(No Model.)

C. H. MATCHETT.

CABLE COVERING PRESS.

No. 450,175. Patented Apr. 14, 1891.

Fig. 1.

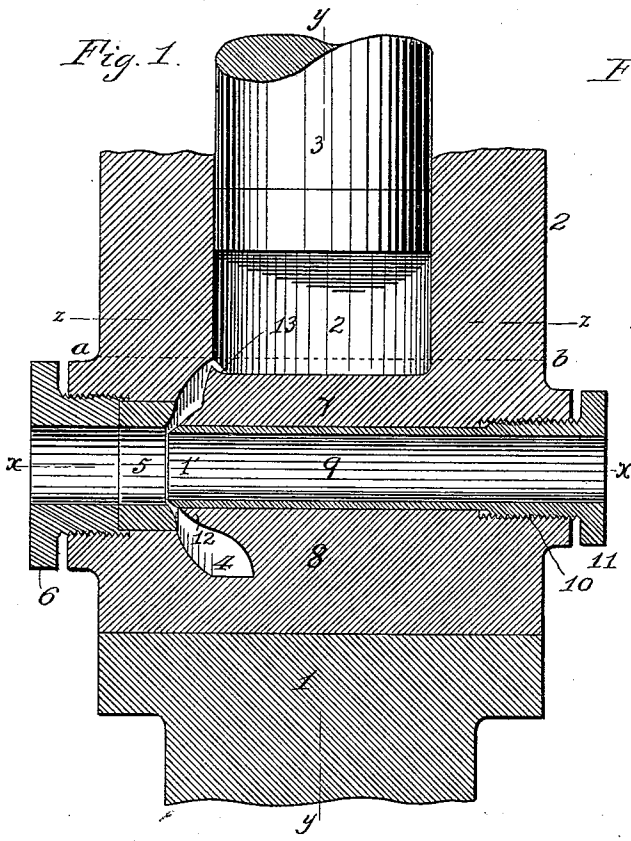


Fig. 3.

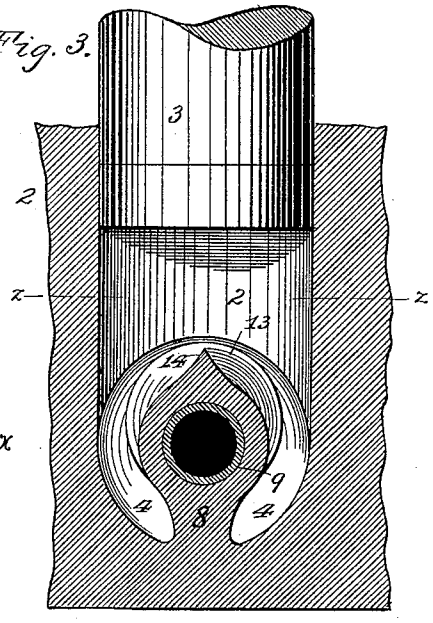


Fig. 2.

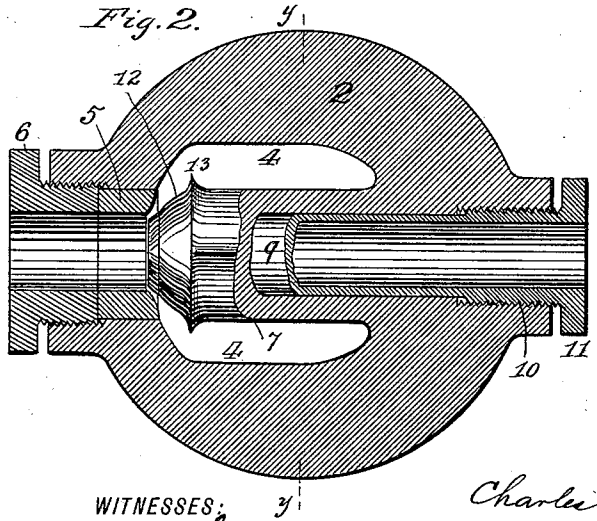
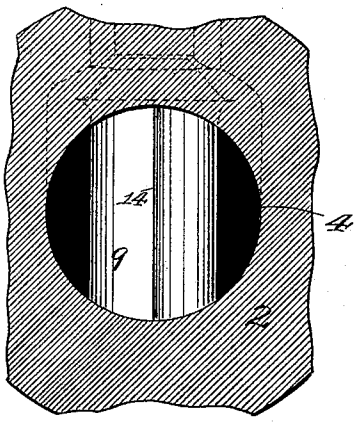


Fig. 4.



