

May 30, 1944.

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2,350,207

DEVICE FOR HANDLING INCENDIARY BOMBS

Filed March 18, 1942

Fig. 1.

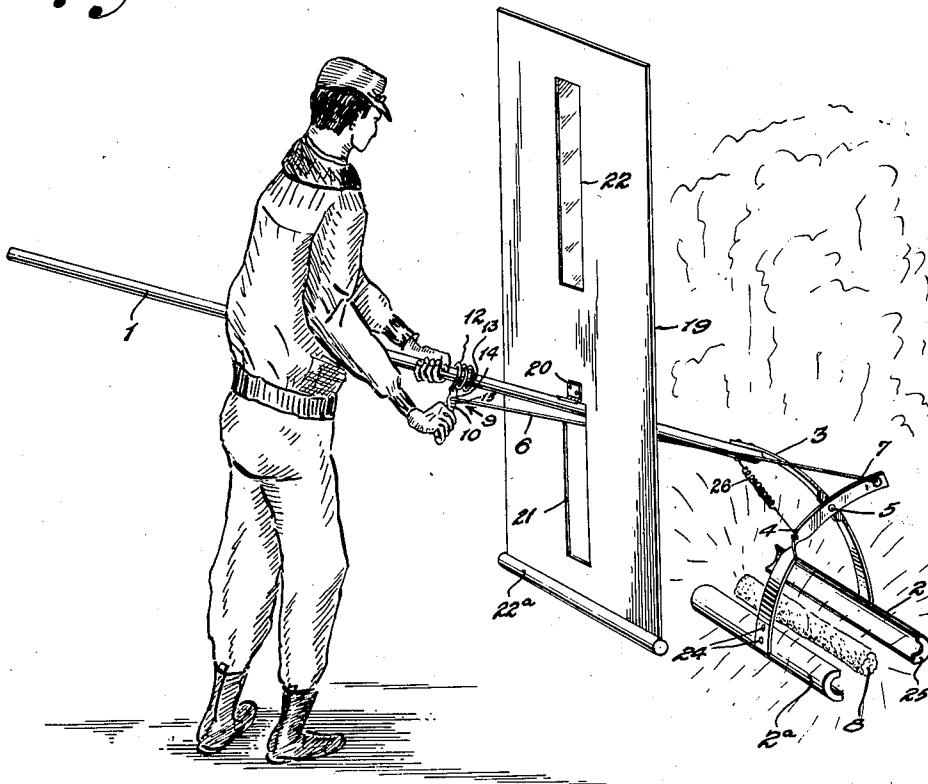


Fig. 2.

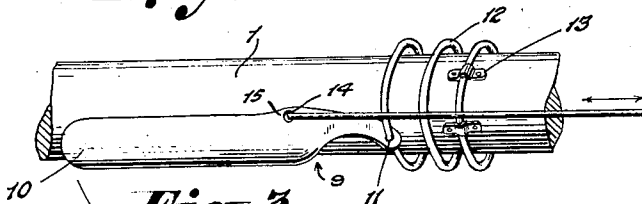


Fig. 3.

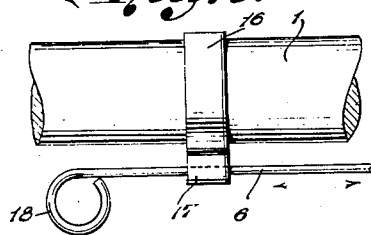
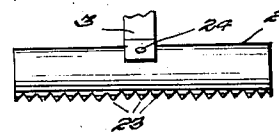


Fig. 4.



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2,350,207

DEVICE FOR HANDLING INCENDIARY BOMBS

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Application March 18, 1942, Serial No. 435,228

3 Claims. (Cl. 294—104)

This invention relates to device for handling incendiary bombs; and it comprises a grapple device having a handle adapted to be grasped by an operator like the handle of a hoe, a jaw member of arcuate shape mounted in fixed position on the end of the handle in substantially the position of a hoe on a handle, said jaw member being secured to the handle by means of a supporting member, a second jaw member of similar shape mounted on a second supporting member, said supporting members being crossed and attached by a pivot in such manner that said second jaw member can be moved into and out of engagement with said first jaw member, said jaw members, when closed, forming a chamber of substantially the shape and size of the bomb, and means for operating said moveable jaw member mounted on said handle and adapted to be operated by the operator's hand; said device being usually provided with a protective screen mounted on said handle between the operator and the bomb; all as more fully herein-after set forth and as claimed.

