

M. SCHOENFELD.
EMBROIDERY MACHINE.
APPLICATION FILED FEB. 2, 1912.

Patented Feb. 2, 1915.

2 SHEETS—SHEET 1.

1,126,879.

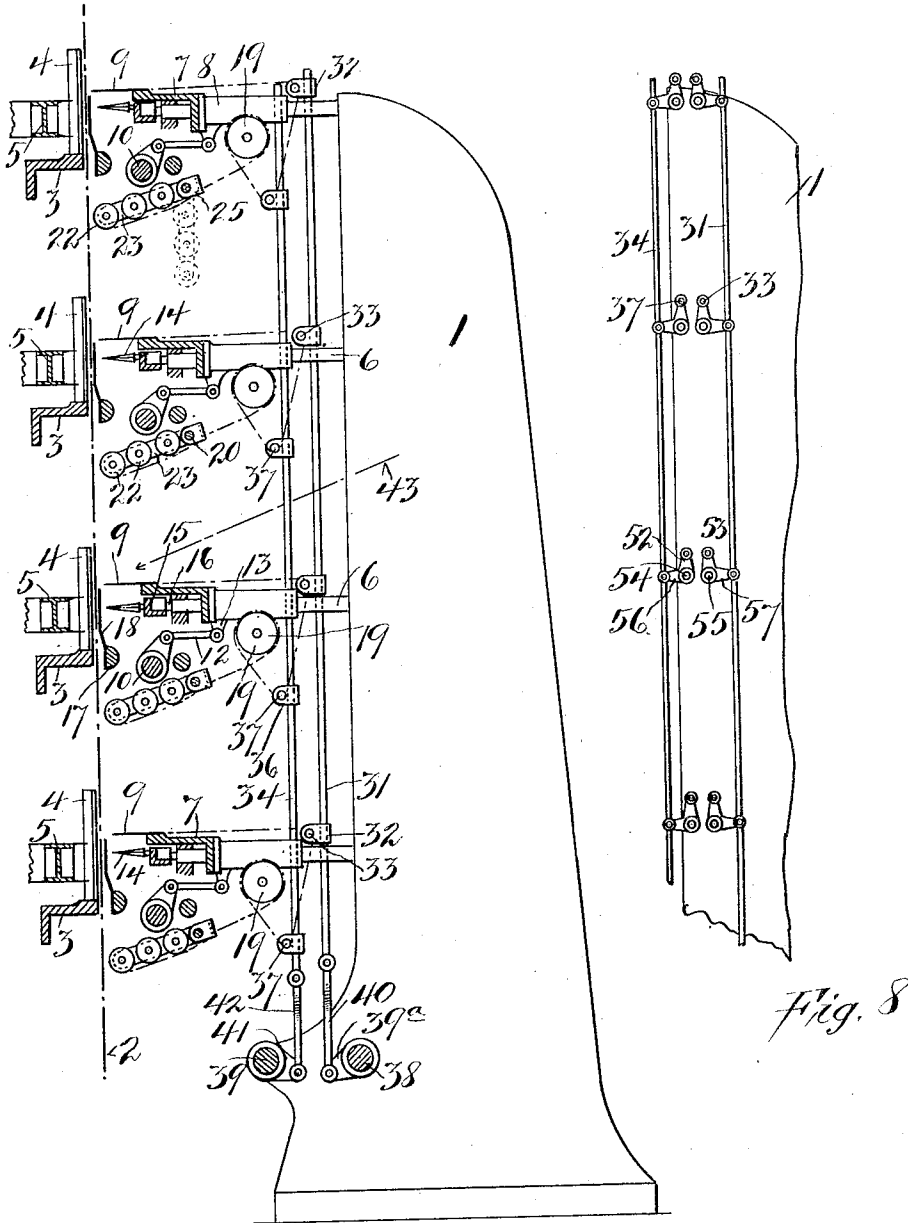


Fig. 1.

Fig. 8.

