K. EGGART.

JACQUARD EMBROIDERY MACHINE.

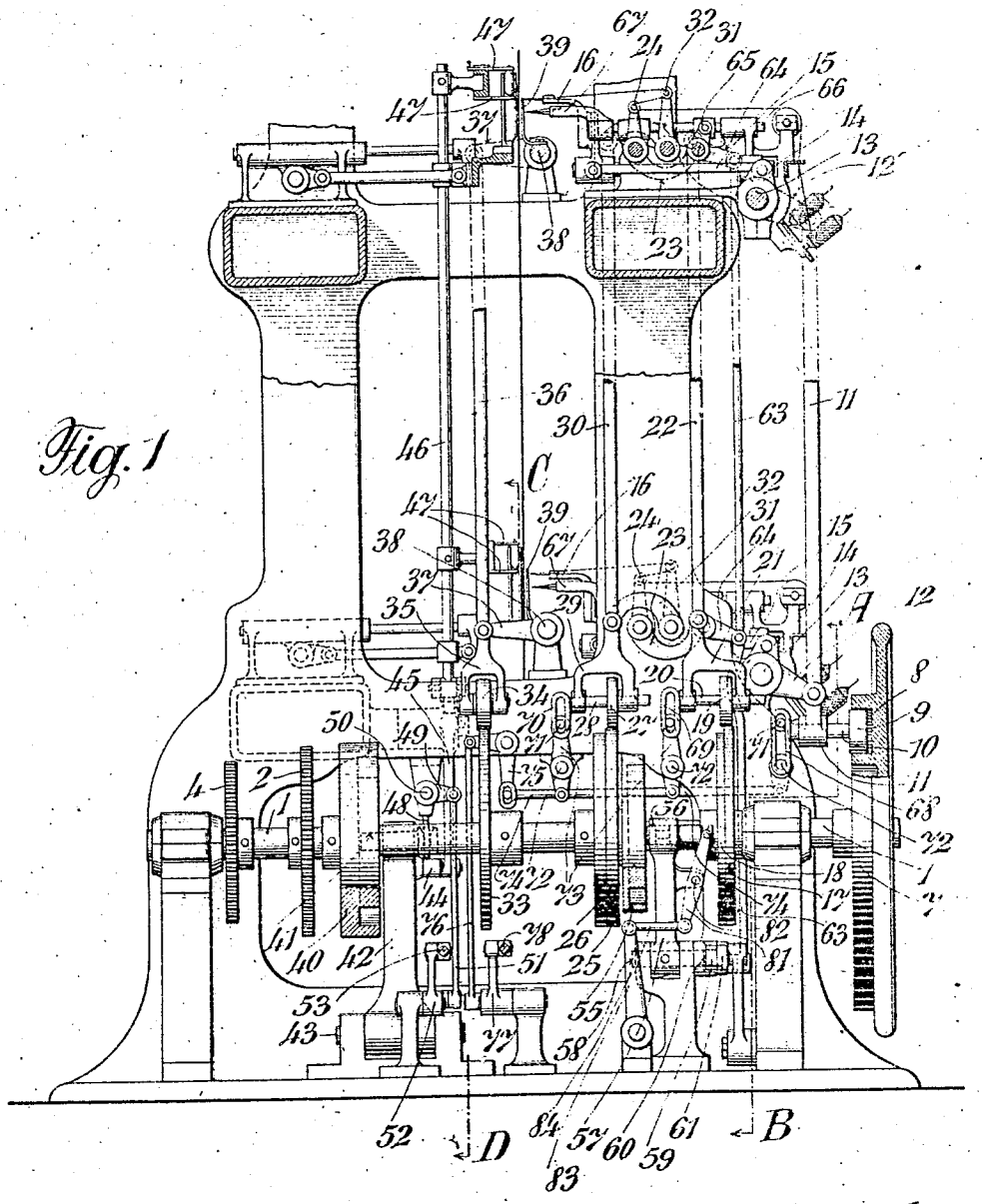
APPLICATION FILED JUNE 10, 1913.

1,118,115.

Patented Nov. 24, 1914.

4 SHEETS—SHEET 1.

Fig. 1



Witnesses:

E. M. Taylor

Worthington Campbell

Inventor:

Karl Eggart

By Redding Greeley & Goodhart

his Attys

K. EGGART.

JACQUARD EMBROIDERY MACHINE.

APPLICATION FILED JUNE 10, 1913.

1,118,115.

Patented Nov. 24, 1914.

