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SEWING MACHINE DRIVING DEVICE

Filed April 13, 1935

2 Sheets-Sheet 1

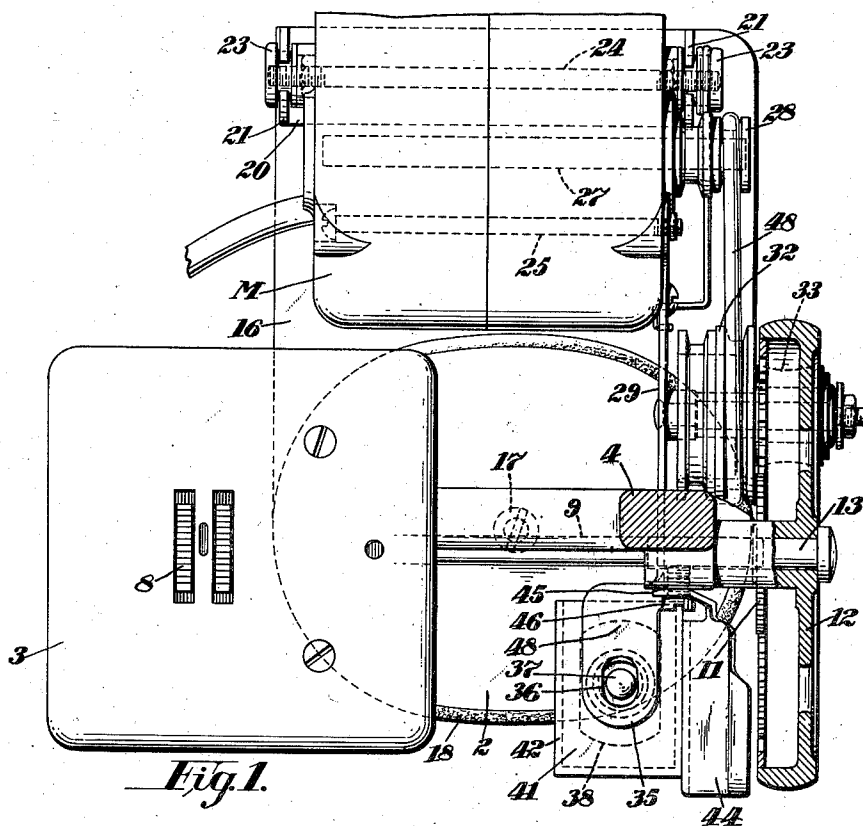


Fig. 1.

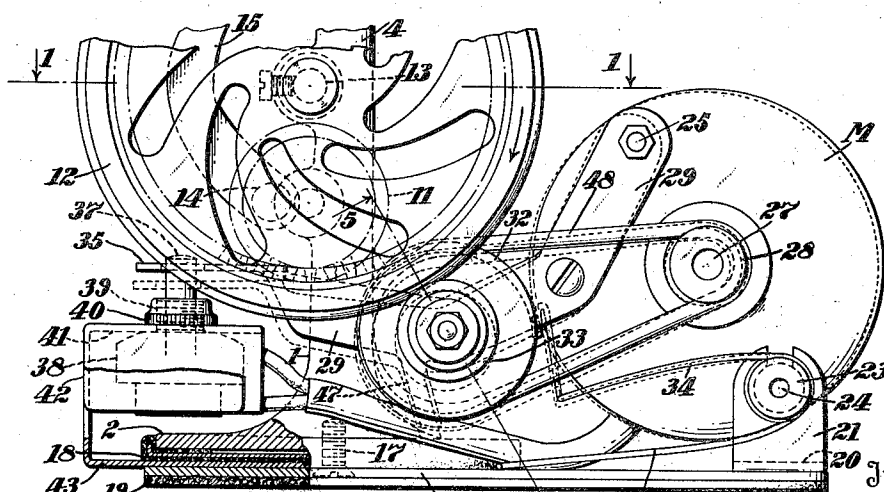


Fig. 2.

Witness:

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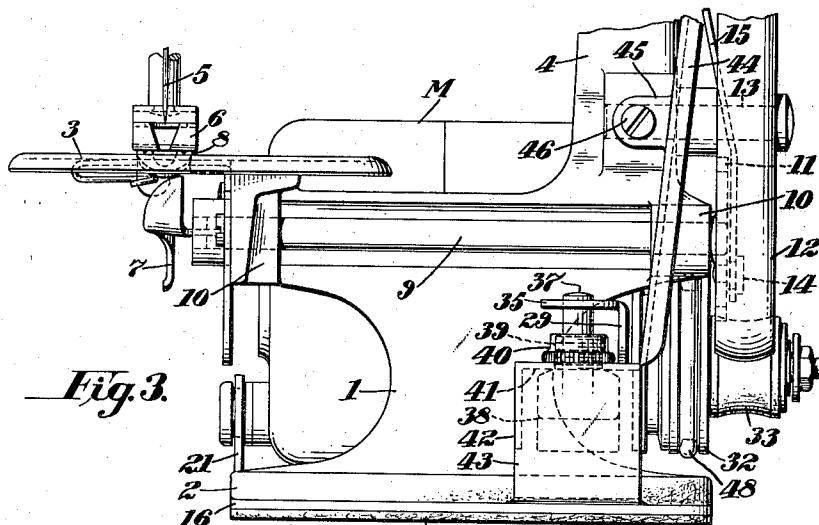


Fig. 3.

