(No Model.) 3 Sheets—Sheet 1.

T. G. OTTERSON.

GLASS PRESS.

No. 353,461. Patented Nov. 30, 1886.

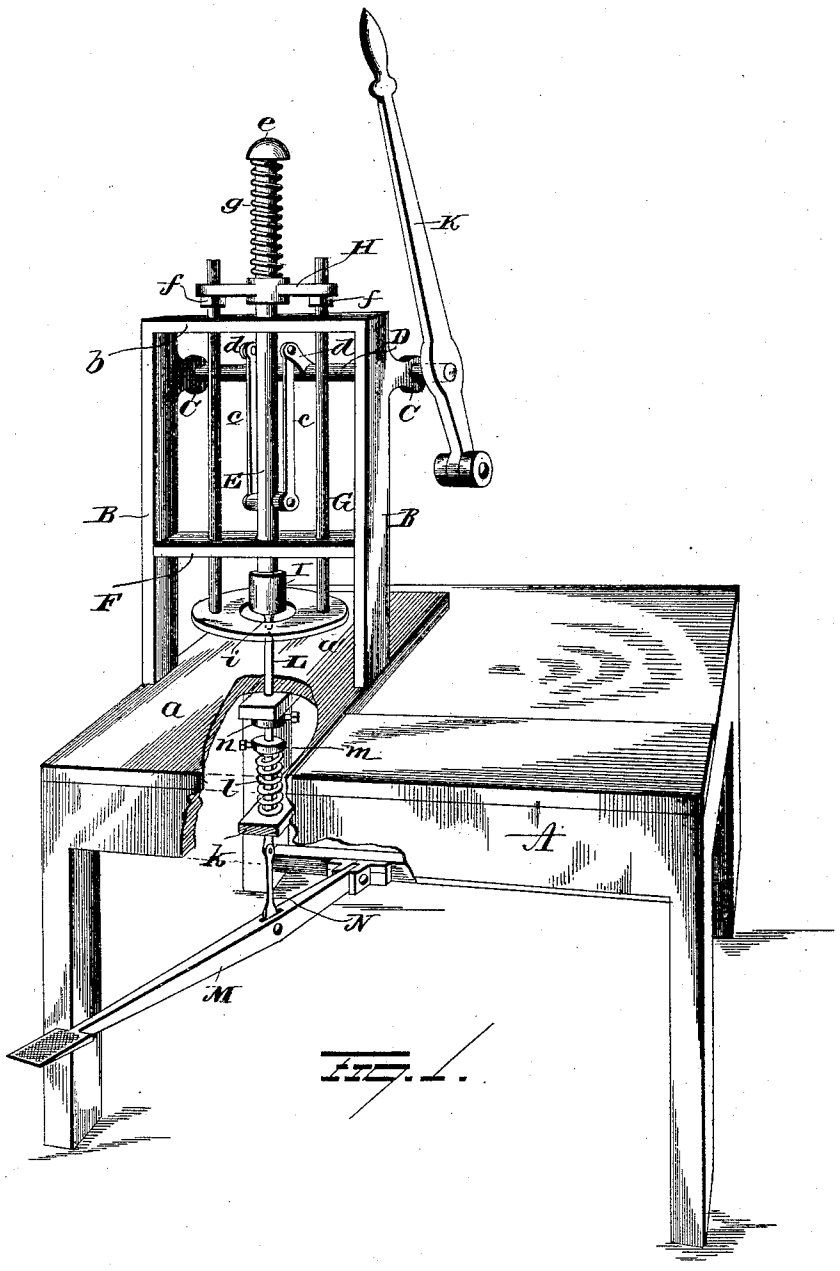


Fig. 1.

WITNESSES

R. Nottingham

Geo. F. Downing

Thomas G. Otterson INVENTOR

By R. A. Seymour Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

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T. G. OTTERSON.

GLASS PRESS.

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Fig. 2.

