

J. A. GROEBLI.
EMBROIDERY MACHINE.
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996,238.

Patented June 27, 1911.

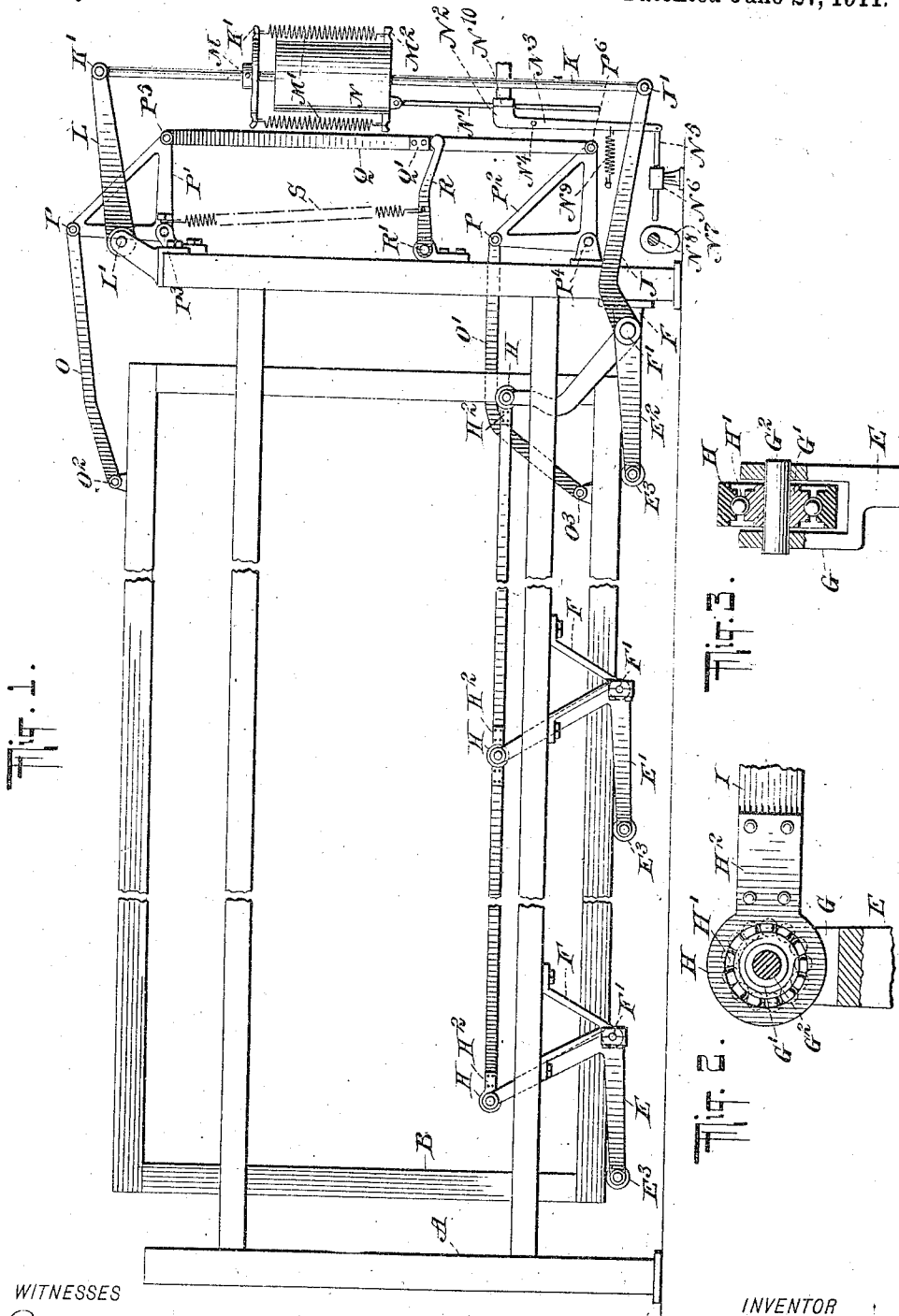


Fig. 1.

Fig. 3.

Fig. 2.

WITNESSES

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EMBROIDERY-MACHINE.

996,238.

