(No Model.)

R. WALSH.

PUNCHING MACHINE.

No. 524,623. Patented Aug. 14, 1894.

Fig. 1.

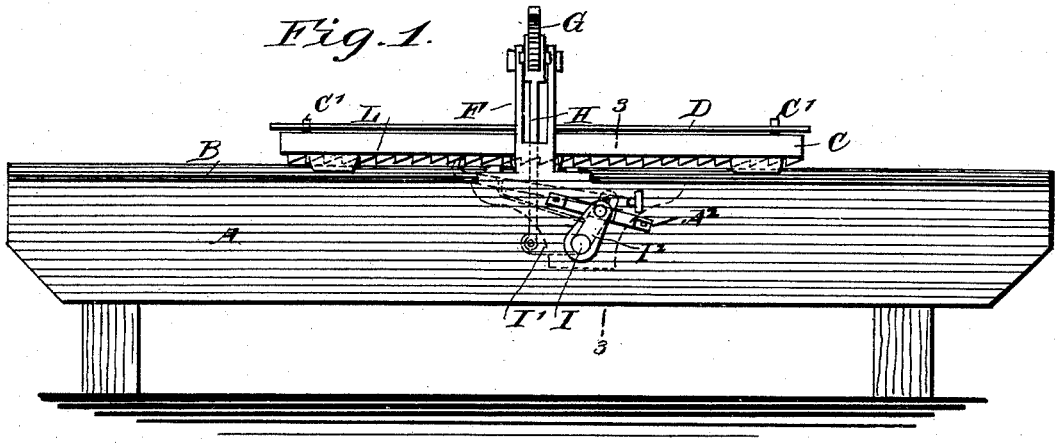


Fig. 2.

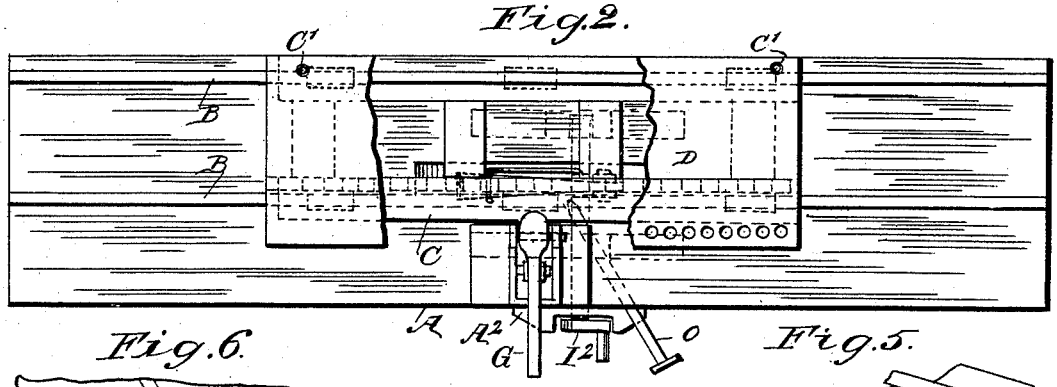


Fig. 6.

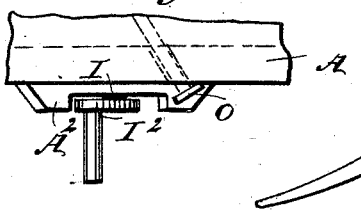


Fig. 3.

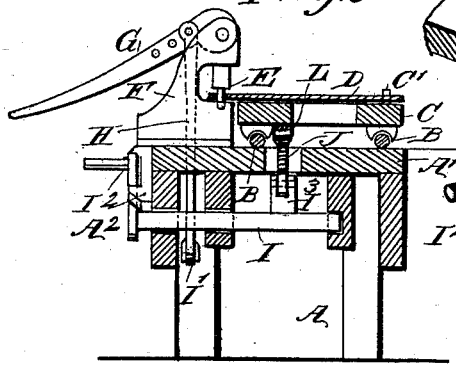


Fig. 5.

