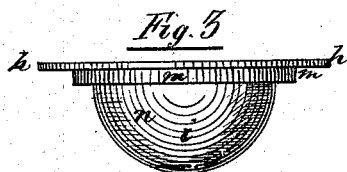
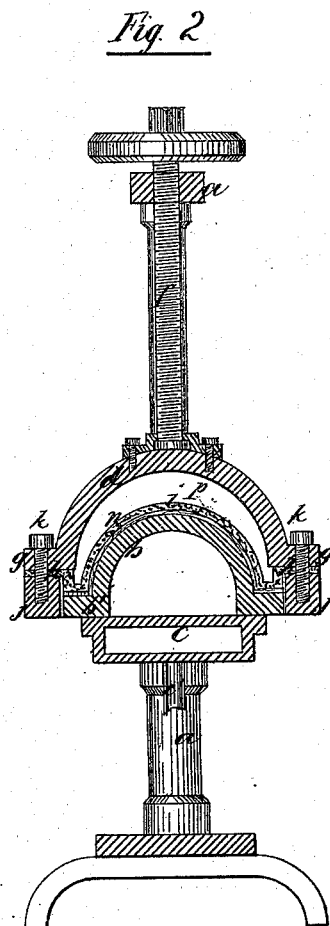
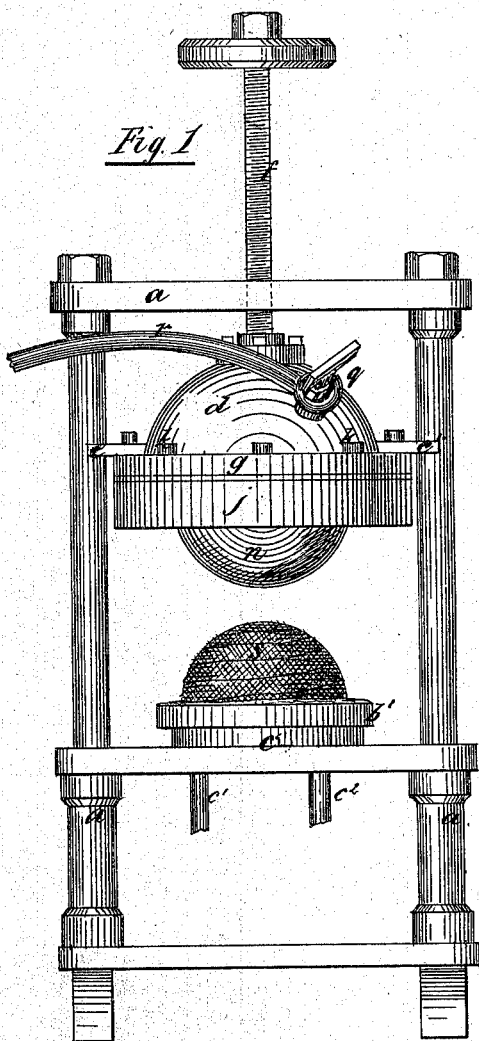


S. Beatty, Hat Press.

No. 112,677.

Patented Mar. 14. 1871.



Witnesses.

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SAMUEL BEATTY, OF NORWALK, CONNECTICUT.

Letters Patent No. 112,677, dated March 14, 1871.

IMPROVEMENT IN HAT-PRESSES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, SAMUEL BEATTY, of Norwalk, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machinery for Pressing Hats, Bonnets, &c.; and I do hereby declare that the following is a full and correct description thereof, reference being had to the annexed drawing and to the letters of reference thereon.

My improved press consists of a heated die and a diaphragm or elastic presser, supported by an elastic cushion of confined air, brought together, to press the hat or bonnet to be pressed by mechanical power, as in ordinary presses, instead of locking the dies and applying pressure to the diaphragm through the fluid used, as in former diaphragm-presses; and

My invention consists in combining a chamber of confined air with a diaphragm in a diaphragm-press, operated by a screw or any suitable mechanical means used to operate die-presses.

My invention further consists in the arrangement of the diaphragm in combination with inclosing-flanges of the press-head and die, whereby the diaphragm is protected from rupture and uniform elastic pressure obtained upon all parts of the hat or other article to be pressed.

My improved press is designed to be used for pressing straw hats, which require comparatively light pressure, and the object of using the air-cushion and India-rubber diaphragm is to avoid flattening the braids when the character of the straw hat or bonnet requires the braid to be left round and full.

Figure 1 of the drawing represents a front elevation of a press with my improvements.

Figure 2, a vertical section through the press, showing the parts in position, as in pressing a hat.

Figure 3, a detached side view of the diaphragm.

Letter *a* represents the frame of the machine.

b, the metal die, supported upon a hollow bed, *c*, which may be heated by steam through pipes *c'* *c''*.

The die *b* may be heated by any of the many known ways of heating dies in presses for pressing straw hats.

Letter *d* represents the press-head, provided with guides *e e'*, and operated by the screw *f*.

Levers or any of the well-known substitutes for a screw for operating presses may be used to bring down the press-head to the die; or the press-head may be stationary and the die moved toward it by such mechanical devices.

