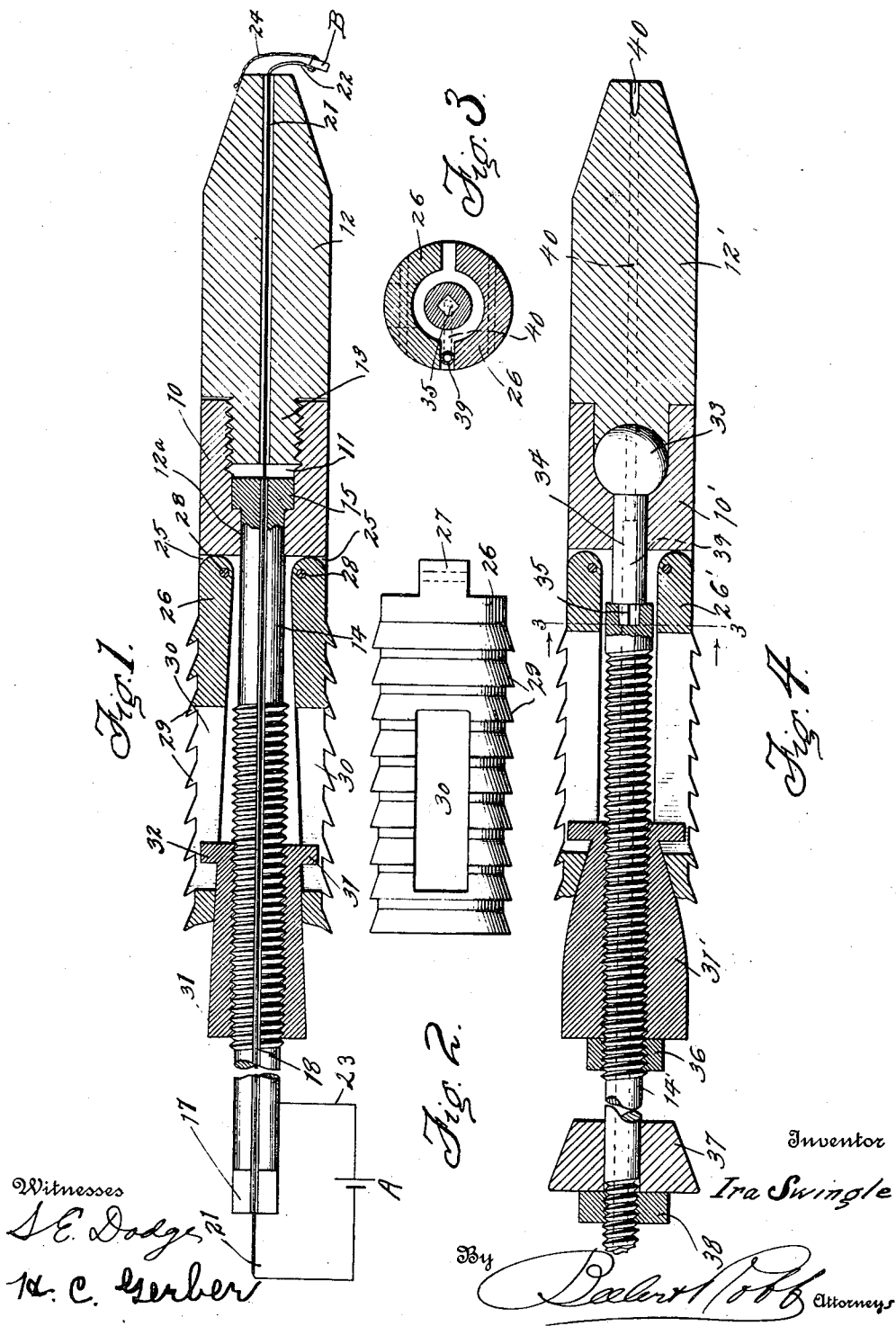


I. SWINGLE.
BLASTING PLUG.

APPLICATION FILED AUG. 23, 1910.

993,907.

Patented May 30, 1911.



UNITED STATES PATENT OFFICE.

IRA SWINGLE, OF WENDEL, PENNSYLVANIA.

BLASTING-PLUG.

993,907.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed August 23, 1910. Serial No. 578,573.

To all whom it may concern:

Be it known that I, IRA SWINGLE, a citizen of the United States, residing at Wendel, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Blasting-Plugs, of which the following is a specification.

This invention relates to blasting plugs, and is designed particularly as an improvement on Patent #921144 granted to C. P. McGregor May 11, 1909.

