

P. S. SOUDERS.

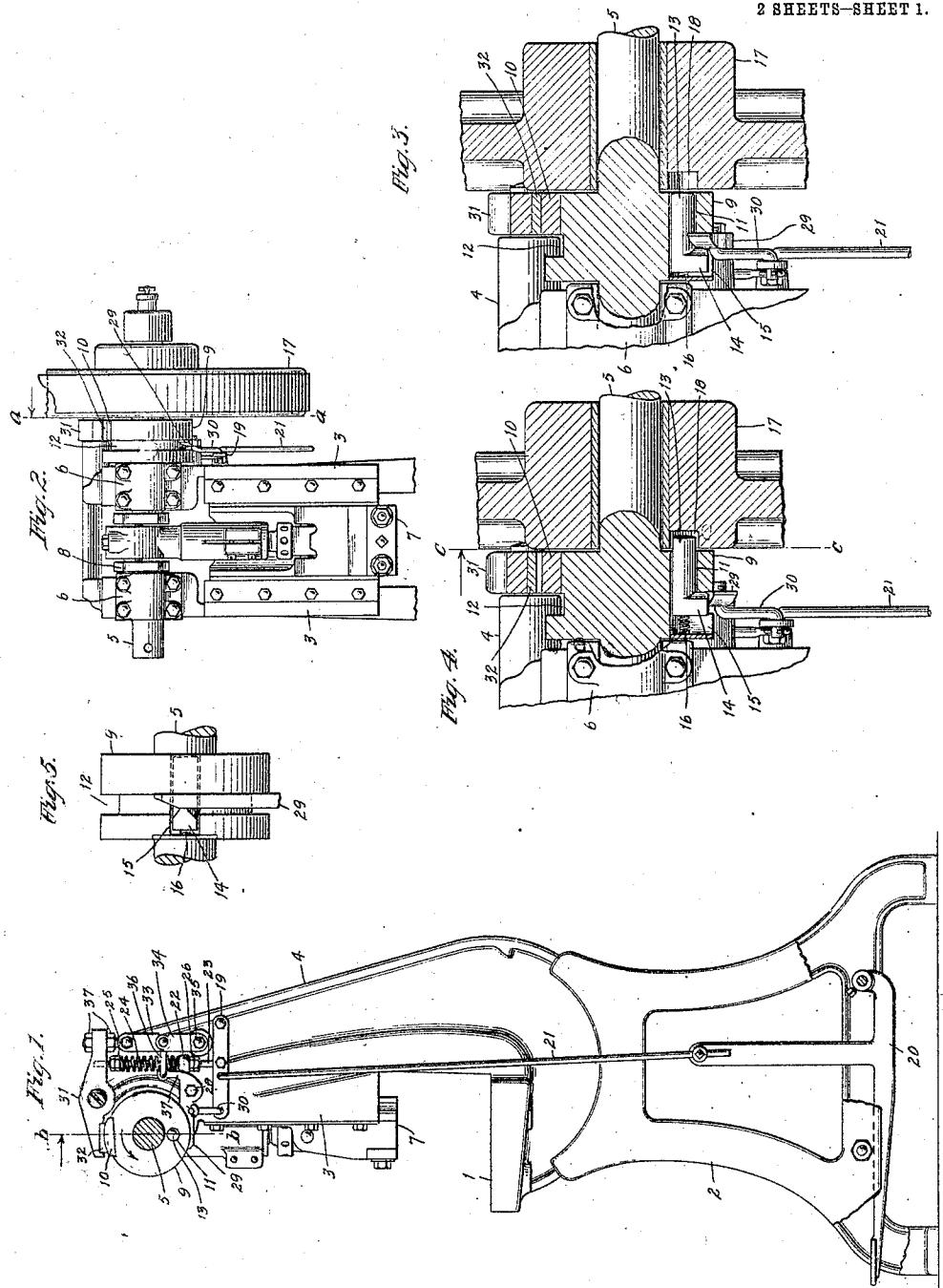
PUNCH PRESS.

APPLICATION FILED JAN. 21, 1911.

998,806.

Patented July 25, 1911.

2 SHEETS-SHEET 1.



Witnesses:

W. L. Dow
E. Behel

Inventor:
Perry S. Souders
By A. O. Rehle

1116

P. S. SOUDERS.

PUNCH PRESS.

APPLICATION FILED JAN. 21, 1911.

998,806.

Patented July 25, 1911.

2 SHEETS-SHEET 2.

Fig. 6.