Various methods have been proposed for handling the so-called incendiary bombs. In most of these methods the bomb is left in any position in which it may happen to fall and is left to burn itself out without disturbance of its position, although water or sand may be applied in the attempt to smother the bomb and to reduce the amount of damage done. Most of the directions, used in civilian defense, instruct householders to leave the bombs strictly alone for two minutes in order to be certain that they are not of the explosive variety. It is then recommended to spray the bombs with water or to throw sand on them. It is obvious, of course, that if a bomb should land on a combustible attic floor and should be left alone for two minutes, it would then be much too late to do anything effective. And if the bomb is left on the floor to burn itself out, it is bound to burn its way through the floor and to set fire wherever it touches. These directions therefore appear to suggest measures which are anything but effective.

I have found that incendiary bombs can be picked up and disposed of effectively by means of a relatively simple tool which can be made cheaply. This tool provides protection to the user and hence it is possible to handle even explosive bombs without great danger. The bombs may be thrown out of a window or placed in some other safe place of disposal where they can do no damage. And then the householder is free to cope with the fire which has been

started without further danger of explosion and without the danger that the fire will be promoted faster than it can be smothered.

My tool for handling incendiary bombs is constructed with a handle which may be from 6 to 8 feet long but is preferably not over 6 feet in length in order that the tool may be readily carried up and down winding stairways. A pair of congruent, arcuate shoes or jaw members are mounted at the end of the handle. These jaw members can be made from a short piece of iron pipe, for example, having a length of about 12 to 14 inches and a diameter of from 2 to 3 inches. This pipe is split in half lengthwise to form the two jaw members. One of these jaw members is secured in fixed position to the end of the handle by means of a strip or bar of metal, in much the same position as a hoe or rake is secured to its handle. It is important that the forward jaw be secured in this manner, since it can then be used, much like a hoe, to scrape up any bomb fragments or to dig the bomb out of the floor, if it has imbedded itself. Teeth may be provided on this forward jaw, if desired, to assist in any digging operation which may be required. The second shoe is fastened to a second strip of metal and this strip crosses the first strip and is pivoted thereto in such position that the two halves of the pipe fit closely when closed together. The shoes, when closed, thus form a cylindrical chamber which is open at both ends. It is advantageous, although not essential, to have the openings at the two ends of the chamber constricted, which can be accomplished by upsetting the ends of the pipe from which the shoes are made, by welding an inner annular flange at the two ends or, if the shoes are formed by a casting operation, these flanges can be produced during casting. The moveable jaw is operated by a wire which is attached to the said second strip at a point beyond the pivot, the wire being extended up the handle and provided with a loop or other means by which the moveable shoe can be operated. A spring may be provided which tends to hold the shoes apart until the wire is pulled or a spring or springs may be provided to hold the shoes in closed position when closed and in open position when opened.

A shield is advantageously provided on the handle of my tool at a point between the bomb and the operator. This shield serves to protect the operator when he is approaching the bomb, and, of course, after the jaws are closed over the bomb, protection is afforded by the jaws with

the exception of fragments which may be thrown out from the ends of the chamber. Any fragments thrown sideways in this manner will not strike the operator. Since the jaws, when open, have a total surface with dimensions of about 12 by 5 inches, some protection is afforded to the operator if the jaws are held between him and the bomb as he is approaching the bomb. For this reason it is sometimes feasible to remove the screen from the handle of the device, especially if the operator is reasonably certain that the bomb is not explosive. The shield is advantageously hinged to the handle and so-weighted that it tends to assume a vertical position. When mounted in this manner the screen does not interfere with the introduction of the device underneath a bed or other obstruction. And the screen closes out of the way against the handle when the device is rested against a wall or placed in a closet, for example. This shield may be made of any suitable material. Plywood may be used, provided that it is fireproofed by soaking in ammonium sulfate or sodium silicate solution, for example. It is also possible to use asbestos board, although this is rather heavy. It is desirable to provide the screen with a window through which the operator can see the bomb, the window being of colored glass or plastic, if desired. The light given off by incendiary bombs is blinding; hence a colored window will protect the eyes of the operator.

My invention can be described in somewhat greater detail by reference to the accompanying drawing in which the figures show, more or less diagrammatically, a preferred embodiment of the invention and several possible modifications thereof. In this showing,

Fig. 1 is a perspective view of my bomb handling device in actual use,

Fig. 2 is an enlarged side view of a lever mechanism which may be used for opening and closing the gripping jaws of the device,

Fig. 3 is a similar view showing a modified mechanism for the same purpose, while

Fig. 4 is a bottom view of a modified gripping jaw which can be employed.

