

P. ZÜND.
EMBROIDERING MACHINE.
APPLICATION FILED MAY 4, 1909.

967,288.

Patented Aug. 16, 1910.

Fig. 1

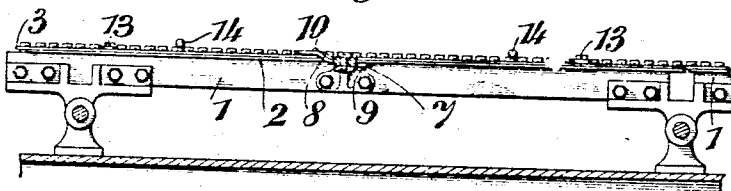


Fig. 2

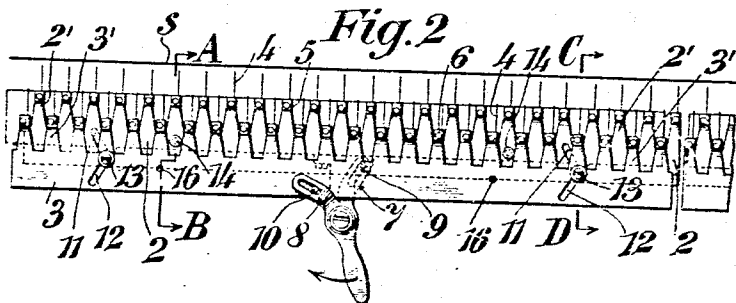


Fig. 3

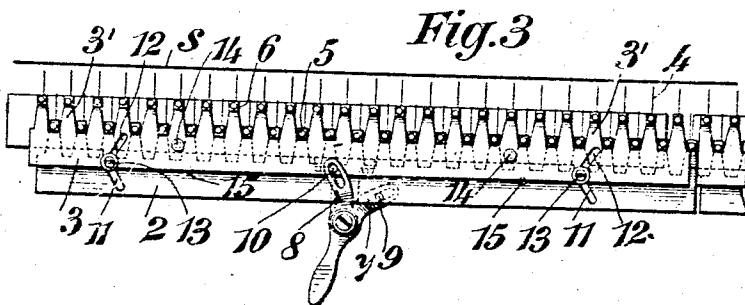


Fig. 4

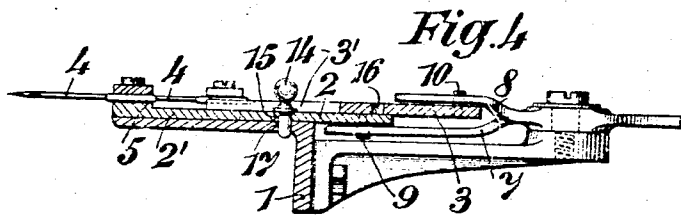
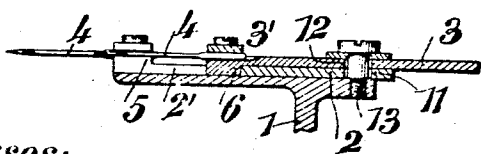


Fig. 5



Witnesses:

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UNITED STATES PATENT OFFICE.

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EMBROIDERING-MACHINE.

967,288.

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To all whom it may concern:

Be it known that I, PIUS ZÜND, a citizen of the Republic of Switzerland, residing at Gossau, near St. Gallen, Switzerland, have
5 invented certain new and useful Improvements in Embroidering-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

15 For the purpose of embroidering with two or more differently colored yarns, or with yarns of different strength and quality, shuttle machines have been constructed each needle-bar of which has at least two rows
20 of needles each capable of being advanced to the piece of work and of being brought into or out of action as required.

The disadvantage of such machines is that in bringing the one row of needles into the
25 operative position the needles of this row come between the needles of the other row, which necessitates shifting of the work each time before the needles can commence to operate; furthermore a separate shuttle is
30 requisite for the needle of each row.

My invention relates to improvements in this type of machine, which I construct in such manner that the rows of needles move
35 simultaneously, so that when the one row is brought out of operation the other row is advanced into action; and the needles of the latter row are slid exactly into that position which the needles of the former row occupied prior to their being retracted,
40 only a single shuttle being thus required for the needle of both rows.

One form of construction of the invention is illustrated in the accompanying drawing, in which—

45 Figure 1 is an elevation of a needle-bar of a shuttle embroidering machine having two rows of needles. Fig. 2 is a plan thereof, with the one needle row in the working position. Fig. 3 is a like view with the
50 other needle row in the working position. Fig. 4 is a section on the line A—B of Fig. 2, and Fig. 5 is a section on the line C—D of Fig. 2, these two last figures being drawn to a larger scale than the preceding ones.

55 1 is the needle-bar of a shuttle embroider-

ing machine, on which the needle mechanisms are mounted, of which several can be arranged adjacent to each other along the needle-bar. Each needle-mechanism consists of two superposed rails 2, 3, which can be
60 slid up to the piece of work at α . Each rail 2, 3 carries a row of embroidering-needles 4. In the drawing only one complete needle-mechanism 2, 3 and a fragment of a second one are illustrated. Each needle
65 is secured to a projecting tongue 2', 3' of the rails 2, 3 respectively, and the tongues 2' of the rail 2 at the places where the needles are fixed present elevated shoulders 5, while the tongues 3' of the rail 3 present
70 pendent shoulders 6; these shoulders 5, 6 serve, as will be hereinafter explained, to limit the extent of motion of the needle-rails.

