

(No Model.)

2 Sheets—Sheet 1.

W. A. SHAW.

LEAD PRESS.

No. 304,569.

Patented Sept. 2, 1884.

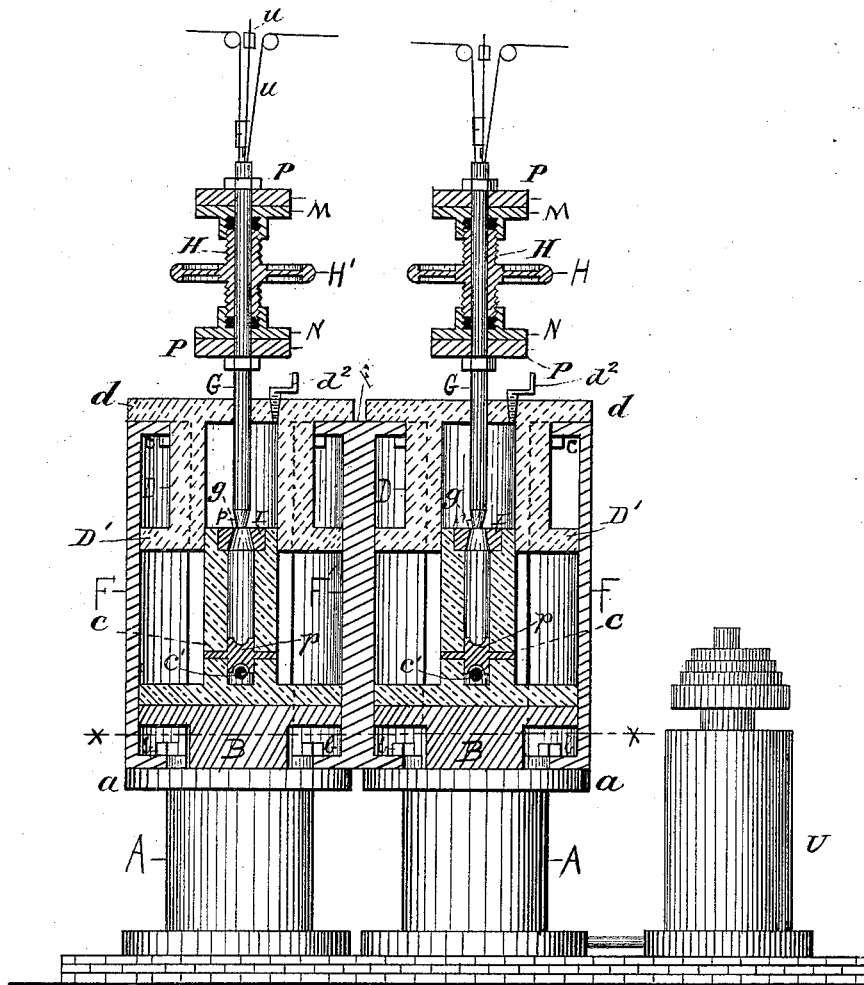


Fig. 1.

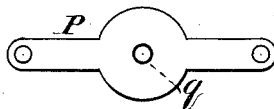


Fig. 2.

Witnesses—  
Eugene Barnis  
Edward J. Ellis

Inventor—  
W. A. Shaw  
per O. E. Duffy  
Atty.

(No Model.)

2 Sheets—Sheet 2.

W. A. SHAW.

LEAD PRESS.

No. 304,569.

Patented Sept. 2, 1884.

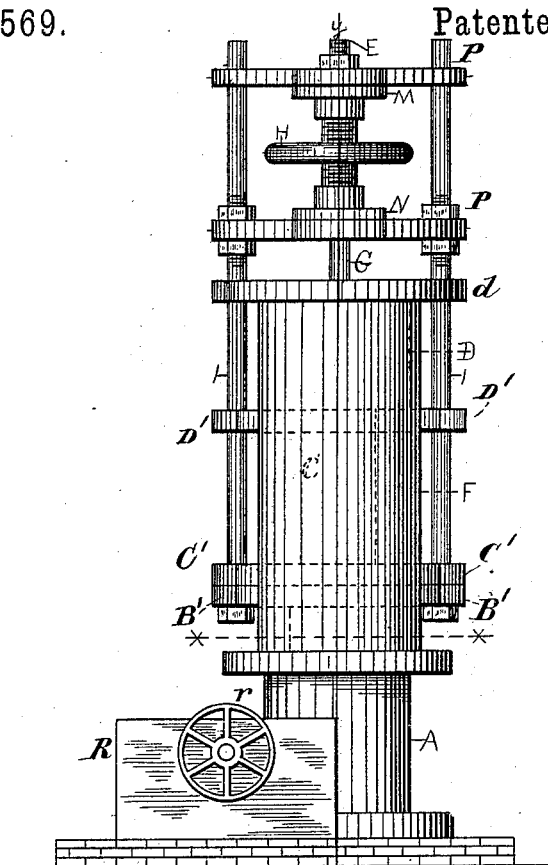


Fig. 3.

