(No Model.) 3 Sheets—Sheet 1.

W. A. SHAW.

LEAD PRESS.

No. 338,561. Patented Mar. 23, 1886.

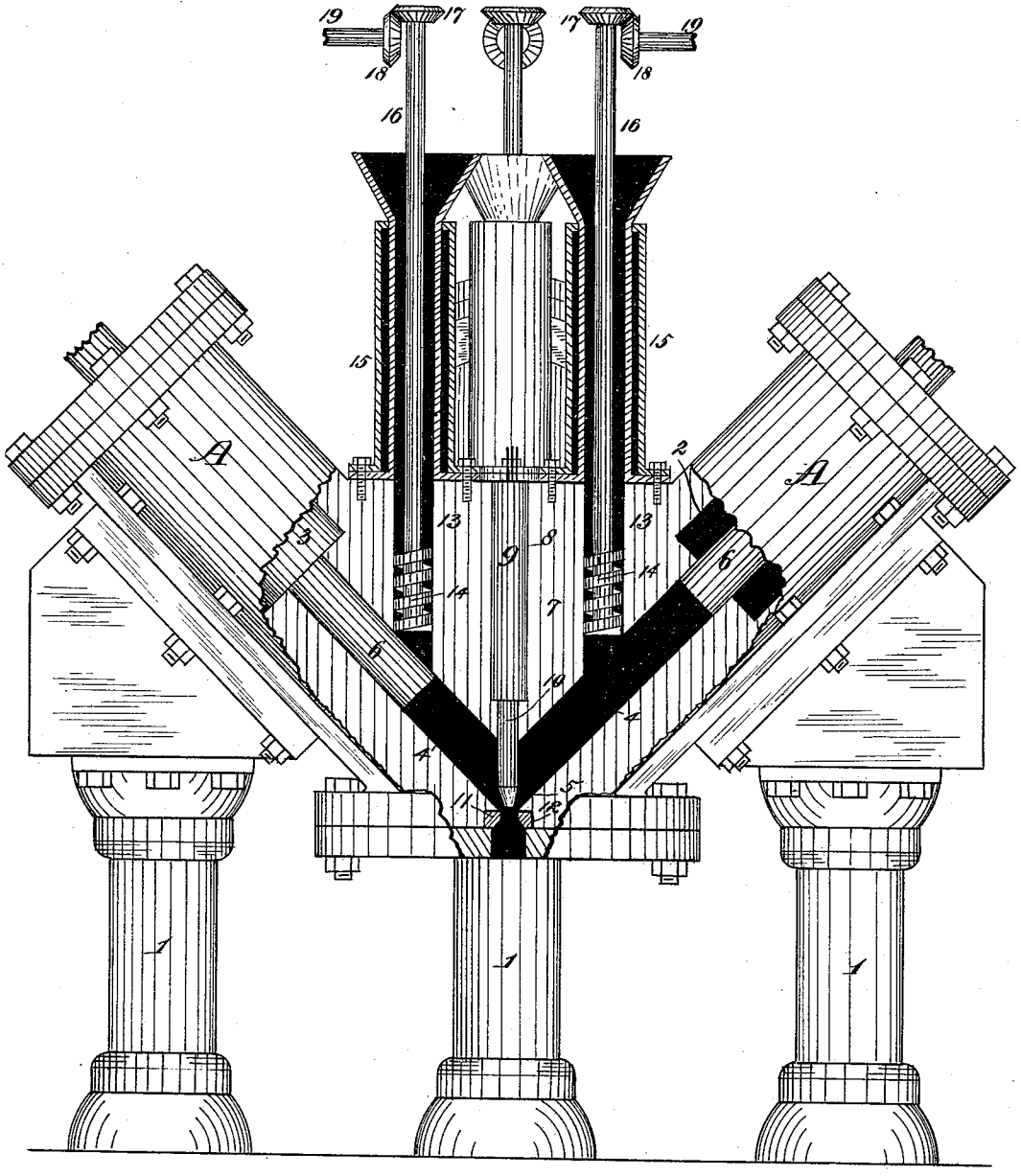


Fig. 1.

