

= Underwire bra =

An underwire bra (also under wire bra , under @-@ wire bra , or underwired bra) is a brassiere that utilizes a thin , semi @-@ circular strip of rigid material fitted inside the brassiere fabric . The wire may be made of metal , plastic , or resin . It is sewn into the bra fabric and under each cup , from the center gore to under the wearer 's armpit . The wire helps to lift , separate , shape , and support a woman 's breasts . Many different brassiere designs incorporate an underwire , including shelf bras , demi bras , nursing bras , and bras built into other articles of clothing , such as tank tops , dresses and swimsuits .

The concept of an underwire can be traced to an 1893 patent that describes a breast supporting device using a rigid plate under the breasts for stability . The modern underwire bra was designed in the 1930s , and gained widespread popularity by the 1950s . As of 2005 , underwire bras were the largest and fastest growing segment of the bra market . A bra without an underwire is a softcup bra .

Underwire bras are occasionally linked to health conditions including breast pain , mastitis , and metal allergies . Women wearing an underwire bra have in a few rare instances been subjected to extra scrutiny when their bra set off metal detectors at security checkpoints in airports or prisons . There have been a few recorded incidents where the underwire deflected a bullet or other weapon that struck the woman 's chest .

= = History = =

The precursor to the underwire bra can be traced back to at least 1893 , when New Yorker Marie Tucek was granted a patent for a " breast supporter " . The breast supporter was described as a modification of the corset , and was very similar to a modern push @-@ up bra designed to support the breasts . It consisted of a plate made of metal , cardboard , or other stiff material , shaped to fit against the torso under the breasts , following the contour of the breasts . It was covered with silk , canvas , or other cloth , which extended above the plate to form a pocket for each breast . The plate curved around the torso and ended near the armpits , held in place and adjusted to a snug fit by shoulder straps that crossed the back , forming an X @-@ shape . It was secured with hook @-@ and @-@ eye closures .

The underwire bra design emerged and took hold in the United States starting in the 1930s . Helene Pons received a patent in 1931 for a brassiere design that incorporated an " open @-@ ended wire loop " that laid flat against the chest , encircling the bottom and sides of each breast . A 1932 patent describes a U @-@ shaped piece of wire used between the cups to keep the breasts separated . A patent issued in 1938 to Pauline Boris describes a " breast support " which used pieces of wire to entirely encircle each breast . In 1940 , Walter Emmett Williams was issued a patent which described a wire framework , shaped like a spiderweb , that encircles and covers each breast to provide support . Although development of the underwire bra started in the 1930s , it did not gain widespread popularity until the 1950s , when the end of World War II freed metal for domestic use .

In the 1940s , Howard Hughes had an underwire push @-@ up bra designed for Jane Russell to emphasize her breasts in *The Outlaw* . According to Russell , the " ridiculous " contraption was painful and she secretly wore her own bra during the movie . The brassiere is now in a Hollywood museum .

With the popularity and widespread use of the underwire bra that started during the 1950s , the underwire was incorporated into many bra designs , and underwire bras were built into other articles of clothing . By 1990 , Norma Kamali had incorporated underwire bras into both one- and two @-@ piece (bikini) swimsuits . Scott Lucretia was granted a patent for a camisole with an integrated underwire bra in 1989 .

Underwire bras accounted for 60 % of the United Kingdom bra market in 2000 and 70 % in 2005 . In 2001 , 500 million bras were sold in the United States , of which approximately 70 % (350 million) were underwire bras . As of 2005 , underwire bras were the fastest growing segment of the market

= = Underwire construction = =

Underwire bras are built with a semi @-@ circular " underwire " , " bra wire " , or " wire " embedded in the wire channel that circles the bottom and sides of each cup . One end , or head element , of the underwire is close to the front and center of the bra , and the other close to the armhole . The underwire can be made of metal or molded plastic ; most are metallic . Plastic underwire has a very small share of the market because it does not provide the same support and rigidity offered by metal underwire . A metallic underwire is a thin strip of metal , usually with a nylon coating at both ends . Metals used include steel and nickel titanium , a shape memory alloy . According to underwire manufacturer S & S Industries of New York , which supplies underwire for bra makers such as Bali , Playtex , Vanity Fair , Victoria 's Secret , Warner 's , and other bra labels , about 70 percent of women who wear bras wear steel underwire bras .

When the underwire breaks through the bra fabric , it can cause tremendous discomfort . Celebrity chef , television personality , and businesswoman Clarissa Dickson Wright only wears a bra on special occasions . At her 50th birthday party , she was dancing when she suddenly felt a " terrifying pain in my chest . " She initially thought she was having a heart attack . " The pain got more and more intense . I staggered off and discovered I 'd broken my underwired bra . "

Because underwire can tear through cloth , most women hand @-@ wash underwire bras or machine @-@ wash them on a delicate cycle . Bra wash bags , usually zippered mesh pouches , can also be used to protect bras and prevent the underwire from separating from the bra during machine washing .

= = Recent patents = = =

In 2002 , S & S Industries obtained a patent for an underwire design that includes a spring @-@ loaded plastic cushion tip on one or both ends . The spring is designed to keep the wire from poking through the bra . In 2008 , Scott Dutton of Wales invented the " Bra Angel " , a simple device to repair a bra when the underwire pops out of its channel . It is a barbed plastic cap that fits onto the end of the underwire , which is then inserted back into the bra and held in place by the barbs .