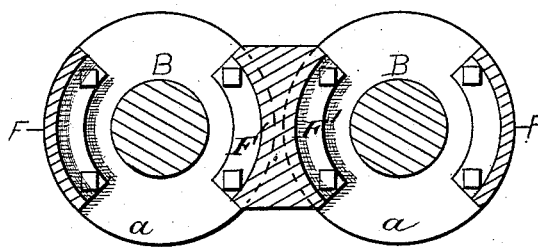


Fig. 4.



Fig. 5.

WITNESSES:  
Eugene Harris  
Edward E. Ellis

INVENTOR  
W. A. Shaw  
per O. E. Duff  
Att'y.

# UNITED STATES PATENT OFFICE.

WILLIAM ANTHONY SHAW, OF PITTSBURG, PENNSYLVANIA.

## LEAD-PRESS.

SPECIFICATION forming part of Letters Patent No. 304,569, dated September 2, 1884.

Application filed November 8, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WM. ANTHONY SHAW, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 of reference marked thereon, which form part of this specification.

This invention relates to that class of presses or machines by which electric conducting-wires are sheathed with lead or other ductile metal, or the wires to form an electric cable are incased in a common body of such metal. Such a machine has heretofore been provided with a single lead-holder or metal-holding cylinder, one die, and other devices for sheathing or incasing but one wire or one cable composed of several wires at a time, and as the lead or other metal is placed in the holder or cylinder in a molten condition, and must cool down to a temperature of about 300° Fahrenheit before it has the proper consistency for working, much time is lost in waiting for the successive charges of metal to cool.

The object of my invention is to obviate such loss of time and to secure other advantages in the operation of machines of the class to which it relates; and to these ends it consists in certain novel constructions and combinations of devices resulting in a duplex machine in which one charge of metal cools to proper consistency in position in its holder or cylinder while another charge is being forced through the die of a different cylinder, so that no time is lost by the attendants in waiting for successive charges.

In the accompanying drawings, Figure 1, Sheet 1, is a view, mainly in vertical central section, of a machine constructed according to my invention. Fig. 2, Sheet 1, is a detail view. Fig. 3, Sheet 2, is an end elevation of the machine. Fig. 4, Sheet 2, is a horizontal section on the line *x x* of Figs. 1 and 3. Fig. 5, Sheet 2, is a detached sectional view of one of the vertical supports.

Referring to Fig. 1, the letters A A indicate two hydraulic cylinders, which are provided with rams B B, and U an accumulator for op-

erating said rams in the ordinary manner of hydraulic presses. Upon the top of each ram B is secured a hollow plunger, C, having seated concentrically in its upper end a die, I. These plungers reciprocate in the lead holders or cylinders D D, supported above them, and force the metal from said cylinders through the dies I to give the external shape to the product of the machine. The cylinders D D are supported and each partially surrounded by vertical segmental walls F F and the double wall F', having at top and bottom inwardly-projecting flanges *c* and *b*, which are bolted to the flanges *d* and *a* of the metal-holding cylinders and the hydraulic cylinder, respectively. The hollow plungers C C have lateral openings C' formed in their walls, and within the plungers are mounted guide-pulleys *p p*, under which the lead-incased cables, pipes, or other products pass, and are guided out through the openings C' C' and led to and around suitable reels, in the usual manner.

Referring to Fig. 3, Sheet 2, it will be seen that the rams B B are provided with ear-pieces B' B', which project laterally between the walls F and F', and the plungers C C have at their bottom similarly-projecting ear-pieces C' C', and which rest upon the ear-pieces of the rams. Through the ear-pieces of the ram and plunger are arranged guide-rods J J, having their lower ends firmly secured to the ear-pieces C' and B', while the intermediate portions of said guide-rods play through guide-passages formed in the flanges *d* at the tops of the cylinders D and in the ear-pieces D' D', projecting from the lower ends of said cylinders.

Above the cylinders D D the guide-rods J J are connected by similar upper and lower cross-plates, P and P', (shown in plan view in Fig. 2,) the lower cross-plates, P' P', having their ends secured to the rods J by nuts, as shown, while the upper cross-plate, P, has its ends simply perforated for the passage of said rods. Each of the cross-plates has a central aperture, *q*, as shown in Fig. 2, and upon the top of the lower cross-plates are secured internally screw-threaded socket-pieces or nipples, N N, while to the under sides of the upper cross-plates are secured similar downward-projecting socket-pieces or nipples, M M. Into these socket-pieces or nipples N N and M M, respectively, are engaged the opposite ends

of hollow screws H H, provided with intermediate hand-wheels, H' H'.

