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1,622,901

PORTABLE SEWING MACHINE

Filed March 31, 1925

2 Sheets-Sheet 1

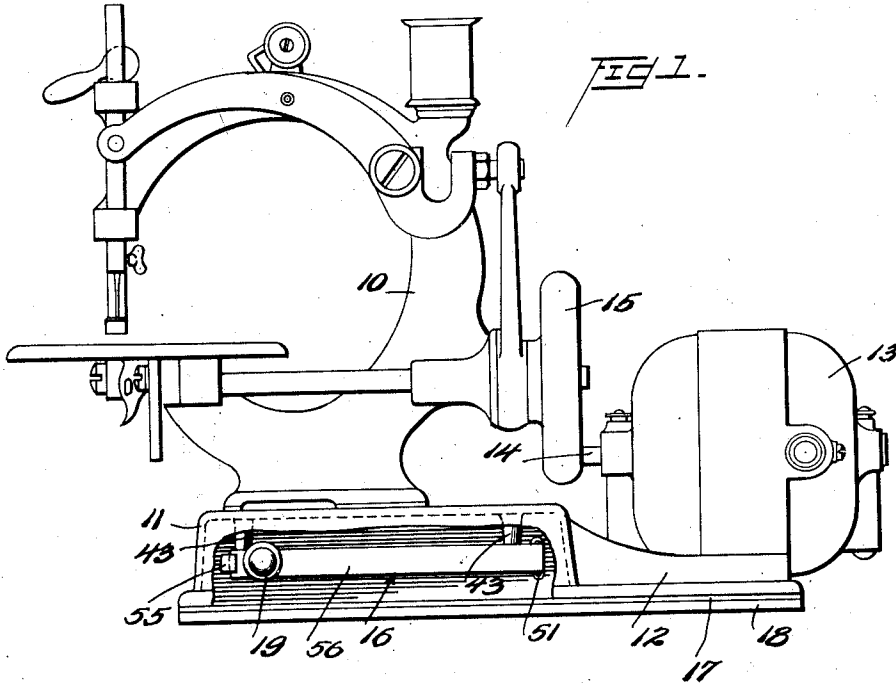
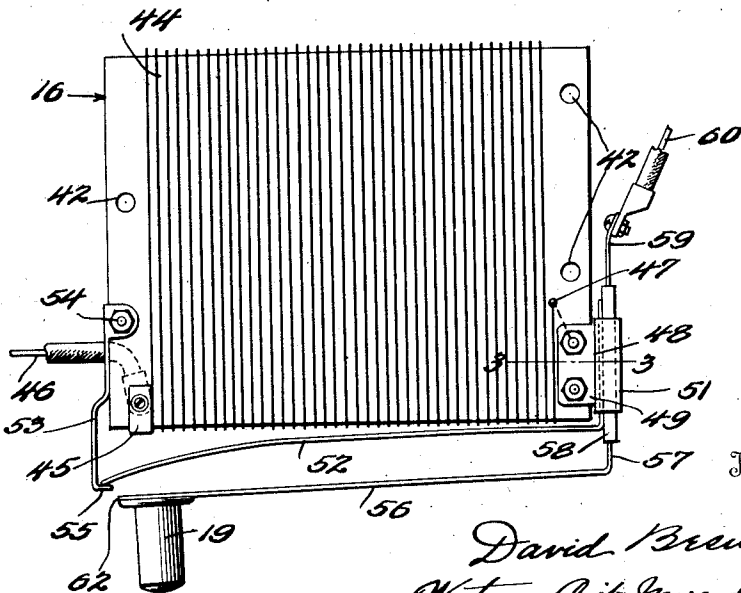


FIG. 2.



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FIG. 3.

