

J. G. SODERBERG.  
JACQUARD CARD PUNCHING MACHINE.  
APPLICATION FILED OCT. 29, 1910.

1,003,214.

Patented Sept. 12, 1911.

2 SHEETS-SHEET 1.

Fig. 1.

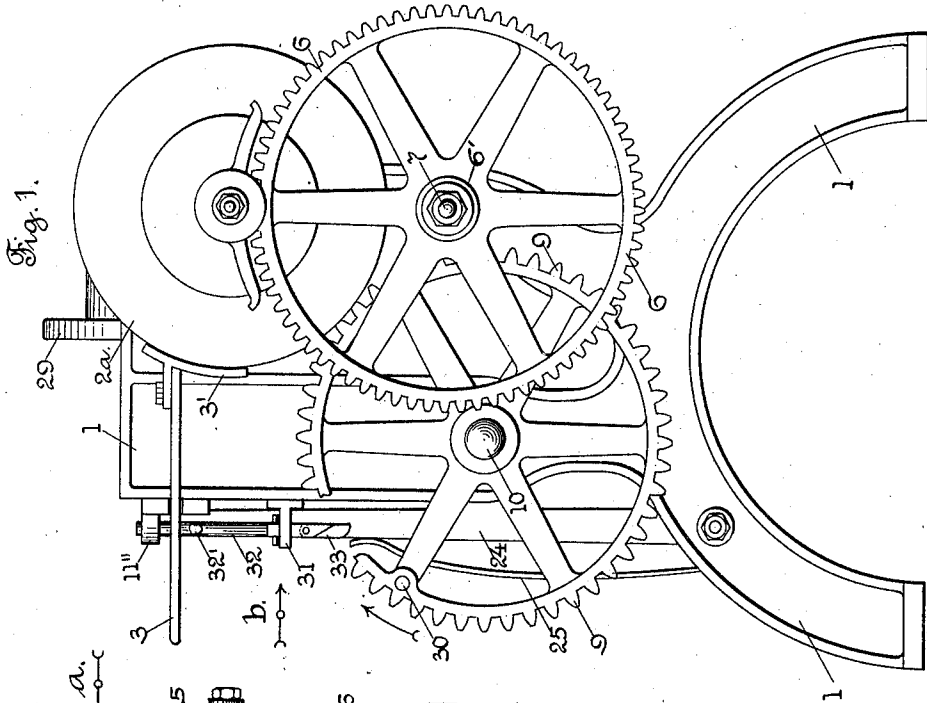
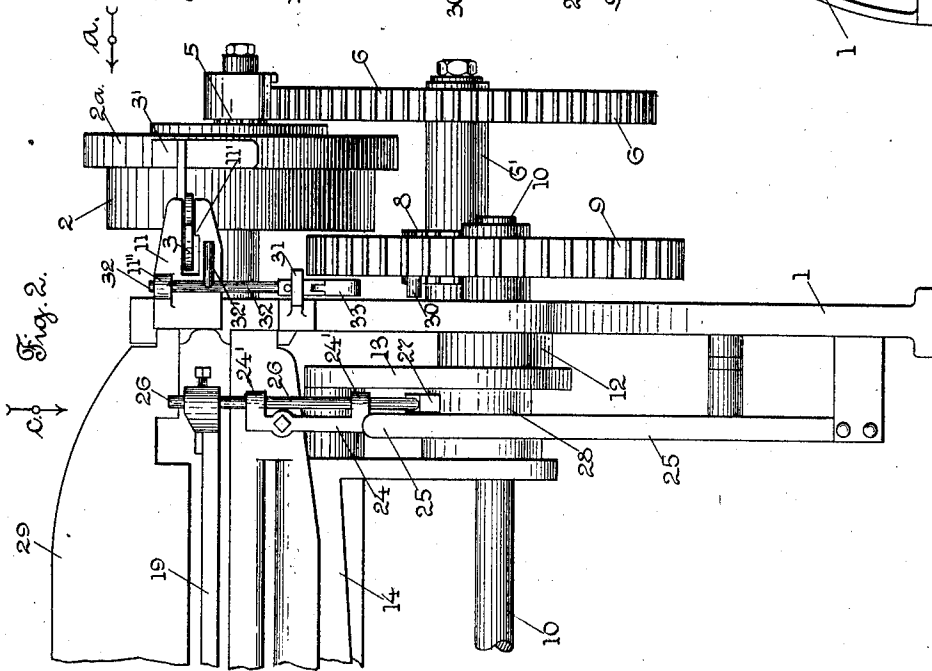


Fig. 2.



