

UNITED STATES PATENT OFFICE.

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SEAL PRESS.

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To all whom it may concern:

Be it known that I, FRANK H. EYMAN, a citizen of the United States, residing in Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Seal Presses, of which the following is a specification.

This invention relates to presses having a frame provided with jaws adapted to admit material therebetween to be operated upon, and having an operating lever for operating a movable seal, die, punch or other similar element for operating upon such material.

The principal object of the invention is to provide a simple, economical and efficient press for operating a seal, die, punch, or similar element to impress or perforate a sheet or other structure to be operated upon, and to provide simple and efficient means for distributing or equalizing and regulating or controlling the degree of pressure to be applied or obtained in the operation of the device.

Other and further objects of the invention will appear from the following description and claims, and from an inspection of the accompanying drawings which are made a part hereof.

The invention consists in the features, combinations and details of construction and arrangement of parts herein described and claimed.

In the accompanying drawings,

Figure 1 is a plan view of a seal press constructed in accordance with my invention;

Fig. 2 is a view in side elevation of the seal press shown in Fig. 1;

Fig. 3 is a view in central vertical section taken on line 3—3 of Fig. 1, looking in the direction indicated by the arrows, showing the lever and movable die in lowered or closed position, and also the adjustable pressure distributing, controlling and regulating means interposed between the movable die and the operating lever;

Fig. 4 is an enlarged detail view in transverse section taken on line 4—4 of Fig. 3, looking in the direction indicated by the arrows, showing the pressure distributing and regulating means;

Fig. 5 is an enlarged detail view in transverse section taken on line 5—5 of Fig. 3, looking in the direction indicated by the

arrows and showing the means for locking and releasing the operating lever; and

Fig. 6 is an enlarged perspective view in detail of the adjustable pressure distributing and controlling means shown in Figs. 2, 3 and 4.

In constructing a press adapted to operate a seal, die, punch, or similar impression or perforating member, in accordance with my invention, I provide a frame 1 having frame arms or jaws which, in the form or construction shown in the drawings, comprise a lower frame arm, jaw or base 2, and an upper frame arm or jaw 3 rigidly connected with the lower arm or jaw 2, and by preference, integral with the same.

The bottom portion or base of the frame may be of any ordinary and well known or described suitable form, and may be provided with an extension 4 adapted to form a convenient grip; and it is obvious, and will be readily understood by those skilled in the art that the bottom portion or base of the frame may be of any suitable width and dimensions suitable for supporting the seal press in upright position on a frame or table, or other support, or may be of any form and dimensions suitable for enabling the seal press to be grasped and supported in one hand, and operated thereby, while the sheet or material to be operated upon or impressed with the imprint of the seal or die is held in position between the opposed die members or impression members by the other hand of the operator.

The frame 1, as well as the operating lever 5, may be formed of pressed sheet steel, or other suitable sheet metal, or may be cast, if desired. But I prefer to make them of hollow light construction, but sufficiently strong and rigid to withstand the stresses and strains to which they are subjected in use; and the device should be compact and portable. It is therefore made as light as possible consistent with the strength required and the uses to which the mechanism is to be applied.

The upper frame arm or jaw 3 is, by preference, so constructed as to comprise side portions 6, 6 which are spaced apart and in parallel relation so as to provide a space 7 therebetween in which is mounted the operating lever 5 which has integral depending side flange portions 8, 8 located between and in engagement with the op-

posite inner side surfaces of the side frame members 6, 6, of the upper rigid frame arm or jaw 3, to which the operating lever is pivotally attached by means of a pivot 9 which is mounted in the upper rigid frame arm or jaw 3, in suitable perforations provided for receiving the opposite ends of the pivot. The pivot 9 thus extends transversely across the space 7 and through perforations in the depending side flange portions 8, 8, of the operating lever 5, at or near the forward end of the lever and the corresponding extremity of the upper jaw or frame arm 3, which thus pivotally supports the lever in position to be raised or extended, and collapsed or lowered, and locked in lowered or closed position and released and operated with facility, as desired.

The lower frame arm or jaw 2 and the upper frame arm or jaw 3 are spaced apart so as to provide a space 10 therebetween adapted to admit the dies, seal members or other parts to be operated and supported in operative position between said upper and lower frame arms or jaws.