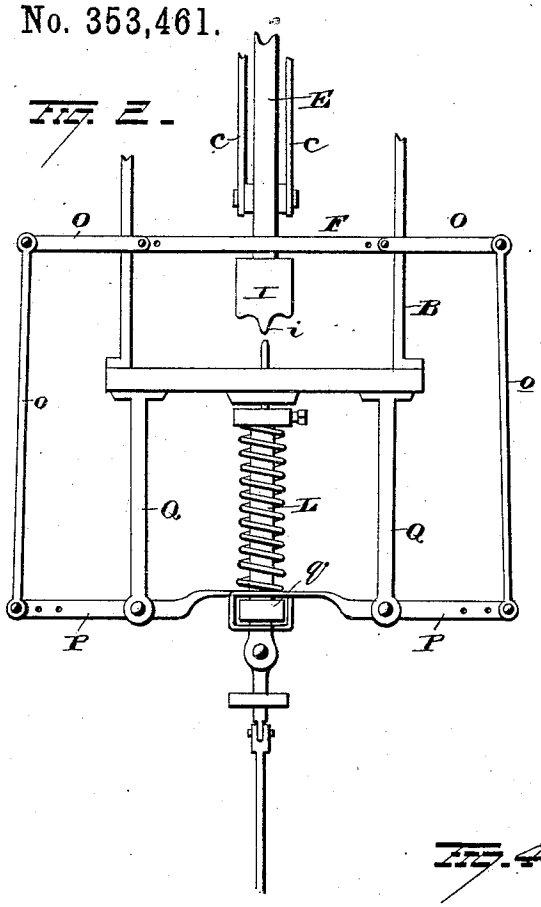


Fig. 3.

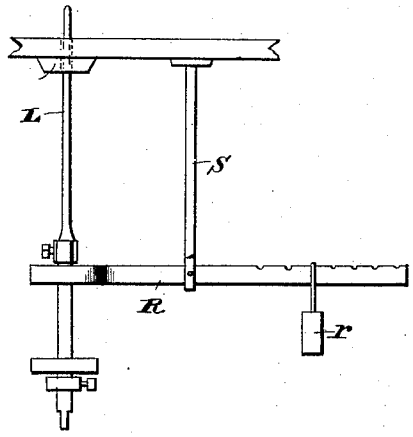
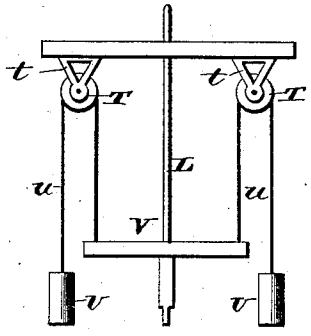


Fig. 4.



WITNESSES

E. A. Nottingham

Geo. F. Downing.

INVENTOR

Thomas G. Otterson

By E. A. Seymour Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

T. G. OTTERSON.

GLASS PRESS.

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Fig. 5.

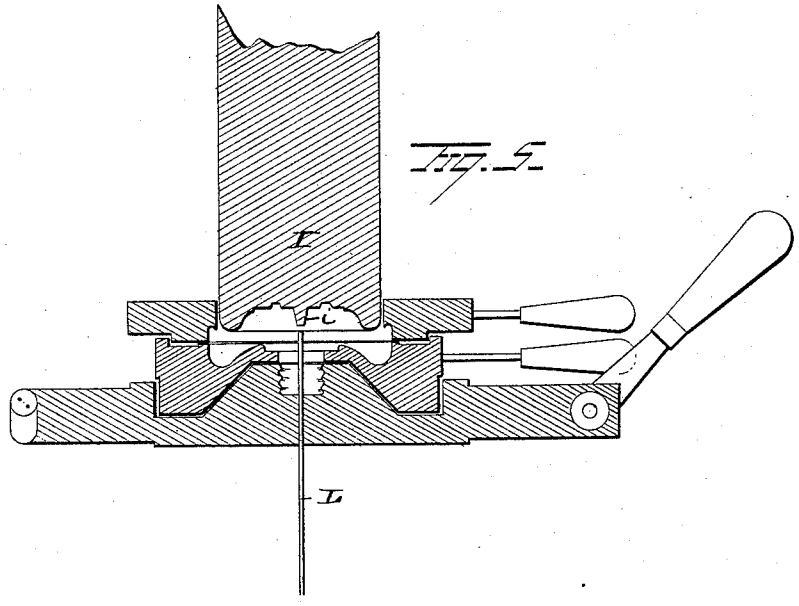
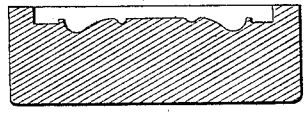


Fig. 6.



WITNESSES

Geo. F. Downing.

E. Nottingham

INVENTOR

T. G. Otterson

By H. A. Seymour Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

THOMAS G. OTTERSON, OF WOODBURY, NEW JERSEY.

GLASS-PRESS.

SPECIFICATION forming part of Letters Patent No. 353,461, dated November 30, 1886.

Application filed April 9, 1886. Serial No. 198,344. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. OTTERSON, of Woodbury, in the county of Gloucester and State of New Jersey, have invented certain new and useful Improvements in Glass-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.

My invention relates to an improvement in glass-presses.

