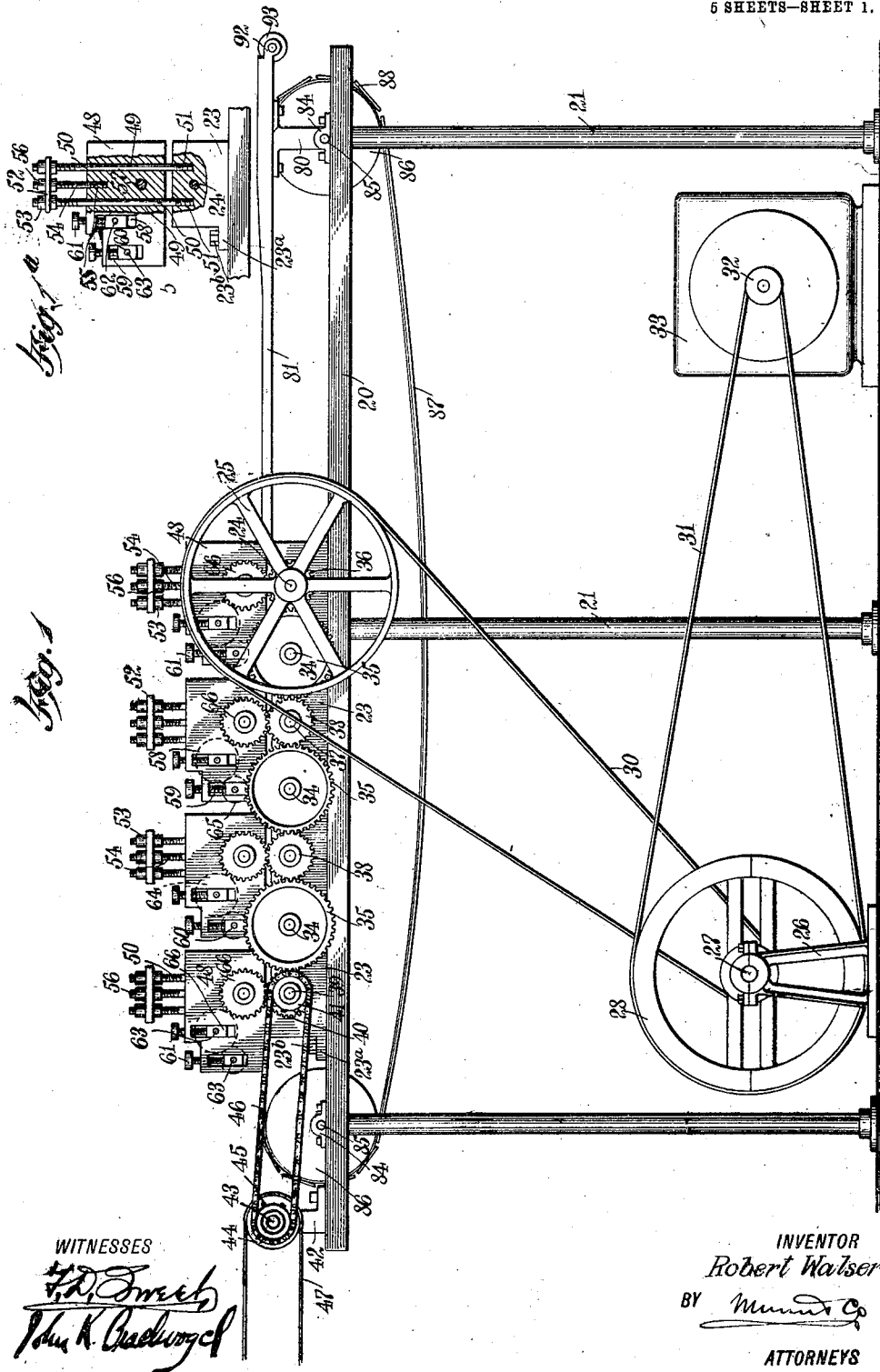


R. WALSER.
EMBROIDERY PRINTING MACHINE.
APPLICATION FILED NOV. 21, 1910.

1,018,948.