A lower stationary die or seal member 11, which may be in the form of what is commonly known as a splash seal, or may be a cast seal member, if desired, is mounted upon the lower rigid frame arm or jaw 2 which has a sufficiently wide, and in this instance, circular seal supporting portion or bed 12 on the upper surface of which the bottom die or seal member 11 is cast or otherwise fixed.

An upper movable die member or seal 13 is movably supported directly over the lower side or seal member 11 by means of a resilient supporting member which, in this instance, is in the form of a spring 14 having a lower spring arm 15 and an upper spring arm 16 formed in one integral piece and mounted on the inside of and inclosed by the hollow casing or frame 1, said spring arms being spaced apart so as to provide a space therebetween adapted to admit a sheet of paper or other material to be operated upon, and to permit the desired movement of the upper movable die 13. The lower spring arm 15 is rigidly secured at its forward extremity to the upper face of the lower frame arm or jaw 2 by means of a screw 17 anchored in the lower frame portion or base, and, by preference, extending through the lower jaw 2 and in secure rigid engagement with the forward end of the spring arm 15 directly back of the lower die 11 and its circular support 12.

A sufficiently wide, and by preference, flat and circular die-supporting casing 18 is movably supported upon and, by preference, formed in one integral piece with the upper spring arm 16 of the resilient die-support 14, and provided with a depending marginal peripheral flange 19 which is sufficiently

flexible and of suitable dimensions to detachably engage, and encircle the periphery of, and securely hold in operative position the die or seal 13. Marginal slits or grooves 20 are cut in the flanged seal supporting casing 18 so as to afford the desired flexibility of the curved die-engaging flange portions 21, which are thus sufficiently flexible, and are adapted to be clamped securely in detachable supporting engagement with the upper movable die or seal member 13 by means of a clamping screw 22 mounted in the adjacent perforated peripheral projecting end portions 23 of the flexible flange parts 21.

A crank pin or eccentric die-operating member 24 is provided on the operating lever 5 and located directly over the central portion of the upper movable die 13 and its supporting casing 18, and forms a pressure-applying member intermediate the axial pivot 9 and the movable die member 13 and support 18. And interposed between the eccentric pin 24 and die 13 is a pressure-distributing and equalizing device comprising a frame or carriage 25 having side frame portions 26 which are perforated and provided with transverse pins or axles 27, on which are mounted rotative anti-friction rollers 28 each of which is in rolling contact with the flat upper surface of the upper die or die supporting casing 18.

These anti-friction rollers are mounted on opposite sides of the transverse center of the die-support 18 and of the upper movable die 13 supported by the resilient member 14.

The frame or carriage 25 is provided with a threaded pressure controlling or regulating adjusting screw 29, which is mounted in vertical position in threaded engagement with a central vertical screw-threaded opening 30 in said carriage or pressure distributing frame member 25. The pressure controlling or regulating adjusting screw 29 is provided with a head 31 having one or more top transverse longitudinal notches or recesses 32 in and across its upper face and adapted to admit and pivotally engage the transverse excentric pin 24 mounted on or forming a part of the operating lever 5, already described.

It will thus be readily understood that by turning the pressure controlling or regulating and adjusting screw in one direction the degree of pressure obtained or applied to the paper and movable die member 13 and pressure distributing carriage or shoe 25, by pressing the operating lever 5 downward to a desired predetermined position—for example, to the position shown in Fig. 3 of the drawings—will be correspondingly increased. It follows as a matter of course that by turning the adjusting screw 29 in an opposite direction one or more turns or partial rotations, the degree of pressure obtained or applied by

the operation of the lever 5 to such desired predetermined lowered operative position will be correspondingly reduced. A very simple and efficient means is thus provided for controlling, regulating or adjusting the degree of pressure to be applied or obtained by the operation of the device. The operating lever 5 may thus be adjusted with respect to the movable die member 13 and pressure distributing and regulating carriage or shoe 25 by means of the adjusting screw 29, so that the lever will be in the desired predetermined position with relation to the die member to afford a convenient and effective leverage. The operation of the device and the accurate adjustment of the upper and lower die members and operating lever with respect to each other and the regulation of the pressure to be obtained are thus accomplished with facility and in an effective manner.