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To all whom it may concern:

Be it known that I, JOSEPH A. GROEBLI, a citizen of the United States, and resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Embroidery-Machines, of which the following is a specification.

My invention relates to embroidery machines and has for its object to provide a parallel motion mechanism for properly controlling the fabric frame, so that the whole frame will move uniformly throughout its entire extent. When the fabric frame is thus moved uniformly, the figures which are embroidered at a distance from the point where the jacquard mechanism or pantograph is attached are of the same dimensions and size as those figures close to the point of attachment of said pantograph.

My invention will be fully described hereinafter and the features of novelty will be pointed out in the appended claims.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a side elevation of so much of an embroidery machine as is necessary to illustrate my invention. Fig. 2 is a detail face view of one of the supporting bell cranks in my device; and Fig. 3 is a vertical section thereof.

A is the stationary frame of the machine and B is movable fabric frame which may be of any customary construction and which is connected with the usual pantograph or jacquard at any suitable point. The frame B is arranged to carry the fabric with which coöperates the usual needle carrying bars of any suitable construction, which I have omitted for the sake of clearness.

E, E', and E² are bell crank levers pivotally carried at F' by brackets F secured to the stationary frame A. The one member of each of these levers E, E' and E² is provided at its free end with a roller E³, which rollers engage the lower horizontal portion of the fabric frame B. The free end of each of the other members of said levers E, E' and E² is forked as indicated at G. A member G' carried by a pin G² is secured in each of said forks G. This member G' is surrounded by a ring H and bearing balls H' are located between said ring H and said member G', suitable races being provided for the accommodation of said balls H'.

The rings H are provided with projections H² which are connected by a metal band I so that the three bell cranks will move in unison. The bell cranks serve to support the fabric frame B from below and provide for a uniform up and down movement of said frame B. Secured to the pivot of the lever E² is an arm J which has its free end pivotally connected at J' with a rod K which has its other end pivotally connected at K' with a lever L. This lever L is fulcrumed at L' on a bracket which is secured to the stationary frame A. M is a disk or cross arm which is carried by said rod K and which is provided with hooks or projections K' on which one end of springs M' is secured. The other ends of the springs M' are fastened to projections M² forming part of a counterpoise weight N. This weight is so graduated as to counterbalance the weight of the fabric frame B and surrounds the rod K loosely, so as to be capable of an up and down movement relatively to said rod.

As the embroidery machine is operated there is a tendency to produce a swinging movement of the weight N. To overcome this I attach a downwardly projecting rod N' to the lower part of the weight N, which rod is engaged by a clamping device. This clamping device comprises a jaw N² carried by a lever N³ pivoted on a stationary part of the machine at N⁴ and having its free end pivotally secured to a sliding bar N⁵. This bar N⁵ slides in a bearing N⁶ and has its free end adjacent to a cam N⁷ located on a suitable power shaft N⁸. The jaw N² coöperates with a second stationary jaw N¹⁰ which is mounted on a suitable part of the machine, so that the rod N' extends between the two jaws N² and N¹⁰. Thus as the shaft N⁸ is rotated and with it the cam N⁷, the bar N⁵ will be moved in its bearing and will swing the lever N³ on its pivot and periodically separate the clamping jaws N² and N¹⁰. The bar N⁵ and lever N³ are returned to their normal position by a spring N⁹. This periodical releasing of the clamping jaws from engagement with the rod N' permits the weight N to follow the general movements of the counterbalancing or parallel motion device, while at the same time it arrests any tendency of the weight N to swing or vibrate. If desired the clamping device may be such as to act constantly on the mem-

ber secured to the weight N with enough force to prevent a swinging or vibrating movement of said weight and yet not obstruct any movement of the weight to adjust itself to the motion of the counterbalancing device.

To provide for an even and uniform horizontal movement of the fabric frame, I provide two links O and O', which are pivotally connected at O² and O³ to similar points at the top and bottom respectively of the frame B. The other end of each of these links O and O' is pivotally connected at P with triangular members P' and P² fulcrumed on the frame A at P³ and P⁴ respectively. These members P' and P² are connected together by a rod Q having a projection Q'.

R is an arm pivoted to the frame A at R' and having its free end located under the projection Q' and in engagement therewith.

