

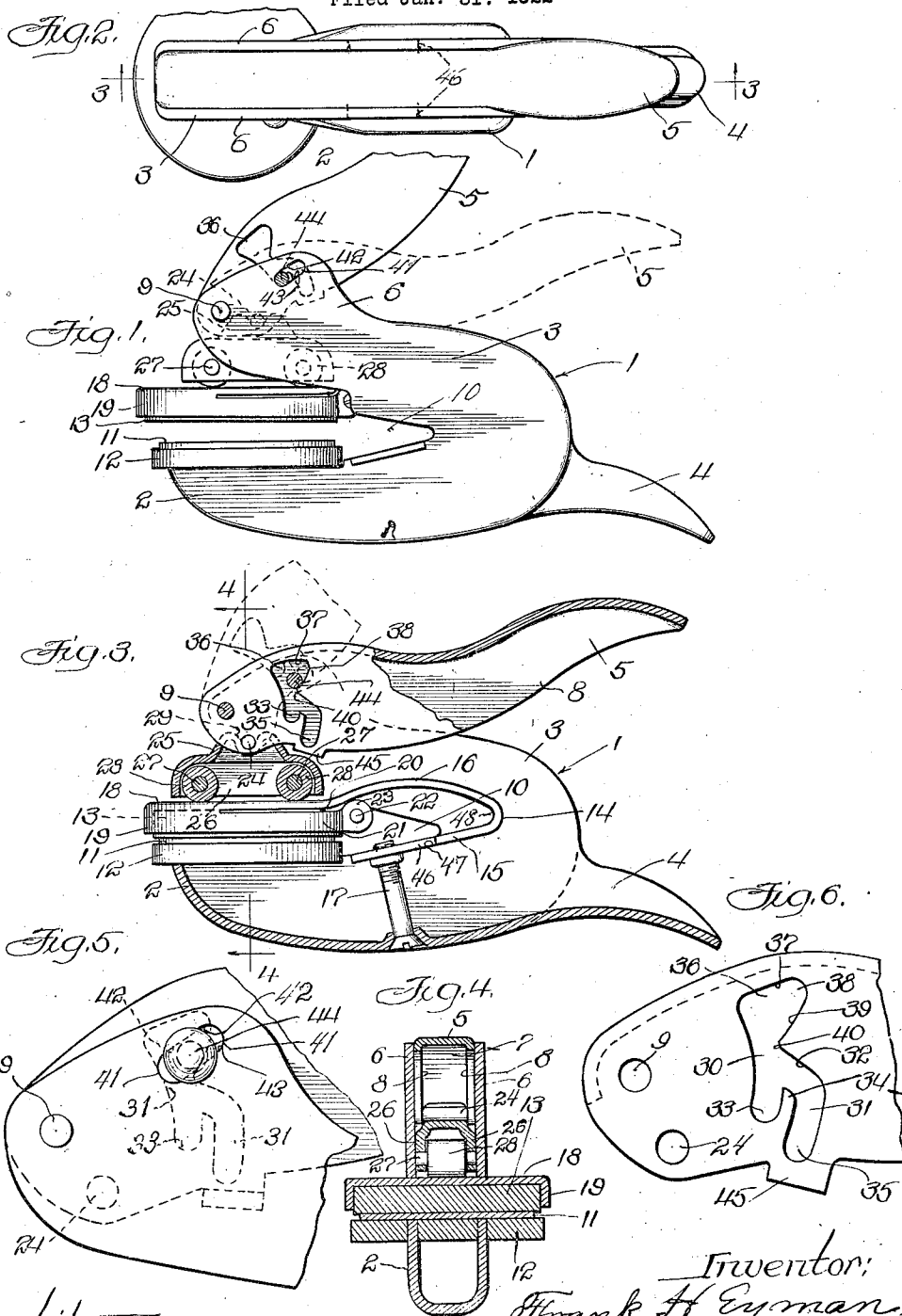
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1,471,687

F. H. EYMAN

SEAL PRESS

Filed Jan. 31, 1922



Witness:
W. K. Olson

Inventor:
Frank H. Eyman.
By Harry Irwin, Promoter.
Atty.

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UNITED STATES PATENT OFFICE.

FRANK H. EYMAN, OF OAK PARK, ILLINOIS, ASSIGNOR TO ART NOVELTY MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SEAL PRESS.

Application filed January 31, 1922. Serial No. 533,135.

