E. FRIEDMAN.

EMBROIDERY MACHINE.

APPLICATION FILED APR. 21, 1911.

1,043,685. Patented Nov. 5, 1912.

3 SHEETS—SHEET 1.

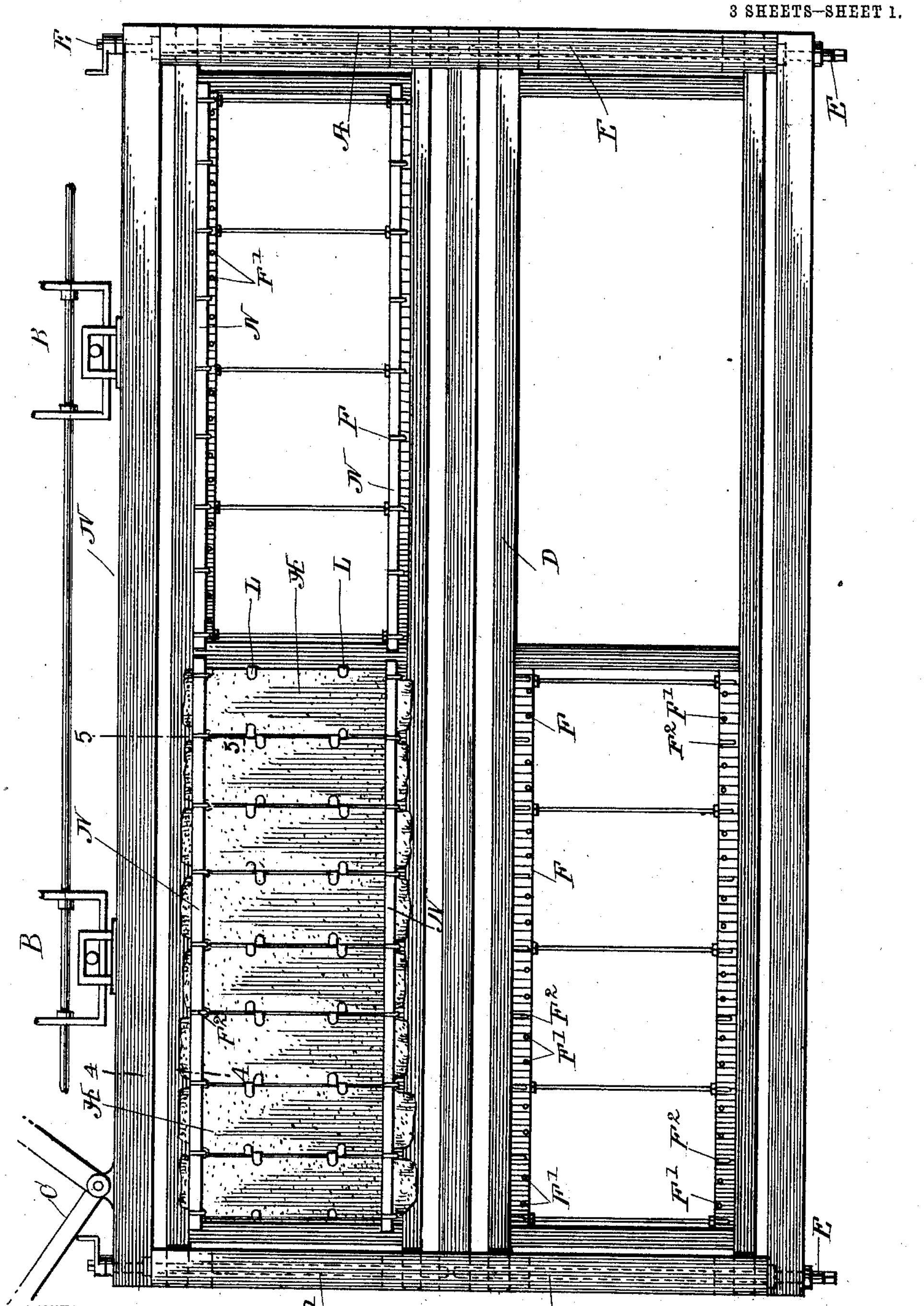

Fig. 1

WITNESSES

John a Bergstrom

Hw. G. Hostertz

INVENTOR

Edgar Friedman

BY Munn & Co.

