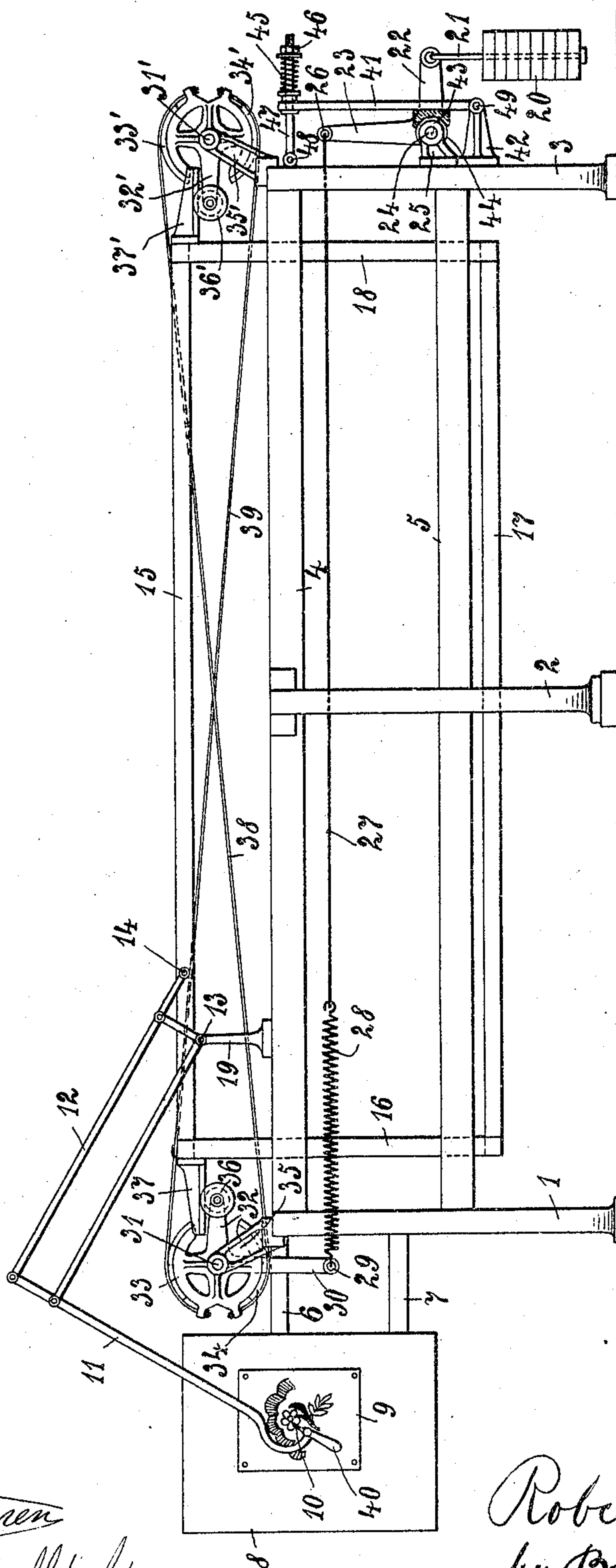


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PATENTED JULY 11, 1905.

R. ZAHN.
EMBROIDERING MACHINE.
APPLICATION FILED JAN. 25, 1905.



Witnesses.

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ROBERT ZAHN, OF PLAUE, GERMANY.

EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 794,331, dated July 11, 1905.

Application filed January 25, 1905. Serial No. 242,677.

To all whom it may concern:

Be it known that I, ROBERT ZAHN, a subject of the German Emperor, residing at Plauen, in the Kingdom of Saxony and Empire of Germany, have invented certain new and useful Improvements in Embroidering-Machines, of which the following is a specification.

This invention relates to embroidering-machines, and more particularly to a device for counterpoising the embroidery-frame in very large embroidering-machines provided with a correspondingly large and consequently very heavy frame. Now as the machine must be run with the greatest possible speed for the purpose of increasing its efficiency and makes up to one hundred and twenty stitches a minute the rapid reciprocal motion of the large and heavy embroidery-frame and the equally heavy counterweight brings about much vibration and agitation in the machine. In consequence thereof the needles cannot enter or pierce the embroidery with necessary precision, so that many wrong stitches arise therefrom. This drawback is fully avoided in the present invention by arranging a draw-spring between the counterpoising mechanism and the counterweight, so that the inertia of the latter cannot influence the motion of the machine, for even the quickest movements of the embroidering-frame are equalized by the spring referred to and the counterweight has a longer time for answering to the movements than was formerly the case.

A further advantage of the present device consists in the fact that the lever to which the counterweight is suspended is provided with a brake arrangement adapted to be controlled by suitable means, so that said counterweight is prevented from nervously jumping up and down, but, moreover, accomplishes its movements in a slow and easy manner.

In the annexed drawing the improved device is shown applied to an embroidering-machine represented in front view.

1 2 3 are the frame-walls of the machine, to which the main longitudinal girders 4 5 are fixed—that is to say, 1 2 3 4 5 represent the machine-frame. Attached to the left side of the latter are two horizontal arms 6 7, carrying the frameboard 8, on which the design 9

is mounted, along the lines of which the pointer 10 of the pantograph 11 12 is guided by the hand of the attendant. The pantograph 11 12 is pivoted to 13 and jointly connected to the embroidering-frame 15 16 17 18 at 14, the latter being moved to and fro by means of the pantograph. The pivot 13 referred to is arranged in a pillow-block 19, attached to the upper girder 4 of the machine-frame.

