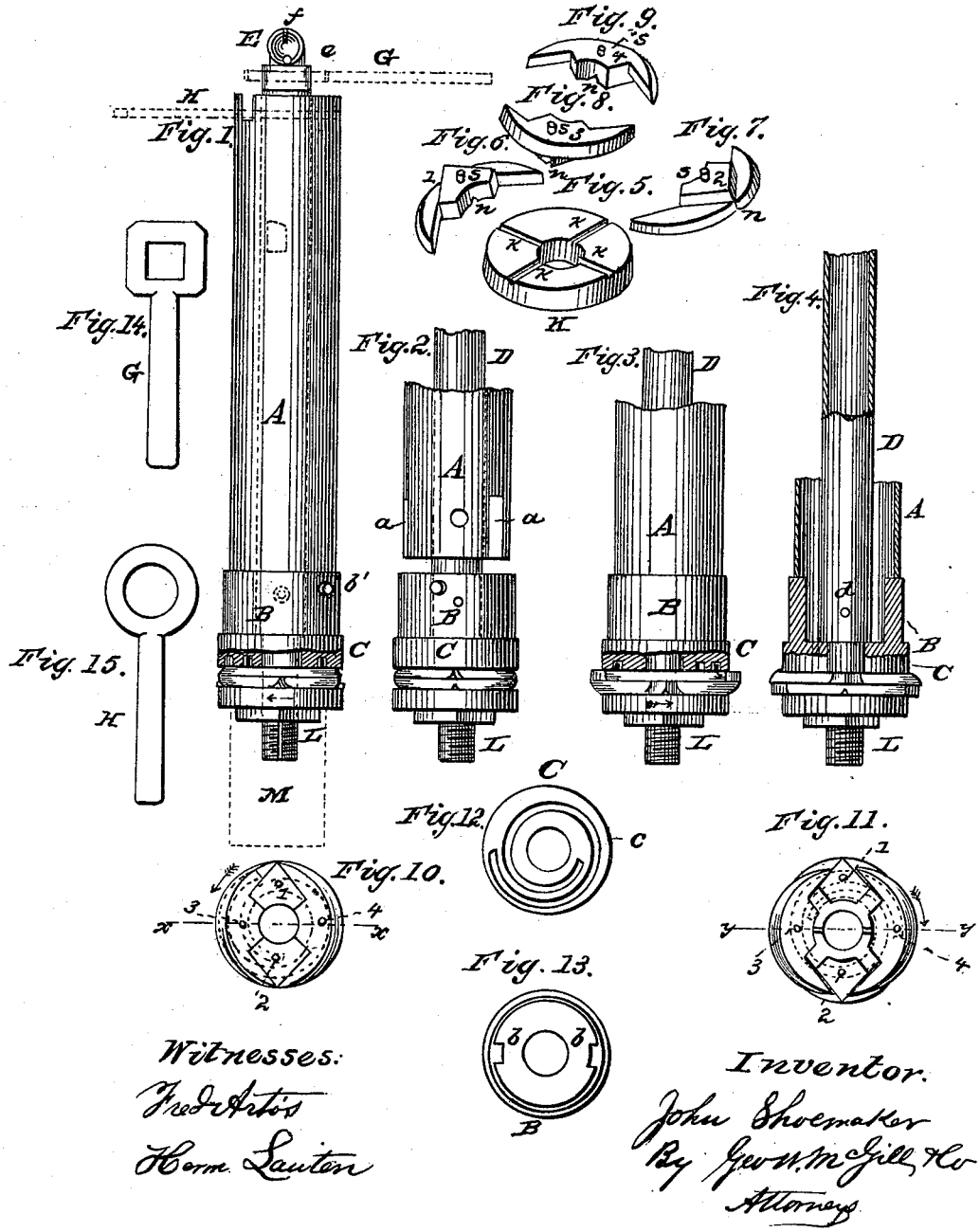
J. SHOEMAKER.

Blast Tamp.

No. 108,397. Patented Oct. 18, 1870.



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JOHN SHOEMAKER, OF PUTNEYVILLE, PENNSYLVANIA.

Letters Patent No. 108,397, dated October 18, 1870.

IMPROVEMENT IN TAMPING DEVICES FOR BLASTING PURPOSES.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, JOHN SHOEMAKER, of Putneyville, in the county of Armstrong and State of Pennsylvania, have invented a new and useful Tamping Device for Blasting Purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, sufficient to enable those skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing making a part of this specification, and to the letters and figures marked thereon.

The object of my invention is to secure a safe, sure, and economical water-proof tamping device, which can be used to advantage in blasting coal, sand, slate, or rock of any description; and

It consists in a fuse-tube or "needle-hole," surrounded and protected by a cylinder provided with expanding dies; also, in the peculiar construction, arrangement, and operation of the parts, all being made of metal except the blasting-cartridge, which may be either of metal, linen, or paper, as desired.

In the drawing—

Figure 1 is a side elevation, showing the tamping device complete, with a cartridge attached.

Figure 2 is a side elevation, showing the manner of attaching the outer cylinder to the sleeve and scroll.

Figure 3 is a side elevation, showing the dies expanded.

Figure 4 is a central longitudinal section, showing a portion of the fuse-tube or inner cylinder.

Figure 5 is a perspective view of the supporting-plate or washer.

Figures 6, 7, 8, and 9 are detailed views of the dies.

Figure 10 shows the position of the dies when in place, but not expanded.

Figure 11 shows the position of the dies when expanded.

Figure 12 is a view of the lower side of the scroll, showing the worm or spiral groove for expanding the dies.

Figure 13 is a top view of the sleeve and scroll.

