



# Farm Tools and Equipment

## Agricultural Crop Production

*Farm tools, implements, and equipment play very important role in farm operations. Their availability makes the work much easier and faster. However, even if one may have the most sophisticated tools and implements, but does not know how to use them, they are useless. In order to do farm operations successfully, one must have a good working knowledge of the tools, implements and equipment before using them.*



# DEFINITION OF TERMS

## Equipment

- instruments needed in performing a service; the set of articles or physical resources serving to equip a person or things; an instrument used in an operation or activity.

# DEFINITION OF TERMS

## Farm Implements

- accessories pulled by animals or mounted on a machinery to make the work easier

## Hand Tools

- Hand operated tools.
- objects that are usually light and are used without the help of animals and machines



# DEFINITION OF TERMS

## Maintenance

- is an excellent means of improving the performance and condition of equipment and facilities.

## Repair

- to restore to good condition something broken or damaged

One of the cultural practices involved in crop production is land preparations. Preparing the area intended for growing various crops entails the **use of farm tools**.



# HAND TOOLS

These are tools made of light materials and are used manually.

Most of the hand tools are used in cultivating the area for small garden or backyard gardening.



## *EXAMPLES:*

# Bolo

is used for cutting tall grasses and weeds and chopping branches of trees.



*EXAMPLES:*

# Crowbar

is used for digging big holes and for  
digging out big stones and stumps



*EXAMPLES:*

# Pick-mattock

is used for digging canals, breaking hard topsoil and for digging up stones and tree stumps.



*EXAMPLES:*

# Grab hoe

is used for breaking hard topsoil and pulverizing soil.



# The main types of hoes are as follows:

- Heavy digging hoes with short handles.
- Light weeding hoes with long handles to allow the operator to stand upright and easily manipulate the hoe with both hands.
- Light planting hoes with short handles for planting.



## *EXAMPLES:*

# Spade

is used for removing trash or soil, digging canals or ditches, and mixing soil media.



*EXAMPLES:*

# Shovel

is used in removing trash, digging loose soil, moving soil from one place to another and for mixing soil media.



*EXAMPLES:*

# Rake

is used for cleaning the ground and leveling the topsoil.



*EXAMPLES:*

# Spading fork

is used for loosening the soil, digging out root crops and turning over the materials in a compost heap.



*EXAMPLES:*

# Light hoe

is used for loosening and leveling soil  
and digging out furrows for planting



*EXAMPLES:*

# Hand Trowel

is used for loosening the soil around the growing plants and putting small amount of manure fertilizer in the soil.



*EXAMPLES:*

# Hand cultivator

is used for cultivating the garden plot by loosening the soil and removing weeds around the plant.



*EXAMPLES:*

# Hand fork

is used for inter row cultivation.



*EXAMPLES:*

# Pruning shears

is for cutting branches of planting materials and unnecessary branches of plants.



*EXAMPLES:*

# Axe

is for cutting bigger size post.



## *EXAMPLES:*

# **Knife**

is for cutting planting materials and  
for performing other operations in  
horticulture



*EXAMPLES:*

# Sprinklers

are used for watering seedlings and young plants



*EXAMPLES:*

# Water pails

are used for hauling water, manure  
and fertilizers



*EXAMPLES:*

# Sprayers

it is for spraying insecticides, foliar fertilizers, fungicides and herbicides



*EXAMPLES:*

# Wheel barrow

is used for hauling trash, manures, fertilizers, planting materials and other equipment.



## *EXAMPLES:*

# Sickle

is a hand-held agricultural tool with a variously curved blade typically used for cutting weeds.





# PRODUCTION MACHINERIES

Agricultural Crop Production

# Walking-type agricultural tractor

\* hand tractor

- self-propelled machine having a single axle designed primarily to pull and propel trailed or mounted agricultural implements and machinery

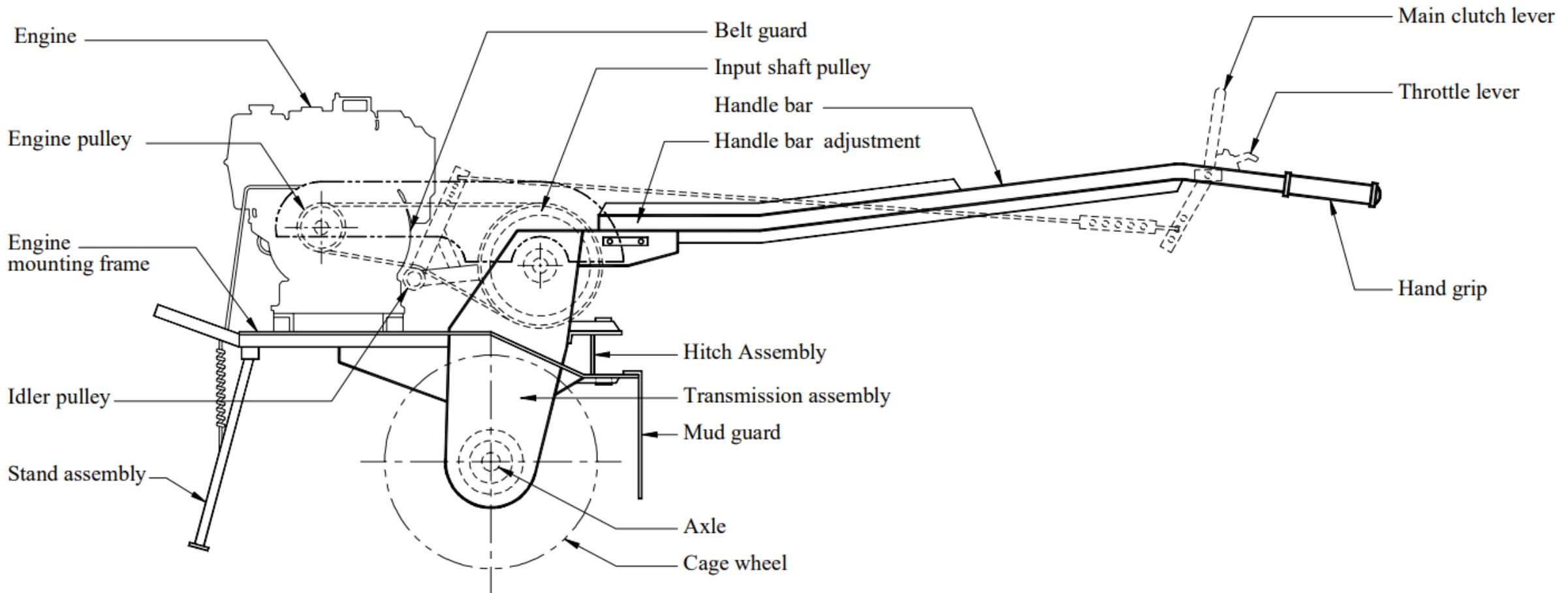


# **pull type**

\*traction type

- capable of pulling various kinds of implements



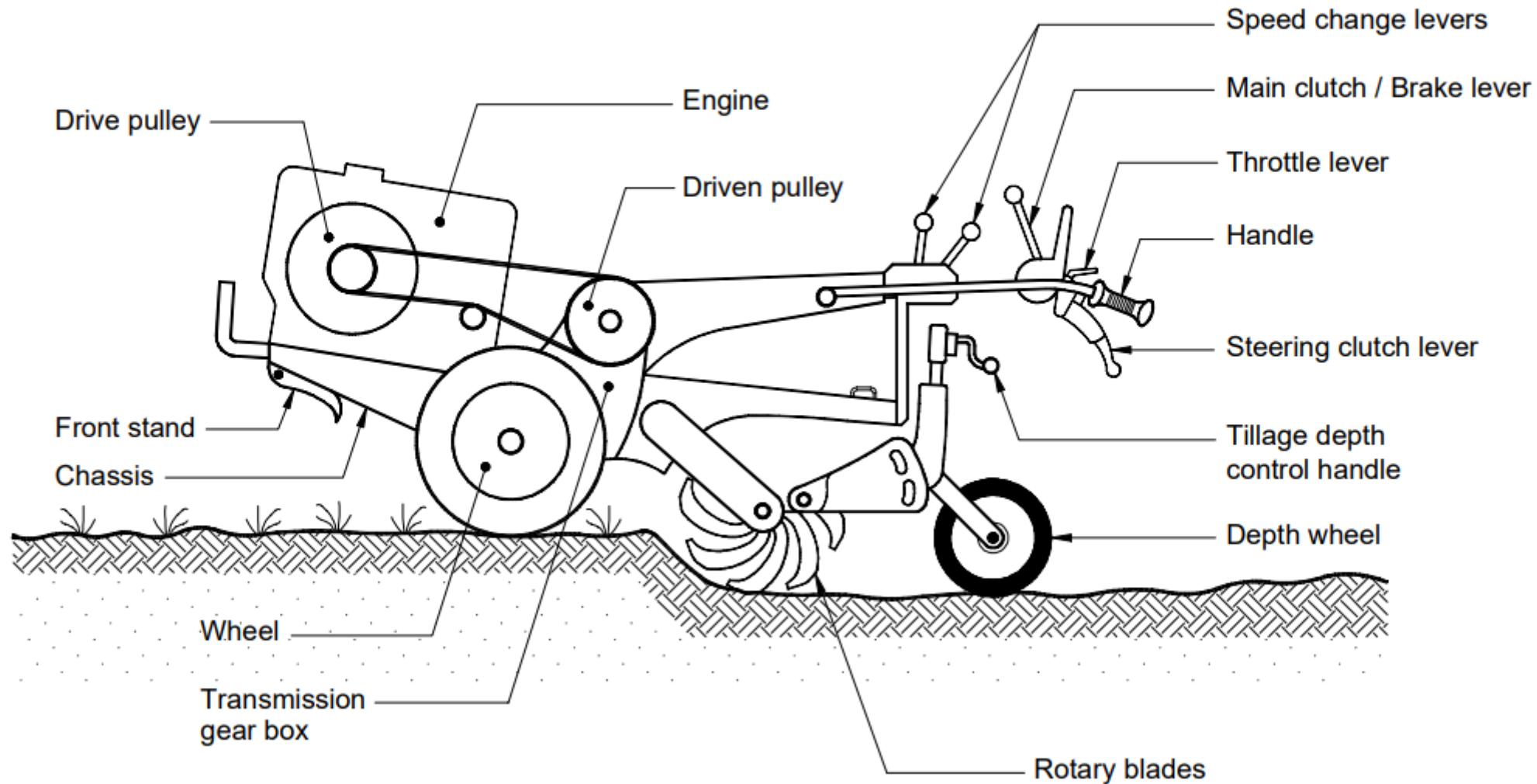


Components of Walking-type Agricultural Tractor (Pull-type)

# **rotary tilling type**

- a type of walking-type agricultural tractor equipped with rotary tiller which cuts, breaks up, and mixes the soil and/or plant residues



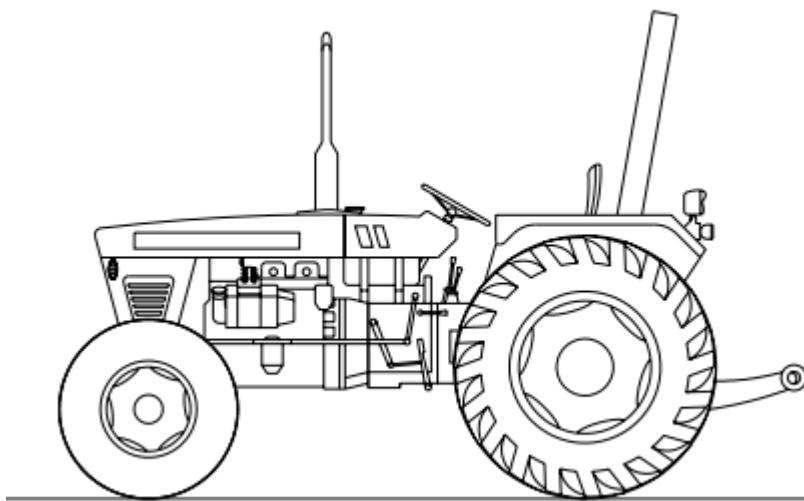


## PTO-driven rotary tiller

Walking-type Agricultural Tractor (rotary tilling-type)

# Two-Wheel Drive Tractor

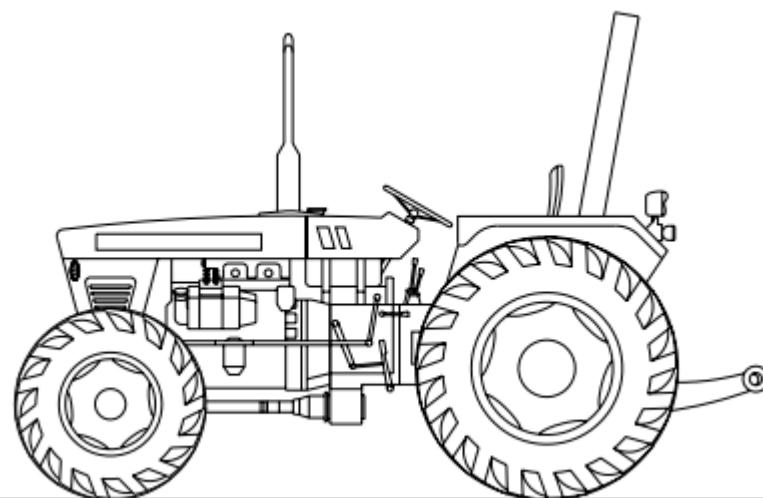
type of four-wheel tractor where power is transmitted to rear wheels with small front wheels being pushed along





# Four-Wheel Drive Tractor

type of four-wheel tractor where power is transmitted to all wheels





## *EXAMPLES:*

# Plows

is used for initial cultivation of soil in preparation for sowing seed or planting.

