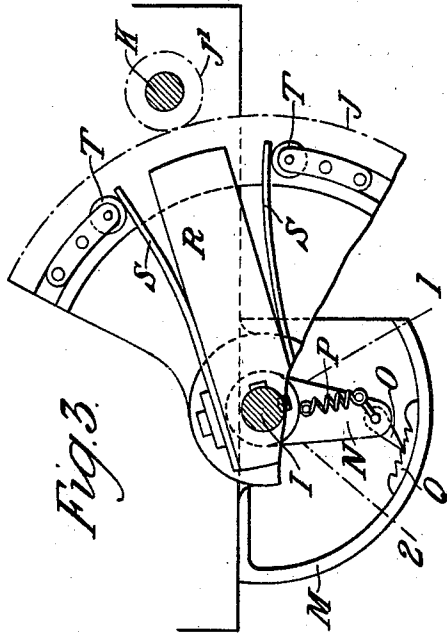
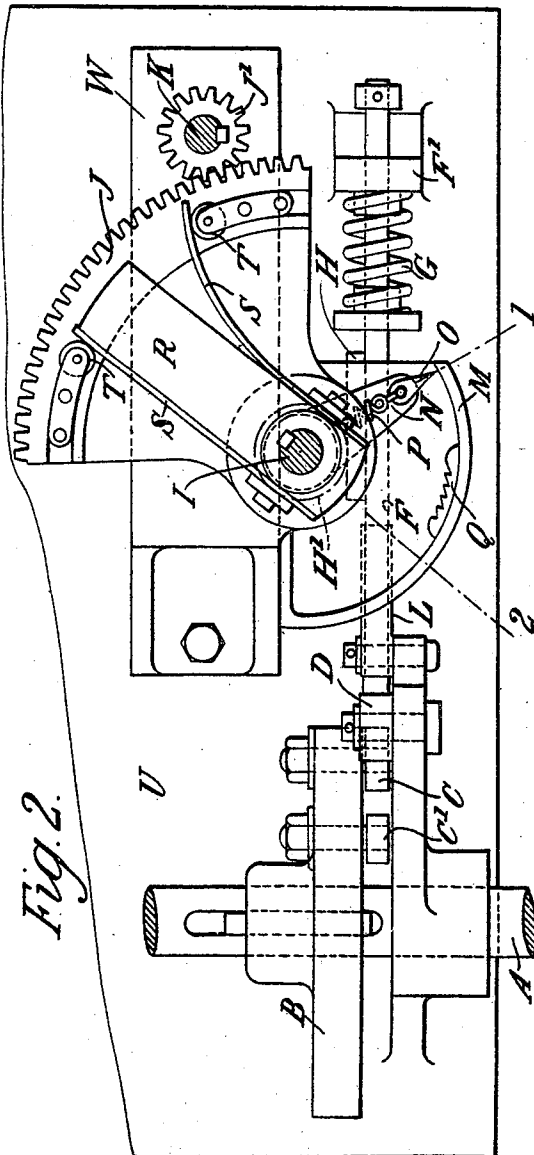


R. F. SPROULE.
RELIEF STAMPING OR PRINTING PRESS.
APPLICATION FILED NOV. 12, 1909.

968,430.

Patented Aug. 23, 1910.

2 SHEETS—SHEET 2.



Witnesses,

[Signature]
[Signature]

Inventor
Robert F. Sproule

[Signature]
[Signature]

UNITED STATES PATENT OFFICE.

ROBERT FRITH SPROULE, OF LONDON, ENGLAND.

RELIEF STAMPING OR PRINTING PRESS.

968,430.

Specification of Letters Patent.

Patented Aug. 23, 1910.

Application filed November 12, 1909. Serial No. 527,684.

To all whom it may concern:

Be it known that I, ROBERT FRITH SPROULE, a subject of the King of Great Britain, residing at 205 Uxbridge road, in the county of London, England, engineer, have invented certain new and useful Improvements in Relief Stamping or Printing Presses, of which the following is a specification.

This invention relates to presses for relief printing or embossing of the kind in which a screwed plunger carrying a die and provided with a fly-wheel is actuated to deliver the blow by means of a rack and pinion suitably geared with the plunger and operated by a spring which is wound or set for this purpose by suitable correlation with the driving shaft or motor.

The present invention consists in improvements comprising an improved means of actuating the rack shaft from the driving shaft which permits the press to be turned backward for adjustment purposes in any position of the driving shaft or spring setting mechanism, and means of preventing the screwed die plunger from coming down again until the proper time. With these objects the motor spring, which is conveniently a compression spring mounted between a collar on the rack shaft or bar and a fixed abutment, is set by means of a crank or other member on the driving shaft operating through a swinging or hanging lever, freely pivoted on the frame and adapted to occupy normally a position in the path of the crank pin, so that if it is desired to turn back the press mechanism for any purpose the lever is free to yield and permit the crank to pass from one side to the other.

The invention further comprises an improved spring device for absorbing any shock or jar that might damage the press gearing.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the press, Fig. 2 a plan and Fig. 3 a plan of a portion of the apparatus in a different position to that in Fig. 2.

In the drawings the motor comprises a main shaft A driven by any suitable means, on which shaft is keyed a disk or crank B near the periphery of which is a stud carrying a friction roller C.

D is a lever pivoted at one end E. Abutting on lever D is a plate or bar F working

in suitable guides, one of which is shown at F', and having near one end a strong helical spring G. On bar F is fixed a short rack H which gears with a pinion H' on the vertical spindle I mounted on the base U of the press and passing through a suitable guide V carried by the main frame W. Free on the upper end of this spindle is a sector J which gears with a pinion J' on the screw or plunger K.