Patented Feb. 27, 1912

5 SHEETS—SHEET 1.

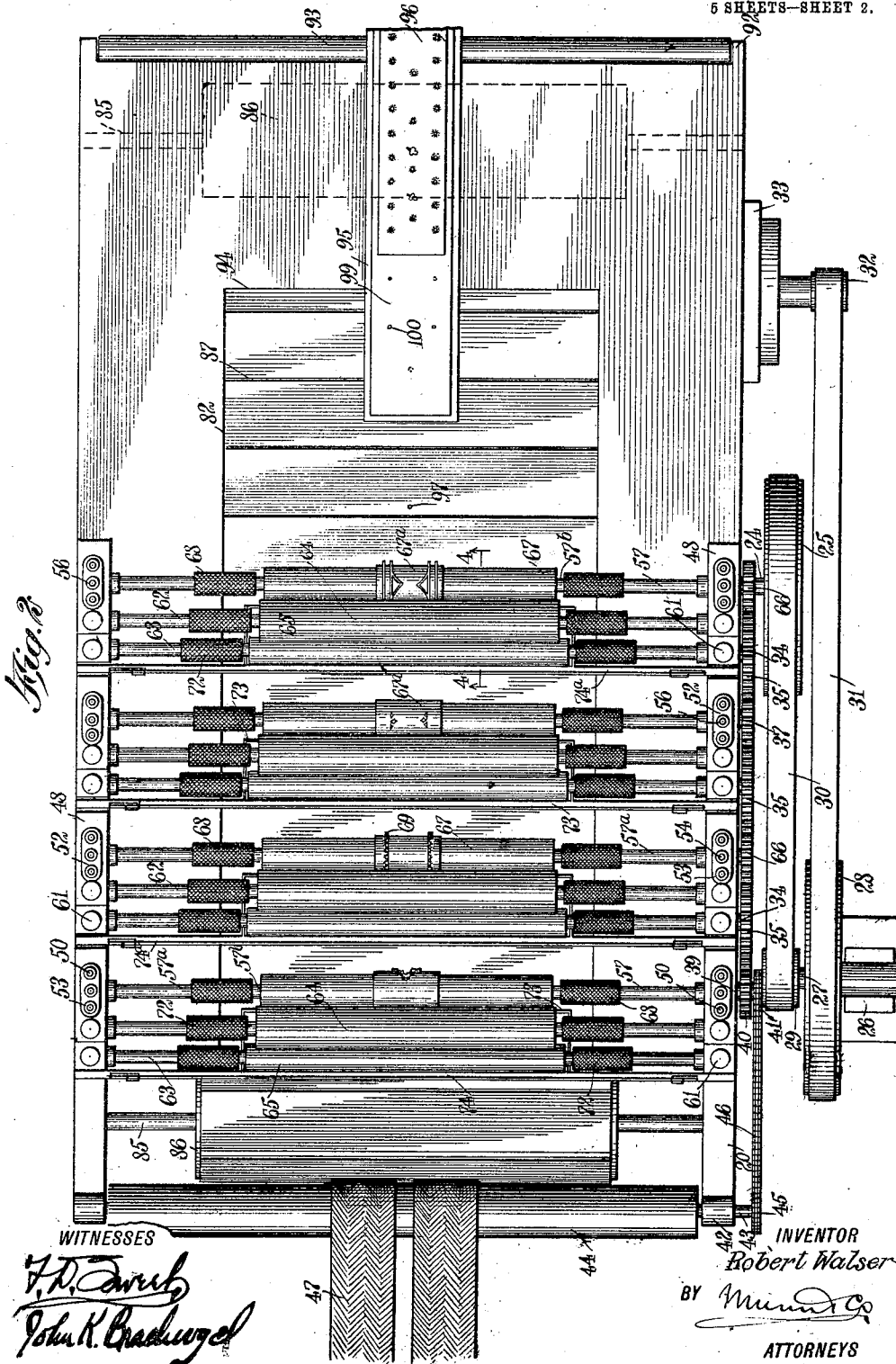


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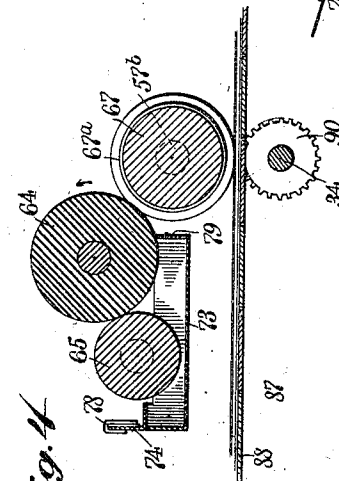
