

(No Model.)

2 Sheets—Sheet 1.

J. FREY.

FRAME FOR EMBROIDERING MACHINES.

No. 401,260.

Patented Apr. 9, 1889.

Fig. 1.

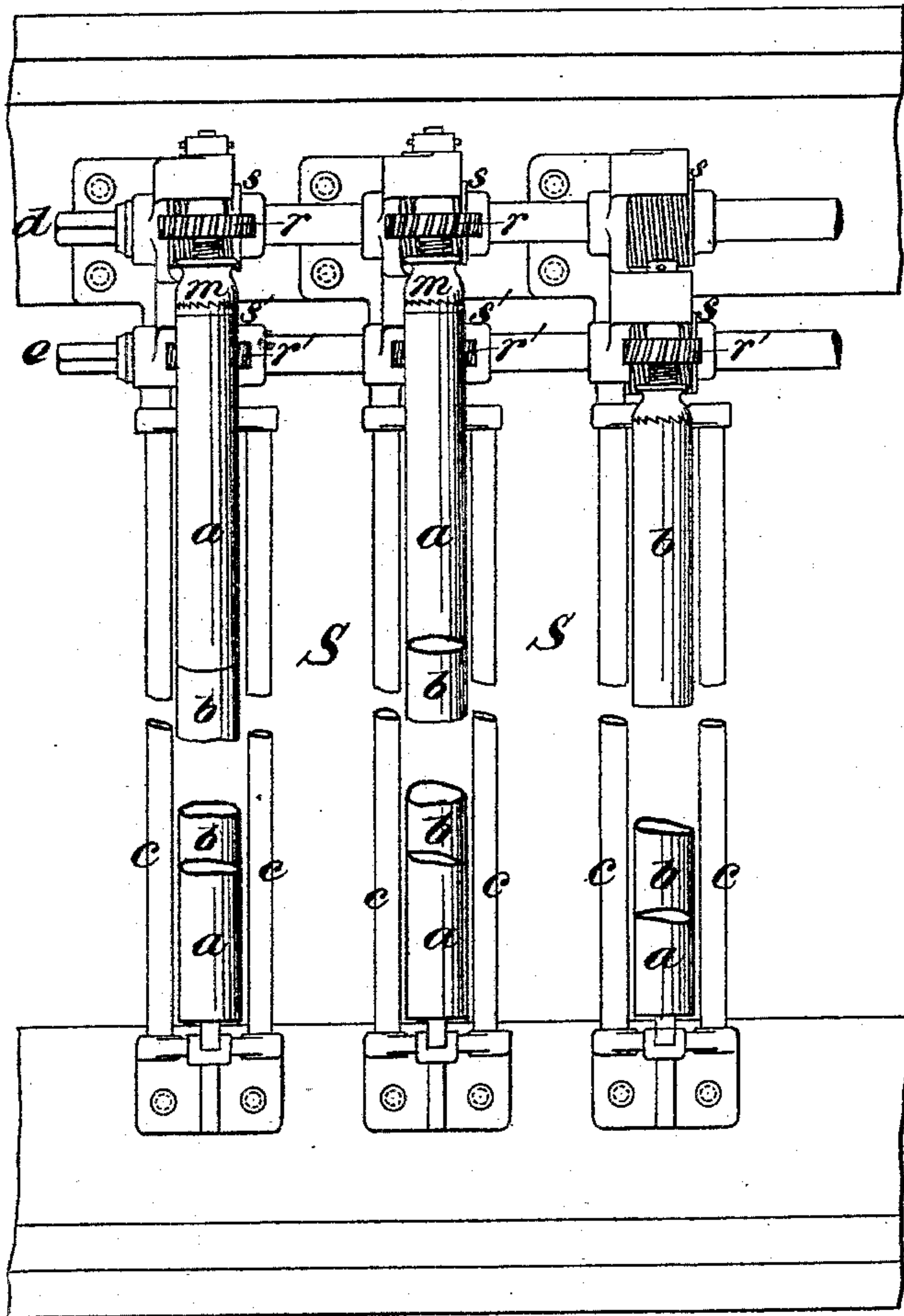


Fig. 2.

