chapter four: Explosives and Booby Traps

Figure 70. The crazed anarchist.

The most heroic word in all languages is Revolution.
—Eugene Debs

This chapter is going to kill and maim more people than all the rest put together, because people just refuse to take things seriously. The formulas and recipes in here are real, they can be made by almost anyone, and they can be performed in the kitchen. I offer a serious note of caution. The people in the house on 11th Street (killed in New York City early in 1970 in an explosion caused by bombs they were making) did not know what they were doing. Not only did they kill themselves, but also some innocent people. Ignorance thus not only becomes fatal and inexcusable, but also criminal. If you are not absolutely sure of what you are doing, *do not do it*. The revolution has too many God-damn martyrs as it is.

Explosives, if used with care and all the necessary precautions, are one of the greatest tools any liberation movement can have. Ninety percent of all sabotage is based on some sort of demolitions, or booby traps. Most of the lethal weapons in the previous chapter rely on a small explosive charge. The actual application of explosives can be a really thrilling and satisfying experience. I have a friend who worked with demolitions in the Middle East, and he has told me on several occasions that an explosion for him was an experience very similar to a sexual orgasm. This may seem strange to anyone who has no experience with explosives, but in many regards it is absolutely true. An explosion is an amazing phenomenon. Coupled with the destruction of an object of popular hatred, it can become more than just a chemical reaction. It can take the shape of hope for a nation of oppressed people. It is a total sensual experience. It affects all the senses, and in primitive societies was considered a God, and worshiped. If you have read about any guerrilla struggles, or experienced any, you will realize that an explosion has many effects, especially when it is controlled by the oppressed group. It will confuse the enemy, cause destruction and death, impress and frighten the enemy with the power and technology of the people.

Maybe I should clarify some points for my own moral conscience. These recipes are not in this book for use by a minority. I do not place them here to be used by fringe political groups. They are included in this book to educate, since we have already decided that ignorance is inexcusable, fatal, and criminal. They are for the people, rich and poor, right and left, black, Spanish, white, middle-of-the-road liberals, young and old. This is the type of training the forces of fascism, communism, and capitalism get. It is my belief that all the people should have access to these skills, to be able to repel these oppressive forces.

Sometimes I wonder which side the so-called "liberation army" is on, meaning that I cannot understand any man who wishes to blow up department stores, unless he has an outstanding bill, but even then that's carrying capitalism a bit too far. The real problem comes from the fringe political factions, who at this point are so alienated from the real people of America that they think they are living in Russia in 1917. All of the faction groups cause great strife for the forces that are. No longer can the arthritic armchair politicos blame all the unrest on Cuban infiltrators, or Canadian saboteurs. They are confused, poor bastards. They really think that the Black Panthers were going to blow up the Botanical Gardens. If that type of reaction was observed under the controls of a psychology lab, I am sure they would have a name for it.

The important thing to remember is that this kind of reaction is madness, but an extremely clever and dangerous form. Madness creates its own fatal hubris, and will destroy itself; but sometimes it does need a push in the right direction.

There is a great misconception in some strata of our society that an explosion, wherever it goes off, is better than no explosion. I have spoken to many individuals who subscribe to this belief, holding that everyone is guilty of something and must be punished for it. The corporations which support the war should be bombed, the liberals who will not get off their asses should be shot, the politicians who don't care about the people must die, anyone who lives in the Middle West or South is a redneck and a potential threat to the revolution, etc. This may be hard to appreciate, but it is nevertheless true. Let us take as an example an individual who wished to destroy the Roman Catholic Church. He would not only be a fool, but a murderer, if he threw a bomb into a full church on Sunday morning. A much more intelligent and effective approach to the problem would be a well-placed rumor, defaming the Pope, so that the Catholic people themselves destroyed their own church.

When I use the term revolution, I do not use it in the same context or with the same meaning of Che Guevara, or Lenin, or anyone else. I see "the revolution" as a humanistic change, which may or may not incorporate violence. It must be a revitalization of the American system to take us back to the real moral and political principles adopted in 1776. Maybe I am not a revolutionary, but then it's all terminology, and more intolerance has sprung out of semantic misunderstandings than any other cause.

A freedom fighter, whether working within or outside the system, must be a pragmatic opportunist, meaning that he must be able to see his advantages, in any situation, regardless of how bad conditions may seem at first. A freedom fighter can never surrender, for if he does he becomes part of the problem. As for the guerrilla, the violent freedom fighter, there is no trial in times of trouble—just torture and death.

There are individuals, in our society, who claim that we cannot exist without oppression and regulation, because we are children. I agree that we are children, because we have always had supervision, and have never been allowed the freedom to see ourselves in a different light. We are all children of the humanistic revolution, and, whether certain individuals like it or not, American children are growing up, fast.

Explosives fall into two basic classes. The first is high explosives, which include dynamite, TNT, nitroglycerine, and plastique. The second class is low explosives, which have less of an explosive report and power than the higher class. The low explosives include smokeless powder, black powder, and other less powerful chemical reactions. I will deal with each class separately, starting first with high explosives, and then going on to the lower ones. Following this, I have included a very important section, that must be read. This is the safety precautions for and methods of handling the different forms of explosives. Following the safety precautions is a section on actual application of demolitions and booby traps. I would like to make it clear that no part of this chapter should be used without first reading and studying the rest of it.

How to make nitroglycerin

Almost all modern explosives are a derivative of a nitric acid base. Although fuming nitric acid (98 percent solution in water) is not an explosive in itself, it is explosive when mixed with many other compounds. This process of mixing a compound with nitric acid chemically is called the nitrating principle. The best-known nitrating agent is glycerin, but many others can be and are used. Mercury, sugar, cork, wheat germ, sawdust, starch, lard, and indigo are all common nitrating agents and are used in modern industry. For example when sawdust is nitrated, it becomes nitrocellulose, and is used in smokeless powder. Mercury fulminate (nitrated mercury) is a very powerful and effective detonator.

The next recipe is for nitroglycerin. Nitroglycerin is a high explosive, with an incredibly unstable nature. It can explode for the most minute reasons, such as a change of one or two degrees in temperature, or a minor shock. Because of nitroglycerin's unstable nature, I would suggest that only people with an extensive background training in both chemistry and explosives try this procedure.

Nitroglycerin $C_3H_5(NO_3)_3$.

1. Fill a 75-milliliter beaker, to the 13-ml. level, with fuming red nitric acid, of 98 percent concentration.

2. Place beaker in an ice bath and allow to cool below room temperature.

3. After it is cooled, add to it three times the amount of fuming sulfuric acid (99 percent H_2SO_4). In other words, add to the now-cool fuming nitric acid 39 milliliters of fuming sulfuric acid. When mixing any acids, always do it slowly and carefully to avoid splattering.

4. When the two are mixed, lower their temperature, by adding more ice to the bath, to about 10 or 15 degrees Centigrade. This can be measured by using a mercury-operated Centigrade thermometer.

5. When the acid solution has cooled to the desired temperature, it is ready for the glycerin. The glycerin *must be added in small amounts using a medicine dropper*. Glycerin is added, slowly and carefully, until the entire surface of the acid is covered with it.

6.This is a dangerous point, since the nitration will take place as soon as the glycerin is added. The nitration will produce heat, so the solution *must be kept below 30 degrees C.* If the solution should go above 30 degrees, the beaker should be taken out of the ice bath and the solution should be carefully poured directly into the ice bath, since this will prevent an explosion.

7. For about the first ten minutes of the nitration, the mixture should be gently stirred. In a normal reaction, the nitroglycerin will form as a layer on top of the acid solution, while the sulfuric acid will absorb the excess water.

8. After the nitration has taken place and the nitroglycerin has formed at the top of the solution, the entire beaker should be transferred very slowly and carefully to an-

other beaker of water. When this is done, the nitroglycerin will settle to the bottom, so that most of the acid solution can be drained away.

9. After removing as much acid as possible without disturbing the nitroglycerin, remove the nitroglycerin with an eyedropper and place it in a bicarbonate of soda (sodium bicarbonate) solution. The sodium bicarbonate is an alkali and will neutralize much of the acid remaining. This process should be repeated as many times as necessary using blue litmus paper to check for the presence of acid. The remaining acid only makes the nitroglycerin more unstable than it normally is.

10. The final step is to remove the nitroglycerin from the bicarbonate. This is done with an eye dropper, slowly and carefully. The usual test to see if nitration has been successful is to place one drop of the nitroglycerin on a metal plate and ignite it. If it is true nitroglycerin, it will burn with a clear blue flame. *Caution:* Nitroglycerin is extremely sensitive to decomposition, heating, dropping, or jarring, and may explode even if left undisturbed and cool. *Know what you are doing before you do it.*

How to make mercury fulminate

When employing the use of any high explosive, an individual must also use some kind of detonating device. Blasting caps are probably the most popular today, since they are very functional and relatively stable. The prime ingredient in most blasting caps and detonating devices in general is mercury fulminate. There are several methods for preparing mercury fulminate.

Method No. 1 for the preparation of mercury fulminate:

1. Take 5 grams of pure mercury and mix it with 35 ml. of nitric acid.

2. The mixture is slowly and gently heated. As soon as the solution bubbles and turns green, one knows that the silver mercury is dissolved.

3. After it is dissolved, the solution should be poured, slowly, into a small flask of ethyl alcohol. This will result in red fumes.

4. After a half hour or so, the red fumes will turn white, indicating that the process is nearing its final stage.

5. After a few minutes, add distilled water to the solution.

6. The entire solution is now filtered, in order to obtain the small white crystals. These crystals are pure mercury fulminate, but should be washed many times, and tested with litmus paper for any remaining undesirable acid.

Method No. 2 for the preparation of mercury fulminate:

1. Mix one part mercuric oxide with ten parts ammonia solution. When ratios are described, they are always done according to weight rather than volume.

2. After waiting eight to ten days, one will see that the mercuric oxide has reacted with the ammonia solution to produce the white fulminate crystals.

3. These crystals must be handled in the same way as the first method described, in that they must be washed many times and given several litmus paper tests.

Many other fulminates can be made in the same manner as above, but I will not go into these, since most are extremely unstable and sensitive to shock. All fulminates, including mercury fulminate, are sensitive to shock and friction, and in no circumstances should they be handled in a rough or careless manner.

How to make blasting gelatin

One of the nearly perfect explosive compounds, in the sense of chemical combustion rather than stability, is blasting gelatin. This was discovered by Nobel, and is a very primitive form of plastique, as we know it today. It is made by mixing a small amount of nitrocellulose (nitrated sawdust) with a larger amount of nitroglycerin. This creates a stiff, plastic substance which has power as an explosive greater than either of its ingredients. A person attempting to make this should use 92 percent nitroglycerin and 8 percent nitrocellulose, and pray. If you don't want to mess with making nitrocellulose and have access to guncotton, it can be substituted. Any recipe listed in this chapter which employs unstable or sensitive explosive compounds, such as nitroglycerin, should be left alone by all those who do not have access to a laboratory or previous training. This book is not enough training to mess with these compounds.

Formulas for the straight dynamite series

Probably one of the single greatest breakthroughs in explosives came by accident, when Nobel discovered a primitive form of dynamite. One of the primary ingredients of dynamite is nitroglycerin, which has great explosive power, although it has the disadvantage of being ultrasensitive to heat and shock. What dynamite does is to combine the high explosive power of nitroglycerin with a stabilizing agent, to render it powerful but safely usable. Nobel developed what is called today the straight dynamite series, which is nothing more than nitroglycerin and a stabilizing agent. The most common straight dynamite formulas follow (nitroglycerin will be referred to as NG):

1) NG	32
sodium nitrate	28
woodmeal	10
ammonium oxalate	29
guncotton	1
2) NG	24
potassium nitrate	9
sodium nitrate	56
woodmeal	9
ammonium oxalate	2
3) NG	35.5
potassium nitrate	44.5
woodmeal	6
guncotton	2.5
vaseline	5.5
powdered charcoal	6
4) NG	25
potassium nitrate	26
woodmeal	34
barium nitrate	5
starch	10
5) NG	57
potassium nitrate	19
woodmeal	9
ammonium oxalate	12
guncotton	3
6) NG	18
sodium nitrate	70
woodmeal	5.5
potassium chloride	4.5
chalk	2
7) NG	26
woodmeal	40
barium nitrate	32
sodium carbonate	2
8) NG	44
woodmeal	12
anhydrous sodium sulfate	44
9) NG	24
potassium nitrate	32.5
woodmeal	33.5
ammonium oxalate	10
10) NG	26
potassium nitrate	33
woodmeal	41
11) NG	15
sodium nitrate	62.9
woodmeal	21.2
sodium carbonate	.9
12) NG	35
sodium nitrate	37
woodmeal	27
ammonium oxalate	1
13) NG	32
potassium nitrate	27
woodmeal	10
ammonium oxalate	30
guncotton	1
14) NG	33
woodmeal	10.3
ammonium oxalate	29
guncotton	.7
potassium perchloride	27
15) NG	40
sodium nitrate	45
woodmeal	15
16) Ng	47
starch	50
guncotton	3
17) Ng	30
sodium nitrate	22.3
woodmeal	40.5
potassium chloride	7.2
18) Ng	50
sodium nitrate	32.6
woodmeal	17
ammonium oxalate	.4
19) NG	23
potassium nitrate	27.5
woodmeal	37
ammonium oxalate	8
barium nitrate	4
calcium carbonate	.5

The figures given in the right column are percentage parts, adding up to a sum of 100 percent. Percentage parts are always based on a weight ratio rather than volume. When preparing any high-explosive formula, be sure you know what you are doing. Have the correct equipment, and the correct chemicals. Many of these chemicals are sold under brand names, which are more familiar than their chemical names, but, before assuming anything, read the ingredients, and take nothing for granted.

These formulas listed above are for straight dynamite. Straight dynamite is a very primitive form of what we know today as dynamite. Later ammonium nitrate was added to the dynamite. This substance produced a greater explosive action, but less velocity. The intensification of the explosive action results because ammonium nitrate furnishes more oxygen for the dynamite. Ammonium nitrate has not only been used in dynamite, but also in many other different explosive compounds, including NG., picric acid, and coal dust. Ammonium nitrate when mixed with these substances creates the cheapest form of high explosive known to man.

How to make chloride of azode

A good example of how ammonium nitrate can be chemically mixed with other substances, and impart its explosive qualities to these otherwise nonexplosive materials, is in the preparation of chloride of azode.

1. A quantity of chlorine gas is collected in a small glass beaker, and placed upside down on another glass beaker containing a water solution of ammonium nitrate.

2. Now the solution of ammonium nitrate is heated gently. While it is being heated, the surface of the solution will become oily, and finally small droplets will form and sink to the bottom of the beaker.

3. After this process is finished, remove the heat and drain off excess ammonium nitrate solution. The droplets that remain at the bottom of the beaker are chloride of azode of nitrochloride. Nitrochloride explodes violently when brought into contact with an open flame, or when exposed to temperatures above 212 degrees F.

There are hundreds and hundreds of formulas for the use of ammonium nitrate, in different explosive compounds. The ones on the following pages are only the major, or well-known, ones. For further information, a chemistry manual or handbook of explosives can be useful.

Formulas for ammonium nitrate compounds

1) ammonium nitrate	60	2) ammonium nitrate	34
potassium nitrate	29.5	potassium nitrate	34
sulfur flour	2.5	T.N.T.	17
charcoal powder	4	ammonium chloride	15
woodmeal	4		
3) ammonium nitrate	59	4) ammonium nitrate	70
woodmeal	10	ammonium sulfate	9
nitroglycerin	10	nitroglycerin	6
sodium chloride	20	barium sulfate	7
magnesium carbonate	1	dextrin	8
5) ammonium nitrate	88	6) ammonium nitrate	75
charcoal powder	12	aluminum powder	25
7) ammonium nitrate	94	8) ammonium nitrate	64
potassium nitrate	2	T.N.T.	15
charcoal powder	4	sodium chloride	21
9) ammonium nitrate	60	10) ammonium nitrate	35
woodmeal	10	potassium nitrate	33
nitroglycerin	10	T.N.T.	12
sodium chloride	20	ammonium chloride	20
11) ammonium nitrate	87	12) ammonium nitrate	92.5
charcoal powder	13	potassium bichromate	2
		naphthalene	5.5
13) ammonium nitrate	70	14) ammonium nitrate	65.5
ammonium sulfate	9	T.N.T.	15
nitroglycerin	6	sodium chloride	5
barium sulfate	7	potassium chloride	14.5
dextrin	8		
15) ammonium nitrate	68	16) ammonium nitrate	76
woodmeal	8	woodmeal	2
nitroglycerin	9	T.N.T.	16
potassium chloride	15	potassium perchloride	6
17) ammonium nitrate	73	18) ammonium nitrate	80
barium nitrate	19	woodmeal	10
potato starch	8	nitroglycerin	10
19) ammonium nitrate	63.5	20) ammonium nitrate	65
sulfur flour	2	sulfur flour	2
charcoal flour	18.5	charcoal powder	20
ammonium sulfate	7.5	rice starch	9
water	1	paraffin wax	3
copper sulfate	7.5	water	1
21) ammonium nitrate	85	22) ammonium nitrate	88
cellulose residue	15	dinitronaphthalene	12
23) ammonium nitrate	80.75	24) ammonium nitrate	88
charcoal powder	4.25	charcoal powder	4
pyro powdered aluminum	15	pyro powdered aluminum	8
25) ammonium nitrate	80	26) ammonium nitrate	89
charcoal powder	2	ammonium sulfate	6
pyro powdered aluminum	18	aniline hydrochloride	5
27) ammonium nitrate	70	28) ammonium nitrate	90
sodium nitrate	20	charcoal powder	6
nitrated resin	10	pyro powdered aluminum	4

29) ammonium nitrate	94.5	30) ammonium nitrate	75
charcoal powder	2.5	copper oxalate aniline	20
pyro powdered aluminum	3	powdered sugar cane	5
31) ammonium nitrate	70	32) ammonium nitrate	91
sodium nitrate	25	potassium nitrate	4
nitrated resin	5	resin	5
33) ammonium nitrate	94	34) ammonium nitrate	90
aniline hydrochloride	6	nitrated resin	10
35) ammonium nitrate	95.1	36) ammonium nitrate	83.5
resin	4.9	dinitrobenzene	16.5
37) ammonium nitrate	84	38) ammonium nitrate	87
ammonium nitrocreasol sulphonate	16	sodium creasol sulphonate	13
39) ammonium nitrate	86	40) ammonium nitrate	70
charcoal powder	2.5	charcoal powder	20
pyro powdered aluminum	8	zinc dust	5
potassium bichromate	3.5	pyro powdered aluminum	5
41) ammonium nitrate	60	42) ammonium nitrate	89.5
sodium creasol sulphonate	10	T.N.T.	5
sodium sulphonate	30	wheat flour	5.5
43) ammonium nitrate	65	44) ammonium nitrate	66
T.N.T.	6	T.N.T.	15
sodium chloride	20	sodium chloride	10
wheat flour	4	wheat flour	4
rye flour	5	rye flour	5
45) ammonium nitrate	78	46) ammonium nitrate	81
T.N.T.	8	T.N.T.	17
calcium silicide	14	wheat flour	2
47) ammonium nitrate	85	48) ammonium nitrate	78.5
T.N.T.	15	tetryl	21.5
49) ammonium nitrate	80	50) ammonium nitrate	38.5
T.N.T.	12	potassium nitrate	29.5
nitroglycerin	4	T.N.T.	10
rye flour	4	ammonium chloride	22
51) ammonium nitrate	34.3	52) ammonium nitrate	35
sodium nitrate	33.3	potassium nitrate	33
T.N.T.	12.2	ammonium chloride	20
ammonium chloride	20.2	tetryl	12
53) ammonium nitrate	88	54) ammonium nitrate	89
T.N.T.	8	ammonium oxalate	1
mononitronaphthalene	4	T.N.T.	10
55) ammonium nitrate	80	56) ammonium nitrate	88
woodmeal	10	T.N.T.	10
nitroglycerin	10	graphite	2
57) ammonium nitrate	61	58) ammonium nitrate	77
T.N.T.	15	woodmeal	3
sodium chloride	15	T.N.T.	12
wheat flour	4	nitroglycerin	3
rye flour	5	guncotton	5
59) ammonium nitrate	47.5	60) ammonium nitrate	57
potassium nitrate	24	T.N.T.	15
T.N.T.	10	sodium chloride	21
ammonium chloride	18.5	graphite	7

61) ammonium nitrate	38
potassium nitrate	35.5
ammonium oxalate	10.5
sulfur flour	4.5
charcoal	11.5

The formulas listed above are for high explosives. They are not for cherry bombs or Roman candles. The ingredients that make up these formulas have several functions: The first is the explosive agent itself, the second is the stabilizing agent, and the third is a texturizer (paraffin). Below are listed the most important and common ingredients that are used to form an explosive compound, and a description of their purpose and function.