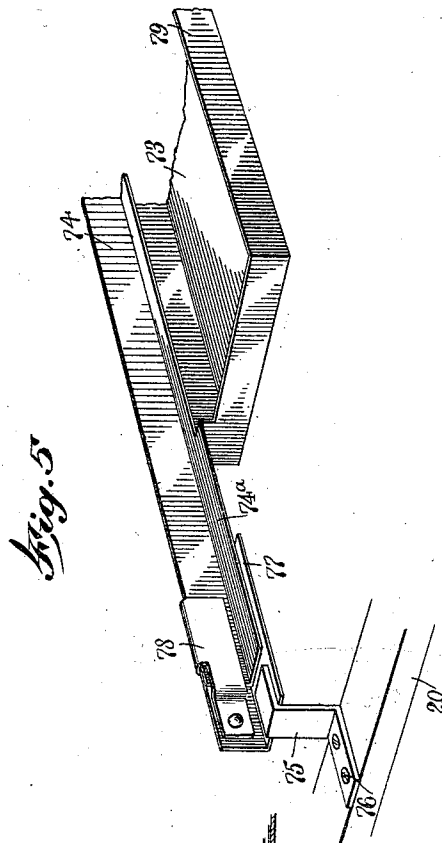
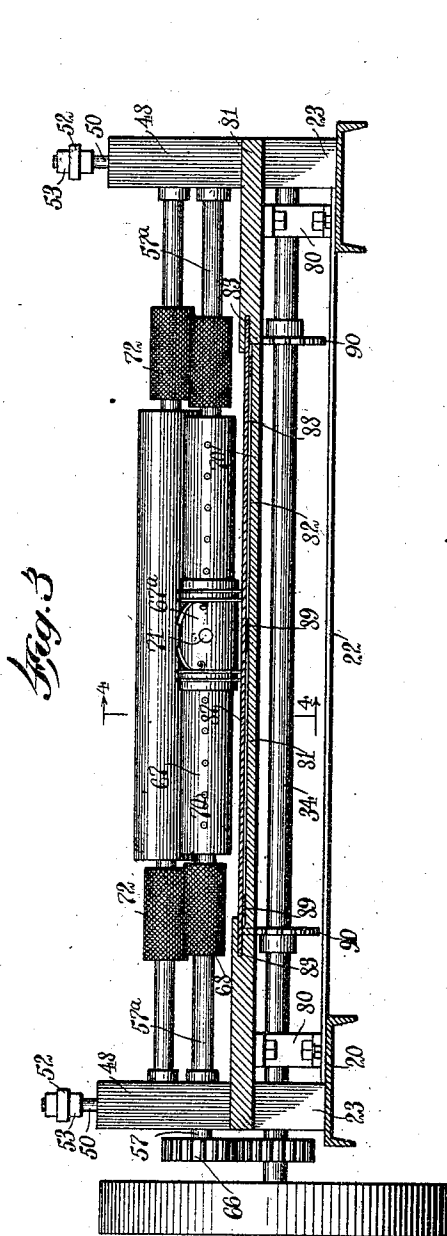


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5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

