L. E. M. & T. S. HARRIS.

BLASTING DEVICE.

APPLICATION FILED APR. 18, 1911.

1,015,021. **Patented Jan. 16, 1912.**

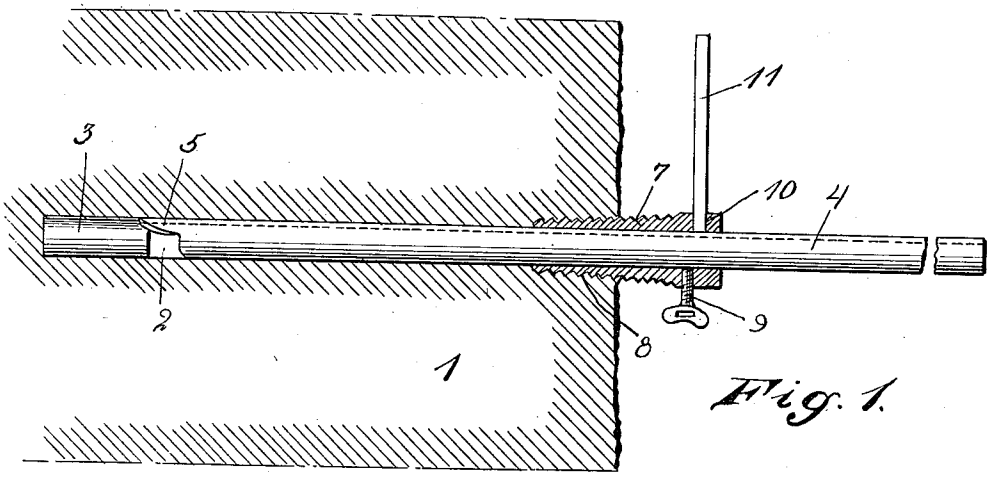

Fig. 1.

Fig. 2.

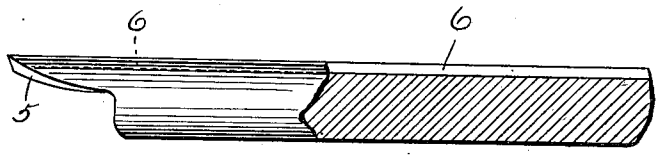

Fig. 3

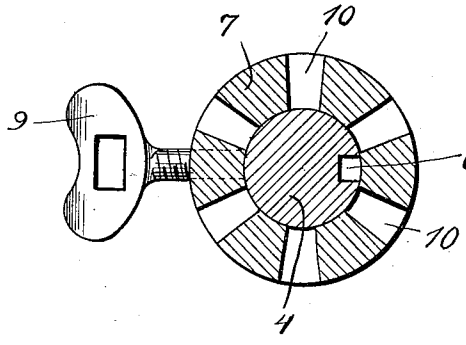

Fig. 4.

Witnesses

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BLASTING DEVICE.

1,015,021. Specification of Letters Patent. Patented Jan. 16, 1912.

Application filed April 18, 1911. Serial No. 621,769.

To all whom it may concern:

Be it known that we, LOUIS E. M. HARRIS and THOMAS S. HARRIS, citizens of the United States, residing at Westernport, in the county of Allegany and State of Maryland, have invented certain new and useful Improvements in Blasting Devices, of which the following is a specification.

This invention relates to a blasting device by the employment of which the tamping process in blasting may be dispensed with.

In the blasting of coal or the like by the employment of powder as an explosive agent, a hole is bored in the stratum of coal, a charge of powder is placed in the inner end of the hole, a blasting needle inserted in the hole so that the inner end thereof is in proximity to the charge, and the hole is filled with sand or the like. This sand is now packed or tamped subsequently to which the blasting needle is removed, forming an opening which leads to the explosive charge, into which opening is inserted a squib. It now only remains to set the squib on fire to cause the explosion.

In the blasting of coal or the like by the employment of dynamite as an explosive agent, such dynamite is not tamped or packed and a cap is employed to explode the dynamite, which cap is in turn exploded by a fuse. Where the hole within which the dynamite is placed is very long, a correspondingly long fuse has to be employed, which is expensive. By the employment of our device, the fuse is dispensed with and the cap exploded by means of a squib.

We have provided means in the nature of a plug, for closing the opening after the insertion of the explosive charge therein. The invention thus dispenses with the tamping process, whereby the device may be employed equally as well with powder or dynamite and the time consumed in tamping saved.

