

R. H. PEARSON.
CLEARANCE DEVICE FOR PUNCH PRESSES.
APPLICATION FILED MAR. 28, 1908.

899,131.

Patented Sept. 22, 1908.

Fig. 1

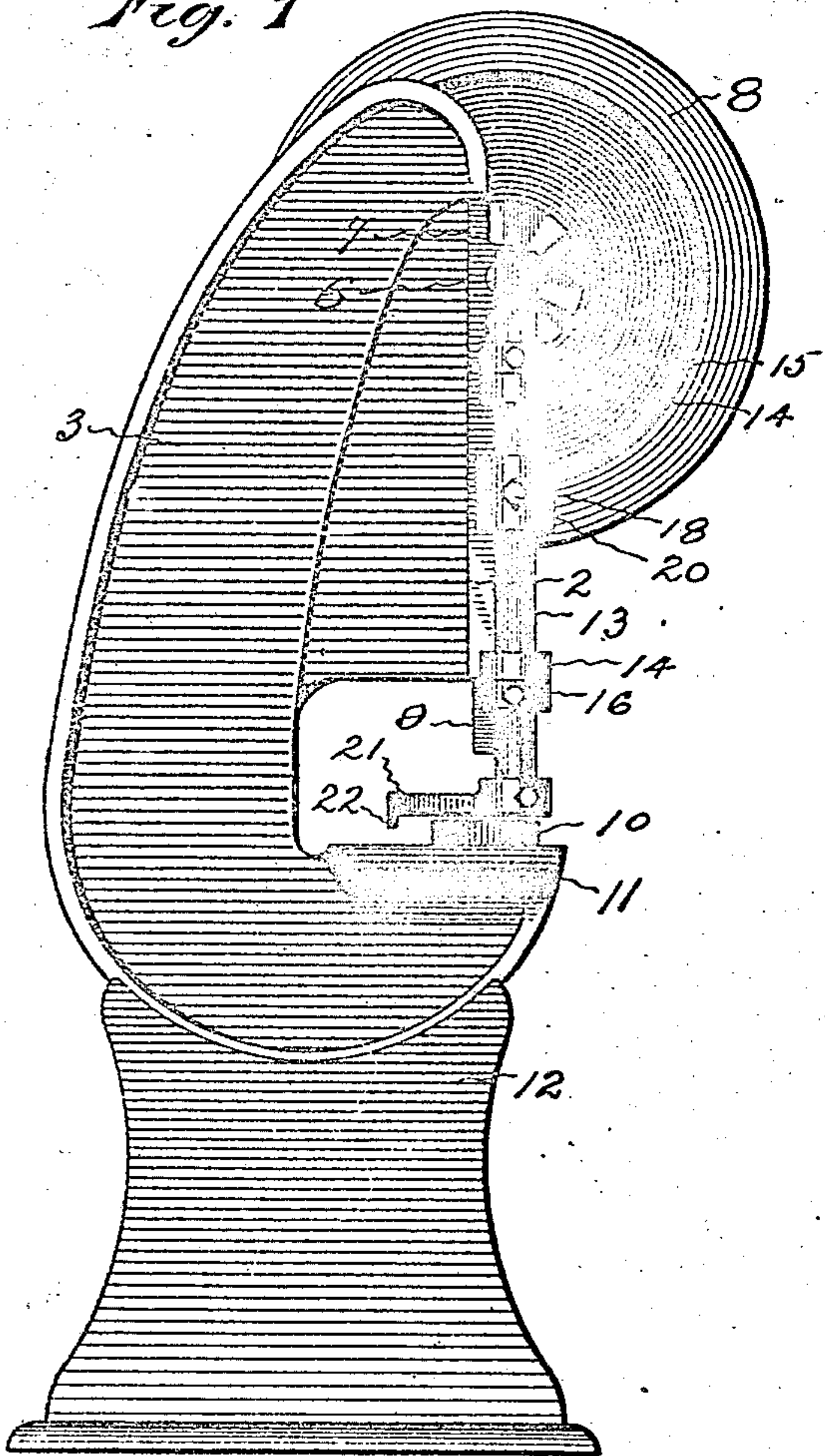


