

No. 840,243.

PATENTED JAN. 1, 1907.

A. NUFER.  
EMBROIDERING MACHINE.  
APPLICATION FILED OCT. 5, 1906.

2 SHEETS—SHEET 1.

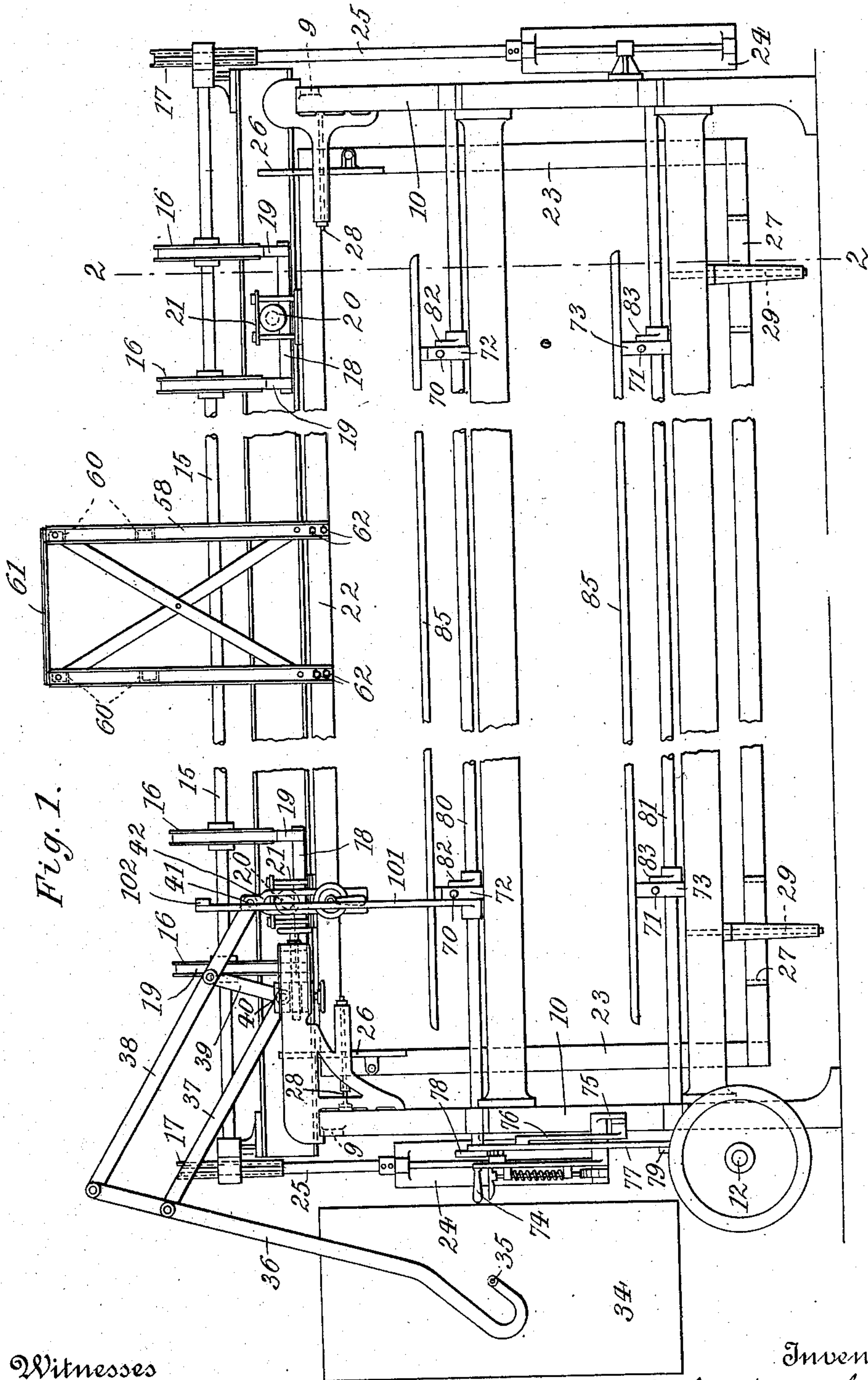


Fig. 1.