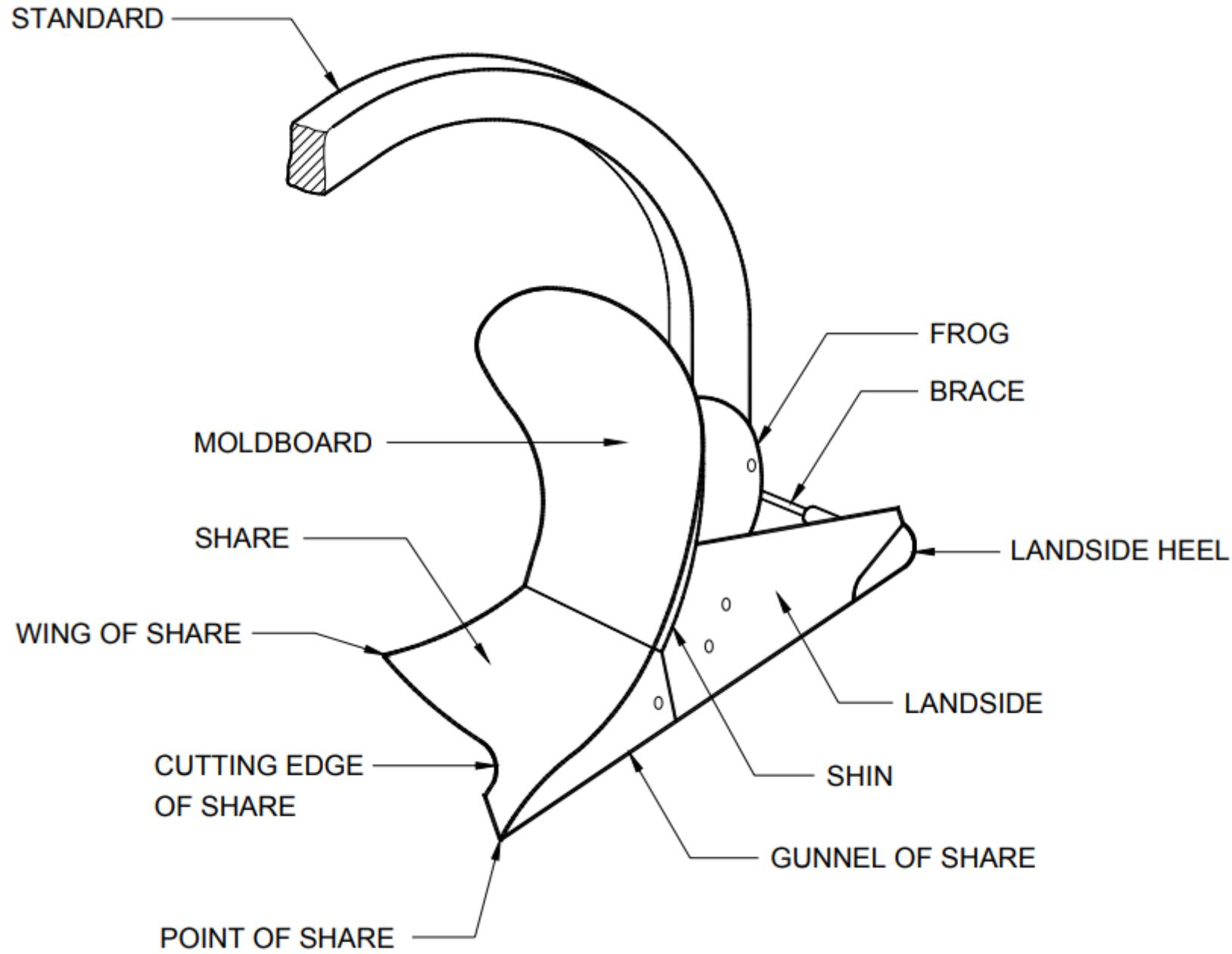


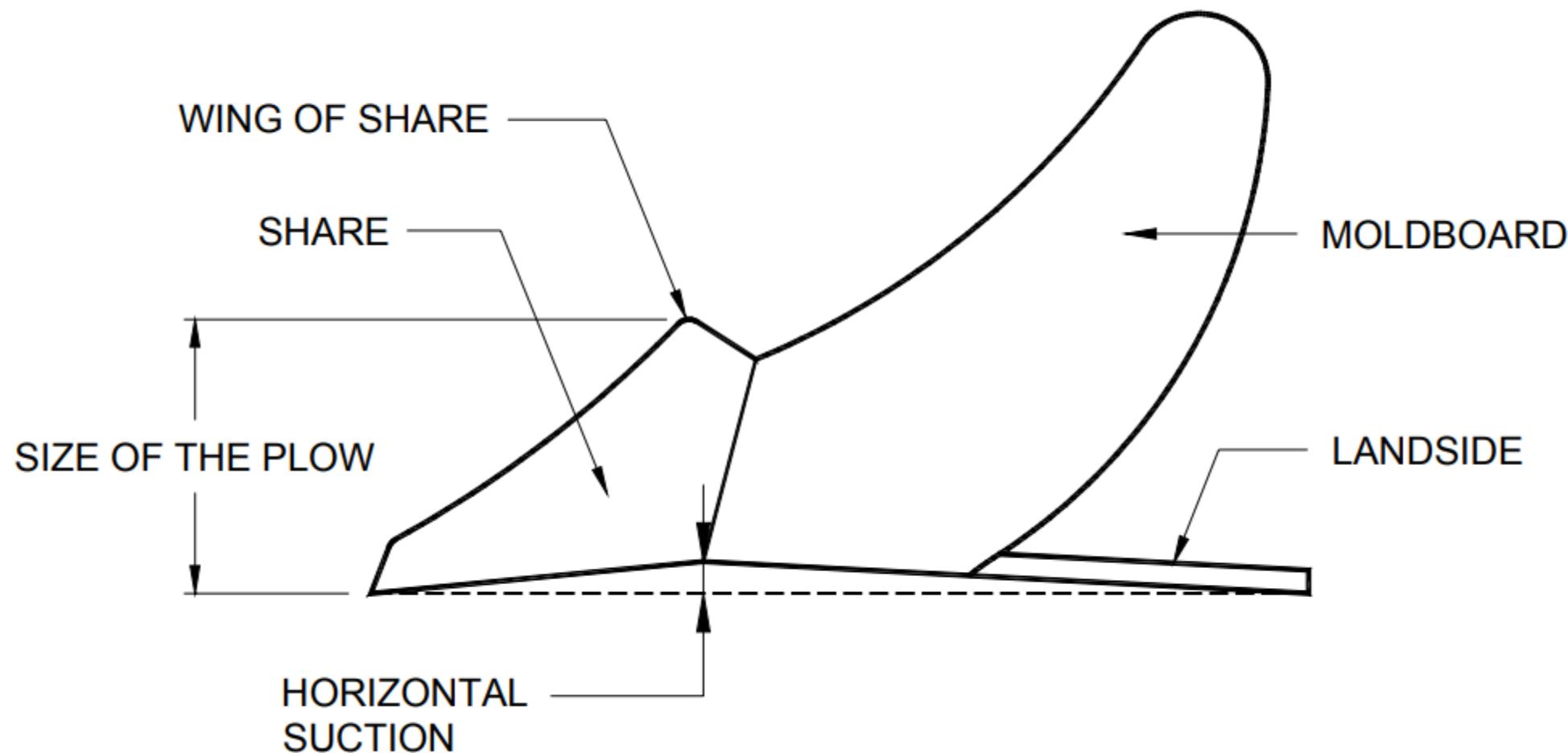
## *EXAMPLES:*

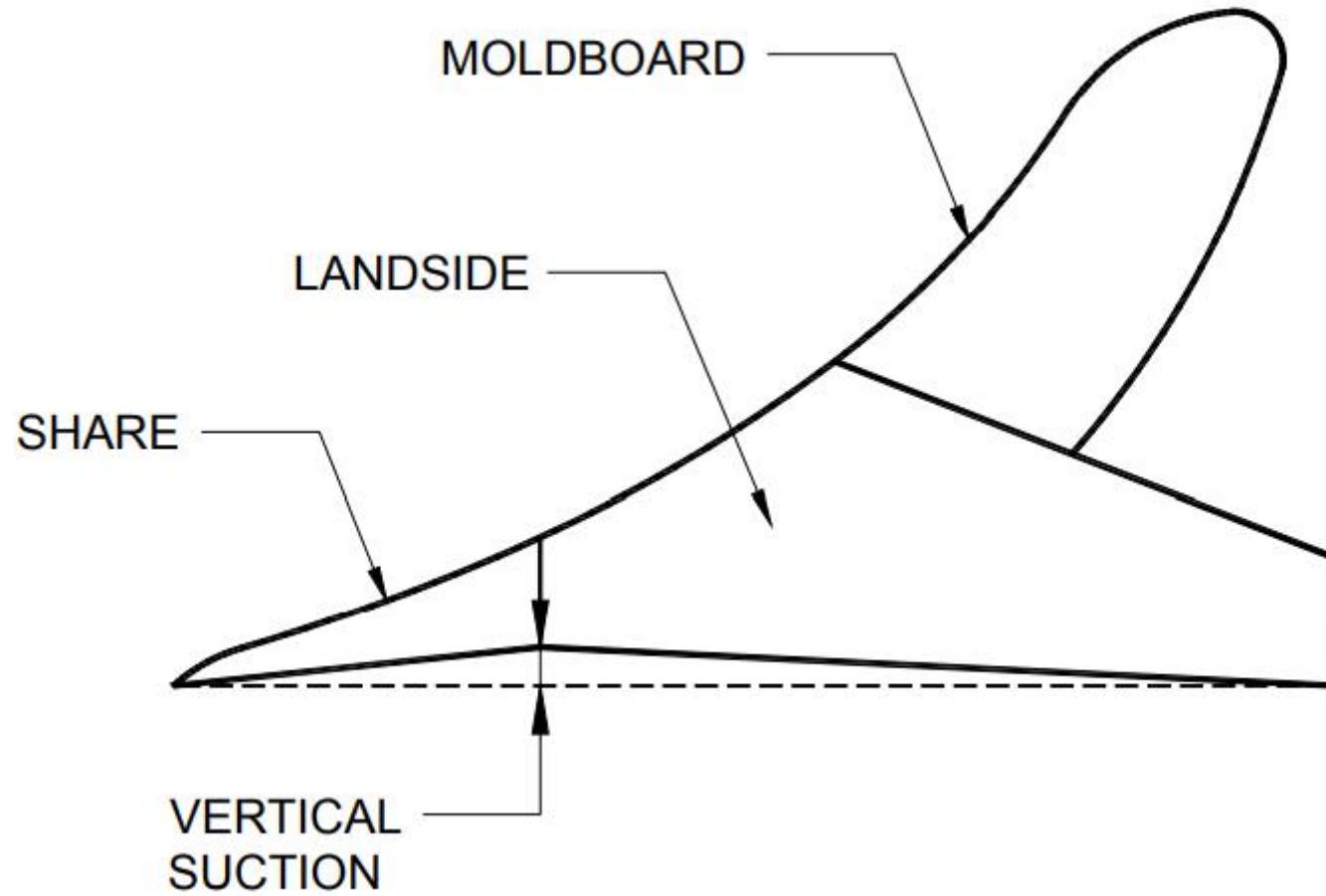
# Moldboard Plow

- sliding implement that cuts, lifts, inverts and throws to one side a layer of soil (furrow slice) to bury surface materials