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 impressing or operating upon such material.

The principal object of the invention is to provide a simple, economical and efficient press for operating a seal member, die, punch or similar element to impress or perforate a sheet or other structure to be operated upon.

A further object of the invention is to provide a seal press or die press, or similar tool or mechanism having an operating lever and a seal, die, or similar element to be operated or pressed into contact with a sheet or other structure to be operated upon, with pressure distributing or equalizing means adapted to enable the desired uniform pressure to be obtained; and to provide simple and efficient means for locking the operating lever and the die or tool to be operated thereby in closed, folded or collapsed position when the press is not in use, and adapted to enable the parts to be released and operated with facility and in an efficient manner, and to be assembled or taken apart readily and fitted accurately and with facility.

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 the details of construction and arrangements of parts herein described and claimed.

In the accompanying drawings—

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

Fig. 2, is a plan view of the same;

Fig. 3 is a view in central vertical section taken on line 3—3 of Fig. 2, looking in the direction indicated by the arrows; and show-

ing the lever and movable die in lowered or closed position in full lines, and the lever in its most extended widest open position in broken lines, as it would be when the parts are to be assembled or disassembled;

Fig. 4 is a view in transverse vertical section taken on line 4—4 of Fig. 3, looking in the direction indicated by the arrows;

Fig. 5 is an enlarged detail view showing the upper fixed jaw or frame portion to which the operating lever is pivotally connected, and showing the relative positions of the elongated slot in the rigid jaw or upper fixed frame arm, and the angular slot in the lever, and the detent or catch mounted in said slots, for locking the lever in lowered position; and

Fig. 6 is an enlarged detail view of the pivoted and slotted portion of the operating lever.

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 desired 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 opposite 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 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 die 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, 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; and the frame or carriage 25 is provided with a transverse notch, recess or opening 29 into which the pin 24 extends, so that, 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 into 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 certain 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 5 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 10 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 15 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 20 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 25 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 30 of the upper and lower die members throughout the entire area or engaged surfaces thereof, or of the sheet located between such parallel uniformly spaced or parallel opposed surface portions of the dies which 35 are, of course, male and female, the outline on 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 40 die member while the latter is in a plastic condition, 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; and the lower die, 45 after receiving the impression, is allowed to set while the upper die is firmly and rigidly held in engagement therewith and in proper parallel relation thereto, and while the pressure is uniform so that the dies are in 50 proper relation and ready for use.

Means for limiting the movement of the operating lever, and of the upper or movable die or tool to raised, open, or extended position, and for locking the same in lowered 55 closed position is provided, as follows:

In one or both of the sides of the operating lever 5 is provided an angular segmental slot or series of communicating slots comprising an inner segmental slot portion 60 30, and an outer segmental slot portion 31 both curved and having the form of arcs of circles the centers of which is the center of the pivot pin 9, and the axis about which the operating lever 5 is adapted to swing 65 when in operation. The upper extremity of

the outer curved segmental slot 31 is connected with the inner slot 30 by means of an angular connecting slot portion 32 which is above the level of the bottom extremity 33 of said inner slot 30, the upper portion 70 of the outer slot 31, and the lower portion of the slot 30 being separated by a division wall or partition 34. The lower extremity 35 of the outer segmental slot 31 extends downward beyond the lower extremity of 75 the inner slot above described. The connecting slot portion 32 constitutes an inclined connecting slot; and said slot 32 and the outer segmental slot 31 are employed only when the operating lever is to be raised 80 to its extreme extended or raised position, for the purpose of assembling the parts, or taking the mechanism apart for repairs or for replacing some part, or for other or similar purposes. The inner segmental slot 85 30, however, is used whenever the operating lever is to be operated, and whenever said lever is to be released from its lowered die-closing position, or from locked or latched 90 closed position, and is provided with an upper outwardly extending radial slot portion 36 which extends outward radially from the upper extremity of the slot 30, and has a top radial wall 37 extending from the upper 95 extremity of the inner segmental slot 30 to the upper outer extremity 38 of the radial slot portion 36 and of the series of connected slots as a whole. The outer portion 38 of the upper radial slot portion 36 merges 100 into the inner slot 30, and in this connection, it should be noted that an inclined or angular wall 39 extends downward and inward at an incline from the outer extremity of the said upper radial slot portion 36, 38 to the slot 30, and merges with the curved segmental 105 outer wall portion 40 of the slot 30 at a point above the radial connecting slot 32 already described.