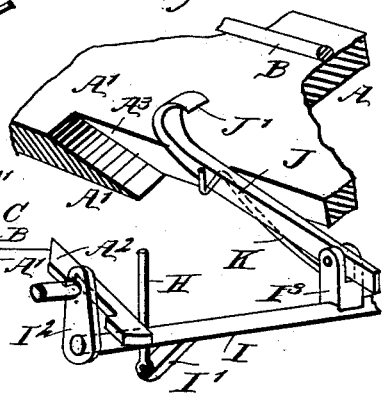
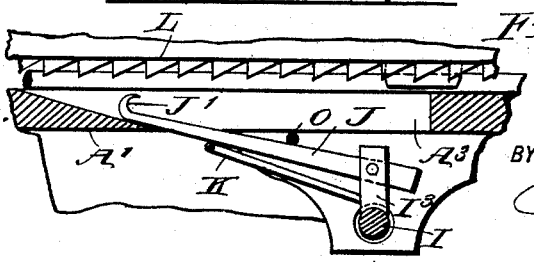


Fig. 4.



WITNESSES:

F. McArdle.

C. Sedgwick

INVENTOR

R. Walsh

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

RICHARD WALSH, OF SHERMAN, TEXAS.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,623, dated August 14, 1894.

Application filed May 4, 1894. Serial No. 510,078. (No model.)

To all whom it may concern:

Be it known that I, RICHARD WALSH, of Sherman, in the county of Grayson and State of Texas, have invented a new and Improved Punching-Machine, of which the following is a full, clear, and exact description.

The invention relates to metal working machinery, and its object is to provide a new and improved punching machine, which is comparatively simple and durable in construction, very effective in operation, and arranged to properly punch the sheet and insure the proper forward feed thereof.

The invention consists principally of a carriage adapted to support the sheet to be punched, and provided with a toothed bar, a rock shaft carrying a pawl adapted to engage the said toothed bar to move the carriage forward, and a punch lever adapted to receive a swinging motion from the said shaft, the said lever being connected with the punch to move the latter downward to punch the sheet.

The invention also consists of certain parts and details, and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a plan view of the same with parts broken out. Fig. 3 is a transverse section of the same on the line 3—3 of Fig. 1. Fig. 4 is an enlarged sectional side elevation of the feed mechanism for the carriage. Fig. 5 is an enlarged perspective view of the same; and Fig. 6 is an enlarged plan view of the outer end of the rock shaft and the means for moving the pawl out of mesh with its toothed bar.

The improved punching machine is provided with a suitably constructed frame A formed on its bed plate A′ with guideways B, on which is mounted to travel longitudinally the carriage C, adapted to support the sheet D to be punched. The carriage C is provided with upwardly extending pins C′, adapted to engage apertures in the sheet D, so as to hold the latter firmly in position on the carriage during the process of punching.

The sheet D is pierced by a punch E forming part of a punching machine F, secured on the frame A at one side of the carriage C, so that the projecting edge of the sheet D passes over the die and under the punch E to be punched by the latter in the usual manner. The punch E is controlled in its movement by the usual cam or punch lever G, pivotally connected by a link H with an arm I′, projecting from or secured on a transversely extending shaft I, journaled in suitable bearings in the frame A below the bed plate A′.