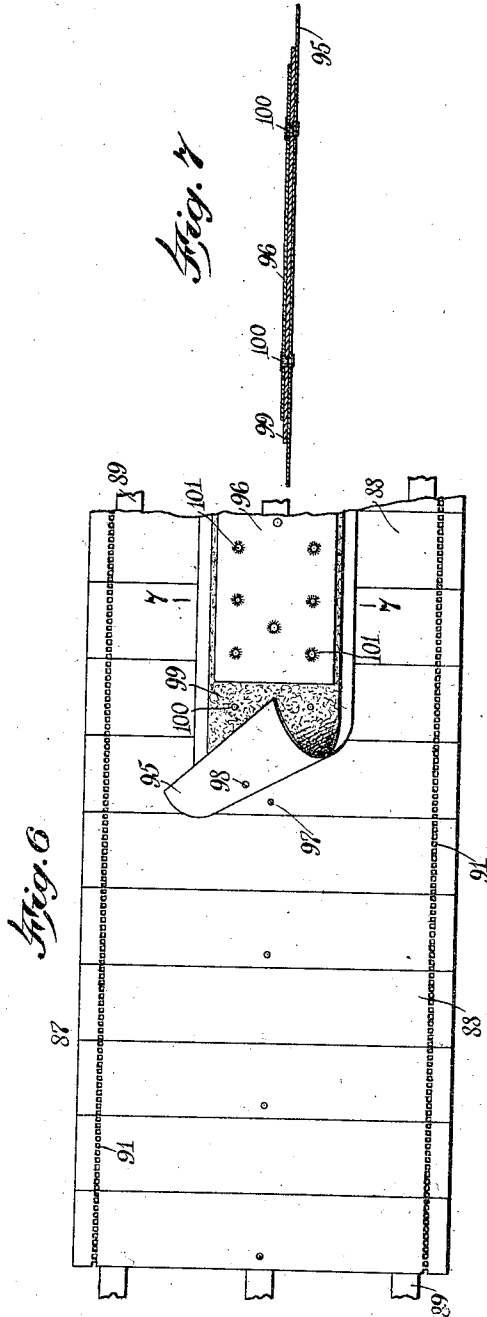
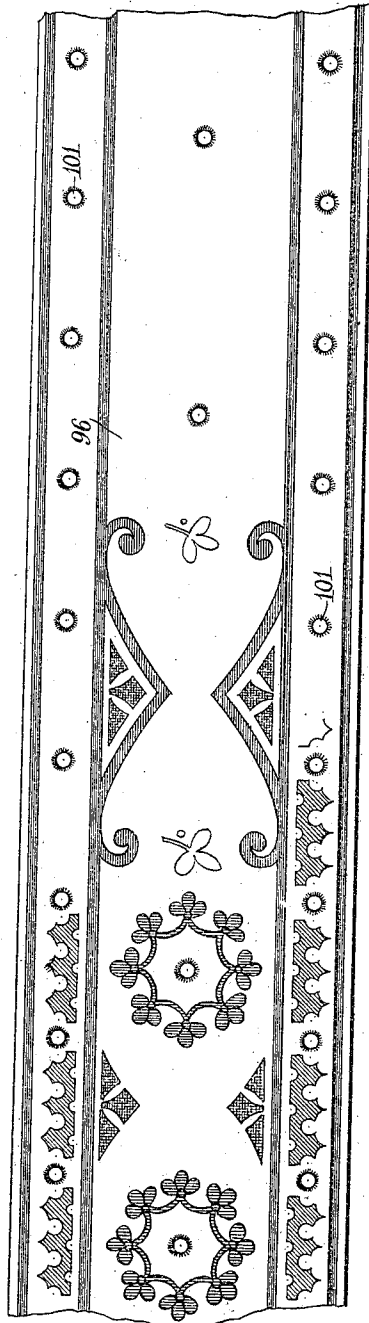


Fig. 8



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5 SHEETS—SHEET 5.

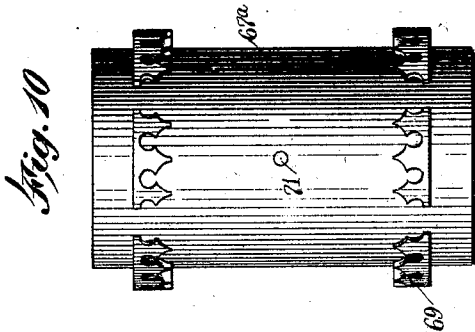
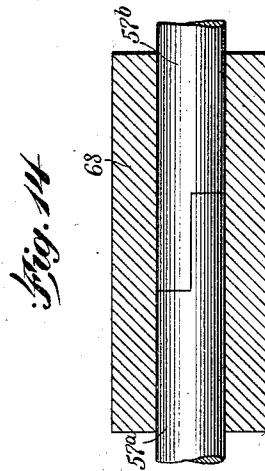
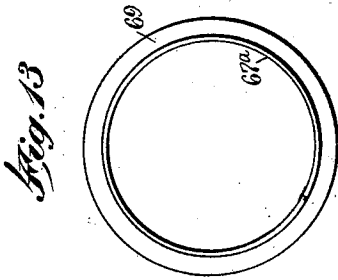