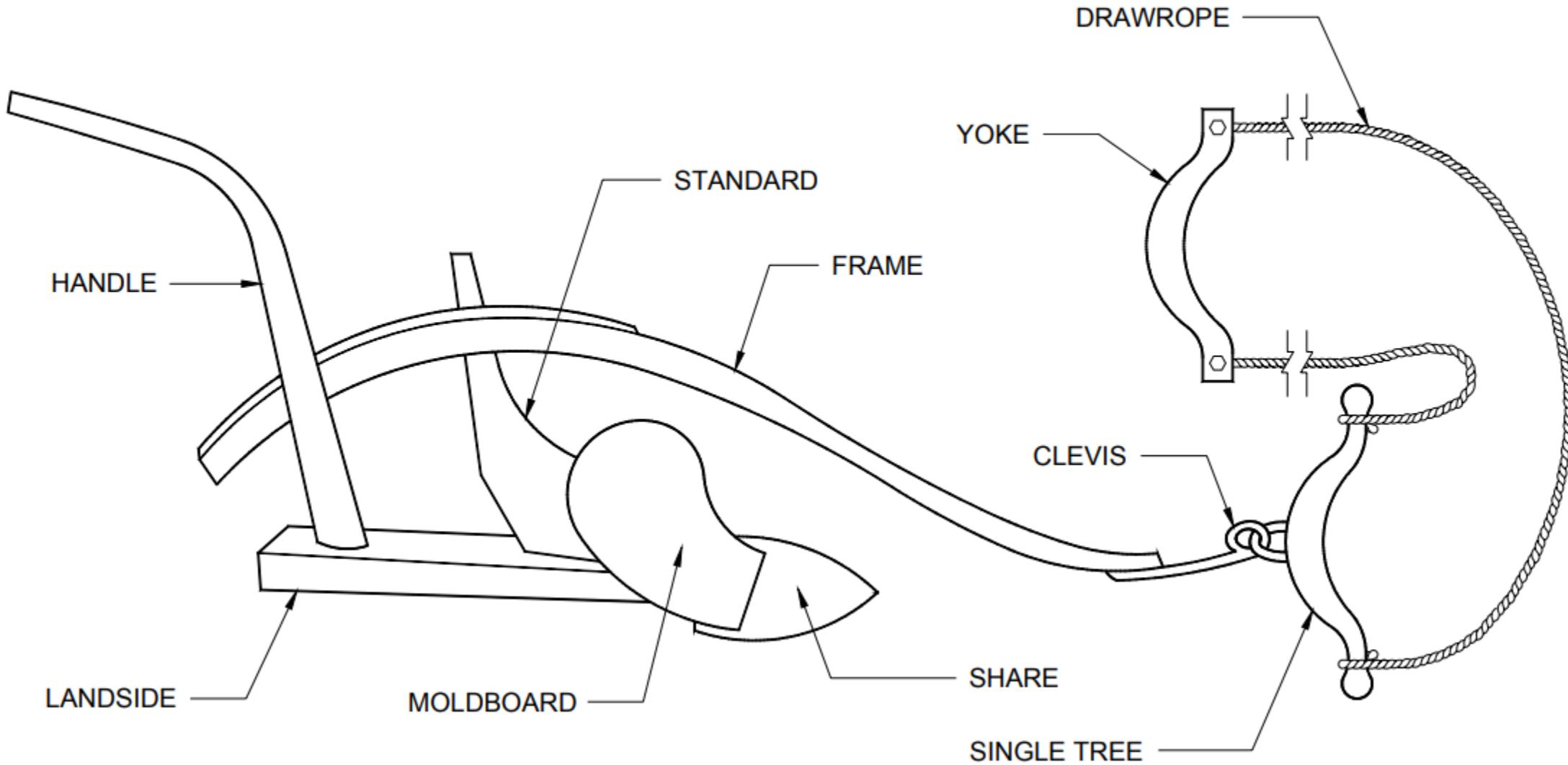




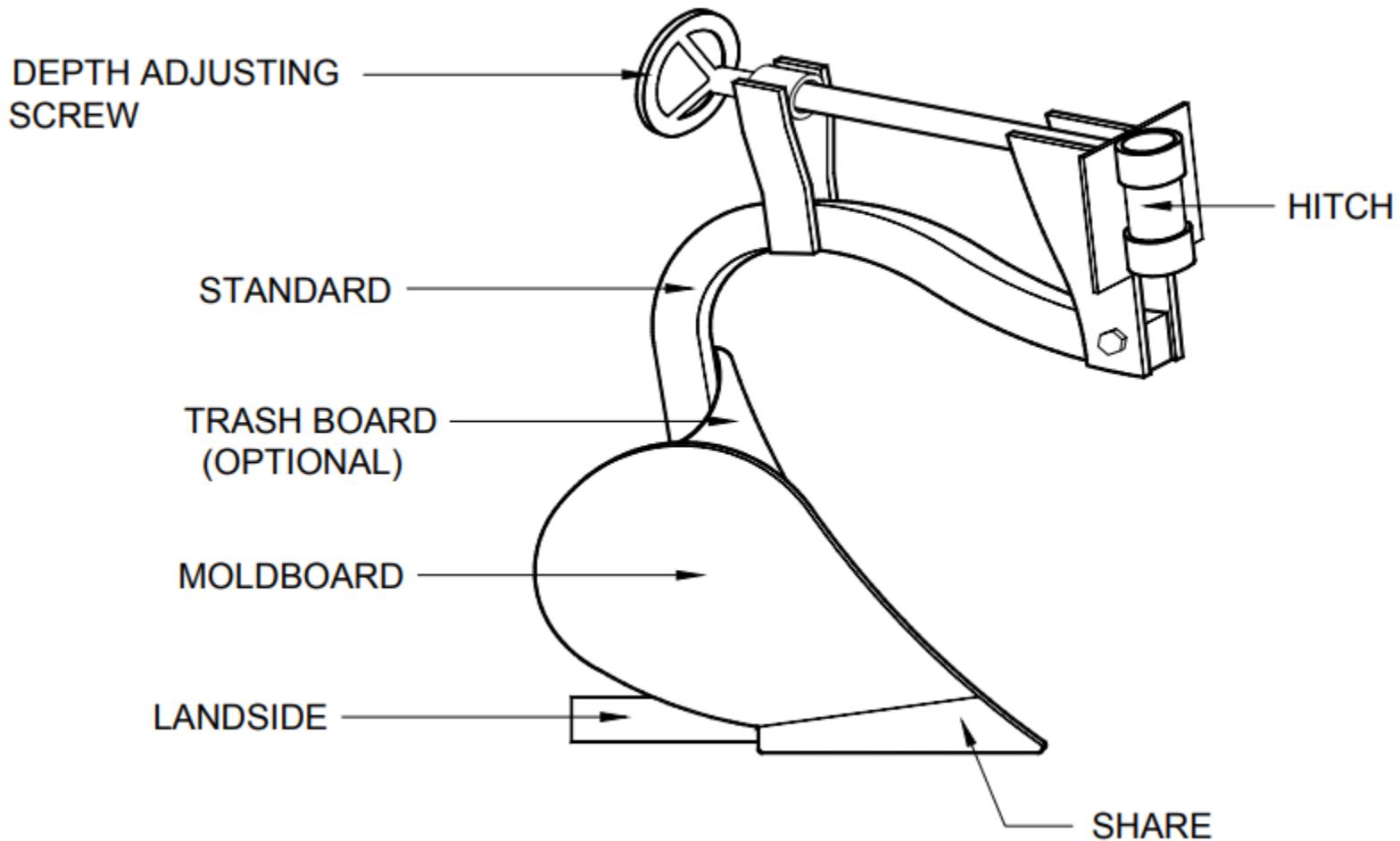




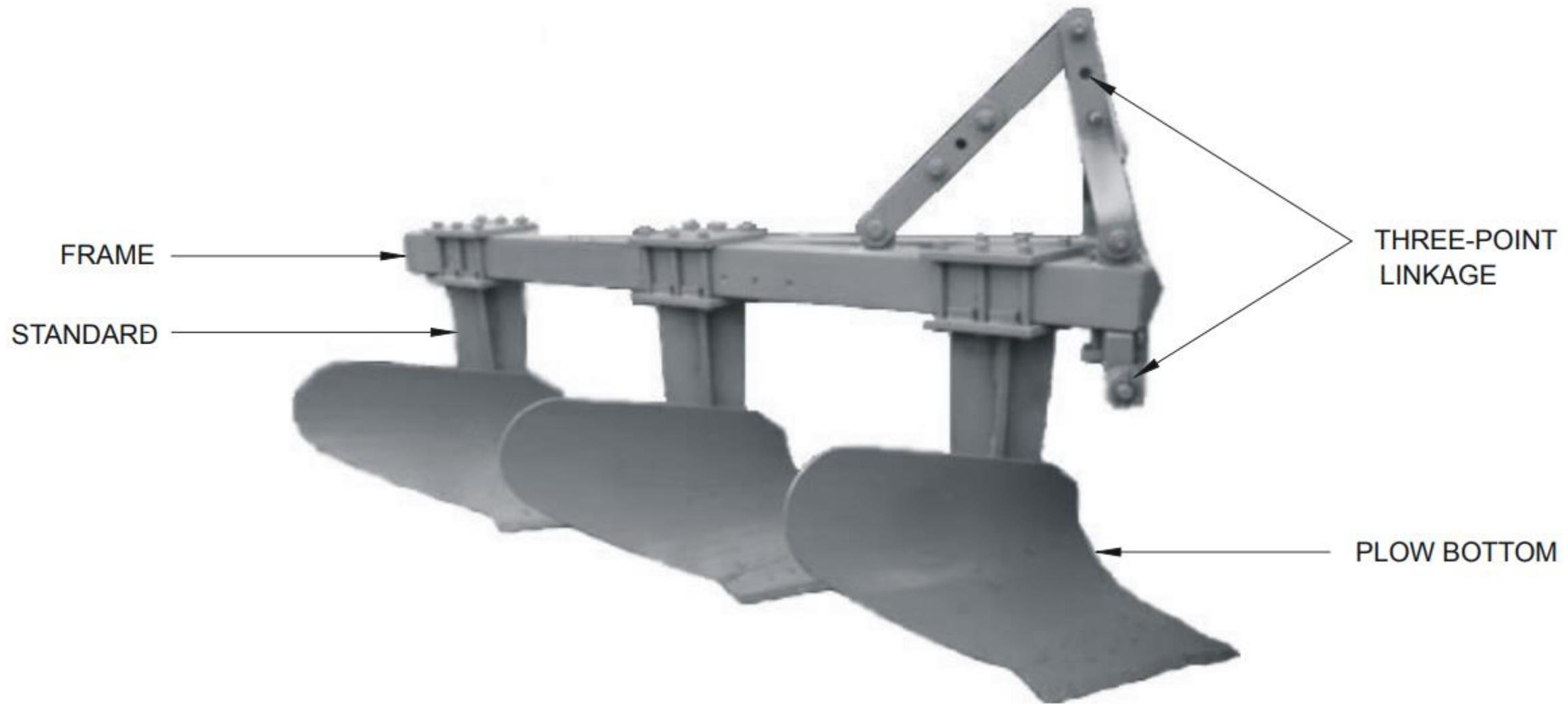
# Animal-drawn Moldboard Plow



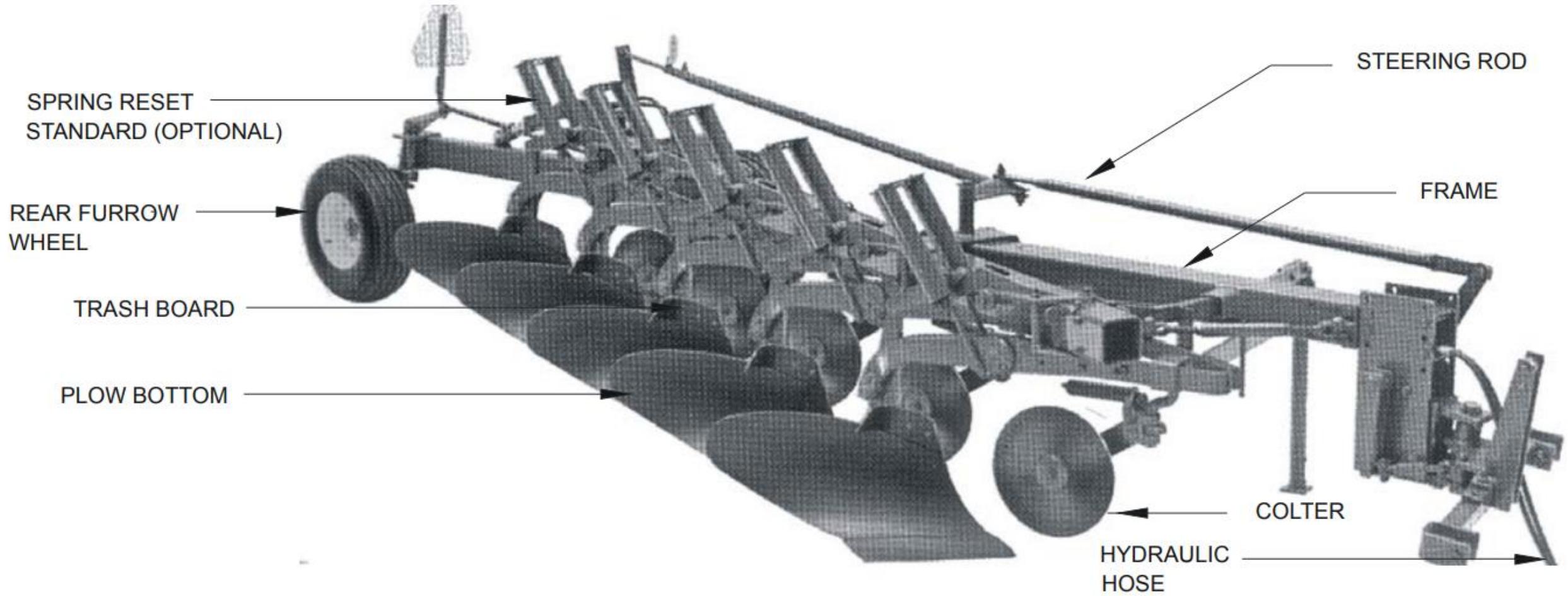
# Moldboard Plow for Two-wheel Tractor



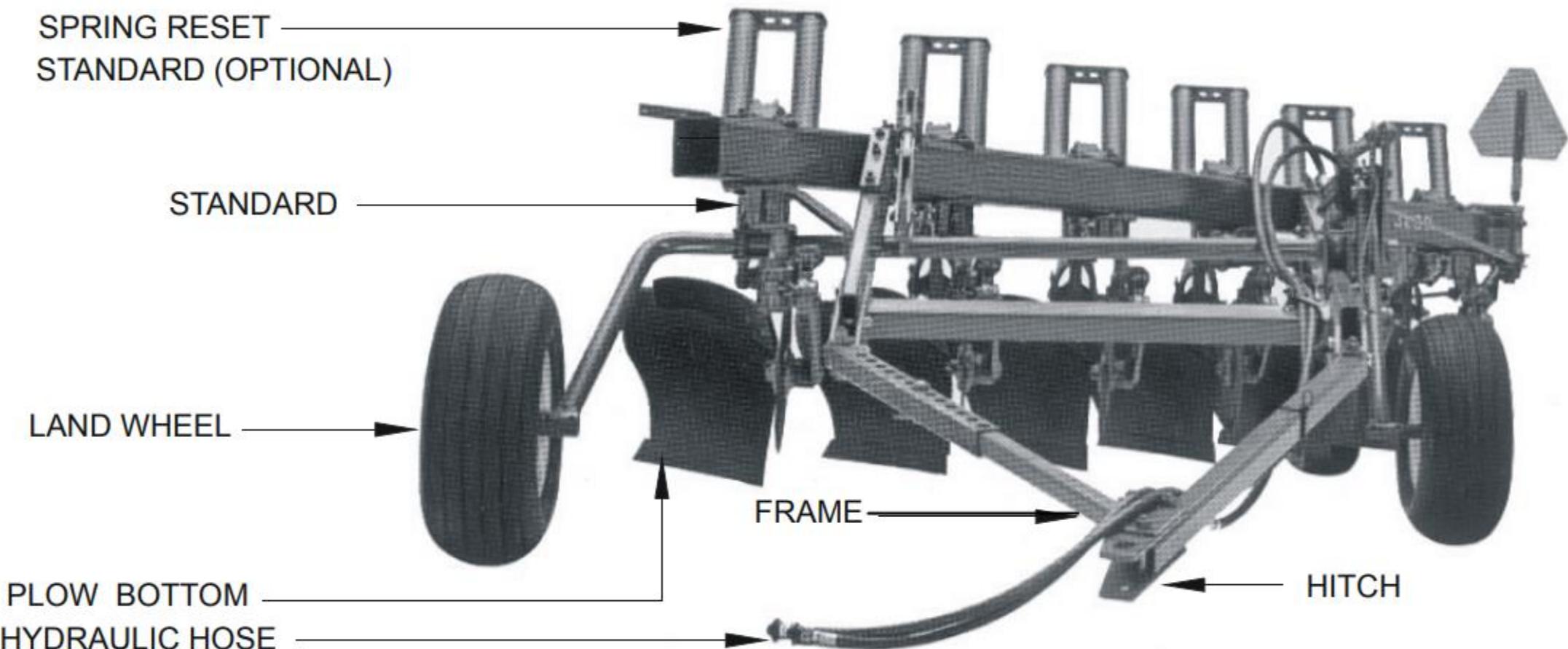
# Tractor-mounted Moldboard Plow



# Semi-mounted Moldboard Plow



# Trailing Moldboard Plow



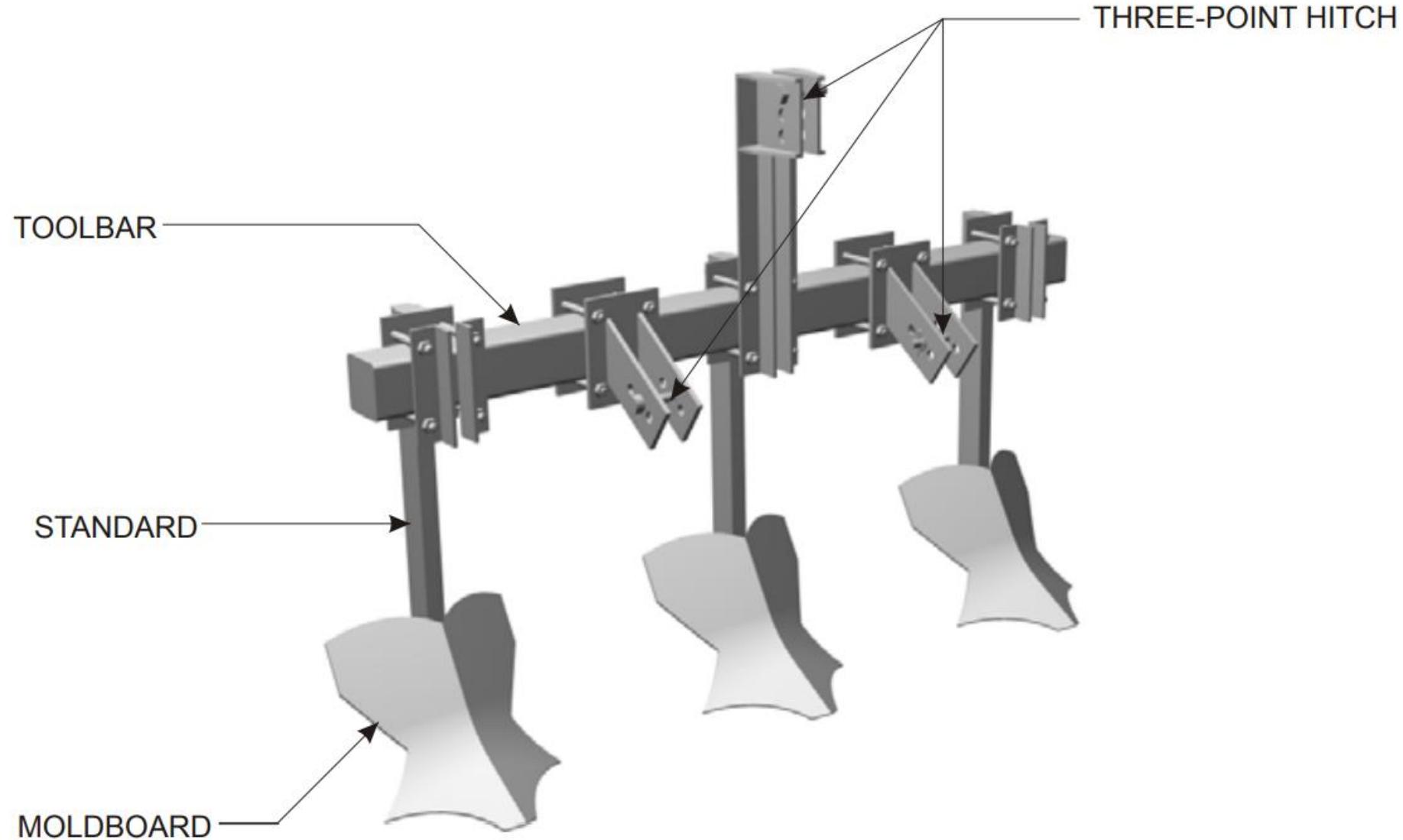
# Furrower

lister/ridger/bedder

- tillage implement resembling a double moldboard, one left wing and one right wing, used to make ridges and beds for planting and trenches for irrigation and drainage purposes



# Tractor-Mounted Furrower



# Types of Furrower Bottoms



a) Blackland



b) General-purpose



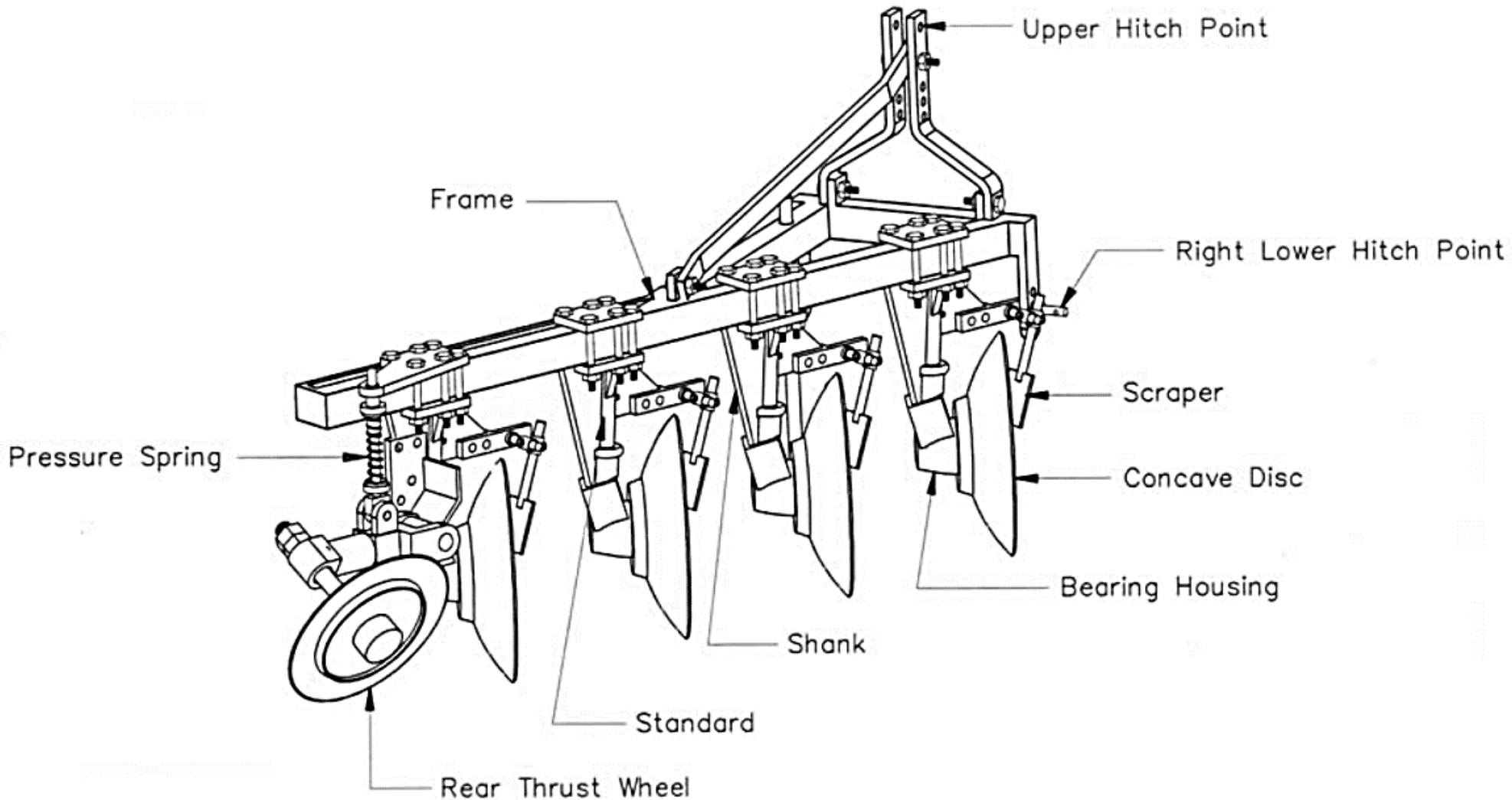
c) Hard-ground

## *EXAMPLES:*

# Disc Plow

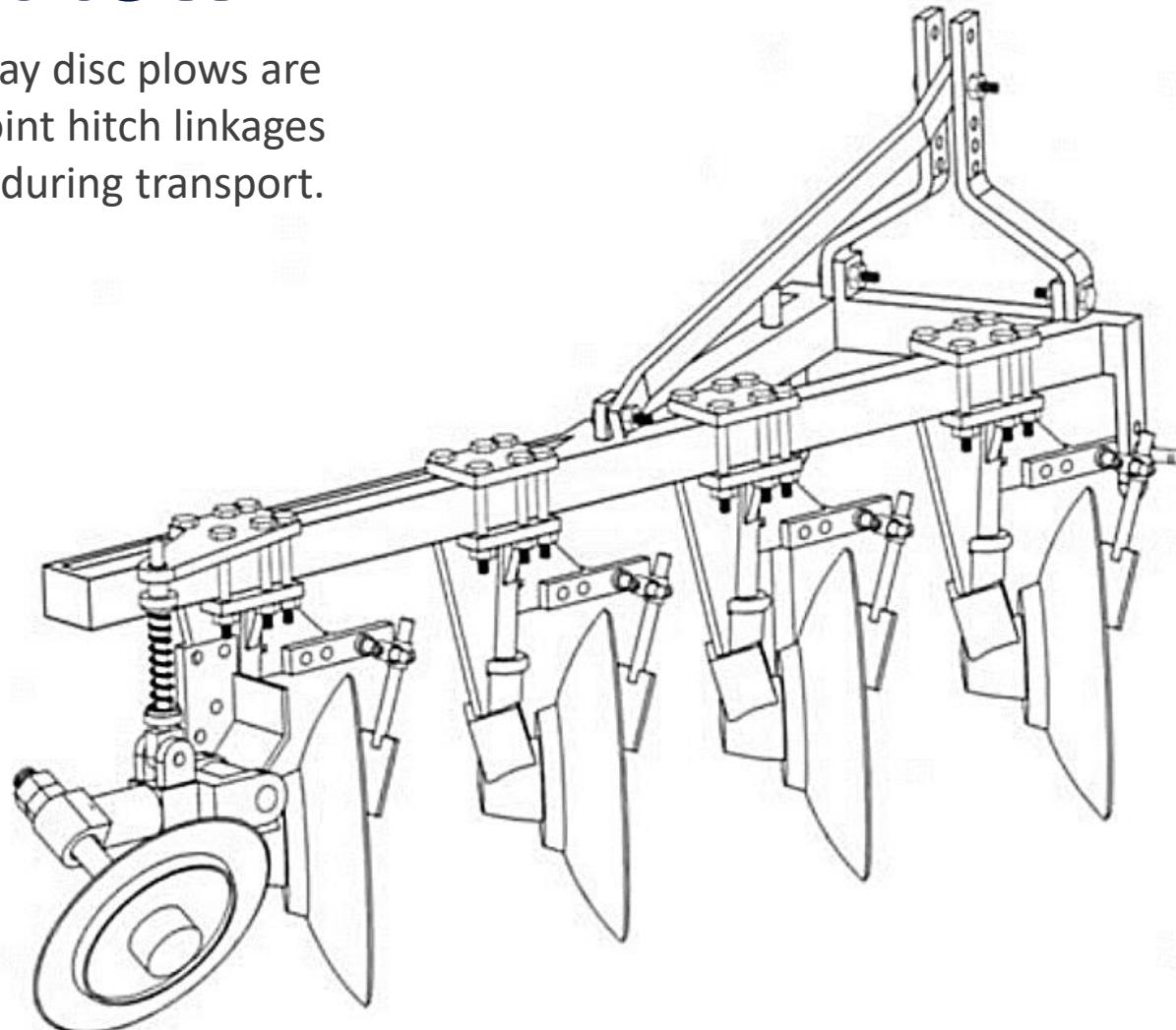
- implement with individually mounted concave disc blades which cut, partially or completely invert soil slices to bury surface material, and pulverize the soil





