H. E. FLATHER.

PROJECTILE.

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1,197,729.

Patented Sept. 12, 1916.

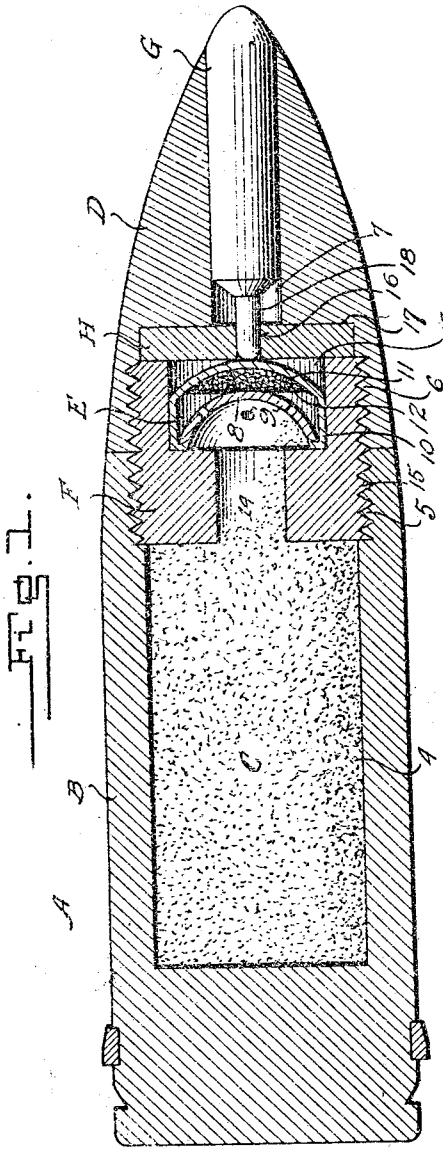


Fig. 1.

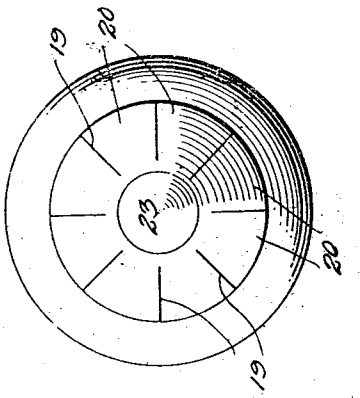


Fig. 3.

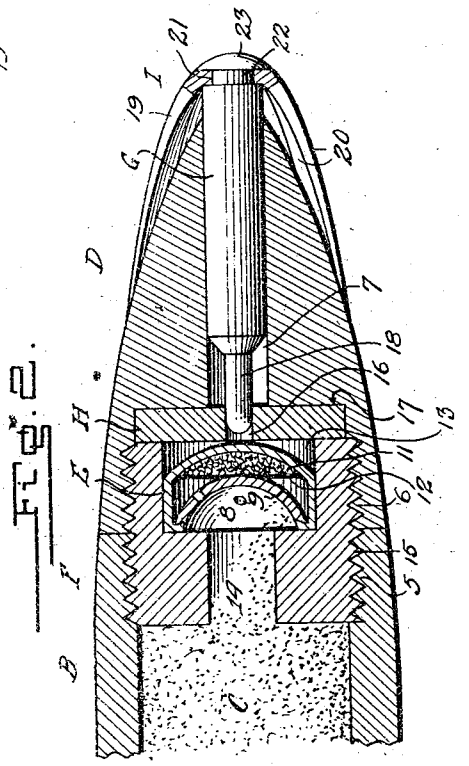


Fig. 2.

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UNITED STATES PATENT OFFICE.

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PROJECTILE.

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To all whom it may concern:

Be it known that I, HERBERT E. FLATHER, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented a new and useful Projectile, of which the following is a specification.

My present invention relates to projectiles of that character which are exploded by point impact with an object through the intermediacy of a firing pin and other device, such as a primer.

The principal objects of my invention are to provide a projectile which may be handled and transported with safety, yet quickly rendered operable just prior to its being placed in the gun from which it is fired; to make secure a detachable firing pin, with a minimum effort, so that it will not become displaced during the flight of the projectile; and, to provide a projectile having its parts coöperating in such a manner as to facilitate assemblage.