= = Health = =

Underwire bras can rub and pinch the breast , causing skin irritation and breast pain , and the wire of a worn bra can protrude from the fabric and scrape or cut the skin . When the fabric of worn bra exposes an underwire , skin contact with nickel and other metals may cause contact dermatitis in a few women .

= = Effect on lactation = = =

Underwire bras , like other constrictive garments , may contribute to clogged milk ducts in lactating women . Fluctuating breast size during pregnancy poses another problem . Because underwire bras are rigid , they do not easily accommodate changes in breast size , and an ill @-@ fitting bra that does not support the breasts correctly can cause discomfort and pain . For several days after a mastectomy , or as long as the breast is tender , a woman is advised not to use an underwire bra .

= = Defibrillator use = = =

Use of an automated external defibrillator on a patient in a metal underwire bra can cause burns , and the bra should be removed by the first responder before the AED is applied . In their 2007 season , the television program MythBusters tested the possibility of burns resulting from using a defibrillator on a patient who is using an underwire bra , and concluded that while it is possible , it is

not likely unless the metal underwire is exposed and paddles of the defibrillator are very close to it .

== Tropical disease ==

A medical report documented that wearing an underwire bra in the Tropics , specifically East Africa , can lead to severe furuncular myiasis of the breast caused by the Tumbu fly . The eggs and larvae from this fly are deposited in clothing , especially along the length of the metal wires of an underwire bra , and can only be killed by applying heat through ironing . It is almost impossible when ironing a traditional underwire bra to achieve the required heat to kill the larvae deposited along the underwire .

== Legal issues ==

The United States Transportation Security Administration recommends that women do not wear underwire bras because they can set off metal detectors . Though most women travelers wear them without any problem , it can depend on the material of the underwire .

== Transportation security ==

On Sunday , 24 August 2008 , film maker Nancy Kates set off a metal detector during security screening . She objected when the agent attempted to pat @-@ down her breasts . She said she told the agent , " ' You can 't treat me as a criminal for wearing a bra . " A TSA supervisor told her she had to either submit to the pat @-@ down search in a private room or not fly . Kates offered to take off her bra , which the TSA accepted . She went to the restroom , removed her bra , and walked through the airport and security screening braless . She said that a supervisor told her that underwire bras were the leading cause of metal detector false alarms .

In August 2010 , cancer survivor Cathy Bossi , an on @-@ duty flight attendant for U.S. Airways , was passing through security screening at Charlotte Douglas International Airport on the way to her next flight . Due to the radiation involved , she reluctantly passed through a full @-@ body scanner . " The T.S.A. Agent told me to put my I.D. on my back , " she said . " When I got out of there the agent said because my I.D. was on my back , I had to go to a personal screening area . " During what she described as an " aggressive " pat @-@ down search , security screening personnel forced her to remove and show her prosthetic breast . Their action violated TSA guidelines , which state that agents do not need to touch or inspect a mastectomy prosthetic .

In October , 2010 , CNN employee Rosemary Fitzpatrick was subject to a personal search after her underwire bra set off a metal detector . The TSA security official applied an invasive " hand @-@ sliding inspection " during which she " ran her hands around her breasts , over her stomach , buttocks and her inner thighs , and even touched her most private areas . " Fitzpatrick said that she cried during the experience . " I felt helpless , I felt violated , and I felt humiliated . "

In response , Triumph International , a Swiss company , launched what it called a " Frequent Flyer Bra " in late 2001 . The bra uses metal @-@ free clasps and underwires made of resin instead of metal that are guaranteed to not set off metal detectors . The bras were not available in the United States , and in 2004 a Canadian spokeswoman did not know whether they were still manufactured .

== Correctional facility rules ==

Some correctional facilities , like San Quentin State Prison , require visitors to either cut their bras and remove the underwire , or temporarily use a soft cup bra provided by the institution before being granted entry . The result can be embarrassment and consternation for unsuspecting visitors . Other facilities require women to remove their underwire bras in a bathroom , pass through the metal detector , and return to the bathroom to put their bras back on .

In June 2010 , attorney Britney Horstman was barred from visiting her client in the Federal Detention Center at Miami , Florida when her underwire bra set off the metal detector . Although she

reminded guards of a detention center memo that permitted female attorneys visiting clients to wear an underwire bra , the guard refused her entry . That memo existed as a result of an agreement negotiated by the Federal Public Defender 's Office , which represents inmates held at the institution before trial . That agreement allows female lawyers entry if her underwire bra is detected by a metal @-@ detecting wand . Horstman removed her bra in a bathroom and returned to the security checkpoint braless , but was then turned away because she did not meet the facility 's dress code . Horstman had previously worn an underwire bra into the facility without problems . Warden Linda McGrew later promised the incident would not happen again .

= = Accidents and attacks = =

There have been several cases where the underwire from a bra has helped deflect bullets or other objects , saving the wearer 's life . In 1996 , the underwire of a girl 's bra helped save her life when she was impaled on a railing and , according to hospital personnel , the underwire from her bra probably helped deflect the spike from her heart . There have been multiple incidents where bullets were deflected by the underwire of a woman 's bra , either keeping her entirely from harm , or directing the bullet away from the heart to another part of the body . One such incident occurred in 2004 when a stray bullet shot by a member of the Ghetto Boys hit the narrow metal wire in Helen Kelly 's bra and was deflected away from her heart . In 2008 , a robbery victim was saved from being stabbed in the chest when the attacker 's knife was caught and deflected by the underwire of her bra .