In operation, as the pin 24 is moved downward and forward in the arc of a circle the center of which is the center of the transverse pivot pin or axle 9, the pressure-distributing device or carriage 25 and rollers 28 will move downward with the die 13 until said die comes in contact with the stationary lower die 11, or with the upper face of a sheet of paper or other material between the dies, and in case any given marginal portion of the movable die becomes engaged and is stopped from further movement in the direction of the lower die in advance of any other portion, or before the upper and lower dies are properly engaged in uniform parallel relation, the anti-friction roller 28 which happens to be the one located over the higher portion of the movable die 13, or between the pin 24 and a portion of the upper movable die which is still out of contact with or more widely separated from the lower die than the portions first engaged and stopped from further movement toward the lower die, will receive and transmit pressure from the pin 24 to the higher portion of the upper die and of the casing 18 and force such relatively high or temporarily more widely spaced apart portion of the upper die down into parallel relation to and in uniform engagement with the face of the lower die or of a sheet located between the upper and lower dies, to be operated upon or impressed with the outlines of the seal or die.

A uniform pressure will thus be applied tending to press all parts of the upper die downward toward and in parallel relation to and in uniform operative engagement with the adjacent face of the lower die or of a sheet located between the upper and lower die members. And an even and uniform pressure and impression is thus obtained between the adjacent opposed surfaces of the upper and lower die members

throughout the entire area or engaged surface thereof, or of the sheet located between such parallel uniformly spaced or parallel opposed surface portions of the dies which are, of course, male and female, the outline one one having been impressed upon the adjacent opposed surface of the other. It is obvious that the form of the upper or original die may be impressed upon the lower die member while the latter is in a plastic condition, if desired, while the movable die is mounted in the position in which it is to be used when the press is in operation for the uses for which it is intended.

Means for limiting the movement of the operating lever and of the upper or movable die or tool, and for permitting the operation of the lever to raised, open or extended position, and for locking the same in lowered closed position, is provided as follows:

Each of the said walls 33 of the operating lever 5 is provided with a transverse aperture or angular slot 34, and each of said wall portions 6 of the upper arm or jaw 3 is provided with an inclined transverse opening or slot 35 adapted to register with a corresponding opening or slot 34 in the operating lever 5.

A locking pin or bolt 36 is slidably mounted in, and in position to extend through the openings or slots 34 and 35, and comprises in its construction a headed inner screw-threaded bolt member or screw 37, and an outer headed sleeve member 38 having a screw-threaded longitudinal axial bore 39 in threaded engagement with which the threaded screw 37 is mounted.

The head of the sleeve member 38 and the head of the screw member 37 are thus located on opposite sides of and in sliding engagement with the opposite outer faces of the side walls 6 of the upper jaw or frame arm 3. The sleeve member 38 is of such length that its inner end margin 40 is in abutting engagement with the inner face of the head of the screw member 37, so that the screw member 37 and the sleeve member 38 may be secured tightly together and held firmly in rigid engagement with each other, while permitting the locking bolt or pin 36, comprising said inner and outer members 37 and 38, to be freely moved in the slots 34 and 35 from upper locking position, as shown in Fig. 3, to lower releasing position, as shown in Fig. 2, and vice versa.

The upper extremities of the transverse slots or angular inclined openings 34 and 35 are adapted to register with each other when the operating lever 5 is in lowered position, with the locking bolt or pin 36—comprising the inner screw-threaded member 37 and outer sleeve member 38—in raised locking position and in engagement with the upper extremities of the lower in-

clined side walls 41 of the angular slots 34 in the operating lever. And the lower extremities of the transverse openings or inclined slots 34 and 35 are adapted to register with each other when the operating lever 5 is in raised or open position and the locking pin or bolt 36 is in lowered lever-releasing position, as shown in Fig. 2.

