No. 774,269. PATENTED NOV. 8, 1904.

E. C. OWENS.

MINER'S SQUIB.

APPLICATION FILED FEB. 25, 1904.

NO MODEL.

Fig. 1.

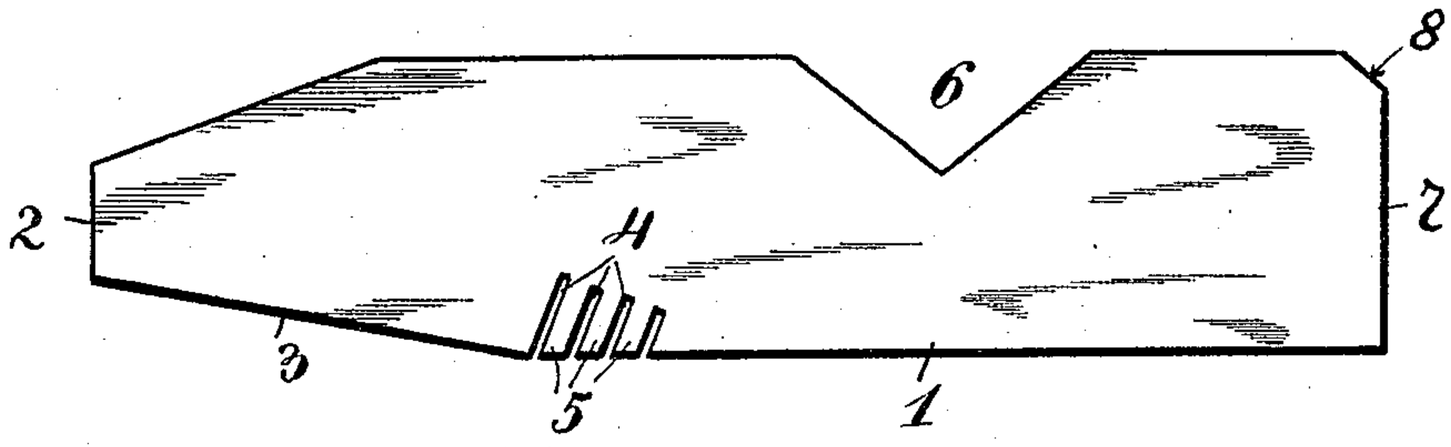



Fig. 2.

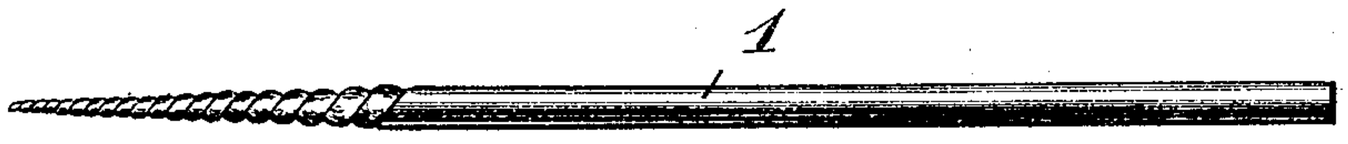
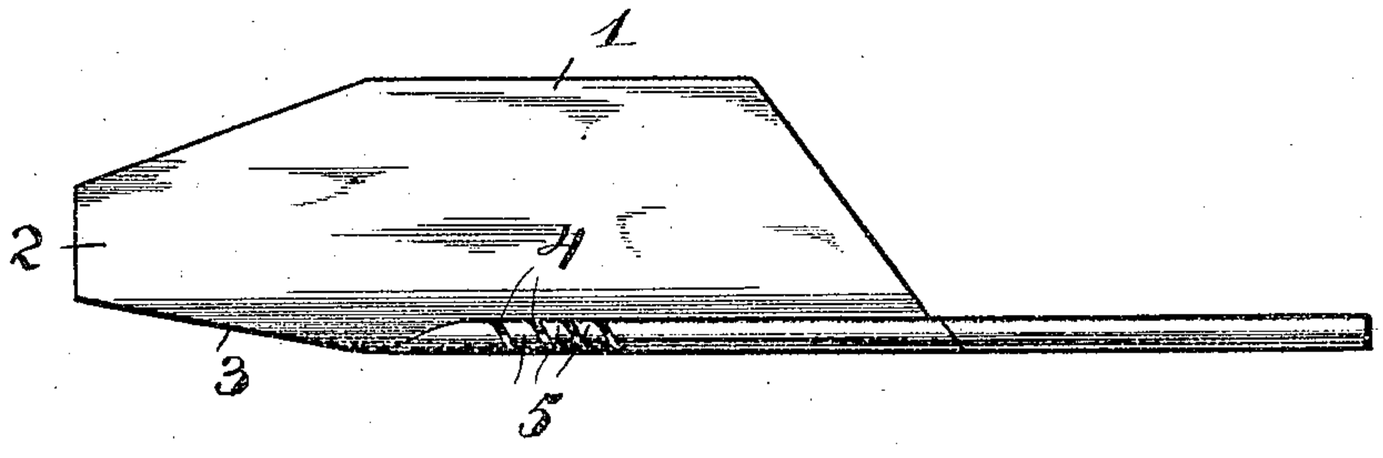



Fig. 3.