4 SHEETS—SHEET 2.

Fig. 3

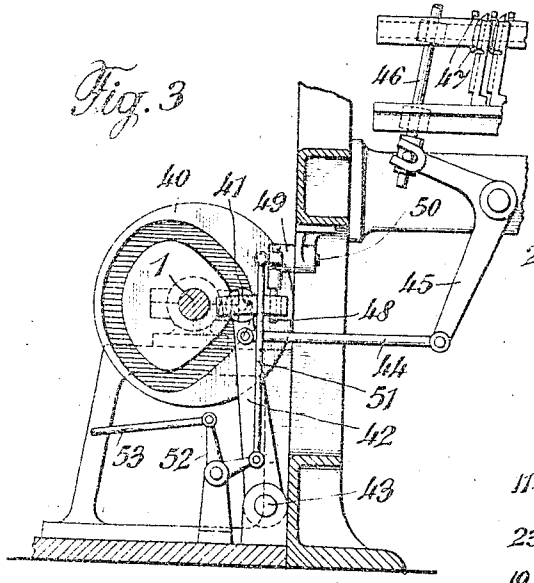


Fig. 2

Witnesses:

E. M. Davis

Worthington Campbell

Inventor:

Karl Eggart

By Redding Greeley & Goodlett

his attys

K. EGGART.

JACQUARD EMBROIDERY MACHINE.

APPLICATION FILED JUNE 10, 1913.

1,118,115. Patented Nov. 24, 1914.

