

G. CROMPTON & H. WYMAN.
Jacquard Card-Punching Machine.

No. 216,782.

Patented June 24, 1879.

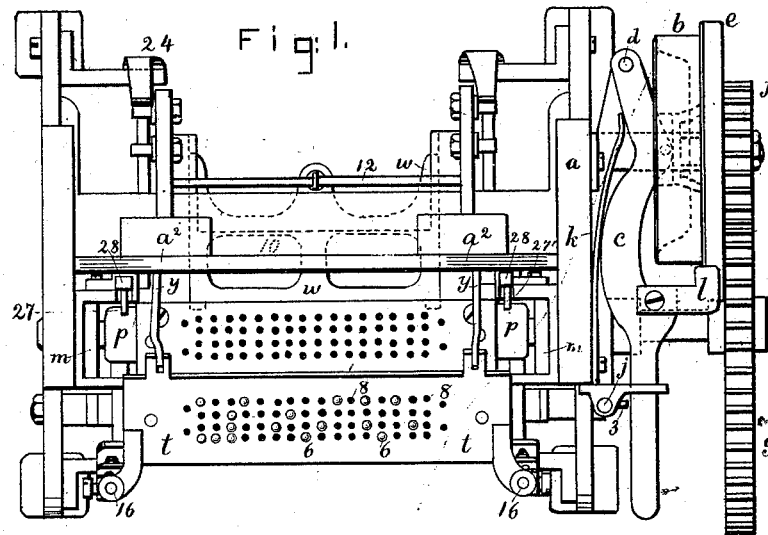
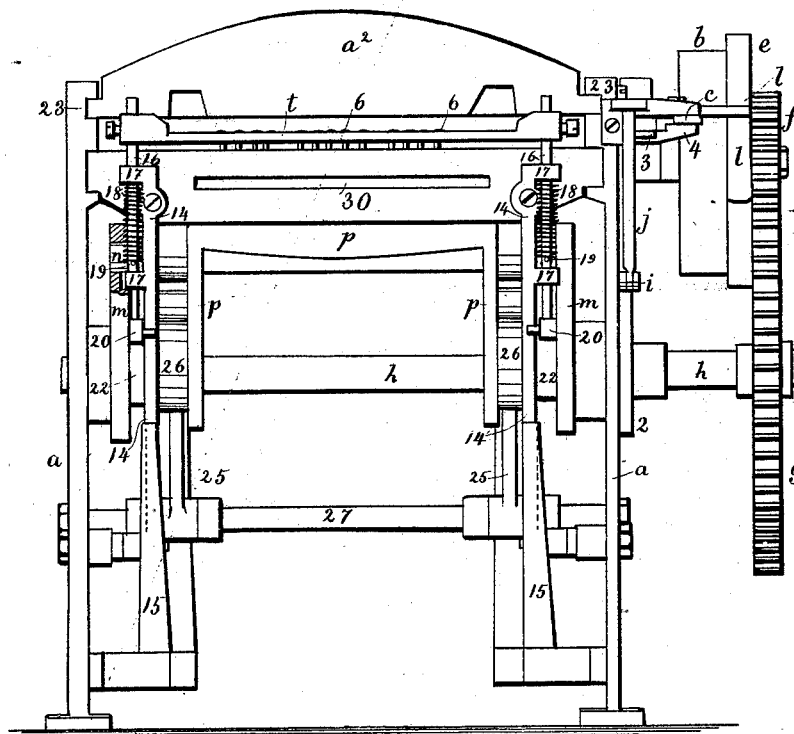


Fig: 2



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N. E. Whitney
L. F. Connor.