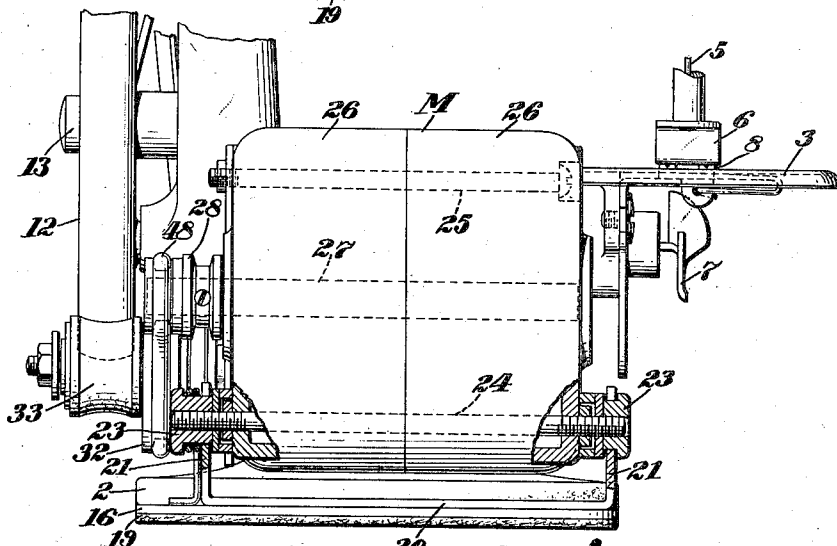


Fig. 4.

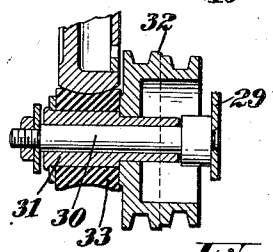


Fig. 5.

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## UNITED STATES PATENT OFFICE

2,052,125

## SEWING MACHINE DRIVING DEVICE

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Application April 13, 1935, Serial No. 16,129

6 Claims. (Cl. 74—472)

This invention relates to electric driving devices for small machines and has for an object to provide simplified, inexpensive and practical means for effecting the electrification of a small machine and particularly a small, inexpensive, hand-driven type of sewing machine, such as has been designed for children's use.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the accompanying drawings Fig. 1 is a top plan view, partly in section, of a motor-driven sewing machine embodying the invention. Fig. 2 is a right end elevation of the driving device as applied to the sewing machine. Fig. 3 is a fragmentary front elevation of the machine. Fig. 4 is a fragmentary rear elevation of the machine, and Fig. 5 is a section on the line 5—5, Fig. 2.

1 represents the pedestal of a sewing machine having a base 2 and carrying the cloth-plate 3 and standard 4 of the usual bracket-arm (not shown) which carries the reciprocatory needle 5 and presser-foot 6 cooperating, respectively, with the rotary looper 7 and feed-dog 8.

The looper 7 is mounted on one end of the rotary shaft 9 journaled in bearings 10 on the pedestal 1 and having fixed to its opposite end a gear-wheel 11 meshing with the internally toothed balance-wheel 12 which is journaled on the stud-pin 13 fixed to the bracket-arm standard 4. The gear-wheel 11 carries a crank-pin 14 which actuates the usual needle-driving pitman 15. The complete sewing machine is mounted on the sheet-metal sub-base 16 by means of the screw 17. The sewing machine base 2 is faced with felt 18 and the sub-base is also faced on its under side with a layer of felt 19 cemented thereto.

Spot-welded or otherwise suitably secured flatwise upon the rearward end-portion of the sub-base is a U-shaped sheet-metal member 20 the upstanding legs 21 of which are apertured at 22 to receive the internally threaded fulcrum bushings 23 secured onto the ends of the tie-rod 24 which together with the tie-bolt 25 hold together the two sections 26 of the frame of the conventional motor M. The motor M has a power shaft 27 which carries a double grooved belt-pulley 28.

Screwed rigidly to the motor frame is the con-

trol arm 29 to which is fixed the laterally extending bearing stud 30 for the bushing 31 carrying the double grooved belt-pulley 32 and rubber driving wheel 33 arranged to bear upwardly upon the rim of the sewing machine balance-wheel 12. A spring 34 coiled about one of the motor-fulcrum bushings 23 and reacting oppositely against the sub-base 16 and arm 29, yieldingly urges the arm 29 and motor M in a direction to carry the driving wheel 33 into driving relation with the balance-wheel 12.