4 SHEETS—SHEET 3.

Fig. 4

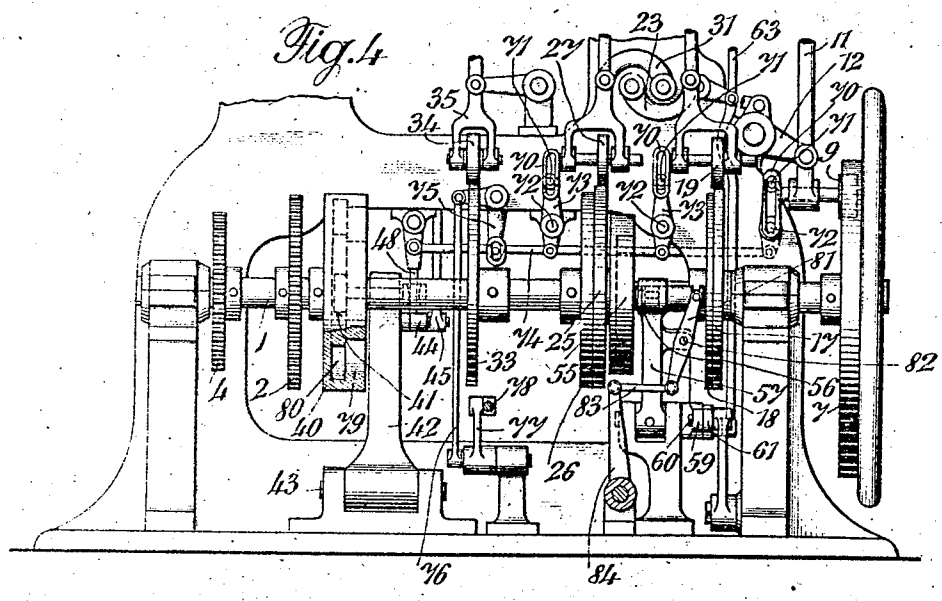


Fig. 5

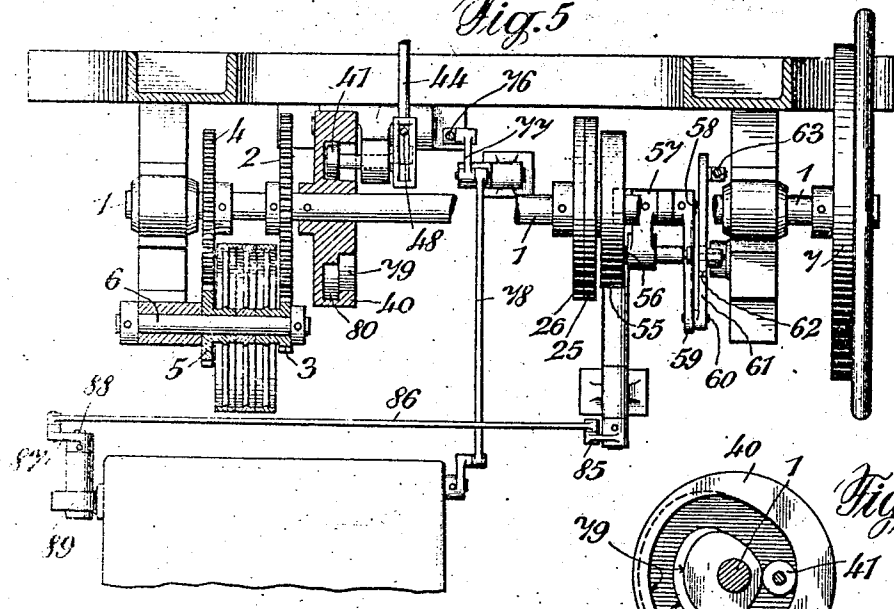


Fig. 6

Witnesses:

E. M. Taylor.

Worthington Campbell

Inventor:

Karl Eggart

By Redding Greely & Goodbett

his attys

K. EGGART.

JACQUARD EMBROIDERY MACHINE.

APPLICATION FILED JUNE 10, 1913.

1,118,115.

Patented Nov. 24, 1914.

4 SHEETS—SHEET 4.

Fig. 7

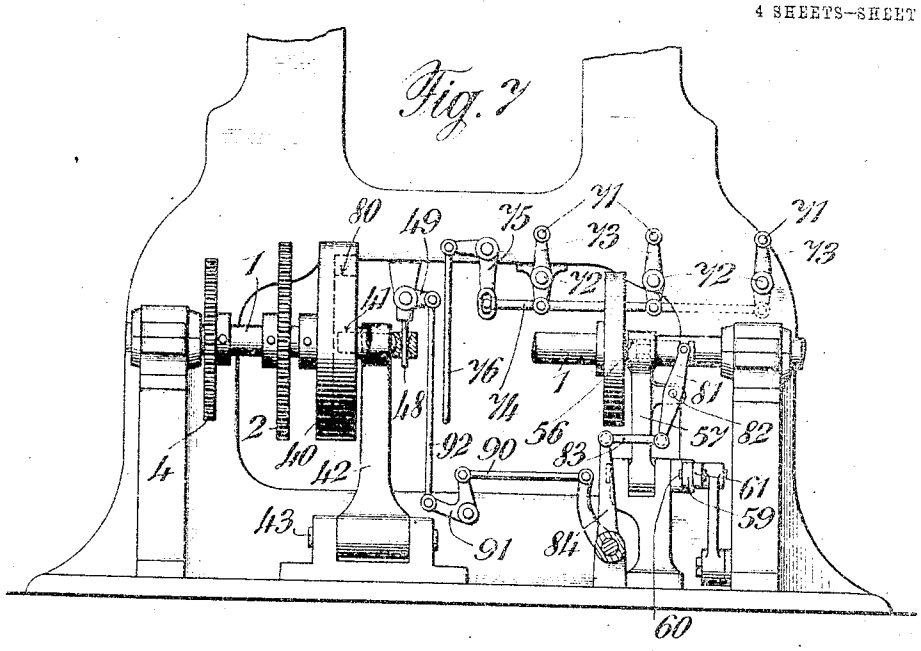
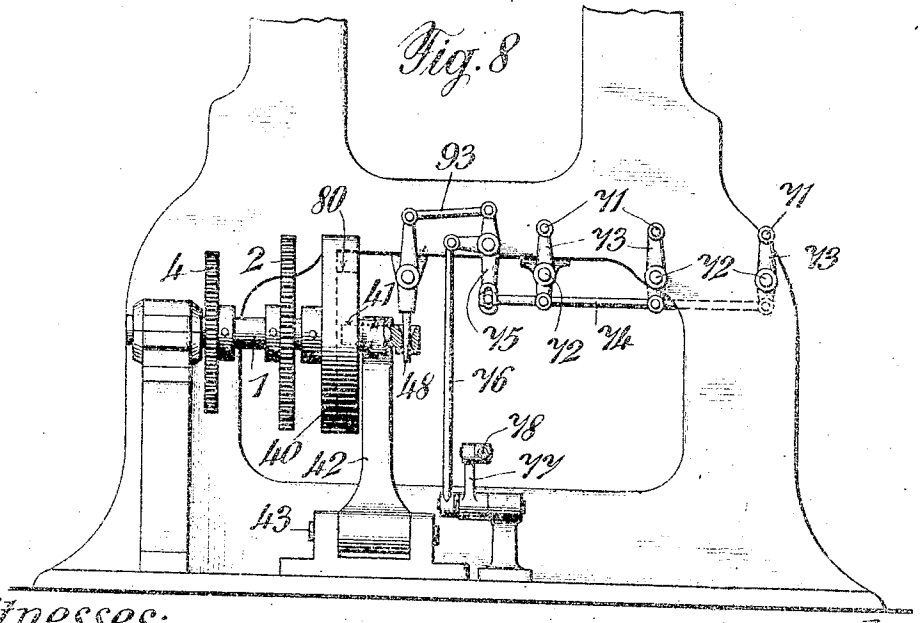