The press-head is dome-shaped, having any internal concave, and is provided with a rim or flange, *g*, which forms a seat for the rim or flange *h* of the hat-shaped diaphragm *i*, which should be made of vulcanized India rubber.

The diaphragm *i* is secured to the flange of the

press-head by a clamping-ring, *j*, and screw-bolts *k*, as shown in the drawing.

It will be observed, by inspection of the drawing, that the diaphragm *i* is not exactly hat-shaped, but that a part of it, *m*, next to the flange *h*, is cylindrical and of larger diameter than the crown-part *n*, and that the cylindrical part *m* extends down inside of the clamping-ring below the joint, and is protected by the clamping-ring from rupture. This part *m* of the diaphragm is also protected from rupture by the flange *b'* upon the die *b*, which is made to fit the interior of the clamping-ring *j*, so that, in the operation of pressing, the die, with the hat upon it, enters the clamping-ring, and, filling its internal diameter, incloses and supports the part *m* while pressing against it. The object of making the diaphragm in this shape is to form an annular fold in the diaphragm below the point of its attachment to the press-head, which annular fold may receive the pressure from the brim-part of the die without any direct strain upon the flange-part of the diaphragm, by which it is attached to the press-head, and, therefore, not only save that part of the diaphragm from rupture, but also afford the same elastic resistance to the brim as to the crown of the hat when pressed by the upward movement of the die.

The annular fold of the diaphragm forms an elastic cushion below the point of the clamping-ring, and thus permits upward movement under elastic pressure of the whole pressing surface of the diaphragm without strain upon the clamped part, which is very desirable in the use of a diaphragm sustained by a cushion of so elastic a medium as air.

The concave of the press-head, when inclosed by the diaphragm, forms an air-tight chamber, *p*, accessible only through the stop-cock *q*, a small flexible pipe, *r*, being attached to the stop-cock for convenience of forcing air into the chamber, which may be done by the operator placing the end of the pipe in his mouth and blowing until sufficient air is forced into the chamber, when the stop-cock is closed and the press ready for use.

If desired to increase the elastic resistance of the diaphragm a greater pressure of confined air may be used, or a quantity of water may be placed in the chamber, which, being practically incompressible, will cause a greater compression of the confined air with the same displacement of the diaphragm by the die; but sufficient air must always be confined in the air-chamber to form an elastic cushion for the diaphragm.

In fig. 1 the press-head is shown as lifted, to permit placing a hat, *s*, upon the die. The part *n* of the diaphragm is shown as distended downward over the hat by the pressure of the confined air. As the press-head is moved down to press the hat the part *n* of the diaphragm comes in contact with the crown of the hat

and gradually envelops the crown, the surface of the rubber rolling, as it were, onto the surface of the delicate straw braid of the hat until the diaphragm and other parts assume the positions shown in fig. 2.

The brim part of the die is shown flat in the drawing, but it may be curved, if desired, by slipping on a curved ring-flange suitable to give the brim a curl or curve, the fold *m* in the diaphragm permitting such operation; but care must be taken to have the curved ring-flange fit the inner diameter of the clamping-ring.

The dies may be oval or round, and of any suitable shape for such presses.

The die shown in the drawing is convex, because it is designed to give shape to the hat from the inside, while the elastic rubber diaphragm is pressing upon the straw with such pressure as to conform the hat to the die without flattening the braids; but, where the object is to smooth-press the outside of the hat, a concave die may be used to receive the hat, and the diaphragm operate on the inner surface of the hat. In this case the compression of the confined air in the chamber, by displacement of the diaphragm in the operation, will be less than when the convex die is used, and, therefore, the normal pressure of the confined air must be increased, or water enough introduced into the air-chamber to compensate for the difference of displacement of the diaphragm.

Should it be desired to use the press always with a concave diaphragm, the form and dimensions of the interior or chamber of the press-head may be changed

upon principles well known to users of presses having fluid-pressures upon diaphragms.

I do not claim, broadly, the use of an elastic fluid in combination with a diaphragm-press, for that occurs in a press in which the die and press-head are locked together, and pressure made by steam upon the diaphragm to press the hat. My invention is limited to a diaphragm-press in which confined air or other similar elastic medium is used as an elastic cushion for the diaphragm, and the pressure to press the hat applied to the press-head and die, to bring them together for that purpose.

I claim as of my invention and improvement in diaphragm-presses for pressing hats, bonnets, &c.—

1. The combination of an elastic cushion of confined air or similar elastic medium with the diaphragm and die of a press, in which the pressure to press the hat, bonnet, or other article to be pressed is applied to the press-head and die to bring them together to press the hat, substantially as hereinbefore described.

2. The combination and arrangement of the diaphragm clamping-ring and flange of the die, whereby the annular elastic fold *m* of the diaphragm is employed to press the brim of the hat, and protected from rupture when under pressure, substantially as hereinbefore described.

SAMUEL BEATTY.

Witnesses:

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EDWD. P. WEED.