An elongated inclined approximately 110 radial slot 41 is provided in the upper frame arm or upper fixed jaw 3 of the main frame of the device, and has an upper wall 42 and a lower wall 43 in parallel relation to each other and spaced apart so as to admit 115 therebetween a detent member 44, which, in this instance is in the form of a transverse headed pin slidably mounted in the slot or slots 41 in the side or sides of the upper jaw 3. This slidable latch member or detent 120 44 extends through the slotted portion of the lever 5, and is adapted to engage the parallel walls 42, 43 of the radial elongated slot 41 in the upper rigid frame arm, and any wall of any desired portion 125 of the series of connected slots 30, 31, 32, 36 in the lever 5, any and all of which are adapted to be brought into adjacent overlapping relation to the elongated slot 41, the inner portion of which is adapted to overlap 130 the adjacent inner segmental slot 30, and the

outer portion of which is adapted to overlap the outer slot portions 31, 32, 38 in the operating lever successively, according to the position of said lever.

From the foregoing description it will be readily understood that the transverse adjustable or slidable detent member or pin 44 is readily movable from one end to the other of the elongated slot in the upper frame arm 3; that when said detent member is at the inner end of the approximately radial elongated slot and in position to extend through the inner upper curved segmental slot or slot portion of the compound angular segmental slot in the side or sides of the operating lever, the operating lever will be free to move upward to die-opening position, and the movable die will be raised by its resilient supporting means to open position, in which position the die members are adapted to admit a paper or sheet of material to be operated upon therebetween, and that the operating lever is also free to move downward to die-closing position, either with a sheet between the dies to be impressed, or without anything between the dies.

It should also be noted that, in casting a splash die or counter die upon the stationary support, or in proper stationary operative position upon the lower frame arm or jaw 2, which may be accomplished by placing metal in a sufficiently hot plastic condition upon the stationary die-support, and then operating the lever 5 and thereby pressing the movable die into contact with the plastic molten or properly heated die-forming metal, and holding the movable die in its proper desired lowered die-closing position while the plastic metal is allowed to cool and set, the thickness of the stationary die members thus cast upon the rigid frame and in the position in which they are to be used, may vary in thickness; and it becomes highly desirable and important that means be provided whereby the movable die, and the operating lever, may be secured, latched, or locked in proper die-closing position, and in proper engagement with the stationary die member, whatever its thickness may be.

The upper portion of the segmental slot in the operating lever is therefore made wider at the top and tapered from the top extremity downward to a point above the level of the angular intermediate connecting slot, and at some distance above the bottom extremity of the inner segmental slot 30. The upper tapered or angular expanded portion of the upper inner segmental slot 30 thus has an outer rearwardly and upwardly inclined side wall 39 which is in oblique relation to the approximately or substantially radial longitudinal side walls of the elongated slot 41 in the upper frame arm 3, and is adapted to engage the rear side of the

detent pin while the opposite side of said pin is engaged by the upper approximately radial longitudinal side wall of said elongated slot. The pin thus extends through the elongated slot and between the upper longitudinal side wall of said elongated slot in the upper frame arm and the said oblique inclined rear wall 39 of the upper tapered portion of the segmental slot 30 in the operating lever. As the wall 39 is in oblique relation to the opposed upper longitudinal substantially radial side wall of the elongated slot 41 it will be readily seen that the operating lever 5 may be stopped in its downward movement at any one of a multiplicity of relatively higher or lower positions, any one of which may have been reached by said lever when the stationary seal has been properly engaged and cast, and that, although the stationary seal may be relatively thick in one instance, or relatively thin in another, and the position of the operating lever may vary according to the varying thickness of stationary seals thus cast, or cast in any other manner, the lever and the movable seal may be secured or locked accurately in exactly the desired position, and with facility, by simply moving the detent pin rearwardly, longitudinally of the elongated slot 41 until it engages an adjacent portion of the oblique wall 39 of the segmental slot 30 in the operating lever. The pin being thus simultaneously in engagement with the upper longitudinal side wall of the elongated slot 41, and the relatively oblique wall 39 of the slot in the operating lever, when said lever has reached any desired one of a multiplicity of possible die-closing positions which the lever may reach in the operation of casting the stationary die, or in causing the movable die to properly engage the stationary die when in die-closing position, it is evident that the lever is thus secured or locked in such desired die-closing position, although said position may vary according to the thickness of the stationary or counter die, as already suggested.