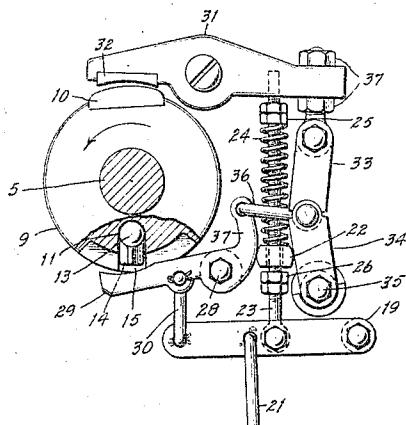


Fig. 8.

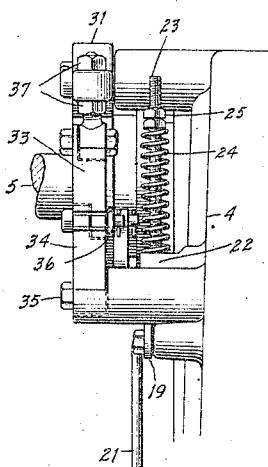


Fig. 7.

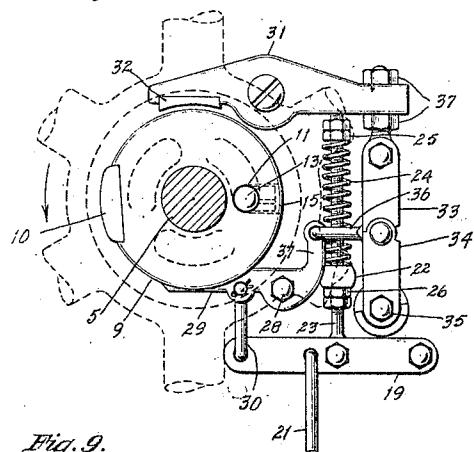
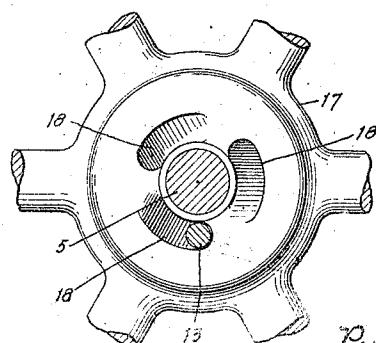


Fig. 9.



Witnesses:

W. L. Dow.
E. Behel.

Inventor:
Perry S. Souders
By A. C. Keeble

Atta

UNITED STATES PATENT OFFICE.

PERRY S. SOUDERS, OF ROCKFORD, ILLINOIS, ASSIGNOR TO ROCKFORD IRON WORKS,
OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

PUNCH-PRESS.

998,806.

Specification of Letters Patent. Patented July 25, 1911.

Application filed January 21, 1911. Serial No. 603,996.

To all whom it may concern:

Be it known that I, PERRY S. SOUDERS, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Punch-Presses, of which the following is a specification.

The object of this invention is to construct a punch press in which the friction is applied only at the time the cross-head is at the height of its movement and after the foot treadle has been released in order that friction will only be applied at the time it is required to hold the cross-head up.

In the accompanying drawings, Figure 1 is a vertical section on dotted line *a a* Fig. 2. Fig. 2 is a front elevation of the upper portion of the punch press. Fig. 3 is a section on dotted line *b b* Fig. 1, in which the friction is applied, and the clutch disengaged. Fig. 4 is a section on dotted line *b b* Fig. 1, in which the friction is released and the clutch is in engagement. Fig. 5 is an underside view of the clutch mechanism. Fig. 6 is a section on dotted line *a a* Fig. 2, in which the clutch is in engagement and the friction released. Fig. 7 is a section on dotted line *a a* Fig. 2, in which the clutch is in engagement, the friction released and the cross-head dropped half its distance. Fig. 8 is a rear elevation of the upper portion of the punch press. Fig. 9 is a section on dotted line *c c* Fig. 4.

The punch press, in the main, is of the usual construction. The platen or shelf 1, is supported by the base 2, and the guides 3 are connected to the rear portion 4 of the frame. A shaft 5 is supported in bearings 6, and a cross-head 7 has a pivotal connection with the crank portion 8 of the shaft. To the shaft 5 is fixedly connected a disk head 9 which is provided with an enlargement 10 seated in the periphery thereof, and an opening 11 is formed through the head. An annular groove 12 is formed in the disk head 9. A dog 13 is located in the opening 11, and is provided with a head 14 which is guided in the cut-away portion 15 of the disk head. A spring 16 holds the dog extended through the opening 11. A pulley 17 is mounted to revolve loosely on the shaft 5, and its face adjacent to the disk head 9 is formed with three inclined recesses 18 and of a size to admit the dog 13. To the upper

portion of the frame is pivoted a lever 19 and a foot treadle 20 is pivoted to the base of the frame. A rod 21 connects the lever 19 with the treadle 20.