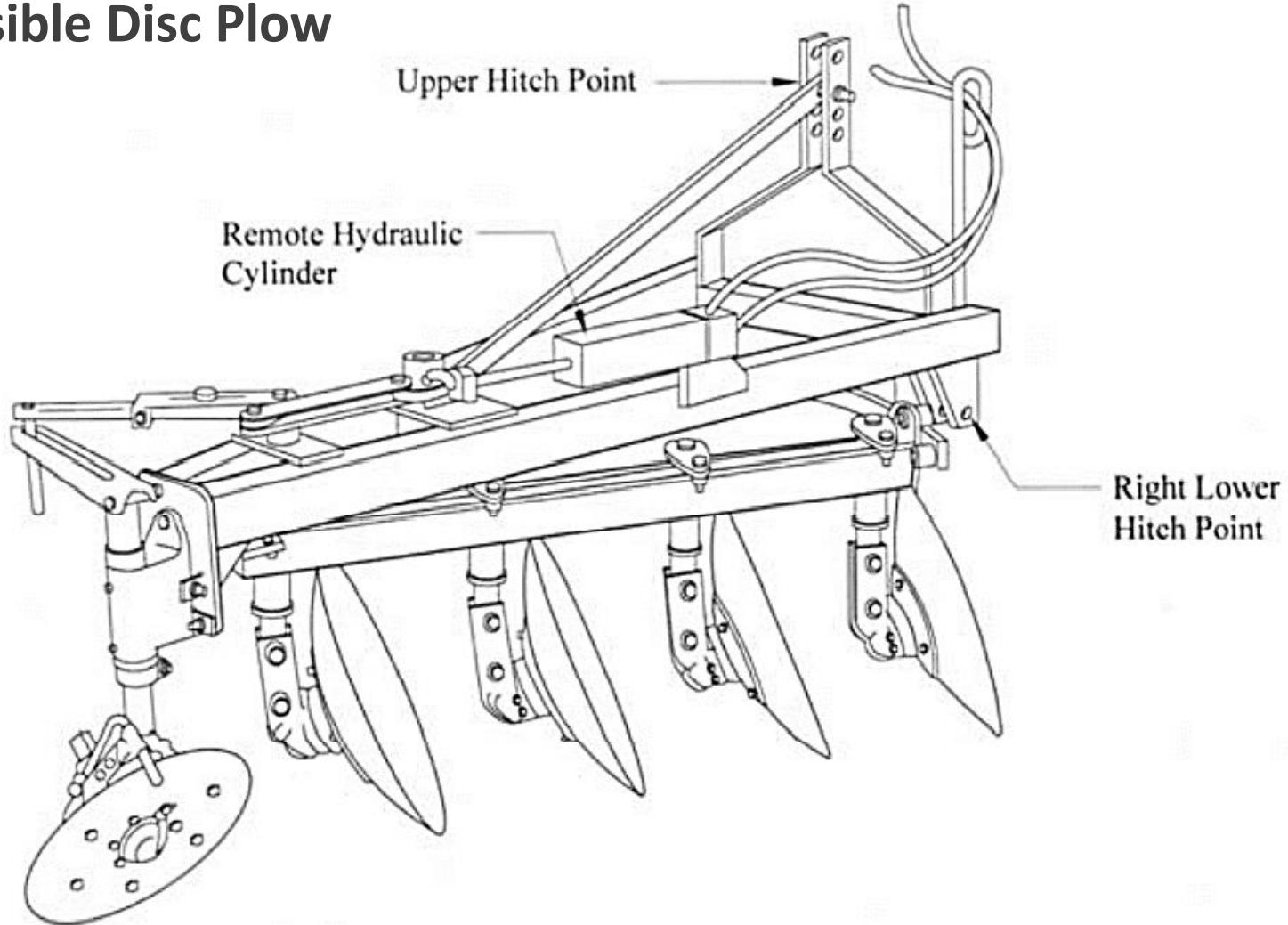
# One-way Disc Plow

Tractor-mounted or integral one-way disc plows are attached to the tractor by three-point hitch linkages and are fully carried by the tractor during transport.



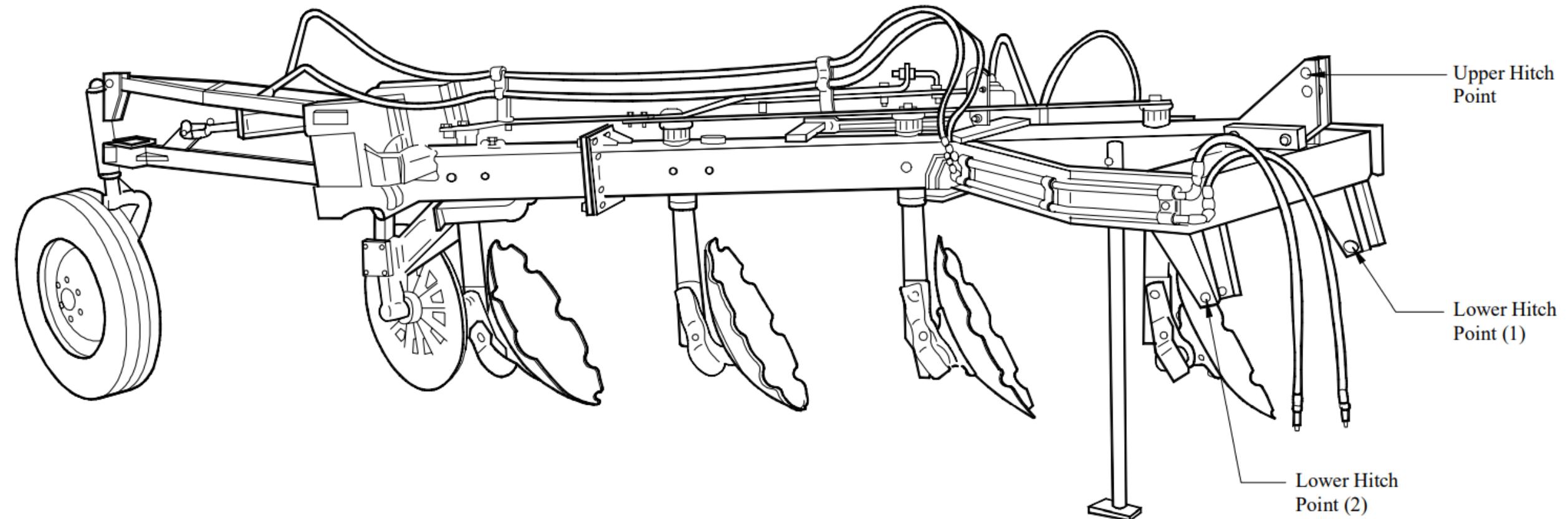
# Reversible Disc Plow

## Tractor-mounted Reversible Disc Plow



# Reversible Disc Plow

Semi-mounted or semi-integral reversible disc plow



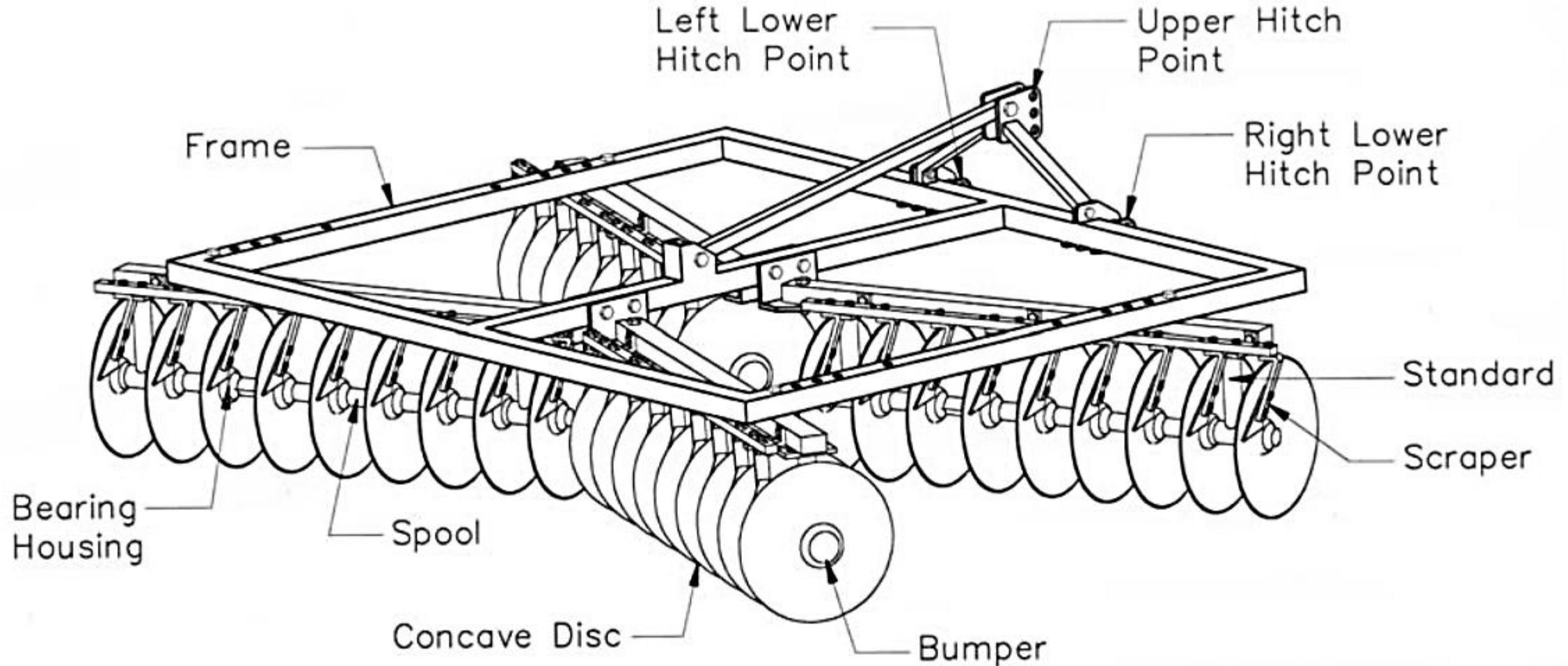
## EXAMPLES:

# Disk Harrow

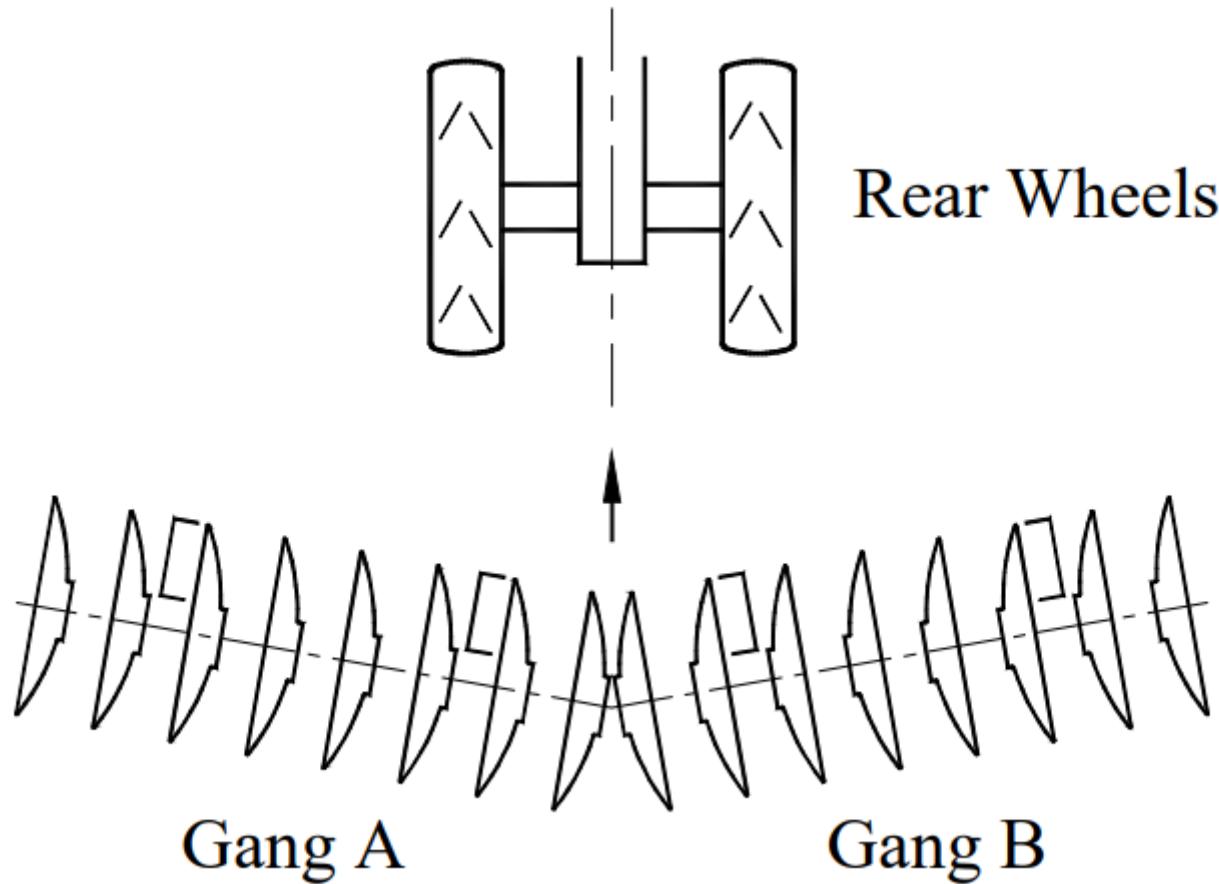
- implement used to pulverize the soil to attain a better soil tilth for the seed germination and growth
- consists of two or more sets of disc gangs cutting the soil to a depth of 3" to 6". A disc gang is made up of a number of discs mounted on a common axle.



