(No Model.)

D. C. MAYO.

HYDRAULIC PRESS.

No. 316,048. Patented Apr. 21, 1885.

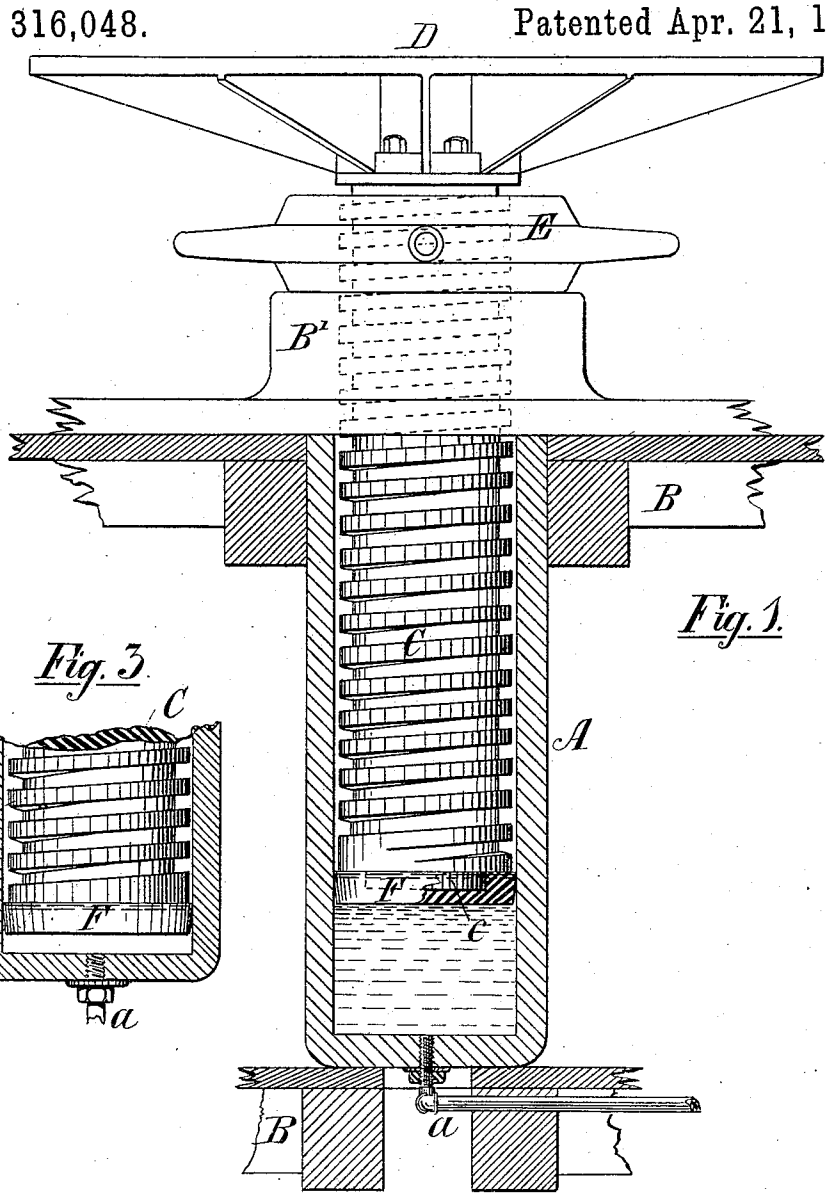


Fig. 1.

Fig. 3.

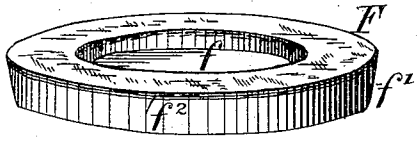


Fig. 2.

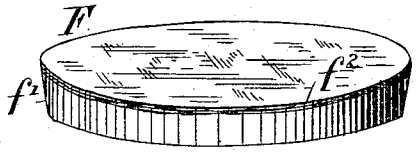


Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

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HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 316,048, dated April 21, 1885.

Application filed May 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, DAVID CRAWLEY MAYO, of the city of Montreal, in the District of Montreal and Province of Quebec, Dominion of Canada, have invented certain new and useful Improvements in Hydraulic Presses; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to an improvement in hydraulic presses of the class used for pressing plug-tobacco, oil-cake, and like purposes; and it consists in an improved piston washer or packing to be used in combination with any ordinary ram and cylinder.

