(No Model.)

F. VON MARTINI.

EMBROIDERING MACHINE.

No. 494,744. Patented Apr. 4, 1893.

Fig. II.

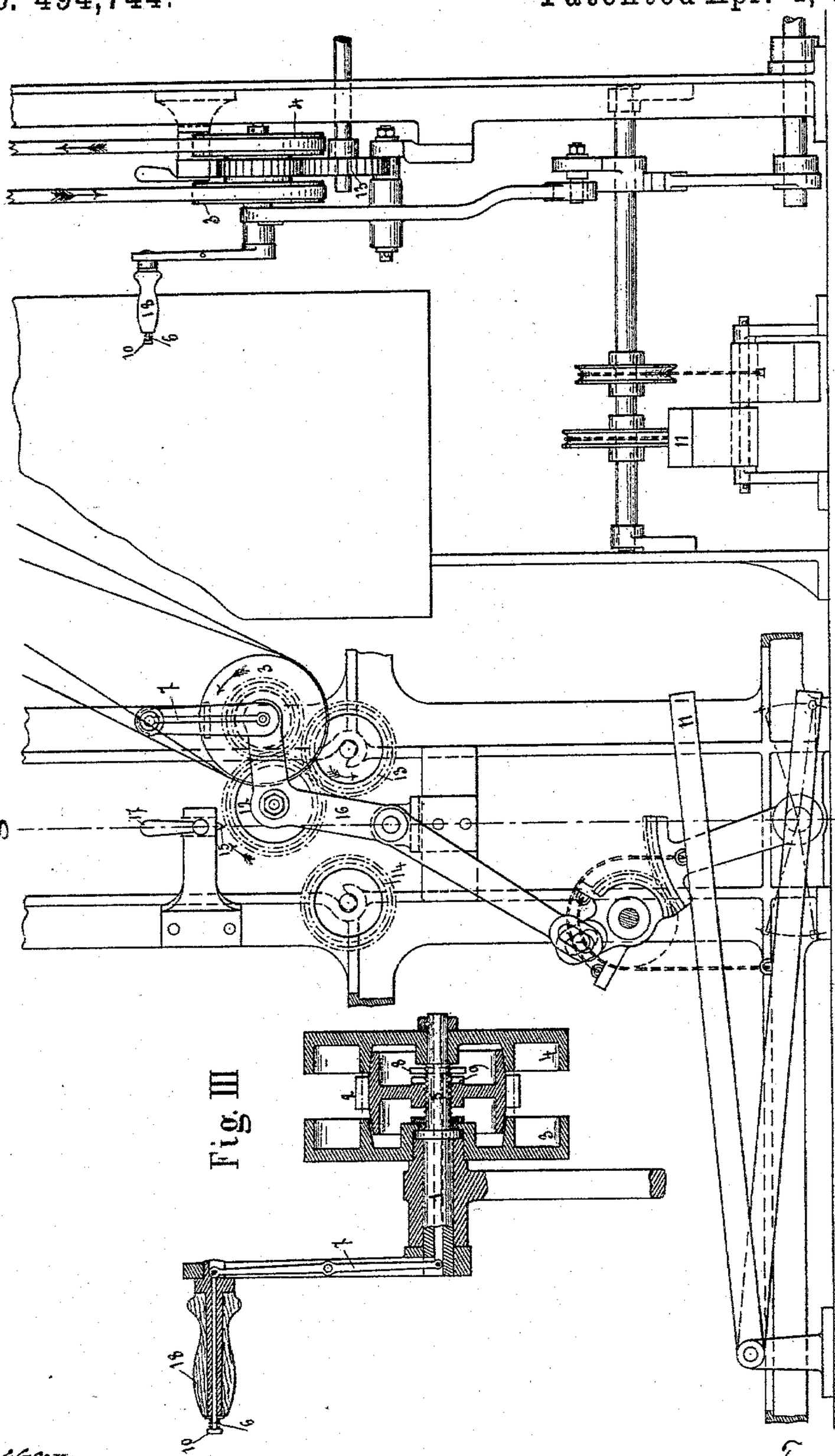

Fig. 1

Fig. III

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EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,744, dated April 4, 1893.