Witnesses:
Wm. Benjamin
Anna A. Bauer

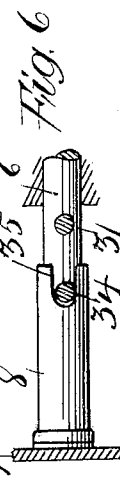
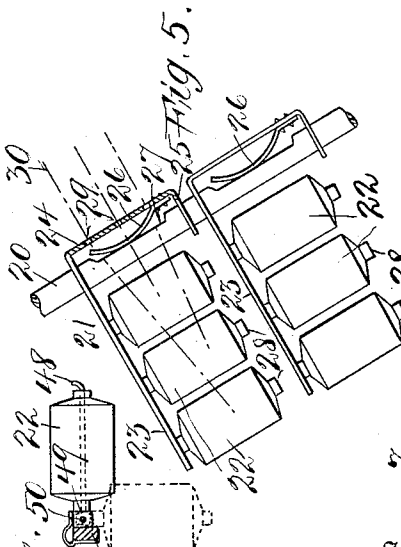
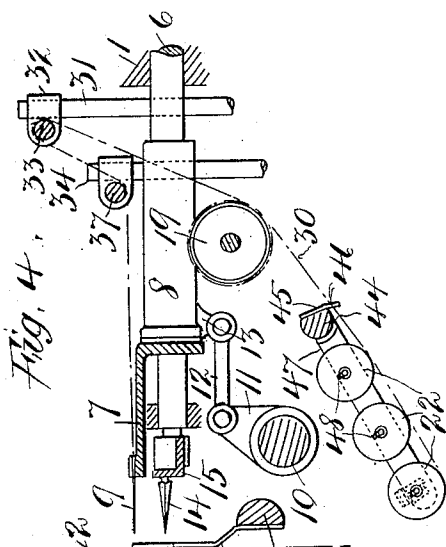
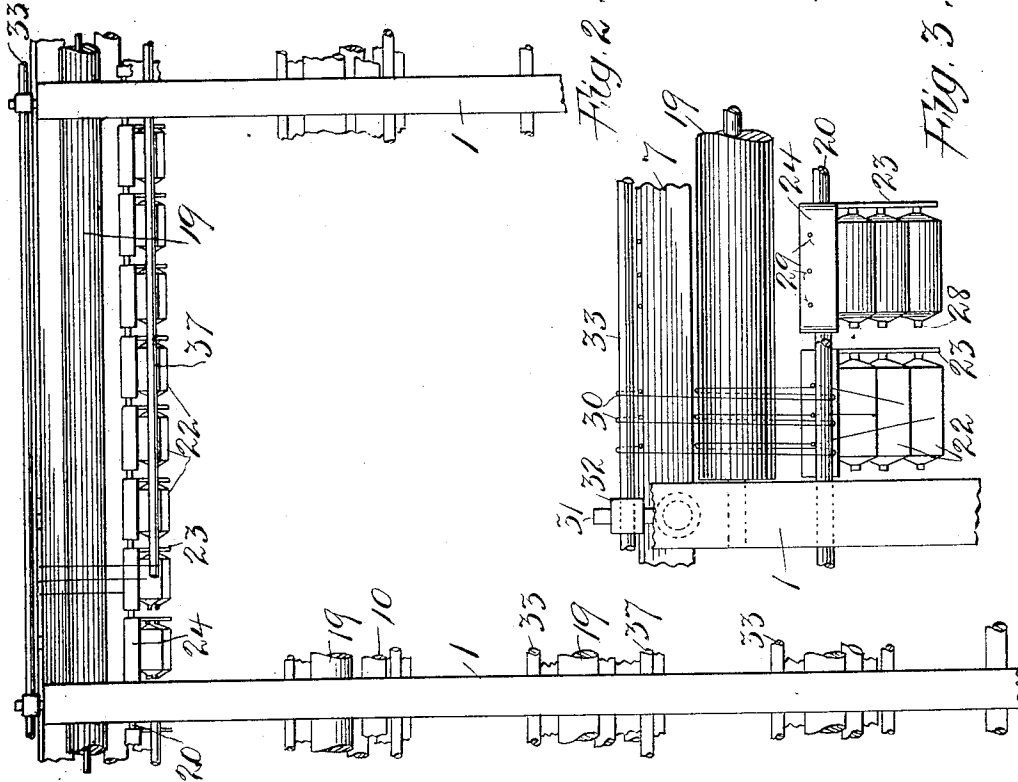
Inventor
Morris Schoenfeld
By Attorney
Charles G. Hensley

