

J. A. BRAND.  
Fuse for Explosive Projectiles.  
No. 223,312.      Patented Jan. 6, 1880.

Fig. 1.

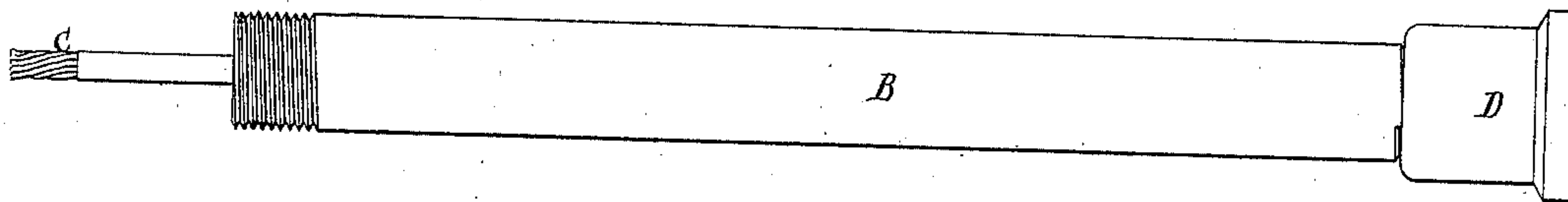


Fig. 2.

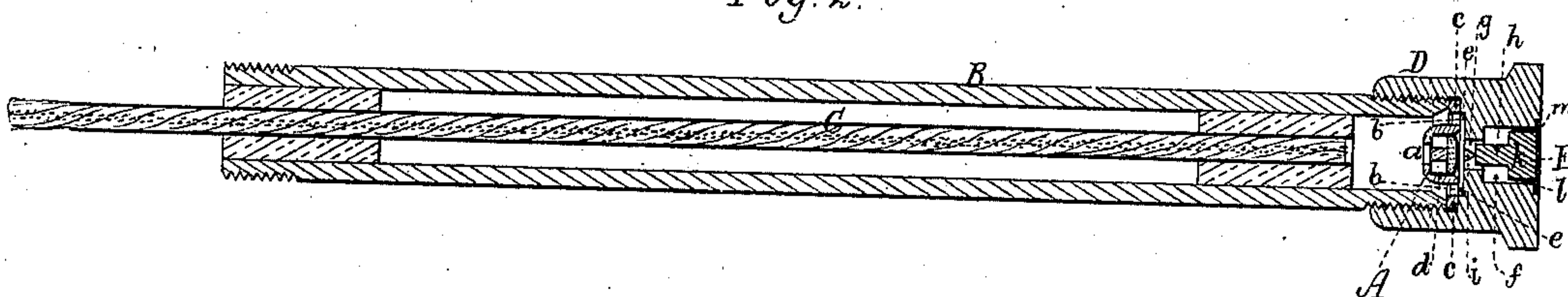


Fig. 3.

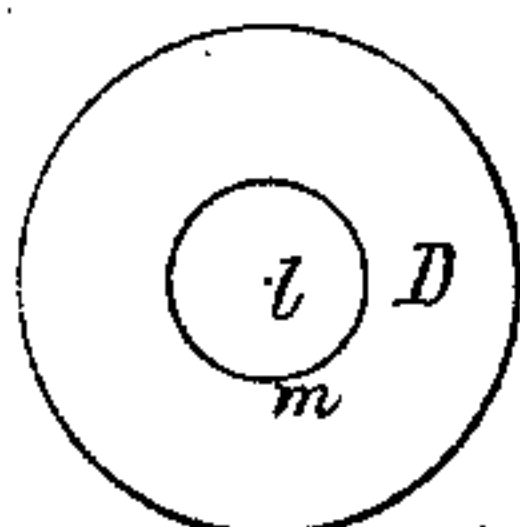


Fig. 4.

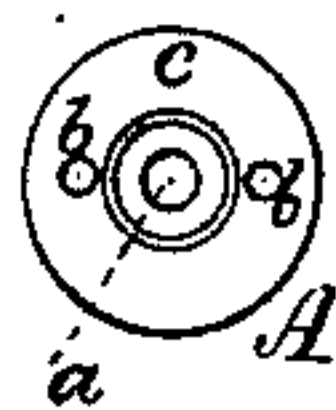
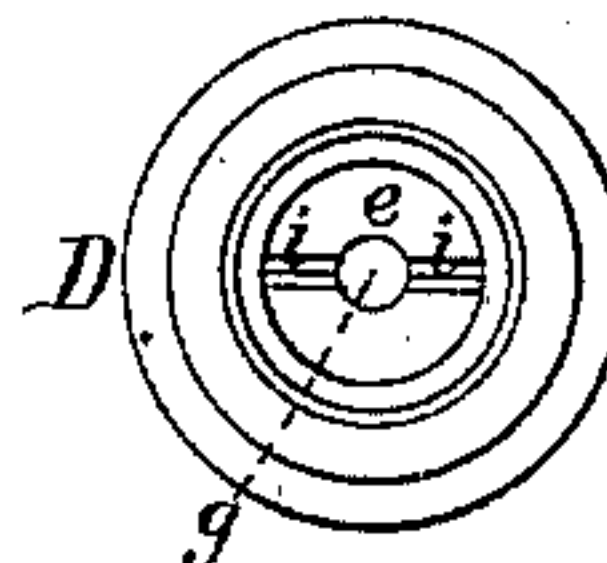


Fig. 5.