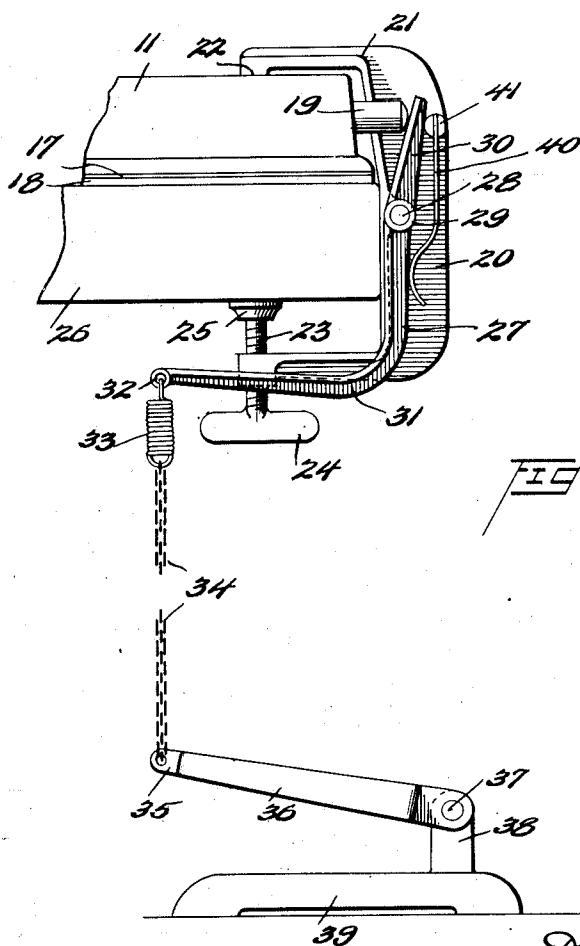
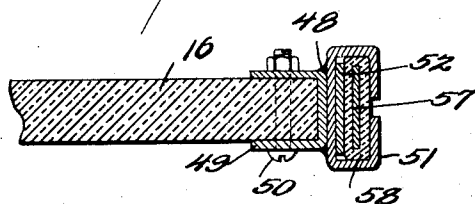


FIG. 4.

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PORTABLE SEWING MACHINE.

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This invention relates to sewing machines and more particularly to control mechanism for use with electric sewing machines.

It is a general object of the present invention to provide a novel and improved means for controlling the motor of an electric sewing machine.

More particularly it is an object of the present invention to provide a novel and improved form of rheostat for use with portable electric sewing machines.

Another object of the present invention is to provide a rheostat for use with portable electric sewing machines in which the current control is in minute steps regulated by the limited movement of an operating handle or button and in which there is no possibility of arcing or burning of the resistance wires forming part of the rheostat.

A further object of the present invention consists in a novel and improved mounting for rheostats for portable electric sewing machines.

A still further object of the present invention consists in the provision of an attachment device for changing the hand control of a portable electric sewing machine of the type illustrated to a foot control.

In the accompanying drawings and following specification there is disclosed, by way of example, only, a single embodiment of the present invention, it being understood, however, that various changes may be made by those skilled in the art in the size, shape, proportion, arrangement and material of the various parts without departing from the spirit of the invention or the scope of the appended claims.

In said drawings:

Fig. 1 is a front elevation partly broken away of a portable electric sewing machine provided with a control device constructed according to the present invention;

Fig. 2 is a plan view of the control device or rheostat;

Fig. 3 is a section on line 3—3 of Fig. 2; and

Fig. 4 is a side elevation of an attachment mechanism for providing a pedal control for the rheostat.

Referring to the drawings, there is disclosed at 10 a portable or table type of sewing machine of any well-known form, provided with the base 11 upon the extension 12 on which is mounted the electric motor 13 provided with the shaft 14 which has fric-

tional driving engagement with the fly-wheel 15 of the sewing machine to drive it. The base portion 11 of the sewing machine is preferably a hollow casting as shown, and within the space provided in this base is arranged the rheostat or control means 16 for the motor. A sub-base such as 17, covered with felt or some other soft material 18 to prevent scratching, serves to close the hollow in the base 11 and to protect the rheostat.