Ammonium Nitrate .... An extremely unstable, white explosive, usually in crystalline form.

Aluminum .... A silver metallic powder, when in pyro grade, it is a major ingredient in many ammonal explosive compounds.

Ammonium oxalate ...... A very valuable stabilizing agent, especially for NG.

Barium nitrate .... Nitrated barium, in white crystalline powdered form.

Charcoal Powder .... A fine black powder, which is extremely absorbent, and used extensively in pyrotechnics.

Guncotton .... Nitrated cellulose (sawdust) is fairly stable, but usually used with other ingredients rather than alone. It is about 13-14 percent nitrogen.

Naphthalene .... This is a sensitizing agent that is normally in a white crystalline form.

Paraffin .... This is a primary ingredient in plastique, and acts as a texturizer.

Potassium nitrate .... An explosive compound in itself, which is stable. It is usually in a white crystalline form.

Potassium perchloride .... A white powder used as an igniting agent in high explosives. It is an extremely common ingredient in low explosives.

Resin .... A gummy substance, which is flammable, and used in high explosives as an igniting agent.

Sodium carbonate .... This white crystalline powder acts to neutralize acid, which may make the explosive more unstable than it normally is.

Sodium chloride .... This is nothing more than ordinary table salt, and is used as a cooling agent in many high explosives.

Sodium nitrate .... A stable explosive compound which has the advantage of being water-absorbent.

Sodium sulfate .... A stabilizing powder, which is water-resistant.

Starch .... This can be either potato or corn starch, and acts as an absorbent in many explosive compounds.

Sulfur .... A yellow crystalline powder, which should be used in flour form only.

Vaseline .... A clear petroleum jelly used in a similar manner as paraffin, as a plasticizer, for many forms of exploding gelatins and plastic explosives.

Formulas for gelatin dynamites

The following few pages have some of the most important formulas for gelatin and semi-gelatin dynamites. As with most of the explosive substances in this chapter, there are hundreds of different recipes. Each chemist claims he's got the most powerful and safest recipe. What I have attempted to do is collect the most common industrial and military formulas, since these function in the correct context that this book is written.

1) nitroglycerin	12	2) nitroglycerin	88
guncotton	.5	potassium nitrate	5
ammonium nitrate	87.5	tetryl	7
3) nitroglycerin	9.5	4) nitroglycerin	9.5
guncotton	.5	guncotton	.5
ammonium nitrate	59	ammonium nitrate	59.5
woodmeal	6	woodmeal	6
ammonium oxalate	10	ammonium oxalate	5
sodium chloride	15	sodium chloride	19.5
5) nitroglycerin	24	6) nitroglycerin	12
guncotton	1	ammonium nitrate	87.5
ammonium nitrate	75	collodion cotton	.5
7) nitroglycerin	71	8) nitroglycerin	75
ammonium nitrate	23	guncotton	5
collodion cotton	4	potassium nitrate	15
charcoal powder	2	woodmeal	5

9)	nitroglycerin	12
	guncotton	.5
	ammonium nitrate	82.5
	potassium nitrate	5
10)	nitroglycerin	30
	guncotton	1
	ammonium nitrate	68
	sodium chloride	1
11)	nitroglycerin	9.5
	ammonium nitrate	67.5
	woodmeal	8
	sodium chloride	15
12)	nitroglycerin	25
	ammonium nitrate	62
	tetryl	1
	charcoal powder	12
13)	nitroglycerin	80
	ethylene glycol dinitrate	20
14)	nitroglycerin	60
	dinitrotoluene	40
15)	nitroglycerin	60
	guncotton	4
	potassium nitrate	28
	woodmeal	8
16)	nitroglycerin	29
	guncotton	1
	ammonium nitrate	65
	potassium nitrate	5
17)	nitroglycerin	55
	guncotton	3
	potassium nitrate	18
	woodmeal	7
	anhydrous magnesium sulfate (Epsom salts)	17
18)	nitroglycerin	27
	guncotton	.7
	ammonium nitrate	30
	sodium nitrate	30
	charcoal powder	11
	barium sulfate	1.3
19)	nitroglycerin	29
	guncotton	1
	ammonium nitrate	70

How to make TNT

Probably the most important explosive compound in use today is TNT (trinitrotoluene). This and other very similar types of high explosives are all used by the military, because of their fantastic power—about 2.25 million pounds per square inch, and their great stability. TNT also has the great advantage of being able to be melted at 82 degrees F., so that it can be poured into shells, mortars, or any other projectiles. Military TNT comes in containers which resemble dry cell batteries, and are usually ignited by an electrical charge, coupled with an electrical blasting cap, although there are other methods.

Preparation of TNT

1. Take two beakers. In the first, prepare a solution of 76 percent sulfuric acid, 23 percent nitric acid, and 1 percent water. In the other beaker, prepare another solution of 57 percent nitric acid and 43 percent sulfuric acid (percentages are on a weight ratio rather than volume).

2. Ten grams of the first solution are poured into an empty beaker and placed in an ice bath.

3. Add ten grams of toluene, and stir for several minutes.

4. Remove this beaker from the ice bath and gently heat until it reaches 50 degrees C. The solution is stirred constantly while being heated.

5. Fifty additional grams of the acid, from the first beaker, are added and the temperature is allowed to rise to 55 degrees C. This temperature is held for the next ten minutes, and an oily liquid will begin to form on the top of the acid.

6. After 10 or 12 minutes, the acid solution is returned to the ice bath, and cooled to 45 degrees C. When reaching this temperature, the oily liquid will sink and collect at the bottom of the beaker. At this point, the remaining acid solution should be drawn off, by using a syringe.

7. Fifty more grams of the first acid solution are added to the oily liquid while the temperature is *slowly* being raised to 83 degrees C. After this temperature is reached, it is maintained for a full half hour.

8. At the end of this period, the solution is allowed to cool to 60 degrees C., and is held at this temperature for another full half hour. After this, the acid is again drawn off, leaving once more only the oily liquid at the bottom.

9. Thirty grams of sulfuric acid are added, while the oily liquid is gently heated to 80 degrees C. All temperature increases must be accomplished slowly and gently.

10. Once the desired temperature is reached, 30 grams of the second acid solution are added, and the temperature is raised from 80 degrees C. to 104 degrees C., and is held for three hours.

11. After this three-hour period, the mixture is lowered to 100 degrees C. and is held there for a half hour.

12. After this half hour, the oil is removed from the acid and washed with boiling water.

13. After the washing with boiling water, while being stirred constantly, the TNT will begin to solidify.

14. When the solidification has started, cold water is added to the beaker, so that the TNT will form into pellets. Once this is done, you have a good quality TNT.

Note: The temperatures used in the preparation of TNT are exact, and must be used as such. Do not estimate or use approximations. Buy a good centigrade thermometer.

How to make tetryl

The next two recipes are for the preparation of tetryl and picric acid, both of which are commonly used in compounds containing TNT.

Method for the preparation of tetryl:

1. A small amount of dimethyllaniline is dissolved in an excess amount of concentrated sulfuric acid.

2. This mixture is now added to an equal amount of nitric acid. The new mixture is kept in an ice bath, and is well stirred.

3. After about five minutes, the tetryl is filtered and then washed in cold water.

4. It is now boiled in fresh water, which contains a small amount of sodium bicarbonate. This process acts to neutralize any remaining acid. The washings are repeated as many times as necessary according to the litmus-paper tests. When you are satisfied that the tetryl is free of acid, filter it from the water and allow it to dry. When tetryl is detonated, it reacts in very much the same way as TNT.

How to make picric acid

Method for the preparation of picric acid:

1. Phenol is melted and then mixed with a concentrated solution of sulfuric acid. The mixture is constantly stirred and kept at a steady temperature of 95 degrees C., for four to six hours, depending on the quantities of phenol used.

2. After this, the acid-phenol solution is diluted with distilled water, and an equal excess amount of nitric acid is added. The mixture of the nitric acid will cause an immediate reaction, which will produce heat, so the addition of the acid must be performed slowly, but more importantly the temperature of the solution must *not go above* 110 degrees C.

3. Ten or so minutes after the addition of the nitric acid, the picric acid will be fully formed, and you can draw off the excess acid. It should be filtered and washed in the same manner as above, until the litmus paper tests show that there is little or no acid present. When washing, use only cold water. After this, the picric acid should be allowed to partially dry.

Picric acid is a more powerful explosive than TNT, but it has disadvantages. It is much more expensive to make, and is best handled in a wet 10 per cent distilled water form, as picric acid becomes very unstable when completely dry. This compound should never be put into direct contact with any metal, since instantly on contact there is a formation of metal picrate, which explodes spontaneously upon formation.

How to make low explosives

Up to this point, I have referred only to high explosives, but there are many formulas and recipes for low explosives, which, although they do not have the power or impact of the high explosives, are generally speaking safer to use and handle. It may seem at first that an explosive compound that has less power is a disadvantage, but this is not true. If a high-explosive charge were used to set off a bullet in a gun, the gun would probably explode in the user's face. Therefore, low explosives have a definite purpose and use, and are not interchangeable with high explosives. Although I stated above that, generally speaking, low explosives are more stable than high explosives, there are some low-explosive compounds that are as dangerous as high-explosive compounds, if not more so. Below is a chart of the most common low-explosive combinations and their stabilities and merit.

Potassium and sodium nitrate gunpowders: These are without a doubt one of the safest low explosives to handle. They are especially good when packed into a tight container, and exploded under pressure.

Smokeless powder: This type of low explosive is much like the one mentioned above, in the sense that it is extremely stable, but it is much more powerful. It also needs the element of pressure in the actual demolition work.

Potassium chlorates with sulfates: Any mixture of potassium or sodium chlorates should be avoided at all costs, since most combinations will explode immediately, on formation, and those that don't are extremely unstable and likely to explode at any time.

Ammonium nitrate with chlorates: This is similar to the compounds discussed above. These are extremely hazardous compounds, with very unstable ingredients.

Potassium chlorate and red phosphorus: This combination is probably the most unstable and highly sensitive of all the low explosives. It will explode immediately and violently upon formation, even in the open when not under pressure.

Aluminum or magnesium with potassium chlorate or sodium peroxide: Any of these combinations, although not quite as unstable as the one discussed above, is still too sensitive to experiment or play around with.

Barium chlorate with shellac gums: Any mixture employing either barium or barium nitrate and carbon, or barium chlorate and any other substance, must be given great care. Barium nitrate and strontium nitrate mixed together form a very sensitive explosive, but the danger is greatly increased with the addition of charcoal, or carbon.

Barium and strontium nitrate with aluminum and potassium perchlorate: This combination is relatively safe, as is the combination of barium nitrate and sulfur, potassium nitrate, and most other powdered metals.

Guanidine nitrate and a combustible: This combination of guanidine nitrate and a combustible (i.e. powdered antimony) is one of the safest of all the low explosives.

Potassium bichromate and potassium permanganate: This is a very sensitive and unstable compound, and should be avoided, as it is really too hazardous to work with or handle.

The low-explosive reaction is based on the principle of a combustible material combined with an oxidizing agent, in other words combining a material that burns easily with another material which in the chemical reaction will supply the necessary oxygen for the combustible's consumption. Listed below are the most common low-explosive combinations of oxidizing agents and combustibles. The first ingredient listed is the oxidizer, and the second is the combustible:

1. Nitric acid and resin.
2. Barium nitrate and magnesium.
3. Ammonium nitrate and powdered aluminum.
4. Barium peroxide and zinc dust.
5. Ammonium perchlorate and asphaltum.
6. Sodium chlorate and shellac gum.
7. Potassium nitrate and charcoal.
8. Sodium peroxide and flowers of sulfur.
9. Magnesium perchlorate and woodmeal.
10. Potassium perchlorate and cane sugar.
11. Sodium nitrate and sulfur flour.
12. Potassium bichromate and antimony sulfide.
13. Guanidine nitrate and powdered antimony.
14. Potassium chlorate and red phosphorus.
15. Potassium permanganate and powdered sugar.
16. Barium chlorate and paraffin wax.

The combinations that are most unstable and sensitive are Nos. 3, 5, 7, 13, 14, 15, 16. These should be avoided.

Formulas for black powder

Gunpowder is the great-granddaddy of all the rest of the high- and low-power explosives, and still to this day is one of the most important explosives. As with all the rest of the explosive formulas, it seems everyone has his own recipe, which he claims to be the best. I have collected 11 of the safer, more functional, methods of preparing gunpowder. The most important thing to remember when dealing with black powder is its incredible sensitivity to sparks. *Note:* A cook, a book does not make.

1) potassium perchlorate	69.2	2) potassium chlorate	75
sulfur	15.4	charcoal	12.5
charcoal	15.4	sulfur	12.5
3) potassium nitrate	70.4	4) potassium nitrate	79
sulfur	19.4	sulfur	3
sodium sulfate	10.2	straw charcoal	18
5) potassium nitrate	64	6) potassium nitrate	70.6
sulfur	12	sulfur	23.5
lamp black	7	antimony sulfate	5.9
sawdust	17		
7) potassium nitrate	50	8) potassium nitrate	37.5
ammonium perchlorate	25	starch	37.5
sulfur	12.5	sulfur	18.75
powdered willow charcoal	12.5	antimony powder	6.25
9) barium nitrate	75	10) guanidine nitrate	49
sulfur	12.5	potassium nitrate	40
charcoal	12.5	charcoal	11
11) sodium peroxide	67		
sodium thiosulphate	33		

When preparing black powder for use in firearms, it is important to keep in mind that these formulas are more powerful than ordinary potassium nitrate gunpowder, and for that reason smaller quantities should be used. The correct amount can only be discovered by trial-and-error experimentation, but caution must be taken to prevent overloading.

Although black powder is one of the safest explosives, it has disadvantages: It is extremely sensitive to sparks; and it leaves a messy residue in gun barrels, which necessitates frequent cleaning. The advantage of smokeless powder is that it is an extremely stable high-powered explosive in the low-explosive class, which gives off only gaseous products upon explosion. The first type of smokeless powder used by the army was basically nitrocellulose with a small amount of diphenylamine, for stabilizer. Smokeless powder is perhaps the safest of any explosive compound discussed in this chapter, and for that reason is extremely popular today.

How to make smokeless powder

1. Boil cotton for 30 minutes, in a 2 percent solution of sodium hydroxide.

2. Wash the cotton in hot water and allow it to dry.

3. Mix slowly and carefully at 25 degrees Centigrade, 250 cc. of concentrated sulfuric acid, 150 cc. of concentrated nitric acid, and 20 cc. of water. They must be kept at 25 degrees C.

4. Next place the dried cotton in the acid solution, and stir well with either a glass or porcelain rod (do not use metal). This should be done for 35 minutes.

5. After nitration, the acids are washed away, and the cotton is washed in boiling water five times, each time for 25 minutes. The cotton is given several tests with litmus paper. If the litmus test proves that there is still some acid present, a 2 percent solution of sodium bicarbonate should neutralize whatever is left. This is important, since any remaining acid acts as an impurity to make the explosive more unstable.

How to make nitrogen tri-iodide

Probably the most hazardous explosive compound of all is nitrogen tri-iodide. Strangely enough, it is very popular with high school chemists, who do not have the vaguest idea of what they are doing. The reason for its popularity may be the ready availability of the ingredients, but it is so sensitive to friction that *a fly landing on it, has been known to detonate it.* The recipe has only been included as a warning and as a curiosity. *It should not be used.*

Preparation for making nitrogen tri-iodide:

1. Add a small amount of solid iodine crystals to about 20 cc. of concentrated ammonium hydroxide. This operation must be performed very slowly, until a brownish-red precipitate is formed.

2. Now it is filtered through filter paper, and then washed first with alcohol and secondly with ether.

Tri-iodide must remain wet, since when it dries it becomes supersensitive to friction, and a slight touch can set it off. *This is an extremely unstable compound and should not be experimented with.*

Formulas for different-colored smoke screens

An interesting aspect of explosives is the extra ingredients which can be added to give the explosion characteristics it would not normally have. A smoke bomb is like this, in the sense that it is not only useful to create confusion and chaos, but also for smoking persons out of an enclosed area, as well as signaling.