M. SCHOENFELD.
EMBROIDERY MACHINE.
APPLICATION FILED FEB. 2, 1912.

1,126,879.

Patented Feb. 2, 1915.

2 SHEETS—SHEET 2.



Witnesses:
Anna L. Bauer.

Inventor
Morris Schoenfeld
By his Attorney
Charles S. Hensley

UNITED STATES PATENT OFFICE.

MORRIS SCHOENFELD, OF RORSCHACH, SWITZERLAND.

EMBROIDERY-MACHINE.

1,126,879.

Specification of Letters Patent.

Patented Feb. 2, 1915.

Application filed February 2, 1912. Serial No. 675,017.

To all whom it may concern:

Be it known that I, MORRIS SCHOENFELD, a citizen of the United States, and a resident of Rorschach, in the Canton of St. Gall, Switzerland, have invented certain new and useful Improvements in Embroidery-Machines, of which the following is a specification.

My invention relates to embroidery machines and more particularly to the stitching elements which are arranged upon the needle side of the fabric.

In the ordinary construction of embroidery machines there are usually two longitudinal rows of stitching devices such as shuttles, needles, bore points and other elements arranged in two superimposed rows whereby the embroidery machine produces two rapport rows of embroidery at a time.

Owing to the heavy longitudinal beams formerly employed for supporting these elements throughout the length of the machine the rows of stitching elements were necessarily spaced considerable distance apart and it was impracticable to employ more than two rows of stitching devices. In an application for patent filed by me on the 16th day of February, 1910, and serially numbered 544195, I showed and described an embroidery machine constructed in such a manner as to enable me to use four or even six superimposed rows of stitching devices arranged in closer relation than in former practice. In a machine of this character, owing to the rows of stitching elements being arranged in closer relation it is desirable to arrange the various stitching elements so as to obstruct as little as possible the surface of the fabric in order that the operator may easily see the operation of the many needles throughout the machine.

In embroidering machines having more than two rows of stitching mechanisms, the rows have to be placed closer together than heretofore and for this reason it is impracticable to arrange the spools as they have been in two row machines.

The object of the present invention is to so construct and arrange the elements on the needle side of the fabric as to permit the operator to clearly observe the operations of the several needles.

My invention not only relates to a novel means for supporting the thread supply elements, such as spools or bobbins, and to the

take up for the threads, but also relates to the relative arrangement of these devices and the thread tension roller and needle bar.

In the drawings forming a part of this application, Figure 1, is a cross section of an embroidering machine embodying my invention in the preferred form, Fig. 2, is an elevation of the front side of an embroidering machine showing the disposition of the several rows of devices, Fig. 3, is an enlarged elevation of a portion of the device shown in Fig. 2, Fig. 4, is an enlarged cross section of a portion of Fig. 1, Fig. 5, is a perspective view of the thread supporting members, Fig. 6, is a sectional view showing the arrangement of the take up shafts, Fig. 7, is a sectional view showing a modified form of spool holder, and Fig. 8, is a view similar to Fig. 1, showing a modified construction of the take up device.