In the various figures like parts are designated by like reference numerals. The handle 1 of my bomb handling device may be made either of wood or metal. Since the gripping jaws 2 and 2a are usually of rather heavy iron or steel, it is advantageous that the handle be made as light as possible in order to reduce the over-all weight of the device. Jaw 2 is secured in fixed position at the end of the handle by a metal strip or bar 3, while jaw 2a is mounted on a similar strip 4, which is pivoted to strip 3 at 5. The two jaws with their supports, therefore, form in effect a grapple operated by the wire 6, attached at 7 to the forward end of strip 4. This wire, when pulled towards the operator, serves to close the jaws together, thereby picking up and enclosing the bomb 8.

The two jaws 2 and 2a are advantageously of such size and shape as to hold an incendiary bomb loosely when closed about it. The two ends of the cylindrical bomb chamber thus formed are open, of course, which prevents an undue confinement of the bomb, which might result in an explosion. It is advantageous, however, to restrict the openings somewhat at the ends, as shown at 25, in order to prevent any molten metal from flowing out of the chamber as well as to prevent the bomb from sliding out. As stated previously the jaws can be made from

ordinary steel or iron pipe, for example, by slitting it lengthwise. The jaws are preferably mounted replaceably on the bars 4 and 5, for example by means of bolts 24.

If desired, a lever mechanism, shown generally at 9, may be used to operate the moveable jaw of my device. This lever mechanism is shown in greater detail in Fig. 2 and is designed to have a spring action. This is accomplished by the use of a scoop-shaped handle 10, which fits partly around the handle, the forward end 11 of which is pivotally secured to a spring 12 coiled around the handle. The forward end of the spring is fastened at 13 to the handle. The wire 6 is pivotally attached at 14 to a projection 15 integral with handle 10. It will be noted that, when the handle is closed around the handle 1, as in Fig. 2, the point 14 at which the wire is attached is above the pivot point 11 of the handle. When the handle is closed, therefore, the action of the spring tends to make it stay closed and when it is open the same action tends to make it stay open.

In a simpler modification of my device the lever mechanism 9 may be replaced by the arrangement shown in Fig. 3. In this modification a band 16 is clamped around the handle, this band being provided with a loop 17 through which the wire 6 passes, this loop forming a slide bearing for the wire. At the end of the wire a finger loop 18 is provided. Since the force necessary to operate the moveable shoe 2a is small, this can be done by means of a single finger inserted in the loop 18.

It is usually advantageous to provide my device with a shield, especially in those cases in which it is suspected that the bomb may be explosive. Such a shield is shown at 19, mounted on the handle 6 approximately midway between the operator and the jaws. This shield may be fastened to the handle by means of a hinge 20. The shield is cut away at 21 below the handle in order that it can be folded against the handle when the device is to be used under an obstruction or when it is resting against a wall, for example. In order to keep the shield in vertical position when in use, it is desirable that its lower end be weighted, as at 22a, for example. It is also desirable to provide a window 22 in the shield, of colored glass or plastic, for example. This serves to protect the eyes of the operator from the glare of the bomb, as well as from the actinic light evolved.

In Fig. 4 a modified gripping jaw is shown which is provided with teeth 23. The cooperating jaw is preferably provided with congruent teeth. The jaws are mounted in such fashion that the teeth overlap forming a relatively tight chamber to prevent molten metal from flowing out between the jaws. The teeth in the forward jaw are useful in case the bomb has burned a depression in the floor, for example. In this case the forward jaw can be used, much like a rake, to dig the bomb out of the depression before it is picked up and carried to a place of disposal.

My bomb handling device is operated in a very simple manner. It must be used promptly after the bomb has fallen on a roof or floor, for example, since if the bomb has burned through a floor but has not yet burned through the ceiling beneath the floor, it cannot be reached until it drops through on to the floor below. If the bomb has merely burned a depression in the floor or roof, it is usually possible to dig it out so that it can be picked up, especially if the forward shoe

is provided with teeth for this purpose. If the bomb is resting on a substantially flat surface or if it can be rolled on to such a surface, it can be picked up rather cleanly by my device. Owing to the high heat capacity of the gripping shoes, it is possible even to pick up molten metal which may have come from the thermit which is usually present in incendiary bombs. If the shoes are contacted with such molten metal the metal will quickly congeal and will usually stick to the shoes, while any part of the bomb which is in the form of a magma will also cling to the shoes and therefore can be readily picked up. It is, of course, highly important that the bomb be removed cleanly and this desirable result can be accomplished by my device.

