No. 663,752. Patented Dec. 11, 1900.

J. GRUBMAN.

EMBROIDERING ATTACHMENT FOR SEWING MACHINES.

(Application filed May 29, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig 1

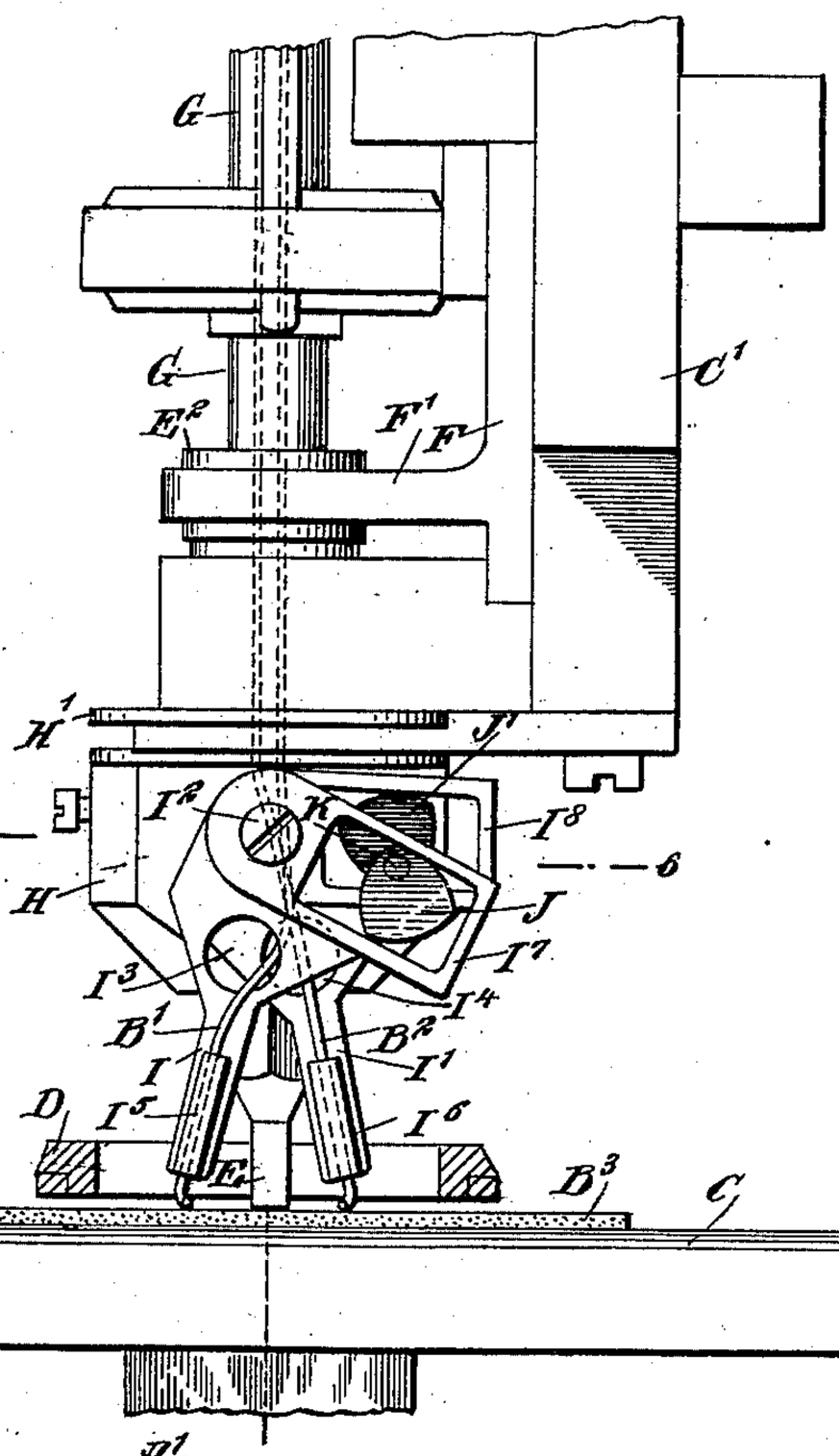

Fig 2

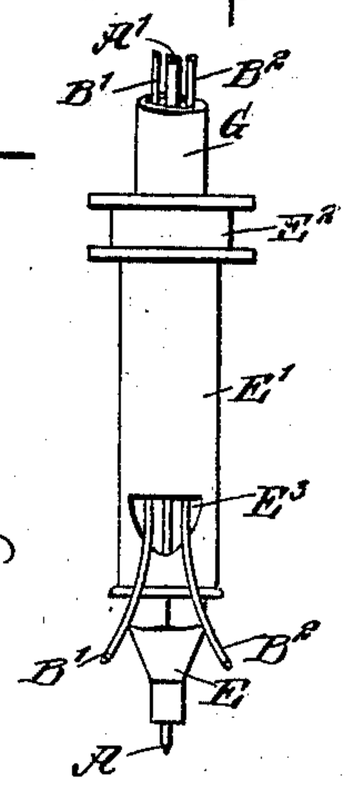

Fig 3

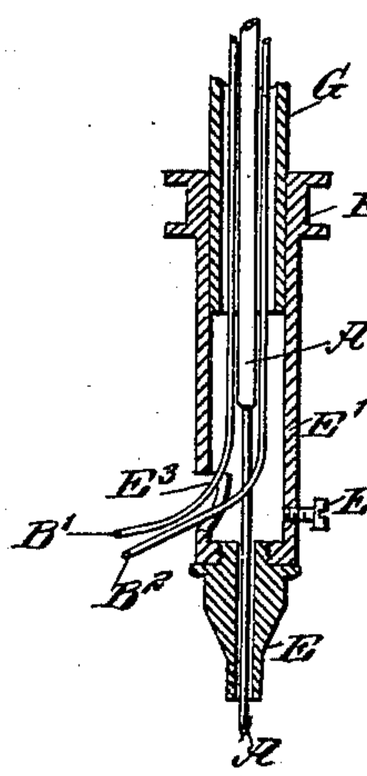

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Fig 4

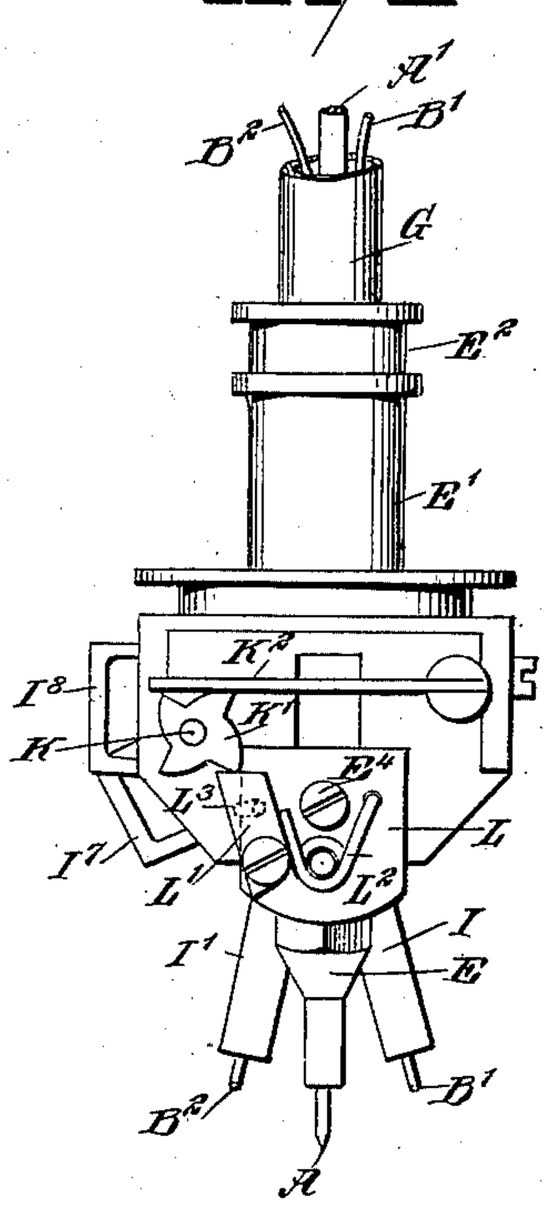


Fig 5

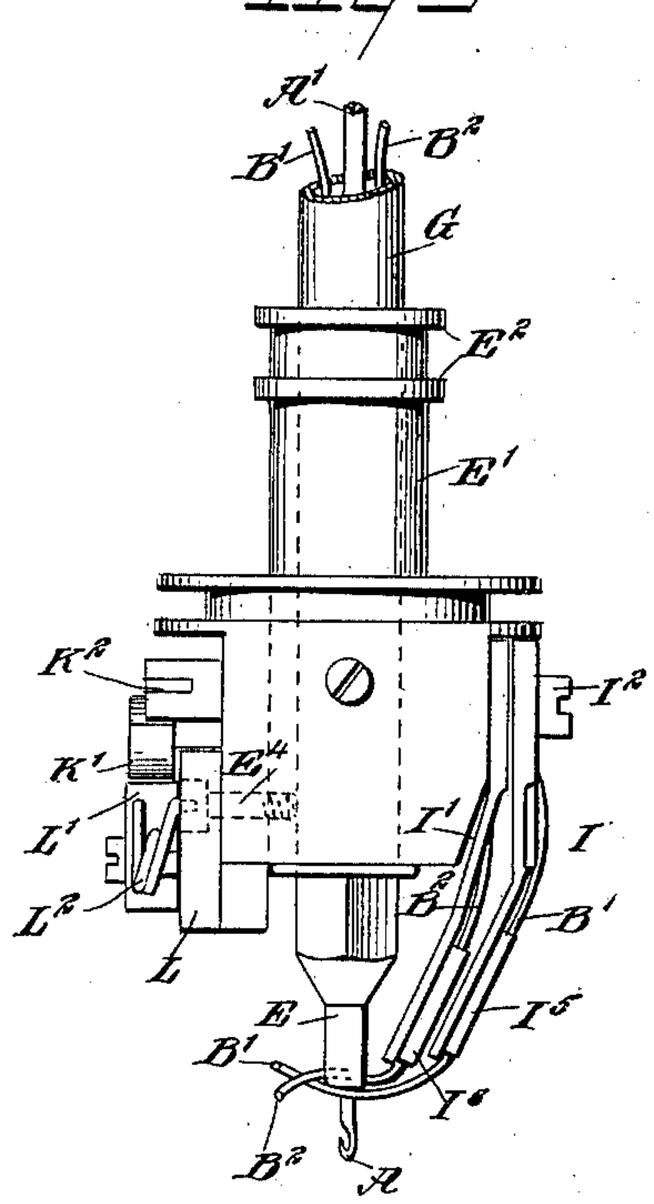


Fig 7

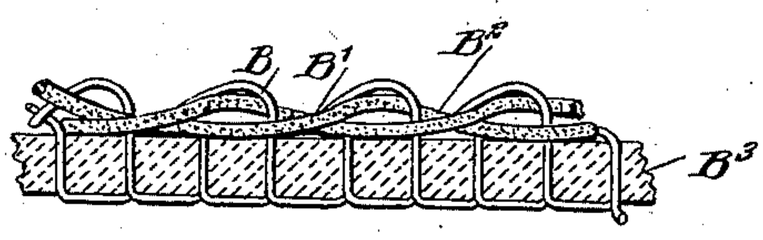


Fig 8

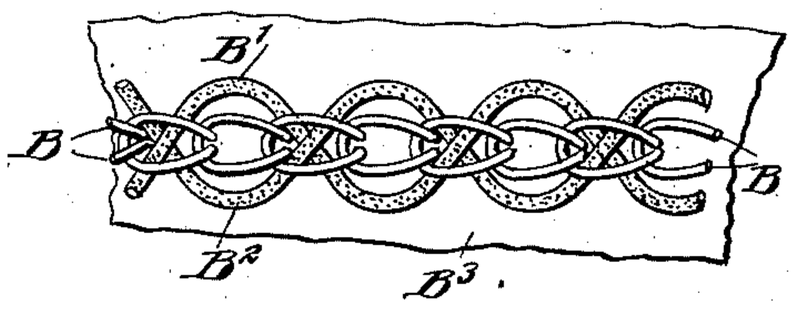