A push button 19 projects forwardly from the operating member of the rheostat and extends through the front wall of the base 11 as shown best in Fig. 4 into a convenient position to be controlled by the operator's thumb. In some cases it may be desirable and more convenient to control the starting and stopping and speed of the motor by the foot in order to keep both hands free for use in guiding the material over the table of the machine. For this purpose the device disclosed in Fig. 4 may be used. It includes a clamp 20 shaped like the usual C-clamp and comprising the C-shaped frame 21, suitably reinforced, adapted to rest at 22 upon the base 11 of the machine, and receiving at its opposite end the threaded clamping screw 23 having the wing head 24 for ease in operation. A swivel foot 25 on this clamp screw is pressed into engagement with the under side of the top of the table or other support 26 upon which the sewing machine rests. The clamp not only serves to firmly hold the machine against slipping on top of the table but also pivotally supports the bell crank lever 27. The frame 21 of the clamp is provided with the pivot or stub axle 28 upon which is journaled the hub 29 of the bell crank lever 27 so that the short vertical arm 30 of this crank extends across the top of the push button 19 and normally in engagement with it while the lower arm 31 extends first vertically downward and then substantially horizontally inward and under the table 26, and is provided on its far end with an eye 32 adapted to receive one end of a coiled spring 33 to the lower end of which is secured a chain or strap 34 connected to the end of a treadle or pedal 36 pivoted at 37 to the vertical projection 38 on the base 39 which is adapted to rest upon and be supported by the floor. A leaf spring 40 is supported in a split boss 41 formed integral with the frame of the clamp so that the lower end of the spring presses against the rear of the

lower arm 31 of the bell crank lever and serves to maintain the upper arm 30 thereof out of contact with the push button by overcoming the weight of the horizontal portion of the arm and of the spring, chain and treadle. It will be seen, however, that upon pressure of the foot on the treadle 36 the chain 34 will be drawn down vertically carrying with it the arm 31 of the bell crank lever and pressing the arm 30 into engagement with the push button 19 to vary its inward movement and thus to control the speed of the motor. The spring 33 serves to prevent damage to the rheostat in case the pedal is pushed down too far. It also enables the operator to operate the machine at full speed with less fatigue, since the foot does not have to be kept in exact position but can be raised and lowered within the range of the spring 33 without reducing the speed of the motor.

The controller or rheostat is best shown in Figs. 2 and 3 and comprises mainly a base plate 16 of porcelain, asbestos, or other suitable insulating material rectangular in shape and of a suitable thickness. The insulating plate is of such a size as to conveniently fit within the hollow base 11 of the machine and is provided with the holes 42 through which screws may be passed into the depending bosses 43 on the top wall of the base 11 to thus secure the insulating plate against these bosses and in spaced relation to all of the walls of the base. The rheostat base plate is wound with any suitable form of resistance wire such as 44, as best shown in Fig. 2 with the turns suitably spaced apart. One end of the wire is secured to a clip 45 straddling and fastened to the base plate and to this clip by the same screw which secures it to the base plate may be fastened the terminal lug of the wire 46 which may lead to a source of current. The other end of the resistance wire 44 passes through a hole 47 in the base plate and is electrically and mechanically connected to the clip 48 which is best shown in Fig. 3. This clip comprises the U-shaped portion 49 which straddles the end of the base plate and is firmly secured thereto by the bolts 50 passing through both arms of the part 49 and through the base plate. Welded or otherwise secured to the base of the U is the strap 51.

The amount of resistance in the circuit is determined by the number of turns of wire with which the contact spring or arm 52 is in engagement. This contact arm 52 is mechanically secured to and in electrical contact with the strap 51. The portion of the contact arm which extends along the edge of the insulating block is curved as best shown in Fig. 2 so that its normal tendency is to extend away from and be out of contact with all of the convolutions of resist-

ance wire. This contact spring 52 is maintained just out of engagement with the last turns on the right hand end of the block by means of the stop member 53 which comprises a piece of sheet metal secured at 54 to the end of the insulating block and having the flange 55 which extends over and limits the outward movement of the end of the contact spring 52 so that in its retracted position its right end is just out of engagement with the last turns of the resistance wire. It will be noted, however, that the contact spring 52 is still electrically connected to the wire 44 through the strap 51.