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C. M. Clarke

INVENTOR William A. Shaw.
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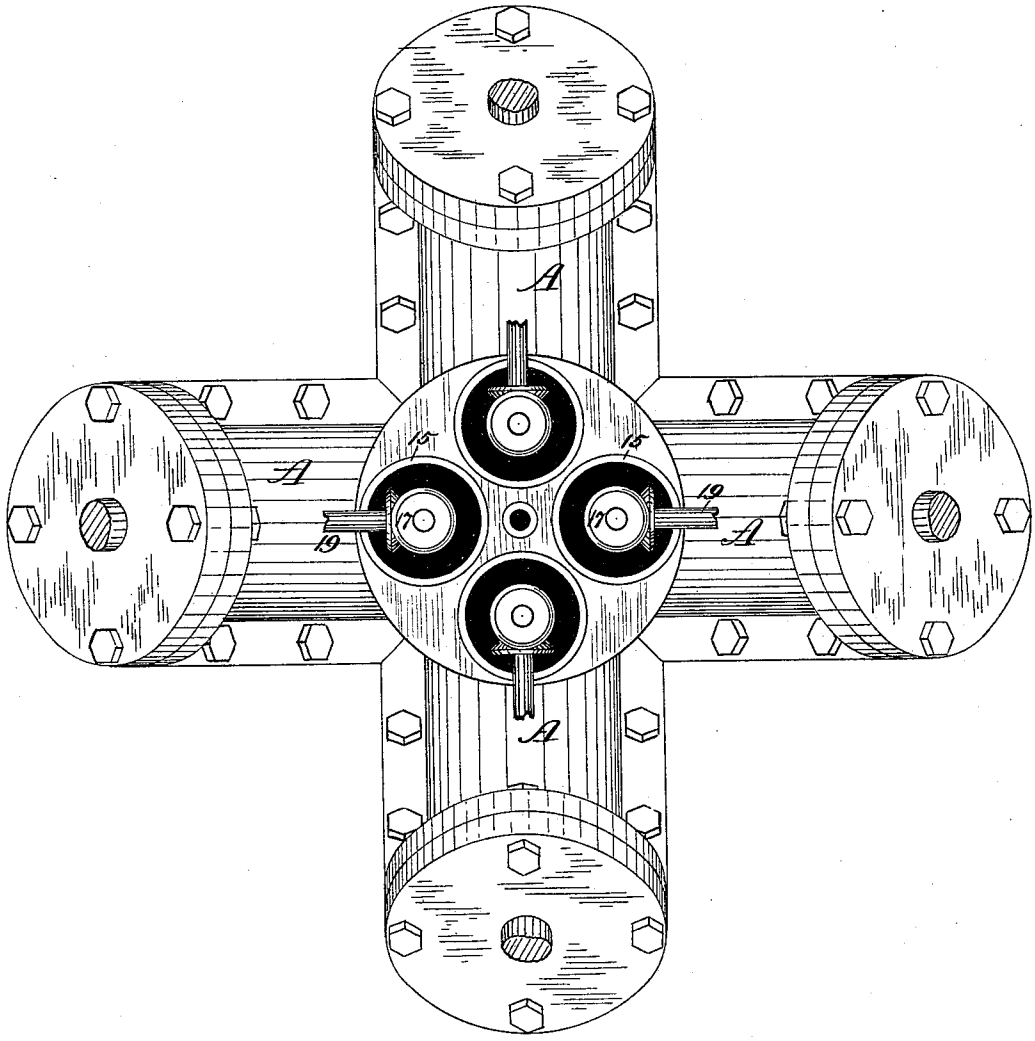
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Fig. 2.



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(No Model.)