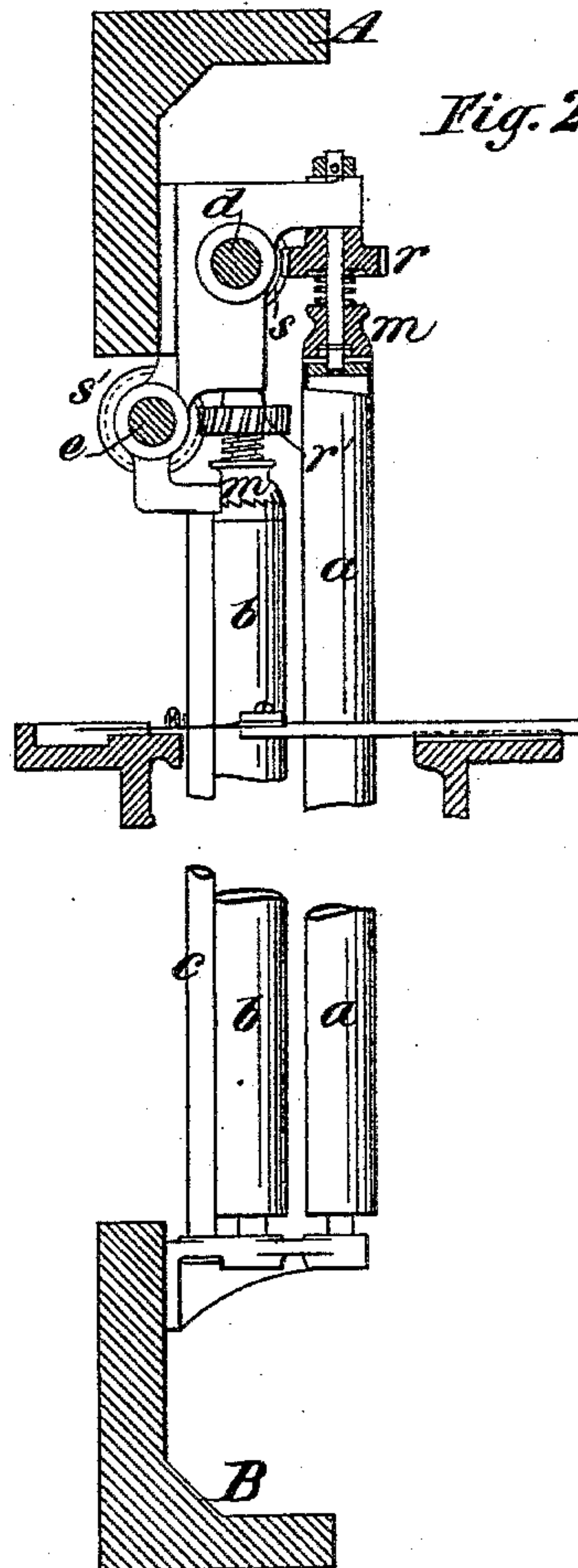
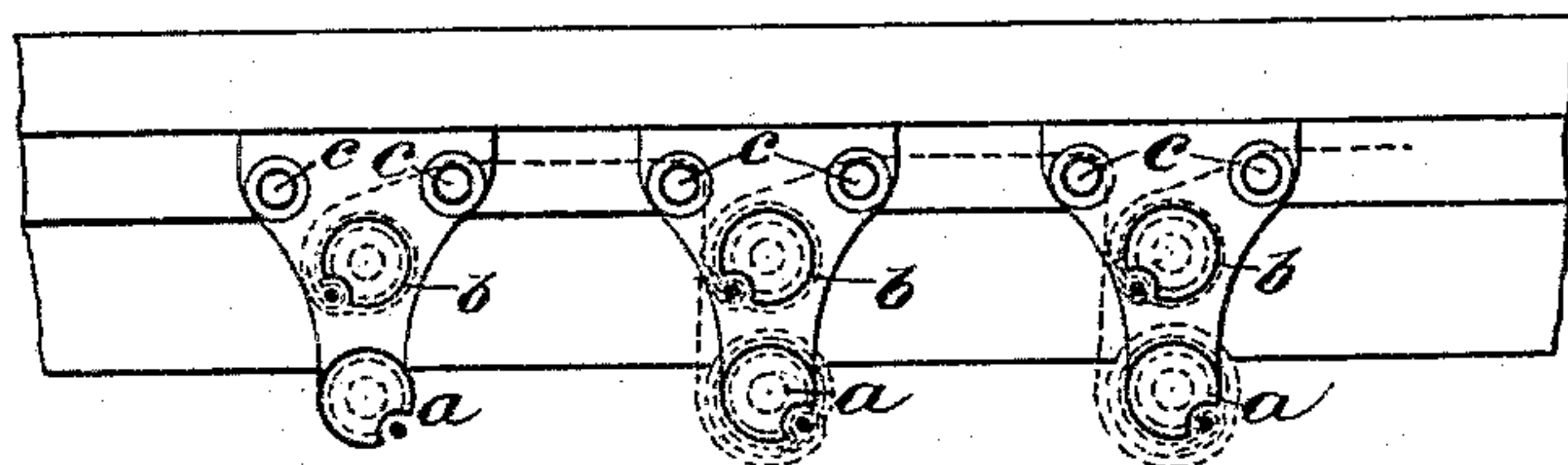


Fig. 3.