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CABLE-COVERING PRESS.

SPECIFICATION forming part of Letters Patent No. 450,175, dated April 14, 1891.

Application filed December 2, 1889. Renewed September 11, 1890. Serial No. 364,616. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. MATCHETT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Hydraulic Lead-Presses; and I do hereby 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 certain improvements in the construction of hydraulic presses, and is more especially intended for such machines as are used in the manufacture of what is known as "lead-covered electric cable," being, however, adaptable for the manufacture of ordinary lead pipe.

The invention consists in the arrangement and combination of devices substantially as hereinafter more fully described and claimed.

In the accompanying drawings, which form part of this specification, Figure 1 is a longitudinal vertical section showing the lower end of the lead-cylinder and the upper end of the ram. Fig. 2 is a horizontal section through the line *x x* of Fig. 1. Fig. 3 is a transverse vertical section through the line *y y* of Figs. 1 and 2. Fig. 4 is a plan section through the line *z z* of Figs. 1 and 3.

In constructing presses for the general purpose of covering electrical cable with a lead coating it has been generally found most convenient to have the hydraulic cylinder undermost with its ram projecting upwardly and the lead-cylinder placed on the ram-head, the plunger of the lead-cylinder being fixed to a cross-head above and sustained by connecting-rods attached to it and to the hydraulic cylinder, so that the upward movement of the ram forces the lead-cylinder upwardly, and as the plunger of the latter is fixed the lead is forced out through the die. Such construction is well understood, and I need not further refer to it. In these machines it has been found very desirable to retain the vertical arrangement of the hydraulic ram and the lead-containing cylinder and its plunger, the dies and forming devices for the lead pipe and for the introduction of the cable to be coated being interposed between the ram-head and the lower end of the cylinder. The construction involved is somewhat complicated, and excessive pressure of the lead necessary to cause its movement requires great strength of parts to withstand such pressure and maintain accuracy of position in all parts.

In designing a machine in accordance with my invention I am able to effect the desired result with a construction which is of the simplest possible character, and at the same time possesses the necessary strength and rigidity, and provides for the removal and interchange of core-tubes with a degree of convenience hitherto unattained, as will be seen on inspection of the drawings in connection with the following description.

The ram-head 1 carries upon it the lead-cylinder 2, in which operates the plunger 3. The lower end of the lead-cylinder 2 connects with a horizontel chamber 4 of about the same diameter, which chamber contracts toward its outer end to a comparatively small bore, in which fits the die 5, which I prefer to make bell-mouthed, and retain this in place against the pressure by means of the nut 6, which also affords a means of adjusting the exact position of the die 5, which determines the external diameter of the lead covering to be applied to the cable. The die and nut may in practice be made in one piece. In the chamber 4 I place a core-head 7, either cast integral with the walls of the chamber or securely fastened thereto. This core-head has a generally-cylindrical form, whose axis is in line with the axis of the die 5, and is rigidly supported beneath by means of the web 8, extending along under the core-head 7 from the rear of the latter to a point near the exit end of chamber 4. This construction enables the core-head to resist any amount of pressure which may be brought to bear downwardly upon it by the lead as it flows. The interior of the core-head 7 is bored out, and an adjustable hollow forming-core tube 9 is fitted thereinto from the outside of the lead-cylinder 2, being inserted and held by means of the threaded portion 10, provided with a wrench-head 11. The internal diameter of this core-tube 9 will be such as to just permit the passage through it of the cable which is to be covered. Its front end extends slightly beyond the end of the core-head into the flaring mouth of the

die 5, thereby forming between itself and the die an aperture for the lead to flow out and form the covering of the cable.