ATTORNEYS

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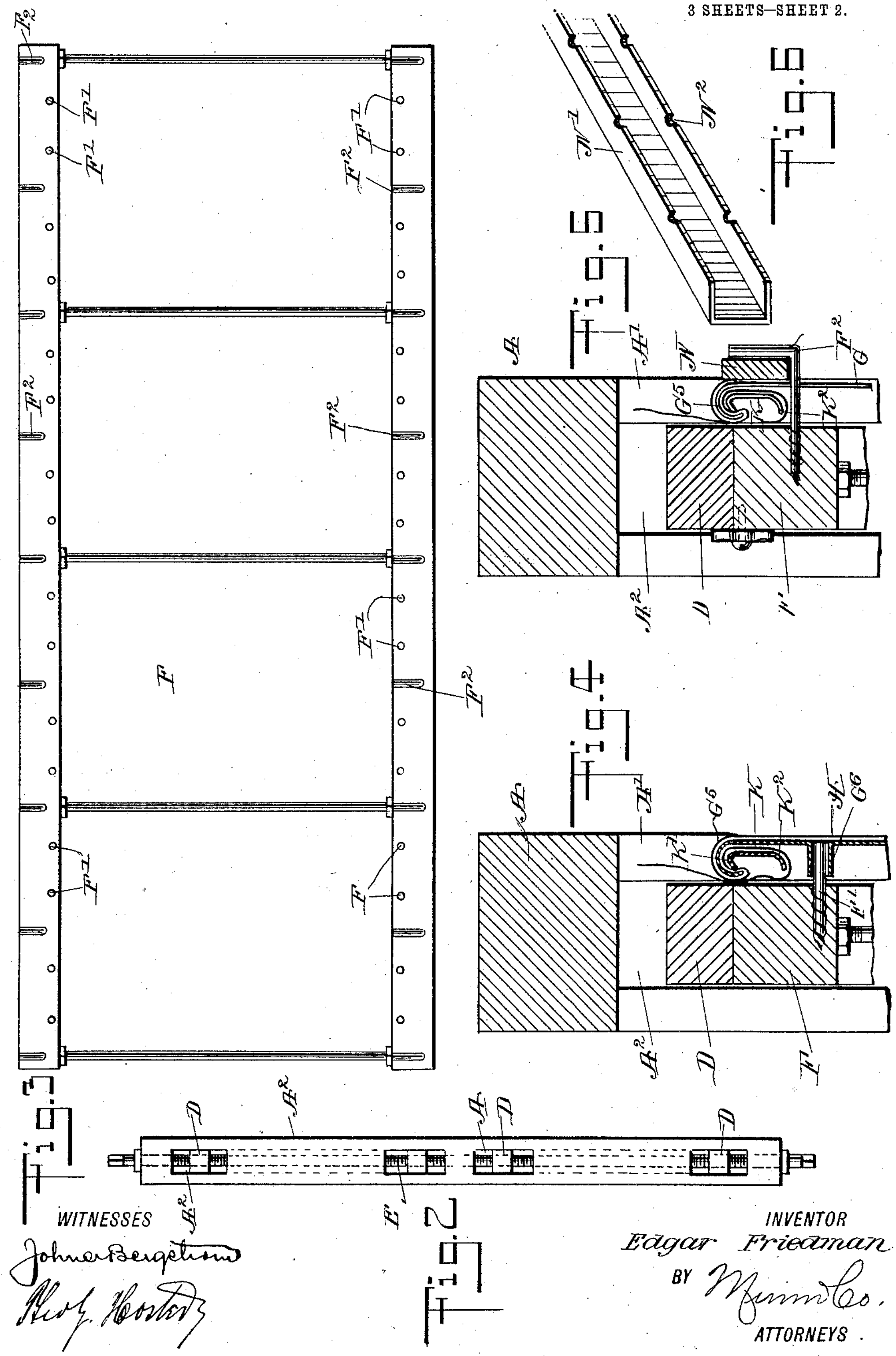