Centrally within the cylinders D D are arranged the core-bars G G, which are hollow bars having internal passages of proper caliber to hold all the conducting-wires which are to be formed into a cable. These core-bars slide in passages formed for them in the tops of the cylinders D D, lower cross-plates, P' P', and nipples N N, and have their upper ends firmly secured to the top cross-plate, P. The lower ends of the said core-bars G G terminate in tapering tips *g*, which extend more or less into the openings of the dies I I, according to the adjustment of the core-bars, as will be presently explained.

From the description heretofore given it will seen that if one of the hand-wheels H' be turned the opposite end of its screw H will be driven into or withdrawn from the sockets or nipples M and N, according to the direction of the movement of the wheel, and the cross-plate P thus raised or lowered on the guide-rods J J, causing the core-bar and its attached tip *g* to rise or descend and the tip to project either more or less into the opening of the die I, as desired. The adjustment of said tip is for regulating the volume of the metal which passes between it and the surrounding edge of the die. The further the tapering tip projects into the die the narrower, of course, will be the space between it and the edge of said die, and the less the volume of metal which can pass, and as the external diameter of the wire is constant, the adjustment of the tip will regulate the size of the passage in the finished product, causing it to hug more or less upon the wire in the passage.

The cylinders D D are provided at their tops with openings, through which they may be charged with molten metal, these openings being normally closed by screw-plugs *d*<sup>2</sup> *d*<sup>2</sup>, which may be removed to permit the charging.

The cistern R, Fig. 3, is to contain the fluid for operating the hydraulic press, and also a pump (not shown) for controlling said liquid, the pump being driven by a belt passed over the wheel or pulley *r*; or, in place of the cistern and pump, I prefer to use an accumulator, U, (see Fig. 1,) which is connected to the cylinders A A by pipes having suitable regulating-valves.

The operation of the apparatus is as follows: The wires having been led over suitable guide-pulleys, *u*, and down through the core-bars G, with their lower ends projecting from the tip *g* thereof, one of the cylinders D is first charged with molten metal, and when it has sufficiently cooled the hydraulic press is started into operation to force upward the plunger of that cylinder, causing the plastic metal to be forced out through its die and around the tip of the core-bar, when it seizes and envelops the wires and passes down as a finished product through the hollow plunger C, and is led under the guide-pulley *p* and off through the

openings C', heretofore described. This product may be either a pipe-like cable with the wires embedded in its walls, or a rope-like cable having a solid center. If a pipe-like cable is desired, the tip *g* of the core-bar is provided with a centrally and downwardly projecting mandrel or core; but this mandrel or core is omitted if the cable is to have a solid center. At a proper time, while the metal is being forced from this first charged cylinder, the second cylinder is to be charged so that its charge of metal will cool down to proper consistency by the time the charge is forced from the first cylinder and its plunger lowered. At this time the operatives, after recharging the first cylinder, turn their attention to the second and put in operation its hydraulic press and plunger to force out its metal and form a product similar to that of the first. By the time the second cylinder is discharged the metal in the first will be ready to be worked, and the operatives, after recharging said second cylinder, will return to the first division of the machine and put it in operation, as before.

The advantages of my invention are, first, saving of time resulting from the use of the duplicate metal-holders, and charging one while the metal is being forced from the other, thus obviating delay in waiting for the charges to cool to proper consistency; second, the compactness and simplicity of the duplex machine, whereby it is rendered capable of operation and control by the same number of attendants heretofore necessary to operate machines having a single metal-holder, and therefore only of half the capacity of production; third, the reduced first cost of the machine as compared in productive capacity with to machines heretofore used.

What I claim is—

1. The combination, in a cable-increasing or pipe-making machine, of the two hydraulic presses, two sets of metal-forming devices, and the hydraulic accumulator connected with said hydraulic presses for alternately operating the same, substantially as set forth.

2. The combination, with the core-bar G, of the guide-rods J J, the fixed cross-plate P, having a passage for said core-bar, and provided with the screw socket or nipple N, the sliding cross-plate, having the upper end of the core-bar secured thereto, and provided with the screw-socket or nipple M, and the hollow screw H, surrounding said core-bar and having its opposite ends engaged with said sockets or nipples, respectively, substantially as described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

WM. ANTHONY SHAW.

Witnesses:

P. F. MORSELL,  
O. E. DUFFY.