Fig. 12

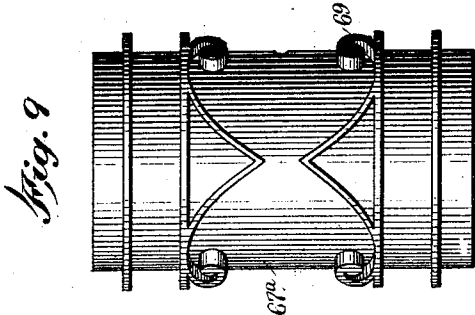
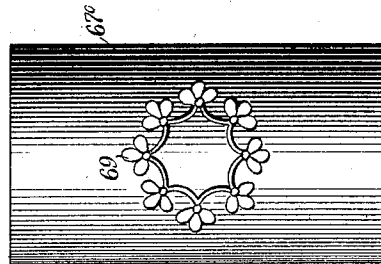
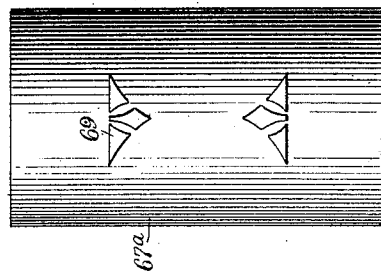


Fig. 11



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UNITED STATES PATENT OFFICE.

ROBERT WALSER, OF NEW YORK, N. Y.

EMBROIDERY-PRINTING MACHINE.

1,018,948.

Specification of Letters Patent.

Patented Feb. 27, 1912

Application filed November 21, 1910. Serial No. 593,406.

To all whom it may concern:

Be it known that I, ROBERT WALSER, a citizen of the Republic of Switzerland, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Embroidery-Printing Machine, of which the following is a full, clear, and exact description.

This invention relates to machines for printing ornamental patterns, designs or the like, upon embroidered fabrics or similar materials, and has reference more particularly to a machine of this class, which comprises printing means for producing the designs or patterns, preferably in colors, feeding mechanism for advancing the fabric into operative relationship with the printing means, and means for simultaneously operating the printing means and the feeding mechanism.

The object of the invention is to provide a simple and efficient machine for printing ornamental designs, patterns and the like, upon embroidery and similar fabrics, which is substantially automatic in operation, by means of which any desired designs or patterns in one or more colors can be inexpensively and rapidly produced upon different kinds of embroidered fabrics, by means of which the designs or patterns are properly registered with the embroidery of the fabric, which is rapid in operation and easy to control, which requires comparatively little power to drive it, and in which the printing mechanism can be easily adapted for producing different designs and patterns.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side elevation of a machine constituting an embodiment of my invention; Fig. 1^a is a fragmentary, side elevation partly in section, showing certain details of construction including the bearings for certain of the rolls of the printing mechanism; Fig. 2 is a plan view of the machine; Fig. 3 is an enlarged, transverse section of the machine; Fig. 4 is a cross section on the lines 4—4 of Figs. 2 and 3; Fig. 5 is a frag-

mentary, perspective view showing one of the ink receptacles and the means for mounting it in place; Fig. 6 is a fragmentary, plan view, showing the feeding means for carrying the fabric into operative relationship with the printing means; Fig. 7 is an enlarged, transverse section on the line 7—7 of Fig. 6; Fig. 8 is a plan view of a piece of embroidered fabric, showing the successive patterns printed thereupon; Fig. 9 is a plan view showing one of the printing rolls for producing a part of the design; Figs. 10, 11 and 12 are similar views of other printing rolls; Fig. 13 is an end view of one of the printing rolls; and Fig. 14 is a fragmentary, longitudinal section of one of the shafts for mounting the printing rolls in place, showing a sleeve used in connecting the parts of the shaft.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that while the machine can be successfully used for printing designs and patterns upon different kinds of fabric, it is particularly useful in connection with embroidered fabrics, such as multiple needle embroidery repeats, in which at different points are provided openings about which stitching is arranged to form parts of the embroidery. I make use of these openings in advancing the embroidery into operative relationship with the printing means and thus insure the exact registering of the printed pattern with the embroidered pattern. Needless to say, it is essential that this registry be as exact as possible. The printed designs preferably supplement the embroidery pattern, and may be produced upon the fabric in a single color or in a number of different colors, according to the nature of the design. In the form of the machine shown herewith, for example, I have illustrated printing means comprising four units or elements, each of which serves to produce upon the fabric part of the whole pattern or design, each preferably being used for a separate color. However, the number of the printing units can be altered in accordance with the different designs. These and others of the details of construction form no part of the invention, and can be varied in accordance with individual preference and special conditions, without departing from the underlying spirit of the invention.