Hitherto it has been customary to form vent-holes through glass lids, stoppers, &c., by making the punch secured to the bottom of the plunger long enough to extend entirely through the lid, stopper, &c., and come in contact with the bottom of the mold; or the punch has been made long enough to project through the lid into a perforation larger than the punch prepared on the bottom of the mold to receive it and into a ball of the molten glass; or to provide a stationary pin or punch at the bottom of the mold, and provide a punch on the plunger adapted to meet the end of the stationary pin or punch. These various constructions have, however, proved objectionable for several reasons: the first because of the necessity of providing means for the escape of the waste glass, which is quite a difficult and expensive task, the molds are soon cut away, and when the punch comes through at the bottom the hole is liable to be rough and cracked in many directions; the second on account of the expense incurred in grinding the edges of the hole smooth after the ball above mentioned was broken off, and the third because it cannot work unless just the required amount of molten glass is put into the mold each time, (which is a practical impossibility,) since if too much is put in, the punch and stationary pin are so far apart when the lid is pressed that the hole cannot be punched through without breaking the lid, and when too little is put in, the punch will meet the pin before the lid is pressed full, and the formation of the lid will be imperfect. The stationary pin will also get so very hot that it will necessitate frequent stops, and the other parts of the mold are in the meantime getting too cold, and the lids, stoppers, &c., will thereby be liable to crack or warp.

The object of my present invention is to provide a press by means of which a hole can be made through a lid, stopper, &c., or so nearly through that it can be completed with a punch without danger to the lid, stopper, &c., leaving both the upper and under surfaces of the lid, stopper, &c., smooth, without any waste deposit, and without loss of time.

A further object is to provide a simple, effective, and cheap press capable of being used for articles of many different shapes and sizes, and of being operated with ease by a workman of ordinary skill.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the press in perspective, a portion of the press-stand being broken away, showing the yielding pin and the means for operating the same. Fig. 2 represents a modified construction, in which the plunger is operated by the treadle which operates the yielding pin. Fig. 3 is a second modification, in which the yielding pin is operated by a weighted lever. Fig. 4 is a third modification, in which the yielding pin is operated by ropes and pulleys. Fig. 5 is a view in section of the mold-pins and plunger, and Fig. 6 is a view of a modified form of mold.

A represents a suitable stand or support, provided with a bed-piece, *a*, adapted to support a mold at a convenient height to be filled and its contents to be operated upon.

A pair of uprights, B, connected at their upper ends by a cross-beam, *b*, are secured on the stand A. The uprights B are each provided with a laterally-projecting lug, C, in which a rock-shaft, D, is journaled. The rock-shaft D is provided with a pair of arms, *d*, which extend beneath the cross-beam *b*, and have secured to their ends by loose joints a pair of connecting rods or bars, *c*, the lower ends of which are pivotally secured to the plunger-rod E. The plunger-rod E extends through a perforation in the cross-beam *b*, and through a perforation in a lower cross-head, F; or the lower cross-head, F, may be secured to the plunger-rod and slide up and down on suitable guideways attached to or formed integral with the uprights B.

A pair of upright rods, G, are secured to the follower *a'* at their lower ends, and extend upwardly through the cross-beam *a*, one on each side of the plunger-rod, their upper ends being to receive the adjusting-nuts *f*. A yoke, H, threaded loosely embraces the plunger-rod E, its ends being perforated to receive the threaded ends of the rods G. A spiral spring, *g*, is secured on the plunger-rod between a cap, collar, or shoulder, *e*, on its upper end and the yoke H, the tension of which is regulated by elevating or depressing the yoke H by means of the adjusting-nuts *f*.

To the lower end of the plunger-rod E is secured the plunger I, the lower end of which is shaped to conform to either the upper or lower side of the article to be molded or perforated, or both, and provided with a teat, spur, or punch, *i*, either yielding or rigid, located either centrally on the end or in any other position thereon where it is desired to form the vent.

An operating-lever, K, is secured on the end of the rock-shaft D, one end of which is weighted for the purpose of holding the plunger normally out of engagement with the work, either alone or in conjunction with the spring *g* on the plunger-rod.

A pin or plunger, L, is secured in a vertically-sliding adjustment beneath the bed-piece *a*, the upper end of the pin projecting upwardly through the bottom of the mold in a position directly beneath the punch *i*. The pin or punch L is held in position against lateral play by suitable bearings in the bed-piece *a*, and in a cross-brace or girder, *k*.