Our invention consists broadly in the provision of a plug member or shaft for closing the opening and constructed to puncture the package containing powder, when such material is employed as an explosive agent. A locking member is mounted upon the shaft and constructed for engagement with the wall of the opening to hold the shaft against longitudinal movement, so that the force of the explosion will be exerted to blow up the stratum of coal or the like.

An important object of this invention is to provide a device of the above character, which is simple in construction, cheap to manufacture and may be used almost indefinitely.

Other objects and advantages of this invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a side view of the device, partly in section and showing the same in its operative position, Fig. 2 is an enlarged fragmentary plan view of the shaft or plug, Fig. 3 is a side view of the same, a part thereof being shown in section, and, Fig. 4 is a cross-sectional view on an enlarged scale, taken through the head of the locking member.

In the drawings wherein is illustrated a preferred embodiment of our invention, the numeral 1 designates a stratum of coal or the like, which is to be blasted and which is provided with an opening 2 formed therein.

The numeral 3 designates a package of powder or other explosive material, which is placed at the inner end of the opening 2, as shown.

The numeral 4 designates a plug member or shaft which is shown as being cylindrical, although any other suitable shape may be employed. The plug member of shaft 4 has its inner end reduced to form a pointed extension 5, which is adapted to puncture and penetrate the package 3. The shaft 4 is provided upon its periphery with a longitudinal groove 6, which extends through the end of the extension 5 and hence has communication with the interior of the punctured package 3. Disposed upon the shaft 4 is a locking member 7 which is substantially frustoconical and externally screw-threaded for the greater portion of its length, as shown at 8. The locking member 7 comprises an outer head portion provided with a screw-threaded opening to receive a clamping screw 9. This head portion is also provided with any suitable number of radially disposed openings 10, for the reception of an instrument 11, by the means of which the locking member may be rotated. The locking member 7 is thus longitudinally movably mounted upon the shaft 4, may be rotated thereon, and locked upon the same at a desired position by the clamping screw 9.

In the use of our device when powder is employed as an explosive agent, the package 3 of the powder is placed at the inner end of the opening 2 and the plug member or shaft 4 inserted within the opening to close the same. The plug member or shaft is forced into the opening until the extension 5 thereof punctures and penetrates the package 3. A suitable squib is placed in the groove 6. The locking member 7 is moved longitudinally of the plug member or shaft until the inner end thereof engages within the outer end of the opening 2. The instrument 11 is then employed to rotate the locking member 7, which by virtue of its screw-threads, is fed within the opening 2 and securely held therein. The clamping screw 9 is then operated to rigidly connect the plug member or shaft with the locking member. From the construction of the above referred to parts, it is obvious that the locking member 7 will prevent the outward longitudinal movement of the plug member or shaft 4, whereby the force of the exploding charge will be exerted to blow up the stratum of coal.

When employing the device in connection with dynamite, a suitable cap is inserted in the package of dynamite, the dynamite placed in the outer end of the hole and the inner end of the shaft 4 placed in the opening to receive the cap within the groove 6. The shaft may be employed to move the dynamite to the inner end of the hole. A squib is placed in the groove 6 and when lighted will kick back to discharge the cap, which in turn will discharge the dynamite. It will thus be seen that our device dispenses with the tamping process which cannot be used with dynamite and also the fuse is done away with and a squib employed to discharge the cap.

We wish it understood that the form of our invention herewith shown and described is to be taken as a preferred example of the same, and that certain changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described our invention, we claim:—

1. A device of the character described, comprising a plug member, an externally screw-threaded locking member movably mounted thereon, and means to lock said member in adjustment at different positions upon the plug member.

2. A device of the character described, comprising a plug member having one end thereof reduced and tapered, said plug member being provided with a groove, a locking member movably mounted on the plug member, and means to hold the locking member in adjustment at different positions upon said plug member.

3. A device of the character described, comprising a plug member in the form of a shaft to approximately fill the opening formed in the material to be blasted and adapted to engage and puncture a package containing the explosive charge, a locking member movably mounted upon said plug member, and means to hold the locking member in adjustment at different positions upon said plug member.

4. A device of the character described, comprising a plug member provided with means for receiving a squib, an externally screw-threaded locking member rotatably and longitudinally movably mounted upon said plug member, said locking member being provided with means to coöperate with a suitable instrument employed to rotate said locking member, and means to hold the locking member in adjustment at different positions upon said plug member.

In testimony whereof we affix our signatures in presence of two witnesses.

LOUIS E. M. HARRIS.
THOMAS S. HARRIS.

Witnesses:
HARRY L. WATSON,
JOHN BARNARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."