S is a spring which has its one end fastened to the arm R and its other end secured to the frame A. This spring exerts an upward pull on the arm R and in turn on the rod Q. This in turn tends to swing the triangular members P' and P² on their pivots to the left in Fig. 1 so that the spring serves to balance the movement of the frame B in a horizontal direction.

From the foregoing description it will be seen that the fabric frame to which my invention is applied is evenly balanced and the movement of the frame throughout it entirely is uniform and parallel.

In order that the points O², O³ may move exactly alike, the distance P O² should be equal to P O³; the distance P P³ equal to P P⁴, and the distance P³, P⁵ equal to P⁴, P⁶.

I claim—

1. In an embroidery machine, a fabric frame, connected means for supporting said frame from below, a resilient counterbalancing device mounted on said machine and connected with said means, and mechanism connected with said frame at the top and bottom thereof to insure a uniform horizontal movement of said frame.

2. In an embroidery machine, a main frame and a fabric frame, members pivoted on said main frame, a connection between said members and links secured to each of said members and to said fabric frame near the top and bottom thereof respectively.

3. In an embroidery machine, a main frame, a fabric frame having parallel upper and lower bars, connected members pivoted on said main frame, and links having their one end pivotally secured to each of said upper and lower bars of the fabric frame, and their other end connected with said members.

4. In an embroidery machine, a main frame, a fabric frame having parallel bars, members pivoted on said main frame, a rod

having its ends secured to said members, links connecting said members with the parallel bars of the fabric frame, and a counterbalancing device arranged upon said rod.

5. In an embroidery machine, a main frame, a fabric frame, bell cranks pivotally carried by said main frame, one member of each bell crank engaging said fabric frame, a strip connecting the other members of the bell cranks, a lever connected with one of said bell cranks, another lever pivotally mounted on the main frame, a connection between said levers, resilient means attached to said connection, and a counterbalancing weight secured to said resilient means.

6. In an embroidery machine a stationary main frame, a fabric frame movable longitudinally, separate means movably mounted on said main frame, a connection between said means and a separate rigid connection from each of said means to the upper and lower portions of the fabric frame respectively to cause said portions to move in exactly the same manner in opposite longitudinal directions.

7. In an embroidery machine a fabric frame, connected means for movably supporting said frame, a counterbalancing device connected with said means, separate devices mounted on a stationary portion of said machine, a connection between said devices and a separate rigid connection from each of said devices to the upper and lower portions of the fabric frame respectively to insure equal horizontal movement in opposite directions of said upper and lower portions.

8. In an embroidery machine, a movable fabric frame having a horizontal and a vertical member and mechanism arranged to cooperate with said horizontal member at two or more points combined with rigid means connected with the frame adjacent to the upper and lower ends of said vertical member to insure equal extent of movement of said fabric frame in any direction.

9. In an embroidery machine a fabric frame, a parallel motion device for insuring an equal movement of said frame throughout its entire extent, a counterbalancing weight, a resilient connection between said weight and said parallel motion device, and a clamp for preventing vibratory movement of said weight.

10. In an embroidery machine, a fabric frame, a parallel motion device for insuring an equal movement of said frame through its entire extent, a counterbalancing weight, a resilient connection between said weight and said parallel motion device, a clamp for preventing vibratory movement of said weight and mechanism for periodically releasing said clamp.

11. In an embroidery machine, a fabric

frame, connected means for supporting said frame from below, a counterbalancing device connected with said means, and mechanism positively connected with said frame at the top and bottom thereof to insure a uniform horizontal movement of said frame.

12. In an embroidery machine, a stationary main frame, a movable fabric frame, and mechanism supported on the main frame and rigid means connected with said mechanism and positively connected with the upper and lower portions of the fabric frame respectively to cause them to move in exactly the same manner.

13. In an embroidery machine, a station-

ary support, a movable fabric frame, means for moving said fabric frame and mechanism mounted on said stationary support and rigid means connected with said mechanism and positively connected with the upper and lower portions of the fabric frame respectively to cause them to make the same extent of movement.

In witness whereof, I have hereunto set my hand in the presence of two subscribing witnesses, this 28th day of January, 1908.

JOSEPH A. GROEBLI.

Witnesses:

HENRY EGLI,
ADOLPH LEIBUNDGERT.