This invention is applicable to all classes of mining but particularly to coal mining and is designed to prevent the back shots which often occur in coal mines exploding the gases causing a great deal of damage.

With the above and other objects in view, this invention consists in the construction, combination, and arrangement of parts, all as hereinafter more fully described, claimed, and illustrated in the accompanying drawings, wherein—

Figure 1 is a central, longitudinal section of the explosion plug forming the subject matter of the present invention; Fig. 2 is an outside elevation of one of the gripping dogs; Fig. 3 is a transverse section taken along line 3—3 of Fig. 4; Fig. 4 is a central, longitudinal section of a modification of the present invention.

Reference being had more particularly to the drawings, 10 indicates the collar having an opening 11 extending therethrough, the rear portion 12^a of said opening being reduced and the forward extremity thereof being provided with interior threads. A copper point 12 having the threaded shank 13 thereon is adapted to be secured in the threaded portion of the opening 11 of the collar 10. The operating rod 14 is swiveled in the opening 11 adjacent to the reduced portion 12 thereof through the instrumentality of the circular shoulder formed at the inner terminal thereof. This rod is provided with a series of threads 16 which extend approximately throughout its entire length and the faced head 17. A groove 18 is provided in one side of the rod 14 and extends throughout the entire length thereof, said groove cooperating with the passage 21 in the point 12 and forms a housing for the wire 22 which extends over the battery indicated as A to the cap indicated as B. The

circuit is completed by a wire 23 extending to the rod which is in circuit with the point 12 throughout the instrumentality of the wire 24 extending from said point to said cap.

A pair of diametrically disposed recesses 25 are formed in the outer extremity of the collar 10 in which are pivoted the dogs 26. These dogs are semicircular in formation and are provided with the lugs 27 at their inner terminals which are pivoted in the recesses 25 by the pins 28. Each dog 26 has a series of outwardly extending teeth 29 which extend transversely over the surface of the dog and which conform with the contour thereof. The dogs 26 are pierced by the passages 30 which form guides for the expanding nut as hereinafter more fully described.

A tapered expanding nut 31 operates on the threads 16 of the rod 14 and is provided with a pair of diametrical projections 32 which cooperate with the passages 30 in the dogs for the purpose of guiding the same. From this construction it will readily be seen that by rotating the rod 17 about the swivel formed by the shoulder, the expanding nut will be forced inwardly causing the dogs to operate outwardly from the rod 14 about the pins 28 as pivots causing said dogs to bite into the wall of the opening and firmly secure the blasting plugs.

Referring to the modification illustrated in Fig. 4, 10' indicates a collar constructed similarly to the collar 10 having the dogs 26' pivoted thereto, said dogs cooperating with the expanding nut 31' similar in construction to the expanding nut 31. A copper point 12' is shrunk into the collar 10' and forms in combination with the collar 10' a socket for the ball 33 which carries a rod 34. A threaded rod 14' is connected to the rod 34 by the joint 35 and similar to the construction of the rod 14, the expanding nut 31 being held in position by the jam nut 36. In order to close the opening in which the blasting plug is placed and make the same air tight, a collar 37 is slidably mounted upon the outer terminal of the rod 14' and is held in position on said rod against the outer terminal of said opening by the jam nut 38. A blasting barrel 39 is mounted between the dogs 26' and is threaded or otherwise secured to the copper point the copper point being pierced by the open-

ings 40 through which the products of combustion pass to the blasting barrel.

Having thus fully described my invention, what is claimed as new is:—

5 1. A blasting device, comprising a point having a reduced portion at its outer extremity, a collar detachably carried by said point, a rod swiveled between said point and said collar, dogs pivoted to said collar, and an expansion member operating on said rod and engaging said dogs for expanding the same.

10 2. A blasting device, comprising a point, a collar detachably carried thereby having an opening therein, a rod swiveled in said opening, semicircular toothed dogs pivoted to said collar, each dog having a longitudinal passage therein, an expansion nut operating on said rod having diametrically disposed lugs adapted to operate in the passages of
20 said dogs, and means whereby an electric

current may be conducted from one end of said device to the other.

3. A blasting device, comprising a point, a collar detachably carried thereby having an opening therein, a rod swiveled in said opening, semicircular toothed dogs pivoted to said collar, each dog having a longitudinal passage therein, an expansion nut operating on said rod and having diametrically disposed lugs adapted to operate in the passages of said dogs, and means whereby the opening in which said device is placed may be made air tight.

In testimony whereof I affix my signature in presence of two witnesses.

IRA SWINGLE.

Witnesses:

THOS. I. CALLAHAN,
JACOB L. MYERS.