Inventors.
Geo Crompton and Horace Wyman
by Crosby & Gregory Attys

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Fig: 3

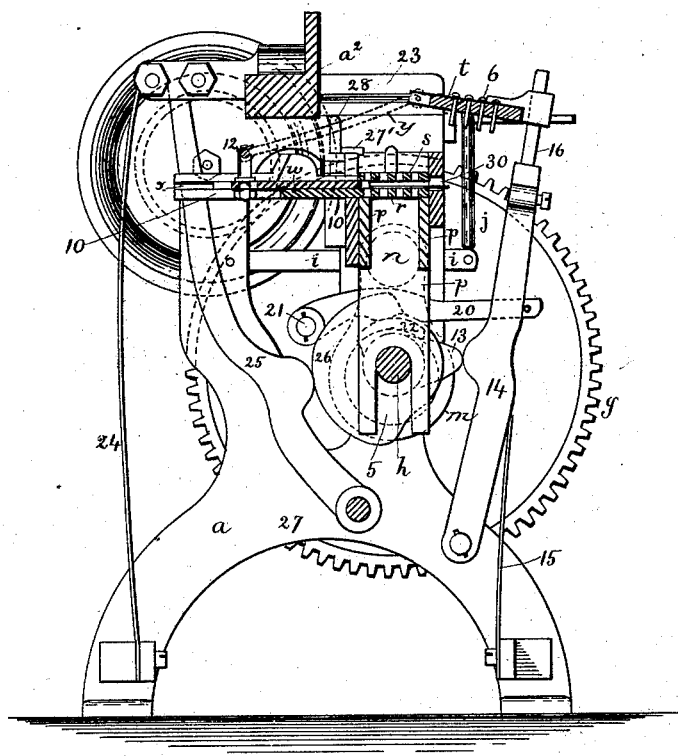
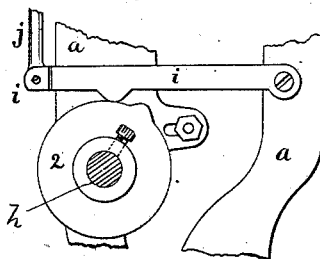


Fig: 4.



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UNITED STATES PATENT OFFICE.

GEORGE CROMPTON AND HORACE WYMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO SAID CROMPTON.

IMPROVEMENT IN JACQUARD-CARD-PUNCHING MACHINES.

Specification forming part of Letters Patent No. **216,782**, dated June 24, 1879; application filed February 20, 1879.

To all whom it may concern:

Be it known that we, GEO. CROMPTON and HORACE WYMAN, both of Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Jacquard-Card-Punching Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for punching Jacquard cards.

In this our improved machine the Jacquard cards, laid upon a support next to or in the range of the movement of a feeder, are automatically moved into proper position upon the upper face of a rising-and-falling perforated platen and under a perforated stripper-plate, and a movable punch-plate provided with changeable punches is swung away from above the platen to have the pins placed in suitable holes according to the pattern, and then is swung back again, and a cross-bar or cross-head is then placed above the tops of the punches of the punch-plate to hold them from rising while the platen is lifted to force the punches through the card laid on its face, after which the punched or perforated card is automatically moved from the platen by an incoming card to be perforated.

With the pins once set in the punch-plate any number of cards can be punched just alike without further manipulation of the punches.

The punches, being headed, are held by the punch-plate while the said plate is lifted, drawing them from the card, the latter then resting, at its upper face, against the stripping-plate.

The mechanism is automatically stopped after each card is punched.

Figure 1 is a top view of one of our improved Jacquard-punching machines; Fig. 2, a front view thereof; Fig. 3, a cross-section thereof; and Fig. 4 is a side view of cam 2.

The frame *a* is of proper shape to hold the working parts. The loose pulley *b*, driven by a belt in any usual way, is provided with a clutching part of any usual construction, which, controlled by the hand-lever *c*, pivoted at *d*, is caused at the proper times to engage with the pulley *e*, having connected with it a pinion, *f*, which engages the toothed wheel *g* on the main

shaft *h*, provided with a cam, 2, that, after each card is punched, acts to lift a radius-bar, *i*, connected with a rod, *j*, provided with a pin, 3, so that the said pin lifts the end of the hand-lever *c* from the holding-notch of the guide 4, and permits the spring *k* to move the lever *c* in the direction of the arrow and into the position shown in Fig. 1, when the pulleys *b* *e* will be disconnected and the brake *l* will be applied to the pulley *e* to stop it and the machine quickly. Whenever the operator desires to start the machine to punch a card the lever is turned so as to be held by the notch in guide 4.