A spiral spring, *l*, secured on the pin L between the girder *k* and an adjustable collar, *m*, tends to hold the pin in a normally elevated adjustment, the tension of the spring being regulated by the said adjustable collar. The upward movement of the pin L is limited by an adjustable collar, *n*, or its equivalent, secured thereon in engagement with the under side of the bed-piece; or it might be placed in position thereon in engagement with the under side of the girder *k*. The lower end of the pin L is connected with a foot-treadle, M, by a connecting-rod, N.

By the above construction the punch or spur on the end of the plunger and the vertically-movable pin are caused to approach each other from the upper and lower sides of the lid or other article to be perforated, and will meet within the molten mass. The perforation which they form will either be complete or a very thin film only may be left between their points, which can be readily removed without the slightest danger of damage to the article. As the plunger moves downwardly into contact with the pin, the latter will yield before it and allow the plunger to press the mold full, even though the charge of molten material be somewhat too small, while the rough uneven edge, if such there chance to be, will be located within the article perforated a sufficient distance from both of its faces to leave the latter smooth.

The modified form shown in Fig. 2 is constructed as follows: The lower cross-head, F, is secured to the plunger-rod, and has attached to its ends a pair of arms, O, which form a continuation of the cross-head beyond the uprights B. The ends of the arms O are connected with the operating-arms of a pair of forked levers, P, by rods *o*. The levers P are fulcrumed in a pair of depending standards, Q, secured to the under side of the stand, the forked ends of the said levers extending toward each other, and partially embracing a cross bar or yoke, *q*, on the pin L or its shaft. By this construction the downward pressure on the treadle M will cause the pin L and the plunger to move away from each other, while the downward or forward pull on the plunger-operating lever will cause the said pin and plunger to approach each other. The operating-arms of the levers P are provided with a series of perforations, *p*, to admit of the rods *o* being connected thereto at different distances from the fulcrums, and hence to regulate the distance which the pin L moves.

In the construction shown in Fig. 3 the spiral spring for holding the pin L in elevated adjustment is dispensed with, and a forked lever, R, fulcrumed in a hanger, S, and provided with a weight, *r*, on its long arm, is adapted to engage the pin or its shaft and hold the same elevated. The weight *r* is adapted to be moved toward and away from the fulcrum in order to cause the pin to yield more or less easily, as may be desired.

Fig. 4 shows another arrangement for holding the pin elevated. It consists in a pair of pulleys, T, journaled in hangers *t* beneath the stand, and a pair of weights, U, connected with a cross-bar, V, on the pin or pin-shaft by ropes or cords *u*, which pass over the pulleys.

I am aware that it is not new in glass-presses to locate yielding or spring-actuated plugs in the bottom of a mold for the purpose of automatically discharging the pressed article after the ascent of the plunger. I am also aware that it is old to employ a sliding plug passing upwardly through the mold, with its upper end resting in a plane above the molten glass to be pressed, whereby the descent of the plunger forces the plug downwardly through the molten glass for forming an opening in the article being pressed, and hence I make no claim to such constructions.

It is evident that other changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a glass-mold and a plunger adapted to be forced into the mold and provided with a spur or punch on its lower face, of a yielding pin or punch adapted

to meet the plunger within the mold, substantially as set forth.

2. In a glass-press, the combination, with a suitable mold and a plunger provided with a spur or punch on its face adapted to be forced into the mold, of a yielding pin or punch extending upwardly through the bottom of the mold, substantially as set forth.

3. In a glass-press, the combination, with a suitable support, a mold located thereon, a plunger provided with a spur or punch on its face, and a lever for forcing the plunger into the mold, of a pin or punch extending upwardly through the mold, means for holding the pin in a normally elevated yielding adjustment, and a lever for depressing the pin, substantially as set forth.

4. The combination, with a plunger located above a mold and provided with a spur or punch on its face, and a yielding pin or punch extending upwardly through the bottom of the mold, of a system of levers for simultaneously operating the plunger and the pin, substantially as set forth.

5. The combination, with the plunger secured in vertically-sliding adjustment in a supporting-frame and provided with a depending spur or punch, a spiral spring secured on the plunger-rod adapted to hold the plunger in a normally elevated adjustment, means for adjusting the tension of the spring, and the operating rock-shaft provided with arms, and an operating-lever, of the yielding pin adapted to meet the plunger within the mold, substantially as set forth.

6. The combination, with the vertically-movable pin extending upwardly through the bottom of the mold, a spring adapted to hold the pin in a normally elevated adjustment, means for adjusting the tension of the spring, and a treadle-lever for operating the pin, of a reciprocating plunger provided with a spur or punch adapted to meet the pin, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS G. OTTERSON.

Witnesses:
FRANCIS HUGHES,
T. F. BOARDMAN.