June 29, 1943. E. L. ALLEN ET AL 2,322,810

EXTRACTING AND PROTECTING DEVICE FOR CARTRIDGES OR SHELLS

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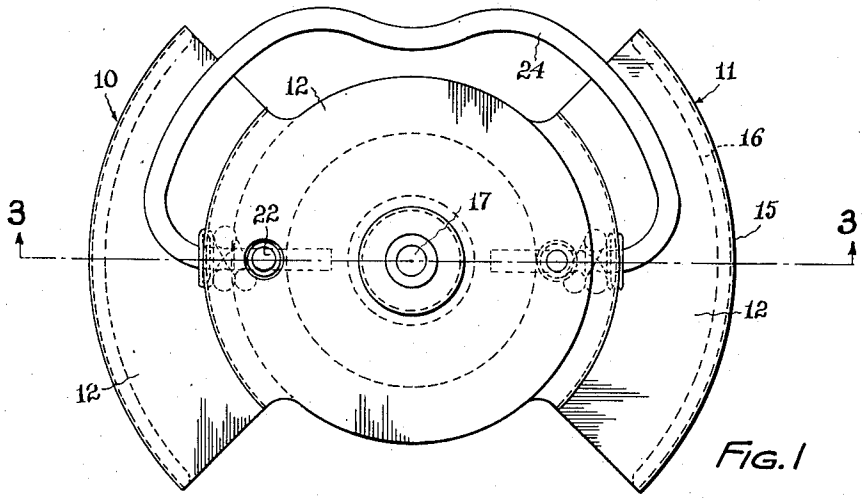



FIG. 1

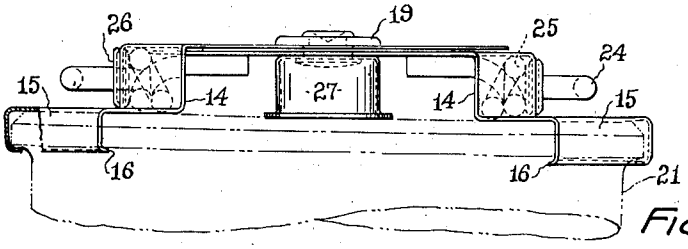



FIG. 2

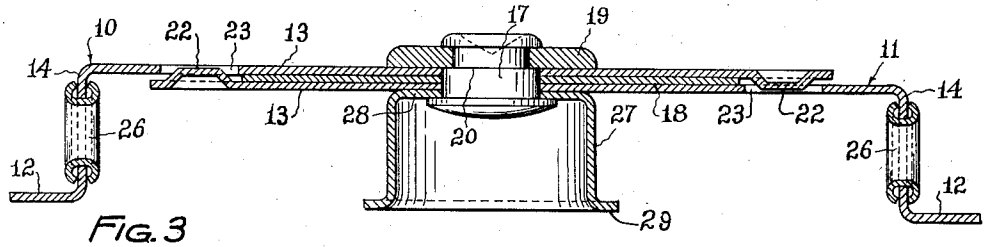



FIG. 3

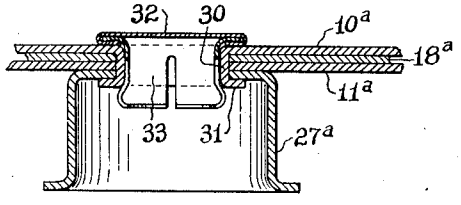



FIG. 4

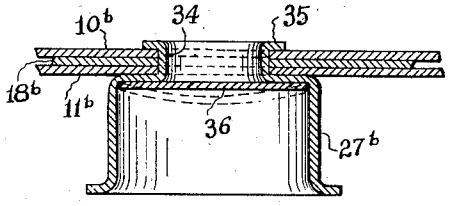



FIG. 5

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## EXTRACTING AND PROTECTING DEVICE FOR CARTRIDGES OR SHELLS

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16 Claims. (Cl. 294—31)

This invention relates to extracting and protecting devices for cartridges or shells and more particularly, to devices which protect the primers of such cartridges or shells and which enable the cartridges or shells to be readily extracted or withdrawn from their enclosing cases or containers.

