

K. EGGART.  
AUTOMATIC EMBROIDERING MACHINE.  
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1,055,893.

Patented Mar. 11, 1913.

Fig. 1

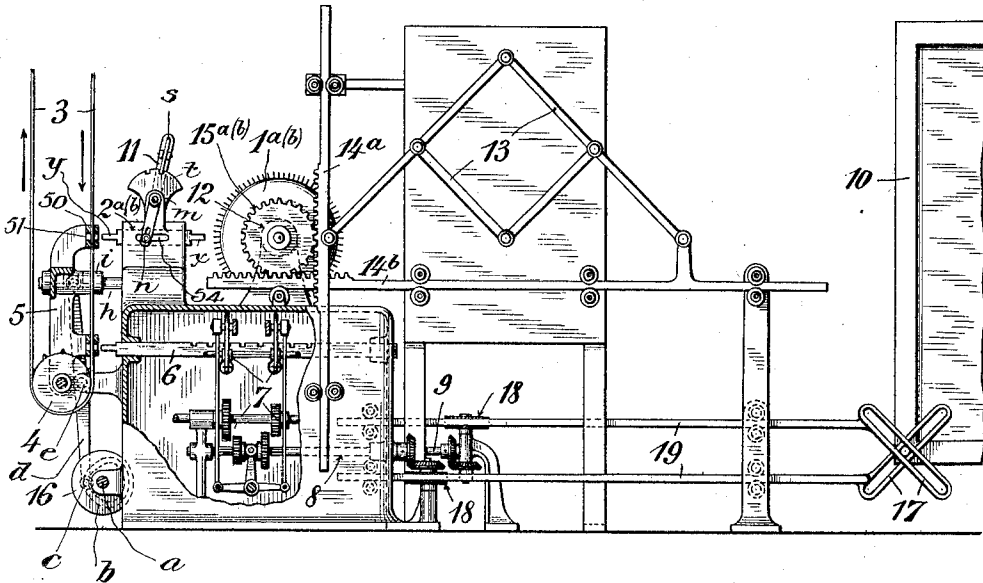
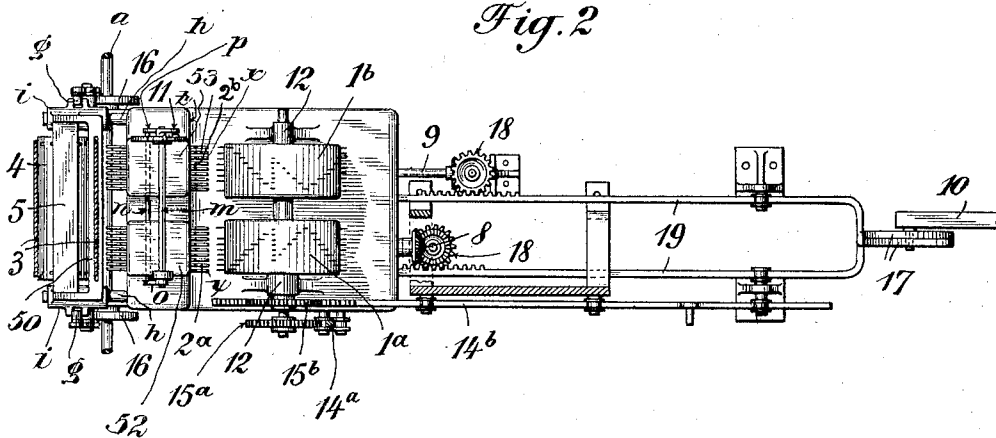


Fig. 2



Witnesses:

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Inventor:

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By *[Signature]*  
Atty.

# UNITED STATES PATENT OFFICE.

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## AUTOMATIC EMBROIDERING-MACHINE.

1,055,893.

Specification of Letters Patent.

Patented Mar. 11, 1913.

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*To all whom it may concern:*

Be it known that I, KARL EGGART, a subject of the Emperor of Germany, residing at Arbon, Switzerland, have invented new and useful Improvements in Automatic Embroidering-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in automatic embroidering machines and consists in a device for preparing a jacquard card by perforating a longitudinally moving strip and for causing the perforations of the jacquard card just being produced to engage the jacquard apparatus of the embroidering machine.

In embroidering on automatic machines, the embroidery, or some of the stitches, vary somewhat from that intended to be produced by the perforations in the jacquard card. These deviations from or irregularities in the intended design result from errors in punching the card, or from the reproducing jacquard mechanism. It is therefore of advantage, in order to determine whether the jacquard card has been properly punched, to immediately produce a control embroidery. This may be done immediately after the entire card has been made, by transferring the card to an embroidering machine. This transfer to a separate embroidering machine is of disadvantage because the errors cannot be discovered until after the card has been made.

In my present machine, simultaneously with the feeding of the card to the punching machine the card is fed to jacquard mechanism controlling the production of the embroidery. Thus the embroidery progresses with the punching, and any errors due to a separate embroidering machine are avoided. The result is that a faultless jacquard card can be produced, which, when placed in a separate embroidering machine, should properly reproduce the pattern. If it does not do so, it is then certain that the errors are due to the separate embroidering machine and not to the card. Any errors in punching the card can be immediately de-

tected and corrected. The same mechanism that feeds the card to the punches also feeds it to the control jacquard mechanism, and any errors due to feed in separate embroidering machines is avoided.

In the accompanying drawing Figure 1 shows in elevation one form of the device, Fig. 2 is a plan view of the same partly in section.