3 Sheets—Sheet 3.

W. A. SHAW.

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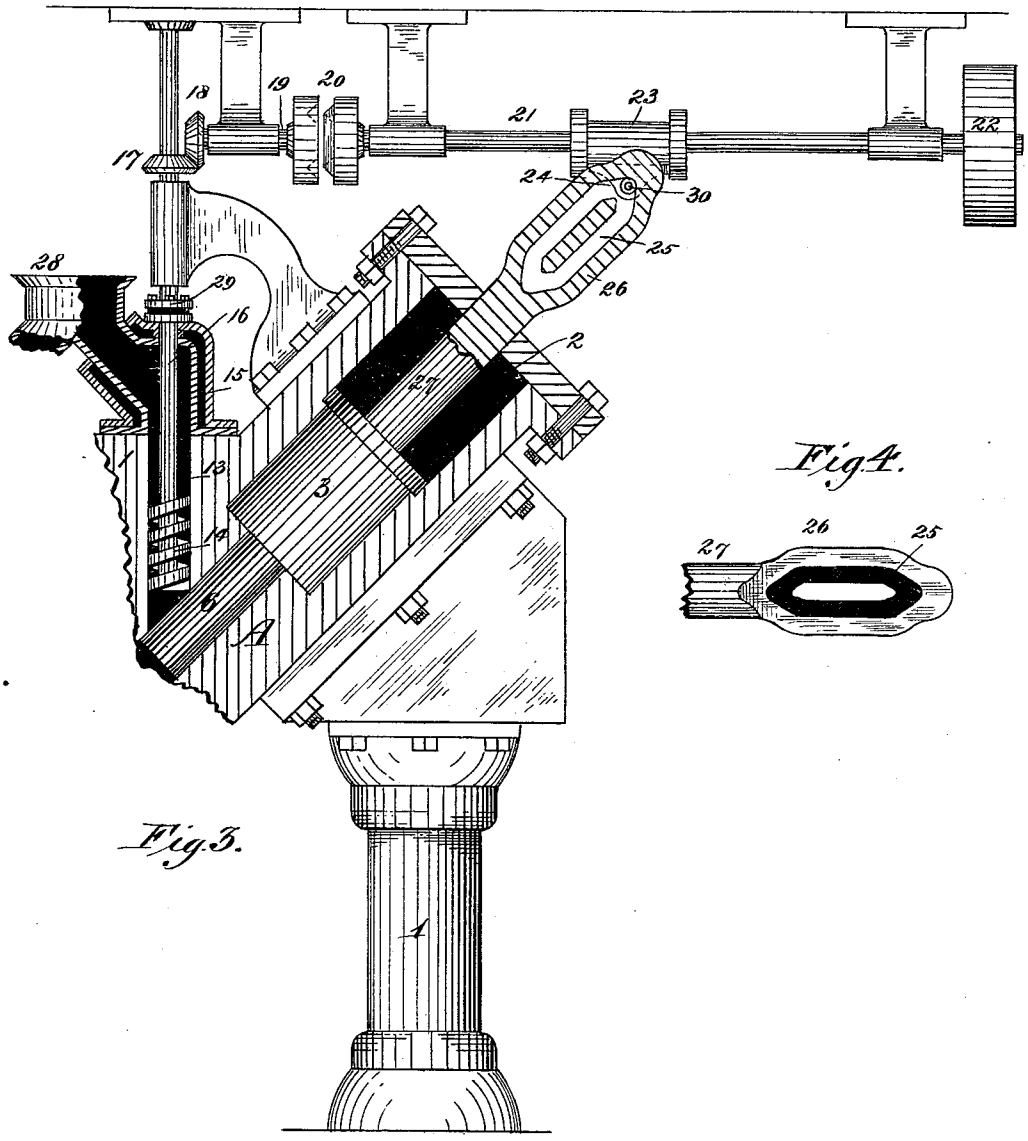


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM A. SHAW, OF PITTSBURG, PENNSYLVANIA.

LEAD-PRESS.

SPECIFICATION forming part of Letters Patent No. 338,561, dated March 23, 1886.

Application filed March 7, 1884. Renewed February 4, 1886. Serial No. 190,863. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. SHAW, a citizen of the United States, residing at Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Lead-Presses; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a view in side elevation of a lead cable or pipe press, certain parts being shown in section. Fig. 2 is a plan view. Fig. 3 is a sectional side elevation of one of the cylinders, showing the operating mechanism. Fig. 4 is a detail view of the rod secured to the rear end of the piston.

In the lead-presses now in use a great amount of time is lost in preparing the press after each operation for the succeeding operation. These preparations, consisting in lowering the plunger, filling the lead-chamber, and allowing the molten-lead to solidify, consume a great amount of time. In fact, more time is consumed in these preparations than in the actual operation of forming the cable or pipe, and hence the output of a press is greatly disproportionate to the time employed.

The object of my invention is to so combine several presses that the formation of the cable or pipe is continuous and uninterrupted; and to this end my invention consists, in general terms, in the construction and combination of parts, all as more fully hereinafter described and claimed.

Upon suitable standards, 1, are supported the cylinders A, cast in one piece and arranged to converge to a common center, as shown. In each of these cylinders A are formed the chambers 2, for the pistons 3, and the passages 4, for the reception of the lead. These passages converge toward a common center, and uniting form a central chamber, 5. In the outer ends of these passages 4 work the plungers 6, united to or forming a part of the pistons 3. The cylinders A are connected or formed with central web, 7, through which is formed the hole 8, having its center in line with the convergent point of the several cylinders.

In the hole 8 is placed the core-bar 9, having on its inner end the core 10, located in the center of the central chamber 5. In line with the core, and on the opposite side of the central chamber, is placed the die 11 in a recess, 12, provided therefor. This die is supported and retained in place by the upper end of the standard 1 on which the common central portion of the cylinders rests.

Through the web 7, at equal distances from the central hole, 8, are formed the vertical passages 13, communicating at their lower ends with the passages 4. Within these passages 13 are arranged the feed-screws 14, which feed the molten metal into the passages 4, where it is forced forward by the plungers 6 toward the center mandrel.

