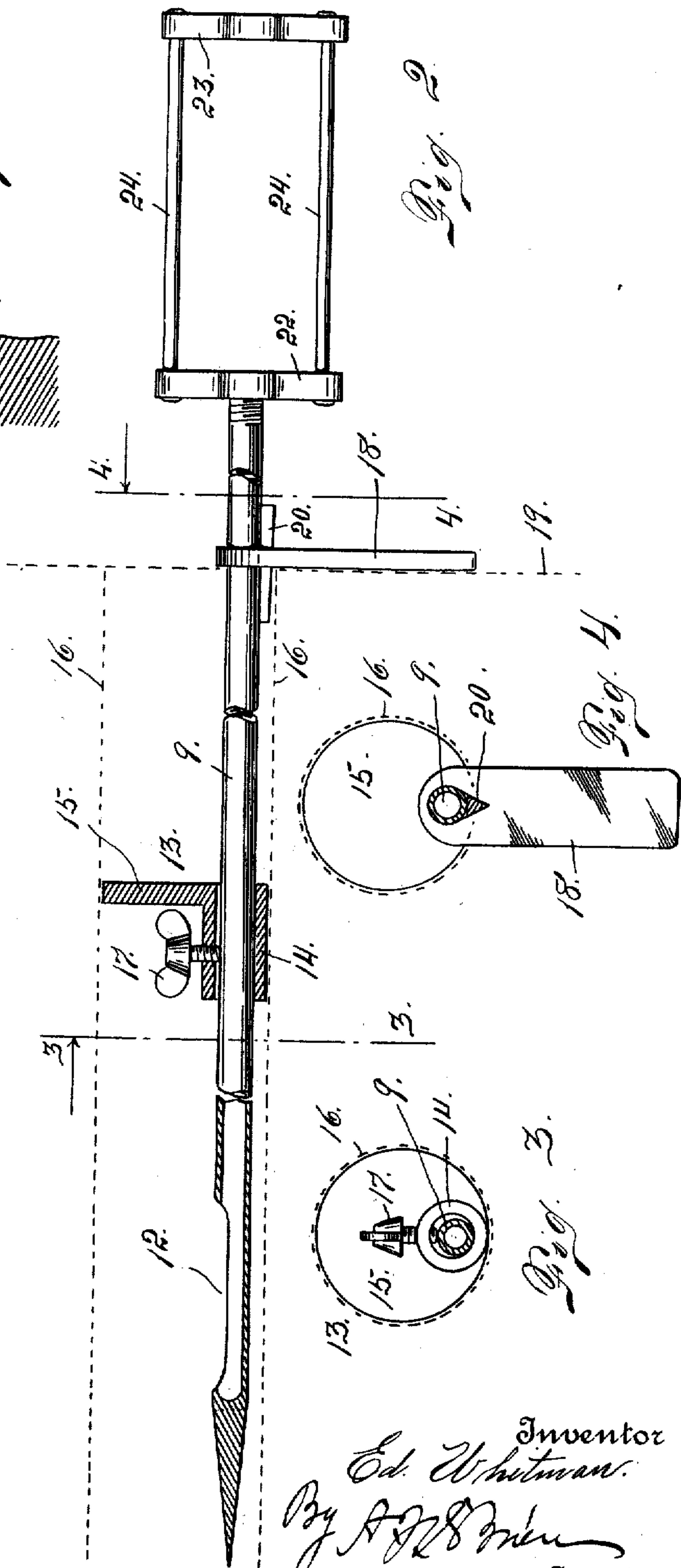
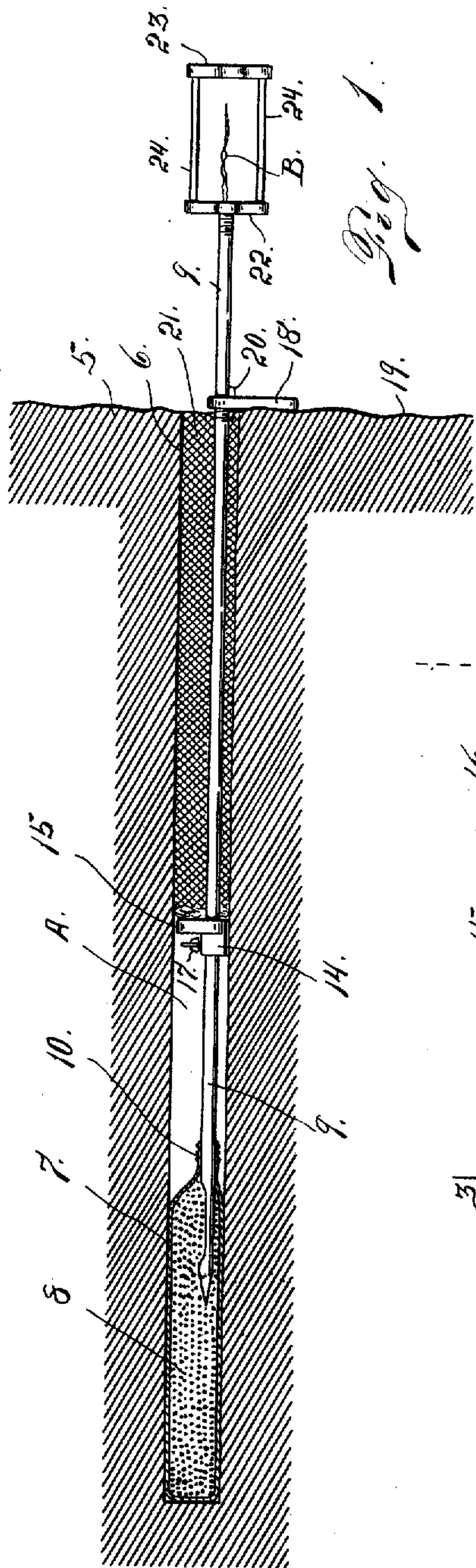