Other objects of my invention are to provide a projectile which is simple in construction and inexpensive to manufacture, and which is so constructed as to prevent the charge from finding exit through the bore for the firing pin.

Another object of the invention is to provide a projectile which includes a firing pin provided with a conoidal guard, whereby the pin is normally held out of contact with the primer, but engages the same upon point impact with an object.

Other objects of the invention will appear in the following detailed description, taken in connection with the accompanying drawing, forming a part of this specification, and in which drawing:

Figure 1 is a longitudinal sectional view through a projectile constructed according to my invention. Fig. 2 is a fragmentary longitudinal sectional view through a projectile showing a modified form of firing pin. Fig. 3 is an end elevation of the shell as shown in Fig. 2.

In the drawings, where similar characters refer to similar parts throughout the views, A designates generally a casing comprising a container B, for a charge C, such as high explosive, and a detachable point D; E means to set off the charge, such as a primer; F a carrier for said means; G a firing pin; and H a partition, the function of which will be hereinafter more specifically set forth.

Referring first to the container B, it is preferably cylindrical in shape and provided with the usual hollow 4 for the charge, and may be provided with internal screw thread 5 adjacent the open end of the hollow.

The point D may be of conoidal shape, provided with internal screw threads 6, alined with the threads 5 of container B, and formed with an opening or bore 7 concentric to the point.

While I have shown the means E as a primer, comprising an anvil 8, perforated as at 9 and a container 10 for a primer mixture 11, held in place by a suitable binder 12, it is to be understood that any suitable device or means for exploding the charge, and operated by a firing pin may be substituted, and placed into operative relation to the charge. The primer E is disposed within a recess 13 of the carrier F, a way 14 being provided open to said chamber 13 and also to the hollow 4 of container B. The perforations 9 and way 14 provide an escape for the flame produced by the ignition of the primer mixture 11, and to facilitate manufacture, the way 14 may be concentric to the carrier F. It is preferred to construct the carrier with a uniform screw threaded exterior diameter, whereby said carrier may serve to join the container and point, one to the other, as clearly shown in the drawings.

In order to operate the means or primer E, the firing pin G is provided of such a shape and size as to project into opening 7 of point D and engage, or lie in close proximity to the primer, this pin G being readily removable in order that the projectile may be handled and transported, without the pin in place, thereby avoiding danger. It has already been proposed to provide projectiles with removable firing pins, however, owing to the fact that metals expand or contract, due to the rise or fall in temperature it is necessary that the firing pin fit loosely within the opening 7, at a normal temperature, otherwise when rendered cold, it would be impossible to place the firing pin due to the reduction of diameter of bore 7. On the other hand, in firing projectiles they often approach the target or other object to which they are aimed, with the pointed

end lowermost, and in such position the firing pin is likely to become separated from the projectile, thus rendering it inoperative.

One of the principal objects of my invention is to provide a projectile which may be quickly rendered operable by the placing of the firing pin into operative relation with the primer, and normally retain it in such an inert position due to magnetic force. This may be accomplished by providing the point D and firing pin G of iron or steel, and rendering one or the other a permanent magnet. In this way the firing pin will remain in a normal inert position due to the magnetic force, when placed within the opening 7, regardless of the position of the shell or projectile, yet it may be easily moved, manually or by impact so as to operate the means E.

In order to prevent the charge from finding exit through opening 7, upon operation of the means E, I prefer to provide a partition H, perforated as at 16, the perforation being relatively smaller than opening 7 and communicating with the same as well as with the recess 13 in carrier F. This partition may be of disk shape and fit within a recess 17, in point D, the partition being interposed between the point of the shell and recess 13, as clearly shown in the drawings. When the projectile is constructed, as shown in the drawings, upon turning the point D tightly upon the carrier F, partition H is forced in place and retained in such position with the perforations 16 preferably in axial alinement with opening 7. The firing pin G is then provided with a reduced extension 18 passing into the perforation so as to be in close proximity to, or engaging the primer.