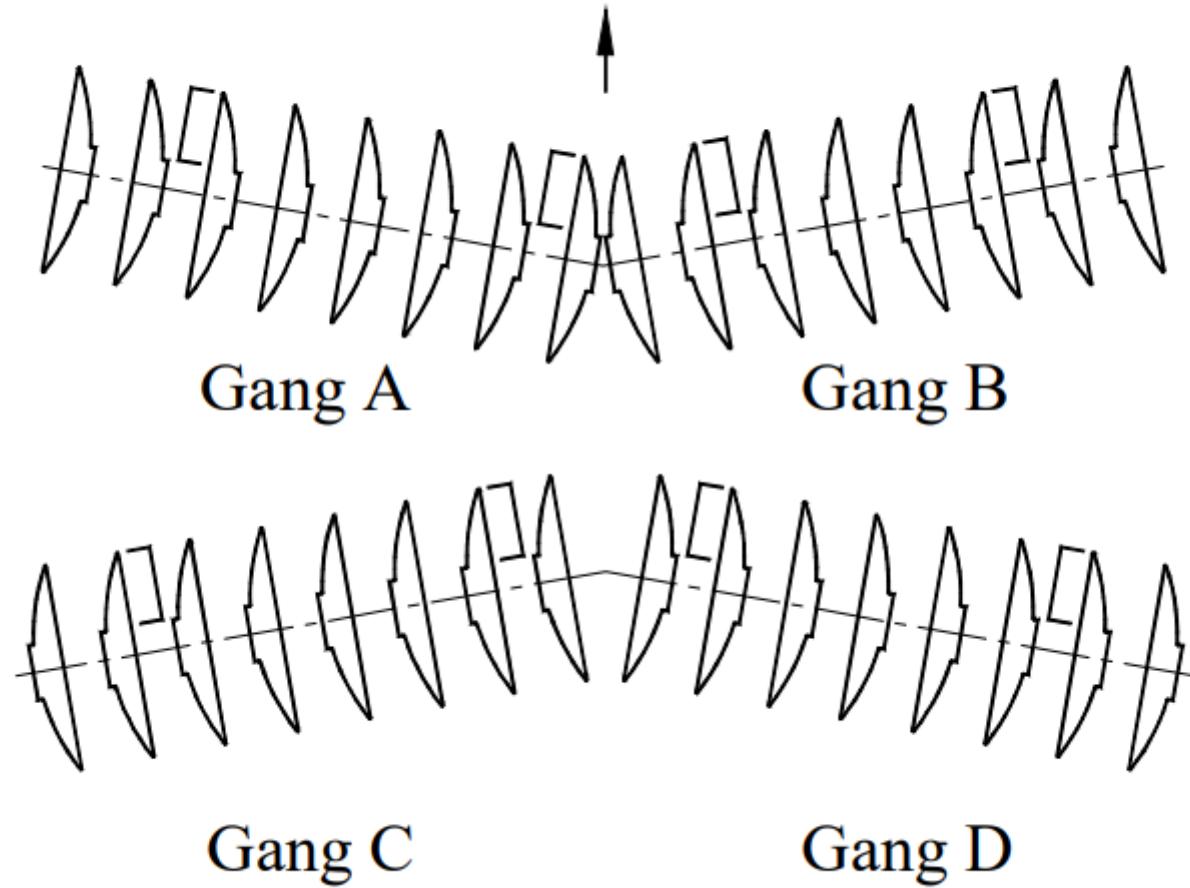
# Disc Harrow and its Components



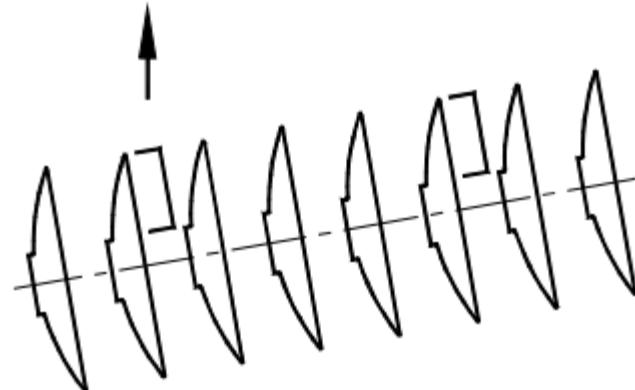
# Single-action



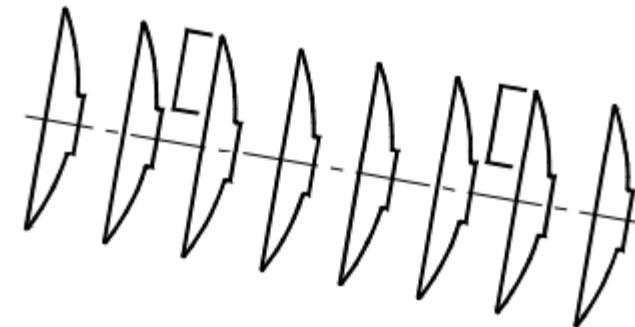
# Tandem



# offset

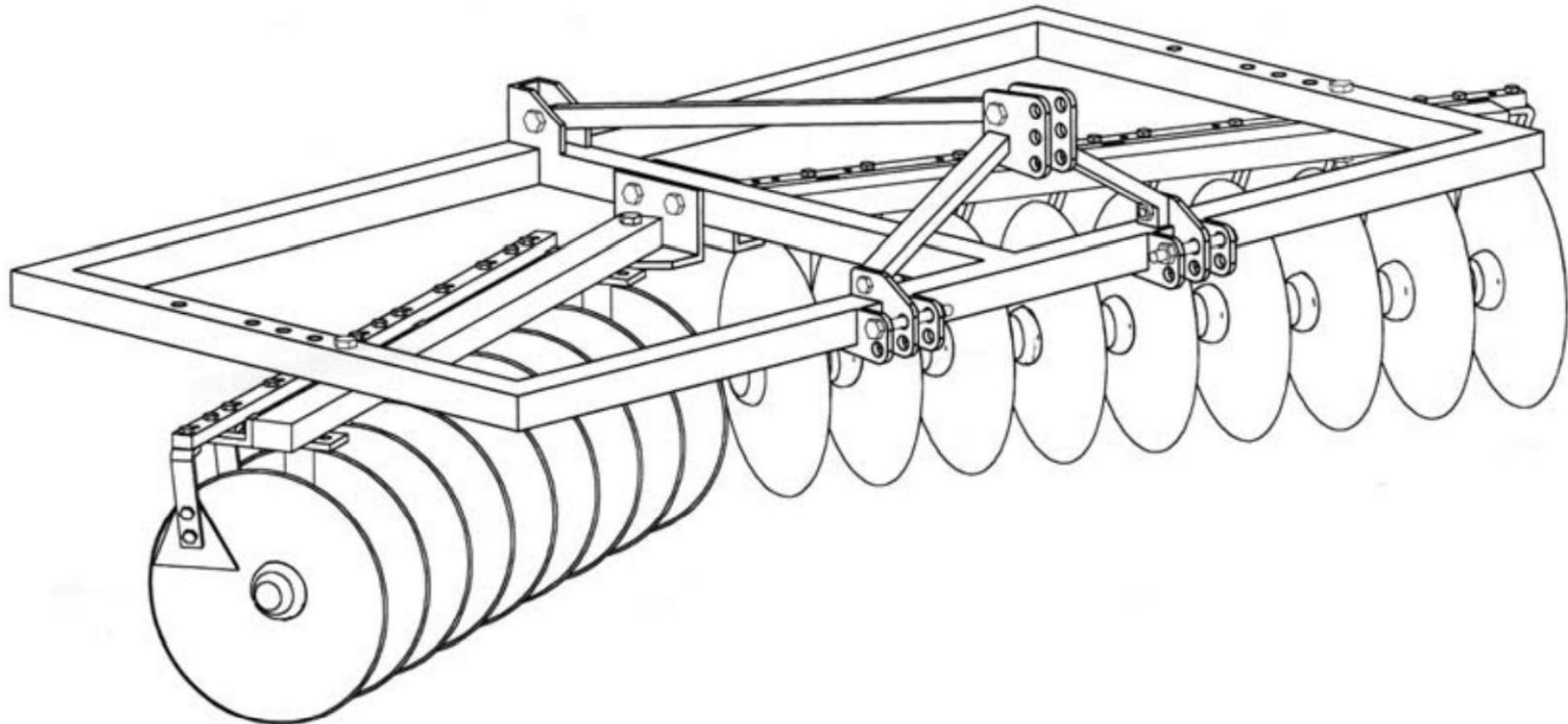


Gang A

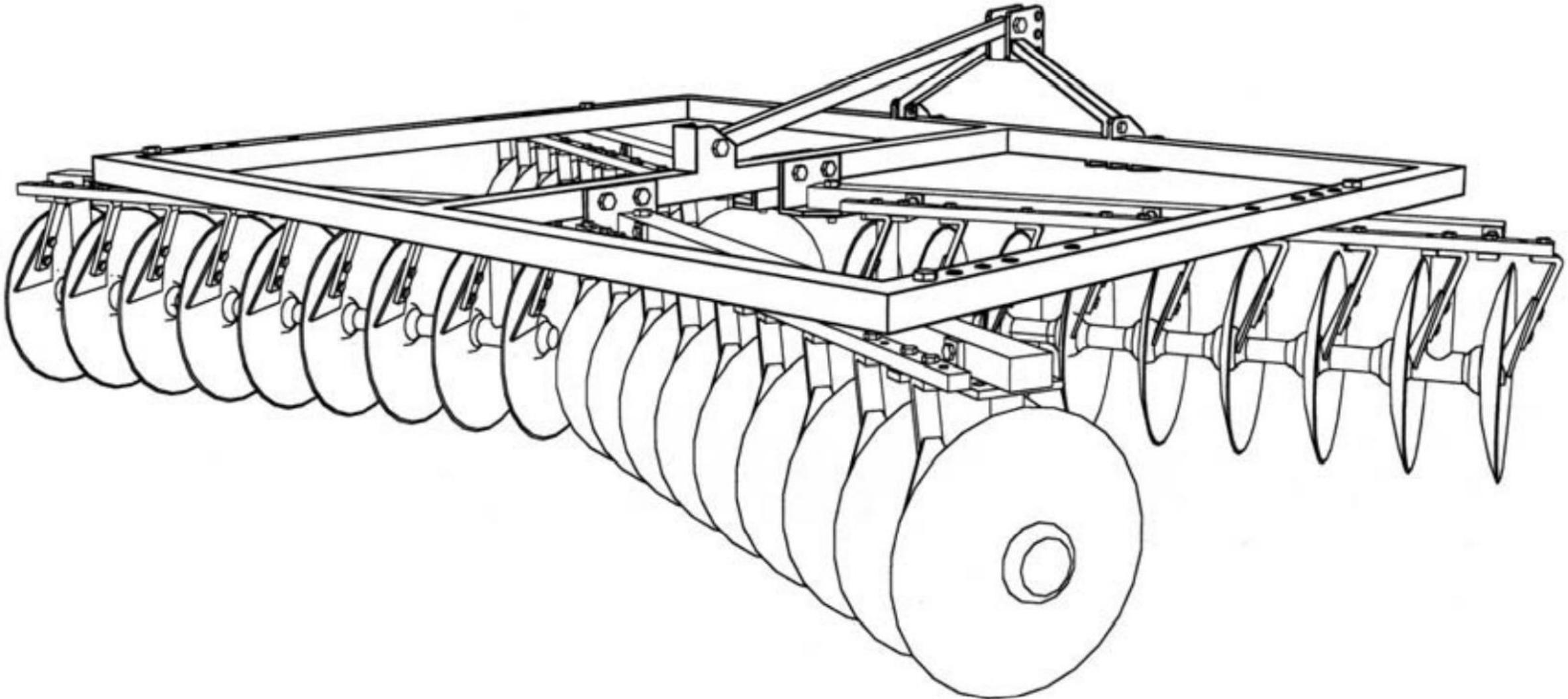


Gang B

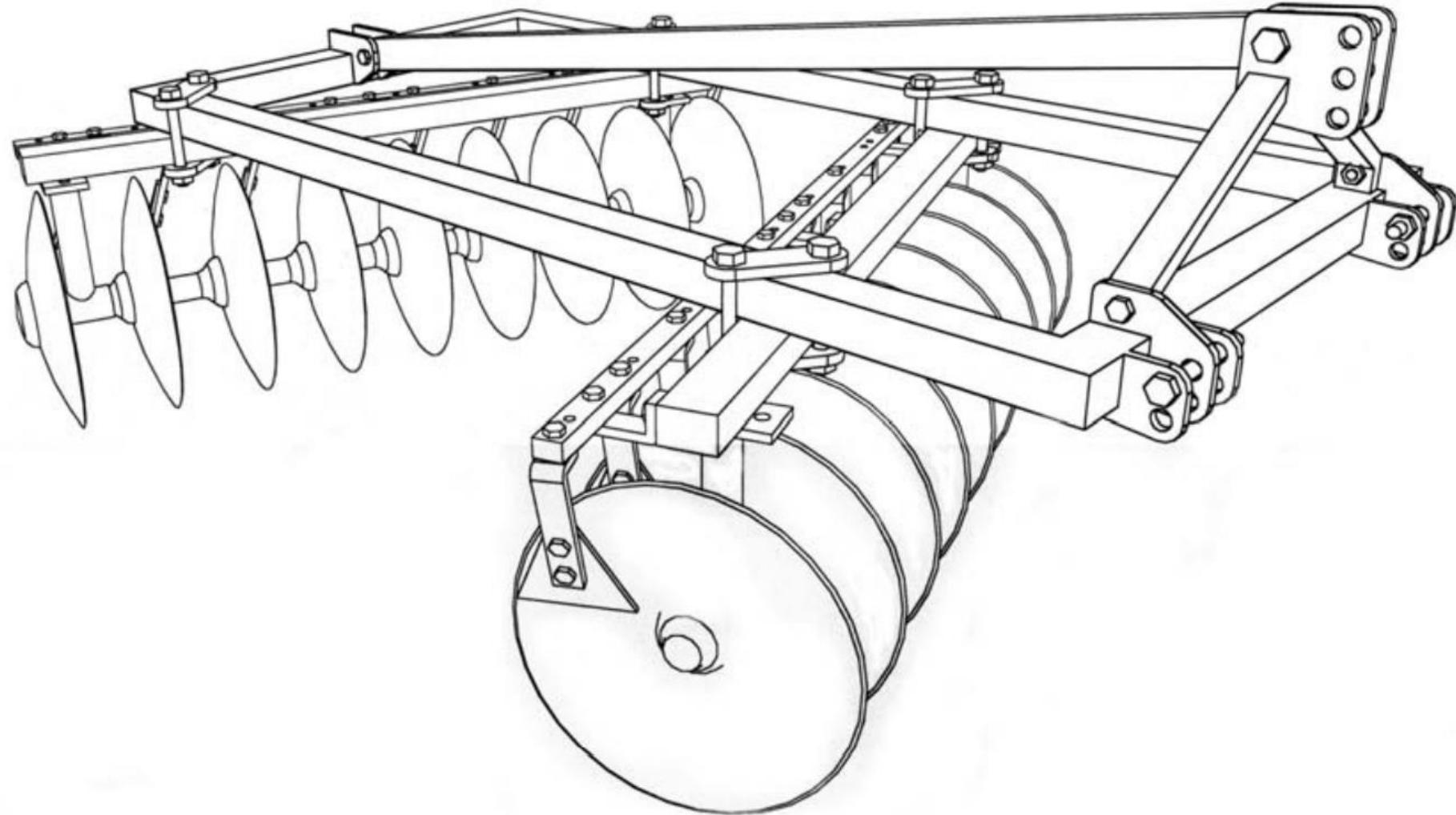
# Tractor-mounted single-action disc harrow