Formulas for the preparation of a black smoke screen:

1) magnesium powder	19	2) magnesium powder	20
hexachloroethane	60	hexachloroethane	60
naphthalene	21	naphthalene	20
3) hexachloroethane	55.8	4) black powder FFF	50
alpha naphol	14	potassium nitrate	10
athracene	4.6	coal tar	20
aluminum powder	9.3	powdered charcoal	15
smokeless powder	14	paraffin	5
naphthalene	2.3		

Formulas for the preparation of a white smoke screen:

1) potassium chlorate	44	2) zinc dust	28
sulfur flour	15	zinc oxide	22
zinc dust	40	hexachloroethane	50
sodium bicarbonate	1		
3) zinc dust	66.67		
hexachloroethane	33.33		

Formulas for the preparation of a yellow smoke screen:

1) potassium chlorate	25	2) potassium chlorate	30
paranitraniline	50	naphthalene azodimethyl	
lactrose	25	aniline	50
		powdered sugar	20
3) potassium chlorate	21.4		
naphthalene			
azodimethyl aniline	2.7		
auramine	38		
sodium bicarbonate	28.5		
sulfur flour	9.4		

Formula for the preparation of a green smoke screen:

1) potassium nitrate	20
red arsenic	20
sulfur flour	20
antimony sulfide	20
black powder FFF	20

Formulas for the preparation of a red smoke screen:

1) potassium chlorate	20	2) potassium chlorate	26
lactose	20	diethylaminorosindone	48
paranitraniline red	60	powdered sugar	26
3) potassium chlorate	27.4	4) potassium perchlorate	25
methylaminoanthraquinone	42.5	antimony sulfide	20
sodium bicarbonate	19.5	rhodamine red	50
sulfur flour	10.6	dextrin	5

Household substitutes

On the next few pages I have included a chart of the chemicals' names and their more common household names. This chart is not entirely correct, although it may seem so. The household substitutes must be checked before using to be absolutely certain they are what you want. Be sure that the chemical you want is alone, since if it is included in the household substitute, but not isolated, the extra ingredients may counteract the desired results.

CHEMICAL NAME	HOUSEHOLD SUBSTITUTE
acetic acid	vinegar
aluminum oxide	alumia
aluminum potassium sulfate	alum
aluminum sulfate	alum
ammonium hydroxide	ammonia
carbon carbonate	chalk
calcium hypochloride	bleaching powder
calcium oxide	lime
calcium sulphate	plaster of Paris
carbonic acid	seltzer
carbon tetrachloride	cleaning fluid
ethylene dichloride	Dutch fluid
ferric oxide	iron rust
glucose	corn syrup
graphite	black lead (pencil lead)
hydrochloric acid	muriatic acid
hydrogen peroxide	peroxide
lead acetate	sugar of lead
lead tetroxide	red lead
magnesium silicate	talc
magnesium sulfate	Epsom salts
naphthalene	mothballs
phenol	carbolic acid
potassium bitartrate	cream of tartar
potassium chromium sulfate	chrome alum
potassium nitrate	saltpeter
silicon dioxide	sand
sodium bicarbonate	baking soda
sodium borate	borax
sodium carbonate	washing soda
sodium chloride	salt
sodium hydroxide	lye
sodium silicate	water glass
sodium sulfate	Glauber's salt
sodium thiosulfate	photographer's hypo
sulfuric acid	battery acid
sucrose	cane sugar
zinc chloride	tinner's fluid

Safety precautions

The next few pages are the most important in this chapter. More people, young and old, political and apolitical, have executed themselves with some form of explosives than I would care to state here. The safety procedures for all explosives are nothing more than common sense and reasoning. Yes, smokeless powder is stable, but if you put it in the oven, it will explode. That may sound stupid, but a 14-year-old in Ohio did it two years ago and killed himself. Plastique is a very stable explosive compound, but it needs to be softened before use. Some guy in New Jersey softened his plastique with a hammer, and he is no more. TNT can be burned and it will not explode—most of the time—whereas gunpowder will ignite with the smallest spark. *Moral:* Read the next few pages and study them, do not assume anything.

Safety precautions for the storing of explosives:

1. The most important factor in picking a storage place is its location. You will want the place close enough to be under your surveillance, but not close enough to be a hazard to you or your family. All explosive magazines or dumps must have secure locks on all the doors.

2. Do not store blasting caps, electrical caps, or primers in the same container or even the same magazine with any other form of high or low explosives.

3. Do not store fuses or fuse lighters in a wet or damp place, or near the storage of flammables such as oil, gasoline, cleaning solvents, or paints. Fuses should also be kept away from radiators, steam pipes, stoves, or any other source of heat, because the very nature of nonelectrical fuses is such that any one of these things could start a large fire.

4. Metals should be kept absolutely away from explosives, meaning that metal tools should not be stored in the same magazine with explosives.

5. In no circumstances, allow any open flame or other fire, including a lighted cigarette, around an explosive storage dump.

6. Spontaneous combustion is a real problem when storing explosives. For this reason, do not allow leaves, grasses, brush, or any debris to collect or accumulate around the explosives storage area.

7. Do not discharge weapons near an explosive magazine. Do not shoot into the storage dump. Keep the shooting away from the explosives.

8. Certain types of explosives require certain types of storage, including temperature regulation and other controls. Be sure that you understand all aspects of the compound's nature before handling or storing it.

9. At all times use common sense, and allow only qualified persons to be near or handle explosives.

Safety precautions for handling explosives:

1. When transporting explosives, know what the federal and state laws and regulations are. Many of these regulations are just common-sense protection for yourself.

2. Make sure that any vehicle used to transport explosives is in proper working order and equipped with a tight wooden or nonsparking metal floor, with sides and ends high enough to prevent the explosives from falling off. The load in an open-bodied truck should be covered with a waterproof and fire-resistant tarpaulin. Wiring should be fully insulated so as to prevent short circuiting, and at least two fire extinguishers should be carried. The truck should be plainly marked, if possible.

3. In no circumstances allow metals of any sort, except the nonsparking type, to come into contact with the explosive casing. Metal, flammable, or corrosive substances should not be transported with explosives.

4. Never in any circumstances allow smoking around any explosive, regardless of its stability.

5. Do not allow unauthorized persons to go near the explosives. This is for two reasons; first, because they might not know what they are doing and accidentally set off an explosion, and secondly, because they might be undercover agents from the enemy.

6. When loading or unloading explosives, do it with the utmost care. Whenever dealing with explosives, in any capacity, do not rush. Take your time and exercise extreme caution.

7. If you must transport both high explosives and blasting caps in the same vehicle, be sure that they are completely separate from one another.

Safety precautions when using explosives:

1. When opening a case of explosives, in no circumstances use a metal crowbar or wedge. Use a wooden wedge or nonmetallic tool.

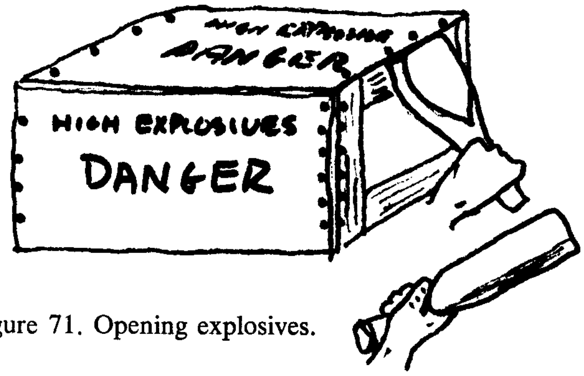


Figure 71. Opening explosives.

2. Do not smoke or allow anyone to smoke. Do not carry an open flame, or any other form of heat source or fire near an area where explosives are being used.

3. Do not place explosives where they may be exposed to a flame, excessive heat, sparks, or shock.

4. Replace the cover or close the top of the explosives container after use.

5. Do not carry explosives in your pocket or on your person at any time. Even when on a mission of sabotage, it is better to carry explosives in a separate container.

6. When making up primers or crimping blasting caps, do not do it near any other explosives, high or low.

7. Blasting caps, although they may look like firecrackers, are a powerful explosive charge and must be treated accordingly.

8. Never insert anything but a fuse into a blasting cap. Since blasting caps, to be functional, must be sensitive, a great degree of care must be used in handling them.

9. Never experiment with, disassemble, strike, tamper with, or in any way try to remove the contents of a blasting cap. Do not try to pull the wires out of an electrical blasting cap.

10. When handling explosives, the only persons who should be present are those who are absolutely necessary. All unnecessary and unauthorized persons should be cleared from the area. This, of course, includes animals and children.

11. Do not handle explosives, or stay in an area where explosives are being stored, when an electrical storm is approaching. Clear the area and retire to safety.

12. Inspect all equipment before use, and never use any equipment that appears damaged or deteriorated.

13. Never attempt to reclaim any explosive or blasting material that has been water-soaked.

Safety precautions to be taken when drilling:

1. Check what you are about to drill into, to be sure there is not a charge already there. Never drill into an explosive charge.

2. Never stack surplus explosives near the drilling area.

3. Since the act of drilling is based on the principles of friction, heat will be created. Never load a bore hole without first checking the temperature. Also check to see if any pieces of burning material are present. Temperatures above 150 degrees F. are extremely dangerous.

4. A common practice in demolitions is what is called springing a bore hole. This is when a small explosive is used to enlarge a bore hole, so that a much larger explosive charge can be placed in it. This should require extreme caution. Check to see if there are any other charges nearby.

5. Never force explosives into a bore hole. Recheck your hole and clear the obstruction before attempting to reload.

6. Never force a blasting cap or electrical blasting cap into a stick of dynamite. Use the hole made by the punch.

7. Do not tamper in any manner with the primer.

8. Figure out what quantity of explosives you will need, according to the formulas given later in the chapter, and then put in that amount. Do not use more than necessary.

Safety precautions to be taken when tamping:
(Tamping is the process of placing materials, such as sandbags, around the explosives so as to send the force of the explosion in one certain direction.)

1. Tamping is a gentle process and should never be performed violently.

2. When using tamping tools, be sure that these are made of wood or some other nonmetal sparkfree material.

3. When tamping a bore hole that has recently been drilled, use clay, sand, dirt, or some other noncombustible material.

4. Take extreme care not to damage or injure the fuse or electrical blasting cap wire when tamping.

5. One should always tamp if possible, since it cuts down the amount of explosives necessary.

Safety precautions to be taken when detonating electrically:

1. Do not uncoil the wires of an electrical blasting cap, or employ their use, during a thunderstorm, dust storm, or when any other source of static electricity is present.

2. Be very careful about the use of electrical blasting material near a radio frequency transmitter. Consult *Radio Frequency Hazards,* a pamphlet issued by the Institute of Makers of Explosives.

3. Keep your firing circuit completely insulated from all conductors except the one circuit you intend to use. This means extreme care in insulation against the ground, bare wires, rails, pipes, or any paths of stray current.

4. Keep all cables, wires, or other electrical equipment away from electrical blasting caps, except at the time of the blast, and for the purpose of that blast.

5. Be very careful in the use of more than one blasting cap. Never use more than one type of blasting cap in a single operation.

6. Use the correct current stated by the manufacturer to set off electrical blasting caps. Never use any less.

7. Be sure that all the ends of the wires which are to be connected are bright and clean.

8. Keep the electrical cap wires or lead wires short-circuited until ready to fire.

Safety precautions to be taken when using a fuse:

1. Handle the fuse carefully. Avoid damaging the covering. In cold weather, warm the fuse slightly before using. Avoid cracking the waterproof outer coating.

2. Never use a short fuse. Always use a fuse which is over two feet in length. Be absolutely sure you know the burning speed of the fuse, and have calculated the amount of time you will need to get to safety.

3. When placing the fuse in the blasting cap, cut off an inch or so to insure dryness. Cut straight across the fuse with a clean new razor blade. Once the fuse is in place, do not twist, pull, or otherwise cause friction.

4. Once the fuse is in place, it is necessary to crimp the fuse into the blasting cap. Crimping is the procedure of attaching a nonelectrical blasting cap to a fuse, by bending the ends of the cap around the fuse. This must be done only with a special tool, called a crimper. Although crimpers may look like pliers, they are not, and pliers must not be used. When crimping, be absolutely sure you know what you are doing, since, if you squeeze the explosive within the cap rather than the ends, there is a good chance you will blow your hand off.

5. Do not light the fuse until you are sure that the sparks that come from it will not set off the explosive until the fuse has burned down.

Safety precautions to be taken when firing explosives:

1. Never hold an explosive in your hands, when lighting.

2. Before exploding any charge, make sure a complete check of the area has been made, and sufficient time and warning have been given.

3. Do not return to the area of the blast until all the smoke has cleared.

4. Do not attempt to investigate a misfire too soon. Wait

at least one hour, and be sure, if you are using an electrical circuit, that you have disconnected it.

5. Never drill out misfires.

6. Never abandon any explosives.

7. Do not leave any explosive equipment, packing material, or empty cartridges where children or animals can get at them.

Basic formulas for demolitions use

1. Computation of minimum safety distance

For charges less than 27 pounds, the minimum safety distance is 900 feet. Over 27 pounds, the minimum safety distances can be figured by using the following formula:

$$300 \text{ x } \sqrt[3]{\text{pounds}} \text{ of explosive (T.N.T.)}$$

2. Steel cutting

When cutting, with explosives, part of a steel structure, determine the area in square inches of the member to be cut. This area is then labeled "A," and one can use the following formula:

$$P=\tfrac{3}{8}A$$

P=the number of pounds of T.N.T. necessary.

3. Steel cutting

When a steel member is not part of a greater structure, a different formula is used. This is based on the diameter of the individual member.

$$P=D^2$$

P = the amount of T.N.T. required, and D is the diameter of the piece of steel.

4. Train rails

To cut rails that weigh less than 80 pounds, use one-half pound of explosives. To cut rails that weigh over 80 pounds, use a full pound of explosives.

5. Timber cutting

When the charge is to be external and untamped, the formula is as follows:

$$P=\frac{C^3}{30}$$

P equals the pounds of explosives required, and C equals the circumference of the tree in feet (this formula is given for plastique). When figuring an internal tamped charge, the formula is:

$$P=\frac{D^2}{250}$$

P equals the pounds of explosives, and D equals the diameter of the tree in inches.

Some important principles

A basic rule to follow in all calculations having to do with explosive compounds is to round off the amount to the next highest unit package. At times you may use a little more than necessary, but you will be assured of success. Another rule when calculating charges is to add one-third more explosives if you do not intend to tamp. If a formula is given for plastique (composition 4), as was done for both timber-cutting formulas, you are able to compute poundage in T.N.T. by adding one-third to the weight of the plastique.

When using the principle of cratering to destroy a paved surface with explosives, use several charges rather than just one. The use of a bore hole is especially effective here. It is pointless to attempt cratering a roadway without tamping, since most of the destructive force of your charge will go straight up in the air.

In the first two sections of this chapter, I have discussed explosives chemically and written about their safe handling. In the third section, I intend to go into their specific application. Bombs, like spies, have no allegiance, even to their creators.

Bombs and booby traps incorporate more than just technical knowledge, they are based on human nature. To create an effective booby trap, one must have a primitive insight into his enemy's actions, thoughts, and methods. Before I get into the nitty-gritty of constructing booby traps, bombs, land mines, grenades, etc., it is important to explain the basic working principles and mechanisms behind these devices.

In the acquisition of equipment I would recommend purchasing or stealing, rather than making your own. Manufactured equipment is much safer to work with, and usually more effective. Once you have your explosive compound, you will need a way to set it off, or detonate it. With all high explosives, you will need a detonator or blasting cap, unless you decide to lace the fuse into the explosive, although this is not recomended. A blasting cap is a low-explosive compound that is connected to a high explosive, for the purpose of detonating it. There are two types of blasting caps—electric and nonelectric.

To use a nonelectrical blasting cap, one gently pushes the fuse into the hollow end, until it is fully in. He then crimps the hollow metal end around the fuse, and puts it into the high explosive. When the fuse burns down, it ignites the flash charge. That in turn explodes the priming

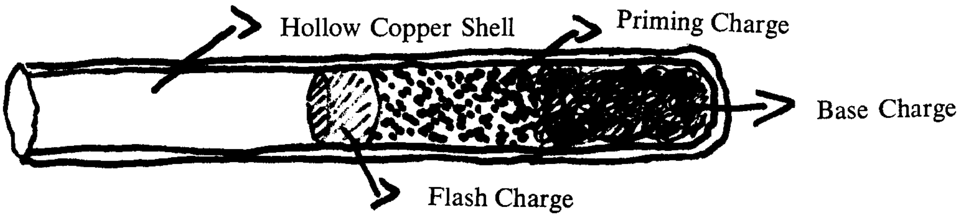


Figure 72. Nonelectrical blasting cap.

charge, which detonates the base charge, and finally creates enough heat to set off the high-explosive charge. The fuse is ordinary safety fuse or detonating cord.

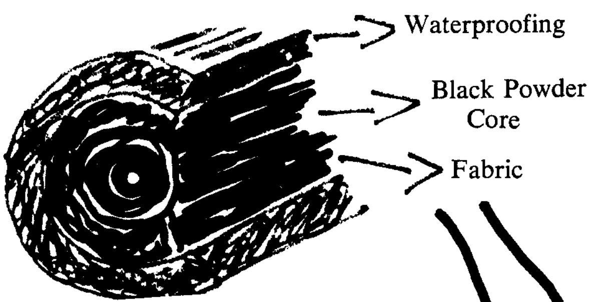


Figure 73. Safety fuse.

When the fuse is put into the blasting cap, it is necessary to seal it. This act of sealing is called crimping. When involved with this sort of thing, one must use the standard safety precautions set down in the previous section. Crimpers look like a pair of pliers, and their function is very similar, although pliers cannot be used for crimping. With the crimper in your right hand and the blasting cap in your left, slowly squeeze the hollow end of the blasting cap until it is firmly against the fuse. Use care so that you do not squeeze the charge within the cap, as this may detonate it.