The arm 29 has a forwardly extending portion affording a finger-piece 35 which is provided with a clearance aperture 36 for the upwardly extending push-button 37 of a conventional single-pole push-on push-off switch 38, connected in the motor circuit to start and stop the motor M. Switches of the type in question are disclosed in U. S. Patents No. 729,772, of June 2, 1903, and No. 1,542,154, of June 16, 1925. The switch 38 is of the single-hole mounting type having the threaded stem 39 and nut 40. It is mounted in the apertured top plate 41 of a sheet-metal switch-housing 42 formed in one piece with the sheet-metal angle-bracket 43 which is spot-welded flatwise upon the sub-base 16. The switch support or housing 42 thus overhangs but is entirely clear of the sewing machine base 2 and does not interfere with the attachment of the sewing machine to the sub-base 16. A finger-guard 44 is spot-welded to the switch housing and has an ear 45 which may be secured by the screw 46 to the standard 4.

The operating arm 29 has a downward branch 47 which functions as a stop by engagement with the base 2 when the finger-piece 35 is depressed. The pulleys 28 and 32 are connected by a live rubber round belt 48. The pulley sizes are so chosen that two different reduced speeds of the rubber driving wheel 33 may be obtained from a motor having a constant speed.

The operation is as follows:—With the motor M at rest and the parts in their full-line positions, Fig. 2, the operator pushes downwardly upon the switch button 37 and simultaneously depresses the lever 35 thus disconnecting the friction pulley 33 from the sewing machine balance-wheel. The motor M is thus free to start under no load at the moment the starting switch 38 is closed. After the motor has been started, the operator allows the finger-piece 35 to rise under the force of the spring 34, whereupon the pulley 33 is caused to frictionally engage the balance-wheel 12 and drive the sewing machine.

The finger-piece 35 has a flat portion 48 in rear

of the slotted portion, upon which the operator may press to disconnect the pulley 33 from the balance-wheel 12 without pushing the switch button 37 to stop the motor. Alternatively, the operator may stop the motor by pushing downwardly upon the switch-button 37.

These provisions permit the use of a smaller and less expensive motor than would be required in cases where the motor is started under load. Furthermore, in the present outfit, no rheostat or speed-regulating device is required other than the arm 29 which may be depressed to regulate the machine speed by regulating the slippage between the friction pulley 33 and balance-wheel 12. Having thus set forth the nature of the invention, what I claim herein is:—

1. The combination with a machine having a balance-wheel, of means for driving said balance-wheel including an electric motor and a friction pulley driven by said motor and, in the absence of attention by the operator, spring-biased against said balance-wheel, and devices movable simultaneously in the same direction by one and the same motion of the operator's hand to start the motor and disengage said friction pulley from the machine balance-wheel.

2. The combination with a machine having a balance-wheel, of means for driving said balance-wheel including an electric motor and a friction pulley driven by said motor and, in the absence of attention by the operator, spring-biased against said balance-wheel, and devices movable simultaneously in the same direction by one and the same motion of the operator's hand to start the motor and disengage said friction pulley from the machine balance-wheel, said devices comprising an electric push-button switch connected in the motor-supply circuit and a controlling arm for shifting said friction pulley, said controlling arm having a finger-piece disposed closely adjacent the push-button of said switch and movable independently of and in the same direction as said push-button.

3. The combination with a machine having a balance-wheel, of a spring-biased electric motor having a friction pulley normally engaging the rim of said balance-wheel without attention by the operator, an operating arm movable downwardly to disengage said friction pulley from said balance-wheel, said operating arm having a finger-piece disposed forwardly of the machine, and a push-button switch connected in the motor-

supply circuit and disposed with its push-button closely adjacent said finger-piece and movable downwardly simultaneously with the latter by one and the same motion of the operator's finger.

4. In combination, a sub-base, an electric motor mounted on said sub-base, said sub-base having sufficient space in front of the motor for reception of the base of a sewing machine, an operating arm extending forwardly above said sub-base from said motor to a point in front of said sewing machine receiving space, a friction pulley mounted on said arm in position to bear upon the rim of the balance-wheel of a sewing machine seated on said sub-base, and a belt-connection between said motor and friction pulley.

5. In combination, a sheet-metal sub-base having a sewing machine base receiving space and motor-supporting ears rising from said sub-base in rear of said space, an electric motor pivotally carried by said ears, an operating arm secured to said motor and extending forwardly above said sub-base to a point in front of said sewing machine base receiving space, a friction pulley mounted on said arm in position to bear upwardly against the rim of the balance-wheel of a sewing machine seated upon said sub-base, a belt connection between said motor and friction pulley, and an electric push-button switch connected to said motor and carried by said sub-base, said switch being disposed closely adjacent the free end of said operating arm.

6. Means for the electrification of a small machine, such as a sewing machine, comprising, a flat base-plate having an electric motor pivotally mounted thereon, said base-plate having a surface in front of said motor of sufficient extent to receive the base of a small conventional machine to be seated thereon and fastened thereto, an operating arm fixedly secured to said motor and overhanging said base-plate, said arm terminating at its free end in an apertured finger-piece above said base-plate, a machine driving friction pulley mounted on said arm and connected to be driven by said motor, a spring for biasing said motor and arm upwardly around the motor pivot, and an electric push-button switch connected in the motor circuit and having its push-button in register with the aperture in the finger-piece of said operating arm.

WILLIAM H. BRADY.