Referring more particularly to the draw-

ings, I employ a machine frame having a pair of longitudinal frame members 20, consisting preferably of inverted channels. The frame members are mounted upon suitable supporting legs 21, and are connected by cross-pieces 22, bolted or otherwise secured in position. Each of the frame members has mounted thereon, a plurality of side supports or blocks 23, constituting, together, the sides, and extending part way along the length of the frame. Each of the blocks has a flange 23^a, by means of which it is secured, through the agency of a bolt 23^b, to the corresponding frame member 20. The sides, at one end, have bearings in which is journaled a main shaft 24, extending at one extremity, beyond the corresponding side, and having a driving pulley 25 rigidly secured thereon. Located suitably adjacent to the frame-work, are bearings 26, in which is journaled a shaft 27, having a transmitting pulley 28 rigidly secured thereon, together with a second, smaller pulley 29. The latter is operatively connected by means of a belt 30 or in any other suitable manner, with the pulley 25. The pulley 28 is likewise connected by means of a belt 31, with the driving pulley 32 of a motor 33, or any other suitable source of power.

The respective side members 23 have bearings in which are located successive driving shafts 34, each projecting at one end beyond the corresponding side, and having rigidly secured thereon, gears 35. The main shaft 24 has mounted thereon, adjacent to the pulley 25, a pinion 36, in mesh with the first gear 35, and serving to drive the same. Between the gears 35, the corresponding side members 23 have bearings in which are journaled spindles 37, each having rigidly mounted upon the outer, projecting end thereof, an idler pinion 38, in mesh with the gears 35, between which it is located. The entire train of gears and pinions is thus operatively driven from the first shaft 24. At the end remote from the pulley 25, the corresponding series of side members has a bearing, in which is journaled a spindle 39, having a pinion 40, in mesh with the last gear 35, and a sprocket 41. At the ends of the frames 20 are bearings 42, in which is journaled a shaft 43 having a roll 44, and at one end a sprocket 45, operatively connected by means of a chain 46, with the sprocket 41. Carrier bands 47, of fabric or other suitable material pass around the roll 44 and another roll (not shown) and serving to carry away the embroidered fabric after the printed design has been produced thereupon, as will appear hereinafter.

Positioned above the side members 23, are pairs of similar bearing blocks 48, corresponding in number to the printing units. Each block 48 has spaced, vertical openings 49, in which are positioned rods 50, having

the lower ends threaded, and mounted in correspondingly threaded openings 51 of a side 23. The upper ends of the rods are threaded, and carry a connecting plate 52 adjustably held in place by means of nuts 53. An adjusting rod 54 has the lower, threaded end located in a correspondingly threaded opening 55 of the block, and has the upper, threaded end secured by means of nuts 56, to the adjusting plate. By suitably adjusting the nuts 53 and 56, the bearing blocks can be raised and lowered. The opposite blocks have bearings in which are journaled shafts 57, which carry the printing rolls, as will appear hereinafter. Each block has a pair of stepped slots 58 and 59, in which are slidably located bearings 60, controlled by threaded adjusting bolts 61. Shafts 62 and 63 are journaled in bearings 60, and carry, respectively, the inking roll 64 and the ink-supplying roll 65. Each of the shafts 57 projects at one end beyond the corresponding bearing block, and has rigidly mounted thereon a pinion 66. The first of these meshes with the driving pinion 36 of the shaft 24. The remaining pinions 66, are in mesh with the idler pinions 38. In this way, the printing rolls are operatively connected with the driving shaft 24.