It will also be readily understood by those skilled in the art, that the lower angular and outer segmental slot or slot portion is adapted to admit the detent pin and permit the free movement of the operating lever to its uppermost extended position, whenever the detent pin is moved into the radial intermediate connecting slot and outer lower segmental slot. Convenient means is thus provided, for assembling, releasing, removing, and replacing the movable die, its supporting and operating parts, as desired, either in the making of the device and assembling the parts in the first instance, or in making repairs, or removing and replacing any part or parts for any reason, or for any purpose, as circumstances may require.

It will be readily understood by those skilled in the art that, while I have described one way of making the lower or stationary die, it, as well as the movable die 13, may be made of any desired suitable material and in any desired ordinary and well known manner; and the lower die is ordinarily made first, in any suitable ordinary manner and of any suitable metal or other material, and then placed in its proper position upon the support or frame 1. It is very desirable, however, that the movable die 13 should be flat on its top or back face, and I prefer that it should be detachably mounted in the flat-topped casing 18, which may be formed in one integral piece with the die supporting and guiding spring 14, or attached to the upper free end of the latter in any suitable manner, removably or otherwise, and by any suitable securing means, such as rivets, or by welding. And the spring arm 15 is provided with lateral projections or arms 46 on opposite sides of the forward extremity or end portion of said spring arm, each of said lateral projections 46 being set into and in snugly fitting, preferably detachable, engagement with a corresponding tightly fitting slot or recess 47 in the corresponding side wall of the frame 1. The spring 14 thus comprises upper and lower spring arms 16, 15 which are formed in one integral piece of spring metal, and which have their converging extremities flexibly connected by an integral connecting loop 48 formed by bending a strip of spring metal or resilient material upon itself. The spring arms 15, 16, and integral connecting loop thus formed and mounted, extend inside of the frame and are freely movable upwardly and downwardly between the side walls of the frame and with respect to the stationary die member 11 and the frame. And the flat bent spring thus rigidly supported at its lower end, resists any tendency of the movable die member to move laterally or horizontally out of proper operative position or relation to the stationary die, and permits the desired freedom of movement of the movable die toward and from the stationary die.

The pressure distributing shoe 25 extends across the center of the movable die member in the direction of the length of the actuating lever 5, and is in non-rotative rocking engagement with the eccentric pressure-applying pin or member 24 on said lever, and in operative engagement with the die-support 18 or the flat top face of the movable die, and movable at an angle with respect to the direction of the path of movement of the movable die member; and said shoe is detachably supported in engagement with the pin or eccentric pressure-applying means 24, and between the latter

and the movable die member, and acts to transmit and distribute pressure applied by the action of the lever and its eccentric pin 24, through the medium of the pressure-distributing shoe, to the movable die member.

The inclined rear wall of the slot portion 32 is adapted to enable the pin 44 to be automatically pressed or caused to move forward from the slot portion 31, through the slot portion 32 and into the curved slot portion 30 in response to the downward movement of the lever 5 whenever the pin 24 happens to be in the slot 35, as it is, for instance, when the lever 5 is raised to its highest position in assembling the parts, as indicated in broken lines in Fig. 3. (See Fig. 6.) The accidental shearing of the pin 44 is thus obviated.

I claim:

1. In a press of the class described, the combination of a frame, a stationary die member mounted in the frame, an actuating lever pivotally mounted on the frame and provided with eccentric pressure-applying means on and in eccentric relation to the axis of said lever, a movable die member located adjacent to the stationary die member, and a pressure-distributing shoe member in rocking non-rotative engagement with said eccentric pressure-applying means on said lever and movable at an angle with respect to the path of movement of said movable die member, said shoe being located between the lever and said movable die member and extending on opposite sides of the center of the movable die member in a direction lengthwise of said lever.
2. In a press of the class described, the combination of a frame, a stationary die member mounted in the frame, a pivoted operating lever mounted in the frame, eccentric pressure-applying means on and in eccentric relation to the axis of the operating lever, a movable die, and an oscillating shoe member in operative engagement with and extending on opposite sides of the axis of said eccentric pressure-applying means, and movable between the lever and said movable die at an angle with respect to the path of movement of the latter.
3. In a press of the class described, the combination of a frame, a stationary die member mounted in the frame, a pivoted operating lever mounted in the frame, eccentric pressure-applying means on and in eccentric relation to the axis of the operating lever, a movable die, and an oscillating shoe member in operative engagement with said eccentric pressure-applying means and extending on opposite sides of the axis of said lever and in operative engagement with said movable die member on opposite sides of said axis.
4. In a press of the class described, the