In the present case I have shown rigid upright supporting elements 1, arranged at comparatively close intervals and these supporting elements are preferably arranged at intervals throughout the length of the embroidering machine similar to the supporting structure in my said copending application; and to simplify the present case I show the supporting elements on the needle side of the fabric only. The stationary frame structure which I prefer to use may be fully understood by reference to my said copending application. The weight of the various stitching elements is supported at intervals upon the frame members 1, so that the weight of these elements is carried upon the frame at comparatively short intervals. I have shown by dotted line 2, the disposition of the fabric upon which the embroidery elements operate. In order to show the relationship of the stitching elements on opposite sides of the fabric I have shown the bar 3, which supports the shuttle tracks 4, for each row of mechanism and I have also shown the usual shuttle drive bar 5; all arranged at what is usually called the rear side of the fabric. These devices form no part of the present invention and the details thereof are therefore omitted.

Between the fabric and the supporting members 1, I have arranged various elements which perform functions in the production of the embroidered design. I have provided laterally disposed shafts 6, rigidly mounted upon the standards 1. The longi-

tudinally disposed needle bars 7, each have
 as many sleeves 8 as there are shafts 6, in
 each row, which sleeves surround the several
 shafts 6, and reciprocate relative to the lat-
 5 ter. In this manner the needle bars 7, are
 guided and supported, so that they may
 reciprocate toward and from the fabric
 surface. Each needle bar is provided with
 a number of needles 9, in the usual manner.
 10 Below the needle bar in each row I have
 shown a shaft 10, provided with arms 11,
 and the latter are connected by means of a
 link 12, with short arms 13, upon the sleeves
 8. By oscillating the shafts 10, in the usual
 15 manner the several needle bars are reciprocated
 laterally of the machine. Below each
 row of needles I have shown a row of bore
 points 14, mounted upon a supporting bar
 15, and each bar 15, is supported by its lat-
 20 eral shaft 16, which are arranged to reciprocate
 in the hollow end of the shafts 6, I
 have also shown detents 18, mounted upon
 longitudinal bars 17, and arranged to oper-
 ate upon the fabric in the usual manner.
 25 Preferably below and in close proximity to
 the sleeves 8, I provide tension rollers 19.
 These various elements are grouped in close
 relationship in order that they will obstruct
 as small a portion of the fabric surface as
 30 possible.

Referring to Figs. 1, 3, 5, it will be ob-
 served that I have provided a longitudinally
 disposed bar 20, which I have arranged un-
 derneath the needle bar. The purpose of
 35 this bar 20 is to support the various thread
 supply elements such as spools or bobbins
 which furnish the necessary supply of
 threads for the several needles. It may be
 here stated that the usual method of dispos-
 40 ing the spools has been to place them near
 the front of the machine and in a vertical
 position so that the various stitching devices
 were spread out laterally of the machine
 over such a distance as to make it difficult to
 45 observe the operations of the many needles.
 In the present instance I have shown a num-
 ber of plates 21, which I have formed by
 bending twice at right angles into U shape
 for supporting the spools or bobbins 22.
 50 These plates comprise a long portion 23, and
 a bar 24, shown at right angles thereto and
 a bar 25 at right angles to the bar 24. The
 shaft 20, extends through the bars 23 and 25
 thereby supporting the members 21. Each
 55 of the bars 24 is provided with a spring 26
 which contact with the flattened portions 27
 of the shaft 20 for the purpose of retaining
 the supporting member 21, in such position
 as will hold the thread spools in close rela-
 60 tion with the other stitching elements and
 obstruct the fabric surface as little as possi-
 ble. Each bar 23, is provided with a num-
 ber of laterally extending arbors 28, for the
 purpose of receiving and holding the sev-
 65 eral spools 22. I have shown three such

arbors 28, on each bar 23, but the number
 may be varied. In the bar 24, I have ar-
 ranged as many apertures 29, as there are
 spools 22 on each of the several supporting
 members and the threads 30, of the several
 70 spools pass through these apertures and are
 thereby separately guided to the tension
 roller 19. I have arranged the several sup-
 porting members 21, upon the shaft 20, suffi-
 ciently close to each other to prevent the
 75 spools 22, from moving laterally off their
 respective arbors 28, while the spools and
 support are in the full line position, shown
 in Fig. 1. That is, the spools 22 in the up-
 80 per half of Fig. 5, can not slide off of their
 arbors 28, because of the bar 23, below them,
 unless their supporting members 21, are
 swung downwardly to lie in a different plane
 as is shown in dotted lines in the upper por-
 tion of Fig. 1.