Each shaft 57 comprises end sections 57^a, between which is located a printing roll 67, provided at the end with shaft stubs 57^b. The extremities of the shaft sections 57^a and of the shaft stubs 57^b are cut away into semi-cylindrical form, and are thus adapted to register and fit together, as is shown most clearly in Fig. 14 and are circumferentially adjustable relative to one another. Holding sleeves 68 are slidably mounted upon the shafts, and removably hold the parts together. The sleeves are preferably provided with roughened surfaces, to facilitate their manipulation. The printing rolls are fashioned from wood or any other suitable material, and each has mounted thereon a printing cylinder 67^a, of brass, or other suitable metal, upon which are formed the pattern-producing projections 69. These may consist of suitably shaped pieces of hard rubber or any other suitable material. The rolls have numbers of openings 70, each formed to receive a set-screw 71 or the like, to secure the cylinders in position. The projections can be formed in any suitable manner. For example, I draw or otherwise indicate the pattern upon a cylinder of hard rubber or the like, and this is then cut out by means of a fret saw, or in any other suitable manner; and the corresponding pattern pieces pinned or otherwise secured upon a cylinder 67^a.

The shafts 62 and 63 carrying, respectively, the inking roll and the ink transferring roll, are sectional, as are the shafts 57, to facilitate the removal and replacing of

the rolls. The sections of these shafts are removably secured together by means of sleeves 72. Under each inking element is located a metal pan or receptacle 73, which contains the ink or other fluid used in printing the patterns upon the embroidery. At the back of each pan is a longitudinal member 74, of angular cross-section, which extends beyond the ends of the pan and forms supporting arms 74^a. The frame members 20 carry L-shaped brackets 75, secured in place by means of screws 76, or in any other suitable manner, and having secured thereto, supporting extensions 77 of angular form, each adapted to receive and hold, one of the arms 74^a. Each extension has pivotally mounted thereon a clip 78 of U-cross-sectional form, to engage the extension and the arm, to hold the pan in position. Each pan is positioned rearwardly of a printing roll, and with the ink-supplying roll 65 extending into it, while the inking roll 64, which is in engagement with the corresponding roll 65 and the printing cylinder 71, projects over the edge of the front 79 of the pan. The latter serves as a scraper to remove surplus ink from the inking roll. It will be understood that the rolls 64 and 65 are frictionally driven through the printing cylinder, the roll carrying the latter, being positively driven. Consequently, the ink-supplying roll will carry ink from the pan, onto the roll 64, which in turn supplies the printing cylinder.

The frame members 20 have bolted or otherwise secured thereto, supporting up-rights 80, upon which is fastened a table 81, extending along the frame, under the printing units. The table has the central part 82 cut away and provided at the edges with undercut grooves 83. Adjacent to the supports 80, are bearings 84, in which are journaled shafts 85, carrying drums 86. A traveling, endless carrier 87 is arranged about the drums 86 and consists of transverse slats or plates 88, secured together by means of flexible or other bands 89, glued thereto, or fastened in any other suitable manner. The plates consist, preferably of comparatively thin aluminum. The carrier is arranged to have the ends of the plates movably received in the undercut grooves 83. The shafts 24 and 34 have rigidly secured thereon, intermediate the ends, pairs of toothed drivers 90, adapted to engage series of perforations 91, extending along the edges of the carrier, so that the shafts serve to drive the carrier continuously, as the printing mechanism is operated. It will be seen that thus the feeding mechanism, *i. e.*, the carrier constituting the same, and the printing mechanism, are simultaneously operated.

At the end remote from the roll 44, the table has bearings 92, in which is journaled a roll 93, over which the embroidery can be

easily fed on to the carrier, which at this end of the table, passes upwardly through an opening 94 therein, to the central cut-away part or depression 82.

I employ a thin, flexible band or strip 95, for carrying the embroidery 96. Certain of the plates of the carrier have studs 97, each adapted to engage a corresponding opening 98 in the strip 95, so that the latter will travel with the carrier. The upper face of the strip has mounted thereon a layer or surface 99 of felt or similar material, upon which the embroidery 96 is supported. The felt or like material presents a proper support for the fabric during the printing operation. The band 95 has upwardly projecting studs 100, which extend beyond the surface 99, and are adapted to engage the openings 101, forming part of the embroidery pattern, and surrounded by stitching, in the usual manner. In this way, the embroidery, after being suitably positioned upon the strip 95, is carried into operative relationship with the printing means, through the agency of the endless carrier. By the provision of the studs engaging the strip, and those of the strip engaging the embroidery, the latter can be positively located upon the carrier, which is in direct operative relation with the printing roll. Consequently, by suitably adjusting the latter, the printed pattern can be brought to exact registry with the embroidery pattern.