The present invention has for its principal object the provision of a cartridge or shell extracting and protecting device which is of simple and inexpensive form, of light weight and sturdy construction, and which can be easily, quickly and conveniently attached to and detached from the flanged end of a cartridge or shell.

A further object of the present invention is the provision of a cartridge or shell extracting and protecting device which is made, in its entirety or substantially so, of sheet material by simple stamping, pressing or forming operations.

A further object of the present invention is the provision of a cartridge or shell extracting and protecting device having a pair of pivotally connected sheet metal members for detachable connection to a cartridge or shell, and a sheet metal cup-like member for covering and protecting the primer of said cartridge or shell, the three sheet metal members being maintained in assembly by a single means, the means being integral with one of said members, if desired.

Further objects of the present invention, and many of its practical advantages, will be evident from the following description of three embodiments thereof, reference being had to the accompanying drawing, in which

Fig. 1 is a top plan view of a cartridge or shell extracting and protecting device embodying one form of the present invention;

Fig. 2 is a side elevational view thereof, the flanged end of a cartridge or shell to which said device is releasably attached being indicated in dot-dash lines;

Fig. 3 is an enlarged vertical sectional view of the central portion of the extracting and protecting device of Figs. 1 and 2, the view being on the line 3—3, Fig. 1, and the handle cord being omitted;

Fig. 4 is a view similar to Fig. 3, but showing a somewhat modified form of extracting and protecting device embodying the present invention; and

Fig. 5 is a view similar to Fig. 4 but showing another modified form of extracting and protecting device embodying the invention here involved.

Before the present invention is described in detail, it is to be understood that such invention is not limited to the details of construction or the specific arrangement of parts herein illustrated or described, as the invention obviously may take other forms. It also is to be understood that the phraseology or terminology herein employed is for the purpose of description and not of limitation, the scope of the present invention being indicated by the appended claims.

Briefly stated, the cartridge or shell extracting and protecting device here involved, for the protection of the cartridge or shell primer and for enabling the cartridge or shell to be readily extracted or withdrawn from its enclosing case or container, comprises (*a*) a pair of pivotally connected sheet metal members capable of being easily, quickly and conveniently attached to and detached from the flanged end of a cartridge or shell; (*b*) a cup-like sheet metal member for covering and protecting the primer of the cartridge or shell, said cup-like member being maintained in assembly with the pivotally connected members by the means by which they are so connected; and (*c*) a handle in the form of a flexible cord or the like suitably secured to the two pivotally connected members.

Referring first to the cartridge or shell extracting and protecting device of Figs. 1 to 3 inclusive, the reference numerals **10** and **11** designate the two pivotally connected sheet metal members, said members preferably being made of sheet steel, cadmium or zinc plated, if desired, and differing structurally only as to the parts with which they are provided for the purpose of enabling said members to be releasably interlocked in a predetermined angular relationship, as will hereinafter appear. As here shown, each of said sheet metal members comprises a substantially flat section **12** of more or less segmental shape and an upwardly offset substantially flat section **13** of generally circular contour, the two sections being joined by a vertically disposed, arcuately shaped wall portion **14**. At its outer end, section **12** is provided with a depending, arcuately shaped flange **15** terminating in a relatively narrow inturned retaining edge portion **16**, as best shown in Fig. 2.

These two sheet metal members **10** and **11** are pivotally connected with their generally circular top sections **13** in superposed relation, the pivotal connection of said members being effected, in this embodiment of the invention, by the use of a pivot pin **17** extending through aligned or registering openings with which the sections **13** are centrally provided. If desired, a spacing shim or washer **18**, preferably made of bronze, brass or

other sheet material of good bearing and wear-resisting qualities, may be and here is interposed between the sections 13 of the members 10 and 11, said shim or washer having a suitable opening for the reception of the pivot pin 17. Also, if desired, a washer 19 of bronze, brass or other sheet material of good bearing and wear-resisting qualities, may be interposed between section 13 of the uppermost member 10 and the out-turned or peaned over upper end of the pivot pin 17, said pin having an annular shoulder 20 (formed by reducing the diameter of its upper shank portion) on which the washer 19 seats, as best shown in Fig. 3.