On the outer end of the shaft I is secured a crank arm or handle I^2, having a limited motion in a bracket A^2, secured to one side of the frame A, as is plainly shown in Figs. 2, 5 and 6. Near the inner end of the shaft I is secured or formed an arm I^3, pivotally connected with a pawl J, extending longitudinally through a slot A^3, formed in the bed plate A′, as is plainly shown in Figs. 3, 4 and 5. The pawl J is held in an uppermost position by a spring K, supported from the shaft I, so as to hold the free, hooked end J′ of the said pawl in contact with a toothed bar L secured longitudinally on the under side of the carriage C. Now, it will be seen that when a rocking motion is given to the shaft I by the operator manipulating the crank arm I^2, then the pawl J, by its hook end J′ engaging one of the teeth in the bar L, causes an intermittent forward feed of the carriage C. The feed takes place during the upward movement of the arm I′, and simultaneously the punch is lifted to allow the sheet and the carriage to be moved forward. The feeding motion takes place at the time the crank arm I^2 swings from the left to the right, and when the said crank arm is on the return stroke and swings from the right to the left, then the pawl J moves rearward and its hook end J′ glides over the teeth in the bar L without changing the position of the carriage. At the same time the arm I′ swings downward, so as to cause the link H to pull on the cam lever G to lower the punch E into engagement with the sheet D, to perforate the latter.

It is understood that the punching of the sheet alternates with the feed of the carriage C, and this feed can be regulated by the operator throwing the pawl J out of engagement with the said toothed bar L whenever desired, that is, at the time the sheet D is

moved the proper distance, corresponding to the desired distance between two succeeding punched apertures.

In order to throw the pawl J out of mesh, an angularly arranged sliding pin O is provided, fitted to slide in the frame A and adapted to engage, with its inner beveled end, the top edge of the said pawl J, to force the latter downward at the time the pin O is pushed inward. When the pin O is withdrawn, as shown in Fig. 2, its inner beveled end is out of engagement with the pawl J, and the latter is moved in engagement with the toothed bar L by the action of the spring K.

It will be seen that by the arrangement and construction described, the sheet D is fed forward according to the distance it is desired to leave between the punched holes, and the punch proper is actuated automatically from the same rock shaft that accomplishes the feeding of the carriage.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A punching machine, comprising a carriage adapted to support a sheet to be punched and provided with a toothed bar, a rock shaft carrying a pawl adapted to engage the said toothed bar, and a punch lever adapted to receive a swinging motion from the said shaft, and connected with the punch to move the latter downward to punch the sheet, substantially as shown and described.

2. A punching machine, comprising a carriage adapted to support a sheet to be punched and provided with a toothed bar, a rock shaft carrying a pawl adapted to engage the said toothed bar, a punch lever adapted to receive a swinging motion from the said shaft, and connected with the punch to move the latter downward to punch the sheet, and means, substantially as described, for throwing the said pawl out of engagement with the toothed bar during the time the punch moves downward, as set forth.

3. A punching machine, comprising a rock shaft having two arms, a spring-pressed pawl pivoted on one of the said arms, a carriage carrying a toothed bar adapted to be engaged by the said pawl, a link pivotally connected with the said second arm on the rock shaft, a punch lever pivotally connected with the said link, and a punch actuated from the said punch lever, substantially as shown and described.

4. A punching machine, comprising a rock shaft having two arms, a spring-pressed pawl pivoted on one of the said arms, a carriage carrying a toothed bar adapted to be engaged by the said pawl, a link pivotally connected with the said second arm on the rock shaft, a punch lever pivotally connected with the said link, a punch actuated from the said punch lever, and means, substantially as described, for limiting the rocking motion of the said shaft, as set forth.

5. A punching machine, comprising a rock shaft having two arms, a spring-pressed pawl pivoted on one of the said arms, a carriage carrying a toothed bar adapted to be engaged by the said pawl, a link pivotally connected with the said second arm on the rock shaft, a punch lever pivotally connected with the said link, a punch actuated from the said punch lever, and a pin having a beveled edge adapted to engage the said pawl to throw the latter out of engagement with the said toothed bar, substantially as shown and described.

6. A punching machine, comprising a carriage adapted to support a sheet to be punched and provided with a toothed bar, a pawl adapted to engage the said bar, an operating shaft connected to the pawl, and a punch-carrying lever having an operative connection with the said shaft, so that the punch and the carriage are actuated from the said shaft, substantially as described.

RICHARD WALSH.

Witnesses:
SILAS HARE, Jr.,
JOSEPH A. L. WOLFE.