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Fig. 4.

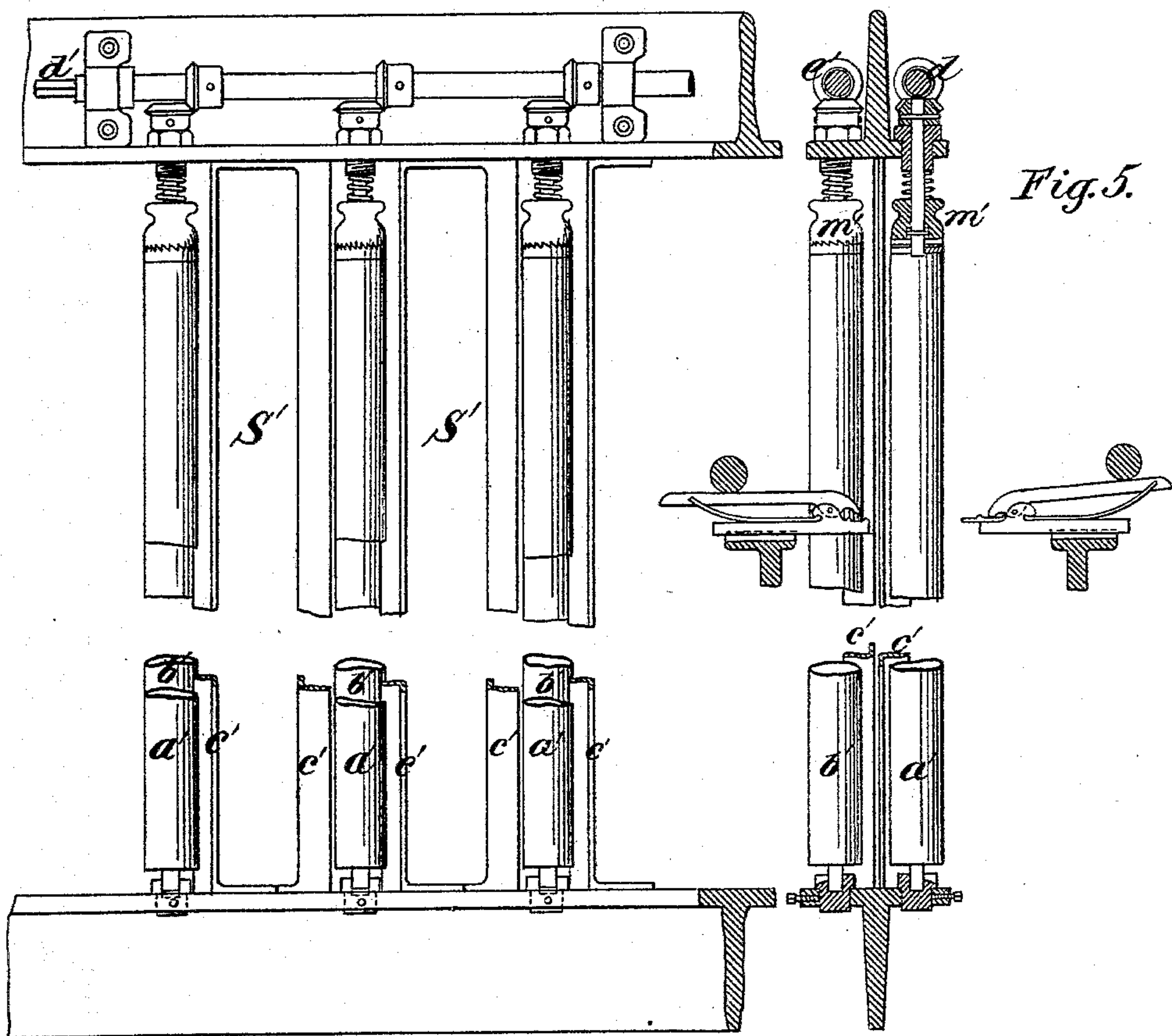
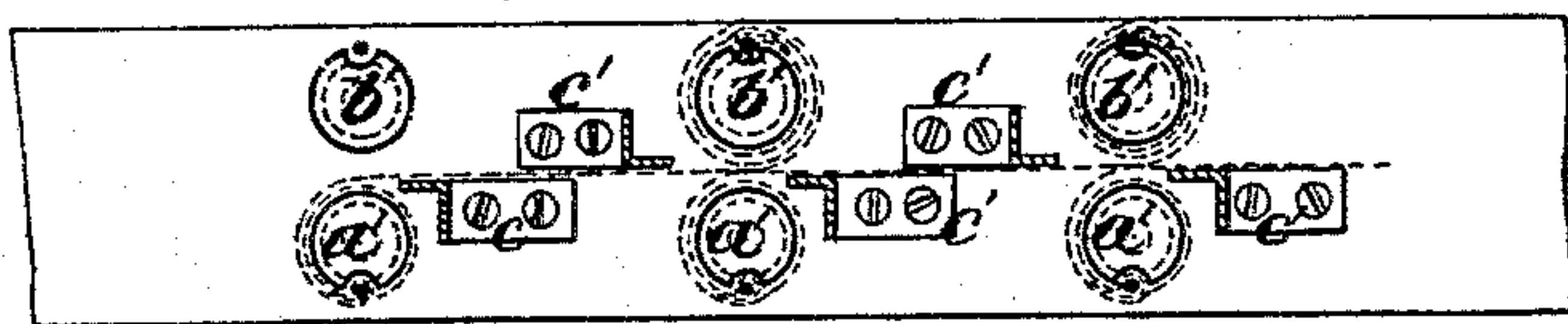