Whereas nonelectrical blasting caps are functional and have proven that they can be relied on, electrical blasting

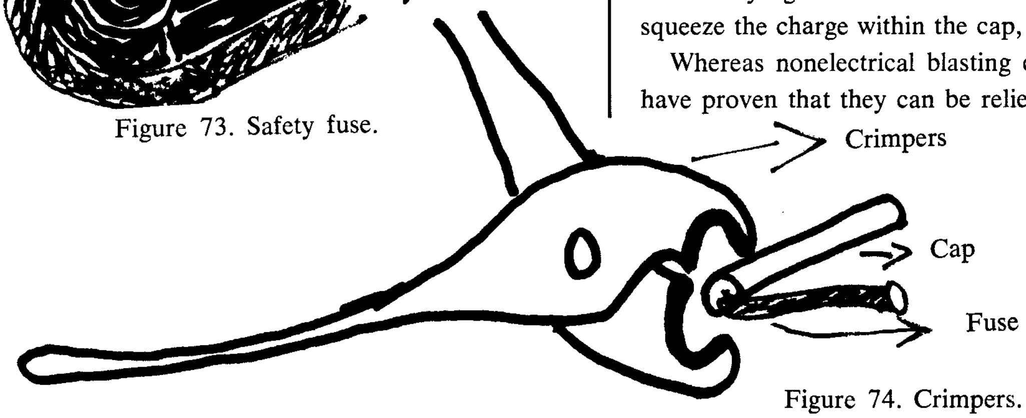


Figure 74. Crimpers.

caps offer a much greater variety of uses. The basic principle of the electrical blasting cap is that an electrical charge moves through an insulated wire until it reaches a small section of that same wire which is not insulated and which is surrounded by a primary flash charge. The heat from the electrical charge will explode the flash charge, which in turn will set off a series of minor explosions, finishing up with the high explosive.

Both types of blasting caps should be placed within the high explosive itself. This is easy when working with plastique or a pliable substance. Manufactured T.N.T. has a small hole designed at the top for just this reason, but in dynamite one has to make his own hole. This hole should be made with a wooden or nonsparking metal object. The ends of the crimpers, illustrated on the previous page, are ideal. The hole can be made in one of two ways: the first is bored carefully and gently straight down from the top of the stick, to exactly the length of the cap itself; the second type of hole is made from the side in a downward diagonal direction. Both of these methods have proven effective.

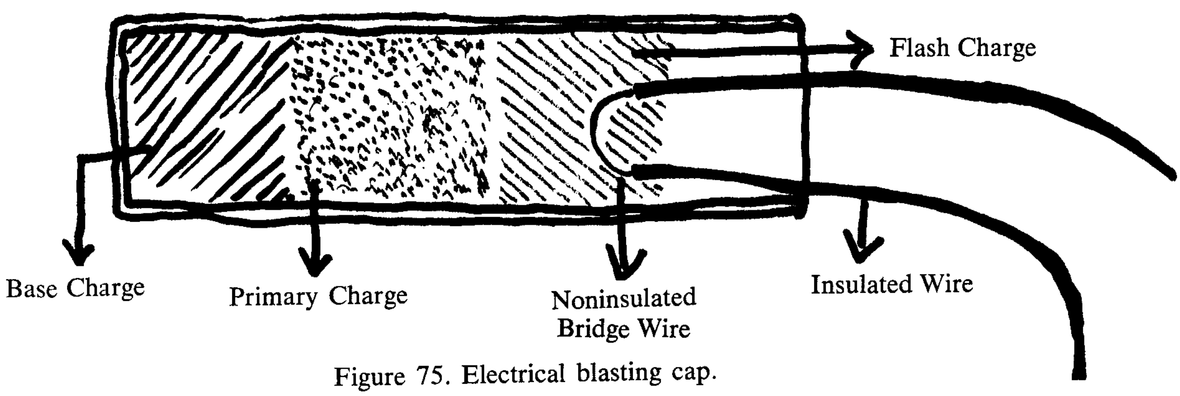
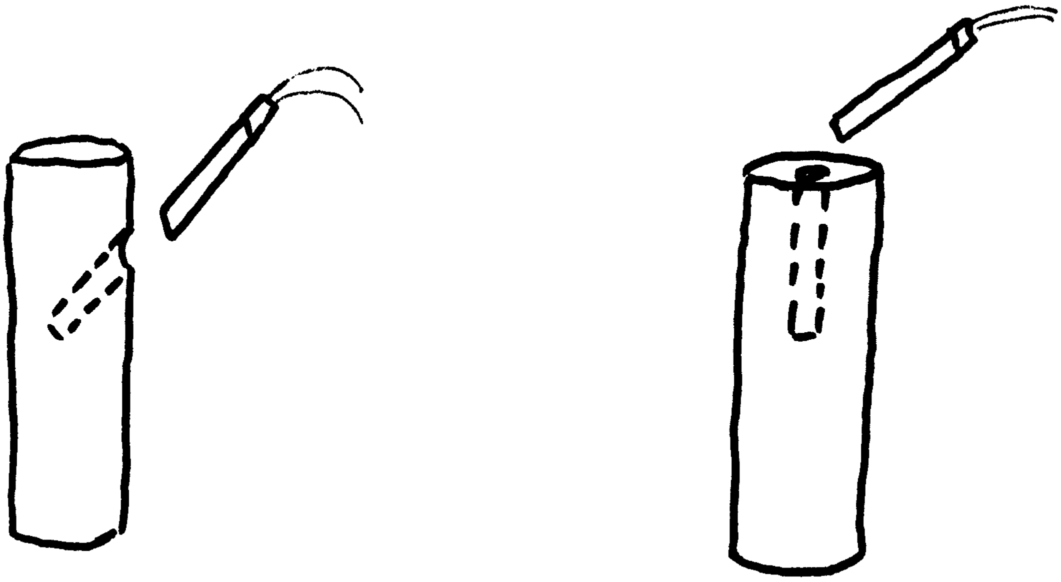


Figure 75. Electrical blasting cap.



Method 1 Method 2

Figure 76. Priming dynamite electrically.

Another method of priming dynamite, which is not as reliable as either nonelectrical or electrical blasting caps, is called "lacing." The principle behind most detonating devices is simply to create a temperature which is hot enough to ignite the high explosive. This increase in temperature can be accomplished with a relatively good degree of success by weaving the fuse throughout the high explosive so that, as the fuse burns down, the heat created from the burning process is captured and held within the high explosive until the detonation temperature is reached.

There are different methods of lacing, depending on what type of high explosive you happen to be working with. For dynamite, the most common and most functional method is literally to sew the detonation cord into the stick. This preparation entails the individual's making several holes directly through the dynamite itself. This hole-making should be performed just as the planting of the blasting cap was handled. The holes must be dug gently and slowly with a nonmetallic instrument. "Lacing" should be done only when there is no alternative, and blasting caps are not available.

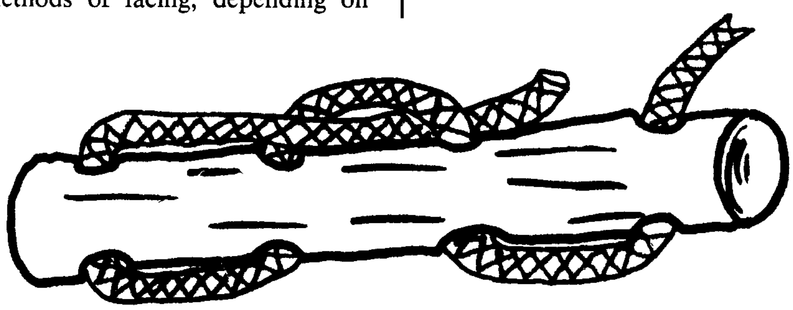


Figure 77. Lacing dynamite.

When using TNT, you can lace it by wrapping the detonating cord around the body of the explosive at least five or six times, and then tying it off with a clove hitch. This will result in a great amount of heat being transferred into the TNT from the fuse, and its detonation.

Plastique can also be ignited in this fashion, by employing a heavy-duty detonation cord, and tying a double knot in one of its ends. This large knot is then buried deep in the center of the composition. It must be at least one inch from any side.

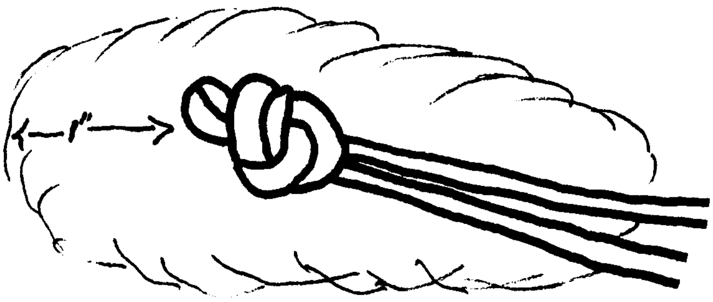


Figure 78. Lacing plastique.

Tamping

Tamping is nothing more than an operation performed before the explosion, to regulate and direct the destructive power of the explosion. In other words, if a pound of black powder is ignited with a match, the explosion will occur but most of the destructive force will take the path of least resistance—into the atmosphere. Now, if the same pound of black powder was placed within a steel pipe, and sealed at both ends, except for a tiny hole for the fuse, the explosion could be regulated with ease. This tamping operation is necessary for any forms of demolitions in order that the operation be successful. A stick of dynamite placed on a concrete roadway untamped, when exploded will create a very small crater, perhaps a few inches. If this same stick of dynamite were tamped, by placing several sandbags on top of it and around it, the explosion would create a much greater crater. This tamping operation is absolutely necessary for the demolition of a large structure or building.

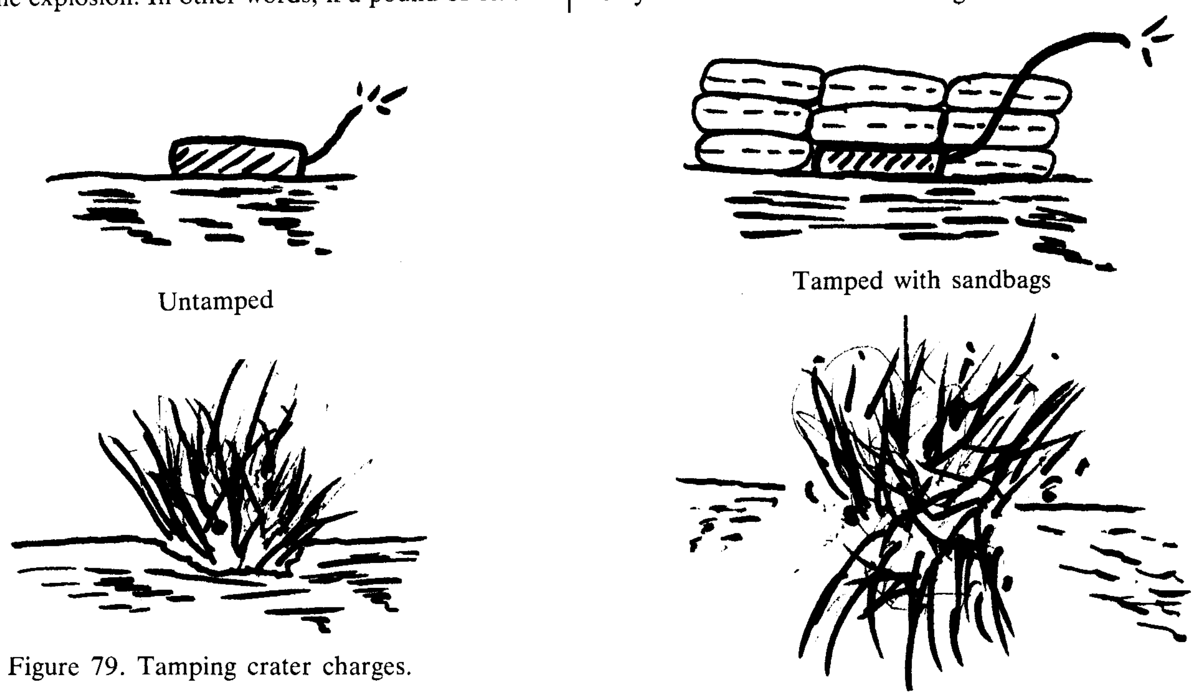


Figure 79. Tamping crater charges.

1. When attempting to sever a steel rod or pole, through the use of explosives, place a charge on each side, leaving a small gap between the butts of the explosives.

2. When cutting a chain, place the explosive charge on one side and tape it securely into place.

3. When cutting any odd-shaped object, the best explosive to use is plastique, because of its flexibility. It is especially useful and effective when cutting heavy metal cables. The compound should be placed around the side of the cable that is to be cut, about a half-inch thick.

When sabotaging railroad tracks with explosive, use plastique if available, since this is the easiest substance to use when trying to sever objects of irregular shapes. The most common way of cutting train tracks is by placing a charge of high explosives on either side of the "I" beam track, so as to have the forces of the two explosions act upon each other, thus causing the middle object maximum destruction.

Another method which has proven equally effective is placing a charge between the rail and the switch. The switch is one of the weakest points along the line, and a

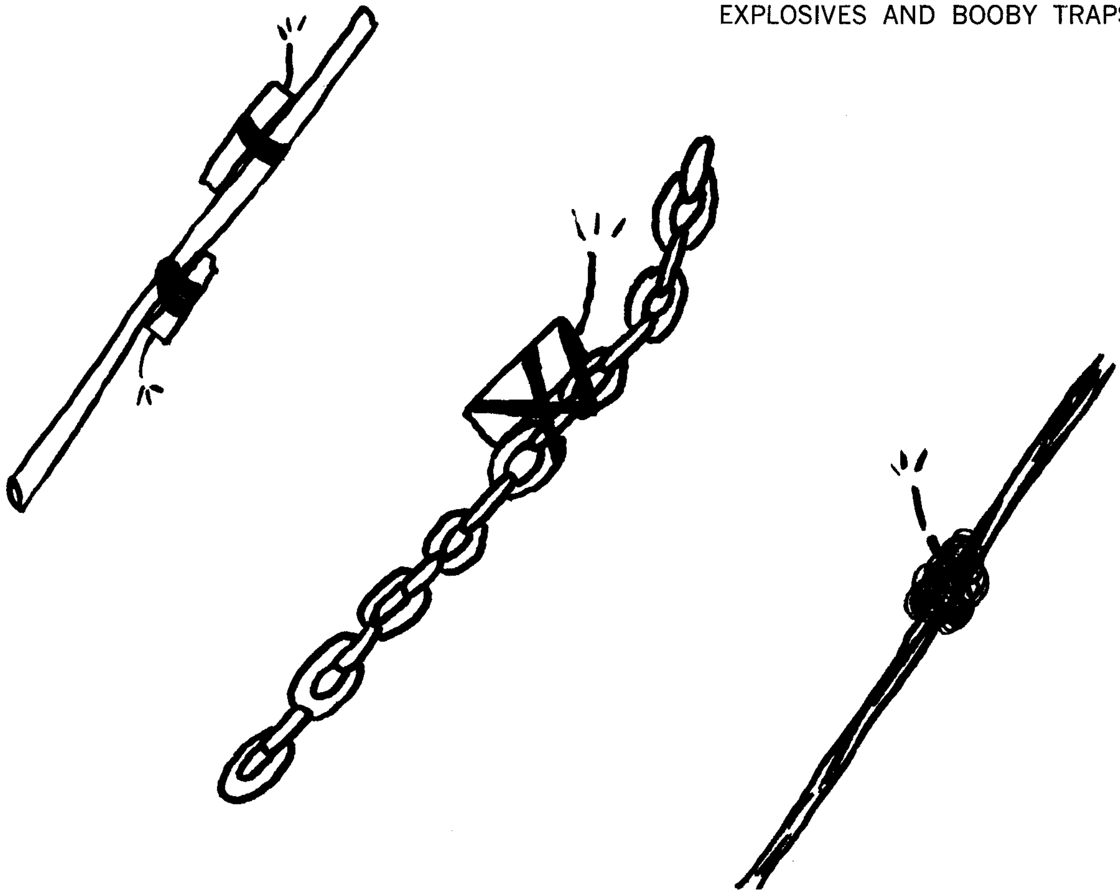


Figure 80. Using explosives to cut through materials.

relatively small charge will not only sever the switch and rail, but will also rip up the ties and the railroad bed. Tamping with sandbags can and should be used if at all possible, since the extent of the damage is multiplied several times by the addition of the sandbags. Tamping can be useless if you are on a silent lightning-fast mission. In this case, a two-pound charge of TNT carefully placed between the switch and rail will almost certainly do the trick without tamping. The best procedure when engaged in this type of sabotage is to repeat the acts every three-quarters of a mile or so, so as to delay the repairmen and create confusion.

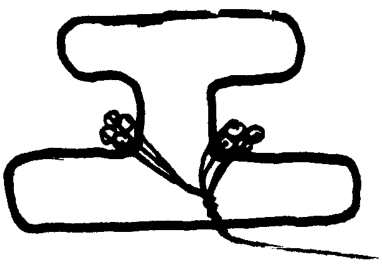


Figure 81. Railroad Sabotage

Placement of charges

In demolition work, the greatest problem is the actual placement of the charges. When an individual is working on a large structure such as a building or a bridge, it is imperative that he have an understanding of the directional force of explosives, and the structure's weaknesses. These large-type structures are built to bear up under abnormal stress, so the chances are good, unless the charges are placed correctly, that the sabotage will have little or no effect.

When attempting the demolition of a building, the first

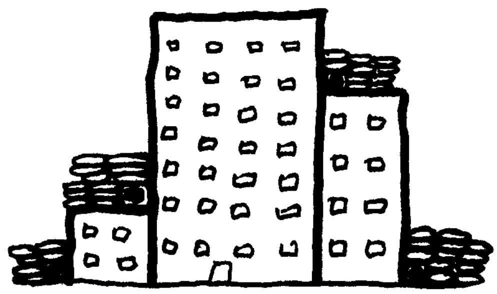


Figure 82. Type of placement and tamping necessary to destroy large buildings.

thing to do is to determine the weakest point in the structure. This is the point where a charge can be placed and well-tamped, and will result in maximum destruction. A large building will usually take more than just one charge. The best bet is to place large explosive charges on either side of a weak point in the foundations. These charges should be tamped from the outside, so as to drive the force inward.

There are several basic methods of planting explosives. The advantage to most of the ones listed below is that they have a natural tamping factor, built-in.

1. Bury the explosive beneath the object of destruction.
2. Drill a bore hole into the object and fill with explosives.
3. Form a brace to hold the explosives tight against the object of destruction. A good brace can be made from wood placed on a diagonal, with one end jammed into the ground.
4. Place a charge out in the open, with the tamping material surrounding it, and directing its force.

