May 13, 1930. H. E. ENNIS 1,758,358

SAFETY BLASTING POWDER STICK

Filed Dec. 23, 1927

Fig. 1.

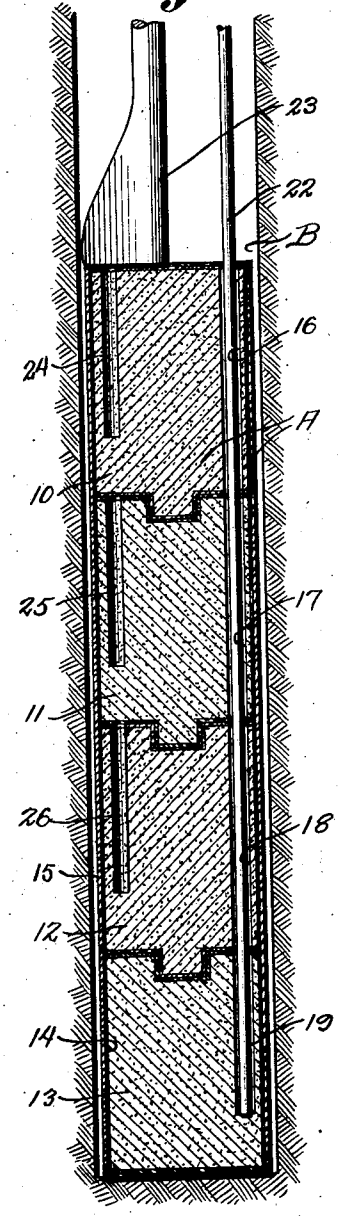


Fig. 2.

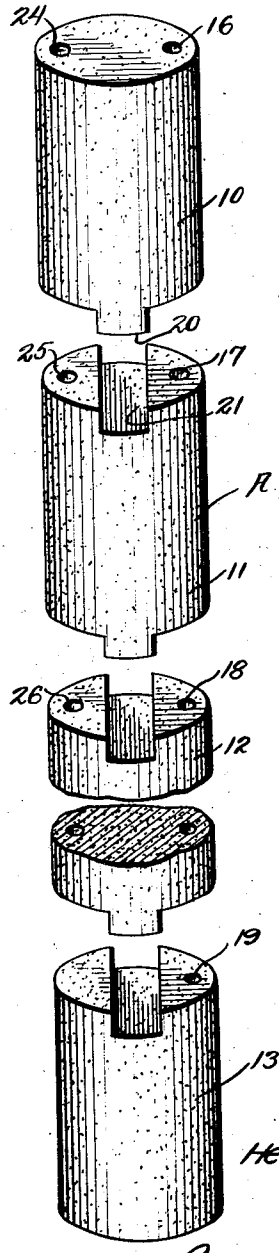


Fig. 3.

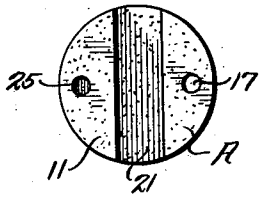


Fig. 4.

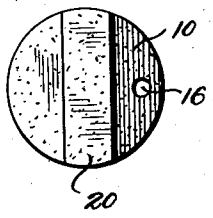
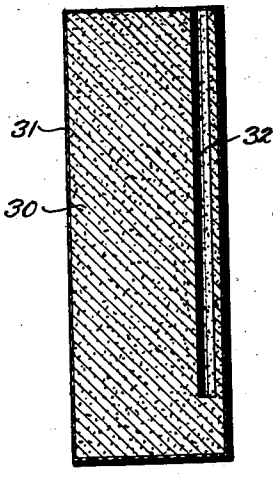


Fig. 5.



Witnesses
F. E. Radman

Inventor
Henry E. ENNIS.

By Irving L. McCathran
Attorney

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UNITED STATES PATENT OFFICE

HENRY E. ENNIS, OF THAYER, WEST VIRGINIA

SAFETY BLASTING-POWDER STICK

Application filed December 23, 1927. Serial No. 242,170.

This invention appertains to blasting and more particularly to a novel means for handling and forming an explosive for blasting purposes.

One of the primary objects of the invention is to provide means for forming a stick of blasting powder or other explosive used in coal mining or the like, whereby the charge can be readily inserted in the blasting hole and tamped in place without danger of an improper or premature explosion.

Another object of the invention is to provide a stick of blasting powder or other explosive with an opening for the reception of an inserting needle or rod, to facilitate placing of the charge in the blasting hole.

Another important object of the invention is the provision of an opening in a stick of blasting powder or other explosive located adjacent to the edge of the stick, for the reception of an inserting needle or rod, the arrangement of the opening allowing the needle or rod to be disposed at one side of the blasting hole to permit easy and full operation of the tamping bar without interference from the needle or rod.

A further object of the invention is the provision of a stick of blasting powder or other explosive formed in sections, the sections having aligned openings, all of the openings with the exception of the opening in the innermost section extending entirely through the stick with means formed on the sections for inter-engagement with one another whereby turning movement of the sections relative to one another will be prevented.