1<sup>a</sup> and 1<sup>b</sup> are two pin-cylinders of the perforating device. To the cylinders supported in bearings 12 are imparted a motion of rotation from the pantograph 13 by means of racks 14<sup>a</sup> and 14<sup>b</sup> and pinions 15<sup>a</sup> and 15<sup>b</sup>.

2<sup>a</sup> and 2<sup>b</sup> are the punches, arranged in two sets corresponding to the rectangular components of the movements of the tracer of the pantograph and by which the strip shaped jacquard card 3 is perforated correspondingly to the pattern. The strip 3 is guided by a pulley 4 and impelled in the direction of the arrows shown in Fig. 1. The pulley 4 is mounted on a slide 5 which is horizontally displaceable in the direction at right angles to the jacquard card 3 by suitable means 16. This motion is effected in any desired manner, but I have shown for the purpose a shaft *a* mechanically driven from any suitable source of power. This shaft carries at each side of the frame 5, disks 16, each provided with a cam groove *b*.

There are two levers *d* one on each side of the machine, pivoted at *e* and whose lower ends carry rollers *c* that enter the cam grooves *b*. The upper ends of the levers *d* have pins *g* that engage the opposite ends of slide 5. The slide 5 is provided with sleeves *i* that are guided on guides *h*. The rotation of shaft *a* imparts reciprocatory movement to the slide 5.

The slide has a slotted die member 50 through which the card is guided, and has a row of perforations 51 in alinement with the punches *y* of the two sets of slides 2<sup>a</sup> and 2<sup>b</sup>. These slides are mounted in casings 52 and 53 having lateral slots 54, each slide being provided with a similar slot capable of registering with slots 54. Passing through the slots is a rod *n* whose ends are secured in arms *o p* that are on a rod *m* said rod *m* being arranged to be swung by a hand lever 11 having a latch *s* arranged to engage notches in an arc *t*. By swinging the lever 11 from the position shown in Fig. 1 to the other notch in *t* all the punches *y* are with-

drawn from the path of the die member 50 and the card. This can be done in the zero position of the pin cylinders 1<sup>a</sup> and 1<sup>b</sup>, at which position there is a portion of each cylinder free from pins opposite the rear ends *x* of the slides.

By positioning the cylinders by the pantograph 13 and racks 14<sup>a</sup> and 14<sup>b</sup> the punches are selectively operated to correspond to the rectangular components of the movement of the pantograph tracer, so that when the die member and card are moved against the two sets of punches, only those punches punch holes that have a pin of a cylinder in alignment therewith.

The fingers 6 are connected to the jacquard apparatus 7 and arranged in front of the side of the strip 3 which is running in direction toward the pulley 4. The fingers are located in the same vertical plane as the punching devices 2<sup>a</sup> and 2<sup>b</sup> and with regard to the motion of the jacquard card 3 the punching devices 2<sup>a</sup> and 2<sup>b</sup> are located before the fingers 6.

8 and 9 are the shafts of the jacquard apparatus from which the horizontal and vertical components are transmitted to the slides 17 and to the frame 10 by means of suitable gears 18 and rods 19.

By shifting the lever 11 all punches 2<sup>a</sup> and 2<sup>b</sup> can be drawn back so that the jacquard card becomes disengaged from the punching device.

If the punching device is working the jacquard card is perforated firstly, whereafter the perforations just after being produced and by the motion of the strip 3 get in such position as to engage the fingers 6 of the jacquard apparatus. The embroidery is automatically produced thereby in the frame 10. Each part of the strip engages separately its corresponding mechanism. Hereby the jacquard card and the embroidery itself are produced at the same time in an exact manner.

When the lever 11 is shifted after the card 3 is prepared as mentioned above and the cylinders 1<sup>a</sup> and 1<sup>b</sup> returned to zero position the card will engage only the fingers 6 and not the punching device which has been placed out of action as above described and the embroidering machine may thereafter continuously embroider without any punching being done on the card.

I claim:

1. The combination with a jacquard card punching machine including punching mechanism; of a jacquard embroidering mechanism having jacquard fingers arranged to be acted upon and controlled by the card and means to carry the card to

simultaneously operate both mechanisms, whereby a control embroidery may be made while punching the cards.

2. The combination with a jacquard card punching machine including punching mechanism and means to progress the card to and from punching position; of a jacquard embroidering mechanism having jacquard fingers arranged to be acted upon and controlled by the punched portion of the card simultaneously with the punching of the unpunched portion of the card.

3. The combination with a jacquard card punching machine including punches and means to guide the card and move it to and from the punches; of a jacquard embroidering mechanism including jacquard fingers, said means simultaneously moving the card against the punches to punch the unpunched portion of the card and moving the punched portion thereof against the fingers to selectively control the jacquard mechanism.

4. The combination with a jacquard card punching machine including punches and means including a guide to move the card to and from the punches; of a jacquard embroidering machine, including jacquard fingers, a guide for the card opposite said fingers and operable by said guide moving means.

5. The combination with a jacquard card punching machine including punches, a slide, and a guide thereon for the card; of a jacquard embroidering machine including jacquard fingers below the punches, a second guide opposite the fingers and on said slide, and mechanism to operate the slide to simultaneously move the card to and from the punches and to and from the fingers.

6. The combination with a jacquard card punching machine including punches and means to move the card to and from the punches; of a jacquard embroidering machine including jacquard fingers arranged to be operated upon by the card simultaneously with the punching thereof, and means to temporarily render the punches inoperative to enable that punched portion of the card between the punches and fingers to operate upon the fingers without actuating the punches and complete the embroidery after finishing the punching of the card.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

KARL EGGART.

Witnesses:

ERNST FISCHER,  
AUGUST RUEGG.