The first thing to be done, when an incendiary bomb must be handled is to determine a safe place to put the bomb where it can do no further damage. This point of disposal must be close by, since it is impossible to carry the bomb with my device for more than 10 to 15 seconds, since such bombs will burn through $\frac{1}{8}$ inch of metal in that length of time. If a window is available, from which the bomb can be dropped to the ground, this should be quickly opened or a pane of glass can be broken out by means of my device. It is also possible to provide a bucket or pile of ashes or sand in which the bomb can be placed. When the place of disposal is determined upon, the bomb must then be picked up with my device and carried to this place as quickly as possible.

The best procedure to be used to pick up a bomb, which is resting on a relatively flat surface, is to open the jaws widely and then to place the forward jaw on the far side of the bomb. The operator should then pull the handle towards himself while simultaneously pulling on the wire or lever mechanism. This motion serves to close the jaws tightly around the bomb while lifting the bomb cleanly from the surface. After being gripped in this manner, the bomb should be quickly carried to the predetermined point of disposal. The bomb can usually be released merely by opening the jaws although in some cases it is necessary to jar it loose. This can be accomplished by clapping the jaws together and then quickly opening them. After the bomb is disposed of in this manner, the fire produced by the bomb can then be fought without further interference or danger from the bomb.

While I have described what I consider to be the most advantageous modifications of my bomb handling device, it is evident, of course, that many modifications can be made in the specific structures described without departing from the purview of this invention. The various parts of my device may be made from any suitable materials. The shoes or jaw members must be made, of course, of fire resistant material. While asbestos board can be used this is somewhat brittle and, while alloy steels are more resistant than ordinary iron or steel, the latter materials are in general to be preferred owing to their low cost. The jaws and metal strips which hold them can be cast in one piece, if desired, but it is usually advantageous to have the jaws replaceable, since they do not last long. Unless the bombs are handled in a minimum of time, they will partly melt the jaws or the molten iron from the thermit may build up on them. In either case the jaws may be ruined for subsequent operations.

The handle of my device may be made of metal

or wood. Wood is suitable, since the heat from the bomb does not have sufficient time to be conducted through the jaws and iron strips before it is disposed of. The handle is, of course, protected from the direct heat of the bomb when the latter is enclosed in the jaws. If made of metal the handle may be hollow and, of course, in this case the operating wire may pass through the handle. The wire may pass along the top of the handle or beneath it. The size and shape of the jaws may be adapted to the size and shape of the bombs. While the present incendiary bombs are about 12 inches long and 2 inches in diameter, there is no assurance that these dimensions will be maintained. But it is evident that jaws of different size and shape may be supplied. While it is generally best to have the jaws somewhat larger than the bombs in order to prevent pressure being directly applied to the latter, it is also possible to provide jaws which fit the bombs closely. But for bombs which are two inches in diameter, I prefer to use jaws forming a chamber having an internal diameter of about $2\frac{1}{2}$ inches. If desired, a special spring may be provided to hold the jaws normally in open position as shown at 26 in Fig. 1. Other modifications which fall within the scope of the following claims will be immediately obvious to those skilled in this art.

What I claim is:

1. A device for handling incendiary bombs which comprises a handle adapted to be grasped by an operator like the handle of a hoe, an elongated jaw member of heat-resistant material and of arcuate cross section mounted in fixed position at the end of said handle, in substantially the position of the usual hoe on a handle, a moveable cooperating jaw member of similar shape pivotally mounted in such manner that the two jaw members form a grapple having a substantially cylindrical chamber, said jaw members being adapted to pick up and hold an incendiary bomb, operating means connected to said moveable jaw member for opening and closing said members and a protecting shield mounted on said handle between said jaw members and said operating means, said shield being at least partly transparent to enable the operator to see the bomb.

2. The bomb handling device of claim 1, wherein said shield is hinged on said handle and weighted at the bottom, whereby it tends to remain in vertical position.

3. A device for handling incendiary bombs which comprises in combination a handle adapted to be grasped by an operator like the handle of a hoe, a jaw supporting member and a jaw member of arcuate shape mounted in fixed position on the end of said handle by means of said supporting member in substantially the position of a hoe on a handle, a second jaw supporting member and a second jaw member of similar shape mounted on said second supporting member, said supporting members being crossed and pivotally attached in such manner that said second jaw member can be moved into and out of engagement with said first jaw member, said jaw members, when closed, forming a chamber of substantially the size and shape of a bomb, and operating means mounted on said handle and attached to the moveable supporting member for opening and closing said jaw members, said operating means including a spring tending to hold said jaw members open when in open position and closed when in closed position.

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