WITNESSES

INVENTOR

Edgar Friedman

BY *Munn & Co.*

ATTORNEYS.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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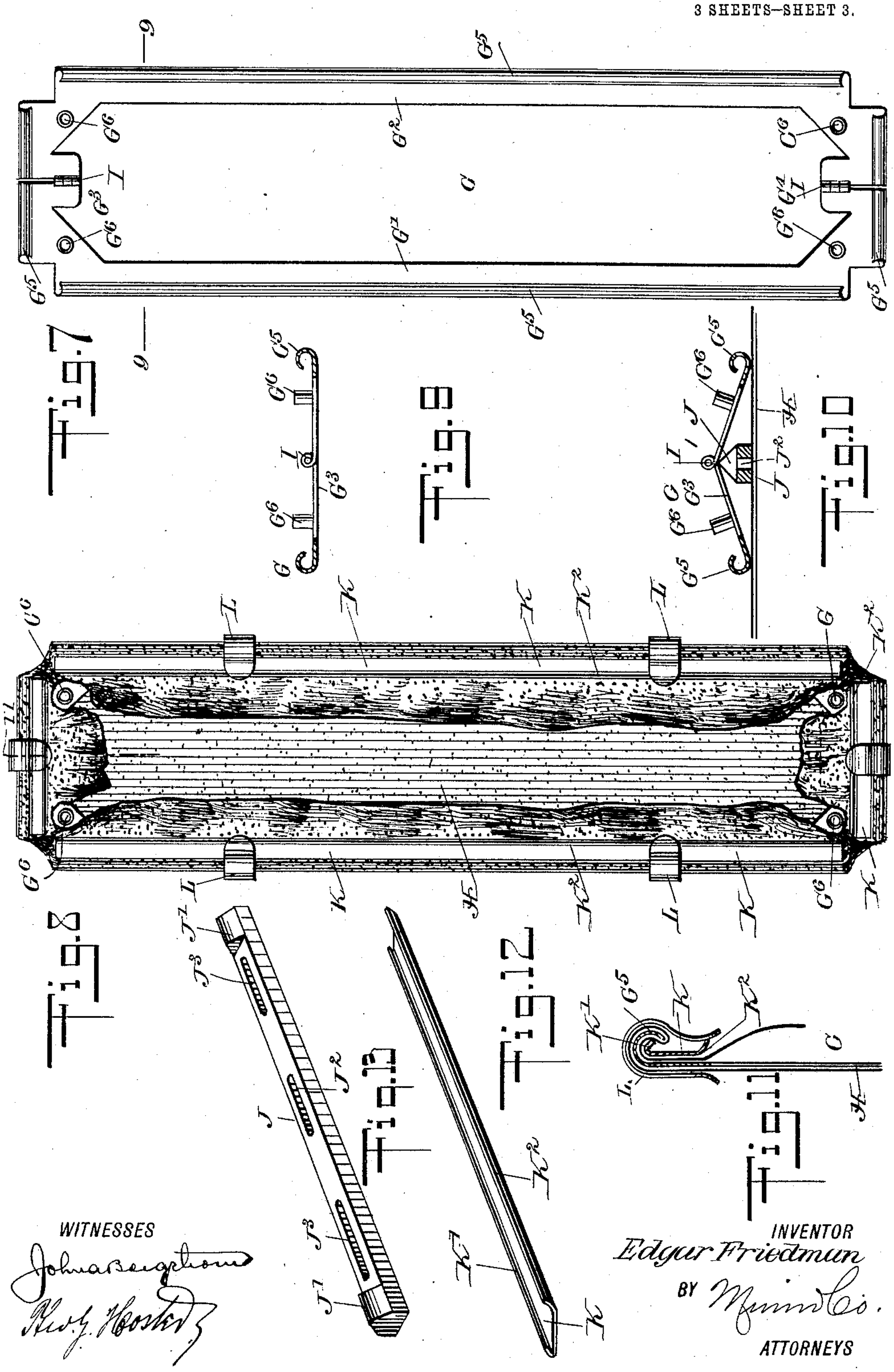

WITNESSES

John a Bergstrom

Fred J. Hoster

INVENTOR

Edgar Friedman

BY Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDGAR FRIEDMAN, OF NEW YORK, N. Y.

EMBROIDERY-MACHINE.

1,043,685. Specification of Letters Patent. Patented Nov. 5, 1912.

Application filed April 21, 1911. Serial No. 622,438.

To all whom it may concern:

Be it known that I, EDGAR FRIEDMAN, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented new and useful Improvements in Embroidery-Machines, of which the following is a full, clear, and exact description.

The invention relates to hand or power embroidery machines having a fabric-carrying frame adapted to be shifted according to the design of a pattern plate for the needles and thread to produce the desired embroidery on a piece of fabric.

The object of the invention is to provide new and useful improvements in embroidery machines to permit of obtaining an accurate alinement and stretching of the fabric material in individual frames, and to expose only the surface portion of the fabric material to be embroidered, thus permitting the accommodation of a large number of single frames on one machine at a time, thereby increasing the output of the machine.

For the purpose mentioned use is made of a frame made in sections hinged together and a gage bar for engagement with the frame at the hinges thereof to locate the gage at the medium line of the frame, and to hold the frame sections in a diverging position one relative to the other, whereby the operator is enabled to adjust the fabric material relative to the frame prior to stretching the fabric material on the frame. Each frame is also provided at the sides and ends with clamping means to clamp the fabric in place and to properly stitch the same on swinging the frame sections into extended position.