For the purpose of shifting the rails 2, 3 there is employed a double-armed lever, piv-
75 oted to the needle-bar 1 and whose divergent limbs 7, 8 are furnished with longitudinal slots, in which there engage the pins 9, 10 projecting from the rails 2, 3. The rails 2, 3 are also furnished with slots 11, 12
80 inclined in opposite directions. The two rails are guided by means of pins 13, each of which passes through two superposed slots 11, 12 and is screwed into the needle-bar 1 (Fig. 5). For the purpose of fixing
85 the rails 2, 3 after they have been shifted, knobbed pins 14 are provided, which can be inserted into holes 15, or 16 in the two rails 2, 3 respectively and into a hole 17 in the needle-bar 1.

90 In Fig. 2 the row of needles of the rail 2, arranged for embroidering for instance with red thread, is shown in the working position, while the row of needles of the rail 3 is out of operation, that is to say
95 retracted, the needle-points protruding but slightly beyond the front edge of the needle-bar. If now it is desired to bring the needle-row of the rail 2 out of action and advance
100 into the operative position the needle-row of the rail 3, arranged for instance for embroidering with white thread, the pins 14 must be withdrawn from the holes 15, 17 and the lever 7, 8 must be turned in the direction of the arrow (Fig. 2). The rail 3 will in this
105 manner be shifted in the direction of the slots 12, and at the same time the rail 2 slid in the direction of the slots 11, so that the needle-row of the rail 3 will arrive in the working position, while the needle-
110

row of the rail 2 will recede out of operation. In this manner it is obvious that the first needle-row (rail 3) will occupy exactly that position which the other needle-row (rail 2) has just vacated. The needle-row of the rail 3 can now be fixed by insertion of the pins 14 in the superposed holes 16 and 17.

If the needle-row of the rail 2 is to be again advanced into the working position and the needle-row of the rail 3 retracted from the operative position, the pins 14 must be again withdrawn from the holes 16, 17 and the lever 7, 8 turned in the opposite direction to that shown by the arrow in Fig. 2. This will cause shifting of the rails in opposite directions to that above mentioned, the rail 3 with the needle-row being retracted and the needle-row of the rail 2 advanced into the working position, that is, into that position which the needle-row of the rail 3 has just vacated. The needle-row of the rail 2 must then be fixed in its working position by insertion of the pins 14 into the superposed holes 15, 17. That rail 2 or 3 which is retracted will butt with its shoulder 5 or 6 respectively against that part of the other rail (which is in its operative position) that lies between two tongues 2' or 3', the extent of motion being thus restricted.

Each of the other needle-mechanisms disposed on the needle-bar can be operated in the same manner as that above described.

With the new invention it will be seen that the embroidery-frame has not to be shifted on change of the needle-rows, and moreover one and the same shuttle serves for the needle of both rows.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In a shuttle embroidering machine, in combination, a needle-bar, two superposed sliding rails supported by the bar and each presenting a row of needles and obliquely located slots, the slots of the one rail being directed in contrary direction to the slots of the other rail, pins projecting from the bar, each pin engaging in a slot in each rail, and means for advancing the one rail toward the work while simultaneously retracting the other rail from said work, whereby the one needle-row can be brought in oblique direc-

tion into the exact operative position vacated by the other needle-row, substantially as described.

2. In a shuttle embroidering machine, in combination, a needle-bar, two superposed sliding rails supported by the bar and each presenting a row of needles and obliquely located slots, the slots of the one rail being directed in contrary direction to those of the other rail, pins projecting from the bar, each pin engaging in a slot in each rail, a double-armed lever pivoted to the bar and having slotted arms, and a pin projecting from each rail and engaged by the one slotted arm, whereby on turning the lever the one rail can be advanced toward the work while the other rail is simultaneously retracted from said work, substantially as described.

3. In a shuttle embroidering machine, in combination, a needle-bar, two superposed sliding rails supported by the bar, and each presenting a row of needles and obliquely located slots, the slots of the one rail running in contrary direction to the slots of the other rail, pins projecting from the bar, each pin engaging in a slot in each rail, means for advancing the one rail toward the work while simultaneously retracting the other rail from said work, and means presented by each rail projecting into the path of travel of the other rail and limiting the extent of motion of the rail, substantially as described.

4. In a shuttle embroidering machine, in combination, a needle-bar, two superposed sliding rails supported by the bar and each presenting a row of needles and obliquely located slots, the slots of the one rail running in contrary direction to the slots of the other rail, pins projecting from the bar, each pin engaging in a slot in each rail, means for advancing the one rail toward the work while simultaneously retracting the other rail from said work, and means for locking the rail whose needles are in the operative position, substantially as described.

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

PIUS ZÜND.

Witnesses:

J. O. SCHNEIDAL,
CARL SPIES.