Due to their pivotal connection, the two sheet metal members 10 and 11 are angularly movable about the pin 17 which constitutes their pivot, and by bringing the outer end portions of said members together at one side of said pivot, sufficient space is provided at the opposite side thereof to permit the members 10 and 11 to be slipped upon the outwardly flanged end of a cartridge or shell, such as the one fragmentarily shown in dot-dash lines in Fig. 2 and designated by the reference numeral 21. Thereafter, by angular movement of one or both of the members 10 and 11, a straight line or fully extended relationship thereof can be readily established, which positions the outer end portions of said members on opposite sides of the cartridge or shell, as will be readily understood.

As indicated in Fig. 2, the inturned edge portions 16 of the depending flanges 15 at the outer ends of members 10 and 11 extend inwardly beneath the out-turned annular end flange of the cartridge or shell 21 and thus effect a detachable connection of said members to said shell, the flanges 15 of said members and the inturned edge portions 16 of said flanges being of sufficient arcuate extent to make the attachment a secure one.

Preferably, and as here shown, the two pivotally connected sheet metal members 10 and 11 are provided with suitable means by which they may be releasably interlocked in their straight line or fully extended relationship, the relationship in which they are shown in the accompanying drawing. The interlocking means here utilized comprises one or more projections and a corresponding number of depressions or apertures for their releasable retention. As here shown, the generally circular section 13 of each of the two pivotally connected members 10 and 11 is provided, outside the area lapped by the shim or washer 18, with both a projection 22 and an aperture 23, the aperture of each such member being adapted to receive the projection of the other, as clearly shown in Fig. 3. Upon the movement of the two pivotally connected members into their straight line or fully extended relationship, the projection 22 of each such member snaps into the projection 23 of the other member. Although the interlock thus provided is adequate to retain them in their straight line or fully extended relationship, relative angular movement of said members from their interlocked position can be readily effected, when desired, as will be readily understood.

To enable the present device when releasably connected to the flanged end of the cartridge or shell 21 to be used as a means for readily extracting or withdrawing said cartridge or shell from its enclosing case or container (not shown), said device includes suitable handle means. As here shown, the handle of the device is in the form of a simple flexible cord 24, the end portions of which extend through a pair of apertures in the wall portions 14 of members 10 and 11 and are provided, inside of such wall portions, with suitable knots 25 or the like which prevent the escape of the cord end portions. Mounted within each of the apertures of the wall portions 14 is a sheet metal bushing or eyelet 26 through which the cord 24 extends, said bushings or eyelets being secured in the usual manner in said apertures and constituting effective protection and bearings for the cord, as will be readily understood.

For covering and protecting the upwardly projecting, centrally disposed primer (not shown) of the cartridge or shell 21, the two pivotally connected members 10 and 11 have associated therewith a cup-shaped sheet metal member 27, the base portion 28 of which is suitably apertured for the extension therethrough of the pivot pin 17. Said cup-shaped member is thus maintained in assembly with members 10 and 11 by the means by which such members are pivotally connected.

As will be evident from Fig. 3, the shank of the pivot pin 17 is inserted upwardly through the aligned or registering apertures in the base portion 28 of the cup-shaped member 27 and the generally circular sections 13 of members 10 and 11, the head of said pin being in contact with the bottom surface of said base portion 28 and the upset or peaned over upper end of the pin shank being in contact with the top surface of the washer 19. The provision of the annular shoulder 20 of the pivot pin 17, in approximately the plane of the upper surface of section 13 of the uppermost member 10 and upon which shoulder the washer 19 seats, protects the two pivotally connected members 10 and 11 from any binding effect which might otherwise result from the upsetting operation, the lower and larger portion of the pin shank serving as a spacer gauge for this purpose. The two pivotally connected members 10 and 11 are thus easily turned about the pin 17 which constitutes their pivot, as will be readily understood. As will be evident from Fig. 3, the out-turned rim flange 29 of the cup-shaped member 27 lies in the same plane as the segmental sections 12 of the members 10 and 11 and like such sections, therefore, seats on the top surface of the cartridge or shell 21, the primer of said cartridge or shell being covered by member 27 in a manner which insures its protection.