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 front elevation of a series of fabric frames mounted on the main frame of the embroidery machine: Fig. 2 is an end elevation of the main frame; Fig. 3 is a face view of one of the auxiliary frames; Fig. 4 is an enlarged cross section of the improvement, on the line 4—4 of Fig. 1; Fig. 5 is a similar view of the same on the line 5—5 of Fig. 1; Fig. 6 is a perspective view of a modified form of retaining bar for holding the fabric frames in position on the supporting frame; Fig. 7 is an enlarged face view of one of the fabric frames; Fig. 8 is a like view of the same with the fabric alined and stretched on the fabric frame; Fig. 9 is a sectional plan view of the fabric frame on the line 9—9 of Fig. 7; Fig. 10 is a similar view of the fabric frame with the gage bar in position thereon; Fig. 11 is a cross section of the fabric frame on the line 11—11 of Fig. 8; Fig. 12 is a perspective view of one of the clamping and locking bars; and Fig. 13 is a perspective view of the gage bar.

The main frame A for carrying the fabric material is hung on the usual support B and is connected with a pantograph C under the control of the operator for shifting the frame A according to the design on the pattern plate and according to the embroidery to be produced on the fabric material. The end bars A′ of the main frame A are provided with guideways A^2 (see Fig. 2), in which are mounted to slide up and down the adjustable frames D adapted to be raised or lowered by screw rods E mounted to turn in the ends of the main frame A.

As shown in Fig. 1, the main frame A is arranged for carrying two adjustable frames D, but it is evident that only one such frame or more than two may be used on a correspondingly main frame A. On each of the adjustable frames D is held one, two or more auxiliary frames F, each adapted to support a plurality of fabric frames G, each adapted to carry a single piece of fabric material for receiving the desired embroidery thereon. Each of the fabric frames G has an opening approximately of the size of the embroidery to be produced on the fabric material H, having that portion stretched across the opening of the frame G which is to receive the embroidery, while the surplus or marginal portion of the fabric H is folded on the back of the frame at the sides and ends thereof. Thus by the arrangement described a large number of frames G, each with a piece of fabric material stretched thereon, are arranged side by side on the frame F, thus accommodating a large number of such frames G at a time on an embroidery machine, for producing on each individual piece of fabric material the desired embroidery.

Each of the fabric frames G consists of the sides G′, G^2 and the top and bottom ends

G^3, G^4, of which the ends G^3 and G^4 are made in sections connected with each other by hinges I so as to permit of extending the frame, as indicated in Fig. 9, or moving the same into the position shown in Fig. 10, whereby the frame assumes a V-shaped position for engagement by a gage bar J, provided at its end with V-shaped ridges J′ engaging hinges, so as to support the frame G in the V-shaped position on top of the piece of fabric material H, to be properly alined and stretched and fastened to the sides G′, G^2 and the ends G^3, G^4 of the frame G. The gage bar J is provided with an elongated opening J^2 at or near its middle, and similar openings J^3 near the ends, so that when the gage bar J and the frame G are in position on the piece of fabric material H, the gage bar J and the frame G can be shifted on the fabric material H until the gage bar J accurately indicates on the median line of that portion of the fabric material which is to receive the embroidery, and which is to be stretched over the opening of the frame G. It is understood that the median line of this fabric material H is indicated thereon in any suitable manner so that the gage bar J and the frame G can be readily placed in proper position on the piece of fabric material.

The sides G′, G^2 and the ends G^3, G^4 of the frame G are provided with return bent interlocking flanges G^5 adapted to be engaged by similar return bent flanges K′ formed on locking and clamping bars K for clamping the material between the flanges G^5 and K, as plainly indicated in Figs. 4, 5 and 11. It is understood that the clamping and locking bars K are of a length corresponding to the length of the sides and ends of the frame G, and each locking bar K is provided on the side opposite the flange K′ with an upturned flange K^2 forming a finger hold for conveniently interlocking the flange K′ with the flange G^5, or unlocking the bar K whenever it is desired to receive the fabric material H from the frame after the embroidering of the piece of fabric material is finished.