From the frame extends a perforated projection 22 through which a rod 23 passes. A spring 24 surrounds this rod, and is located between the projection 22 and the nuts 25. The action of this spring is to hold the foot treadle 20 and the bar 19 in the position shown at Fig. 1. Nuts 26 contact with the projection 22 and prevent the further upward movement of the treadle 20 and bar 19.

A bell crank is pivoted to the frame on the pivot 28, and to the arm 29 of this bell crank is connected a link 30, the other end of which is connected to the bar 19. The free end of the arm 29 of the bell-crank is beveled as shown at Figs. 3, 4 and 5, with which the head 14 of the dog 13 will contact in the revolution of the disk head 9 thereby moving the dog 13 against the action of the spring 16 and holding the dog free of its engagement with the pulley 17.

To the upper portion of the frame is pivoted a rocker-arm 31, one end of which supports a shoe 32, and to its other end is pivoted one link 33 of a toggle joint. The other link 34 of the toggle joint is pivoted to the link 33 at one end and its other end is pivoted to the frame of the punch press at the point 35. A link 36 has one end pivotally connected with the toggle joint, and its other end is pivotally connected to the arm 37 of the bell crank.

When the mechanism is at rest, the shoe 32 will rest in contact with the enlargement 10, and the dog 13 will be free of the pulley 17 which will allow the pulley to be driven idly and the cross-head will be held at its highest point as shown at Fig. 1. By depressing the treadle 20, the bar 19 will be rocked which will rock the bell-crank, thereby liberating the dog 13 in order that it may enter one of the inclined recesses 18 in the face of the pulley 17. The rocking of this bell-crank will break the toggle joint against the action of the spring 24 which will rock the bar 30 and raise the shoe 32 free of the projection 10, thereby liberating the shaft 5 to which the cross-head is connected, and when a recess 18 receives the dog 13, the rotation of the pulley 17 will force the cross-head down and afterward raise it until the dog is withdrawn from the pulley by the

head of the dog contacting with the beveled end of the bar 29. After the treadle has been released, the spring 24 will return the toggle lever into locking position which will 5 rock the rocker arm 31 and lower the shoe into the position shown at Fig. 7. The rotation of the pulley, through the dog, will rotate the projection 10 until it assumes a position beneath the shoe as shown at Fig. 10 1, which will stop the rotation of the shaft 5, consequently the cross-head will be held suspended, as the dog 13 had just previously been disengaged from the pulley 17. By holding the treadle depressed, a connection 15 will be indefinitely made between the pulley and cross-head, and the shoe will be held clear of the enlargement, but as soon as the treadle is released, the cross-head will stop in its top position. All that is necessary is 20 to depress the treadle when one cycle of movements of the cross-head will be completed. The treadle can be immediately released after being depressed, and the movements will be completed. By this arrangement, the shoe is applied only at the instant of arresting the movement of the cross-head, consequently there is no power being consumed while the cross-head is at rest, and the instant the shoe is withdrawn from the 25 projection 10, the cross-head is released, and the friction of the projection in contact with the shoe is not restored until the cross-head is in a position to be held elevated.

By means of the two nuts 37, the free end

of the rocker-arm 31 carrying the shoe 32 35 can be adjusted to apply more or less friction to the projection 10 to insure the stopping of the shaft 5, and cross-head carried thereby.

I claim as my invention—

1. The combination of a frame, a shaft supported by the frame, a cross-head connected to the shaft, a driving pulley, a clutch connection between the driving pulley and shaft, a treadle for operating the clutch 45 mechanism, a projection rotating with the shaft, a shoe with which the projection contacts when the cross-head is elevated and means for disengaging the shoe from the projection to release the cross-head. 50

2. The combination of a frame, a shaft supported by the frame, a cross-head connected to the shaft, a driving pulley, a clutch connection between the driving pulley and shaft, a lever for holding the clutch disengaged, a friction disk provided with a peripheral projection, a shoe movable into the path of the movement of the projection, a toggle lever connecting the shoe and a stationary support, and a connection between the toggle lever and the lever. 55

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PERRY S. SOUDERS.

Witnesses:

M. F. THAYER,

E. D. E. N. BEHEL.