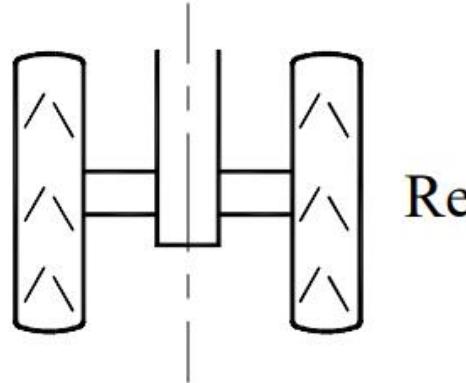
# Tractor-mounted tandem disc harrow



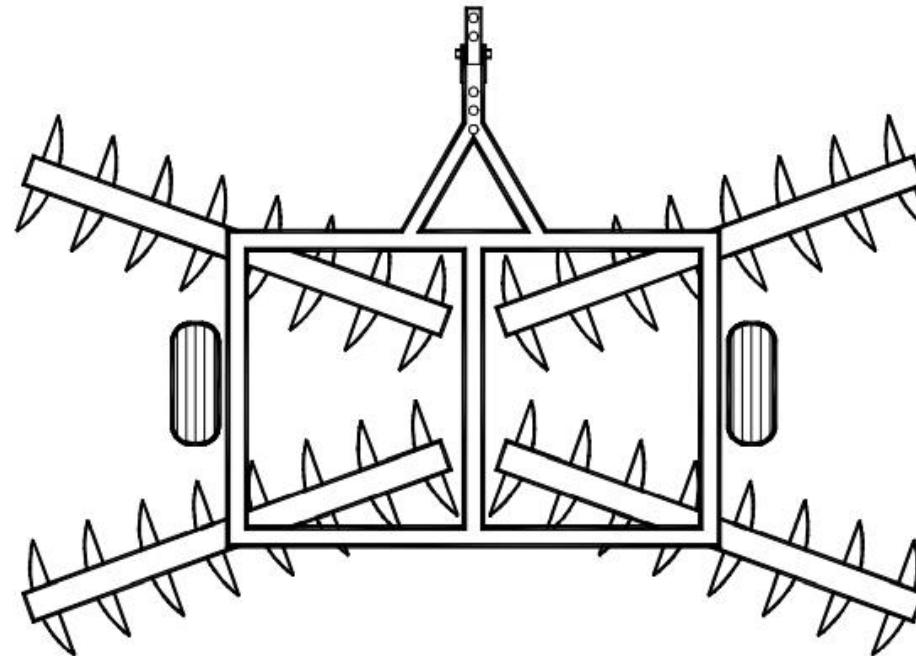
# Tractor-mounted offset disc harrow



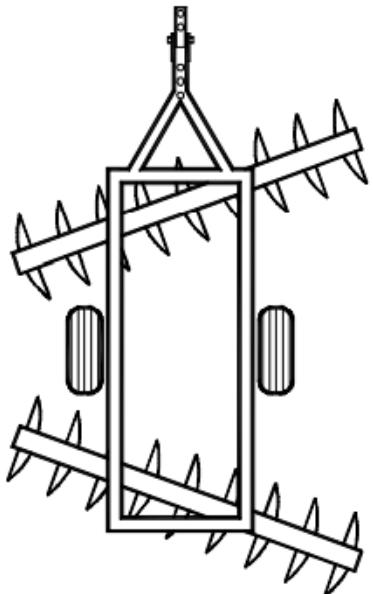
# trailing tandem disc harrow



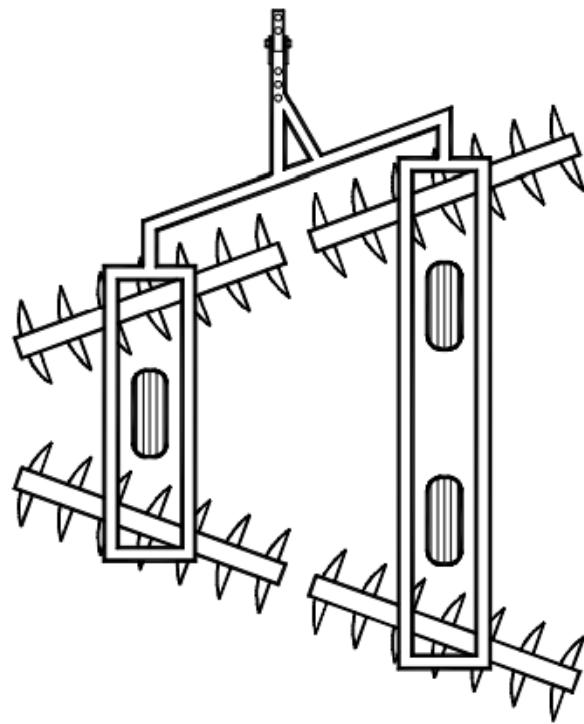
Rear Wheels



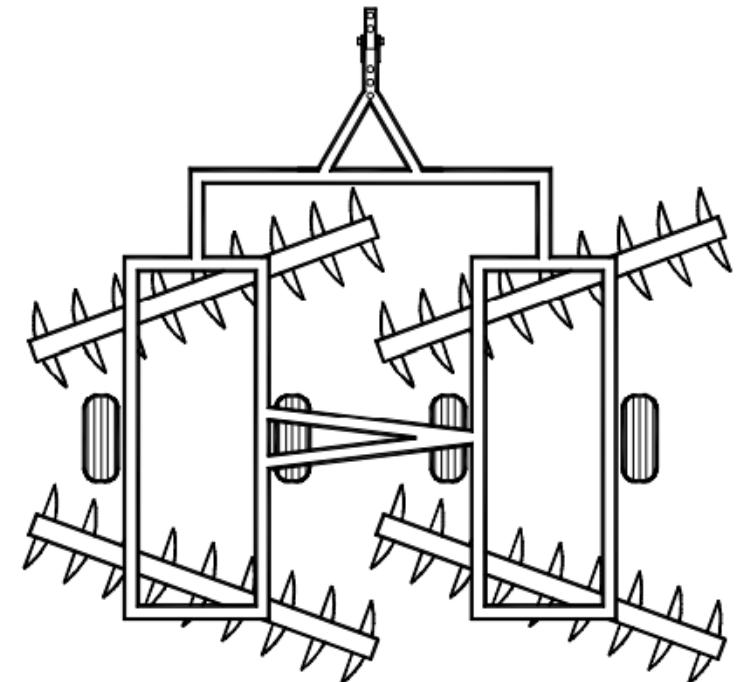
# Trailing Offset Disc Harrows



a) offset with  
rigid gangs



b) offset with flexible  
in-line gang beams



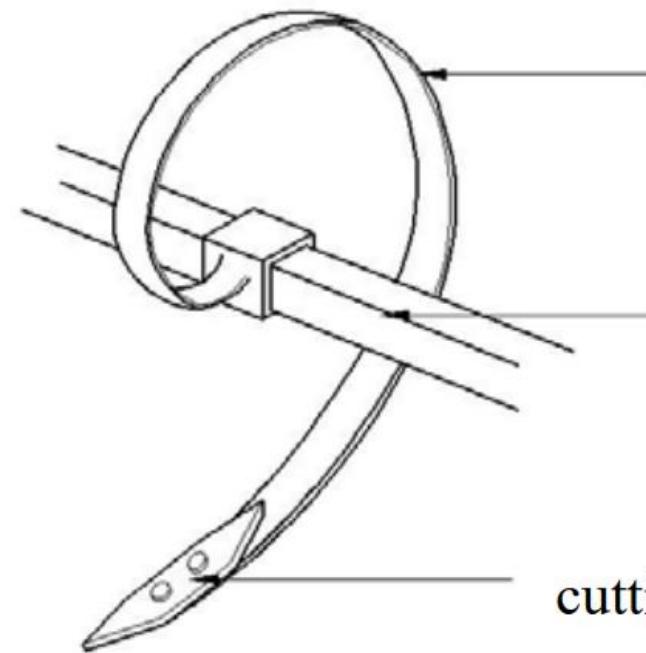
c) offset with squadron  
arrangement

## EXAMPLES:

# Springtooth harrow

- secondary tillage implement consisting of long and curved teeth made of spring steel which are fastened on the transverse toolbars with the other end pointed to give good soil penetration



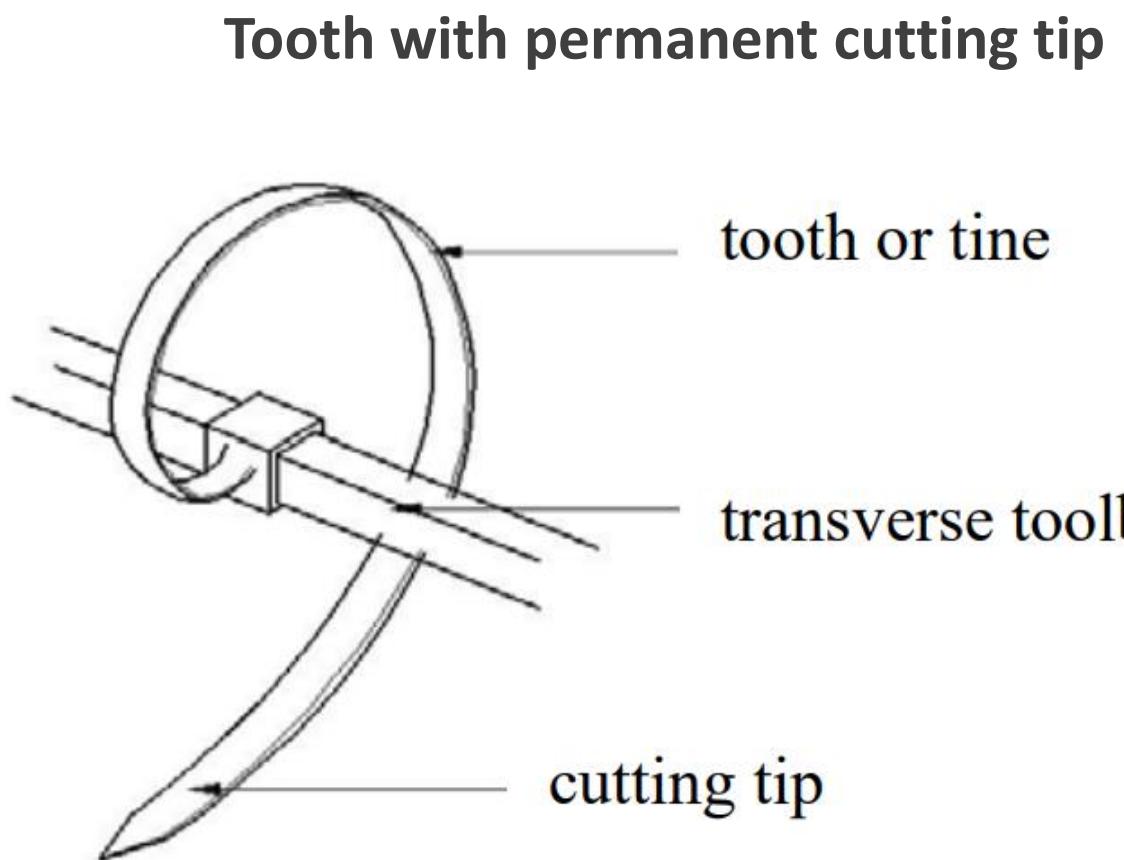


tooth or tine

transverse toolbar

cutting tip

### Tooth with replaceable cutting tip



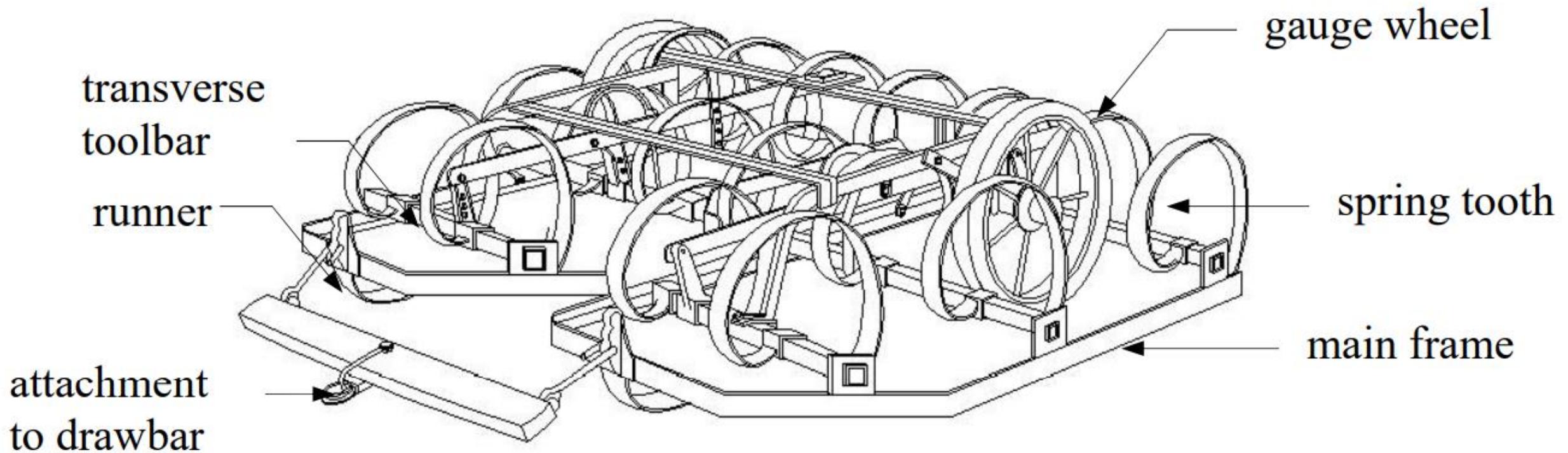
**Tooth with permanent cutting tip**

tooth or tine

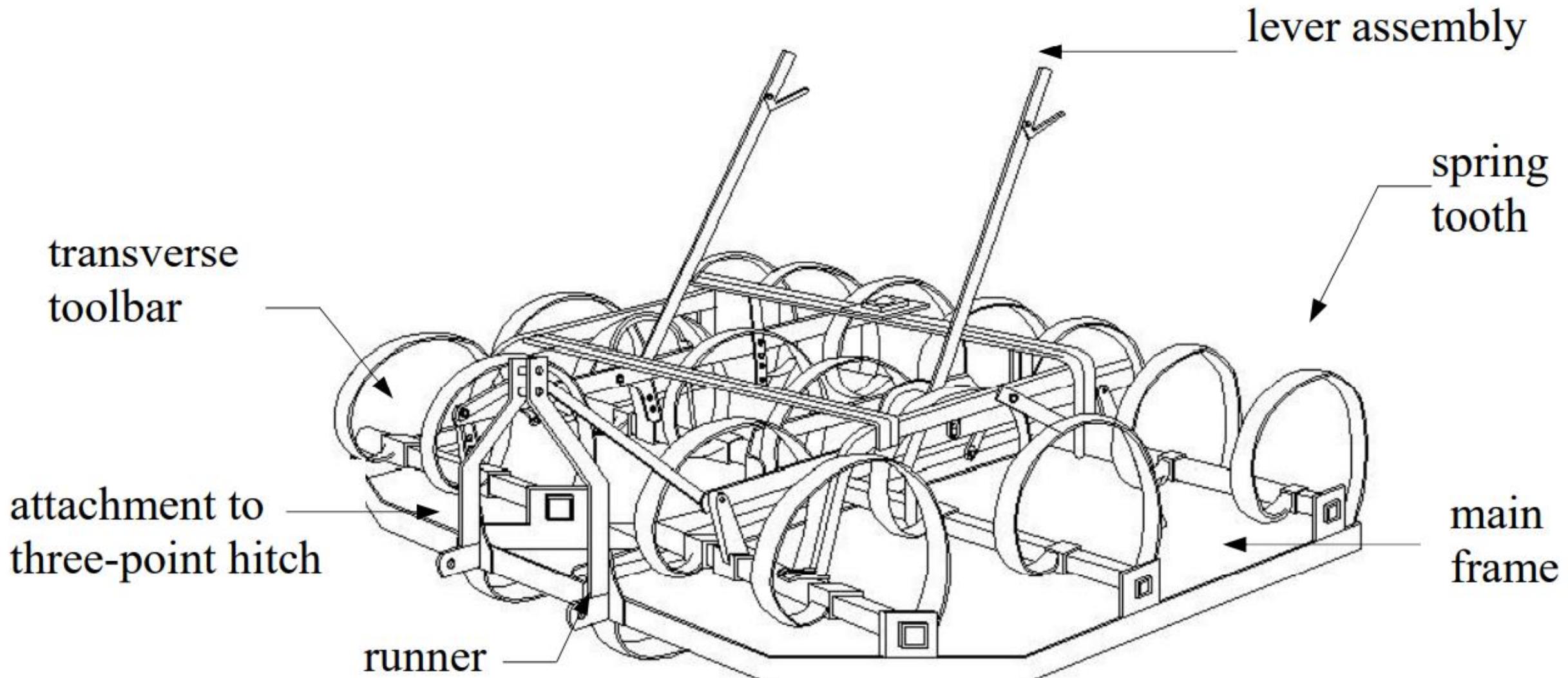
transverse toolbar

cutting tip

# Trailing spring-tooth harrow



# Three-point hitch-mounted spring-tooth harrow



## EXAMPLES:

# Spike tooth harrow

- consists of long rigid spikes clamped or welded to cross bars on a staggered arrangement to attain maximum stirring and raking of the soil. The cross bars can be rotated to change the angle of the teeth



*EXAMPLES:*

## Rotary Tiller/Rotavator

- is a motorized cultivator that works the soil by means of rotating tines or blades.