I have shown upright shafts 31, extend-
 ing through and guided by shafts 6. Upon
 the shafts 31, I have provided blocks 32,
 which support and carry the longitudinally
 disposed take up bars 33. I have also shown
 90 shafts 34, extending through the shafts 6
 and also through slots 35 in the sleeves 8.
 These shafts also carry blocks 36, which
 support and carry the longitudinally dis-
 posed take up bars 37. Upon the frame
 95 members 1, I have mounted shafts 38 and 39
 the former of which is provided with arms
 39* which are connected by means of links
 40 with the shafts 31; while the shaft 39 is
 connected by means of arms 41, and links
 100 42 with the shafts 34. By oscillating the
 shafts 38 and 39 the shafts 31 and 34 will
 be caused to reciprocate vertically and they
 will be guided in their reciprocating move-
 ment by the shafts 6.

I have shown by a dotted arrow 43, the
 sight line in the machine that is the direc-
 tion in which the attendant views the oper-
 ations of the many needles and it will be
 observed that the stitching devices are so
 110 grouped and arranged that the space for
 viewing the work of the needles is open and
 clear notwithstanding the fact that the vari-
 ous rows of mechanisms are arranged com-
 paratively close. In other words I can em-
 115 ploy four or more rows of stitching mech-
 anisms arranged closer than in former
 practice and still preserve a clear space for
 viewing the action of the sewing needles.
 For instance the thread spools are arranged
 120 underneath the several longitudinal rows of
 needle bars and lie one behind the other in
 such order that they cover but little more of
 the fabric surface than would be covered by
 a single row of spools. With the parts in
 125 the full line position shown in Fig. 1, the
 threads from the several spools 22, pass
 through their individual apertures 29, in the
 several bars 24 and pass once around the
 tension roller 19; thence under the take up

bar 37 over the take up bar 33 and to the eye of the needle. At each stitch period, that is, at each complete reciprocation of the needle bars, the take up bars will be moved to act upon the thread for the purpose of taking up the thread. The operation of the shafts 38, and 39 will be such as to cause the take up bars 37 and 33, to operate upon the threads similar to take up devices well known in this art, and as it is the arrangement of the take up bars and their operating shafts which form a part of the present invention I have not shown the mechanism for operating them, as such mechanism is well known.

The present arrangement and disposition of the take up device eliminates the use of the heavy longitudinal shafts heretofore used and which obstructed the view of the embroidery surface. When the parts are in the position shown in Fig. 1, the threads will feed off of their respective spools 22, around the tension roller and the take up bars; and the relative arrangement of the several supports 21 will prevent the spools from moving off their respective arbors.

Whenever the attendant finds that one of the spools has become exhausted of its thread or nearly so, she only has to swing the support 21, upon the shaft 20 by overcoming the action of the spring 26 until support is moved to the dotted line position shown in the upper part of Fig. 1. As the bar 24 which guides the several threads as they leave their spools is near the shaft 20, the guides will not affect the condition of the thread even though the machine continues to operate while the spools are in their lower position. The spool support having been swung to its lower position any or all of the spools 22, thereon may be moved lengthwise off their arbors and a new spool or spools with a fresh supply of thread may be quickly placed upon the arbors and the ends of their threads may be passed through apertures 29, around the tension roller, and take up bars, and thence through the eyes of their respective needles. The support 21, is swung back to its original position. This operation may be carried on as to any of the supports 21, without interfering with the operation of the spools on any of the others. From this it will be apparent that I dispose the spools in the most advantageous manner for preserving a clear view of the fabric and at the same time arranged the spools so that they may be replenished quickly and without interrupting the operation of the machine.