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William Schulz

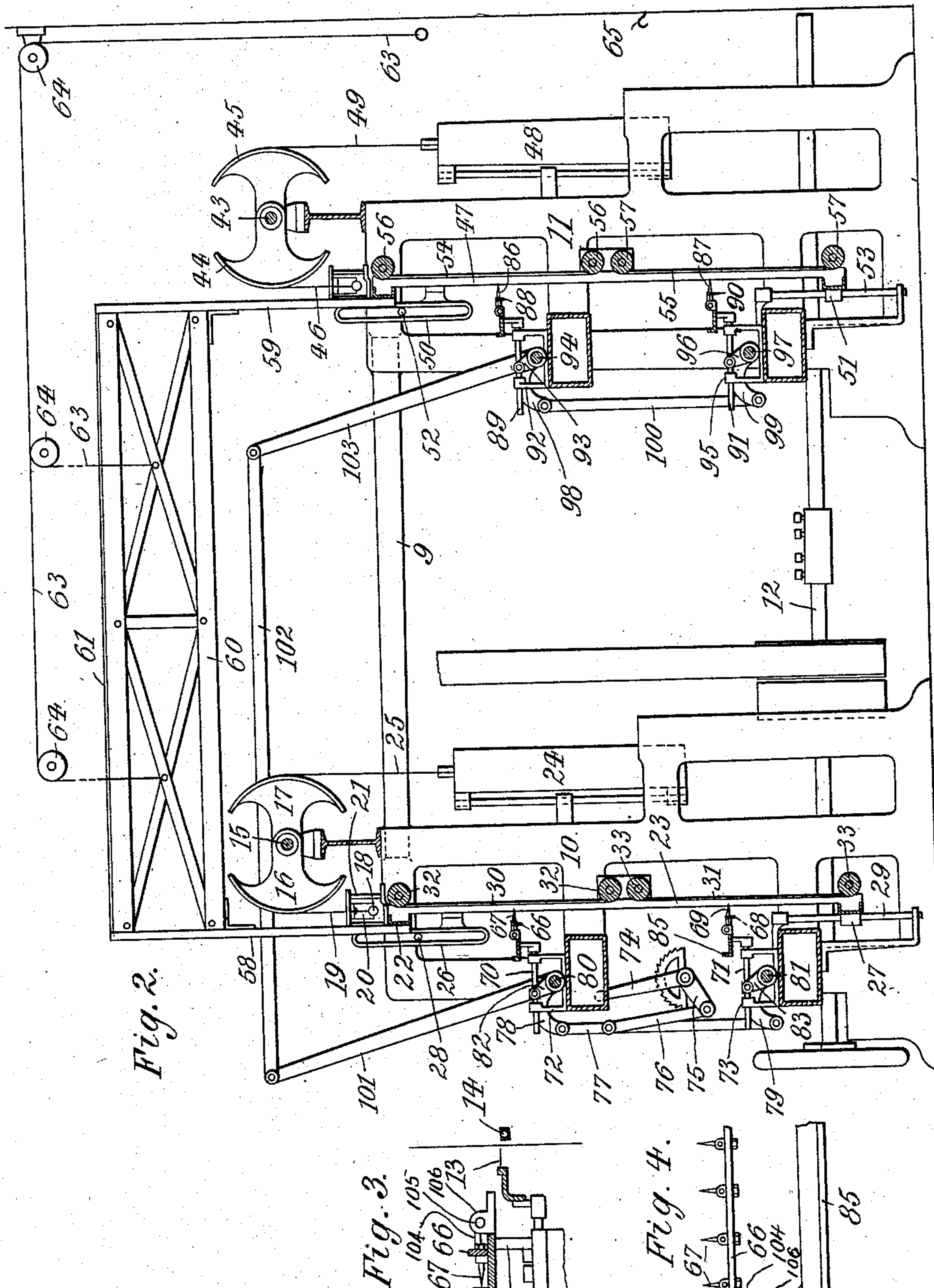
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By his Attorney  
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

ALBERT NUFER, OF JERSEY CITY, NEW JERSEY.

## EMBROIDERING-MACHINE.

No. 840,243.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed October 5, 1906. Serial No. 337,504.

*To all whom it may concern:*

Be it known that I, ALBERT NUFER, a citizen of the United States, residing at Jersey City, Hudson county, State of New Jersey, have invented new and useful Improvements in Embroidering-Machines, of which the following is a specification.

