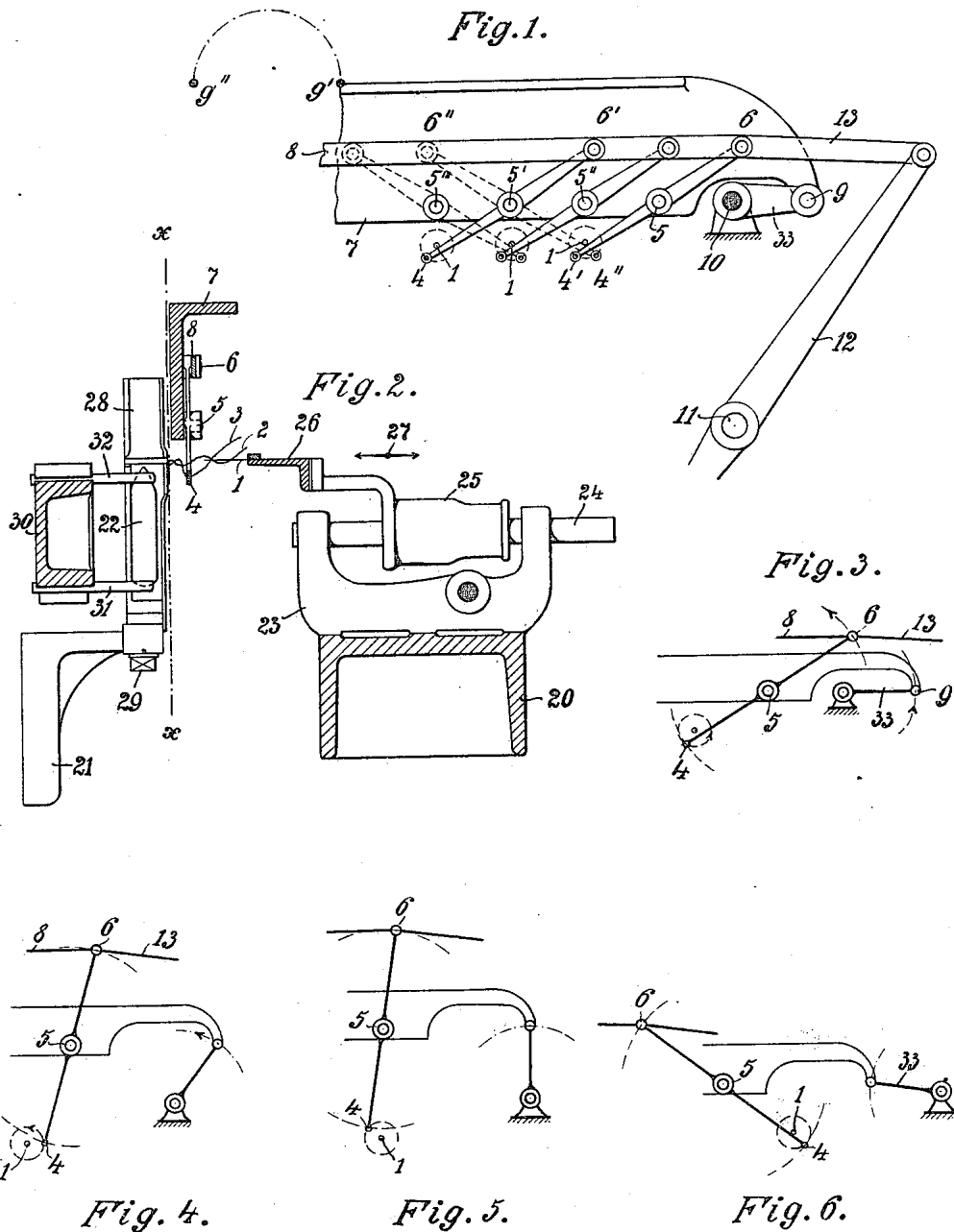


J. GRANZ.
EMBROIDERING MACHINE.
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1,204,269.

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Witnesses:
E. D. Swett
E. M. Stocker

Inventor:
Josef Granz
by F. Dillman
Attorney

UNITED STATES PATENT OFFICE.

JOSEF GRANZ, OF PLAUE, GERMANY.

EMBROIDERING-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

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

The subject matter of the present invention consists of a device in connection with embroidery machines the aim and object of which is to place an ornamental accessory (hereinafter termed a cord) in front of each needle in suchwise that the said cord can be securely worked on to the embroidery by the needle itself.

A constructional example of the invention is shown in the accompanying drawing.

Figure 1 is a front elevation of some parts of the machine, which are intended to serve for embroidering or working in the cords. Fig. 2 is a vertical cross section through those parts of the embroidery machine which it is requisite to explain in order that the invention may be readily understood. The remaining Figs. 3 to 6 are a diagrammatic representation of the method of procedure and show the same parts as Fig. 1.

In Fig. 2 the embroidery is represented by the dot-and-dash line $x-x$. As in all other embroidery machines of this class there is arranged on the front side of the embroidery a long heavy cast-iron carrier 20 on which there are located the mechanisms already known for driving and moving the needles 1. Behind the embroidery $x-x$ there is also a long cast-iron carrier 21, on which there are located mechanisms for driving and moving the shuttles 22. All these parts, and all the rest of the entire machine, are already perfectly well known. The sole new device is that which serves to embroider in the cords and designated 4, 5, 6, 7, 8, 9, 10, 11, 12 in the drawing.