L is a pawl adapted to be moved into and out of engagement with the plate F to enable the operator to prevent the screw coming down if he has not the sheet of paper or other material to be embossed in proper position in time.

In working, the operation is as follows:—

As the disk or crank B is rotated the friction roller C comes in contact with the lever D which compresses the spring G and, by means of gearing H H', the spindle I, the sector J and pinion J', effects the raising of the screw plunger K to the full extent of its upward travel. When the roller C clears the lever D the pressure of the spring G causes the screw plunger to descend and give the impression of the die. After the plunger has struck the impression, it rebounds and is again positively lifted and prevented from coming down again until the proper time in the following way. On the side of the press a frame M, through which the vertical spindle I passes, is bolted. In proximity to this frame is an arm N keyed on the spindle I and adapted to vibrate between the indicated points 1 and 2. The end of this arm carries a pawl O which can move freely from side to side but is lightly held in its mid position by a light tension spring P. When the plunger K is at the height of its travel, the arm is at 1; as the plunger descends the arm swings around to point 2, the pawl trailing over the short length of rack Q secured to frame M. When the impression has been struck the plunger rebounds slightly and the arm N swings back toward point 1, but not necessarily sufficient to cause the pawl to reach or trail back over the rack Q and at the end of the rebound be forced into one of the teeth of the rack with the object of preventing the plunger coming down again until the proper time, that is after the completion of one rotation of the driving shaft. To insure the trailing back of the pawl and its engagement with one of the rack teeth, with

the above object a second roller C' is mounted on the disk or crank B and is moved into and out of engagement with the lever D immediately after the plunger has struck the impression. The roller C' is of such a size or is so placed on the crank that it causes only a partial movement of the rack H and consequently a partial lifting of the plunger, but sufficient to cause the pawl to reach and engage the rack for the purpose stated. When the driving shaft has completed one revolution the lever D is again shifted to cause the plunger to be raised to the top of its travel for another operation.

In order to protect the press gearing from jars during working, at the upper end of the vertical spindle I is keyed a driving member R, on one or both sides of which is screwed a spring S, which is preferably flat. Pressing against each spring is a friction roller T fixed to the geared sector J so that when the driver R begins to move, the motion is transmitted without shock to the sector J and thence to the screw plunger K.

Having thus described the nature of my said invention and the best means I know of carrying the same into practical effect, I claim:—

1. In a press for relief stamping and the like, the combination with a press frame and a die plunger, of a spindle, driving means correlating the spindle and the plunger, a pinion on the spindle, a rack meshing with the pinion, a driving shaft capable of rotation in either direction, a motor spring adapted to actuate the spindle and the plunger die, a member carried by the shaft, and means movably mounted on the frame so as to occupy normally a position in the path of the member and adapted to be moved by the member to displace the rack and set the spring when the shaft is rotated in one direction and to be moved out of the path of the member when the shaft is rotated in the opposite direction for the purpose described.

2. In a press for relief stamping and the like, the combination with a press frame and a die plunger, of a spindle, a driving means correlating the spindle and the plunger, a pinion on the spindle, a rack meshing with the pinion, a motor spring adapted to actuate the spindle and the plunger die, a driving shaft capable of rotation in either direction, a member fixed to the driving shaft, a roller carried by the member, and a lever pivotally mounted on the frame so as to occupy normally a position in the path of the roller and adapted to be moved by the member to displace the rack and set the spring when the shaft is rotated in one direction and to be moved out of the path of the member when the shaft is rotated in the opposite direction for the purpose described.

3. In a press for relief stamping and the like, the combination with a press frame and

a die plunger, of a spindle, driving means correlating the spindle and the plunger, a pinion on the spindle, a rack meshing with the pinion, a motor spring adapted to actuate the spindle and the plunger die, a driving shaft, a crank fixed to the driving shaft, a roller carried by the crank, a lever pivotally mounted on the frame in the path of the roller and adapted to be moved by the crank to displace the rack and set the spring, a ratchet carried by the frame, a pawl fixed to the spindle and adapted to engage the ratchet and retain the spindle, and a second roller on said crank adapted to impart during a rotation of the shaft a partial and subsequent displacement to the rack, substantially as and for the purpose described.

4. In a press for relief stamping and the like, the combination with a press frame a die plunger, and plunger gearing, of a spindle, a pinion on the spindle, a rack meshing with the pinion, a driving shaft, a motor spring adapted to actuate the spindle and the plunger die, shiftable means interposed between the rack and the shaft and adapted to be actuated by the shaft to displace the rack and set the spring, and driving means correlating the spindle and the plunger including a shock absorbing device comprising a driver keyed to the spindle, and a spring carried by said driver and adapted to engage and drive the plunger gearing, substantially as described.

5. In a press for relief stamping and the like, the combination with a press frame a die plunger, and plunger gearing, of a spindle, a pinion on the spindle, a rack meshing with the pinion, a driving shaft, a motor spring adapted to actuate the spindle and the plunger die, a crank fixed to the driving shaft, a pivoted lever interposed between the rack and the shaft, a roller on the crank adapted to be moved into and out of engagement with the lever to displace the rack and set the spring, a ratchet carried by the frame, a pawl fixed to the spindle and adapted to engage the ratchet and retain the spindle, a second roller on said crank adapted to impart during a rotation of the shaft a partial and subsequent displacement to the rack for the purpose herein described, and driving means correlating the spindle and the plunger including a shock absorbing device comprising a driver keyed to the spindle, and a spring carried by said driver and adapted to engage and drive the plunger gearing, substantially as described.

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

ROBERT FRITH SPROULE.

Witnesses:

JOSEPH MILLARD,
W. J. SKERTEN.