

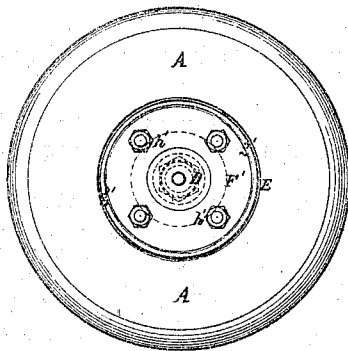
C. SELLERS.

Copper-Lined Cylinders for Hydraulic-Presses.

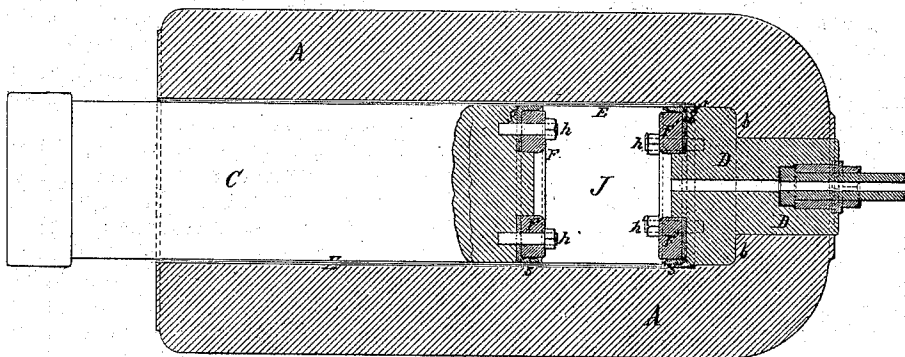
No. 127,191.

Patented May 28, 1872.

— Fig. 2. —



— Fig. 1. —



Witnesses:

Frederick Steptoe
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Inventor:

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by his atty
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UNITED STATES PATENT OFFICE.

COLEMAN SELLERS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
WILLIAM SELLERS & CO., OF SAME PLACE.

IMPROVEMENT IN COPPER-LINED CYLINDERS FOR HYDRAULIC PRESSES.

Specification forming part of Letters Patent No. 127,191, dated May 28, 1872.

To all whom it may concern:

Be it known that I, COLEMAN SELLERS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Cylinders for Hydraulic Presses, of which improvements the following is a specification:

It is the object of my invention to increase the strength and durability of hydraulic cylinders, and, at the same time, to simplify their construction.

Cast-iron cylinders for hydraulic presses are liable to burst, because the fluid finds its way into porous parts of the casting, and thus not only enlarges the area subjected to pressure but subjects the porous parts to a pressure beyond their strength. To obviate this liability such cylinders have been lined with sheet metals of great tenacity and of a density more uniform than that of cast-iron, such as brass or copper. This lining formed a continuous metal casing over the entire area of the cylinder subjected to pressure and was, necessarily, fitted to the back end of the cylinder. As the back end of the cylinder was closed the difficulty of fitting the lining is obvious.

My invention consists in combining with a sheet-metal cylindrical lining, open at both ends, and a cylinder, also open at both ends, a packed plug, closing the back end of the lined cylinder; and my invention further consists in making the opening in the back end of the cylinder smaller than the bore of the lined cylinder, and inserting in this opening a plug packed in the same manner as the ram and having an opening through it for the passage of the fluid, so that not only may the plug be inserted from the inside of the cylinder, but when inserted it is rendered self-packing and self-retaining.

My invention is illustrated in and will be readily understood upon reference to the accompanying drawing, in which—

Figure 1 represents, in section, a hydraulic press cylinder and ram of my improved construction; and Fig. 2, an end view of the cylinder, the ram being removed.

In this instance, a cast-iron cylinder, A, is shown with an opening at the back end of less diameter than the bore, so as to form shoulders *b*, upon and against which the packed plug D rests, as hereinafter described. A ram, C,

works in the cylinder in the usual way. A lining cylinder, E, of sheet metal, open at both ends, fits the bore of the cylinder snugly, but does not extend quite to the back end of the cylinder. The plug D closes the back end of the cylinder. Cupped leather packing-rings *g g'* are secured upon the front end of the plug by screws *h h'* passing through a metal ring, F', thus tightly packing the back end of the lined cylinder. The ram is packed in a similar way. The lining cylinder E, obviously, need only extend far enough into the cylinder A to be covered by the packing-rings *g g'*.

The fluid passes through a suitable pipe-connection, with an opening in the plug D, and presses equally in every direction within the chamber J, the packing preventing any leakage. The shoulders *b* prevent the plug from being forced out backward, and the lining E prevents any access of the fluid into the cast-iron body of the cylinder, and the ram, being the only movable part, is forced forward by the fluid, as in ordinary presses.

The plug D besides providing the convenient and effective means hereinbefore described for closing the inner end of the cylindrical lining, permits the easy attachment of the pipe-connection at the end of the cylinder for the passage of the fluid without piercing the lining, as would be necessary if the lining covered the back end of the cylinder, and, consequently, without the use of joints liable to admit fluid between the lining and the cast-iron body of the cylinder. By this mode of closing the bottom of the cylinder important practical advantages are also attained in the casting and boring out of the latter the large opening in the bottom of the cylinder (afterward filled by the reduced part of the plug D) allows the sand core to be held securely in both ends of the mold, permitting the free escape of air and gases during the process of casting, as well as subsequently admitting a direct current of cold air or water through the core to insure uniform cooling and contraction of the metal. The boring-bar also can pass entirely through the cylinder. Cast with this opening, and supporting it at both ends, the operation of boring is greatly simplified as compared with this operation when the cylinder is cast with one end closed.

It is evident that the described manner of

securing the plug D in the cylinder to resist the pressure of the fluid may be modified in various ways without departing from the principle of my invention. For instance, the bore of the cylinder A may be of uniform diameter throughout, and the plug D may be inserted to a required depth and secured to the cylinders A E from the outside by strong bolts or by other equivalent means; or, the plug may be secured bodily into a conforming screw-thread in the end of the cylinder A.

I claim as my invention and desire to secure by Letters Patent—

1. The combination of the open-ended iron

cylinder, the open-ended lining cylinder, and the packed plug, all these members being constructed to operate in combination, as described.

2. The combination, with the open-end lined cylinder and the shoulders *b*, of the perforated packed plug, constructed as described, for the purposes set forth.

In testimony whereof I have hereunto subscribed my name.

COLEMAN SELLERS.

Witnesses:

THEODORE BERGNER,
DAVID L. LUKENS,