From the foregoing description of the cartridge or shell extracting and protecting device of Figs. 1 to 3 inclusive, it will be evident that such device is well adapted for its intended functions, namely, the protection of the primer (or percussion cap) of a cartridge or shell and the extraction or withdrawal of said cartridge or shell from its case or container. It also will be evident that said device is of simplified form, of light weight and of sturdy character. Moreover, said cap structure requires for its formation but little metal which is now regarded as strategic. If desired, of course, even the washers 18 and 19 may be made of material which is now readily available or such parts may be omitted altogether.

Referring now to Fig. 4, wherein a modified form of cartridge or shell extracting and protecting device is shown, it will be noted that the two pivotally connected sheet metal members 10*a* and 11*a*, the sheet metal shim or washer 18*a* therebetween, and the primer-protecting sheet metal cup-shaped member 27*a* are maintained in as-

sembly by a depending annular flange 30 with which the generally circular section of the uppermost member 10a is integrally provided. As shown, said flange extends downwardly through the aligned or registering apertures in the generally circular section of member 11a, the shim or washer 18a and the base portion of the cup-shaped member 27a, the lower end 31 of said flange being outwardly turned to underlie the base portion of member 27a for assembly-maintaining purposes. Preferably, the opening of flange 30 is closed for the protection of the cartridge or shell primer from accidental impact, the closure therefor here utilized being a hollow, sheet metal plug-like member having a generally flat top portion 32 of greater diameter than that of the flange opening and a retaining portion 33 of resilient character in the form of a longitudinally spilt skirt enlarged at its lower end for retention purposes. As will be readily understood, this closure plug may be snapped into place within the opening of flange 30, its retention being effected by the resiliency of its skirt portion 33.

Referring now to Fig. 5, wherein is illustrated another modified form of the present invention, it will be noted that the pivotally connected sheet metal members 10b and 11b, the sheet metal shim or washer 18b therebetween and the primer-protecting cup-shaped sheet metal member 27b are maintained in assembly by an upstanding annular flange 34 with which the base portion of member 27b is integrally provided. As shown, said flange extends upwardly through the aligned or registering apertures in the generally circular sections of members 10b and 11b and the shim or washer 18b therebetween, the upper end 35 of said flange being outwardly turned to overlie the uppermost member 10b for assembly-maintaining purposes. For closing the opening of flange 34, a sheet metal disk 35 of dished form is here utilized. As will be evident from Fig. 5, the closure disk 35 is inserted in the cup-shaped sheet metal member 27b and pushed upwardly into contact with the base portion thereof. Thereafter, said disk is forcibly flattened out from its dished or dotted line shape, the flattening out of said disk causing its peripheral edge to assume a knife-like form which bites into the metal of the cup-shaped member 27b for effecting its retention.

From the foregoing description of the cartridge or shell extracting and protecting devices of Figs. 4 and 5, it will be evident that they differ from the device of Figs. 1 to 3 inclusive chiefly as to the means by which are maintained in assembly the two pivotally connected sheet metal members, the sheet metal shim or washer therebetween and the sheet metal cup-shaped member for protecting the cartridge or shell primer, said assembly maintaining means constituting the pivot about which the two pivotally connected members turn. By using for such assembly-maintaining means an integral part of the upper pivoted member (the construction of Fig. 4) or an integral part of the primer-protecting cup-shaped member (the construction of Fig. 5), the use of a pivot pin, such as the pivot pin 17 of the device of Figs. 1 to 3 inclusive, is avoided. The devices of Figs. 4 and 5, including their closures, are thus made entirely of sheet metal, as will be readily understood.

To those skilled in the art to which the present invention relates, other features and advantages of cartridge or shell extracting and protecting devices embodying the present invention will be evident from the foregoing description of three such embodiments.