The shaft *h* has two eccentrics, 5, one of which is shown in dotted lines, Fig. 3, and these eccentrics are each embraced by eccentric-straps *m*, connected at their upper ends with pins *n*, (see left of Fig. 2,) forming part of the movable frame *p*, which carries the platen *r*, perforated with numerous holes in rows, in the usual manner, the said perforations or holes being shown in Fig. 3, and by these eccentrics the platen is raised at the proper time to lift upward the piece of paper or other card to be punched by the headed punches or pins 6, located in suitable holes 8 of the punch-plate *t*, said pins being set in the proper holes, according to the demands of the pattern to be produced, by the operator each time the said plate is thrown forward, as in Fig. 3.

Just above the platen *r*, and preferably connected with it, is the perforated stripping-plate *s*, which holds the card down as the punches, by the rising of the punch-plate, are withdrawn from the card, it then resting between the platen and stripping-plate.

The frame which carries the platen has a backwardly-projecting portion or bed, 10, to receive the card to be punched, and a feeder, *w*, (fitted in grooves *x* in the bed, and connected by a rod, 12, and links *y* with the punch-plate *t*.) is thus caused to move a fresh card from the bed into position upon the platen as the punch-plate is thrown outward by the cams 13, which act upon the pivoted arms 14, held pressed toward the cams 13 by springs 15.

The connection between the punch-plate and

arms is, by means of loose rods 16, Fig. 2, held in guiding-ears 17 and surrounded with spiral springs 18, the lower ends of which rest upon pins 19 in the said rods. The lower ends of these rods 16 rest upon the upper sides of radius-bars 20, Fig. 3, pivoted at 21, and acted upon by the cams 22 of shaft *h*.

When the punch-plate is moved from the position shown in Fig. 3 to a position above the stripping-plate and platen, and over the card held between them, the bars 20 are lowered, and the springs 18 lower the punch-plate until the punches all enter through the holes in the stripping-plate and stand upon the card to be punched. In that position the cross-head *a*², guided in ways 23 at the top of the frame-work *a*, is moved forward by the springs 24 until the cross-head rests in a position directly in line with and above the punch-plate and platen, and so as to act upon the heads of the punches or pins 6 when the frame and platen are raised, as before described, to force the card against the lower ends of the punches and perforate the said card. After the card has been punched, the cross-head is moved into its backward position by the arms 25, acted upon by the cams 26, and as the punch-plate is again to be moved outwardly by its operating-cams 13 and arms 14, the radius-bars 20 are lifted by their cams, so as to act upon the ends of rods 16 and lift the punch-plate and its punches clear from the card and stripping-plate, so that the pins of the punch-plate may be again reset when in its outward position. As the punch-plate is settled down to its lowest position, the punches then going through the holes in the stripping-plate, the punch-plate, at its lower side, strikes a projection, 27', from cross-bar checking-pins 28, there being one at each end of the machine, and depresses the said pins, permitting the cross-head to be thrown quickly forward by the springs 24. The arms 25 are held loosely upon the rod 27. The punched card is discharged through the throat 30.

I claim—

1. In a machine for punching Jacquard cards, the combination, substantially as set forth, of the swinging punch-plate and its changeable

punches, the perforated platen, the fixed stripping-plate connected and moving with the platen, the cross-head for retaining the punches in the punch-plate during their operation, and mechanism, substantially such as shown, to automatically raise and lower the platen and operate the punch-plate, all as specified.

2. In a machine for punching Jacquard cards, the combination, with the perforated platen and movable punch-plate, as described, of the feeder and mechanism to operate it, substantially as described, to place upon the platen the card to be punched, substantially as set forth.

3. The rising and falling perforated platen, combined with the cross-head, and means, substantially as described, to move it laterally and place it above the punches, to prevent upward movement of the punches in the platen while the card is being punched, substantially as set forth.

4. The punch-plate and its actuating-arms 14, combined with loose connections between them, as described, and mechanism to raise and lower the punch-plate, all substantially as described.

5. In a Jacquard-card-punching machine, the combination of the movable punch-plate, the series of headed punches therein, the cross-head, and mechanism, substantially such as described, to move the punch-plate and cross-head into operative conjunction, substantially as specified.

6. In a Jacquard-card-punching machine, the cross-head and spring to throw it forward, combined with pins 28 and mechanism to withdraw them, substantially as described, to release it and permit it to be moved into position to operate upon the punches, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEO. CROMPTON.
HORACE WYMAN.

Witnesses:

J. B. SYME,
J. A. WARE.