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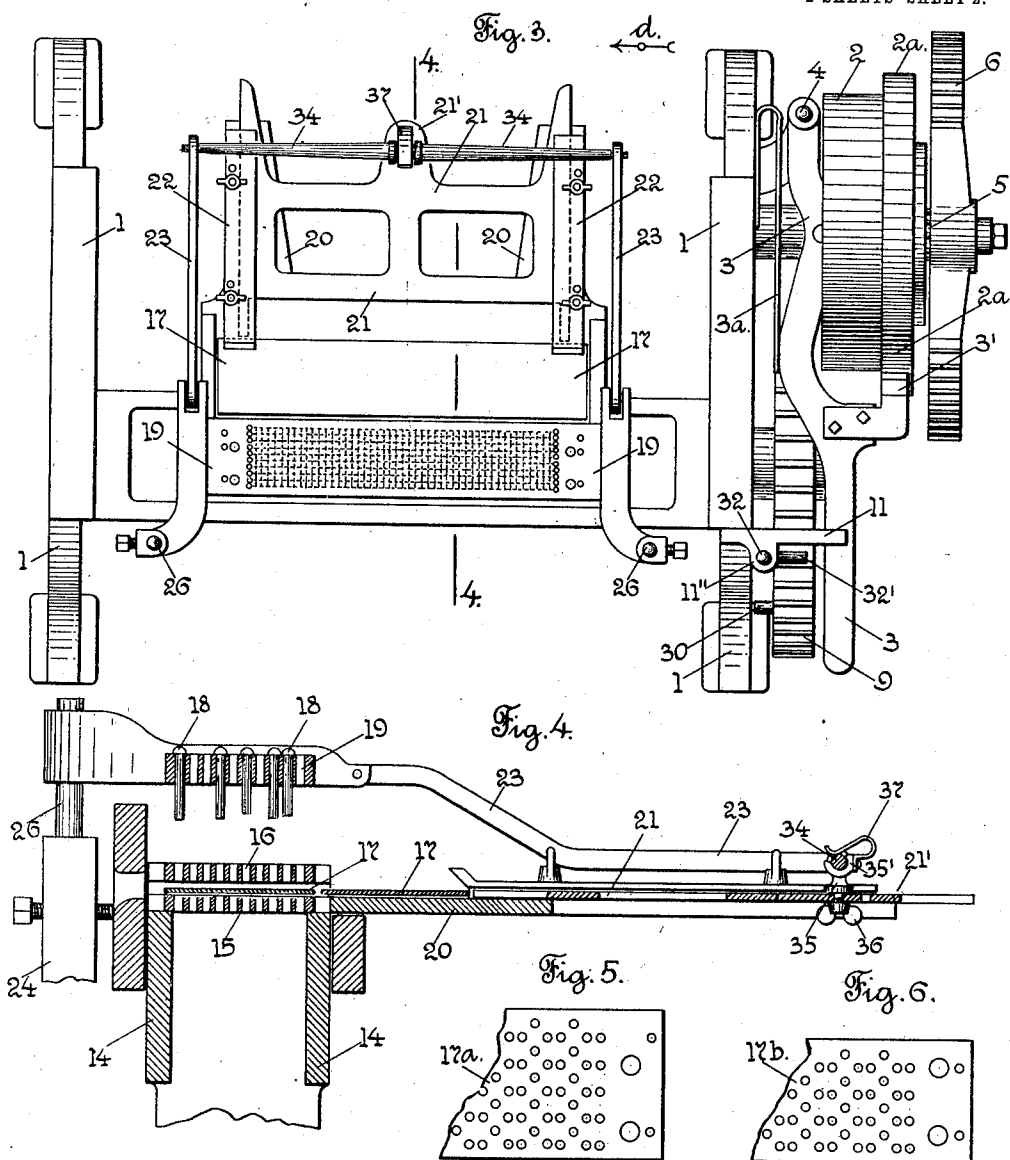
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2 SHEETS-SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## JACQUARD-CARD-PUNCHING MACHINE.

1,003,214.

Specification of Letters Patent.

Patented Sept. 12, 1911.

Application filed October 29, 1910. Serial No. 589,709.

*To all whom it may concern:*

Be it known that I, JOHN G. SODERBERG, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Jacquard-Card-Punching Machines, of which the following is a specification.

My invention relates to a jacquard card punching machine, and particularly to the type of machine shown and described in the U. S. Letters Patent, No. 216,782, of June 24, 1879.

