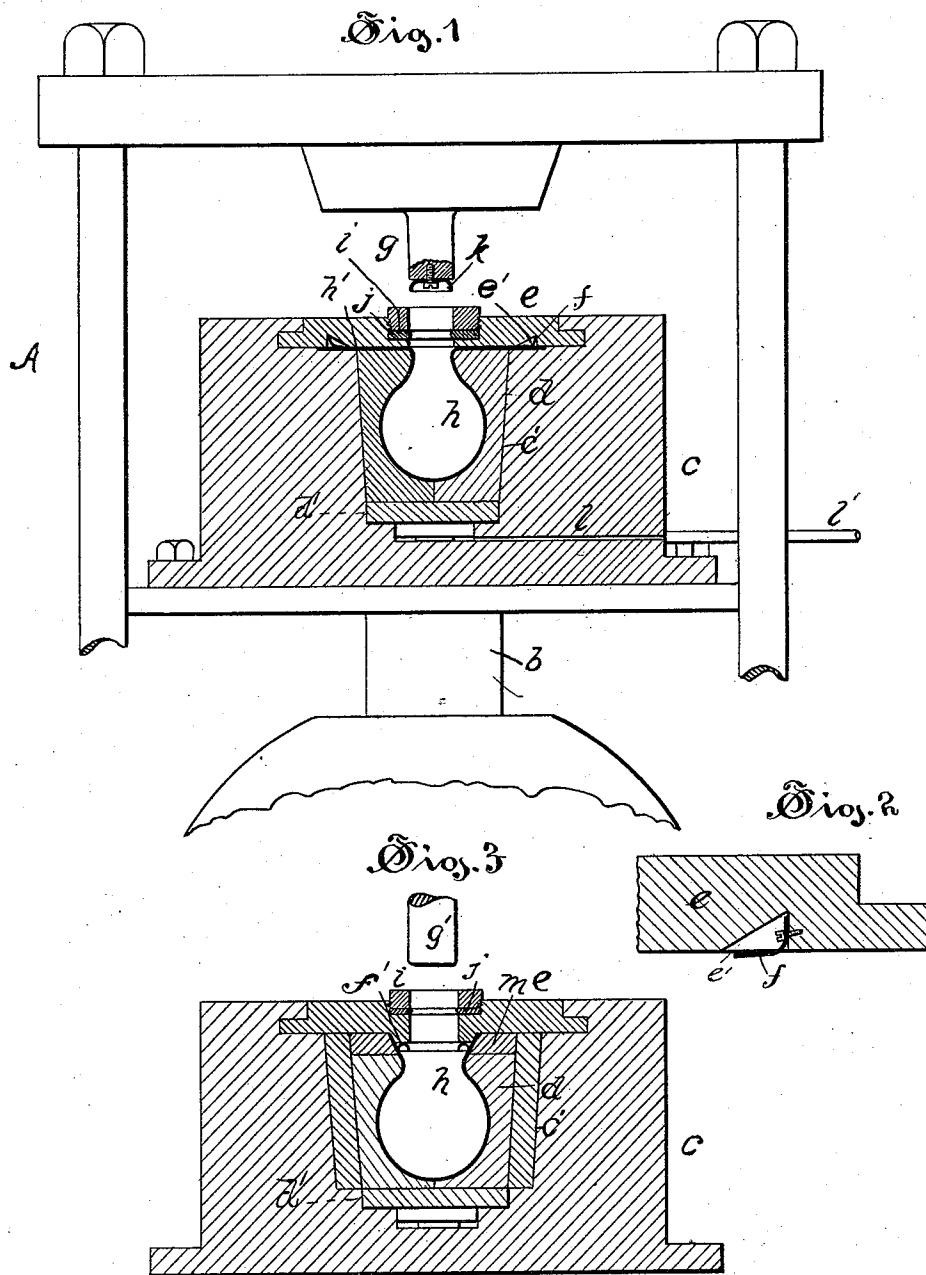


(No Model.)

A. E. HOBSON & G. W. HULL.
HYDRAULIC SHAPING PRESS.

No. 429,349.

Patented June 3, 1890.



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UNITED STATES PATENT OFFICE.

ARTHUR EDWIN HOBSON, OF HARTFORD, AND GURDON W. HULL, OF
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HYDRAULIC SHAPING-PRESS.

SPECIFICATION forming part of Letters Patent No. 429,349, dated June 3, 1890.