Witnesses

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No. 774,269. Patented November 8, 1904.

# UNITED STATES PATENT OFFICE.

EDWARD C. OWENS, OF PRICEBURG, PENNSYLVANIA.

## MINER'S SQUIB.

SPECIFICATION forming part of Letters Patent No. 774,269, dated November 8, 1904.

Application filed February 25, 1904. Serial No. 195,278. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD C. OWENS, a citizen of the United States, residing at Priceburg, in the county of Lackawanna 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 improvements in miners' squibs.

The object of the invention is to provide a squib in which the dangers heretofore existing in such devices will be minimized.

Another object is to provide a squib so constructed as to form a perfect seal for the powder, thereby preventing the entrance of the same into the match end of the squib.

A further object is to provide a squib which may be quickly and easily opened for examination without liability of tearing the same and which may be readily and neatly closed again for use.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a plan view of the blank from which the squib is formed. Fig. 2 is a similar view of the completely-formed squib. Fig. 3 is a side view of the same, showing the match part of the squib opened for inspection.

Referring more particularly to the drawings, 1 denotes the paper blank from which the squib is formed, one end of said blank being tapered, as at 2, said end having a longer taper on one edge than on the other, as shown at 3 in Fig. 1 of the drawings.

In the edge of the blank adjacent to the inner end of the taper 3 are formed a series of slits 4, which are cut into the paper at an acute angle to the edge of the same, thereby forming tongues 5. The slits 4 are graduated in length, the longest slit being the one nearest the tapered end of the blank.

In the edge of the blank opposite to that in which the slits are cut is formed a V-shaped notch 6, and the corner of the paper formed by said notched edge and the square end 7 opposite the tapered end 2 is cut off, as at 8.

In forming the squib the paper is rolled upon a suitable mandrel or needle, (not shown,) said roll being begun at the slitted edge of the paper and rolled toward the notched edge of the same, the tapered end being twisted to a more or less degree of tightness, according to the time that it is desired the same should burn before the fire reaches the explosive contained in the tubular portion of the roll.

When it is desired to open the squib for inspection, the tapered end of the same is untwisted, and said end as far in as the V-shaped notch is then unwound, thereby exposing the inside of the twisted or match end of the squib to the view of the miner and enabling him to see whether or not there is any powder in said twisted end that would cause a premature explosion. The V-shaped notch permits this end of the paper to be unrolled without tearing the same or disturbing the contents of the tube.

When the blank is rolled and the tapered end twisted, the tongues 5, formed by the slits 4, will be doubled over the end of the tubular portion of the roll and will form a seal to prevent the powder or other explosive from passing into the twisted end of the squib.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A blank for miners' squibs, consisting of a strip of paper having unequally-tapered edges at one end of the same, whereby said strip may be rolled into a tube having a tapering end, slits formed in and arranged at an acute angle to one edge of the strip, and means whereby the tapered end of said blank may

be unrolled and rolled again without disturbing the tubular end of the same, substantially as described.

2. A blank for miners' squibs, consisting of a strip of paper having unequally-tapered edges at one end of the same whereby said strip may be rolled into a tube having a tapering end, slits formed in and arranged at an acute angle to one edge of said strip, and a V-shaped notch formed in the opposite edge of the same whereby the tapered end of said blank may be unrolled and rolled again without unrolling or tearing the tubular end of the same, substantially as described.

3. A miner's squib, composed of a strip of paper or the like rolled to form a tube to contain an explosive charge, one end of said strip of paper being unequally tapered whereby said end may be rolled and twisted to form a match, graduated slits cut obliquely in one edge of said strip to form tongues which are turned or doubled in over the tubular end of said squib when said strip is being rolled and twisted, and means whereby said tapered end may be untwisted and unrolled without disturbing the tubular end of the squib, substantially as described.

4. A miner's squib, composed of a strip of paper or the like rolled to form a tube to contain an explosive charge, one end of said strip of paper being unequally tapered whereby said end may be rolled and twisted to form a match, graduated slits cut obliquely in one edge of said strip to form tongues which are turned or doubled in over the tubular end of said squib when said strip is being rolled and twisted, and a notch formed in the outer edge of said strip whereby the tapered end of said squib may be untwisted and unrolled without unrolling or tearing the paper forming the tubular end of the same, substantially as described.

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

EDWARD C. OWENS.

Witnesses:
MINNIE D. NORRIS,
JACOB REISMAN.