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SAFETY BLASTING BARREL.  
APPLICATION FILED MAY 18, 1906.

908,055.

Patented Dec. 29, 1908.



Witnesses  
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# UNITED STATES PATENT OFFICE.

EDWARD WHITMAN, OF DENVER, COLORADO.

## SAFETY BLASTING-BARREL.

No. 908,055.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed May 18, 1906. Serial No. 317,639.

*To all whom it may concern:*

Be it known that I, EDWARD WHITMAN, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Safety Blasting-Barrels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in safety blasting devices, my object being to prevent the force of the exploded charge from blowing out the tamping.

In my improved device I provide an air space between the charge and the tamping whereby the force of the charge is cushioned by the air within said space or chamber and this yielding capacity of the air prevents the force of the explosion from acting upon the tamping and blowing out the same, thus causing the full force of the explosion to act on the rock or other material which it is desired to break from the body of the mass into which the blasting hole is formed.

In my improvement the barrel or tube through which the fire from the squib passes to the charge of explosive, is provided with an adjustable abutment adapted to close the drill hole and form a stop for the tamping material which cannot pass the abutment. Between the abutment and the charge the drill hole is free, constituting an air chamber. Upon the barrel is also mounted a stop adapted to engage the breast of the material and prevent the barrel from being driven into the drill hole during the operation of tamping against the abutment.

Another feature of my improvement consists in providing a guard plate in the rear of the outer extremity of the barrel, to prevent the burning squib from being blown outwardly to any considerable distance from the breast of the coal or other material.

Having briefly outlined my improved construction, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a sectional view taken through the rock showing my improved safety blasting barrel in place, also

a cartridge containing a charge of explosive the same being shown attached to the inner extremity of the barrel. Fig. 2 is a view illustrating my improved device shown on a larger scale, the same being partly broken away and partly sectionized. In this view the rock in which the drill hole is formed is indicated by dotted lines. Fig. 3 is a section taken on the line 3—3 Fig. 1 viewed in the direction of the arrow. Fig. 4 is a section taken on the line 4—4 Fig. 2.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the coal or material to be broken down by the force of the blasting charge. In this material is formed a hole 6 in which is inserted a cartridge 7 containing a quantity of explosive material 8. In order to insert this cartridge it is attached to the inner extremity of the tube or barrel 9 as shown at 10. This attachment is made just in the rear of an opening 12 in the barrel, this opening communicating with the explosive material in order to allow the fire from the squib which is placed in the outer extremity of the barrel, to explode the charge.