Fig. 6.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JUNIUS A. BRAND, OF NORWICH, CONNECTICUT.

## FUSE FOR EXPLOSIVE PROJECTILES.

SPECIFICATION forming part of Letters Patent No. 223,312, dated January 6, 1880.

Application filed October 27, 1879.

*To all whom it may concern:*

Be it known that I, JUNIUS A. BRAND, of Norwich, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Fuse-Igniters for Explosive Projectiles; and I do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

10 Figure 1 is a side view, Fig. 2 a longitudinal section, and Fig. 3 an end view, of a fuse-tube or bomb-lance shank provided with my invention, which relates to the screw-cap of the said tube or shank, and to the firing-pin and the percussion-cap holder thereof, and is not only to seal the firing-pin chamber and hold the firing-pin in position so as to prevent it from being accidentally driven against the cap, but is to prevent the latter, when back 15 upon the end of the firing-pin chamber, from sealing such end so as to prevent or materially obstruct the escape of the gases incident to the combustion of the charge of the primer and fuse.

25 Fig. 4 is a top view, and Fig. 5 a transverse section, of the firing-cap holder A. This holder is a flanged cup having a vent-hole, *a*, through the center of its bottom, and also two other vent-holes, *b b*, through its flange *c*. The percussion powder or composition is placed within a small cup or cap, *d*, which is inserted and fitted closely into the recess of the holder. The said percussion-cap-priming holder has a diameter equal, or about equal, to that of 35 the fuse-tube carrier B, which, in this case, is to be supposed to be the tubular shank of an explosive bomb-lance, such as is used in capturing or killing whales or various other sea-animals. A fuse, C, properly supported within the carrier B, terminates at one end near the cap-holder A, which is held in place by a metallic cap, D, which is screwed upon the carrier B and against the flange of the holder. Directly in front of the holder there is, with- 45 in the said cap D, a shallow circular recess or chamber, *e*, which communicates with the firing-pin chamber *f* by a passage, *g*, having a diameter a little greater than that of the shank *h* of the firing-pin E. In the bottom of the 50 chamber *e* are one or more grooves or chan-

nels, *i*, leading into the firing-pin-shank passage *g*.

Fig. 6 is a rear view of the cap D, showing two of the said channels *i*, which are formed by a groove extending diametrically in and across the bottom of the chamber *e*. 55

The firing-pin E has a cylindrical head, *k*, which is provided at its outer end with a thin yielding flange, *l*, that fits into a shallow chamber or recess, *m*, made in the cap D at the outer end of the firing-pin chamber. The said flange 60 *l* is to be strong enough to support the firing-pin in place, so as to prevent it from being accidentally thrown forward against the percussion-cap or primer. The said flange, however, 65 should be incapable of withstanding the force of the explosion of the charge of the gun from which the missile or projectile may be discharged. The flange, by means of cement or a suitable sealing material, is to be hermetically sealed in the recess for its reception. 70

On explosion of the charge of the gun taking place, the firing-pin, by the force thereof, will be broken away from the flange and driven forward against the primer or percussion-cap, 75 so as to cause the fulminate or composition thereof to be exploded. On firing of the fulminate or charge of the primer or cap *d* so taking place, the said cap is liable to be driven channel or channels *i* in the bottom of the 80 back with great force; and, were it not for the chamber *e*, such cap, on being so driven back, would be liable to estop the firing-pin-shank passage *g*, and thus prevent escape of the smoke and gas produced. So, were it not for 85 the shallow chamber *e*, its channel or channels *i*, and the vent hole or holes of the percussion-cap holder, the escape of gas from combustion of the fuse might be interrupted or prevented by the percussion-cap when covering the pas- 90 sage *g*.

Should the hole in the bottom of the cap-holder become obstructed, or the cap not be forced back out of it, the vent hole or holes in the flange of the holder will allow escape of 95 the gases into the chamber *e*, from whence such gas or gases will be discharged through the firing-pin chamber.

Previous to my present invention I have made the firing-pin-chamber sealing-disk sepa- 100



rate from the firing-pin, and applied to the latter a spring to force or hold it back against the disk, in order to prevent such pin from being accidentally driven forward. My present improvement enables me to dispense with such spring, which I accomplish by providing the firing-pin with the yielding sealing-flange, directly attached to or in one piece with it, the said pin.

10 What, therefore, I claim as my invention is as follows:

1. The cap D, provided with the chamber *f*, the annular sealing-recess *e*, and the firing-pin, arranged as set forth and having a yielding sealing-flange, *m*, extending from and connected with the said pin, and hermetically sealed in the said recess *e*, all being substantially as explained, whereby the said flange is made not only to support the firing-pin, but to  
20 serve as a means of hermetically estopping the

outer end of the chamber in which such pin is arranged.

2. The shank-cap D, provided with the shallow chamber *e* and one or more channels, *i*, arranged therewith and with the firing-pin chamber substantially in manner and for the purpose specified, in combination with the cap-holder A and the percussion-cap thereof, arranged as set forth.

3. The holder A, provided with the bottom and flange vents, *a b*, and the cap *d*, as explained, in combination with tube B and with the firing-pin and its supporting-cap D, having the shallow chamber *e* and one or more channels, *i*, arranged, with the firing-pin chamber, substantially as represented.

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Witnesses:

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