Fig. 8



Witnesses:

E. M. Taylor.

Worthington Campbell

Inventor:

Karl Eggart

By Redding Ourley & Goodell

his attys

UNITED STATES PATENT OFFICE.

KARL EGGART, OF ARBON, SWITZERLAND, ASSIGNOR TO THE FIRM OF ADOLPH SAURER, OF ARBON, SWITZERLAND.

JACQUARD EMBROIDERY-MACHINE.

1,118,115. Specification of Letters Patent. Patented Nov. 24, 1914.

Application filed June 10, 1913. Serial No. 772,774.

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 Jacquard Embroidery-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.

When in working with a jacquard embroidery machine it is desired to change from embroidering to perforating, those devices which are used for the embroidery operations, and in particular the needles, have to be thrown out of operation. In all prior machines of this class it has been the practice to stop the main shaft of the machine when perforating, either upon throwing out the needles or subsequently thereto. Among other disadvantages attaching to this method, however, is the difficulty met with in coupling the main shaft of the embroidery machine again in the right angular position relatively to the jacquard shaft, on the subsequent return to the embroidery work, for it is absolutely essential that the embroidery machine shaft shall start its motion in a certain definite position relatively to the jacquard shaft. In order to overcome this difficulty by the present invention certain devices requisite in embroidering are thrown out of gear on the change being made from embroidering to perforating, but the main shaft of the embroidery machine is not stopped for this purpose. In this manner clutch mechanism can be altogether dispensed with. A further advantage is that the perforating-cam can be mounted directly upon the embroidery machine shaft (this being always in motion), so that the usual auxiliary shaft is rendered superfluous. Furthermore various auxiliary devices of the embroidering mechanism instead of having to be disengaged altogether, can simply be given another motion, so that for example the thread guides for drawing off can be actuated from the main shaft of the embroidery machine.

Four forms of construction of the improved mechanism are illustrated in the accompanying drawing, those parts not necessary for a clear understanding of the present invention being omitted.

Figure 1 is a view in side elevation of a portion of an embroidering machine, partly in section. Fig. 2 is a view in front elevation of the parts shown in Fig. 1 partly in section on the line A—B of Fig. 1. Fig. 3 is a section on the line C—D of Fig. 1. Fig. 4 is a view in side elevation of a portion of a modified construction of the machine, and Fig. 5 is a top view thereof, partly in section. Fig. 6 shows a detail to be hereinafter referred to. Fig. 7 is a view in side elevation of a portion of a third modification, and Fig. 8 is a view in side elevation of a portion of a fourth modification.

Referring more particularly to the form of construction illustrated in Figs. 1–3, 1 is the main shaft of the embroidery machine, which, depending upon the speed it is to have, can be driven from the shaft 6 by means of the gears 2, 3 or 4, 5. On the shaft 1 there is fixedly mounted the needle-cam 7, in whose groove 8 there engages a roller 9, rotatably mounted on a pin 10, which is longitudinally slidable in a bar 11. The bar is jointed to two cranks 12, mounted on shafts 13, to which are secured arms 14, jointed to rods 15, whereby the needle bars 16 can be moved to and fro. On the shaft 1 there is also fixedly mounted a cam 17 for operating the minor thread guides, and secured to this cam is a circular disk 18. With the double cam thus constituted there coöperates a roller 19, which is mounted on a shaft 20, which is longitudinally slidable in a fork 21. This latter is carried by a rod 22, which is pivotally connected to arms 23 rigidly secured to the shaft of the minor thread guides 24. Mounted on the shaft 1 is also a cam 25 for imparting motion to the major thread guides. This cam has a circular disk 26 rigidly secured to it, so as to form a double cam, and with the latter there engages a roller 27, whose shaft 28 is slidable in longitudinal direction in a fork 29, carried by a rod 30 connected to arms 31 on the shaft of the major thread guides 32. There is likewise mounted on the main shaft 1 a cam 33 for actuating the fabric pressers. This cam coöperates with a roller 34, which is mounted in a fork 35 without capability of sliding axially, while the fork itself is carried by a rod 36. The rod is connected to arms 37 on shafts 38, which carry the fabric pressers 39. Also

