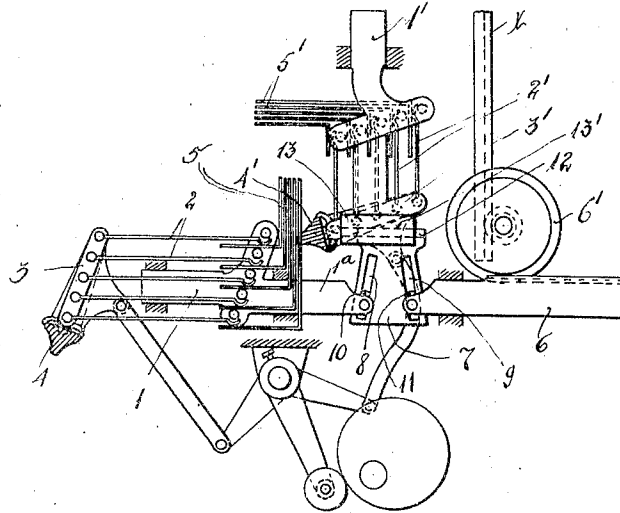


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JACQUARD EMBROIDERING MACHINE.
APPLICATION FILED JUNE 17, 1912.

1,063,492.

Patented June 3, 1913.



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JACQUARD EMBROIDERING-MACHINE.

1,063,492.

Specification of Letters Patent.

Patented June 3, 1913.

Original application filed February 5, 1910, Serial No. 542,305. Divided and this application filed June 17, 1912. Serial No. 704,105.

To all whom it may concern:

Be it known that I, ROBERT ZAHN, a subject of the German Emperor, residing at Plauen, Kingdom of Saxony, Germany, have invented certain new and useful Improvements in Jacquard Embroidering-Machines, of which the following is a specification.

The invention relates to embroidering machines of the automatic type and more particularly to a mechanism for adding up or totaling the large and the small movements of the embroidery frame and is a division from the application 542,305 filed Feb. the 5th, 1910, patented July 2, 1912, No. 1,031,159. The transmission of movement to the embroidery frame in different directions is effected automatically in the manner described and illustrated in the above named original application by means of jacquard controlled allotting members.

In the accompanying drawing which forms a part of this specification and in which similar reference characters denote corresponding parts, a lateral elevation is shown, illustrating more or less diagrammatically an automatic embroidering machine according to this invention.

With reference to the drawing 1 denotes a horizontal slide and 1^a a vertical slide. From these slides the various movements are transmitted to the embroidery frame (not shown) by means of a toothed slide 6, coöperating with gear wheels 6^t and rack α , as fully described and shown in my Letters Patent above referred to and whereby the direction of movements is determined. The slides are operated from allotting members comprising horizontal and vertical coupling rods, 2, 2^t which are pivotally connected to rocking levers 3, 3^t in such a manner that the coupling rods 2, 2^t are given different throws, according as they are arranged farther from or nearer to the fulcrums 4, 4^t of their respective levers 3, 3^t. The coupling rods are actuated by bars 5, 5^t to be coupled to their respective slides 1, 1^a. For combining or totaling the different movements imparted to said slides 1, 1^a I provide the following mechanism. Between the slide tail 1^a and the toothed slide 6 from which latter movement is transmitted to the aforementioned rack α , I provide a trapezoidal plate 7 in which are arranged two slots, 8, 9 acutely inclined to one another. In these slots slidably engage blocks 10, 11, which

are respectively carried by the tail 1^a of slide 1 and by the slide 6. The upper edge of the plate 7 carries a flange 12 which is capable of sliding longitudinally in a groove 13^t provided in a bar 13 formed at the tail end of the slide 1^a. On the slide 1 being reciprocated the flange 12 will be caused to slide in the groove 13^t and on the slide 1^a being reciprocated the two slides 1, 6 are caused to approach or to move away from one another.

The operation of this mechanism is as follows: Assuming that the slide 1, 1^a is caused to perform a horizontal movement while the slide 1^a, 13, is stationary. The flange 12 is thus caused to reciprocate in the groove 13^t of the piece 13 of the slide and the slide 6 is made to travel exactly the same distance as the slide 1. Supposing now the slide 1, 1^a to be stationary and the slide 1^a, 13 to be caused to make a vertical movement, it will be seen that plate 7 will reciprocate on the blocks 10, 11 in the respective slots 8, 9 whereby the slide 6 will receive a fraction of the movement of the slide 1^a, 13, the ratio between the two movements depending upon the angle of inclination of the slots 8, 9. Assuming now this ratio to be 1:10 and the slides 1, 1^a to travel horizontally a distance of say 5 mm. and simultaneously the slide 1^a, 13 to perform a vertical movement of say 3 mm. These two movements are both transmitted to the slide 6 which is thus moved to the extent of 5.3 mm. owing to the throw of 5 mm. being directly transmitted to the slide 6, whereas the throw of 3 mm. owing to the inclination of the slots 8, 9 is reduced to the tenth part of the movement performed by the slide 1^a, 13. In this manner the throw of the slide 6 may be varied at will according to the operation of the bars 5 and 5^t bringing about the coupling of the rods 2, 2^t under the action of the jacquard mechanism. Its shortest displacement 0.1 mm. the slide 6 receives in the event of the slide 1, 1^a being stationary and the slide 1^a, 13 being drawn down by the coupling rod 2^t which in the drawing is farthest to the left, that is to say, which is nearest the fulcrum 4^t. A throw of 0.9 mm. is transmitted to the slide 6 upon the slide 1, 1^a being again stationary while the slide 1^a, 13 is drawn down by the coupling rod 2^t which in the drawing is farthest to the right, that is to say, remotest from the

fulcrum 4¹. The throw of the slide 6 becomes 1 mm. when the slide 1¹, 13 is stationary and slide 1, 1^a is moved to the right by the coupling rod 2 which in the drawing occupies the lowermost position. The largest possible throw of the slide 6 is 9.9 mm. and is attained when both slides 1, 1^a and 1¹, 13 are moved by the coupling rods 2 and 2¹ respectively which are remotest from the respective fulcrums 4, 4¹.

The above numbers are of course mere examples and the question as to whether the shortest throw should be 0.1 mm. and the largest 9.9 mm. depends entirely on circumstances and on the minimum throw chosen under particular conditions herein. Thus if, for instance, for the minimum throw 0.25 mm. is chosen the corresponding maximum throw would be 24.75 mm.

20 What I claim and desire to secure by Letters Patent is:

1. In an automatic embroidery machine the combination with a driven member and allotting members connected therewith; of a mechanism for combining the various movements of said allotting members and comprising an intermediate member provided with oblique guides and movable parallel to the direction of movement of the driven member, said intermediate member being

journalled in one of the allotting members with which it is movable in a transverse direction relative to said driven member.

2. In an automatic embroidery machine, the combination with jacquard controlled horizontal and vertical allotting members and a driven member, of a mechanism for combining the different movements of said allotting members and comprising an intermediate member between said allotting members and said driven member having slots at an acute angle with respect to each other, blocks carried by one of said allotting members and by said driven member and engaging said slots, and a connection between said intermediate member and said other allotting member, whereby the intermediate member is caused to move transversely to the first named allotting member and driven member to draw the same together or apart and which permits the said intermediate member to move parallel to the said first named allotting member and said driven member.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT ZAHN.

Witnesses:

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ROBERT H. NIER.