Mounted upon the barrel at a suitable point in the rear of the cartridge is an abutment 13 consisting of a sleeve 14, and a plate 15 arranged to fill the drill hole, the diameter of which in Fig. 2 is indicated by the dotted lines 16.

Threaded in the sleeve 14 of the abutment is a set screw 17 adapted to secure the abutment in any desired location upon the barrel. The location of the abutment is determined by the length of the air space which it is desired to leave between the explosive charge or cartridge and the inner extremity of the tamping. This air space may be regulated to suit the purpose. It is believed that under ordinary circumstances it should be approximately of a length equal to the length of the explosive charge though this will be determined by experiment or by the judgment of the operator. Upon this barrel is also adjustably mounted a stop 18 adapted to engage the breast 19 of the rock and prevent the barrel from moving inwardly farther than is required. This stop 18 is locked in place on the barrel in any suitable manner. In this instance a wedge-shaped key 20 is employed, the same being inserted in a recess formed in the stop adjacent the circular opening through which



the barrel passes. Between the abutment plate 15 and the outer extremity of the drill hole, the tamping 21 is placed. Beyond the stop 18 and attached to the outer open ex-  
 5 tremity of the barrel is a plate or cross piece 22 provided with a central opening and threaded upon the barrel. To the plate 22 is attached a plate or cross piece 23 by means of parallel rods 24. The plate 23 is  
 10 located directly in the rear of the outer extremity of the barrel and forms a stop to prevent the fire from the squib from passing to any distance beyond the breast of the rock. The plate 23 constitutes a safety de-  
 15 vice whereby any fire which may have a tendency through the force of the explosion to pass rearwardly into the mine, is prevented from doing so.

From the foregoing description the use and  
 20 operation of my improved safety blasting barrel will be readily understood. In the first place the cartridge 7 containing the explosive charge 8 is tied or fastened to the in-  
 25 ner portion of the barrel in the rear of the opening 12. The barrel is then inserted into the drill hole of the rock and the blasting charge deposited at the inner extremity of said hole. Before inserting the charge, the  
 30 abutment 13 is adjusted upon the barrel and fastened in order to leave the necessary air space A between the outer extremity of the explosive charge and the abutment. The  
 35 stop 18 is then locked in place so that it shall engage the breast of the rock and prevent the barrel from moving inwardly farther than is desired. The tamping material is then  
 driven into the hole in the rear of the abutment whereby this portion of the hole is tightly filled. The squib B which is inserted  
 40 in the outer extremity of the barrel is then lighted and the fire conducted through the barrel to the explosive charge. As soon as the explosion takes place its force is cushioned on the air within the chamber A, thus

preventing the explosive force from blowing 45 out the tamping. The abutment 15 is eccentrically arranged on the barrel 9 whereby the latter is permitted to occupy a position close to the wall of the drill hole thus giving  
 50 a better opportunity for introducing the tamping material to the drill hole than would be the case if the abutment were concentric with the barrel. Attention is also called to the fact that the stop 18 is connected with  
 55 the barrel in such a manner that it engages the breast of the rock beyond the drill hole leaving the latter open for the introduction of the tamping material.

While this device is more especially intended for use in coal mining, it must be un- 60 derstood that it may be employed in other relations where more solid material as various kinds of rock are to be mined by blasting.

Having thus described my invention, what I claim is: 65

1. A blasting barrel provided with an abutment located intermediate its extremities, the barrel passing through the abutment outside of the latter's center, whereby it is eccentrically arranged thereon, and a 70 stop adjustably mounted on the barrel in the rear of the abutment and projecting laterally therefrom to engage the breast of the rock without obstructing the outer open extremity of the drill hole. 75

2. The combination with a blasting barrel, of an abutment consisting of a plate and a sleeve located outside of its center, the barrel passing through the sleeve of the abutment, and means connected with the sleeve 80 for adjustably fastening the abutment in place upon the barrel.

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

EDWARD WHITMAN.

Witnesses:

DENA NELSON,  
 A. J. O'BRIEN.