Bridge destruction

Bridges are much harder to destroy than buildings, and this is for several reasons:

1. Most of the bridges to be destroyed will be far larger than the buildings.
2. They are built strongly, to last for long periods of time.
3. They have many reinforcements that are not visible.
4. Everyone realizes the strategic importance of bridges, therefore everyone should realize how well guarded they are.

An important factor to bear in mind, when working on bridge demolition, is the extent of real damage desired. Total destruction of a bridge is useless, a waste of good explosives. It may even be harmful, since there may come a time when a friendly force will need the use of that bridge. Bridge destruction should therefore be considered a tactical-delay operation. It will slow the enemy down, and cause them much expense and time to rebuild. Since types of charges differ for different types of bridges, I will go into specific types of bridge demolitions.

Stringer bridges are the most common type of concrete, steel, or timber bridges in existence. They are usually one or more spans, but this makes little difference in the actual placement of charges. If more than one span is to be destroyed, one should just copy the first placement on the second span. The stringer-type bridge is on basically two or three steel "I" beams, referred to as stringers. The obvious method is to attempt to sever these primary aspects of the entire structure. This can be accomplished by placing charges on either side of each stringer. Each charge should be tamped either with sandbags or a wooden brace. The result of placing all the charges on the same side of the stringer is the twisting and forced warping of the steel beams beyond any future use. When dealing with a bridge of this type which incorporates more than one span, place the charges along the joints of the stringer, since this is the weakest point along the line.

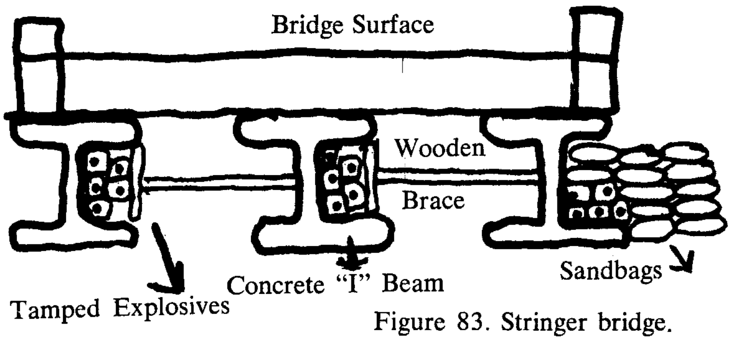


Figure 83. Stringer bridge.

A *slab bridge* is a simple structure, consisting of a flat slab of either concrete or timber held together in such a way that it forms one continuous slab. These are the easiest bridges to destroy, since all that is required is a diagonal line of explosive charges placed either under, or drilled into, the structure itself. If the charges are placed be-

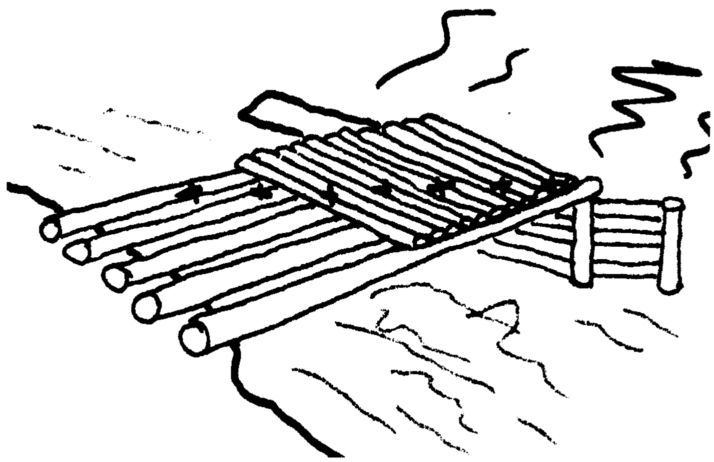


Figure 84. Slab bridge.

neath the bridge, they should be attached by some means, and tamping should be used.

The *T-beam bridge* is very similar to the stringer-type bridge, except it is without the bottom reinforcements. This doesn't mean that the T-beam type is any weaker or easier to destroy. This type of bridge is based on three or four concrete or steel T-beams, with a large slab of concrete covering them. The space between the T-beams on the underneath of the bridge is ideal for the placement of explosive charges, since 75 percent of the tamping has already been constructed, by the very nature of the bridge itself. This type of bridge may have more than one span but, since bridge destruction is only a tactical-delay operation, the destruction of one span should be enough. If you wish to destroy more than one span, just repeat the same operation, on the second span, paying close attention to the joints. Like the stringer-type bridge, the charges are placed beneath the bridge, between the beams themselves. A steel or wooden platform should be constructed to so hold the explosives, and direct their force upward into the bridge.

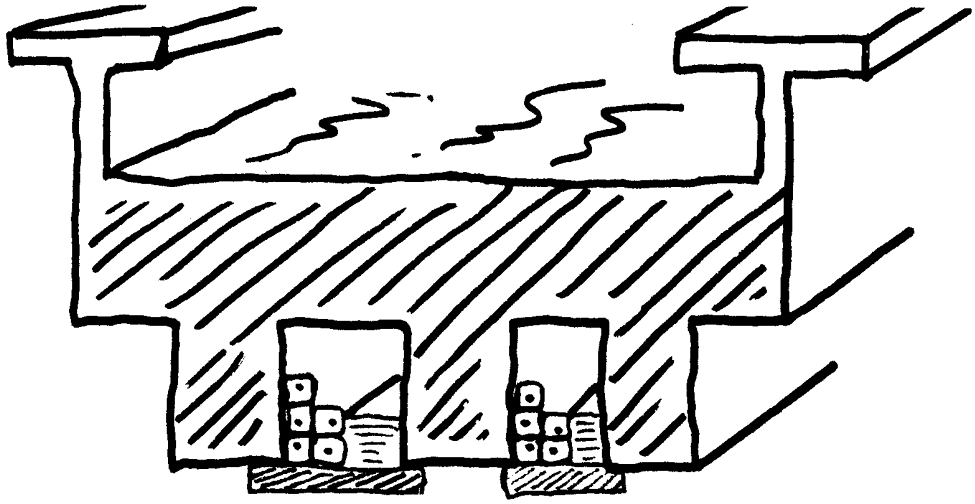


Figure 85. T-beam bridge.

The *concrete cantilever bridge* is probably better known as a causeway. It is usually a very low bridge, with many segments or spans supported by a series of concrete columns. The same basic procedure should be followed as previously outlined, in that one should look for the weakest point in the entire structure, and fix the charges at that point. The weakest point in most structures is the place where two objects join, so the explosive charges should be placed along the joints of the separate sections or spans. Place charges of explosives at the foot of the corresponding column to insure destruction. The charges placed at the foot of the columns should all be tamped and placed on the same side of the respective columns, so as to encourage maximum destruction. This type of bridge has many spans, but usually it is only necessary to destroy several of the middle sections, as shown below.

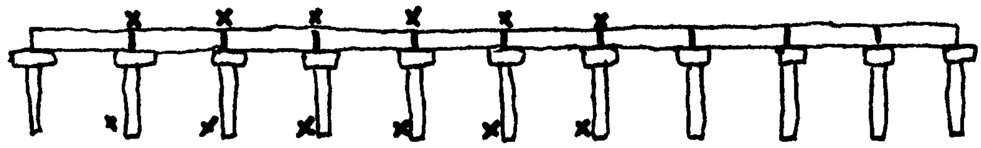


Figure 86. Concrete cantilever bridge.

The "X"s mark the location of the explosive charges. All charges placed at the foot of the columns should be situated on the same side, so as to channel the movement of the destructive force in one direction.

The *truss bridge* is usually used for railroad crossings, and is built of steel. This type of bridge is one of the strongest in the world, and offers many problems for the saboteur. The best method is to run several different explosions at thirty-minute intervals, so that one can see exactly what needs destruction, but this is not feasible for the guerrilla operation. Figure 87 is a diagram of this type of bridge. The "X"s show the location of five charges, which can be placed hastily and are reasonably effective. Be very careful when attempting a sabotage operation of this type, especially with a truss bridge, since, as it is a train crossing, it will undoubtedly be guarded heavily.

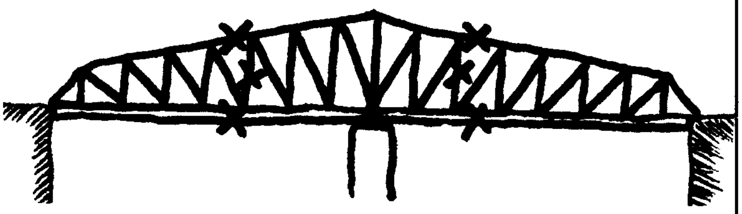


Figure 87. Truss bridge.

Suspension bridges are, generally speaking, the largest bridges in the world, and accordingly the strongest. It is a good idea to allow yourself three or four separate charges with a time lapse between them. If this not possible, concentrate your charges on the main cables, and the center section of the bridge. Six—no less important—charges should be placed on the two towers at either end of the bridge and tamped down. "X"s mark the location of the explosive charges in Figure 88.

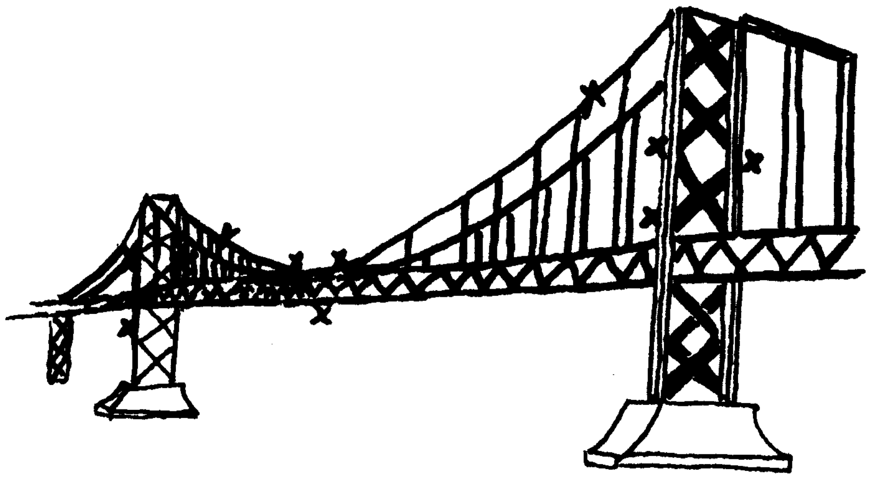


Figure 88. Suspension bridge.

Detonators

The most common time-delay device is an ordinary safety fuse. These fuses usually consist of a black-powder core surrounded with a fabric and then a layer of waterproof material. Although there are many different types, it can generally be said that safety fuses burn between 30 and 45 seconds per foot; however, check these figures when you make your purchase. Fuses can be bought from any mail-order pyrotechnics company. Two with whom I have dealt are:

Ecco Products
Box 189
Northvale, New Jersey 07647

Westech Corporation
P.O. Box 8193
Salt Lake City, Utah 84108

Double-coated waterproof fuse usually sells for 20 to 25 dollars for a thousand to fifteen hundred feet. I would advise purchasing this equipment, since homemade fuses are not to be trusted.

Bombs can be detonated in many ways. The detonation and use of certain devices are based mainly on the cleverness and imagination of the saboteur. In the following section I have discussed several basic forms of detonators, both nonelectric and electric. However, there is an infinite number of variations, which may be better suited to individual situations.

The first type is referred to either as a tension-release, or a wiretrip device. It operates on the principle of releasing the tension caused by a wound spring, on the firing pin, and allowing it to strike and set off a nonelectrical blasting cap. The nonelectrical blasting cap will in turn generate the necessary heat to ignite the T.N.T. or dynamite. This can be implemented in many ways. Two simple methods are illustrated in Figures 89 and 90. A common method in which the wire-trip device can be employed is stretching a trip wire about six inches above the ground. Another equally popular method of employing the tension-release device is attaching the taut wire to the back of a door, so that, when the door is opened, the tension is released, and the explosive ignites.

A device very similar to the last one is the pull-trigger electric detonator. It functions in the same manner, in that a safety pin is removed from the striker or firing pin, causing it to move forward and connect with a metal plate. This connection with the metal plate completes the electrical circuit. The batteries have been connected by wires to an electrical blasting cap, a metal plate, and finally to the firing pin. (See Figure 91.) Although professional supplies for this equipment are available at reasonable prices, the diagram shows the detonating device constructed from household items. The construction of this device is as follows: Two flashlight batteries are connected to each other, and then one wire is run from one end of the batteries to the electrical blasting cap, the other wire from the opposite end of the batteries to the metal plate. A third wire is run from the blasting cap to the firing pin. This now completes the fully cocked device.

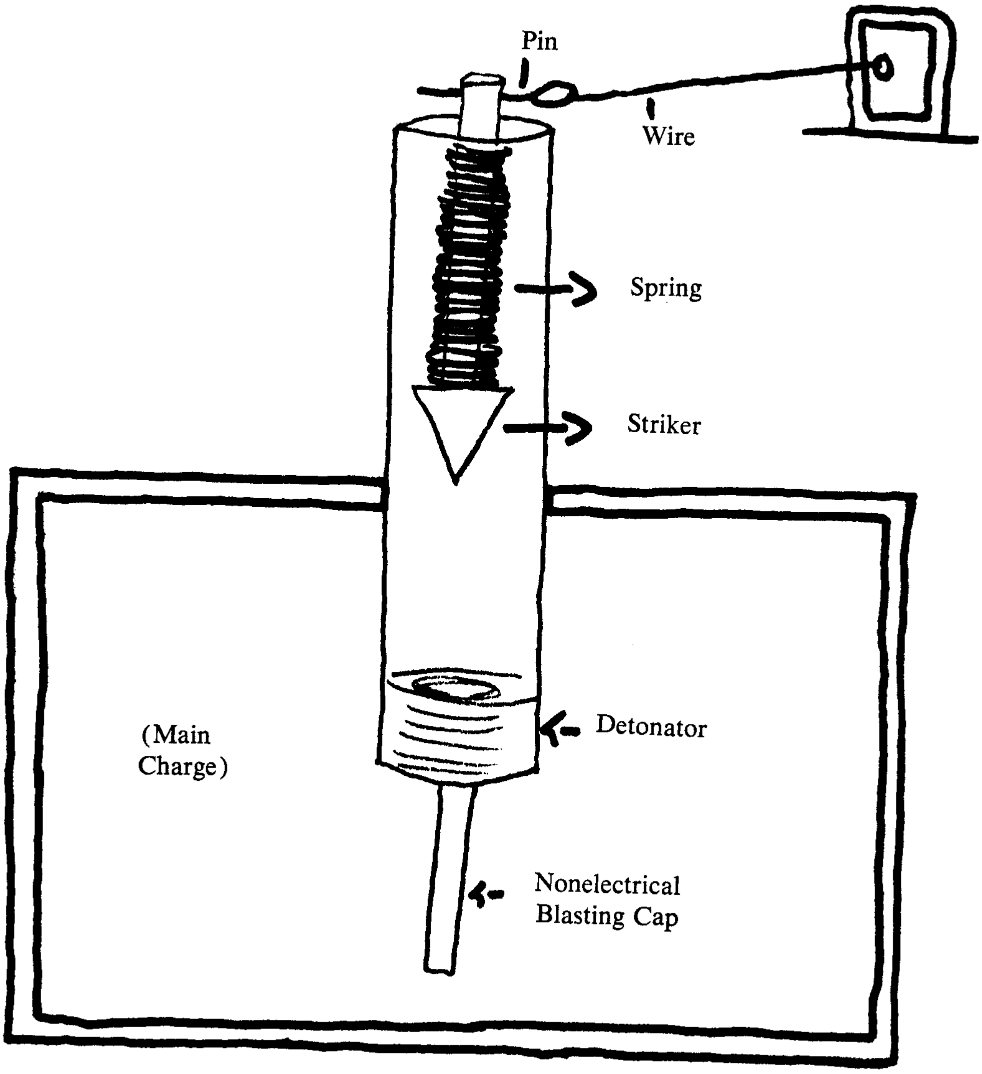


Figure 89. Tension-release detonator.

In the same manner as the explosive in Figure 89 is detonated, so is the common military grenade. The principle of a tension release is the same. After the pin is pulled out of the military grenade, the spring is free to react, causing the primer to ignite the lead-spitter fuse, and it in turn will ignite the lead oxide and pentolite. The pentolite will release enough heat to ignite the T.N.T. and cause the fragmentation of the metal casing.

The next type of detonating device I am going to discuss is called the pressure-trigger device. It is based on the application of pressure rather than its release, as in the previous devices. This mechanism is primarily used when an electrical circuit is employed. The plunger is pushed down; it forces one thin metal plate against another thicker metal plate. The batteries are connected, via the blasting cap, to each of these metal plates. Therefore, when they touch, the electrical circuit is complete, and the explosive will ignite.

This type of device has several important advantages. First of all, it can be constructed away from the area it will be used in. This will cut installation time down to seconds. Later in the chapter, I discuss a type of booby trap that can be rigged into the ignition system of a car. Although the ignition-system booby trap works very well, it takes time to install. This pressure-trigger device will act almost in the same manner if placed beneath the driver's seat, and can be installed in a lot less time. (See Figures 92 and 93.)

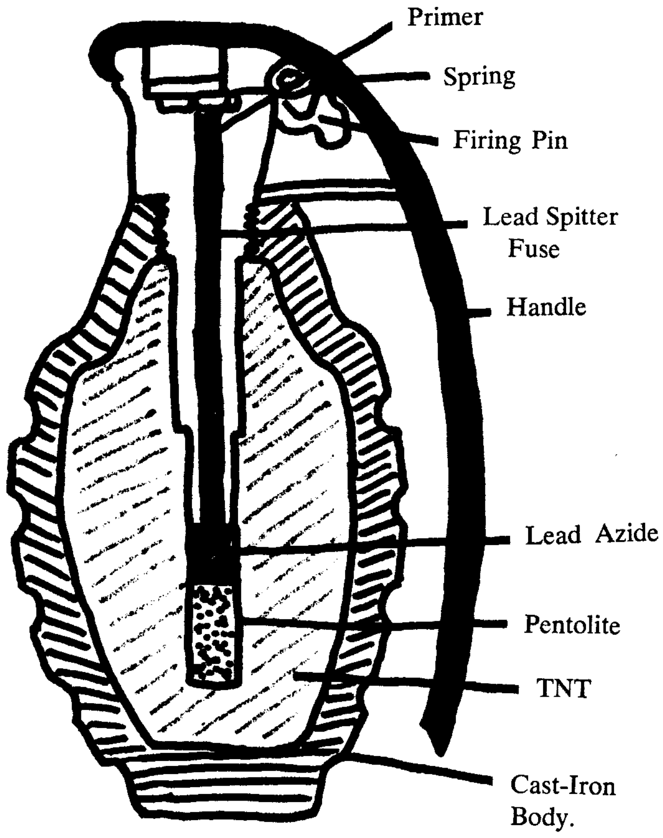


Figure 90. Military grenade.