Application filed November 14, 1892. Serial No. 451,866. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH VON MARTINI, a citizen of the Republic of Switzerland, residing at Frauenfeld, in Switzerland, have invented certain new and useful Improvements in Embroidering-Machines, of which the following is a specification.

In operating the Heilmann embroidering machines entirely by manual labor the needle racks are moved toward or from the fabrics by hand, by turning a crank and the changes required in the gearing for intermittent motion of the front or rear accomplished by the operator by means of treadles.

The speed at which Heilmann's said embroidering-machine can work is limited by the quality of the thread used, which wears appreciably when drawn quickly through the material; but this speed is never attained on the hand embroidering-machine at present in use, in consequence of the insufficient power of the embroiderer.

The object of this invention is to provide an attachment to the same, whereby the speed of the machine is increased and the parts of the machine are operated by power. To attain this object, the operator is relieved of work, which has heretofore been done by hand and which limits his capacity for work, so that he has left to him, little more than the control or regulation of the machine, the mechanical work proper being performed by driving power placed at his disposal, suitable apparatus being provided by which the direction of the motion and the speed of the machine is completely under the control of the embroiderer. For attaining the object in view as above indicated, the driving-mechanism is provided with a coupling capable of being placed into and out of engagement and whereby the various intermittent changes of movement required for embroidering can be effected and maintained. Apparatus for this purpose can be constructed in various ways.

In the accompanying drawings, Figure 1 is a front elevation. Fig. 2 is a side-elevation of the driving-mechanism for a hand-embroidering-machine constructed according to my invention. Fig. 3 is a section to a larger scale, taken through the crank handle and crank shaft.

Similar numerals of reference indicate corresponding parts.

On the crank-shaft 1 carrying the crank-handle, and at both sides of the hand-wheel 2, are mounted small loose belt-pulleys 3 4 which are rotated from a counter-shaft in opposite directions. These pulleys 3 and 4 are provided with friction cones adapted to engage with suitable friction cones on the hand-wheel 2 and to cause the latter to rotate in one or the other direction according as it is pressed into one or the other cone. The hand-wheel 2 is not keyed fast on the crank-shaft 1 but its bore is formed with a screw-thread and a corresponding screw-thread is formed on the part 5 of the crank-shaft. On turning the crank-handle the hand-wheel 2, since the machine offers the necessary resistance, is shifted on the part 5 to the right or to the left according to the direction of the rotation of the crank-handle until it arrives and is pressed against the pulley 3 or 4 by which it is then rotated. In driving by friction, the speed of the wheel 2 can be regulated by pressing more or less on the crank-handle; also by moving the wheel 2 in the opposite direction a braking action may be exerted upon the moving parts so as to bring them to rest, and also to complete the pull or tightening action exerted on the threads. The speed of the countershaft for driving the pulleys 3 and 4 may be made adjustable by suitable gearing. For certain cases however, it is necessary that the hand-wheel 2 and the crank-handle shall be capable of being coupled firmly together in order that the machine may be used for a longer or shorter period exactly like the hand embroidering-machine at present in ordinary use. These cases occur, for example when the operator desires to complete the pull by hand in boring, punching, and festooning, in finishing off the short remnants of thread and in adjusting the carriages. For this purpose, the following arrangement is employed:

In the crank-handle 18 is located an endwise movable pin 6, which actuates a lever 7, so as to move a pin 8 along a slot in the crank-shaft 1, with which the pin 8 is compelled to rotate. On one side of the hand-wheel 2, suitable grooves 9 are made for the entry of the pin 8. If now the operator, after the friction

driving is stopped, presses upon the projecting knob 10 of the handle 18, the pin 8 will enter the slot in the hand-wheel and connect it with the crank-handle firmly together. The motive power provided can also be employed by the operator for aiding or effecting the changes required in the gearing for the intermittent motion of the front and rear carriages, so that he is also partly or wholly relieved of this mechanical work. For this purpose the arrangement is such that when the operator commences the delivery by pressing on the corresponding treadle 11, the carrier-wheel 12 will begin to move out of gear with the teeth of the wheel 13 which operates the rear carriage and toward the wheel 14 which operates the front carriage and will engage a tooth 15 fixed to the framing of the embroidering-machine as soon as it is clear of the wheel 13; and the hand-wheel 2 continuing to be rotated by the motive force, will cause the shifting lever 16 to turn until the wheel 12 gears with the wheel 14. The tooth 15 is arranged to be readily thrown into and out of operation, as required, by means of a handle 17. Thus by the means described the operator's foot will be relieved of a considerable amount of work.

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

1. In a hand-power embroidering-machine, the combination, with a crank-shaft carrying the usual hand-wheel, power-driven pulleys on the crank-shaft adjacent to the hand-wheel, and means for coupling the said hand-wheel with either power-driven pulleys, substantially as set forth.

2. In an embroidery-machine, the combination, with two friction pulleys and means for rotating them in opposite direction from a power shaft, of a toothed friction-wheel mounted between the two pulleys and adapted to be engaged with either, gearing on said friction-wheel for transmitting motion to other gear-wheels, and means for bringing said friction-wheel in frictional contact with either of said friction-pulleys, substantially as set forth.

3. In an embroidery-machine, the combination, with a crank-shaft and a toothed friction-wheel on said crank-shaft, means for shifting the pulley on the crank-shaft in the direction of the length of said crank-shaft by turning said crank-shaft and two friction-pulleys mounted loosely on the crank-shaft, at opposite sides of the friction-wheel, and means for rotating said pulleys in opposite direction from a power shaft, substantially as set forth.

4. In an embroidery-machine, the combination, with a crank-shaft, and a friction-wheel mounted to turn on said shaft, of two friction-pulleys, and means for locking the friction-wheel on the crank-shaft, substantially as set forth.

5. In an embroidery-machine, the combination, with a crank-shaft, and a friction-wheel on the same, of a lever pivoted in the crank, a pin projecting from one end of said lever through the crank-handle, a rod connected with the opposite end of the lever and mounted movably in the crank-shaft, and a cross-pin projecting from said rod and adapted to engage the friction-wheel on said crank-shaft, substantially as set forth.

6. In an embroidery-machine, the combination, with a foot-lever, of a lever pivoted on the frame of the machine and in operating connection with said foot-lever, a gear-wheel on said lever, gear-wheels on the front and rear carriages with which gear-wheels the gear-wheel on the pivoted lever can engage, a crank-shaft mounted on said lever, a friction-wheel mounted on said crank-shaft, two friction-pulleys mounted loosely on said crank-shaft means for engaging the friction-wheel with either of the friction-pulleys, means for rotating said friction-pulleys in opposite direction from a power shaft, the gear-wheel on the friction-wheel engaging the gear-wheel on the pivoted lever, and an adjustable tooth projecting from the machine frame and adapted to engage the gear-wheel on the pivoted lever, substantially as set forth.

7. In an embroidery-machine, the combination, with a pivoted lever on the machine frame, of a foot-lever in operating connection with said pivoted lever, a gear-wheel on said pivoted lever, means for rotating said gear-wheel, an adjustable tooth on the machine frame with which tooth the gear-wheel on the pivoted lever can engage, and gear-wheels on the front and rear carriages of the embroidery-machine, which gear-wheels can be engaged with the gear-wheel on the pivoted lever, substantially as set forth.

In testimony whereof I hereunto sign my name, in the presence of two subscribing witnesses, this 13th day of October, 1892.

FRIEDRICH VON MARTINI.

Witnesses:
EMIL BLUM,
H. LABBARD.