Fig. 2

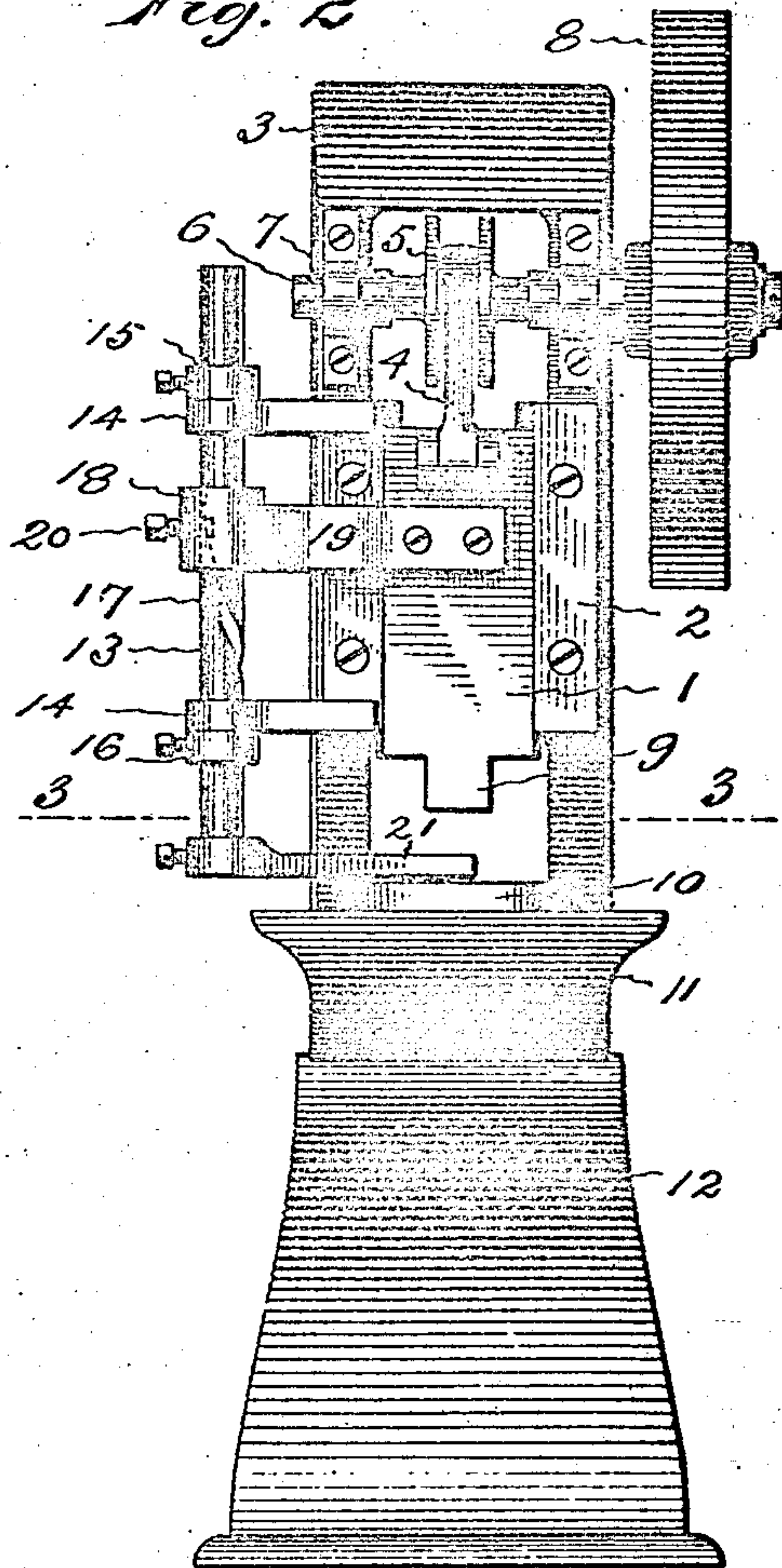
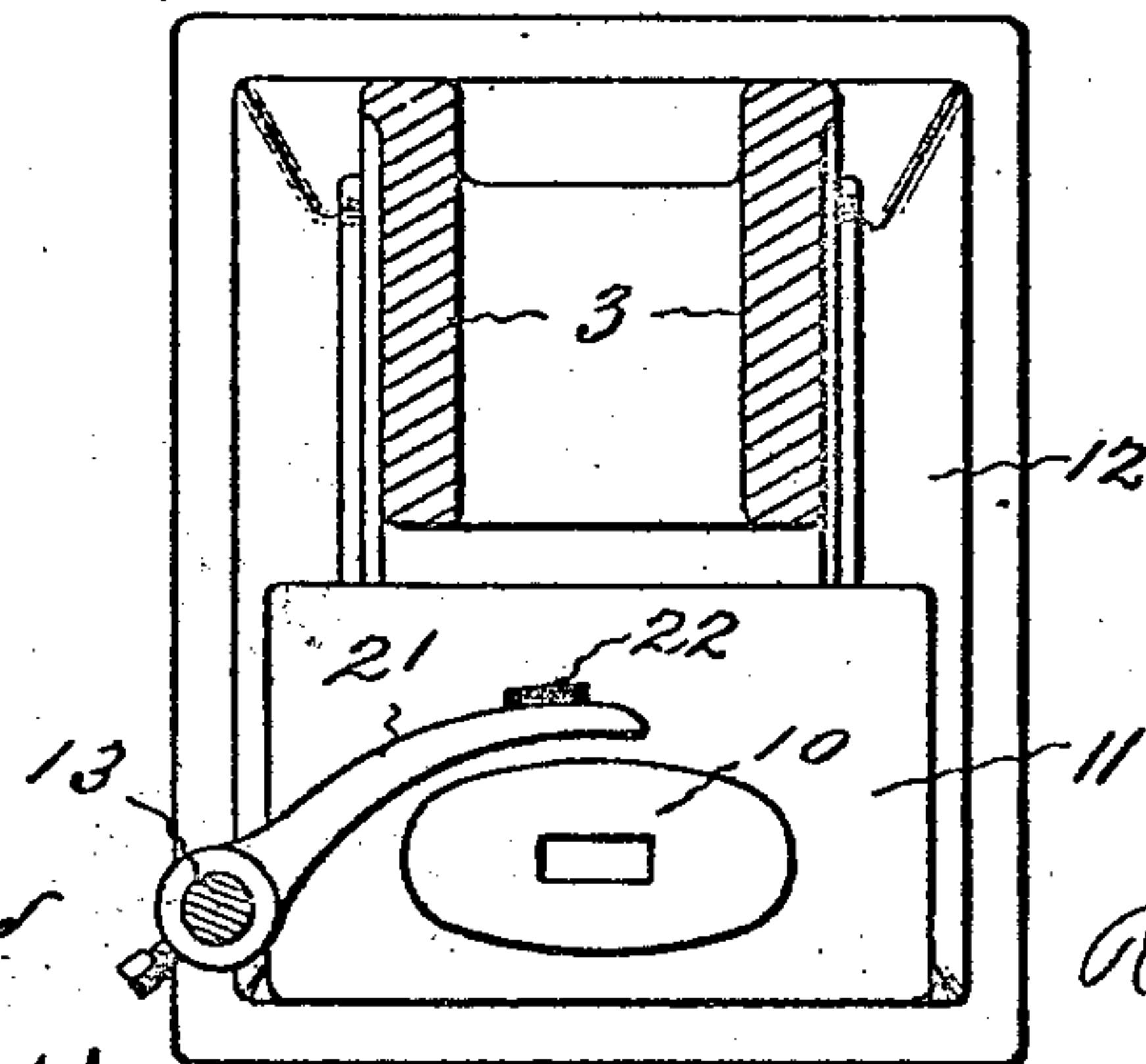