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAKOB FREY, OF BRUGGEN, NEAR ST. GALLE, ASSIGNOR TO JOHN JACOB RICHTER & COMPANY, OF WINTERTHUR, SWITZERLAND.

FRAME FOR EMBROIDERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 401,260, dated April 9, 1889.

Application filed June 28, 1888. Serial No. 278,417. (No model.) Patented in France December 8, 1887, No. 187,471.

To all whom it may concern:

Be it known that I, JAKOB FREY, of Bruggen, near St. Galle, Switzerland, have invented a new and useful Improvement in
5 Frames for Embroidery-Machines, (for which I have obtained a brevet d'invention of the Republic of France, No. 187,471, dated December 8, 1887,) of which the following is a specification, reference being had to the ac-
10 companying drawings.

I will proceed to describe the invention with reference to the drawings, and afterward point out the novelty in claims.

Figure 1 is a front view illustrating the
15 application of my invention to a shuttle embroidery-machine. Fig. 2 is a transverse sectional view, and Fig. 3 a plan corresponding with Fig. 1. Figs. 4, 5, and 6 show the same views as in Figs. 1, 2, and 3, and illustrate
20 the application of my invention in a modified form to a Heilmann embroidery-machine.

In both cases two rows of rollers, *a* and *b* or *a'* and *b'*, one row exactly behind the other, are so arranged in bearings provided on or
25 in the upper and lower bars, A B, of the embroidery-frame that one piece of cloth or woven material is wound upon each of the rollers *a*, Figs. 1, 2, and 3, or rollers *a'*, Figs. 4, 5, and 6, and is unwound from each roller *a* or *a'*
30 to one of the rollers *b* or *b'*, (of the pair of rollers *a b* or *a' b'* to the right or to the left,) to which roller *b* or *b'* the cloth or woven material is fixed in the usual manner by a slot in the roller, into which the cloth or woven ma-
35 terial is pressed by a bar.

In order that all the pieces of cloth or woven material in the frame may lie within the same vertical plane, no matter whether more or less cloth or woven material is wound on the
40 different rollers, the cloth is drawn between its respective rollers over upright guides, which may be tubes *c*, as in Figs. 1, 2, and 3, or pieces of angle-iron *c'*, as in Figs. 4, 5, and 6, the said guides being firmly secured to the upper
45 and lower bars, A B, of the frame. As the weight of the frame which carries the parts *a b c* or *a' b' c'* must be counterbalanced by counter-weights, it is desirable to make all these parts as light as possible.

50 If all the pieces of woven cloth or material

have been stretched in the manner specified, the fields S, Fig. 1, or S', Fig. 4, may be embroidered to the extent of the embroidering height of the machine and to the extent of nearly the full width of the fields S and S', between
55 the tubes *c* or angle-irons *c'*. After such fields have been embroidered the embroidered material is wound upon the rear rollers, *b* or *b'*, and a corresponding length of unembroidered material is unwound from the rollers *a* or *a'*,
60 so that unembroidered material comes into the fields S or S', whereupon the embroidering of the commenced design is continued. Of course the winding and unwinding may be done the reverse way, the unembroidered
65 material being first wound on the rollers of the rear row and the embroidered material being wound in succession or *en étape* on the rollers of the front row.