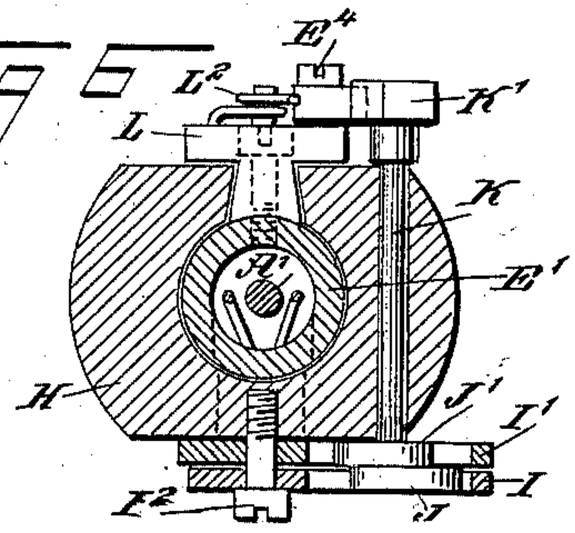


Fig 6



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UNITED STATES PATENT OFFICE.

JOSEPH GRUBMAN, OF NEW YORK, N. Y.

EMBROIDERING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 663,752, dated December 11, 1900.

Original application filed March 10, 1900, Serial No. 8,169. Divided and this application filed May 29, 1900. Serial No. 18,409. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH GRUBMAN, a subject of the Czar of Russia, residing in the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Embroidering Attachment for Sewing-Machines, of which the following is a full, clear, and exact description, this application being a division of the application for Letters Patent of the United States, Serial No. 8,169, filed by me on March 10, 1900, and patented August 28, 1900, No. 656,967.

The object of the invention is to provide a new and improved embroidering attachment for Bonnaz or other embroidering or sewing machines and arranged to intertwine or otherwise arrange embroidering materials—such as braid, chenille, tapes, cords, bands, or the like—upon the fabric to be embroidered.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied to a Bonnaz machine, the fabric-feeder foot being shown in section. Fig. 2 is a reduced front view of the needle, the needle-bar, and the nipple, with the embroidering materials in place. Fig. 3 is a transverse section of the same. Fig. 4 is a rear elevation of the improvement. Fig. 5 is an end view of the same. Fig. 6 is a sectional plan view of the same on the line 6 6 in Fig. 1. Fig. 7 is a sectional side elevation of the embroidered fabric, and Fig. 8 is a plan view of the same.