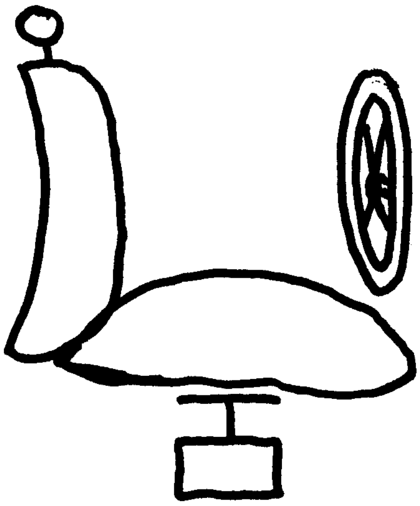


Figure 92. Pressure-trigger device under driver's seat.

Release of pressure detonators

The next type of detonating device I will discuss is called a release-of-pressure mechanism. This device employs exactly the same principles as the pressure-trigger device, except in reverse. The movement of the pressure plate, rather than down, is now up. This can be used effectively when a weight is placed on the pressure plate. Then when it is removed, the explosives will be ignited. To construct, use a heavy-duty spring beneath the first metal plate, as shown in Figure 93. Connect a wire from the blasting cap to the first metal plate. The second wire is then stretched from the bottom of battery "A," to the second metal plate. The third wire is run from the electrical blasting cap to the top of battery "B." When this is accomplished, the booby trap is fully cocked. When the weight on the pressure plate is removed, the spring will force the second metal plate against the first metal plate, thus completing the electrical circuit and exploding the device.

Figure 95 shows a booby trap which incorporates a tension-release device. When the tension, resulting from a wire pulling on a pliable metal strip, is released, the metal strip will snap back into another metal strip. Since the wires from the batteries and blasting cap are connected to either metal strip, when they touch, the circuit will be complete and it will detonate the explosive charge. This type of detonator is especially effective when attached to drawers, doors, or any movable objects.

Time delay devices

There are three different types of time-delay devices:

1. Metal strip under tension until it breaks.

2. Chemical action that will, after a period of time, produce enough heat to detonate the explosive charge.

3. An alarm clock set for a certain time, so that when it rings it will complete an electrical circuit, thus detonating an electrical blasting cap. The first method, metal under tension until breakage, I will not discuss, since it is extremely hazardous and unreliable. You can have little or no control over timing, and such devices are notorious for backfiring.

The chemical-action time-delay methods have proven to be pretty reliable. Most of this action incorporates the amount of time taken by a certain solution of acid to eat its way through another substance. The time length can be determined by the concentration of the acid and by the substance to be eaten through.

An example of this type of chemical action is the Nipple Time Bomb, which is very effective. One must obtain a short section of steel pipe and cap each end accordingly. Place inside the steel pipe a stick of dynamite, and drill a quarter-inch hole at one end of the cap. Now, into this hole you must place a small amount of potassium chlorate and gunpowder. Now, separately from the pipe, take a small glass vial and fill it with a concentrated sulfuric acid solution, then stop up the end with a paper or cork stopper. To arm the bomb, place the vial of acid upside down in the hole at the top of the pipe. Now, when the acid has eaten its way through the stopper, it will come into contact with the potassium chlorate and gunpowder. The mixture of these chemicals will cause a minor explosion, but it will be large enough to produce the heat necessary to detonate the dynamite. The detonation time is usually between three and six hours. If a solution of sulfuric acid and glycerin is used, rather than just pure sulfuric acid, the time delay will be up to five or six days. (See Figure 96.)

Figure 97 is a diagram of an incendiary time bomb. This is very similar to the Nipple Time Bomb, in that it relies on the same chemical action, but without the dynamite. The procedure is very simple. A cardboard or iron tube is filled with a mixture of three-quarters potassium chlorate and one-quarter sugar, and then sealed. At one end a hole is made. Into that hole is placed an inverted vial of sulfuric acid, with a paper or cork stopper. When the acid has eaten its way through the stopper, it will come into contact with the potassium chlorate-sugar mixture. This will result in a very hot, powerful fire.

The Magnifying-Glass Bomb, illustrated in Figure 98,

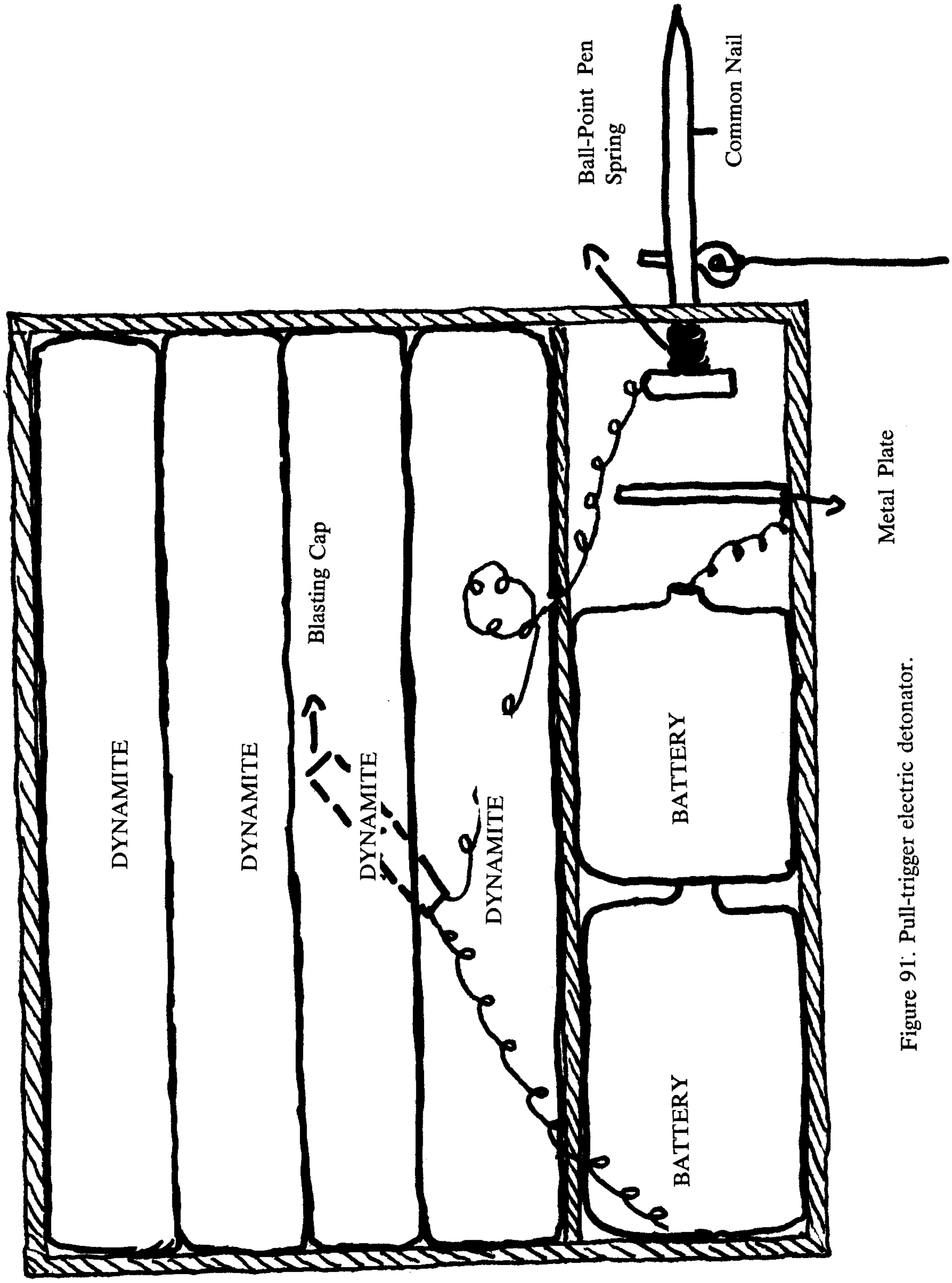


Figure 91: Pull-trigger electric detonator.

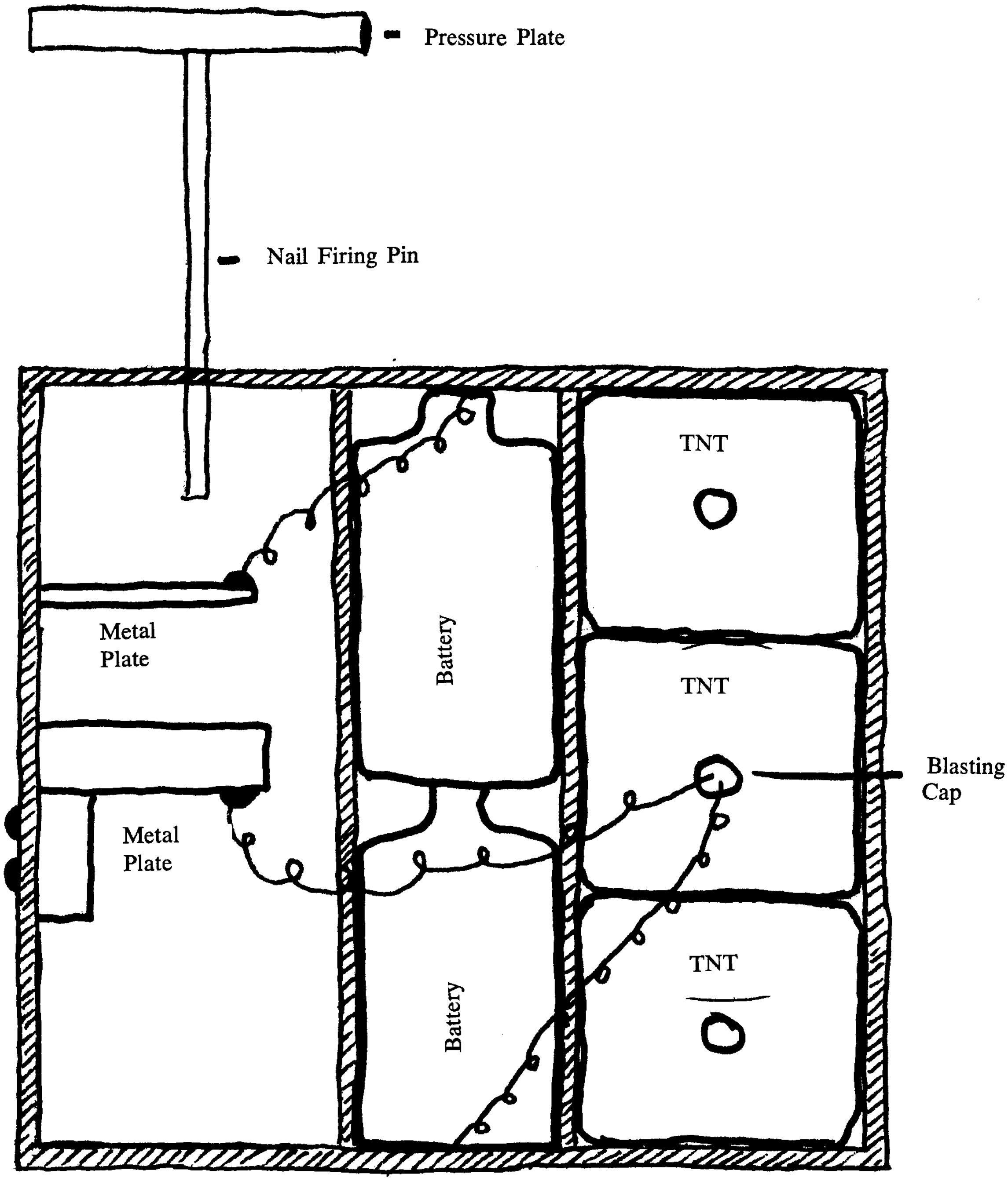


Figure 93. Pressure-plate detonator.

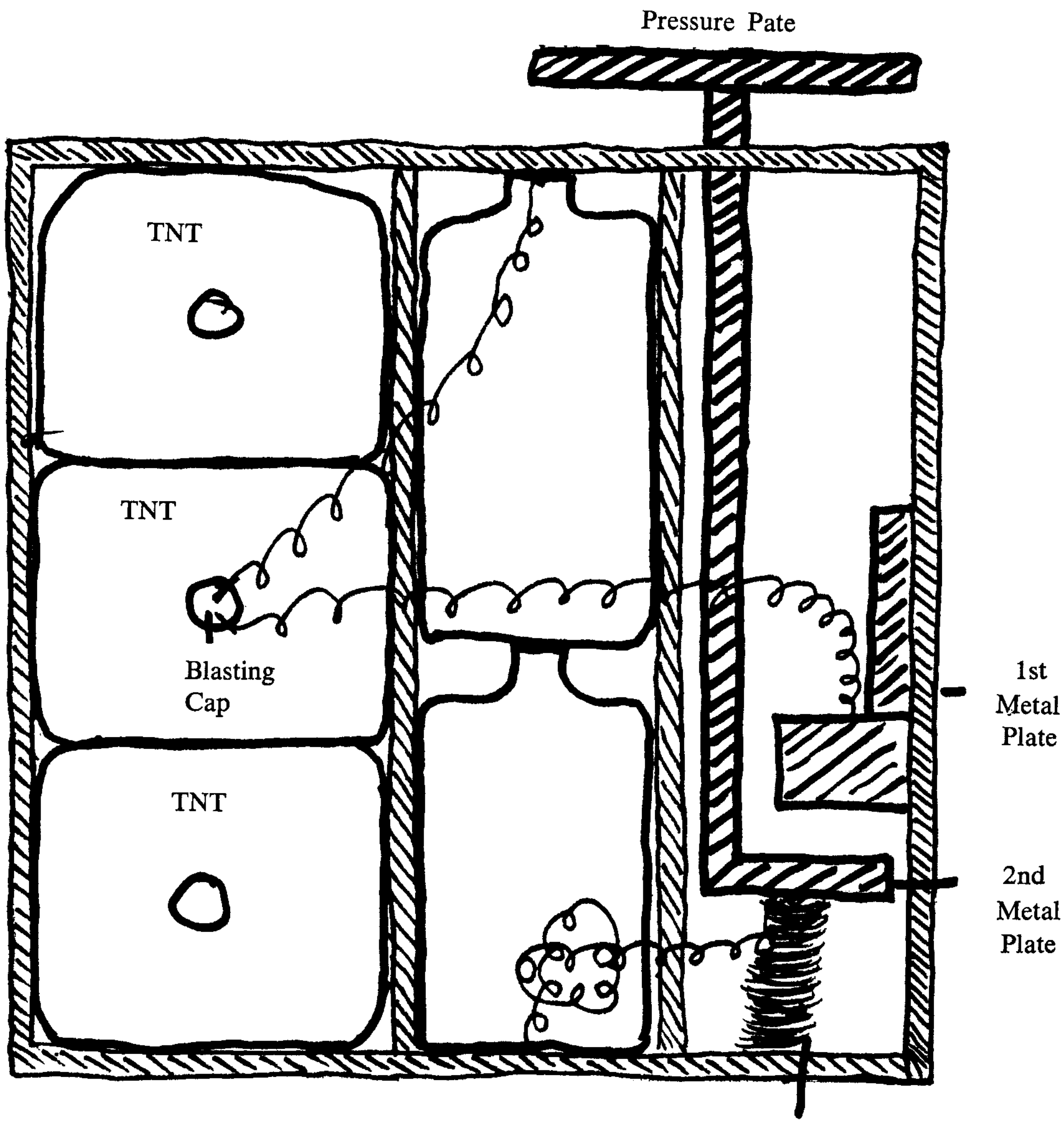


Figure 94. Release of pressure detonator.

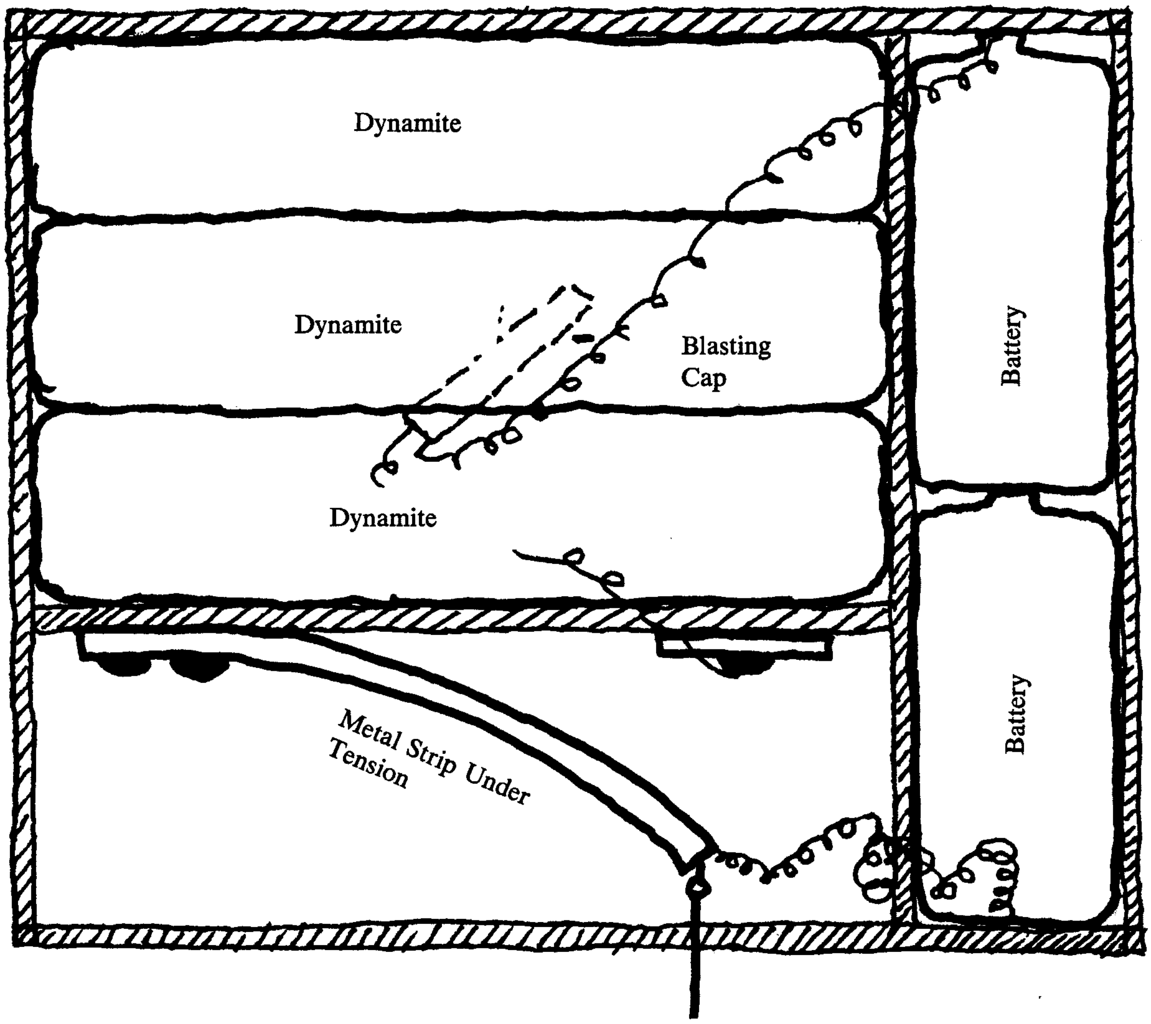


Figure 95. Tension-release detonator.