mounted on the shaft 1 is a grooved cam 40 for the operation of the shuttles. With this cam there engages a roller 41, which is axially slidable on a lever 42 (Fig. 3), which vibrates on a stationary pin 43. This lever 42 is connected by a rod 44 with a bent lever 45, which is connected to a rod 46, rigidly connected with the shuttle actuators 47. The roller 41 is moved axially by a pin 48, rigidly secured to a lever 49 which oscillates on a pin 50. To the lever 49 there is connected a system of rods and levers 51, 52, 53, 54, which is actuated in well known manner by the jacquard apparatus, in correspondence with the pattern, so that the roller 41 can be thrown out by means of the jacquard apparatus.

The shaft 1 has further mounted on it a grooved cam 55, with which there coöperates a roller 56. The latter is mounted with capability of axial sliding in an arm 57, on a shaft 58, on which latter there is also mounted an arm 59. The arm 59 is connected by a pin 60 with a lever 61, which oscillates on an adjustable fulcrum block 62, while its other end is connected to a rod 63. This rod 63 is connected by means of shaft arms 64, 65 with the horizontally slidable rods 66, which carry the perforator bars 67. The shaft of the roller 56 is engaged by a lever 81, which is pivoted by a pin 82 on the arm 57, while the opposite end is connected to a rod 83 by means of a ball and socket joint, which rod 83 is connected, likewise by a ball and socket joint, with a lever arm 84 (Figs. 1 and 2). With this lever arm 84 there is rigidly connected a lever arm 85 (Figs. 2 and 5), to which there is connected a rod 86, whose other end is connected to a crank arm 87, on a shaft 88, which can be actuated from the jacquard apparatus by means of worm gearing 89, according to the pattern, in well known manner, so that the roller 56 can be thrown in and out of gear by the jacquard apparatus.

When the roller 9 of the needle cam 7 is thrown in, and likewise the roller 41 of the cam 40, all the various devices mentioned which are requisite for the embroidering work, that is, the needles, thread guides, fabric pressers and shuttles, are thrown into gear. Should it be desired to change from embroidering to perforating, however, all those devices must be disengaged which would interfere with the work of perforating. This disengagement is effected according to the present invention in the following manner.

The longitudinally slidable axes 10, 20, 28, upon which the rollers 9, 19, 27, are mounted with capability of rotation but not of shifting laterally thereon, are provided with slotted end-pieces or links 68, 69, 70. In the slots there engage the pins 71 of levers 73, which are mounted on stationary pins 72, and whose other ends are connected to a rod 74. To this rod there is connected a bent lever 75, which can be oscillated by means of a system of rods and levers 76, 77, 78 from the jacquard apparatus. If this occurs, depending upon the holes in the pattern card, then, without the main shaft 1 being stopped, the roller 9 will be drawn out of the groove 8 of the needle cam 7, so that the needles will be thrown out. The roller 19 will also be drawn from the track 17 on to the circular track 18, whereby the minor thread guides will be disengaged. Similarly the roller 27 will be drawn from the cam track 25 on to the circular track 26, wherefore the major thread guides will be thrown out too. The roller 41 will now be retracted from the groove of the cam 40 by the jacquard apparatus so that the shuttles will be thrown out as well. In this manner all these devices are brought out of gear. The fabric pressers are not disengaged, because their motion in no way interferes with the perforating work. If now the roller 56 is caused by the jacquard apparatus to enter the groove of the perforating cam 55, the perforating can proceed, the work being done from the main shaft 1.

In the modification illustrated in Figs. 4–6, the roller 41 instead of being thrown out, is merely given a different motion. The cam 40 has here two tracks 79, 80 (Fig. 6). The pin 48 is connected directly to the rod 74, so that on the rollers 19, 27 being shifted as already above described, the roller 41 will be actuated simultaneously being shifted from one track to the other. In embroidering the roller 41 engages in the groove 79, whereas in perforating it coöperates with the other groove 80 for drawing off thread.

In the modification illustrated in Fig. 7 the grooved cam 40 has only one track 80, so that the roller 41 is merely advanced into or retracted from the groove, there being no change of motion. The actuation of the rollers 56, 41 is effected simultaneously by the jacquard apparatus, lever 84, operated by the jacquard apparatus as already set forth, being connected by a rod 90, bent lever 91 and rod 92, with the lever 49.