combination of a frame, a stationary die member mounted in the frame, a pivoted operating lever supported by the frame, an eccentric pressure-applying member on and in eccentric relation to the axis of the operating lever, a movable die member mounted in the frame and movable toward and from the stationary die member, and a non-rotative pressure distributing member located intermediate said eccentric pressure-applying member and the movable die member and extending across the center of and movable at an angle with respect to the path of movement of said movable die member.

5. In a press of the class described, the combination of a frame, a stationary die member mounted in the frame, a pivoted operating lever supported by the frame, an eccentric pressure-applying member on and in eccentric relation to the axis of said lever, a movable die member, a die-supporting member in supporting engagement with the movable die member, and a non-rotative pressure-distributing shoe in engagement with and extending on opposite sides of said eccentric pressure-applying member and between the latter and the movable die and across the central portion of the movable die.

6. In a press of the class described, the combination of a frame, a stationary die member mounted in the frame, a pivoted operating lever supported by the frame, an eccentric pressure-applying pin on and in eccentric relation to the axis of the operating lever, a movable die, resilient die-supporting means in supporting engagement with said movable die, a non-rotative pressure-distributing shoe in engagement with and extending on opposite sides of the said eccentric pin and movable at an angle with respect to the path of movement of the movable die, and anti-friction means on said shoe and located on opposite sides of said eccentric pin and adapted to permit the shoe to move at an angle with respect to the path of movement of the movable die member.

7. In a mechanism of the class described, the combination of a frame, a stationary die member mounted in the frame, a movable die, an operating lever pivotally mounted in the frame and in operative engagement with said movable die, an elongated slot in said frame and having opposite longitudinal side marginal walls disposed in approximately radial relation to the axis of the pivoted lever, said operating lever having a slot provided with a marginal wall disposed obliquely with respect to one of said approximately radial side marginal walls of said elongated slot in said frame, and a detent adjustably mounted in said last mentioned elongated slot and extending between and in engagement with a longitudinal side marginal wall of said elongated slot in said frame and with said oblique marginal wall

of said slot in said operating lever, for securing the lever in die-closing position.

8. In a mechanism of the class described, the combination of a frame, a stationary die member mounted in the frame, a movable die, resilient supporting means in supporting engagement with the movable die, an operating lever pivotally mounted in the frame and in operative engagement with said movable die, an elongated slot in said frame and having opposite longitudinal side marginal walls in approximately radial relation to the axis of said operating lever, said operating lever having a segmental slot provided with opposite side marginal walls extending at an angle with respect to the longitudinal side walls of said elongated slot in said frame, and a detent pin slidably mounted in and movable longitudinally of said last mentioned elongated slot, and extending between and in engagement with a longitudinal side marginal wall of said elongated slot in said frame and an opposed longitudinal side marginal wall of said segmental slot in said operating lever, for locking the lever and thereby the movable die in die-closing position.

9. In a mechanism of the class described, the combination of a frame, a stationary die member mounted in the frame, a movable die, an operating lever pivotally mounted in the frame and in operative engagement with the movable die, means for yieldingly supporting the movable die, an elongated slot in said frame and provided with opposite longitudinal marginal walls in approximately radial relation to the axis of said pivoted operating lever, a segmental slot in the operating lever, said segmental slot having side marginal walls extending at an angle with respect to the longitudinal side walls of said elongated slot in said frame, a detent pin slidably mounted in and movable longitudinally of said elongated slot in said frame and adapted to extend between and in engagement with the walls of said segmental slot in said lever, for locking the lever and the movable die in die-closing position, and an angular segmental slot communicating with and extending endwise beyond the end of the first-mentioned segmental slot in said lever and adapted to receive said slidable detent pin when said lever is moved to its outermost extended position upon its axis, to permit the movable die and other parts to be assembled, released, removed, and replaced, as desired.

Signed at Chicago, in the county of Cook and State of Illinois this 25th day of January, 1922.

FRANK H. EYMAN.

Witnesses:

HARRY I. CROMER,
FRIEDA BLUEMER.