It is understood that after the gage bar J and the frame G have been moved into proper position on the piece of fabric material H, then the material outside of the sides of the frame G is passed over the flanges G^5 of the sides G′ and G^2, and then the clamping and locking bars K for the sides are engaged with the said flanges G^5 of the sides G′, G^2, so that the material is clamped to the sides of the frame G. When this has been done, the gage bar J is removed and then the operator presses down on the hinges I so that the frame members G are extended or moved into horizontal position, as plainly indicated in Fig. 9, whereby the fabric material is firmly stretched across the frame without danger of changing the proper position of the frame G relative to the fabric material. The fabric material at the ends of the frame G is now drawn over the flanges G^5 of the said ends G^3 and G^4, and then the end locking bars K are engaged with the said flanges to clamp the material in place on the ends G^3 and G^4 of the frame G. The surplus or marginal material of the fabric H is folded on the back of the frame, and spring clips L are slipped over the frame at the sides and ends to engage the locking bars K so as to hold the same firmly in position against accidental opening. It is understood that when the end locking bars K are interlocked with the flanges G^5 of the sectional ends G^3 and G^4, then the said sectional ends are held in extended horizontal position.

The frame G is provided at the corners with apertured or recessed lugs G^6, adapted to be engaged with correspondingly arranged sets of pins F′ held on the frame F, so as to support the fabric frames G with the material H clamped thereon in position on the frame F. After the individual frames G with their fabric material H stretched and clamped thereon, are attached to the frame F, then retaining bars N are passed in front of a series of such frames G and are engaged with hooks F^2 carried by the frame F to prevent the frames G from accidental disengagement with the frame F. The retaining bars N may be plain strips of wood, as indicated in Figs. 1 and 5, or they may be in the form of channel irons N′ (see Fig. 6) and provided with notches N^2 for engagement by the hooks F^2 so as to hold the retaining bars N against shifting in a longitudinal direction. The frames G are partly cut out at the corners so as to provide sufficient room for the hooks F^2 employed for holding the retaining bars N in position.

From the foregoing it will be seen that by the arrangement described an accurate alinement and stretching of the fabric material H on the frame G is obtained, and only that portion of the fabric material to be embroidered is exposed in the opening of the frame, thus permitting the use of a large number of frames, one alongside the other, on an embroidery machine at a time, thereby increasing the output of the machine to a considerable extent.

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

1. In combination with a frame made in sections hinged together at the median line of the frame and over which frame the fabric is to be stretched, a gage for engagement with the frame at the hinges thereof and to hold the frame sections in diverging positions whereby the operator is enabled to

adjust the frame and the fabric one relative to the other and prior to fastening the fabric to the frame and stretching the fabric on opening the frame to its full extent.

2. In combination with a frame made in sections hinged together at their ends along the median line of the frame and over which frame the fabric is to be stretched, a gage in the form of a bar provided at the ends with sharp ridges for the hinges of the ends to rest on and holding the frame sections in diverging positions one relative to the other.

3. In combination with a frame made in sections hinged together at their ends along the median line of the frame and over which frame the fabric is to be stretched, a gage in the form of a bar provided at the ends with sharp ridges for the hinges of the ends to rest on and holding the frame sections in diverging positions one relative to the other, the gage bar being provided at its middle with marking holes.

4. A frame for holding a fabric in a stretched condition, comprising side and end members, and locking bars, the said side and end members and the said locking bars having interlocking means for clamping the fabric between the said interlocking means and holding the fabric in stretched position across the frame, the said end members of the frame being in sections hinged together and the side members being rigidly connected with the corresponding sections of the end members.

5. A frame for holding a fabric in a stretched condition, comprising side and end members, and locking bars, the said side and end members and the said locking bars having interlocking means for clamping the fabric between the said interlocking means and holding the fabric in stretched position across the frame, the said end members of the frame being in sections hinged together and the side members being rigidly connected with the corresponding sections of the end members, the outer corners of the frame being cut out.

6. A frame for holding a fabric in a stretched condition, comprising side and end members, and locking bars, the said side and end members and the said locking bars having interlocking means for clamping the fabric between the said interlocking means and holding the fabric in stretched position across the frame, the said end members of the frame being in sections hinged together and the side members being rigidly connected with the corresponding sections of the end members, and apertured bosses at the inner corners of the frame for engagement with fixed pins to support the frame.

7. A frame for holding a fabric in a stretched condition, comprising side and end members provided along their outer edges with return bent flanges, locking bars for the said side and end members and each having along one edge a return bent flange for interlocking engagement with a return bent flange on the corresponding frame member, each locking bar having its other edge provided with an upturned flange for forming a finger hold, and spring clips adapted to be passed over the frame members and locking bars to hold the latter against accidental opening.

8. In an embroidery machine of the class described, the combination with a supporting frame provided with sets of pins and hooks, of a plurality of fabric-holding frames each provided with apertured lugs for engagement with a corresponding set of pins, and retaining bars extending in front of the said fabric-holding frames and removably held on the said hooks.

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

EDGAR FRIEDMAN.

Witnesses:

THEO. G. HOSTER,

PHILIP D. ROLLHAUS.