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

1. A machine of the class described comprising a frame, a plurality of successive printing devices carried thereby in predetermined relationship to each other, a movable carrier for advancing embroidery into operative relation successively, with said printing devices, fabric-engaging means upon said carrier, having a definite relation with respect to the pattern of the embroidery, whereby the design applied by the printing devices bears a definite relation to the pattern of the embroidery, and means for simultaneously operating said printing devices and said carrier.

2. A machine of the class described comprising a frame, printing means carried thereby, feed mechanism for advancing embroidered fabric into operative relation with said printing means, said feed mechanism including fabric-engaging means having a definite predetermined relation with respect to the pattern of the embroidered fabric, whereby the design applied to the fabric by the printing means bears a definite relation to the embroidered pattern of the fabric, and means for simultaneously operating said printing means and said feed mechanism.

3. In a machine of the class described, in

combination, printing means, feed mechanism for carrying embroidered fabric into operative relation with said printing means, and means associated with said feed mechanism, for engaging the fabric, said last-mentioned means having a definite, predetermined relation with respect to the pattern of the embroidered fabric, whereby the design applied by the printing means bears a definite, predetermined relation to the pattern of the embroidered fabric, so that the embroidered pattern and the printed pattern are caused to register.

4. In a machine of the class described, a printing device and an endless carrier having a run arranged to travel under said device and to carry embroidered fabric into operative relation with said device, said carrier having fabric-engaging means for holding multiple needle embroidery repeats thereon, said fabric-engaging means having a definite, predetermined relation with respect to the pattern of the embroidered fabric, whereby the design applied by the printing design bears a definite relation to the pattern of the embroidered fabric.

5. In a machine of the class described, a printing device including a printing roll, a table mounted under said roll, an endless carrier having a run arranged to travel along said table under said roll and guided marginally by said table, and means for holding multiple needle embroidery repeats upon said run of said carrier in predetermined relationship with said printing roll.

6. In a machine of the class described, printing means, a traveling carrier for advancing embroidery into operative relationship with said printing means, and presenting a substantially flat surface, and a flexible, normally flat strip removably held upon said carrier and serving to support the embroidery to be printed.

7. In a machine of the class described, printing means, a carrier, means for simultaneously operating said printing means and said carrier, said carrier serving to advance embroidery into operative relationship with said printing means, said carrier presenting a substantially flat surface, and an auxiliary support removably mounted upon

said carrier and having a predetermined position relative thereto, said auxiliary support consisting of a normally flat, flexible strip serving to hold the embroidery to permit said printing means to produce a design or pattern upon the embroidery.

8. In a machine of the class described, printing means, a carrier, means for simultaneously operating said printing means and said carrier, said carrier serving to advance embroidery into operative relationship with said printing means, and an auxiliary support removably mounted upon said carrier and having a predetermined position relative thereto, said auxiliary support serving to hold the embroidery, to permit said printing means to produce a design or pattern upon the embroidery, said auxiliary support having a cushion surface, and being provided with means for holding the embroidery in place.

9. In a machine of the class described, printing means, an endless carrier consisting of a plurality of flexibly connected transverse plates, means for operating said printing means and said carrier, and a flexible strip having a cushion surface and serving to support the embroidery, said carrier having studs, said strip having openings adapted to receive said studs, whereby said strip can be positively positioned upon said carrier.

10. In a machine of the class described, printing means and feeding mechanism for advancing embroidered fabric into operative relationship with said printing means, said feeding mechanism including a supporting member having projections each adapted to engage openings already formed in the embroidered fabric, said projections having a definite, predetermined relation with respect to the pattern of the fabric, whereby the design applied by the printing means bears a definite relation to the pattern of the embroidered fabric.

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

ROBERT WALSER.

Witnesses:

JOHN K. BRACHVOGEL,
PHILIP D. ROLLHAUS.