The embroidering-machines to which this invention relates are provided with a laterally and vertically movable frame to which the fabric to be embroidered is attached. This frame is by a pantograph connected to a pointer which is moved by hand over a fixed pattern, so that the movement of the pointer is transmitted on a reduced scale to the fabric. As the needles and shuttles do not participate in this movement, they will when actuated embroider upon the fabric copies of the pattern, such copies being multiplied to any extent desired by correspondingly multiplying the number of needles.

In practice a very large number of needles are sought to be employed, so that the greatest possible surface is embroidered at a single operation. Practical considerations, however, limit the length of the machine; and it is the object of the present invention to largely increase their operative area and output without correspondingly increasing their length.

In the accompanying drawings, Figure 1 is a front view of an embroidering-machine embodying my invention with some of the parts omitted; Fig. 2, a vertical cross-section on line 2-2, Fig. 1; Fig. 3, a cross-section through the punch-bar and adjoining parts, and Fig. 4 a plan of part of said bar.

The machine-frame is composed of two sections 10 and 11; connected by cross-bars 9. The power-shaft 12, hung in said frame, operates the needles 13 and shuttles 14 in known manner, the transmitting mechanism not forming part of the present invention and not being shown in the drawings. Near the top of frame-section 10 is journaled a shaft 15, carrying forwardly-extending sectors 16 and rearwardly-extending sectors 17. Sectors 16 are arranged in pairs, the two members of each pair supporting jointly a rail 18, suspended therefrom by flexible bands 19. On rails 18 travel grooved pulleys 20, confined within boxes 21, which are secured to the top rail 22 of the fabric-carrying frame 23. This frame is counterbalanced by weights 24, suspended by bands 25 from sectors 17. By the means described the frame 23, and consequently the fabric to be embroidered, may

move freely in all directions within one and the same vertical plane.

In order to guide the frame 23 during its movement, it is provided on top with a pair of vertically-arranged elongated eyes 26 and at its bottom with a pair of elongated horizontally-arranged eyes 27. Eyes 26 receive horizontal guide-pins 28, projecting from frame 10, while eyes 27 receive vertical guide-pins 29, projecting from said frame. The height of frame 23 is preferably such as to accommodate two strips of fabric 30 31 below one another, each of said strips being embroidered by its own row of needles 13. It is, however, obvious that the frame may be made to hold either more or less than two strips of the fabric. The means for securing the fabric to the frame consist of upper rolls 32, to which is attached upper strip 30 and lower rolls 33, to which is attached lower strip 31; but other means may obviously be employed.

Over the pattern-board 34, bearing an enlarged representation of the design to be duplicated, is free to be moved by hand a pointer 35. This pointer is secured to one end of a lever 36, which, together with the levers 37, 38, and 39, constitutes a pantograph. Lever 37 has a fixed fulcrum 40 on frame-section 10, while lever 38 is pivoted at 41 a yoke 42, adjustably secured to rail 22 of frame 23. As the pointer 35 is moved over the lines of the pattern a corresponding movement on a reduced scale will be transmitted by the pantograph-levers to frame 23. In this way the fabrics 30 and 31 are displaced with relation to their needles in such a manner that each of the needles will embroider upon them a reduced reproduction of the pattern.

Part 11 of the machine-frame supports a duplicate of the parts stated to be supported by part 10, excepting that the pattern-plate 34, pointer 35, pantograph-levers 36, 37, 38 39 and yoke 42 are omitted. Thus 43 indicates the shaft carrying the sectors 44 45. From sectors 44 is suspended by flexible bands 46 the embroidering-frame 47, hung parallel to frame 23 and counterbalanced by weights 48, suspended from sectors 45 by bands 49. Frame 47 is guided by eyes 50 51 and pins 52 53, so as to be freely movable in all directions within a single vertical plane. The strips of fabric 54 55 are secured to frame 47 by rolls 56 57, all as more fully described with relation to frame-section 10.

Frame 47 is so coupled to frame 23 that



the motion imparted to the latter by the pantograph is transmitted to the former. The means for coupling the frames consist of an inverted-U-shaped yoke, composed of  
 5 braced uprights 58 59, braced side pieces 60, and a top 61. The uprights 58 59 extend below sides 60, so that the yoke straddles shaft 15. The yoke is centered above the frames 23 47, and its shanks 58 59 are detach-  
 10 ably secured at their lower ends by bolts 62 to the upper bars of said frames.