In order to completely open the circuit and at the same time to prevent arcing between the contact spring and the turns of the resistance wire as the final break is made, an auxiliary spring or breaker strip 56 is provided. This strip carries the operating button 19 and is formed of suitable springy conducting material having the right-angled end portion 57 which is mechanically secured to but electrically insulated from the strap 51 and contact arm 52 by the layer of insulating material 58 shown in Fig. 3. The end 59 of the breaker strip 56 which projects through the strap 51 has secured to it the wire 60 which leads to the motor 13 whose speed is to be controlled.

In the position of the parts shown in Fig. 2 it will be noted that the circuit is open, since the breaker strip 56 which is connected to one side of the circuit is out of contact with the contact spring 52 and therefore the circuit is open. When it is desired to operate the motor the push button 19 is slowly pushed inward until the tip 62 of the breaker strip 56 engages the contact spring 52 and the circuit is then complete through the spring 52, the strap 51, the clamp 48 and the right hand end of the resistance wire through which the current then flows to the wire 46 thus putting all of the turns of the resistance wire in the circuit and running the motor at its slowest speed. Further depression of the push button 19 serves to successively short circuit the turns of wire on the base block until at such time as the spring 52 is pressed into engagement with the clip 45 when all of the resistance is out of the circuit and the motor reaches its maximum speed. Upon release of the push button resistance is rapidly inserted into the circuit by the rising of spring 52, but the point 62 of the breaker strip is always in engagement with the spring 52 until this spring has come out of engagement with the last turns of the resistance wire and the final break of the circuit takes place between the point 62 and the spring 52 thus effectively preventing any arcing between the turns of the resistance wire and the contact spring so that there is no possibility of corroding or burn-

ing the resistance wire or of damaging the contact spring.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In an electric sewing machine in combination, a base, a control button for said machine projecting from said base and adapted for finger control, a clamp adapted to be removably secured to said base, a lever pivoted to said clamp and having a portion in operative relation to said button, a pivoted pedal and a connection between said pedal and lever whereby said control button may be foot operated.

2. In an electric sewing machine, in combination, a base, a speed control lever for said machine projecting from said base and adapted for finger control, a clamp adapted to be removably secured to said base, a lever pivoted intermediate its ends to said clamp, one end of said lever being in operative relation to said speed control lever, a treadle and a flexible connection between said treadle and the opposite end of said clamp lever.

3. In a rheostat, in combination, a series of convolutions of resistance conductor having intermediate exposed portions forming a longitudinal contact surface, a flexible conductor extending along said surface, connected to one end of said conductor and adapted to progressively make contact with said contact surface, a breaker strip adapted to be connected to a source of current, said strip being so arranged as to make contact with said flexible conductor before it engages said contact surface.

4. In a rheostat, in combination, a series of convolutions of resistance conductor having intermediate exposed portions forming a longitudinal contact surface, a flexible conductor extending along said surface, con-

nected to one end of said conductor and adapted to progressively make contact with said contact surface, a breaker strip adapted to be connected to a source of current, said strip being so arranged as to make contact with said flexible conductor before it engages said contact surface, and to remain in contact with it until after it breaks contact with said surface.

5. In a rheostat, in combination, a series of convolutions of resistance conductor having intermediate exposed portions forming a longitudinal contact surface, a flexible conductor extending along but normally curved away from said surface and adapted to be pressed successively into engagement with said convolutions, a breaker strip normally insulated from said flexible and resistance conductors and connected to a source of current and means to press said breaker strip into engagement with said flexible conductor to cause it to contact with said contact surface for the purpose described.

6. In a rheostat, in combination, a series of convolutions of resistance conductor having intermediate exposed portions forming a longitudinal contact surface, a flexible conductor extending along but normally curved away from said surface and adapted to be pressed successively into engagement with said convolutions, a stop retaining said flexible conductor close to said surface, a breaker strip normally insulated from said flexible and resistance conductors and connected to a source of current, and means to press said breaker strip into engagement with said flexible conductor to cause it to contact with said contact surface for the purpose described.

In testimony whereof I hereunto affix my signature.

DAVID BESWICK.