Figure 14 is a wrench for holding the fuse-tube or inner cylinder D stationary while the outer cylinder A is being turned.

Figure 15 is a lever, by which the inner cylinder or fuse-tube D is held in proper position and the outer cylinder A is turned.

The outer cylinder A is made of suitable dimensions to pass easily into the hole made by the drill.

At the lower end of the cylinder A is attached a sleeve, B, the bottom of which is slightly enlarged so as to form a collar, C, which I call the scroll.

The cylinder A and sleeve B are connected together, and prevented from turning independently of each other, by means of a spline and feather, *a b*, and secured by a screw, *b*.

In the bottom of ths sleeve and scroll (see figs. 12 and 13) is an orifice large enough to admit the lower end of the inner cylinder.

On the under side of the bottom of the scroll C is a worm or spiral groove, *c*, shown clearly in fig. 12.

The fuse-tube or inner cylinder D is made of sufficient length to project a short distance beyond the ends of the outer cylinder when in place, and is large enough in diameter to hold the necessary quantity of squib-powder or other suitable substance. Its lower portion is made slightly smaller than the other portion so as to form a shoulder, which, when in place, rests upon the bottom of the sleeve and collar, as shown in fig. 4, the smaller portion passing through the opening shown in figs. 12 and 13.

A short distance above the shoulder and smaller portion is a vent-hole, *d*, for the escape of gas.

At the upper end of the tube or cylinder D, on one side, is a concave depression, E, which forms a priming-pan, communicating with the inside of the cylinder by means of a priming-vent, *e*, the upper end of the cylinder being closed with the exception of the vent *e*.

On the extreme upper end of the cylinder D is another concave depression or bowl, which communicates with the priming-pan E by means of a channel, *f*, and which forms a convenient receptacle for the match when the tamping device is used in a horizontal position; but when used in a vertical position it becomes the priming-pan, and the priming-vent *e* is made therein instead of in the depression on the side. An angular shoulder is formed just below the priming-pan E, so that the cylinder D may be held stationary by means of a wrench, G, shown in fig. 14, the upper end of the cylinder being held in proper position with relation to the lower end by means of a tool, H, shown in fig. 15, consisting of a ring with a handle attached. The inner circumference of the ring surrounds the cylinder D, and the outer circumference fits the inside of the cylinder A, the handle resting in a notch cut in the upper end of the cylinder A, as shown in fig. 1, and by means of which the same is turned.

The expanding-dies are made in four sections, 1 2 3 4, as shown in figs. 6, 7, 8, and 9. On the upper side of each section is a stud or pin, *s*, for engagement with the worm-groove *c*, on the scroll C. On the under side of each section is a notch or groove, *n*. When the sections are placed together in proper position they form a circle, with an orifice in the center, the notches or grooves *n* radiating from the center at right angles with each other.

The supporting-plate consists of a circular plate or washer, K, with an orifice in its center, and with ribs or tongues *k*, corresponding with the notches or grooves *n* in the sectional dies.

The operation is as follows:

The inner cylinder D is held with the open end uppermost. The outer cylinder A, with the sleeve

and scroll attached, is placed over it, so that the end of the cylinder D passes through the orifice, and the shoulder rests against the bottom of the sleeve. The sectional dies are then placed in position, commencing with section 1, which is placed so that the stud *s* engages with the groove *c* near its inner terminus; section 2 is then placed next to section 1, on the left-hand side; section 3 diametrically opposite to section 1, and section 4 between sections 1 and 3. The plate or washer K is then placed in position, so that the ribs or tongues *k* fit in the notches or grooves *n*. The parts are held in place by a nut, L, screwed on the end of the cylinder D, and a spline and feather secures them so that they will turn together.

The cylinder D is filled with the squib-powder, the cartridge M attached, and the device placed in the drilled hole.

The tool H is placed in the position shown in fig. 1, with the handle resting in the notch.

The tube D is held stationary by means of the wrench G, and the cylinder A is turned toward the right-hand side by means of the tool H, when the engagement of the studs *s* with the groove *c* expands the sectional dies, as shown in figs. 3, 4, and 11, tamping the charge completely and effectually. The match is then applied to the concave depression, some priming-powder placed in the priming-pan, the match ignited, and the charge exploded.

Among the advantages attending the use of my invention, it may be stated that in drilling slate and other rocks of a similar character it is sometimes times found to be so wet as to dampen the powder, or so dry as to crumble in and obstruct the needle-hole, in either case preventing the successful ignition and explosion of the charge. By the use of my tamping device these difficulties are readily obviated.

Another advantage is that the dies can be expanded at any desired point, so that the dimensions of the space to be acted upon by the charge can be regulated at the pleasure of the operator.

This tamping device need not be confined to cases where powder is used as the explosive agent. It will be found equally advantageous where gun-cotton, nitro-glycerine, or other explosive agents are used.

What I claim as new, and desire to secure by Letters Patent, is—

1. A tamping device provided with expansible dies, constructed and operating substantially as shown and described.

2. A fuse-tube or needle-hole, protected by an outer cylinder, constructed and operating substantially as shown and described.

3. The scroll C, in combination with the sectional dies, substantially as shown and described.

4. The supporting-plate or washer K, with its ribs or tongues *k*, in combination with the sectional dies formed with notches or grooves *n*, substantially as shown and described.

5. A tamping device, made and operating as above, in combination with a cartridge, substantially as shown and described.

In testimony that I claim the foregoing tamping device, I have hereunto set my hand this 5th day of March, 1870.

JOHN SHOEMAKER.

Witnesses:

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MICHAEL HOFFMAN.