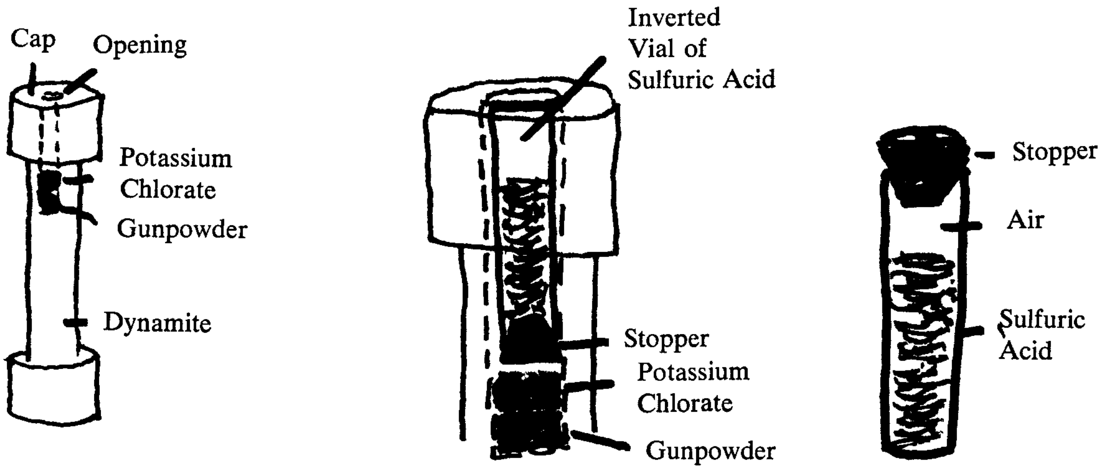


Figure 96. Nipple time bomb.

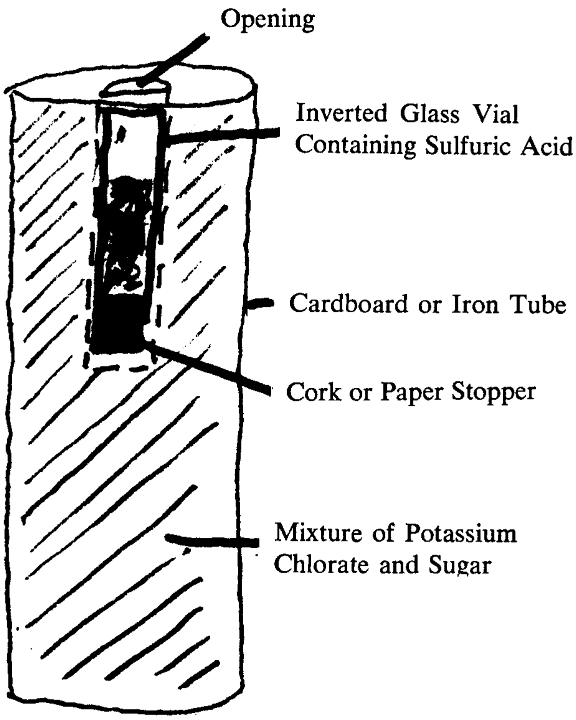


Figure 97. Incendiary time bomb.

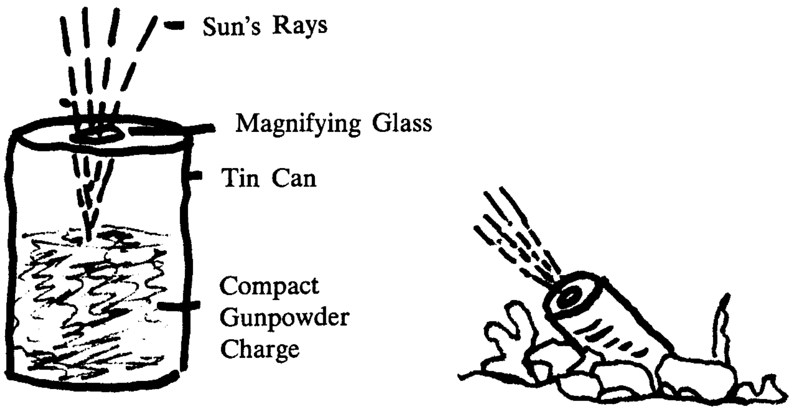


Figure 98. Magnifying-glass bomb.

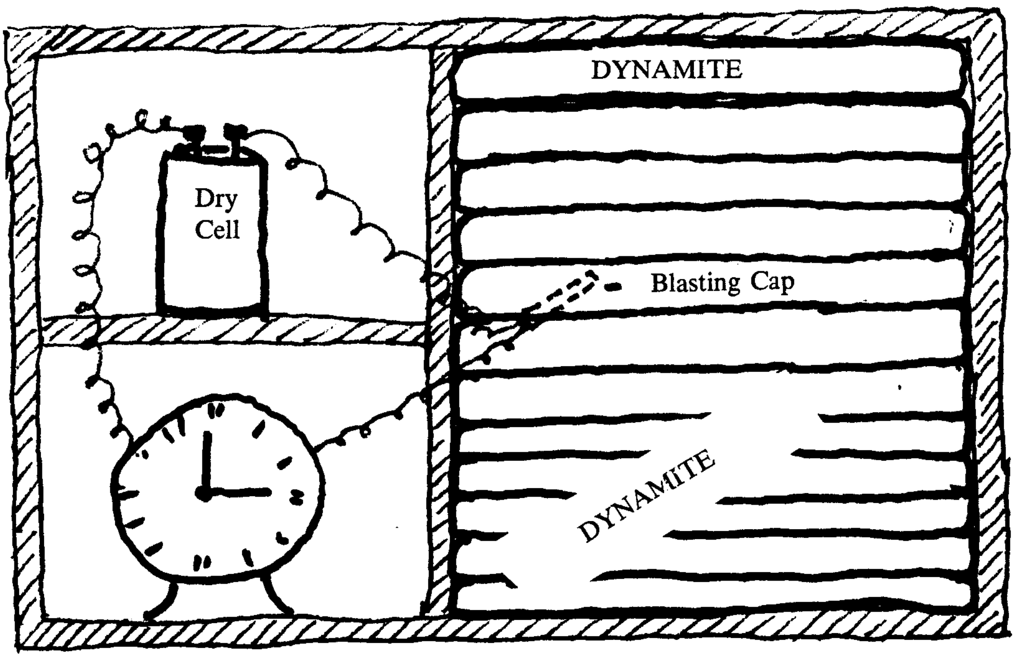


Figure 99. Alarm-clock time bomb.

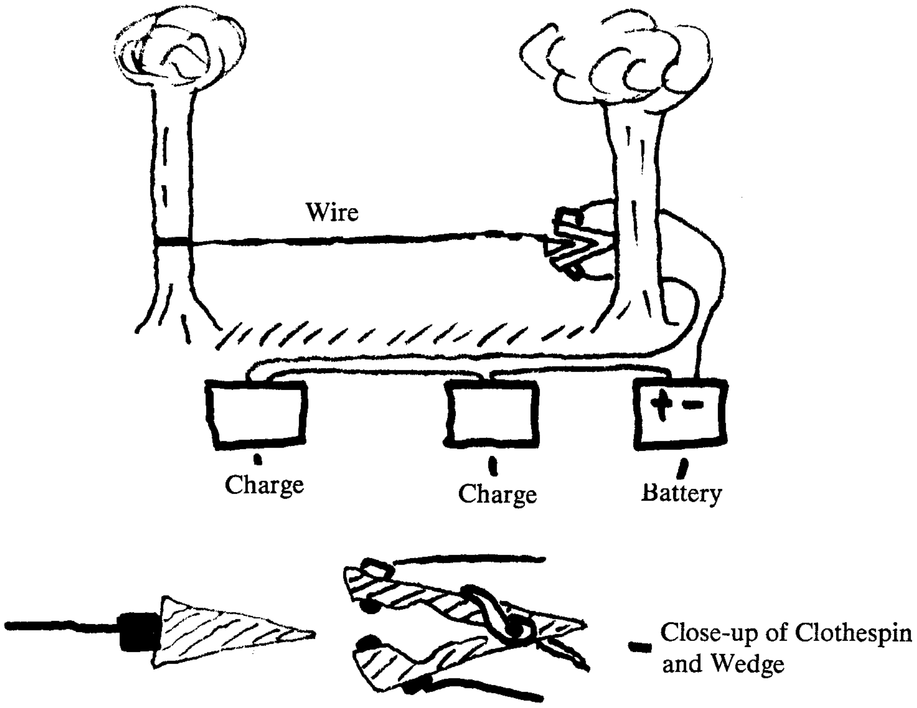


Figure 100. Road trap.

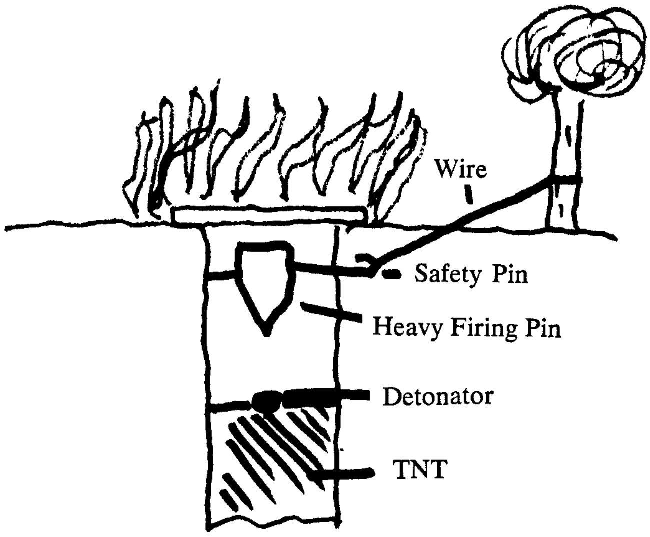


Figure 101. Walk trap.

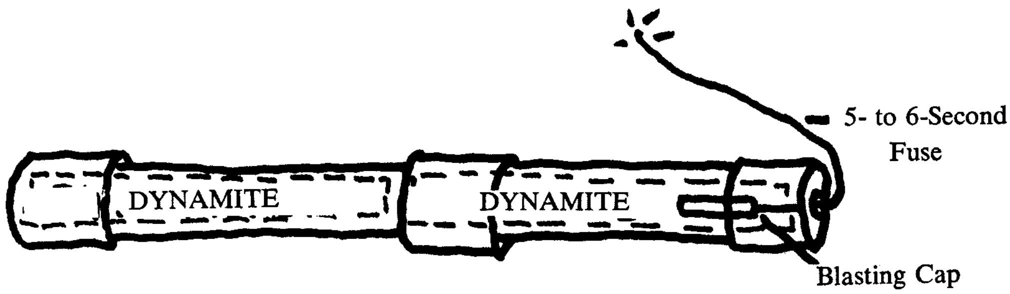


Figure 102. Bangalore torpedo.

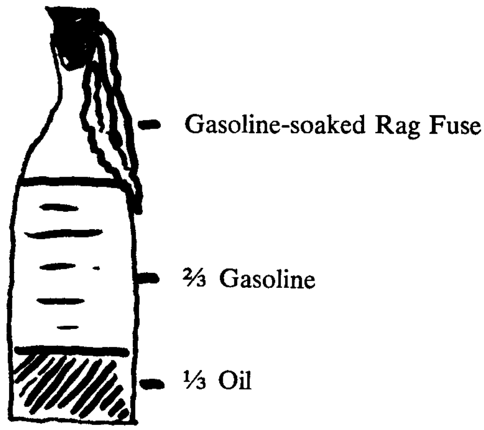


Figure 103. Molotov Cocktail.

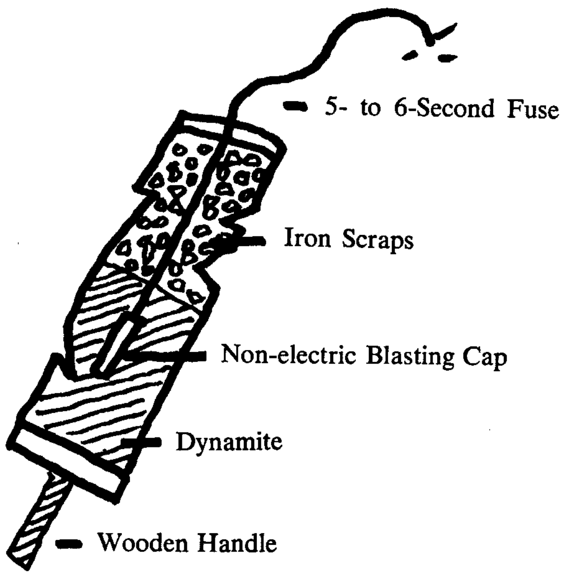


Figure 104. Homemade grenade.

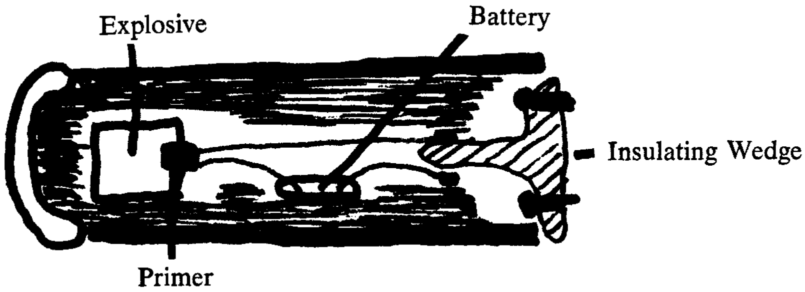


Figure 105. Book trap.

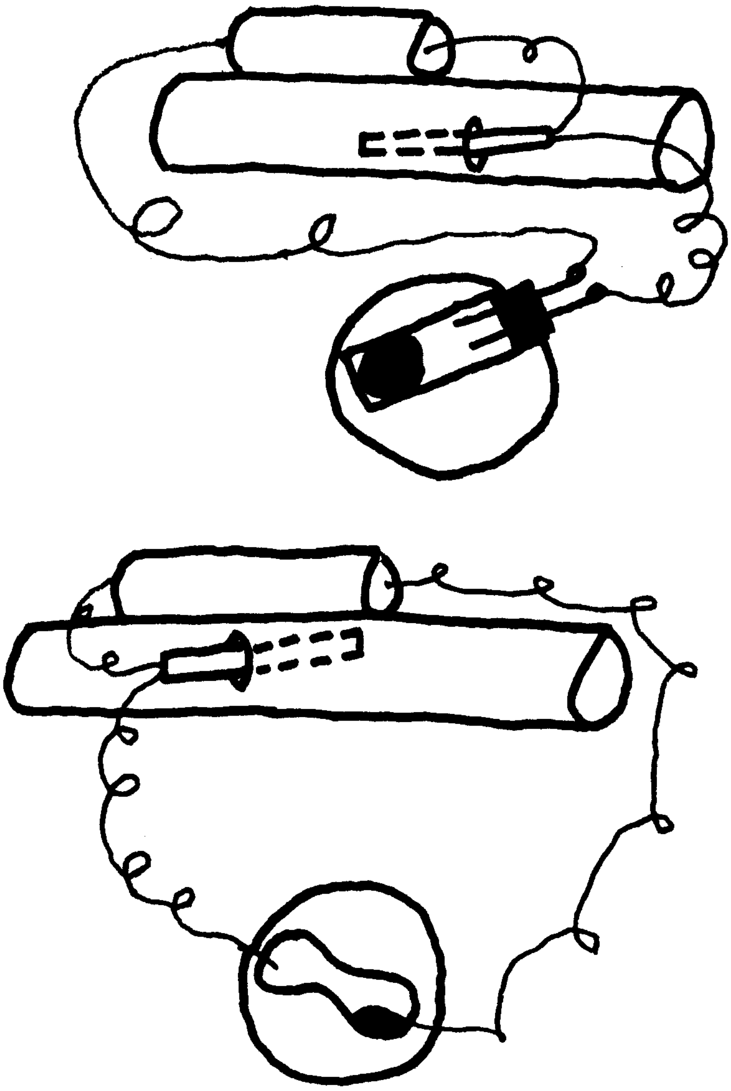


Figure 106. Door-handle traps.

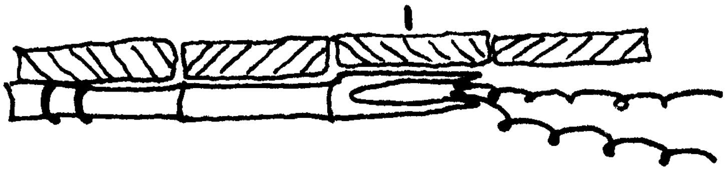


Figure 107. Loose floorboard trap.