Fig. 3



WITNESSES:

E. E. Dickland
Josephine M. Stremppfer

INVENTOR:

Robert H. Pearson
Harry P. Williams
att.

UNITED STATES PATENT OFFICE.

ROBERT H. PEARSON, OF MARINER HARBOR, NEW YORK, ASSIGNOR TO THE TRAVELERS INSURANCE COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CLEARANCE DEVICE FOR PUNCH-PRESSES.

No. 899,131.

Specification of Letters Patent.

Patented Sept. 22, 1908.

Application filed March 28, 1908. Serial No. 423,863.

To all whom it may concern:

Be it known that I, ROBERT H. PEARSON, a citizen of the United States, residing at Mariner Harbor, in the county of Richmond and State of New York, have invented a new and useful Clearance Device for Punch-Presses, of which the following is a specification.

This invention relates to a device which is designed to be applied to or arranged in connection with such machines as punch presses, drop forging presses, power hammers, rivet machines and the like, in which a punch, drop or hammer is reciprocated by power toward and from dies or an anvil for punching, swaging, forging or shaping metal, for the purpose of preventing the hand or any portion of the body or clothing of the operative or any other foreign matter from getting caught between the movable and stationary parts when the machine is in operation and becoming injured or damaged.

The object of the invention is to provide a very simple and cheap device which can be used in connection with or attached to a machine of this character in such manner that just preceding the time the punch, hammer or drop is to act upon the stock, a clearance arm, finger, bar or like part is moved across or over the dies or anvil in such manner as to force the hand or other part of the body or clothing of the operative from between the punch, hammer or drop and the dies or anvil, which arm, finger, bar or like part can also be arranged so that when it swings back across or over the dies or anvil it can be utilized to remove the piece of stock operated upon, and thus eliminate all danger of any injury to the operative resulting from inattention, carelessness or slowness in placing the stock in or removing the stock from position.

Figure 1 of the accompanying drawings shows a side elevation of a press provided with a safety device which embodies this invention. Fig. 2 shows a front elevation of the same, and Fig. 3 shows a horizontal section on the plane indicated by the dotted line 3—3 on Fig. 2.

The gate 1 of the press shown is reciprocated in ways 2 formed on the front face of the upright frame 3, by the connecting rod 4 and crank 5 on the shaft 6 which is mounted in bearings 7 fastened to the front face of the frame and is provided with a fly wheel 8.

The rotation of the fly wheel through crank

and connecting rod reciprocates the gate which carries a punch, plunger or hammer 9 toward and from a die holder 10 which is mounted on the table or anvil 11 on the upper face of the base 12.

In the form of the invention that is illustrated, a rotatory shaft 13 is supported vertically at one side of the gate by bearings 14 which are shown as attached to the front of the upright frame. This shaft is preferably held against downward movement by a collar 15 located above the upper bearing and against upward movement by the collar 16 located below the lower bearing. This vertical rotary shaft has a spiral groove 17 and a sleeve 18 movable up and down the shaft is a sleeve 18 that is connected by an arm 19 with the gate. A screw or stud 20 extends through this sleeve into the spiral groove in the shaft so that the upward and downward movement of the sleeve will cause the shaft to rotate. Fastened to and projecting from the rotatable shaft is an arm 21. This arm is arranged to swing back and forth just above the dies or anvil when the gate with the punch, plunger or hammer is reciprocated.

The parts are so timed that the vertical shaft is rotated and the arm caused to swing across or over the dies or anvil just before the punch, plunger or hammer strikes for performing its work. This movement of the arm, which is positive with relation to the downward movement of the punch, plunger or hammer will push the fingers or other portion of the body of the operative or his clothing or in fact any other material from above the dies so that they cannot be hit and injured by the descending punch, plunger or hammer. The vertical position of the arm can be adjusted according to the nature of the work by changing its position on the shaft and its throw can be altered by changing the location of the collars which support the shaft.

The arm which swings above the dies or anvil can be made to yield forwardly so that when it swings back it will not tend to catch the hand or other part of the body or other article and push them over the anvil or dies, or it can be made to swing completely around by altering the spiral groove in the vertical shaft so that it will always pass over the dies or anvil in one direction, preferably from back to front, just before the punch, plunger or hammer reaches the dies or anvil for per-

forming its work. It is preferred, however, that the spiral groove be so cut in the rotary shaft that the arm will swing forwardly and backwardly, and then it can be used to push the fingers or other foreign matter from over the dies or anvil when moving forwardly and used to push the stock from the dies or anvil when it passes rearwardly, after the punch, plunger or hammer has performed its work.

10 This can be accomplished by attaching a piece of flexible material, such as a piece of rubber 22, to the arm in such manner that it will pass over the stock without removing it from the dies during the forward movement, 15 but will catch the work and push it out from the dies when it moves backwardly.

The invention claimed is:

1. The combination with a punch press having a bed, a frame and a reciprocating 20 gate, of shaft bearings attached to the frame above the bed, a rotatory shaft supported vertically above the bed by said bearings and provided with a spiral groove, an arm attached to and movable with the gate, a stud 25 projecting from said arm into the spiral groove in the shaft, and an arm extending

from the shaft and adapted to be swung over the bed by the rotation of the shaft when the shaft is turned by the movement of the arm attached to the gate, substantially as specified.

2. The combination with a punch press having a bed, a frame and a reciprocating gate, of shaft bearings attached to the frame above the bed of the press, a rotatory shaft 35 supported vertically above the bed by said bearings and provided with a spiral groove, an arm attached to and movable with the gate, a stud projecting from said arm into the spiral groove in the shaft, an arm ex- 40 tending from the shaft and adapted to be swung over the bed by the rotation of the shaft when the shaft is turned by the movement of the arm attached to the gate, and a wiper attached to the arm and movable 45 therewith back and forth across the bed, substantially as specified.

ROBERT H. PEARSON.

Witnesses:

T. H. BIGGS,
SIDNEY H. SMITH.