The improvement is shown applied to a Bonnaz sewing-machine having the usual hook-needle A secured to a reciprocating needle-bar A′ and operating in connection with a looper (not shown) to sew by "chain" or other stitch B the two embroidering materials B′ B^2 upon a fabric B^3 in intertwined or sinuous fashion, as is plainly indicated in Figs. 7 and 8, said fabric being moved over a table C in the desired direction by a feeder D, forming part of the usual universal feed-motion of the sewing-machine. The needle A passes through a reciprocating nipple E, having a tubular shank E′ and a grooved collar E^2, engaged by the fork F′ of a vertically-reciprocating driver F, mounted to slide on the head C′ of the sewing-machine frame. The embroidering materials B′ B^2 extend along the needle-bar A′ inside of a needle-bar carrier G into the shank E′ and pass through an opening E^3 therein (see Figs. 2 and 3) and through a slot in the sleeve H, which carries the embroidering-material carriers or feeders I I′, respectively, for intertwining or otherwise laying the said materials on the top of the fabric B^3 adjacent to the needle A, as is shown in Figs. 7 and 8 and as hereinafter more fully described, it being understood that the said sleeve H and the carriers or feeders I I′ form essential parts of the attachment, the sleeve being mounted to turn in suitable bearings H′ on the head C′ and turning in unison with the needle A and the cloth-feeder D by the action of the needle-bar carrier G.

The carriers I I′ are alike in construction and are located one in front of the other and are made in the shape of depending arms fulcrumed at the upper ends at I^2 to the sleeve H and spaced apart at their lower portions, which are bent somewhat inward toward the lower end of the nipple E and the needle A to swing in front of the same and alternately from one side to the other to intertwine or otherwise fashion the embroidering materials B′ B^2, as indicated in Figs. 7 and 8, while the stitches B of the needle A secure the intertwined loops of the materials in place.

The lower spaced-apart portions of the carriers I I′ are formed with large openings I^3 I^4, respectively, for the passage of the embroidering materials B′ B^2 from the slot or opening in the sleeve H to the front of the carriers I I′ and down into and through guideways in the form of eyes I^5 I^6, extending lengthwise at the extreme lower ends of said carriers, as is plainly indicated in Figs. 1 and 5.

The upper or pivoted ends of the carriers I I′ are provided with angular slotted cam-arms I^7 I^8, in which operate triangularly-

shaped cams J J′, respectively, extending in opposite directions and secured to one end of a cam-shaft K, journaled in suitable bearings on the sleeve H, as shown in Fig. 6. The cam-shaft K carries at its other end (see Fig. 4) a star-wheel K′, pressed on by the free end of a flat spring K^2, secured to the sleeve H, so as to hold said star-wheel and the cam-shaft K against accidental turning. The star-wheel K′ is adapted to be engaged by a pawl L′, pivoted on a slide L, secured on the reciprocating nipple-shank E′ by a set-screw E^4, so that when the nipple rises the pawl engages a tooth of the star-wheel K′ and turns the latter and the cam-shaft K accordingly, and during the movement of the reciprocating needle-bar A′ the shaft K remains at a standstill. The pawl L′ is pressed on by a spring L^2, carried on the slide L, and the outer swinging movement is limited by a stop-pin L^3, operating in a slot in the slide, as indicated in dotted lines in Fig. 4.

As shown in the drawings, the star-wheel K′ has four teeth, so that during four full strokes of the nipple-shank E′ and the nipple E the cam-shaft K is turned around once, and consequently the cams J J′ impart two forward and backward swinging motions to the carriers I I′ to intertwine the embroidering materials and secure the same in place by the stitches B, as above described and shown in Fig. 8, one stitch B being within a loop and one passing over the intersection of the embroidering materials. By reference to Fig. 8 it will be noticed that each embroidering material extends in a sinuous or wavy line and alternately on opposite sides of the row of stitches.