On the top of the web 7 and around the passages 13 are bolted the jacketed filling-heads 15, having an internal diameter equal to the diameter of the passages 13. These filling-heads are kept hot by steam or hot air circulated in the space between their inner and outer walls. Through the filling-heads extend the shafts 16 of the feed-screws, having on their upper ends the bevel-gears 17, meshing with the bevel-gears 18, secured to a suitable driven shaft, 19, on the opposite end of which is secured one member of the clutch mechanism 20, the other member of this clutch mechanism being secured to the shaft 21, which is driven by a belt passing around the pulley 22, secured to the opposite end of said shaft.

On the shaft 21, which is also capable of longitudinal motion, is so mounted the sleeve 23 that it will move longitudinally with the shaft 21, but will not rotate therewith. The sleeve 23 is provided with the depending lug 24, said lug being provided with the laterally-projecting friction-roller 30. This friction-roller 30 projects into a groove, 25, formed in one side of the enlarged end 26 of the rod 27, which is attached to the piston 3 and projects through the head of the cylinder. The groove 25 is so shaped that the inward stroke of the piston will so move the shaft 21 as to separate the members of the clutch mechanism 20, and the outward stroke of the piston will push and hold together said members. Each of the cylinders is provided with a feeding device

and a feed-operating mechanism similar to that above described.

In place of the filling-heads 15 being separate and independent of each other, they may all be united together to a common funnel or basin, 28, as shown in Fig. 3, in which case the filling-heads are provided with a stuffing-box, 29, through which shafts 16 pass.

The operation of this press is as follows to form a lead-covered cable: The insulated wires are drawn from suitably-mounted reels, and passed through the core-bar 9 and core 10, and the die 11. The filling-heads are then filled with molten lead, and one or more of the pistons are moved so as to cause the members of their clutch mechanisms to engage, thereby turning their feed-screws, which will then force the molten lead into the passages 4 and central chamber, 5. As soon as the passages and chamber are filled, one of the pistons and plungers is forced forward by admitting water into the chamber 2 behind its piston, the other pistons having been moved back to their original positions at the outer ends of the chambers 2. It will be noticed that while the pistons are at either end of their strokes the friction-roller 30 is held in such a position by the groove 25 that the members of the clutch mechanism are not in engagement. The forward movement of one of the plungers forces the lead in its passage toward the central chamber and out through the die. As soon as the plunger has completed its forward stroke it is moved outward again by admitting water from a pump or accumulator in front of the piston, and during this outward movement the feed-screw is operated to fill the passage of this piston, and simultaneously with this outward movement of the piston and the filling of its passage one of the other plungers is operated in the same manner as the first plunger, and so on in succession with the other cylinders. The movements of the various parts should be so timed that one piston will not act until the passage of the preceding plunger has been filled. If desired, the pistons of two oppositely-disposed plungers may be operated simultaneously.

It will be observed that by combining the cylinders and other press mechanism as above described, the formation of the cable goes on uninterruptedly, the lead being forced out of one cylinder while that of the other is solidifying, and that as the plungers move back their passages are being filled with lead by the feed-screws.

The temperature of the filling-heads should always be such as to keep the lead in a fluid or quite plastic condition.

I claim herein as my invention—

1. In a lead-press, a cylinder having a lead-passage, 4, and feed-passage 13, in combination with a plunger and automatic mechanism for feeding the lead into said passage during the retreat of the plunger, substantially as set forth.

2. In a lead-press, a cylinder having a lead-passage, 4, and a feed-passage, 13, in combination with a plunger, and the feed-screw 14, substantially as set forth.

3. In a lead-press, a cylinder having a lead-passage, 4, and a feed-passage, 13, in combination with a plunger, the feed-screw 14, and the jacketed filling-head 15, substantially as set forth.

4. In a lead-press, a cylinder having a lead-passage, 4, and feed-passage 13, in combination with a plunger, a feed-screw, and mechanism operated by the plunger for rotating the feed-screw, substantially as set forth.

5. In a lead-press, a series of two or more cylinders having suitable lead-passages, 4, and feed-passages 13, the lead-passages uniting and forming a central chamber, in combination with a mandrel, 10, the die 11, the plungers 6, and the feed-screws 14, substantially as set forth.

6. In a lead-press, a series of two or more cylinders having lead-passages 4 and feed-passages 13, the lead-passages uniting and forming a central chamber, in combination with jacketed filling-heads arranged around each of the feed-passages and connected to a central receiving-basin, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WILLIAM A. SHAW.

Witnesses:
R. H. WHITTLESEY,
C. M. CLARKE.