The slots 34 and 35 are of such form and dimensions, and the inclined walls 41 of the slots 34 and inclined walls 42 of the slots 35 are so disposed with respect to each other and at such angles with respect to the axis 9 of the operating lever, that the lever will be held in lowered position by means of the locking pin or bolt 36 and the openings or slots 34 and 35 in such a manner as to permit the raising of the lever without shearing or injuring the locking pin or bolt 36. Injury to the pin or operating lever or other parts of the device by the unskilled operator, or by inadvertently raising the operating lever without first adjusting the locking bolt 36 to releasing position, is thus obviated.

I claim:

1. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary die member, a movable die member mounted adjacent to said stationary die member, connecting means operatively connected with and forming an operative connection between said operating lever and said movable die member and comprising an adjusting screw interposed between said lever and said movable die member and adapted to enable said movable die member to be adjusted with respect to said operating lever.

2. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary die member, a movable die member mounted between the stationary die member and said operating lever, pressure-distributing connecting means operatively connected with and forming a connection between said operating lever and said movable die member, and adjusting means comprising an adjusting screw interposed between said operating lever and said movable die member adapted to enable the movable die member to be adjusted with respect to said operating lever.

3. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary die member, a movable die member mounted adjacent to said stationary die member, pressure-distributing means interposed between said operating lever and said movable die member and in movable relation to the latter, and adjusting means comprising a transversely slotted adjusting screw extending between said operating lever and said movable die member adapted to enable the mov-

able die member to be adjusted with respect to the operating lever.

4. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary member, a movable die member mounted adjacent to said stationary die member, a pressure-distributing member interposed between said operating lever and said movable die member, and in movable relation to the latter, and adjusting means on said pressure-distributing member adapted to enable said pressure-distributing member to be adjusted with respect to said operating lever and thereby permit the adjustment of the movable die member with respect to the operating lever.

5. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary die member, a movable die member mounted adjacent to said stationary die member, a pressure-distributing shoe interposed between said operating lever and said movable die member and in movable relation to the latter, and adjusting means on said pressure-distributing shoe member and operatively connected with said operating lever and adapted to enable the pressure-distributing shoe and said movable die member to be adjusted with respect to the operating lever.

6. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary die member, a movable die member mounted between said stationary die member and said operating lever, a pressure-distributing shoe interposed between said operating lever and said movable die member and in movable relation to the latter, and an adjusting screw mounted in operative engagement with said pressure-distributing shoe and in operative engagement with said operating lever and adapted to enable the pressure-distributing shoe and said movable die member to be adjusted with respect to the operating lever.

7. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary die member mounted in the frame, a movable die member mounted between said stationary die member and the operating lever, a pressure-distributing member mounted between said operating lever and said movable die member and movable at an angle with respect to the path of movement of the latter, and adjusting screw mechanism mounted on said pressure-distributing member and in operative engagement with said operating lever and adapted to enable said pressure-distributing member and movable die member to be adjusted with respect to said operating lever.

8. In a press of the class described, the combination of a frame, an operating lever pivotally mounted in the frame, a stationary die member mounted in the frame, a
5 movable die member mounted between said stationary die member and the operating lever, an eccentric pressure-applying element on and in eccentric relation to the axis of said operating lever, a pressure-distributing member mounted between said operating
10 lever and said movable die member and movable at an angle with respect to the path of movement of the latter, and an adjusting screw mounted in engagement with said pressure-applying member and having a transversely recessed end portion adapted
15 to engage said eccentric pressure-applying element on said operating lever, for enabling the pressure-distributing member and movable die member to be adjusted
20 with respect to the operating lever.

9. In a press of the class described, the combination of a frame, an operating lever

pivotally mounted on the frame, a movable die member mounted between the station- 25
ary die member and the operating lever, a pressure-applying pin on said operating lever, a pressure-distributing member located between said operating lever and said
movable die member and in movable opera- 30
tive engagement with the latter, and an adjusting screw mounted on and in threaded engagement with said pressure-distributing member and having a transversely recessed
35 head in engagement with said pressure-applying pin and adapted to enable the pressure-distributing member and movable die member to be adjusted with respect to the operating lever.

Signed at Chicago, in the county of Cook 40
and State of Illinois, this 30th day of November, 1922.

FRANK H. EYMAN.

Witnesses:

HARRY I. CROMER,
JENNIE L. FISKE.