Now when the machine is in operation and the cam K is intermittently rotated from the slide L and its pawl L′ operates in conjunction with the star-wheel K′ during the reciprocating movement of the nipple E it is evident that an intermittent swinging motion is given to the two carriers I I′, so that they alternately cross their embroidering materials and form the intertwining loops secured in place on the fabric B^3 by the stitches B, as above explained. It is understood that when the several parts are in the position illustrated in Fig. 1 the carriers I I′ are in the dormant spread-apart position while the needle A makes a stitch, and during the next stroke of the nipple and at the time the cloth B^3 is fed forward the cam-shaft K is turned, but the cams J J′ simply change position without, however, imparting a swinging motion to the carriers I I′. On the next downstroke of the nipple E the slide L moves with it and the pawl glides over the star-wheel K′, and on the following upstroke of the nipple the slide L, with its pawl L′, causes a turning of the cam-shaft K and the cams J J′, and the latter now impart a swinging motion to the carriers I I′ for crossing the embroidering materials while the cloth B^3 is fed forward, the movement of the carriers ceasing as soon as they have reached opposite positions. Thus by the construction of the star-wheel and the cams the carriers receive a swinging motion on but every other upward stroke of the nipple E, so that one stitch B is placed over the crossing of the embroidering materials and another stitch within the loop formed by the embroidering materials, as above referred to and shown in Figs. 7 and 8.

The needle A and the nipple E are reciprocated alternately, as is well known, and consequently the needle makes four stitches for two swinging movements of the carriers I I′—that is, to bring the latter back to an original position.

It is evident that the star-wheel K′ may be provided with more or less teeth than shown, and the form of the cams J J′ may be varied to produce a different intertwining effect than the one shown in Figs. 7 and 8, and it is also evident that instead of two carriers only one may be employed, and in this case the embroidering material appears as a sinuous or wavy line and alternately on opposite sides of the stitches B. In a like manner more than two carriers may be employed for laying a corresponding number of embroidering materials upon the cloth and securing them in place by stitches B.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn, a carrier for embroidering material and pivoted on the sleeve to swing across the path of the stitches made by the sewing-needle, a shaft having an intermittent turning motion and provided with a cam for engagement with said carrier to impart a swinging motion to the latter, means for turning said cam-shaft intermittently and means for holding said cam-shaft against accidental turning, substantially as shown and described.

2. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn, a carrier for embroidering material and pivoted on the sleeve to swing across the path of the stitches made by the sewing-needle, a shaft having an intermittent turning motion and provided with a cam for engagement with said carrier to impart a swinging motion to the latter, a reciprocating nipple, a slide movable on the sleeve and moving with the nipple, and a connection between the said slide and the said cam-shaft to operate the latter intermittently from the slide, as set forth.

3. An embroidering attachment, comprising a reciprocating nipple having a tubular shank provided with an opening for the passage of the embroidering material, a sleeve mounted to turn and having a slot or opening by which the embroidering material passes from the nipple-shank to the outside of the sleeve, a carrier pivoted on the outside of the sleeve and having an opening below the pivot

leading to the front of the carrier, and a guideway at the lower end of the carrier for the embroidering material and means for swinging the carrier, substantially as shown and described.

4. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and concentric with the needle-bar, a plurality of carriers for the embroidering materials and pivoted on said sleeve, a cam-shaft, a reciprocating slide, and means for imparting an intermittent turning motion to the shaft from the said slide, the said shaft being provided with cams engaging the said carriers to impart an intermittent swinging motion to the same, for the purpose set forth.

5. An embroidering attachment for sewing-machines comprising a sleeve mounted to turn and concentric with the needle-bar, a plurality of carriers for the embroidering materials and pivoted on said sleeve and adapted to swing in opposite directions to cross the embroidering materials, a reciprocating nipple, a cam-shaft, means for imparting motion to the cam-shaft from the nipple, and cams carried by said shaft and adapted to swing the said carriers at every alternate upward stroke of the nipple, as set forth.

6. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and concentric with the needle-bar, a plurality of carriers for the embroidering materials and pivoted on said sleeve, a cam-shaft, triangular cams thereon and engaging cam-arms on the said carriers, and means for imparting motion to the said cam-shaft, as set forth.

7. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and concentric with the needle-bar, a plurality of carriers for the embroidering materials and pivoted on said sleeve, a cam-shaft mounted to turn in the said sleeve, triangular cams on the said cam-shaft and standing in opposite directions and in engagement with cam-arms on the said carriers, a star-wheel on the said cam-shaft, and a pawl for engaging the said star-wheel to intermittently turn the same, substantially as shown and described.

8. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and concentric with the needle-bar, a plurality of carriers for the embroidering materials and pivoted on said sleeve, a cam-shaft mounted to turn in the said sleeve, triangular cams on the said cam-shaft and standing in opposite directions and in engagement with cam-arms on the said carriers, a star-wheel on the said cam-shaft, a pawl for engaging the said star-wheel to intermittently turn the same, and a slide mounted in said sleeve and carrying the said pawl, the said slide receiving an intermittent reciprocating movement from the nipple, substantially as shown and described.

9. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and concentric with the needle-bar, a plurality of carriers for the embroidering materials and pivoted on said sleeve, a cam-shaft mounted to turn in the said sleeve, triangular cams on the said cam-shaft and standing in opposite directions and in engagement with cam-arms on said carriers, a star-wheel on the said cam-shaft, a pawl for engaging the said star-wheel to intermittently turn the same, a slide mounted in said sleeve and carrying the said pawl, the said slide receiving an intermittent reciprocating movement from the nipple, and a spring engaging the said star-wheel, to hold it and the cam-shaft against accidental turning, substantially as shown and described.

10. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and provided with a slot or opening for the passage of the embroidering materials, a plurality of carriers pivoted on said sleeve and mounted to swing in opposite directions, the said carriers having registering apertures below the pivot for the passage of the embroidering materials from the slot or opening in the sleeve to the front of the carriers and means for imparting a swinging motion to the carriers, substantially as shown and described.

11. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and concentric with the needle-bar, the said sleeve being provided with a slot or opening for the passage of the embroidering materials, a plurality of carriers pivoted on said sleeve and mounted to swing, and means for swinging the carriers in opposite directions, the carriers having registering apertures, at a point below the pivot for the passage of the embroidering materials from the slot in the sleeve to the front of the carriers, and eyes at the free ends of the carriers for the passage of the embroidering materials, substantially as shown and described.

12. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn, a carrier for an embroidering material and pivoted on the sleeve to swing across the path of the stitches made by the sewing-needle, a cam-shaft, a reciprocating nipple, means for imparting motion to the cam-shaft from the nipple, and a cam on said shaft for engagement with said carrier, the said cam being arranged to impart a swinging motion to the carrier, at every alternate upward stroke of the nipple, substantially as set forth.

13. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn, a carrier for an embroidering material and pivoted on the sleeve to swing across the path of the stitches made by the sewing-needle, the said carrier being provided at its upper end with a slotted cam-arm, a cam-shaft having a cam operating in the slotted cam-arm, to impart a swinging motion to the carrier, and means for imparting an intermittent turning motion to the cam-shaft, as set forth.

14. An embroidering attachment for sewing-machines, comprising a sleeve mounted to turn and concentric with the needle-bar, a carrier for an embroidering material and pivoted on the sleeve, a cam-shaft mounted to turn in said sleeve, a cam on said shaft and engaging a cam-arm on the carrier, a star-wheel on the said cam-shaft, a reciprocating nipple, a slide receiving an intermittent reciprocating movement from the nipple, a pawl pivoted on the slide and engaging the said star-wheel, a spring carried on the slide and pressing on the pawl, a stop for limiting the swinging movement of the pawl, and a spring engaging the star-wheel to hold it and the cam-shaft against accidental turning, substantially as described.

15. In an embroidering attachment for sewing-machines, a plurality of carriers mounted to swing in opposite directions and having apertures for the passage of the embroidering materials, each carrier being provided with a slotted cam-arm, cams engaging the slots of said arms, and means for operating the cams to impart an intermittent swinging motion to the carriers, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH GRUBMAN.

Witnesses:
THEO. G. HOSTER,
EVERARD BOLTON MARSHALL.