On the front carrier 20 guide blocks 23 are fastened at predetermined distances. In each of these guide blocks there is a prismatic bar 24 so mounted as to be movable in its longitudinal direction. To each bar 24 there is fastened a rider 25, and all these riders 25 are connected by means of a long rail 26. Several hundred needles 1 are firmly screwed to the rear edge of the rail 26. When, therefore, the bars are moved backward and forward by a mutual opera-

tive mechanism in the direction of the double arrow 27, all the needles 1 penetrate the embroidery $x-x$ simultaneously and bring the threads 2 at the back of the embroidery in connection with the shuttles 22 in the manner known.

The mechanisms for operating the bars 24 are not shown in the drawing, because they are already known.

To each needle 1 on the front side there belongs a shuttle 22 at the rear. Each shuttle 22 is driven up and down in the shuttle race 28. All the shuttle races 28 are fastened to the carrier 21 by screws 29. To a cast-iron bar 30 there are fastened pins 31, 32, which drive the shuttles 22 up and down in the race 28. The mechanisms for moving up and down the bar 30 are also not shown in the drawing, because they are well known.

The aim and object of the invention is to bring the cord 3 in connection with the threads 2 in such wise that they can be firmly embroidered on to the piece of work. To effect this end the following arrangement is used: Close in front of the embroidery $x-x$ there is a horizontal iron rail 7. This rail 7 is provided at both ends with rotary pivots 9. In Fig. 1 only the right end of the rail is shown; the left end is constructed in a similar fashion. Upon a stationary bearing 10 of the frame of the machine there is mounted a lever 33 which can be displaced backward and forward to an extent of 180 degrees. Figs. 1 and 3 show the lever 33 in its terminal position while, in Fig. 6, it is shown in its other terminal position. The lever at the left end of the rail 7 is just as easily capable of movement as this lever 33 and, consequently, any desired point of the rail 7, as for instance the point g' in Fig. 1, can describe a semi-circular path from g' to g'' and back again. For the same reason point 5 in Fig. 1 moves up to the point 5' and the point 5'' is moved toward 5'''.

To the lower edge of the rail 7 bolts 5 are fastened at certain distances. The distances from one bolt 5 to another are precisely the same as from one needle 1 to the other. On each bolt 5 there is rotatably mounted a lever 4, 5, 6. The terminal points 6 of all these levers are rotatably connected to a common rail 8. The right end of the rail 8 is connected to a lever 12 by means of an intermediary link 13, and the lever 12 is so

mounted as to be capable of oscillation around a pivot 11. The terminal point 4 of each lever 4, 5, 6 is provided with a hole through which the cord 3 is drawn. The levers 4, 5, 6, though shown straight, need not necessarily be so and they may be operated by other than the exact means herein shown.

Both the lever 33, as well as the lever 12, are placed in motion by means of a mechanism which is not shown in the drawing.

For the actual working process the essential feature is that the eye 4 of the thread guide in Fig. 1 moves around the needle 1 in suchwise that it commences at the point 4' and, at the completion of its movement, it takes up its position at point 4''. This is effected in precisely the same time as that taken by the movement of point 5 up to point 5'. At the same time the eye 4 of the thread guide makes a circular movement around the needle, the said movement being greater than 360 degrees. At the completion of this movement the lever 4, 5, 6 has taken up the position shown by the dotted lines 4'', 5'', 6''.

The diagrammatic Figs. 3 to 6 are intended to make this peculiar and characteristic movement still more plain.

The initial position shown in Fig. 3 is precisely the same as in Fig. 1. The arrow heads show the movements which take place at the several points.

After a certain lapse of time the several parts have taken up the positions shown in Fig. 4, and shortly afterward those shown in Fig. 5 and finally those of Fig. 6. The aim and object of this peculiar movement are to effect that the thread, which is embroidered or worked by the needle 1, is forced without any doubt to securely pass over the cord 3. If for instance, in Fig. 1 the eye 4 of the thread guide should not describe a complete circle around the needle 1, it might readily come to pass that the needle 1 would cast over its thread precisely at the point where the circular movement of the eye 4 is open. In this case the cord 3 would not be firmly embroidered upon the piece of work but, on the contrary, it would hang

down loosely. In order, therefore, to proceed with perfect certainty the arrangement has been so devised that the eye 4 describes more than a full circle, that is to say it passes around the needle by more than 360 degrees. As will now be readily understood the purpose in view, as hereinbefore described, can thus be secured with far greater certainty.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In an embroidering machine, needles, a carrier for said needles, means for reciprocating the carrier, levers, each lever having an ornamental-thread guide at one end thereof adapted to describe a substantially circular movement of over three hundred and sixty degrees around a needle and means movable in semi-circular path on which said levers are pivotally mounted.

2. In an embroidering machine for working in an ornamental cord, a carrier provided with needles, a thread guide having an eye adapted to describe a circular movement of over 360 degrees around one only of said needles, a lever, said thread guide being located at the end of said lever, the center of oscillation of which can be moved along a semi-circular path so that the thread guide can travel around the needle and a rail, on which the lever is mounted and adapted to be moved along said semi-circular path.

3. In an embroidering machine for working in an ornamental cord, thread guides each having an eye, said thread guides being mounted to describe a circular movement of over 360° each around a single needle only, a lever for each guide, the eye of each of said thread guides being located at the end of its lever, a rail movable in a semi-circular path and on which said levers are pivotally mounted, and a second rail to which the outer ends of said levers are connected.

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

JOSEF GRANZ.

Witnesses:

JOSEPH MÜHLE,
ROBERT H. NISN.