In presses of this description at present in use the lower end of the ram has affixed to it a piston washer or packing of leather, which is of such diameter as to fit the bore of the hydraulic cylinder, and this leather piston has generally one or more annular grooves or channels formed in it, into which the water presses in raising the ram, and thus expands the leather at the edges until the piston or packing fits the cylinder very tightly. Now, I have found in making these leather pistons and from long practical trials of them in tobacco-presses that, as the leather is forced into shape with a metal ring pressed over the flat sheet of leather and a metal die-block, the edges of the piston or packing are invariably torn or cut in such manner as to render them unfit for service for any length of time in a hydraulic cylinder. This will be understood when it is borne in mind that the constant action of the water will swell and destroy the leather whenever a ragged surface is exposed. Another objection to leather packings is that sand or grit finding its way into the cylinder gets between the piston and the cylinder-wall and scratches and tears the packing, so as to soon destroy its efficiency. The cost of manufacture is also very high, as the best part of a side of sole-leather is used in making each packing.

By my invention I produce a piston washer or packing which possesses none of the above disadvantages, but combines cheapness with increased utility and lasting qualities.

My packing or piston is formed of rubber, vulcanized to the required firmness, of such diameter as to closely fit the bore of the cylinder, and arranged to be raised by the force of the water and to return again with the ram, against the lower end of which it bears.

For more complete comprehension of my invention reference must be had to the accompanying drawings, in which letters of reference similar to those used herein indicate like parts, and where—

Figure 1 is a vertical sectional elevation of part of a hydraulic press, showing my improved piston or packing within the cylinder. Fig. 2 is a perspective view of the piston or packing suited for use with the existing style of rams. Fig. 3 is a sectional elevation showing part of cylinder and ram with flat end and plain piston or packing. Fig. 4 is a perspective view of said plain piston or packing.

A is the hydraulic cylinder, of any suitable pattern, having the usual water-pipe, *a*, and carried by framing B B. Inside this cylinder the usual screwed ram, C, works, on its upper end being carried the press-platform D. The usual clamping-collar, E, is interposed between this platform and a shoulder, B′, of the frame, so that as the ram is forced up by the hydraulic pressure and the press-platform brought into action, this clamping-collar E (being threaded on the ram) is screwed down hard against the shoulder B′, and thus retains the press in position until the articles acted upon have received the required amount of compression. All the parts thus far described are now embodied in hydraulic presses used in tobacco-factories for pressing plug-tobacco.

My special improvement is in the piston, washer, or packing F, which is of vulcanized india-rubber, inserted within the cylinder A, and arranged to rise and fall with the ram, although not necessarily connected thereto.

In Figs. 1 and 2 I have shown this piston or packing F provided with a cylindrical recess, *f*. This is only done so as to receive the reduced end *c* of the ram, at present used with the leather packings, as otherwise this reduced end would indent the piston in the center, and thus prevent the hydraulic press from working properly. In Fig. 3, however, I show a ram, C, with a plain flat lower end, and, as seen in Fig. 4, I make the piston or packing F in the shape of a perfectly flat disk of rubber fitting the bore of the cylinder, and which

will press against the end of the ram as both are forced upward by the water, and will return again to the bottom of the cylinder when the water recedes and the ram descends.

In all cases I prefer to make my rubber piston or packing with a slightly beveled edge, f', the larger diameter being at the upper side, and I usually harden or stiffen this upper edge and the top face of the piston with canvas or other suitable material, as at f^2, so as to present a better wearing-surface to the head of the ram and to the cylinder-walls. This hardened or stiffened portion f^2 is also for the purpose of preventing the rubber (when softened, as it is slightly by the constant action of the water) from oozing or spreading between the ram and the cylinder-wall.

The water pressing in the center of my rubber packing will cause it to expand at the lower edge and fit the cylinder-wall tightly, like the upper hardened edge, f^2.

It will be seen that a piston or packing constructed according to my invention will cost a great deal less than those made from leather, and will be more efficient in operation and less liable to get out of order.

What I claim, and desire to secure by Letters Patent, is as follows:

1. In a hydraulic press having a vertically-moving ram, a piston or packing composed of a flat disk of vulcanized rubber independent of said ram, but adapted to move therewith.

2. In combination with the ram or piston, a loose packing composed of vulcanized rubber hardened at its upper face or edge, substantially as described.

3. The combination, with a hydraulic cylinder and the ram C, having the reduced end *c*, of the rubber piston or packing F, having the recess *f*, and adapted to move with the cam, substantially as and for the purpose specified.

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Witnesses:
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