I may find it desirable to provide a yieldable conoidal guard I, carried by firing pin G, to normally retain the firing pin in an inert position with extension 18 out of contact with the primer, as clearly shown in Fig. 2 of the drawings. The guard I may be more blunt than the point D, so that it has frictional engagement with the outer portion of the point only at its open end, permitting the pin G to move sufficiently, upon impact, to operate means E. This may be accomplished by splitting the guard as at 19 radially, thereby providing a number of fingers 20 which are flexible. As a convenient means for attaching the guard to the pin, it may be provided with a perforation 21 extending about a neck 22 formed on the outer end of the pin, this neck being battered or upset, as at 23, exteriorly of the guard to retain it in place, and forming a continuous surface exteriorly of the guard.

In assemblage, the charge C is first placed in the container B, and carrier F turned so as to have screw threaded engagement with said container. The means E or primer is then positioned within the recess 13, the partition H within recess 17 and the point D turned upon carrier F. The projectile is then ready for handling or transportation, without danger of premature explosion. Just prior to placing the projectile within the gun from which it is to be fired, the firing pin G is placed within opening 7, where it is in operative relation to the primer, but is retained in an inert position due to the magnetic force hereinbefore described.

After being fired from the gun, when the projectile reaches an object, the impact upon firing pin G forces it inwardly, and the primer mixture 11, engaging anvil 8 causes the flame to ignite charge C, exploding the shell or projectile in the well known manner.

Changes in detail may be made without departing from the spirit or scope of my invention: but,

I claim:

1. A projectile comprising in combination, an outer casing for the charge provided with an opening, means to set off the charge, and a firing pin adapted to operate said means and normally held in an inert position projecting into the said opening of said casing by magnetic attraction.

2. A projectile comprising in combination, a casing for the charge provided with a bore, means to set off the charge, and a cylindrical firing pin adapted to operate said means and normally held in an inert position projecting into the said bore of said casing by magnetic attraction.

3. A projectile comprising in combination, a casing for the charge provided with an opening, a primer, and a firing pin adapted to engage said primer by impact, but normally held in an inert position projecting in the said opening of said casing by magnetic attraction.

4. A projectile comprising in combination, a casing for the charge provided with an opening, a primer, a firing pin adapted to engage said primer by impact but normally held in an inert position projecting in the said opening of said casing by magnetic attraction, and a guard for normally holding said pin out of contact with said primer but yieldable upon impact.

5. A projectile comprising in combination, a charge container, a point therefor, having an axial opening, a primer intermediate the hollow of said charge container and said opening, and disposed in the axis of the latter, and a firing pin adapted to engage said primer but held in an inert position projecting into the said hollow of said point by magnetic attraction.

6. A projectile comprising in combination, a charge container, a primer carrier supported by said charge container and pro-

vided with screw threads exteriorly of the latter and formed with a recess at its outer face, with a way open to the hollow of said container and the said recess, a primer in the said recess of said carrier, a point provided with screw threads to engage with the said screw threads of said carrier, said point formed with an opening of uniform width leading toward said recess, a non-frangible partition intermediate said point and primer, against which the latter abuts, said partition having a perforation open to the said recess and the said opening in said point but being relatively smaller than the latter, and a removable firing pin provided with a reduced extension adapted to project into the said opening, with the said extension passing through the perforation in said partition, to engage said primer.

7. A projectile comprising in combination, a charge container, a point therefor provided with an axial opening of uniform width, a primer intermediate the hollow of said container and the said opening, a non-frangible partition, intermediate said primer and the said opening provided with a perforation open to the said opening in said point but relatively smaller than the same, and a removable firing pin provided with a reduced extension adapted to project into the said opening with the said extension fitting the perforation in said partition and to engage said primer.

8. A projectile comprising in combination, a pointed casing for the charge provided with an opening, means to set off the charge, a removable firing pin extending into the said opening and adapted to operate said means, and a yieldable conoidal guard carried by said pin, split longitudinally to provide a plurality of yieldable fingers extending from said pin and frictionally engaging the pointed portion of said casing exteriorly, and adapted to normally hold said pin in an inert position, but yieldable upon impact, substantially as and for the purpose set forth.

HERBERT E. FLATHER.