It is necessary to restrict the flow of lead directly from the cylinder by the shortest path to the die and to cause the greater part of it to flow by a gradually-widening path to the sides and bottom of the die, so that the lead finally will pass forward with uniform pressure upon all portions of the forming-aperture. I accomplish this by expanding the upper portion of the core-head into a flange or deflector 13, extending toward the wall of the cylinder or chamber, and constricting the opening in the line of the shortest path toward the die, and this expanded portion or deflector 13 I gradually diminish or cut away downward on both sides of the core-head, so as to allow a freer passage forward as the flow of lead approaches the bottom of the chamber. The lead which can flow past the deflector 13 thus finds a contracted or choked passage at the upper edge of the deflector 13—that is to say, at the point where the lead would otherwise meet with least resistance—by reason of the shortness of the path and finds a gradually-increasing opening as it comes down over the core-head 7. Back of the deflector 13 the core-head 7 is preferably formed with a longitudinal ridge or knife-edge 14 for the purpose of more readily dividing the flow of lead upon both sides of the core-head.

The direct downward pressure of the lead upon the ridge or back of the core-head is sustained underneath by the supporting-web 8, rising from the bottom of the cylinder or chamber, and the lateral pressure against the core-head is substantially equal upon the opposite sides. Consequently there will be no deflection of the core-head from its alignment with the axis of the die 5.

The core-head 7 is made, preferably, of cast-steel, of such form and thickness as to withstand the crushing-strain of the inward pressure of the lead upon it, and projects forward toward the die 5, being reduced externally to form a sort of nozzle 12.

On account of the strength and rigidity of the core-head 7, the core-tube 9 is entirely protected from pressure and strain except upon its slight extension beyond the nozzle of the core-head toward the die 5, and the pressure upon this extension or lip is comparatively inconsiderable from the fact that the principal part of the pressure exerted by the lead ram has been expended upon the core-head and the walls of the chamber in driving the body of lead forward and reducing its diameter to nearly the size at which it is to be delivered from the dies. Consequently the core-tube 9 may be made of comparatively thin metal and fitted into the core-head, so as to be readily removed or replaced, as the conditions of service may require.

Obviously the only thing necessary in changing from one size cable to another is to change the removable core-tube 9, and if such change requires also a difference in diameter of the lead covering the die 5 will be changed proportionately.

As in practice the core-head 7 will preferably be cast in one piece with the lower end of the lead-cylinder, it is desirable to make some provision for access to the deflecting-surfaces in order to smooth them up and properly proportion them. For this purpose I may construct the lead-cylinder in two or more parts—for instance along the line *a b*, as indicated by the dotted line in Fig. 1, or at any other suitable point. By this construction all the interior portions and surfaces can be readily got at, and irregularities of casting rectified as well as small changes in form and proportions made.

I claim as my invention—

1. In a lead-press, the combination of a lead-cylinder having on one side of its delivery end an opening containing a forming-die, with a compound core located transversely in the cylinder in line with the axis of the die and consisting of a core-head rigidly supported upon the bottom of the cylinder, and a removable core-tube extending longitudinally through the core-head.

2. In a lead-press, the combination of a lead-cylinder terminating in or leading into a forming-chamber having a die opening on one side, with a compound core located in such chamber transversely to the entrance in line with the axis of the die and consisting of a core-head rigidly supported upon the bottom of the chamber, and a removable core extending longitudinally through the core-head.

3. In a lead-press, the combination of the lead-cylinder having at its delivery end a transverse forming-chamber terminating in the forming-die, and a core-head in such chamber in line with the die and having near its delivery end a deflector, which approaches the wall of the forming-chamber most closely at the top and then gradually recedes, leaving a gradually-widening passage for the lead.

4. In a lead-press, the combination of the lead-cylinder having at its delivery end a transverse forming-chamber terminating in the forming-die, and a core-head in such chamber in line with the die and having a supporting-web between it and the bottom of the lead-cylinder.

5. In a lead-press, the combination of the lead-cylinder having at its delivery end a transverse forming-chamber terminating in the forming-die, and a core-head in such chamber in line with the die having a supporting-web underneath and a knife-edge or rib along its top.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. MATCHETT.

Witnesses:
JOHN A. BARRETT,
A. E. PFARRE.