The rotative motion may be imparted to the
70 rollers *b* or *b'* for winding up the embroidered material and for simultaneously unwinding the material to be embroidered from the rollers *a* or *a'* in any convenient manner; but I prefer to use the devices shown in Fig. 1,
75 where two shafts, *d* and *e*, are arranged in bearings carried by the bars A B of the frame. These shafts may be turned by keys, levers, cranks, ratchets, or any other convenient means. On the shaft *d*, Figs. 1 and 2, worms
80 *s* are arranged, fixed to the said shaft and taking into the worm-wheels *r* of the rollers *a* of the front row, whereby a simultaneous turning or rotation of all the front rollers, *a*, may be accomplished. On the second shaft, *e*,
85 worms *s'* are arranged, fixed to the shaft and taking into the worm *r'*, whereby the rollers *b* of the rear row are simultaneously rotated. By this arrangement each row of rollers may,
90 *per se*, be rotated, all rollers of this row rotating in correspondence. Thereby on all rollers of this row the same length of woven material may be wound or unwound or the woven material may be stretched in all embroidering-
95 fields in correspondence, provided that the cloth has been brought uniformly into all the fields. In Figs. 4 and 5 this winding or unwinding of the woven material is effected in the same manner by rotation of the shafts *d'* and *e'*, with this difference, that bevel-wheels 100

are here substituted for the worm device. However, spur-wheels or other means may be employed for the same purpose.

In order to prevent the shafts *d* and *e* or *d'* and *e'* from receding, and thus slackening the stretched woven material, any convenient means may be employed—such as set-screws, pressure-screws, ratchet-wheels working by teeth or friction—which means, however, I have not thought it necessary to show in the drawings.

In order to obtain as far as possible a uniform and sufficient tension of all the pieces of woven material in the fields from the beginning it is necessary to provide means for imparting rotation to each roller independent of the others. This is accomplished by providing each roller at the upper end with a ratchet device, taking into a coupling-piece, *m*, Figs. 1 and 2, and *m'*, Figs. 4 and 5, also provided with ratchet-teeth. The coupling-pieces *m* may easily be raised vertically, so as to free the roller, which now may be separately turned at will for stretching that piece of woven material belonging to said roller. A spiral spring is arranged above the coupling-piece to hold it in gear with the ratchet-teeth of the roller. Instead of the device just described one of the spur or bevel wheels might be provided with coupling arrangement or clutches, so as to uncouple such wheel and thereby freeing the roller for separate rotation.

In order to lose as little as possible time for first winding up the woven material on the front rollers, *a*, in Figs. 1, 2, and 3, and *a'* in Figs. 4, 5, and 6, each roller is provided with a step-bearing having a slot at one side, through which slot the pivot or trunnion of the vertical roller may be introduced into the step-bearing, the slot being not so deep as the bearing itself, so that if the roller is inserted and the spiral spring above named presses upon the roller this latter is steadily secured in the step-bearing, but may be easily removed from it by slightly lifting up the roller against the pressure of the spiral spring. This arrangement of the step-bearing and pivot may, if desired, be applied to all the rollers of the front and rear row.

It is obvious that in the ground plans, Figs. 3 and 6, the fields *S* and *S'* lie in one vertical plane, although in Fig. 3 the two rows of rollers *a* and *b* are on one side of this plane, whereas in Fig. 6 the one row of rollers *a'* is on one side, and the other row of rollers, *b'*, is on the other side of such plane. This simply originates in the arrangement mentioned above, that Figs. 1, 2, and 3 refer to a shuttle-machine in which the shuttles of the different fields must work in one line, Fig. 2, undisturbed by the rollers, whereas Figs. 4, 5, and 6 refer to a Heilmann machine, in which the needles are carried through the woven material by clips arranged and working on the two opposite sides of the material.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an embroidery-machine, the combination, with a frame, of two rows of upright rollers journaled therein, the rollers of one row being immediately behind those of the other row, said rollers being arranged in pairs, whereby material to be embroidered will be passed from one of the rollers of one pair to and over one of the rollers of another pair, and interposed guides by which all the pieces of material being embroidered are presented to the needles in substantially the same vertical plane, substantially as specified.

2. In an embroidery-machine, the combination, with a frame, of two rows of upright rollers carried thereby, the rollers of one row being arranged directly behind those of the other row, two horizontal shafts, gearing between said rollers and said shafts, whereby the rollers are rotated, and stretching devices for stretching the material being embroidered simultaneously and all parts and independently in a given part, substantially as specified.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JAKOB FREY.

Witnesses:

J. KOENIG,
L. B. GRANT.