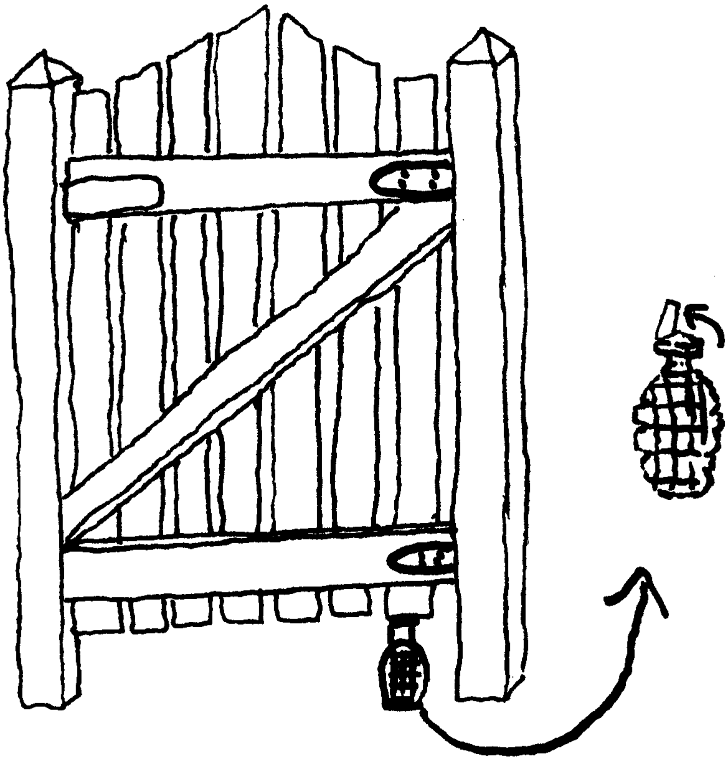


Figure 108. Pressure-release gate trap.

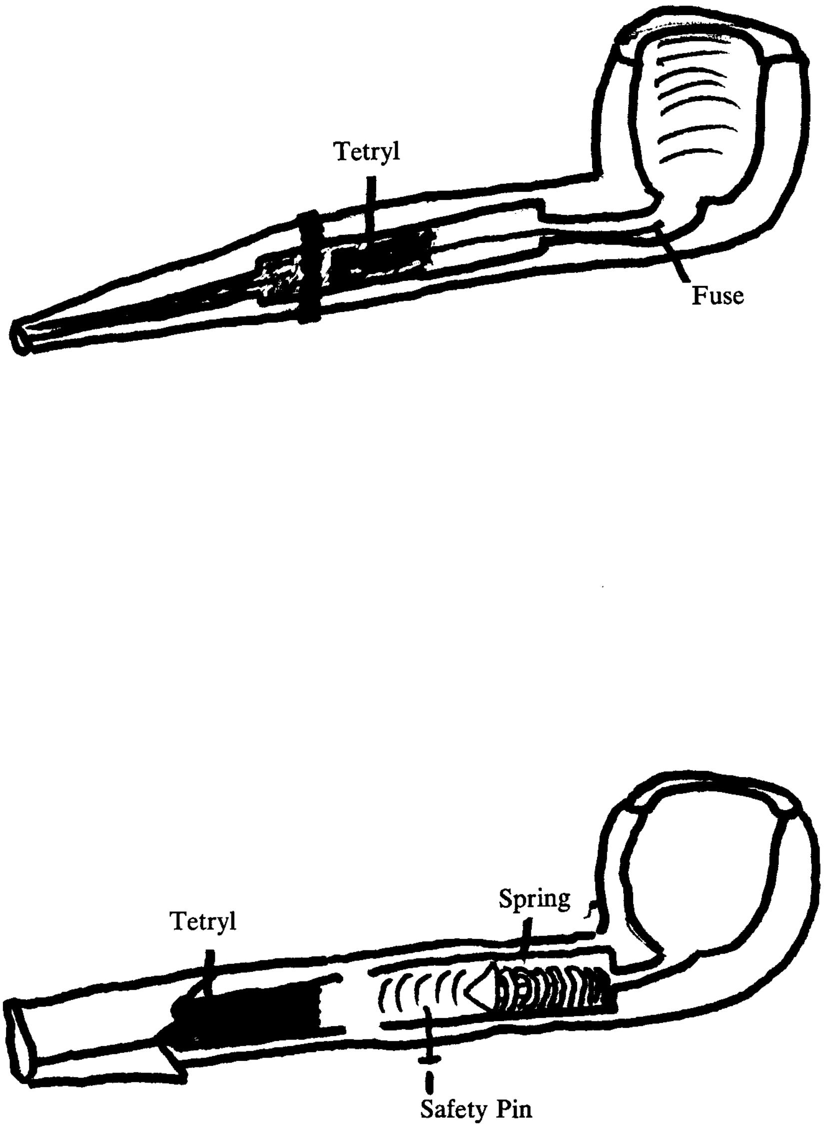


Figure 109. Pipe traps.

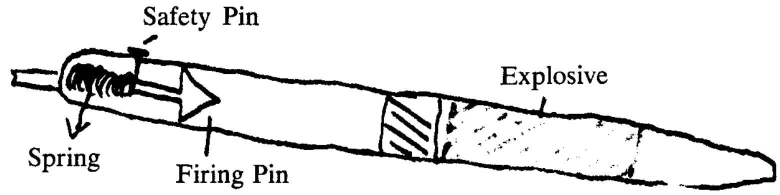


Figure 110. Ball-point pen trap.

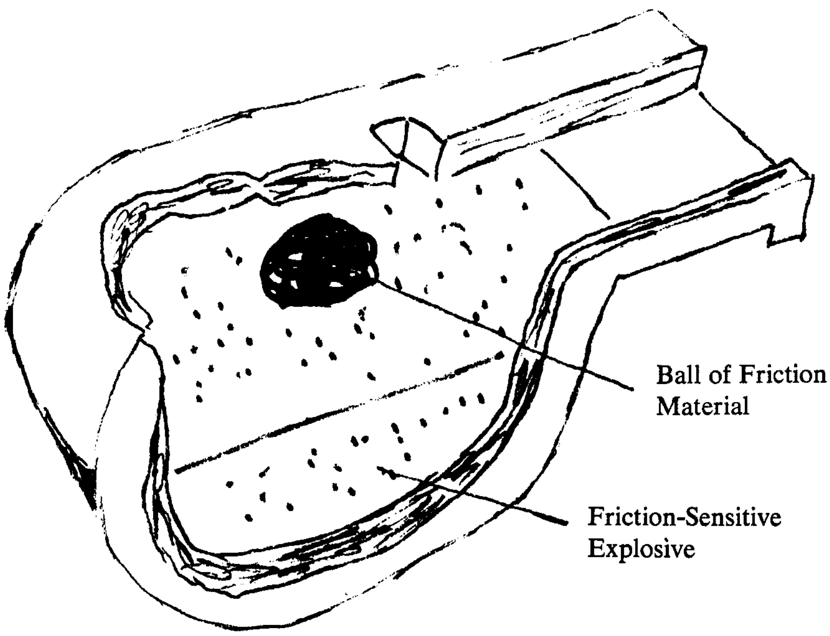


Figure 111. Whistle trap.

is effective, but it has many disadvantages. The procedure is very simple. Take a tin can and fill three-quarters of it with highly compressed gunpowder. Now attach to the top of the can a small magnifying glass, so that the sun's light, when magnified through the glass, will cause the heat necessary to detonate the charge. This works very well, as long as the sun shines, and it doesn't rain.

The alarm-clock detonating method is the most accurate device, in that a person can set the time he wishes the bomb to explode. It is connected in the same fashion as the other electrical-circuit booby traps. Wires are connected to the hammer of the bell and to the bell itself, via the blasting cap, to a dry cell (as shown in Figure 99). The clock should be set before the booby trap is built. When the alarm goes off, the hammer and bell connect completing the electrical circuit and detonating the explosive.

Up to now I have been primarily concerned with detonating devices, rather than the actual application of these bombs and booby traps. In this last section on explosives, I will deal with just a few of the many applications for these booby traps. Each situation calls for different techniques, so use your imagination and your cunning.

Road trap

The first type of application I will discuss is a basic road trap. This incorporates a wire-trip action to complete the electrical circuit. It is extremely simple to make, since all the equipment can be gathered in or around the house. The great advantage to this particular device is that the explosives are detonated when the vehicle is directly over it, so insuring maximum destruction. (See Figure 100.) To construct a road trap, begin by digging three holes across a roadway. Into two of the holes place the explosive charges, and into the third place a regular car battery. Connect the first wire from the negative terminal of the battery via each of the blasting caps, in each charge, to a metal pin on one side of an ordinary clothespin. The second wire should be connected directly from the positive terminal of the battery to the opposite metal pin, located on the same clothespin. The clothespin must be kept open by a small wooden wedge, which is attached to a thin black wire stretched across the roadway. When the semi-invisible wire is pulled, the wooden wedge will fall out of the clothespin, thus closing the clothespin. When the clothespin is closed, the two metal pins will connect and complete the electrical circuit, thus exploding the charges.

Walk trap

In Figure 101 is illustrated what is known as a walk trap. This incorporates the same type of wire-trip action as described in the road trap. The walk trap is not electrically operated, it relies on a percussion detonator. When the wire is pulled, it pulls the safety pin out of the heavy firing pin. The heat created from the detonator's explosion will be sufficient to set off the TNT. This type of booby trap is especially effective in dense undergrowth, where the trip wire cannot be readily seen.

Bangalore torpedo

In Figure 102, the Bangalore torpedo is illustrated. This is nothing more than a few sections of pipe filled with sticks of dynamite, sealed at the ends, and joined in the middle by couplings, thus permitting the torpedo to be of varying lengths. The cap at one end must have a small hole drilled in it, so that a fuse and blasting cap can be inserted. It can be used very effectively to destroy walls, barricades, and steel or iron doors. These are also great weapons against cars, trucks, and even trains. If piping of this sort is not available, you can make a substitute torpedo by taking a stick of dynamite and wrapping it tightly with electric tape and thin copper wire. To be effective, it should have many layers of each.

Molotov cocktail

Figure 103 shows a Molotov Cocktail. This is an incendiary bomb, which bursts into flame on breaking. A quart bottle is filled with two-thirds gasoline and one-third oil. A fuse is made of an old gasoline-soaked rag, and then stuffed into the mouth of the bottle. The bottle is corked, and the fuse is lit. It is thrown and, when it breaks, it will burst into flame. The enemy will not be able to extinguish the fire with water. These were used with varying degrees of success in the struggle in Hungary. According to reports they can disable a tank.

Homemade hand grenade

A homemade grenade is shown in Figure 104. This is constructed from an empty, clean, condensed-milk can, attached to a wooden handle. It is then filled halfway with a layer of dynamite. In the dynamite is placed a nonelectric blasting cap, with a five- to six-second fuse. The dynamite is then covered with small pieces of iron, until the can is full. Seal the top of the open end closed, leaving a small hole for the fuse.

How to make an anti-personnel grenade

Even more effective than the grenade described above is an anti-personnel grenade. This is constructed by taking a piece of pipe and closing it at one end, either by soldering or by screwing a cap on it. The pipe is packed tightly with dynamite, and sealed at the other end, leaving a small hole for the detonator, which is made in the following manner. A piece of one-eighth-inch tubing is fastened to the end of a piece of fuse, which in turn is attached to a detonating cap. On the other end of the fuse, a bit of cotton, saturated with chlorate of potassium and common sugar, is placed, followed by another piece of cotton and a little vial of sulfuric acid. (This vial must be hermetically sealed, to prevent leakage.) Finally, a piece of wood or iron, which can be easily moved, is packed in the remaining empty space. The piece of wood is placed there, so that when the pipe is moved the piece of iron or wood will fall against the vial of sulfuric acid and break it. Once the sulfuric acid contacts the potassium chlorate, the chemical reaction will cause a very hot flame, which will ignite the fuse and cause the explosion. If this type of device is placed in a roadway, or directly in the path of the enemy army, there is a good chance it will be set off—either by a kick or by curiosity.

Book trap

Figure 105 depicts a book trap. To construct this, you will need a large book, perhaps a thousand pages. The book should be hollowed out, leaving the edges intact. In this hollow place, put a dry cell battery and your explosive, and connect the wires. Fix two metal contact points to the edges of the book, and separate them with a wooden wedge, which is attached to the rear wall of the bookcase. This must be accomplished in such a manner that, when the book is removed from the shelf, the metal contact points will touch and complete the electrical circuit, thus causing the detonation of the explosive charge.

Door-handle traps

Two basic methods of booby-trapping door handles are illustrated in Figure 106. The first employs a short test tube, a cork, two needles, three wires, one electric blasting cap, one metal ball bearing, and one stick of dynamite. The two needles are pushed through the cork to an equal length, and the ball bearing is placed within the tube. The test tube is corked, and taped to the inside of a door handle. The wires are then connected from the eyes of the two needles to the battery, with one wire going via the blasting cap. Next, the battery and stick of dynamite are taped to the back of the door. When the handle is turned, the ball bearing will roll and touch both points of the needles, thus completing the electrical circuit and exploding the dynamite.

The second door-handle trap is much the same, except it uses a mercury thermostat switch, rather than a ball bearing.

Loose floorboard trap

The loose floorboard trap (Figure 107) utilizes the same principles as the Book Trap, in that it relies on two metal contact points touching to complete the electrical circuit. Beneath the loose floorboard are two strips of pliable metal or bamboo, each with a metal contact point, which will touch when pressure is brought down on the loose floorboard.

Gate trap

Illustrated in Figure 108 is the utilization of a regulation military grenade in a booby trap. This is an extremely simple, effective, and relatively safe booby trap. To cock the booby trap, pull the pin on a regular tension release grenade, and place beneath a swinging gate, or anywhere that will supply the pressure necessary. When the gate is moved (either opened or closed), the pressure will be released and the grenade detonated.

Chimney trap

An extremely simple but effective booby trap can be placed in a fireplace in a matter of seconds. Take three or four sticks of dynamite and tape them together. Attach a nonelectrical blasting cap, with a three- or four-foot fuse. Now tape the dynamite about five feet up on the inside of the chimney, leaving the fuse hanging loose downward. The end of the fuse should be about a foot or so up the chimney so that it is out of sight. When a fire is lit, the heat generated will ignite the fuse, and it will explode the charge, further up the chimney. This works extremely well, since most of the tamping is supplied by the very structure of the chimney.

Lamp trap

A personnel booby trap can be made by taking any oil or kerosene lamp and draining it of all the fuel. Now replace the oil with high-octane gasoline. When lit, this will cause a massive incendiary explosion. A candle can also be booby-trapped, by stuffing a small amount of lead azide or tetryl pellets into the wax, near the wick. The explosives will detonate from the flame of the candle.

Car trap

It is an extremely simple procedure to booby-trap a car. It has many advantages, the most important being that you do not have to carry your own power supply, but rather use the ignition system of the car itself. Wires are run from the electrical blasting cap to points along the electrical ignition system, and attached with alligator clips. When the key is turned, it will complete the ignition system, and thus explode the bomb. A good place to hide explosives is in the hollow cavity behind the dashboard, since then the full force of the explosion will be directed at the individuals in the front seat.

Pipe trap

There are basically two methods of booby-trapping pipes. The first is very similar to the chimney trap, except the intent is to blow off the smoker's head. A small amount of tetryl or lead azide is placed in the mouthpiece of the pipe, and a fuse is attached, which leads through the rest of the pipe to a point about one-quarter-inch beneath the bowl (Figure 109). When the smoker lights the pipe, the fuse will be lit, and burn down untouched, until it detonates the explosives in the mouthpiece, and blows the smoker's head off.

The second method (illustrated in Figure 109) is a little more complex but just as effective. A very sensitive explosive is placed in the mouthpiece, as before, except an activated firing pin is placed in the stem of the pipe. The smoker will attempt to light the pipe and find he cannot suck through it. Believing the stem to be blocked with tar or nicotine, he will unscrew the threaded joint. The act of unscrewing will release the firing pin, and detonate the explosives.

Pen trap

An ordinary plastic or metal retractable ball-point pen can be turned into a lethal weapon in a matter of minutes. The refill ink cartridge is removed, and in its place is put a small amount of tetryl. Above the charge is placed a firing pin, similar to the one used in the second method of the pipe trap. This firing pin will be held under pressure created by the pen's own spring. The tension is released by reversing the firing-pin motion. When the user snaps the plunger at the end of the pen, the firing pin is released and goes crashing in the tetryl, and detonates it. (See Figure 110.)

Whistle trap and other handy devices

A booby trap that has an effect similar to the one created by the pipe trap, is the whistle booby trap. It is constructed by separating the metal or plastic sides into their natural halves. This can be accomplished by steaming. Now, fill each half one-fourth full of an extremely friction-sensitive explosive. Before gluing the two halves together, include a small ball made of a rough sandpaper-like substance. When the whistle is blown, the ball will bounce around inside the shell, creating enough friction heat to set off the explosive charge.

An interesting booby trap can be constructed by using a bottle, full of a highly sensitive liquid explosive, which will detonate on the extraction of the cork. The cork is designed with a friction element that pulls through a sensitive explosive. When this booby trap explodes, it does extensive damage, due to the fragmentation of the glass.

An extremely simple device for setting a time-delay fire is a book of matches, with a lighted cigarette stuck in it. This is then left upon combustible material. The cigarette, as it burns down, will light the matches, and they in turn will generate the heat necessary to ignite the other larger combustible material.

Another incendiary time-delay device is constructed out of a candle, friction matches, and several rags soaked either in gasoline or kerosene. The candle is placed upright in the center of the bundle of matches. The soaked rags are placed around the base of the matches. As the candle burns down, it will ignite the matches, and they will ignite the rags. One can usually expect about a fifteen-minute delay with this device.

Cacodyal

To conclude this chapter, I will present the most horrendous recipe I could find. Since it is not feasible to make napalm in your kitchen, you will have to be satisfied with cacodyal. This is made by chemically extracting all the oxygen from alcohol, and then replacing it, under laboratory controls, with metal arsenic. The formula for alcohol is C_4 H_5 O, whereas for cacodyal it is C_4 H_5 AR. Now, this new substance, cacodyal, possesses spontaneous inflammability, the moment it is exposed to the air. Therefore it can be put into a bottle and used like a Molotov Cocktail. If it is thrown, it will explode on impact, but this is not its real advantage. When it explodes, a dense white smoke is given off. This is white arsenic, a deadly poison. One inhalation will probably cause death in a matter of seconds.