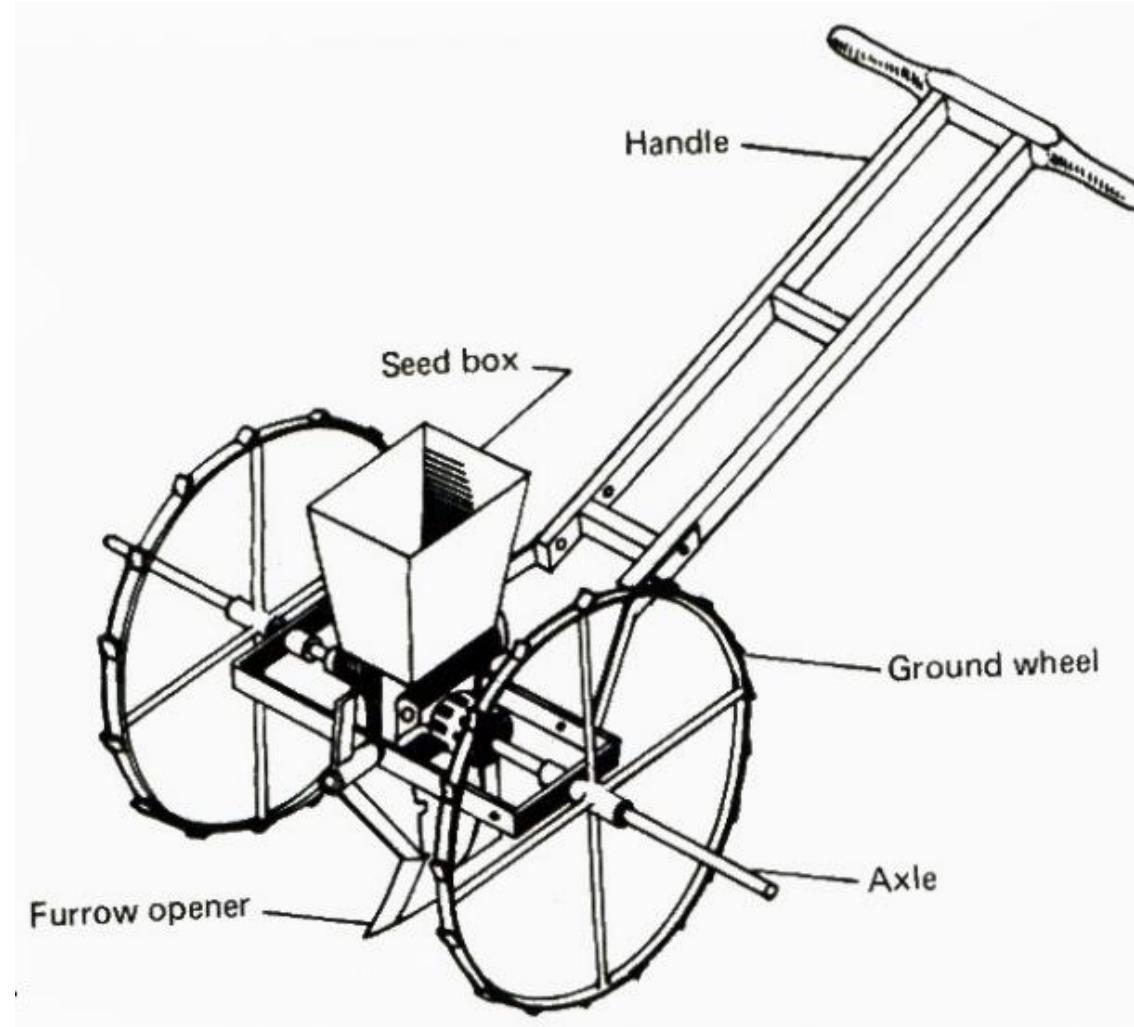
*EXAMPLES:*

# Grain seeder

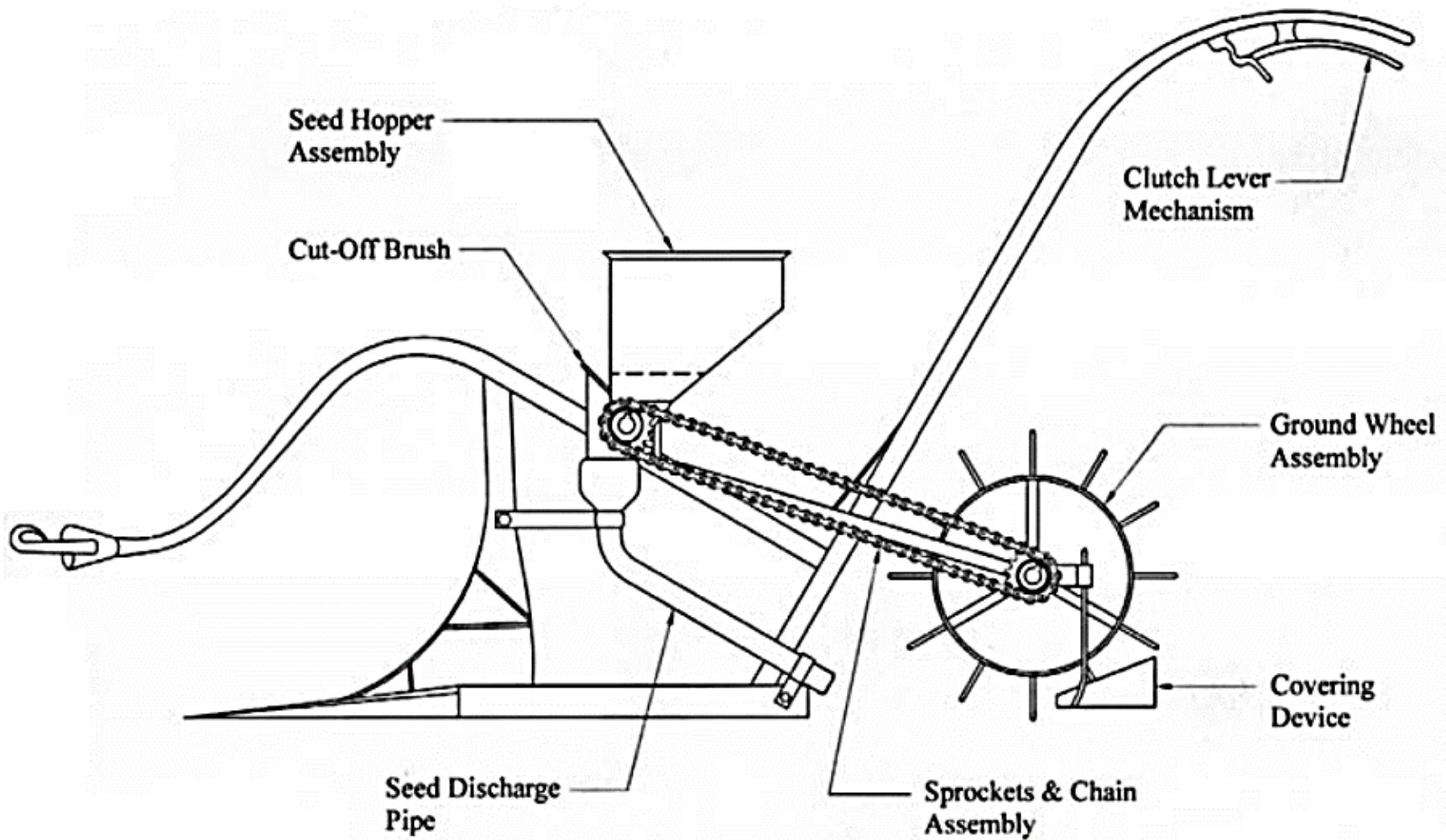
- planting equipment used to deposit seeds in the soil for crop production



# Manually-operated or hand seeder

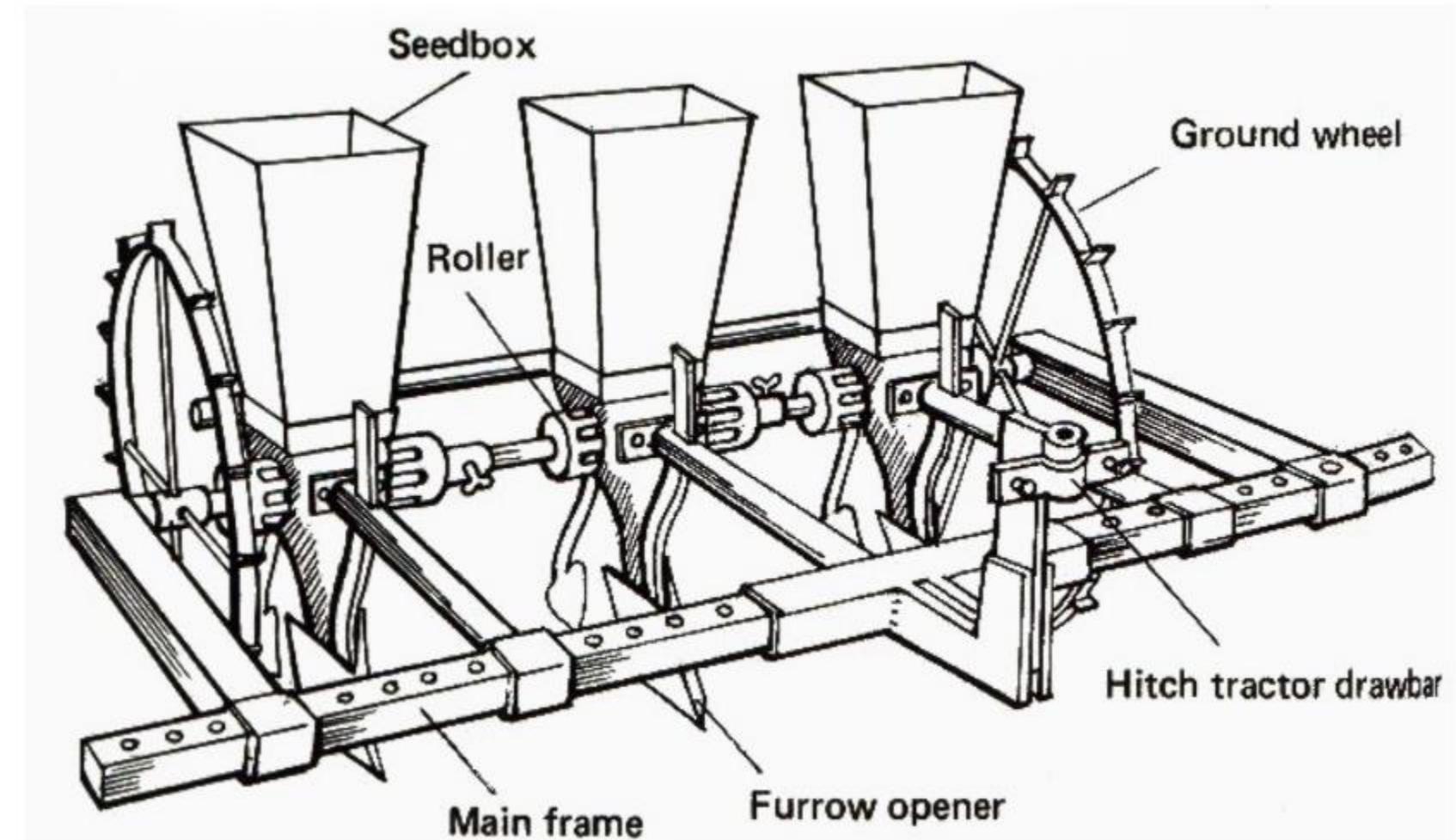


# Animal-Drawn Seeder

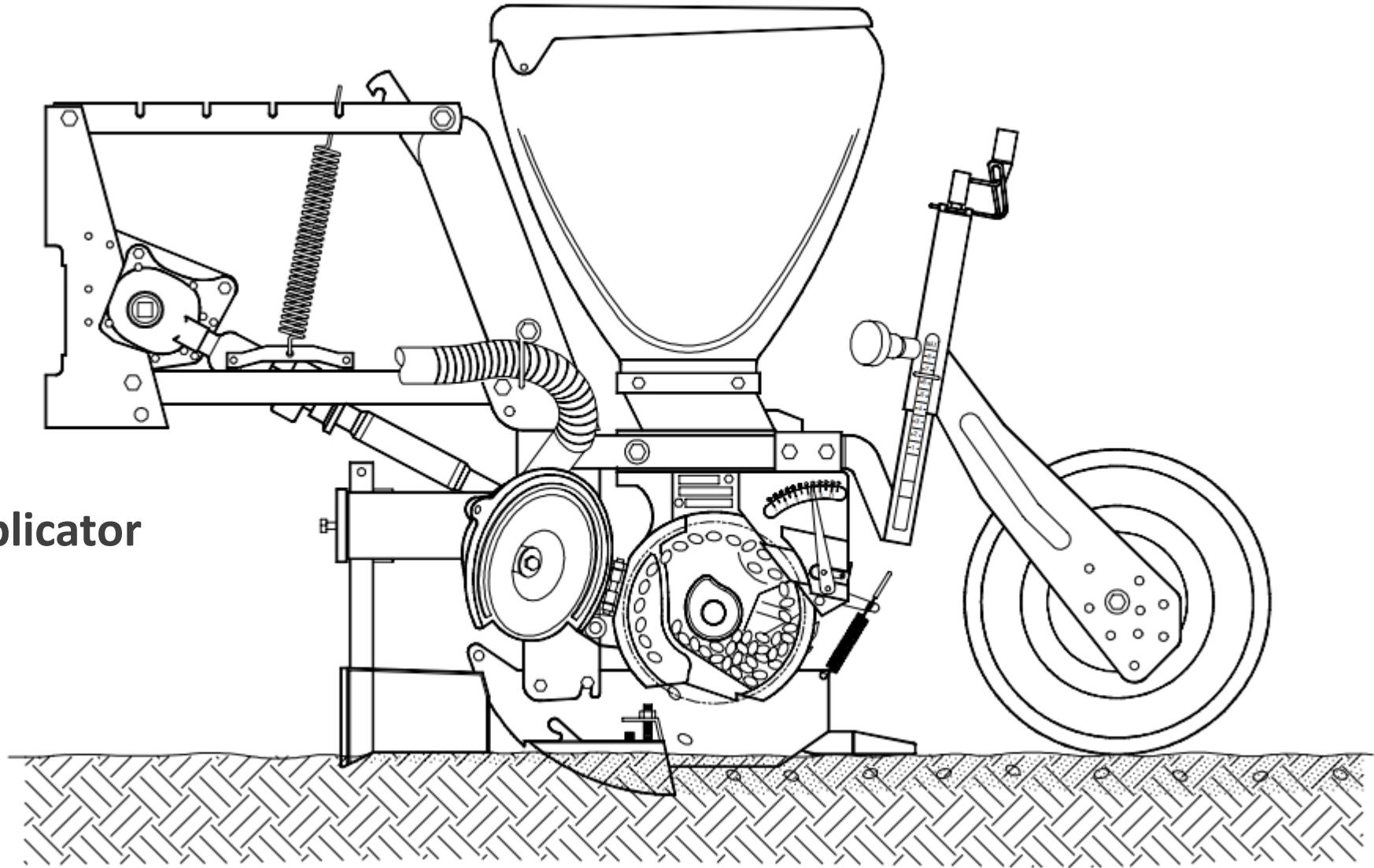


# Tractor power-driven seeder and planter

Row-crop planter



**Precision planter  
without fertilizer applicator**



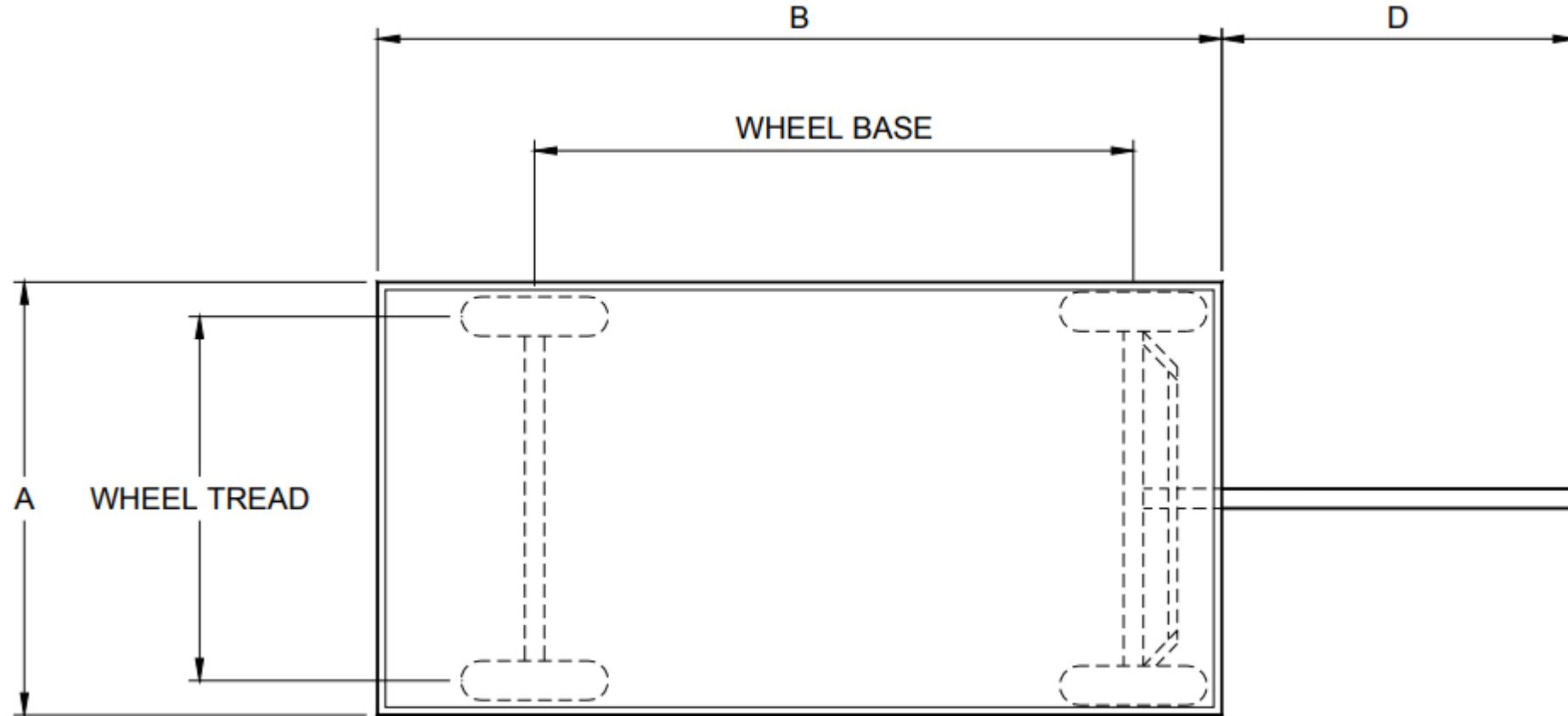
*EXAMPLES:*

# Agricultural Trailer

- trailer designed to carry load for agricultural purposes without power of its own

