No. 676,502. Patented June 18, 1901.

I. T. JENKINS.

MINER'S SQUIB.

(Application filed Apr. 22, 1901.)

(No Model.)

Fig. 1.

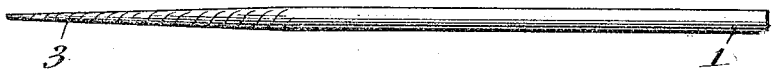


Fig. 2.

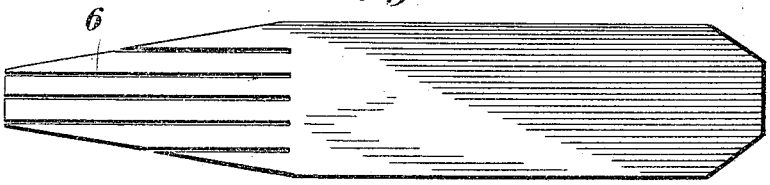


Fig. 3.

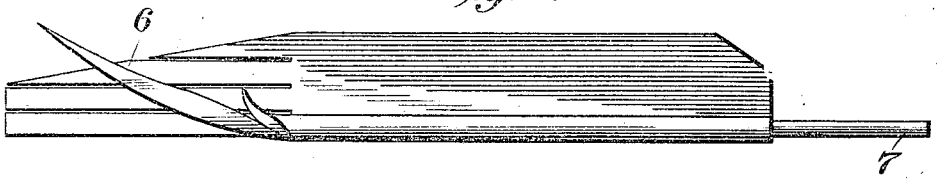
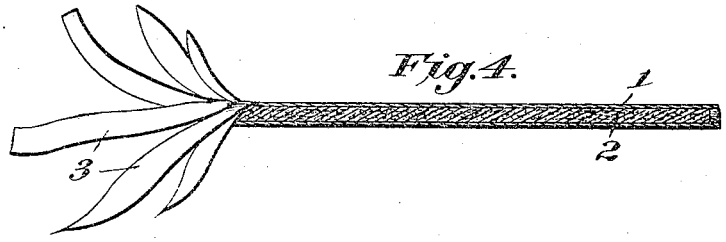


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ISAAC T. JENKINS, OF PLYMOUTH, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO SAMUEL SALSBURG, OF SAME PLACE, AND ABRAM SALSBURG, OF WILKESBARRE, PENNSYLVANIA.

MINER'S SQUIB.

SPECIFICATION forming part of Letters Patent No. 676,502, dated June 18, 1901.

Application filed April 22, 1901. Serial No. 56,979. (No model.)

To all whom it may concern:

Be it known that I, ISAAC T. JENKINS, a citizen of the United States, residing at Plymouth, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Miners' Squibs; 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.

This invention relates to miners' squibs; and the object of the same is to construct the squib so as to guarantee absolute safety in the use thereof and which will show conclusively to the miner that the squib is perfectly safe and reliable, the squib being specially adapted for use in gaseous mines or mines traversed by strong wind-currents. I accomplish this by providing a shredded or slitted twisted match that can be instantly opened, which every miner is very prone to do, whether the tube part is hermetically sealed or not, in order to examine the interior of match to see that no stray grains of powder have accidentally adhered to the match.

To this end the invention consists in the details of construction hereinafter more fully described, and particularly pointed out in the appended claims.

Figure 1 is a perspective view of a miner's squib constructed in accordance with my invention. Fig. 2 is a plan of the blank from which the squib is made. Fig. 3 is a view showing the manner in which the squib is formed. Fig. 4 is a longitudinal section through the tube of the squib and shows the match opened for inspection.

Referring to the drawings, the numeral 1 designates the paper case or tube, 2 the explosive filling, and 3 the match of the squib.

5, Figs. 2 and 3, designates the paper blank from which the squib is made, said blank having a trapezoidal-shaped shredded or slitted end 6, which when rolled and twisted by hand forms the completed match 3.

In the construction of my improved squib the paper blank is laid upon a flat and smooth base of slate or marble, a cylindrical needle or former 7 laid thereon at the right or left hand edge thereof, with one end of the needle end projecting to base of slits, and the paper is then rolled on the needle in a manner known to all familiar with the art of paper tubing and assumes the shape shown in Fig. 1. The paper can be rolled from either edge, so that the squib can be formed by either right or left hand persons. The powder is then inserted and the open end of squib is closed with a composition consisting of picric acid, litharge, wood-naphtha, and shellac or gum-arabic in or about the following porportions: picric acid, thirty-two parts; litharge, twenty parts; wood-naphtha, eight parts, and gum shellac or arabic, one part.

The advantages of my improved squib over those heretofore made is the facility in opening and closing match. Heretofore the objection has been raised that too much time was taken up in opening match and closing it, while a transparent match is utterly useless as well as dangerous, as a transparent match necessitates the use of a lamp with a glass globe or bulb carried by the miner to enable him to examine the match underground. In my squib all unnecessary labor in untwisting or examining by any method not attainable underground is dispensed with, as the match part can be instantly untwisted and opened and closed and rendered a time-fuse, according to the discretion of the miner or the distance he has to traverse to a place of safety.

In my invention the slitted strands overlapping each other practically form a barrier to the powder from entering the match, at the same time forming no impediment to the fire entering powder in the tube at the place intended, there being no obstacle in the shape of a turned-over tongue at insertion of match within the tube. When a turned-over tongue is used, the fire in the match is apt to leave the tongue, thus crawling along the outside of the body of tube, igniting the powder at about the center of squib, causing it to blow out. Particularly is this the case where blowers or volumes of gas are encountered in holes after tamping—a process necessary before adding squib for blasting.

When the powder in the tube has caught fire otherwise than at the place or point in-

tended, such as base or insertion of match, the force of such a squib is rendered inadequate to the force of gas sometimes encountered in holes while blasting. In my squib the danger above alluded to is not encountered.

In the construction of my improved squib the needle is extended to base of the slits and the edge of the blank turned over needle, as shown in Fig. 3, and rolled until the whole assumes the shape shown in Figs. 1 and 4, when paste or other adhesive matter is applied along the projecting outer edge, when the needle and paper are rolled to form a complete tube. This tube will be closed at the junction of the tube-body, which closure is effected by the shreds or strands of match parts overlapping each other under the process of rolling. The match is then twisted by hand, when the squib presents the appearance shown in Fig. 1.

The use of my squib is well known to miners and need not be explained at length.

Having thus described my invention, what I claim is—

1. A blank for miners' squibs, composed of a strip of paper or the like having a slitted or shredded end adapted to be twisted to form the match.

2. A blank for miners' squibs, composed of a strip of paper or the like having a trapezoidal-shaped end shredded or slitted longitudinally and adapted to be twisted to form the match.

3. A miner's squib, composed of a strip of paper or the like rolled to form a tube containing an explosive charge and having a shredded or slitted end twisted to form the match.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ISAAC T. JENKINS.

Witnesses:
ELEANOR D. MCCARTNEY,
ELMER G. FEIST.