The object of my invention is to improve upon the construction of the machine shown and described in said patent, and more particularly to improve the mechanism to automatically stop the machine after each card is punched, and also to improve upon the construction of the feeder which automatically moves the cards into proper position on the punch-plate. As shown in the drawings and as herein described, I provide an adjustable feeder plate by means of which the punching machine is adapted to perforate or punch jacquard cards of different width without changing the punch-plates.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have shown in the drawings a detached part of a jacquard card punching machine of the type above referred to, and my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a side view of the machine, showing the driving mechanism with my stop mechanism applied thereto, looking in the direction of arrow *a*, Fig. 2. Fig. 2 is front view, showing the right hand end of the machine, looking in the direction of arrow *b*, Fig. 1. Fig. 3 is a plan view of the machine, looking in the direction of arrow *c*, Fig. 2. Fig. 4 is, on an enlarged scale, a section on line 4, 4, Fig. 3, looking in the direction of arrow *d*, same figure. Fig. 5 shows one end of a punched card, and Fig. 6 corresponds to Fig. 5, but shows a narrower card.

In the accompanying drawings, 1 is the end frame of the machine, 2 is the loose driving pulley, provided with clutching mechanism of any usual construction, which

is operated by the hand lever 3 pivotally mounted at 4. The pulley 2 has a pinion 5 connected therewith, which meshes with and drives a gear 6, having its hub 6' loosely mounted on a stud 7. A pinion 8 on the hub 6' meshes with and drives a gear 9, which has its hub fast on the main shaft 10. A guide 11 is secured to the end frame 1, and has a notch 11' therein, which on the starting of the machine holds the hand lever 3 in its inward position.

A pin, to be hereinafter described, is adapted to raise the end of the hand lever 3 from the holding notch 11' in the guide 11, to allow the lever 3, through the action of a spring blade 3<sup>a</sup>, to be moved toward the right, into the position shown in Fig. 3, to disconnect the pulley 2, and to apply the brake 3' to the brake surface 2<sup>a</sup> of the pulley 2, to stop the machine. When the operator desires to start the machine, the lever 3 is moved toward the left, to be held by the notch 11' in the guide 11.

The main shaft 10 has mounted thereon, on each end thereof, the eccentrics 12, only one is shown in the drawings. The eccentrics 12 are attached to the eccentric straps 13, which are connected at their upper ends to the movable frame 14, which are adapted to carry the lower punch plate 15, and the stripper plate 16, see Fig. 4. The movable frame 14 is caused, at the proper time, to lift upward the paper card 17 to be punched by the punches or pins 18, located in suitable holes in the upper punch plate 19.

The frame 14, which carries the punch plate 15, and the stripper plate 16, has a rearwardly projecting plate or bed 20 to receive the blank card 17 to be punched, and a feeder 21, which is guided in grooves on the edge plates 22, is connected by a link 23 with the punch plate 19. The outward movement of the punch plate 19 causes a fresh card 17 from the bed 20 to be moved into position upon the lower punch plate 15, as the punch plate 19 is moved outwardly by the pivoted arm 24 operated by cams on the main shaft 10. Springs 25 act to press the pivoted arm 24 toward the cam.

The punch setting plate 19 is suitably secured to the vertically extending rods 26, which are loosely held in guiding ears 24'. The lower ends of the rods 26 rest upon the upper sides of levers 27, which are operated and raised by cams 28 on the shaft 10. The

cross head 29, see Figs. 1 and 2, is adapted to be moved in guide-ways on the frame 1, and above the punch plate 19, by suitable mechanism, not shown, in the usual way.

5 All of the above mentioned parts may be of any usual and well known construction, and as shown and described in said Letters Patent, No. 216,782, above referred to.

I will now describe my improvements.

10 The main gear 9 is provided in this instance on its rim with a pin or stud 30, which extends out therefrom on one side thereof, and is adapted, on each revolution of the gear 9, to lift a vertically extending  
15 bar or rod 32, to stop the machine. The rod or bar 32 is suitably guided in a vertical plane in ears 11'' and 31. The lower part of the bar 32 is preferably of square shape, in cross section, see Figs. 1 and 2, and has  
20 mounted thereon the downwardly extending finger 33. The finger 33 has its lower end preferably rounded, and is adapted to be engaged by the stud 30, which raises the finger 33 and the rod 32, and through the  
25 extension 32' on the rod 32, the main lever 3 is lifted away from the holding notch 11' of the guide 11, which causes the machine to stop, when it is desired to run the machine for successive movements without stopping,  
30 the finger 33 may be turned outwardly from the path of movement of the pin 30.