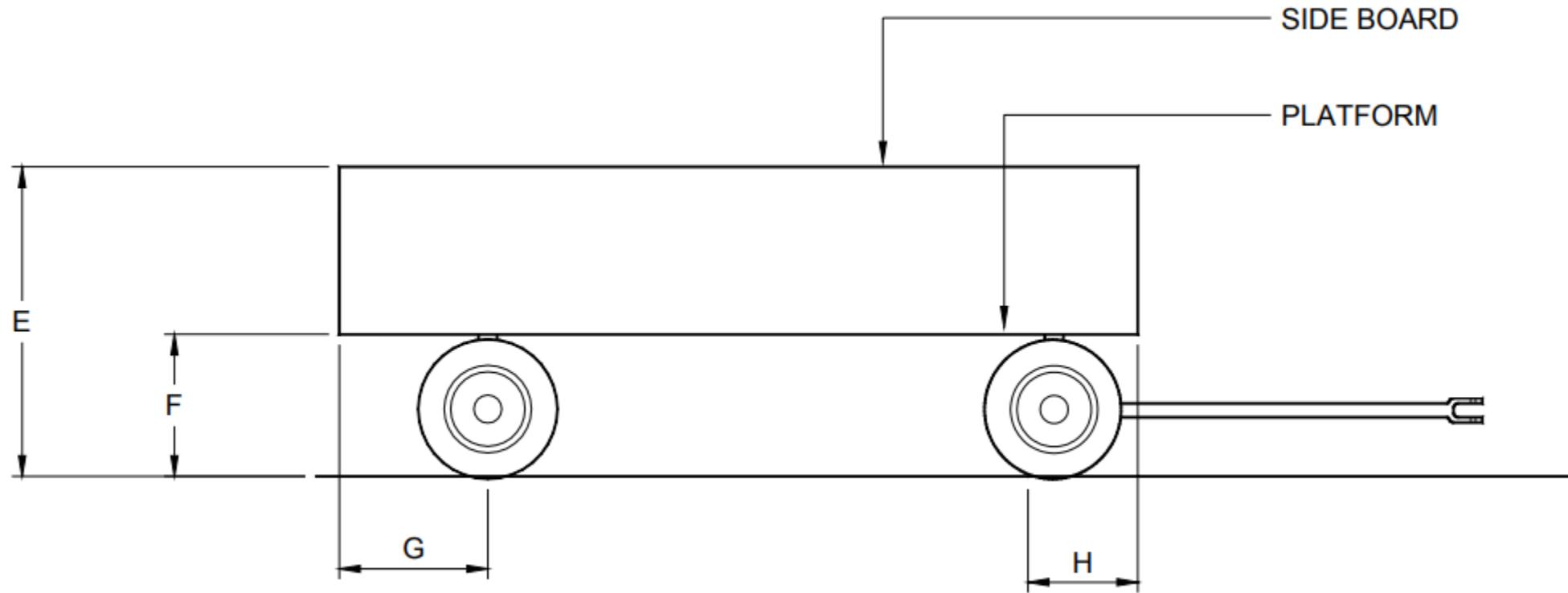


# Balanced Trailer for Four-Wheel Tractor



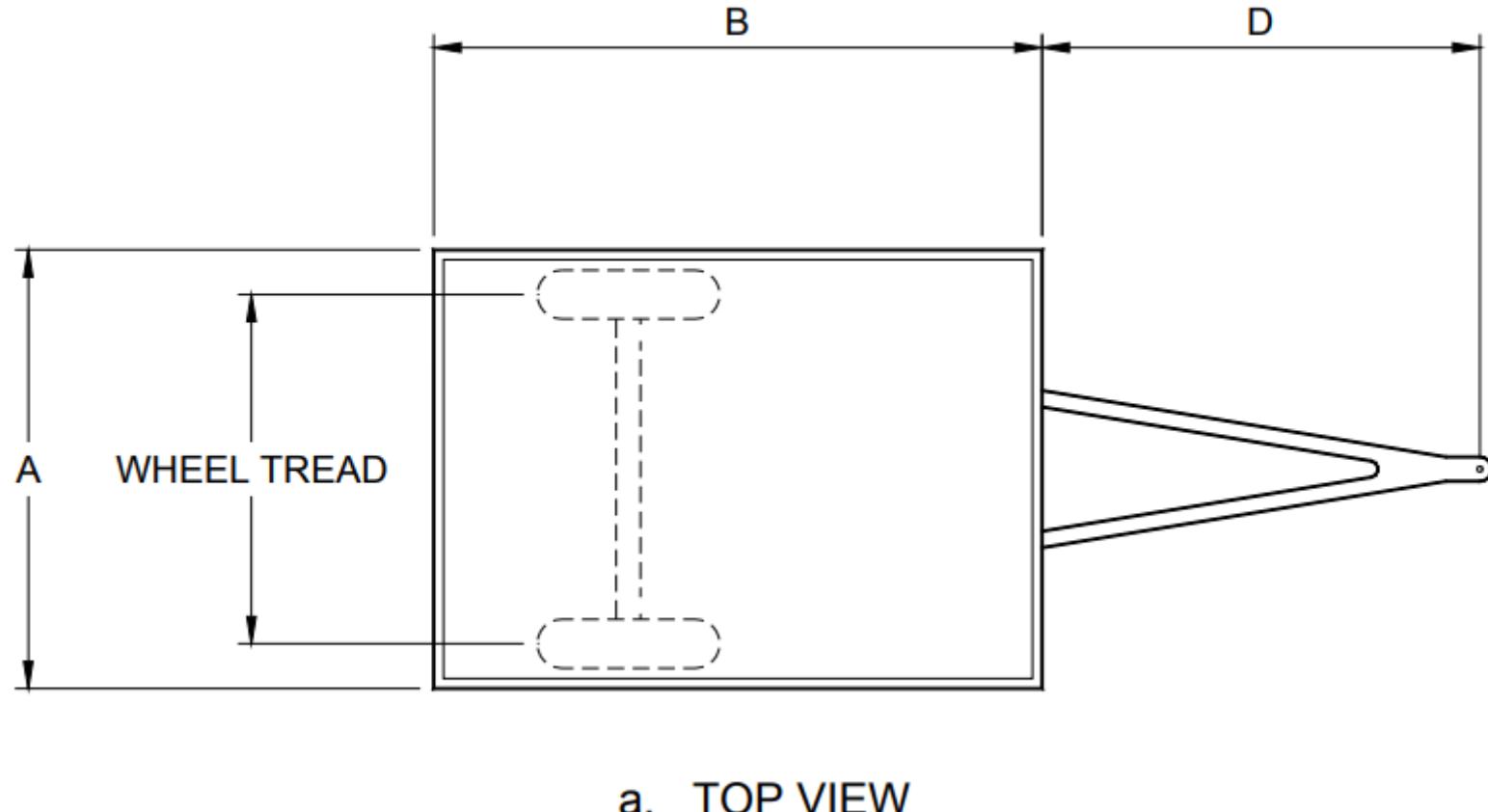
a. TOP VIEW

# Balanced Trailer for Four-Wheel Tractor

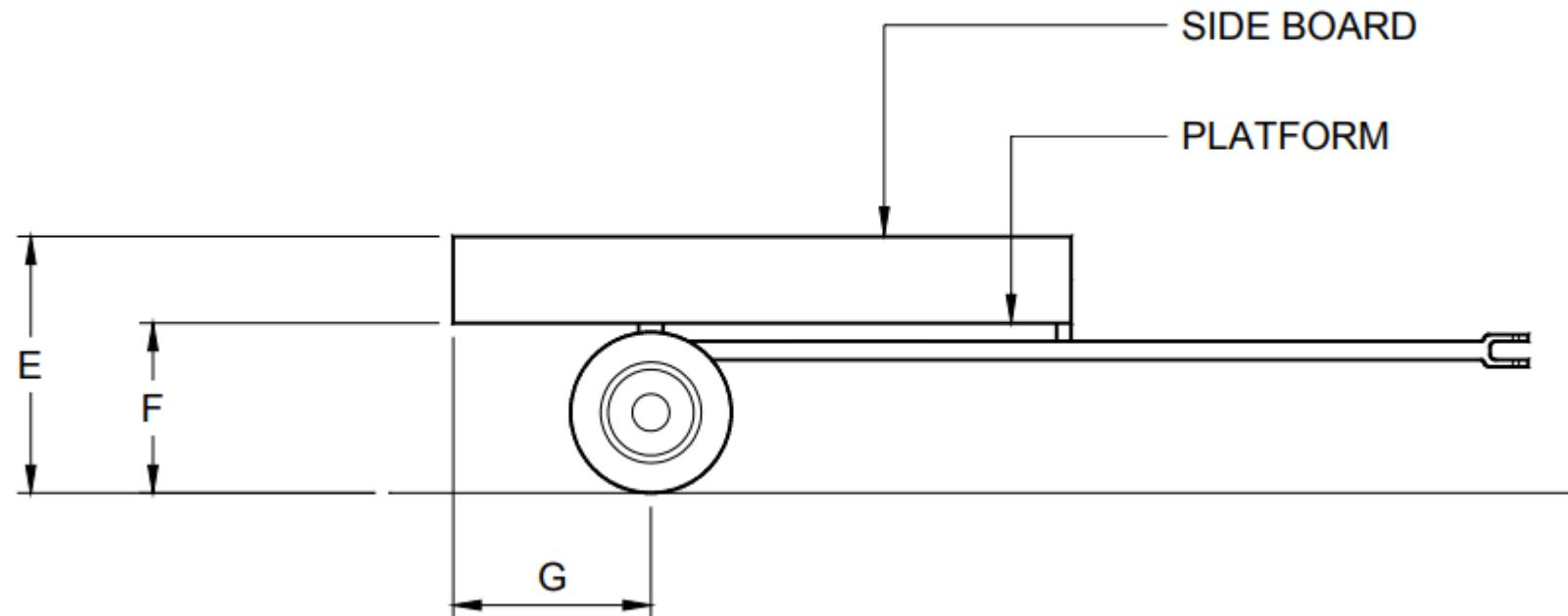


b. SIDE VIEW

# Semi -Trailer for Four-Wheel Tractor

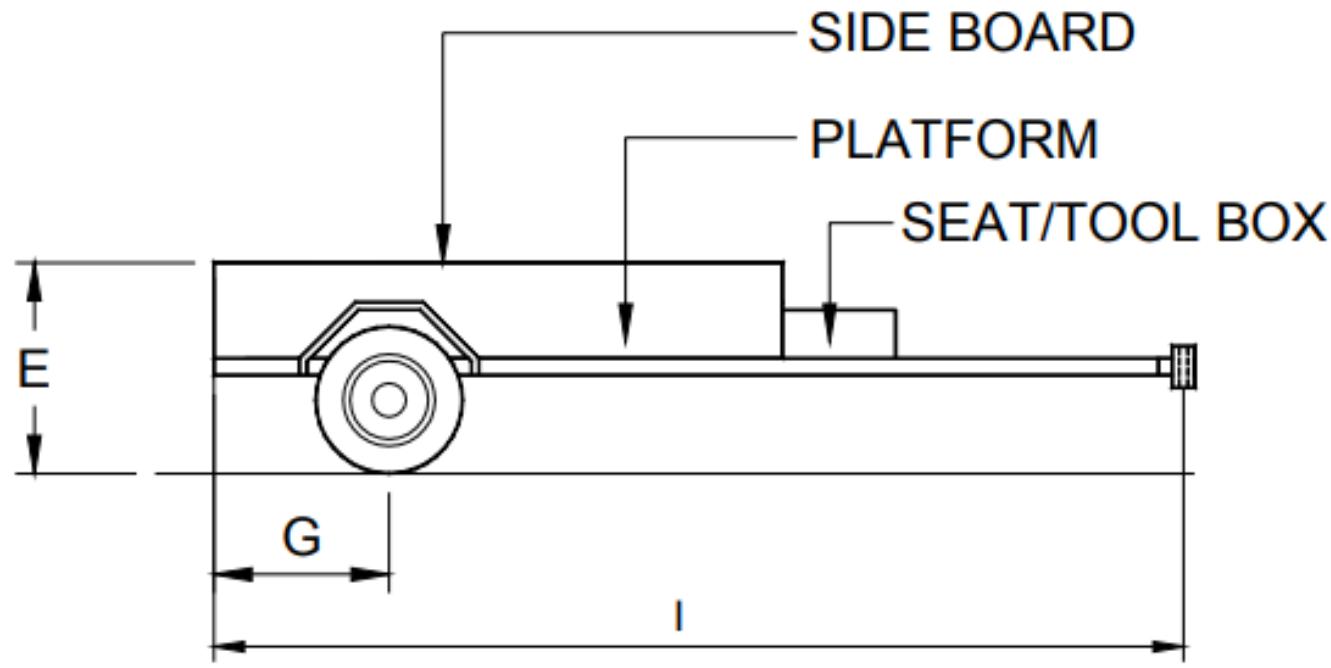


# Semi -Trailer for Four-Wheel Tractor



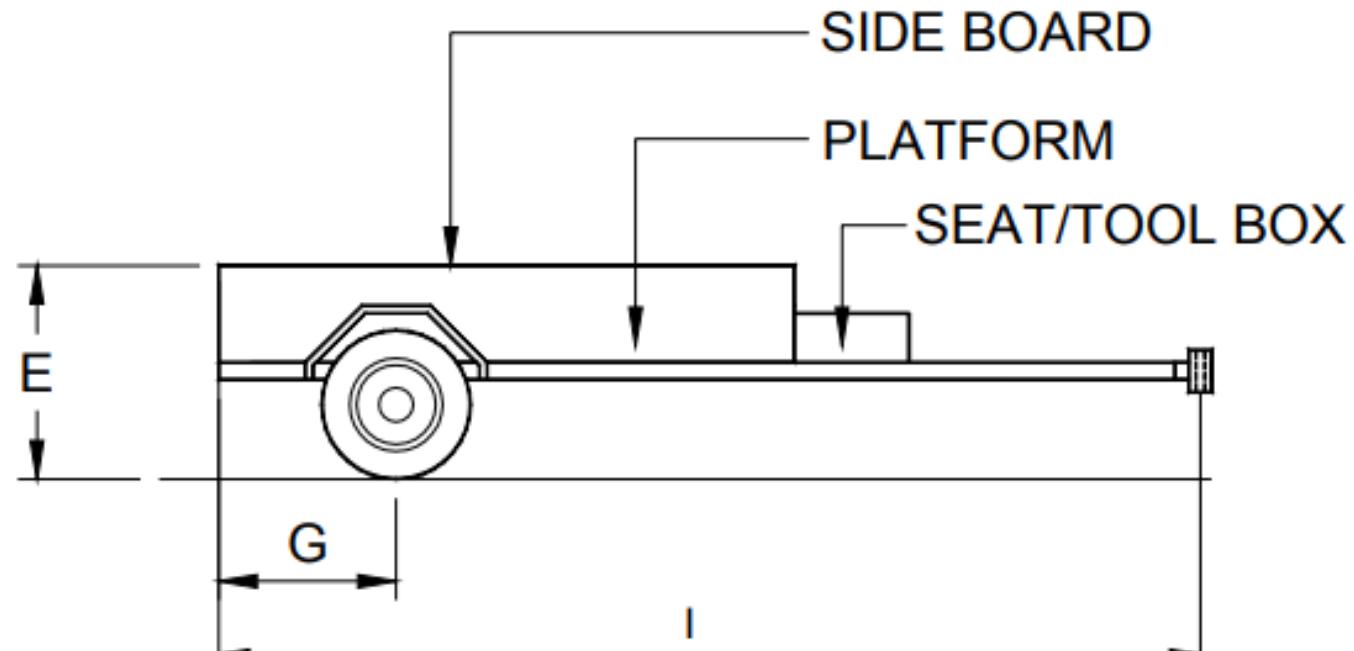
b. SIDE VIEW

# Semi -Trailer for Two-Wheel Tractor



b. SIDE VIEW

# Semi -Trailer for Two-Wheel Tractor



b. SIDE VIEW

*EXAMPLES:*

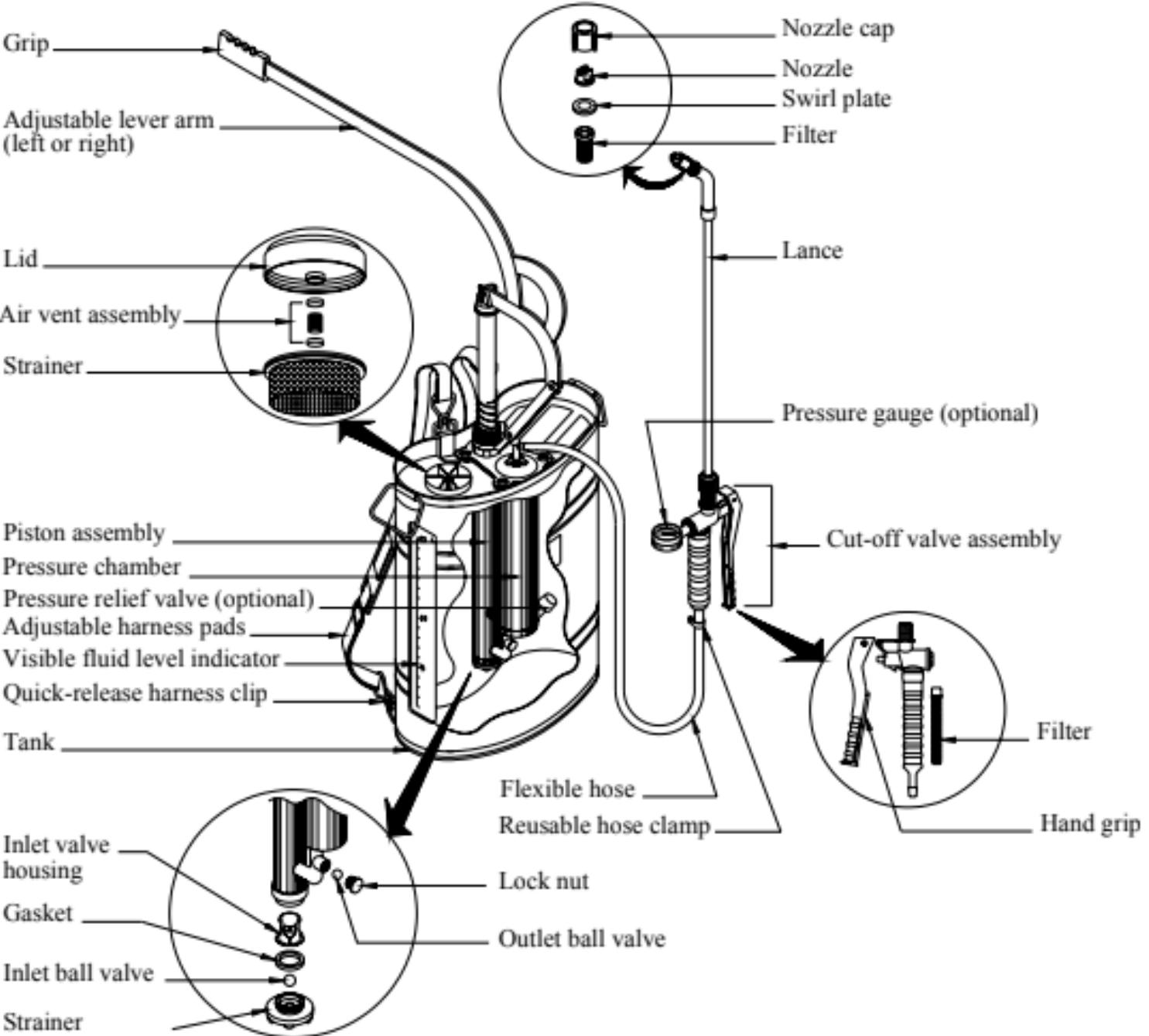
# Lever-operated knapsack sprayer (LOKS)

\* backpack sprayer

- sprayer which is operated manually with a lever and can be carried on the back of an operator for spraying



## A Typical Lever-Operated Knapsack Sprayer (Piston type) with its Components



## EXAMPLES:

# Sprayer

- is a piece of equipment that applies herbicides, pesticides, and fertilizers to agricultural crops.



*EXAMPLES:*

# Broadcast Seeders

- is a tractor implement commonly used for spreading seed, lime or fertilizer.



*EXAMPLES:*

# Manure Spreader

- is an agricultural machine used to distribute manure over a field as a fertilizer.



## EXAMPLES:

# Slurry Tank

- is a trailer with a tank and pump which is used for slurry (combination of manure and water) to fertilize the fields.



*EXAMPLES:*

# Centre Irrigation

- Irrigation is the artificial application of water to the soil usually for assisting in growing crops