A further object of the invention is provision of sockets formed in the sections of a stick of blasting powder or other explosive at one side of the openings in the sections whereby the sockets can receive the inserting needle or rod when the sections are broken apart and used independently for small charges.

A still further object of the invention is provision of a novel stick of blasting powder or the like, of the above character, which will be efficient in use, one which will be simple and easy to manufacture and one which can be placed upon the market at small cost and used with perfect safety.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which drawings,

Figure 1 is a longitudinal section through the improved stick of blasting powder or other explosive, showing the same inserted in a blasting hole and being tamped in place,

Figure 2 is a perspective view showing the sections of the blasting stick separated one from the other,

Figure 3 is an end elevation of one section of the blasting stick showing the groove formed therein,

Figure 4 is an end elevation of another section of the blasting stick showing the tongue formed thereon for cooperation with the walls of the groove in an adjacent section of the stick.

Figure 5 is a longitudinal section through a slightly modified form of the blasting stick.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved stick of blasting powder or other explosive and B a blasting hole in which the stick can be inserted.

In the preferred form of the invention the stick A can be formed into a plurality of sections preferably four and these sections have been indicated respectively by the reference characters 10, 11, 12 and 13. Each of the sections is preferably wrapped independently of one another in thin oiled paper 14 and all the sections are wrapped together in heavy oiled paper 15 to form a single stick. Provision of the oiled paper 14 and 15 prevents dampness from acting upon the stick and as the sections are independently wrapped, the stick can be broken apart and the sections used independently of one another for small charges.

The sections 10, 11 and 12 are provided with openings 16, 17 and 18 which extend entirely through the sections and open out through the

inner and outer ends thereof. The innermost section 13 is provided with an opening or socket 19 which extends short of the inner end thereof, but opens out through the outer end thereof. The openings 16, 17, 18 and 19 extend at one side of the axial centers of the sections and preferably close to the outer faces of the sections for a purpose which will be later described.

In order to prevent turning movement of the sections relative to one another and to insure that the openings 16, 17, 18 and 19 will always be in proper alignment, the abutting ends of these sections are provided respectively with tongues 20 and grooves 21. By referring to Figures 1 and 2, it can be seen that the tongues 20 of one section will fit in the grooves 21 of the adjacent section and thus all the sections will be interlocked one with the other.

In use of the improved stick of blasting powder or other explosive, an inserting needle or rod 22 is placed through the aligned opening 16, 17, 18 and 19 and this needle forms a support for the stick and allows the insertion of the charge into the blasting hole to the furthest end thereof. Due to the fact that the openings are arranged adjacent to the side of the stick, the needle 22 will be disposed at one side of the hole allowing full use of the tamping bar 23, without danger of bending or injuring the needle.

If preferred, the sections 10, 11 and 12 can be provided with additional sockets or openings 24, 25 and 26 respectively, which can be used when the stick is broken apart to use only certain sections thereof for small charges. These openings 24, 25 and 26 do not extend entirely through the sections but terminate short of the inner ends thereof and thus when the needle 22 is inserted in these openings the same will not go entirely through the sections, but will permit the effective placing of each section in proper position. In view of the fact that the innermost section 13 has its opening 19 terminating short of its inner end, the necessity of providing an additional opening or socket for this section is eliminated.

If preferred, the sticks can be made in half sections, as indicated by the reference character 30 in Figure 5 of the drawings. In this instance, each half is wrapped in a suitable oiled paper 31 and provided with a longitudinally extending needle receiving opening or socket 32 which terminates short of the inner end of the section.

It is to be understood from Fig. 5, that the essential feature of the application is the needle receiving opening 32 and that in most instances, the blasting stick will be made in whole length sections with the needle receiving opening 32. It is also to be understood that the whole length sections can be made in different sizes, as may be desirable.

Changes in detail may be made without departing from the spirit or the scope of this invention but what I claim as new is:

1. A stick of explosive comprising a plurality of sections each having an inserting needle receiving opening therein, the opening in the innermost section terminating short of the inner end thereof, and the openings in the other sections extending entirely therethrough, and means for holding the sections against relative turning movement and the openings in longitudinal alignment.

2. A stick of explosive comprising a plurality of sections each having an inserting needle receiving opening therein, the opening in the innermost section terminating short of the inner end thereof, and the openings in the other sections extending entirely therethrough, the facing ends of the sections having interlocking tongue and groove connections as and for the purpose specified.

3. A stick of explosive comprising a plurality of sections each having an inserting needle receiving opening therein, the opening in the innermost section terminating short of the inner end thereof, and the openings in the other sections extending entirely therethrough, means normally holding the sections against relative turning movement and the openings in longitudinal alignment, the last mentioned sections also having openings therein terminating short of the inner ends thereof.

In testimony whereof I affix my signature.

HENRY E. ENNIS.