In Figs. 4 and 7, I have shown a somewhat modified form of my invention. Various stitching elements are shown arranged similar to those in the other forms of the drawings except to the thread spools. In this form I have shown shaft 44, which carries a thread guide 45 provided with aper-

tures 46, similar to the apertures 29, in the first construction. Upon this shaft 44 I have arranged arms 47 which carry the laterally extending arbors 48. The shaft 49 carried by the arm 47 forms the immediate support for the arbors 48. The latter are arranged with a block 50 through which shaft 49, passes and the arbors are adapted to swing with their blocks 50 from the horizontal position shown in full line to the dotted line position shown in Fig. 7. For the purpose of retaining the arbors in the horizontal position I have provided springs 51, which press upon the blocks 50 to hold the arbors in the extended position. In this form the arms 47, remain stationary and when a spool becomes exhausted of its thread its arbor 48 is individually swung downwardly upon the shaft 49 and when in the vertical position it will be free and the spool may be slid lengthwise off the arbor.

In Fig. 8, I have shown a modified form of take up to show how the device may be varied and still preserve the general arrangement. In this form the angle levers 52, 53, are fulcrumed on studs, 54, 55, on the standard 1. The shaft 34, is connected with the arms 56 of the levers 52 and the shaft 31 is connected with the arms 57 of levers 53. Take up bar 37 is carried upon one arm of levers 52 and take up bar 33, is carried upon one end of levers 53. The rocking of levers 52, 53 moves the take up bars away from each other but in a horizontal direction instead of vertically as before. Otherwise the construction remains the same.

Having described my invention what I claim is:—

1. An embroidering machine comprising a stationary frame composed of a plurality of rigid upright frame members, a plurality of superposed rows of stitching mechanism supported upon the stationary frame, take up bars arranged substantially in the horizontal plane with the rows of stitching mechanisms and a plurality of upright, reciprocable shafts connecting the take up bars vertically and horizontally in a rigid movable whole, whereby said take up bars will be supported by the said shafts and be operated as a unit.

2. An embroidering machine comprising a stationary frame, a plurality of superposed rows of stitching mechanisms supported upon the stationary frame and including needle bars and tension rollers, and means for supporting groups of thread spools for the several rows of stitching mechanisms, and arranged to support the spools so that the latter lie underneath the needle bar and one behind the other and behind the tension roller, in the direction in which the operator views the fabric.

3. An embroidering machine comprising a stationary frame, a plurality of super-

imposed rows of stitching mechanisms supported upon the stationary frame and means for supporting a plurality of groups of thread spools for the several rows of stitching mechanisms; said supports being arranged to support said spools whereby one group will be prevented from moving off their support by the juxtaposition of another group, said supports being arranged to permit the spools to be swung into a position to be removed therefrom.

4. An embroidering machine comprising a stationary frame, a plurality of superimposed longitudinal rows of stitching mechanisms supported thereon and including a tension roller, a plurality of swinging thread spool supports adapted to support a plurality of groups of spools in substantially longitudinal rows one behind the other in the direction in which the operator views the fabric, whereby the spools will be prevented from moving off their supports by a juxtaposed group while in their operative position, and adapted to be swung to permit the removal of the spools from their

supports, and means for guiding the threads between said spools and the tension roller.

5. An embroidering machine comprising a stationary frame a plurality of superimposed longitudinal rows of stitching mechanisms supported thereon and including a tension roller, a longitudinally disposed supporting shaft, a plurality of U shaped bars arranged to swing on said shaft, and having thread apertures in their longitudinal portion, lateral arbors on said supports for holding thread spools arranged whereby the spools will lie one behind the other in the direction in which the operator views the fabric, said supports being adapted to be swung downwardly on the said shaft for the purpose of removing the spools therefrom and springs for retaining said supports in their raised position.

Signed at the city, county and State of New York this 29th day of January 1912.

MORRIS SCHOENFELD.

Witnesses:

ARTHUR K. KUHN,
CHAS. J. CAVANAGH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."