The finger 33 is provided with a wedge shape engaging end, which on its engagement with the rod 32, holds the finger 33 in  
35 one direction, when the gear is rotating in its proper direction, as indicated by the arrow in Fig. 1. When the gear 9 is rotated in the opposite direction, the finger 33 gives way to the engaging stud 30, to prevent the  
40 breaking of any parts.

The links 23, see Fig. 3, which connect the feeder plate 21 with the upper punch plate 19, have their other ends pivotally connected to the traverse rod 34. The rod 34 has its  
45 center portion loosely journaled in a boss or bearing 35' on a stand 35, which has its lower end adjustably secured on the feeder plate 21, by a thumb screw 36, see Fig. 4. The bearing 35' of the traverse rod 34 is  
50 preferably open at its upper end and provided with a spring blade 37, which in this instance is adapted to hold the rod 34 in its position. The spring blade 37 acts also as a give-way for the rod 34.

55 In the operation of the machine, after a card has been punched and a fresh one is placed on the feeder, its inward movement pushes out from between the plates the punched card, which as the fresh one  
60 reaches its position, passes over the edge of the plate and falls into a receptacle below, and in punching cards narrower than those to which the punch plates were fitted, it is necessary to push such narrower cards  
65 into such a position, that after being punched

they will be pushed out and fall over the edge of the plate by the incoming narrower fresh card, to accomplish which, the feeder must be moved forward on the studs the difference between the width of the cards.

In Figs. 5 and 6 are shown two different widths of jacquard cards, which can be punched on the machine shown and described in the drawings, without changing the punch plates. After punching wide cards 17<sup>a</sup>, shown in Fig. 5, and it is desired to punch a narrower one, the feeder plate 21, shown in Fig. 4, has to be adjusted by loosening the thumb screw 36, and refastening the stand 35, according to the width of the narrower card 17<sup>b</sup>, shown in Fig. 6. The rearwardly extending end 21' of the feeder plate 21 is in this instance preferably slotted or provided with holes in different positions.

The operation of the machine is as follows:—When the punch setting plate 19 is moved outward, as in Fig. 3 of the Patent No. 216,782, above referred to, the stop motion brings the machine to a stop, leaving the plate in position for the operator to rearrange the punches for the next card, this movement, at the same time, brings a fresh card from the bed 20 into position upon the lower punch plate 15. After the punches in plate 19 are rearranged, the operator moves  
95 the lever 3, causing the machine to be started and move the punch plate into operative position and punch the card, and the continued movement carries the plate outward, to be again arrested by the stop motion, and the punch pins may again be rearranged. When it is desired to repeat or punch other cards of the same setting, the stop motion may be held out of operative position for the machine to run the desired number of  
105 repeats. The stop motion is arranged with a jointed finger to permit of a reverse movement of the machine without injury. It sometimes happens that an unpunched card is not properly placed on the feeder plate 21, and to prevent breakage of parts when the plate is moved, to place the card between the punch plates, there is provided a give-way or relief connection, as the spring 37, Figs. 3 and 4 between the feeder plate  
115 21, and the movable punch plate 19, whereby an undue strain upon the connecting rod 23 will cause the feeder plate to be disconnected from the punch plate.

It will be understood that the details of  
120 construction of my improvements may be varied if desired.

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

1. In a card punching machine having a movable punch setting plate, a shipper lever, and a brake for said shipper lever, means operated by a pin on the main driving wheel to release said shipper lever, and apply the  
130

brake at the extreme outward movement of said plate.

2. In a card punching machine having a movable punch setting plate, a cam shaft to move said plate into a punch re-arranging position, a vertically extended bar to the main shipper lever, and a stud carried on the main gear to contact with said bar and lift said lever.

3. In a card punching machine having a movable punch plate, a stopping mechanism consisting of a vertical movable bar, having at its lower end a jointed downwardly extended finger, adapted to yield in one direction when engaged by a rotating stud moved by the cam shaft, and said cam shaft.

4. In a card punching machine having a movable punch setting plate, a feeder plate, and means to move it to place a blank card

between the punch plates, and yielding means between it and its actuating punch plate, operative upon undue strain upon its connections, to disconnect it from the plate.

5. In a card punching machine having a movable punch setting plate, a feeder plate, connections from the punch plate to studs having open bearings carried on said plate, and spring plates to yieldingly retain the studs in the bearings.

6. In a card punching machine having a movable punch setting plate, a feeder plate, adjustable studs carried on said plate, connections from said studs to the punch plate, whereby the extent of the outward movement of the plate may be varied.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."