The following device serves for the purpose of counterpoising the embroidering-frame 15 16 17 18: The counterweight 20, by means of the rod 21, is suspended to the angle-lever 22 23, pivoted to the fixed pin 24, and the latter is journaled in the pillow-block 25, attached to the vertical frame-wall 3. Jointly connected to the free end of the vertical arm 23 of said lever 22 23 is a connecting rod, chain, or steel band 27, the other end of which is connected to a powerful tension-spring 28. This spring 28 engages the free end of the lever 30, pivoted to the shaft 31 integral with the lever 32, and the band-pulley, consisting of two segment-pieces 33 34. The shaft 31 is journaled in a pillow-block 35, fixed to the vertical frame-wall 1. Rotatably journaled in the free end of the lever 32 is a roller 36, with a horizontal arm 37 resting on its circumference, said arm 37 being attached to the upper left corner of the embroidering-frame 15 16 17 18. Fixed to the right upper corner of the latter is a similar arm 37. On the frame-wall 3 a pillow-block 35' is arranged and a roller 31' journaled therein integral with the two segment-pieces 33' 34' and the arm 32'. To the latter the roller 36' is pivoted, the arm 37' resting on said roller. Attached to the circumference of the segment-piece 33' with one end is a tightly-stretched wire rope or similar device, the other end thereof being fixed to the segment-piece 34. A like tension member 39 connects the band-pulley—to wit, the two segment-pieces 33 and 34'—and also is very tightly stretched. Therefore if the pantograph 11 12 is seized at the hand 40 and the pointer 10 moved to and fro on the design 9 the embroidering-frame 15 16 17 18 will accomplish similar movements, and thereby be

counterpoised in all positions by the balancing mechanism 32 32' 30 28 27 23 22 20. If the vertical movements of the embroidering-frame take place very rapidly, the spring 28
 5 will equalize the inertia of the counterweight 20. For the purpose of preventing the latter from jumping up and down in a nervous manner during this movement the brake-lever 41 is pivotally arranged on the pin 49. The lat-
 10 ter is supported by the pillow-block 42, attached to the frame-wall 3. Fixed to the lever 41 is a brake-block 43, pressing against the circumference of a brake-disk 44, integral with the angle-lever 22 23. The force with
 15 which the brake-block 43 is pressed against the brake-disk 44 may be controlled by means of a spring 45, adapted to be tightened according to requirements by the nut 46. The spring 45 and nut 46 are arranged on a rod
 20 adapted to oscillate around the pin 48, fixed to the frame-wall 3. The purpose of this brake device is to prevent the counterweight 20 from jumping up and down rapidly when the embroidering-frame 15 16 17 18 is moved
 25 up and down very quickly.

Having now fully described my invention, I declare that what I claim is—

1. In an embroidering-machine the combination with an operating-frame, a movable
 30 counterweight therefor, and braking mechanism retarding movement of said weight.

2. In an embroidering-machine the combination with a reciprocating frame, a counterweight therefor, and friction braking mechanism for said weight.
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3. In an embroidering-machine the combination with a reciprocating frame, of suspension devices therefor connected to operate in unison, a counterweight for said frame, a
 40 bell-crank lever mounted upon a shaft, a braking-disk upon said shaft and a braking-shoe yieldingly holding in engagement with said disk.

4. In an embroidering-machine the combination with a reciprocating frame, of suspension devices therefor connected to operate in unison, a counterweight for said frame, yieldingly connected with one of said devices, and braking mechanism retarding movement of
 50 said weight.

5. In an embroidering-machine the combination of a frame provided with horizontal

supporting - arms, rollers supporting said arms, band-pulleys carrying said rollers, said pulleys consisting of oppositely - extending
 55 segments, bands connecting said segments for insuring movement of the frame at both ends in unison, tension devices connecting said bands and segments, and a counterweight yieldingly connected with one of said pul-
 60 leys.

6. In an embroidering-machine the combination of a frame provided with horizontal supporting - arms, rollers supporting said arms, band-pulleys carrying said rollers, said
 65 pulleys consisting of oppositely - extending segments, bands connecting said segments for insuring movement of the frame at both ends in unison, tension devices connecting said bands and segments, a counterweight yield-
 70 ingly connected with one of said pulleys, and braking mechanism retarding movement of said counterweight.

7. In an embroidering-machine the combination with a frame, of a counterweight, yield-
 75 ingly connected therewith, and braking mechanism for retarding movement of said weight.

8. In an embroidering-machine the combination of a reciprocating frame provided at both ends with horizontal supporting-arms, 80 of supporting devices for both ends of said frame comprising pulleys each having oppositely-extending segments, rollers carried by said pulleys and engaging said supporting-arms, bands connecting said segments insur-
 85 ing movement of the opposite ends of said frame in unison, tension devices securing said bands to said segments, a lever projecting downwardly from one of said pulleys, a bell-crank lever having two angularly-extending
 90 arms, one of its arms being yieldingly connected with said pulley-lever, a counterweight carried by the other arm, a brake-cylinder for said lever, a brake-shoe engaging said cylinder retarding movement of said counter-
 95 weight, and a spring serving to hold said shoe in engagement with said cylinder.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT ZAHN.

Witnesses:

A. KÖHLER,

W. PRIELMEYER.