It will be seen that every movement imparted by pointer 35 to frame 23 is transmitted to frame 47 in such a way that both  
 15 frames move in unison in two parallel vertical planes. In this way the pattern formed on board 34 will be simultaneously embroidered upon the fabrics carried by both frames, so that labor is saved and the output of the  
 20 machine is increased. If it is desired to operate one section of the machine only, the yoke is uncoupled from frames 23 47 and suspended from the ceiling by ropes 63 engaging overhead pulleys 64. The yoke may be  
 25 maintained in its raised position by a hook 65, engaging a ring on the end of rope 63.

Patterns frequently require the fabric to be pierced before being embroidered. To this effect a bar 66, carrying punches 67, is  
 30 arranged opposite fabric 30 of frame 23, and a similar bar 68, carrying punches 69, is arranged opposite fabric 31 of such frame. Bars 66 68 are pivoted to slides 70 71, which are guided in bearings 72 73. Reciprocating  
 35 movement may be simultaneously imparted to bars 66 68 by a hand-lever 74, which, by lever 75, link 76, rod 77, and curved levers 78 79, is connected to shafts 80 81. Of these  
 40 shaft 80 is by lever 82 connected to slide 70, while shaft 81 is by lever 83 connected to slide 71. By manipulating handle 74 slides 70 71 will be reciprocated to first advance punches 67 69 and puncture the fabric and to then retract the punches.

45 Bars 66 68 and punches 67 69 are so arranged in their supports 70 71 that they may be swung forward or backward to either assume an operative or an inoperative position. As the means for producing this result are the same for both bars, these means  
 50 have only been illustrated in connection with bar 66. The latter is firmly secured at each end by an arm 104 to a pin 105, turning in lug 106 of slide 70. One of these pins carries  
 55 a handle 84. When the pattern is such that the punches are not to be used, bar 66 is by handle 84 swung back into the position shown in Fig. 3, in which position the punches are protected by a guard-rail 85.

If the punches are, however, to be used, 6c they are swung forward, as shown in Fig. 4. The construction above described also applies to bar 68.

Opposite frame 47 are arranged in similar manner the punches 86 87. Punches 86 are 65 mounted on bars 88, pivoted to slides 89, while punches 87 are mounted on bars 90, pivoted to slides 91. Slide 89 is guided in bearings 92 and is connected by lever 93 to a shaft 94. In like manner slide 91 is guided 70 in bearings 95 and is connected by lever 96 to shaft 97. Shaft 94 is operatively connected to shaft 97 by levers 98, 99, and link 100.

Means are provided for transmitting the 75 motion imparted to bars 66 68 directly to bars 88 90, so that by a single manipulation of lever 74 all the punches 67 69, 86, and 87 are simultaneously operated. These means consist of a lever 101, secured at its lower end 80 to shaft 80 and connected at its upper end by pivoted rod 102 to the upper end of a lever 103, the lower end of which is secured to shaft 94. In this way the oscillation of shaft 80 will be transmitted to shafts 94 and 97, so 85 that all punches will be simultaneously operated in the manner desired.

I claim—

1. An embroidering - machine provided with a pair of fabric-carrying frames adapted 90 to move in different vertical planes, a pointer operatively connected to the first of said frames, and means for transmitting the motion from said first frame to the second frame, substantially as specified. 95

2. An embroidering - machine provided with a pair of fabric-carrying frames adapted to move in parallel vertical planes, a pointer operatively connected to the first of said frames, and a yoke connecting said first 100 frame to the second frame, substantially as specified.

3. An embroidering - machine provided with a pattern-plate, a pantograph, a frame connected to the pantograph, means for sus- 105 pending the frame so that it is freely movable in a vertical plane, a yoke connected to said frame, a second frame connected to the yoke, and means for suspending said second frame so that it is freely movable in a vertical plane 110 other than the plane of movement of the first frame, substantially as specified.

Signed by me at New York city, Manhattan, N. Y., this 3d day of October, 1906.

ALBERT NUFER.

Witnesses:

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 WILLIAM SCHULZ.