What we claim is:

1. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, and sheet metal means for covering and protecting the primer of said cartridge or shell and having a portion extending into the registering openings of said first mentioned members for effecting their pivotal connection and for effecting the assembly therewith of said primer protecting means, the cartridge or shell supporting means of said pivotally connected members being movable into and out of cartridge or shell supporting position by relative angular movement of such members.

2. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, sheet metal means for covering and protecting the primer of said cartridge or shell and having an apertured portion extending into the registering openings of said first mentioned members for effecting their pivotal connection and for effecting the assembly therewith of said primer protecting means, and a sheet metal closure for the aperture of said primer protecting means, the cartridge or shell supporting means of said pivotally connected members being movable into and out of cartridge or shell supporting position by relative angular movement of such members.

3. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, and cup-shaped sheet metal means for covering and protecting the primer of said cartridge or shell and having a base portion extending into the registering openings of said first mentioned members for effecting their pivotal connection and for effecting the assembly therewith of said primer protecting means, the cartridge or shell supporting means of said pivotally connected members being movable into and out of cartridge or shell supporting position by relative angular movement of such members.

4. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, and a sheet metal member for covering and protecting the primer of said cartridge or shell and having an opening in registry with the aforesaid openings, one of said sheet metal members being provided with means integral therewith and extending into all of said registering openings for maintaining all three members in assembly, the two first mentioned members being in pivotally connected relationship and the cartridge or shell supporting means thereof being movable into and out of cartridge supporting position by relative angular movement of such members.

5. An extracting and protecting device for a cartridge or shell having a primer, said device

comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, a sheet metal member for covering and protecting the primer of said cartridge or shell and having an opening in registry with the aforesaid openings, one of said sheet metal members being provided with apertured means integral thereby and extending into all of said registering openings for maintaining all three members in assembly, and a sheet metal closure for the aperture of said assembly maintaining means, the two first mentioned members being in pivotally connected relationship and the cartridge or shell supporting means thereof being movable into and out of cartridge or shell supporting position by relative angular movement of such members.

6. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, and sheet metal means for covering and protecting the primer of said cartridge or shell and having an opening in registry with the aforesaid openings, one of said first mentioned members being provided with means integral therewith and extending into all of said registering openings for maintaining said first mentioned members and said primer protecting means in assembly, the two first mentioned members being in pivotally connected relationship and the cartridge or shell supporting means thereof being movable into and out of cartridge or shell supporting position by relative angular movement of such members.

7. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, and a cup-shaped sheet metal member for covering and protecting the primer of said cartridge or shell and having an opening in its base portion in registry with the openings of said first mentioned members, one of said first mentioned members being provided with an annular flange surrounding its opening and extending into the registering openings of the other first mentioned member and the primer protecting member for maintaining all three members in assembly, the two first mentioned members being in pivotally connected relationship and the cartridge or shell supporting means thereof being movable into and out of cartridge or shell supporting position by relative angular movement of such members.

8. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means, means for pivotally connecting said members intermediate their outer ends, the cartridge or shell supporting means of said members being movable into and out of cartridge or shell supporting position by relative angular movement of such members, and an inverted cup-shaped sheet metal element disposed in its entirety beneath said pivotally connected members for covering and protecting the primer of said cartridge or shell, said cup-shaped element being secured in assembly with said pivotally connected members by the means by which they are so connected and being provided at its lower end with an out-turned rim flange for bearing contact with said cartridge or shell.

9. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means, means for pivotally connecting said members intermediate their outer ends, the cartridge or shell supporting means of said members being movable into and out of cartridge or shell supporting position by relative angular movement of such members, means for releasably retaining said members in that relative angular relationship thereof in which their cartridge or shell supporting means are in cartridge or shell supporting position, and sheet metal means for covering and protecting the primer of said cartridge or shell, said primer covering and protecting means being secured in assembly with said pivotally connected members by the means by which they are so connected.

10. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means, means for pivotally connecting said members intermediate their outer ends, the cartridge or shell supporting means of said members being movable into and out of cartridge or shell supporting position by relative angular movement of such members, each of said members being provided between its pivot and its outer end with an aperture, sheet metal eyelets mounted in said apertures, a flexible handle extending through said eyelets and anchored to the pivotally connected members for lifting purposes, and sheet metal means for covering and protecting the primer of said cartridge or shell, said primer covering and protecting means being secured in assembly with said pivotally connected members by the means by which they are so connected.

11. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, cup-shaped sheet metal means for covering and protecting the primer of said cartridge or shell and having an apertured portion extending from its base into the registering openings of said first mentioned members for effecting their pivotal connection and for effecting the assembly therewith of said primer protecting means, and a sheet metal disk mounted within said cup-shaped primer protecting means for closing the aperture thereof, the cartridge or shell supporting means of said pivotally connected members being movable into and out of cartridge or shell supporting position by relative angular movement of such members.

12. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering openings, a sheet metal member for covering and protecting the primer of said cartridge or shell and having an opening in registry with the aforesaid openings, one of said sheet metal members being provided with means integral therewith and extending into all of said registering openings for maintaining all three members in assembly,

the two first mentioned members being in pivotally connected relationship and the cartridge or shell supporting means thereof being movable into and out of cartridge or shell supporting position by relative angular movement of such members, and a sheet metal closure for the aforesaid registering openings of the three members.

13. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means, sheet metal means for covering and protecting the primer of said cartridge or shell and having an opening, one of said first mentioned members being provided with an opening in registry with the opening of said primer protecting means, the other of said first mentioned members being provided with apertured means integral therewith and extending into the two aforesaid registering openings for maintaining the first mentioned members and the primer protecting means in assembly, the two first mentioned members being in pivotally connected relationship and the cartridge or shell supporting means thereof being movable into and out of cartridge or shell supporting position by relative angular movement of such members, and a sheet metal closure for the aforesaid aperture of one of said pivotally connected members.

14. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members each having an upper portion, a lower portion outwardly therebeyond and a connecting wall therebetween, at least parts of the upper portions of said members being in lapped relationship and at least parts of the lower portions of said members being disposed substantially in a common plane, means for pivotally connecting the lapped parts of the upper portions of said members, the lower portions of said members being provided at their outer ends with cartridge or shell supporting means, and inverted cup-shaped sheet metal means for covering and protecting the primer of said cartridge or shell and depending from the lapped pivotally connected parts of the upper portions of said members and having an outwardly extending rim flange in substantially the plane in which are disposed at least parts of the lower portions of said members for bearing contact on said cartridge or shell, said primer covering and protecting means being secured to the lapped parts of the upper portions of said members by the means by which such parts are pivotally connected.

15. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members each having an upper portion, a lower portion outwardly therebeyond and a connecting wall therebetween, at least parts of the upper portions of said members being in lapped relationship and at least parts of the lower portions of said members being disposed substantially in a common plane, means for pivotally connecting the lapped parts of the upper portions of said members, the lower portions of said members being provided at their outer ends with cartridge or shell supporting means, sheet metal means for covering and protecting the primer of said cartridge or shell and depending from the lapped pivotally connected parts of the upper portions of said members, said primer covering and protecting means being secured to the lapped parts of the upper portions of said members by the means by which such parts are pivotally connected, the connecting walls of said members being provided with apertures, and handle means extending into such apertures for lifting purposes.

16. An extracting and protecting device for a cartridge or shell having a primer, said device comprising a pair of sheet metal members provided at their outer ends with cartridge or shell supporting means and provided between their outer ends with a pair of registering apertures, a depending sheet metal member for covering and protecting the primer of said cartridge or shell and having an aperture in registry with the aforesaid registering apertures, and means for connecting the two first mentioned members in pivotal relationship and the third mentioned member in assembly therewith, said means comprising a separate pin-like element extending through the registering apertures of the three members, said pin-like element having an enlarged head at its lower end and also having shoulder means spaced above said head a distance at least as great as the combined thickness of the three sheet metal members in the region of their apertures, a washer-like element seated on said shoulder means and overlying said sheet metal members, and abutment means carried by the upper end of said pin-like element, said washer-like element being confined between the abutment means of said pin-like element and the shoulder means thereof.

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