In the modification shown in Fig. 8 also the grooved cam 40 possesses but a single track 80. Here the actuation of the roller 41 is effected by the jacquard apparatus with the aid of the rod 76, which operates simultaneously the rod 74. The lever 75 is formed as a three-armed lever and is connected by a rod 93 with the lever 49. Thus the shuttles are thrown out simultaneously with the disengagement of the needles and thread guides, without stoppage of the driving shaft.

The various devices of the embroidery machine may, in the change being made from embroidering to perforating, be thrown in and out, or a different motion imparted

to them, in any desired order. The main feature is always that the continuous rotary motion of the driving shaft or driving shafts of the various devices of the embroidery machine is maintained even when a special function such as perforating is being performed.

I claim as my invention:—

1. In a jacquard embroidery machine, a jacquard apparatus, a perforating mechanism, stitching mechanism, a single shaft adapted to rotate continuously in one direction and from which the several parts of the stitching mechanism and the perforating mechanism are directly operated, means actuated by the jacquard apparatus for effecting connection and disconnection between the shaft and the several parts of the stitching mechanism without stopping the rotation of the shaft, and means for effecting connection and disconnection between the shaft and the perforating mechanism.

2. In a jacquard embroidery machine, in combination, a jacquard apparatus, a perforating mechanism, a stitching mechanism, a single shaft adapted to rotate continuously in one direction and from which the perforating mechanism and the several parts of the stitching mechanism are directly operated, means actuated by the jacquard apparatus for effecting connection and disconnection between the shaft and the stitching mechanism, and means operated from the jacquard apparatus for effecting connection and disconnection between the shaft and the perforating mechanism, all without stopping the rotation of said shaft.

3. In a jacquard embroidery machine, in combination, a jacquard apparatus, a perforating mechanism, a stitching mechanism, a single shaft adapted to rotate continuously in one direction and having a series of cams for actuating the several parts of the stitching mechanism and perforating mechanism, means actuated by the jacquard apparatus for effecting operative connection and disconnection between the cams and the several parts of the stitching mechanism actuated thereby, and means for effecting operative engagement and disengagement between one of said cams and the perforating mechanism.

4. In a jacquard embroidery machine, in combination, a jacquard apparatus, perforating mechanism, a single shaft adapted to rotate continuously in one direction, needle mechanism and thread guide mechanism both operated directly by the shaft, means actuated by the jacquard apparatus for effecting disconnection between the shaft and the needle mechanism without stopping rotation of the said shaft, and for effecting disconnection between the shaft and the thread guide mechanism, and means for effecting connection between the shaft and the perforating mechanism.

5. In a jacquard embroidery machine, in combination, a jacquard apparatus, perforating mechanism, a single shaft adapted to rotate continuously in one direction, needle mechanism, thread guide mechanism and shuttle mechanism all operated directly by the shaft, means actuated by the jacquard apparatus for effecting disconnection between the shaft and the needle mechanism without stopping rotation of the said shaft and for effecting disconnection between the shaft and the thread guide mechanism and shuttle mechanism, and means for effecting connection between the shaft and the perforating mechanism.

6. In a jacquard embroidery machine, in combination, a jacquard apparatus, perforating mechanism, a single shaft adapted to rotate continuously in one direction, needle mechanism an auxiliary embroidery device mechanism both operated directly by the shaft, means actuated by the jacquard apparatus for simultaneously effecting disconnection between the shaft and the needle mechanism and auxiliary device mechanism without stopping rotation of the said shaft, and means for effecting connection between the shaft and the perforating mechanism.

7. In a jacquard embroidery machine, in combination, a jacquard apparatus, perforating mechanism, a single shaft adapted to rotate continuously in one direction, needle mechanism and thread guide and shuttle mechanism all operated directly by the shaft, means actuated by the jacquard apparatus for effecting disconnection between the shaft and the said needle, thread guide and shuttle mechanisms without stopping rotation of the said shaft, and means for effecting connection between the shaft and the perforating mechanism.

8. In a jacquard embroidery machine, in combination, a jacquard apparatus, a shaft adapted to rotate continuously in one direction, needle mechanism operated directly by the shaft, a cam mounted on the shaft, perforating mechanism actuated by the cam, means actuated by the jacquard apparatus for effecting disconnection between the shaft and the needle mechanism without stopping rotation of the said shaft, and means for effecting operative engagement between the cam and the perforating mechanism.

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

KARL EGGART.

Witnesses:
JOSEF LUTZ,
EUGENE NABEL.