Application filed August 9, 1889. Serial No. 320,296. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR EDWIN HOBSON, of Hartford, in the county of Hartford and State of Connecticut, and GURDON W. HULL, of Wallingford, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Hydraulic Shaping-Presses, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of our invention is to provide a press for shaping metal that shall be adapted principally for the forming of flat or hollow ware by the use of a fluid medium; and to this end our invention consists in the combination of the several parts of the press, and in the packing device, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a detail view of part of a hydraulic press, showing the forming-dies in section and the packing-joint. Fig. 2 is a detail sectional view on enlarged scale of part of the ring-packing. Fig. 3 is a detail view in central section of the die-block and dies, showing a modified form of packing.

In the accompanying drawings, the letter A denotes a machine capable of exerting great pressure, as a hydraulic ram, the piston *b* supporting on its upper end a die-block *c*, having a die-socket *c'*, in which are located the removable dies *d*, resting on a substantial bottom plate or disk *d'*. The upper part of this socket is closed with a plate *e*, that is preferably arranged in form of a slide, with flanges taking into undercut or dovetailed sockets in the die-block, so that this plate *e* fits closely upon the top of the dies. On the under side of this plate is an annular groove, forming a packing-socket *e'*, in which a flexible packing *f* is so secured that it tends to project downward, with a space on the inner side, into which a fluid packing may flow from within the vessel when the plunger *g* enters and closes said packing down upon the flange *h'*, that projects from the mouth of the vessel *h*, that is being formed within the dies. The plate *e* has an opening arranged with reference to the position of the plunger *g*, so that the latter can

pass through it into a cavity in the dies, within which a hollow vessel *h* may be formed. This opening is provided with an annular gland *i*, that is secured in place by a screw-thread taking into a threaded socket, and it clamps between its under surface and a shoulder on the plate a packing-ring *j*, of any suitable material. The end of the plunger *g* may be provided with a cup-shaped flexible packing *k*, or it may be left smooth and without packing, as shown in Fig. 3 of the drawings.

In order to provide for the ready removal of the dies from the die-socket in the block, a hole *l* is formed through the block, extending from the chamber underneath the dies and below the die-socket to the outer surface of the block, where it communicates with a pipe *l'*, through which a liquid, as water, under great pressure may be forced by any suitable device.

In Fig. 3 there is illustrated a modified form of the packing means, the annular packing *f'* being secured to the under side of the plate within the mouth of the vessel, the projecting flange flaring upward and resting against the inner side of a ring *m*, so that when the plunger *g'* enters the opening through the plate and presses against the surface of liquid contained in the vessel-blank the pressure of the liquid will not only form a vessel to shape against the inner walls of the dies, but will tend also to force the packing outward against the flange as well as against the plunger and prevent the leaking of liquid through the joints in a manner that might prevent the perfect operation of the forming device.

In the forms of apparatus shown in Figs. 1 and 3 the die-blocks and forming-dies are mounted on the upper end of the piston and are made movable toward a fixed plunger that is secured to the cross-head on the frame of the press; but it is not necessary that this plunger shall be fixed, as it is possible to produce good results by the use of a moving plunger, which amounts to merely the reversal of the moving parts, without any change in idea and without requiring anything except the exercise of ordinary skill.

In the operation of the machine the parts are moved toward each other, so that the plun-

ger enters the opening through the plate and presses upon the surface of the liquid that is held in the blank, so that the latter is forced outward against the walls of the die, receiving
5 on its outer surface the impression of the design that is formed on the working-face of the die.

By operating the machine so as to depress the piston an enormous pressure is brought
10 upon the liquid within the vessel-blank and it is forced outward against the working-face of the die.

Instead of using a hydraulic press for obtaining the desired pressure, we may make use
15 of a screw-press or drop-press or a combination of these machines, as may be desired.

We claim as our invention—

1. In combination with the press, the die-block having the die-socket, the removable
20 dies, the extractor device having a tubular connection from the bottom of the die-socket to a point outside the die-block, the plate adapted to cover the upper surface of the die-block, and dies to afford a support for the
25 projecting flange of the vessel-blank, and the

reciprocating plunger and the packing device, all substantially as described.

2. In combination with a press, the reciprocating piston *b*, the die-block *c*, supported on the upper end of the piston and having
30 the die-socket *c'*, the removable dies *d*, fitting said socket, the perforated plate overlying the upper surface of the die-block, and the plunger *g*, bearing the packing *k*, all substantially as described. 35

3. In combination with a press, a die-block having a die-socket, the removable dies fitting said socket, the plate adapted to cover the dies within the socket and supporting an annular packing-ring, and the plunger adapted
40 to enter an opening in said plate, all substantially as described.

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