

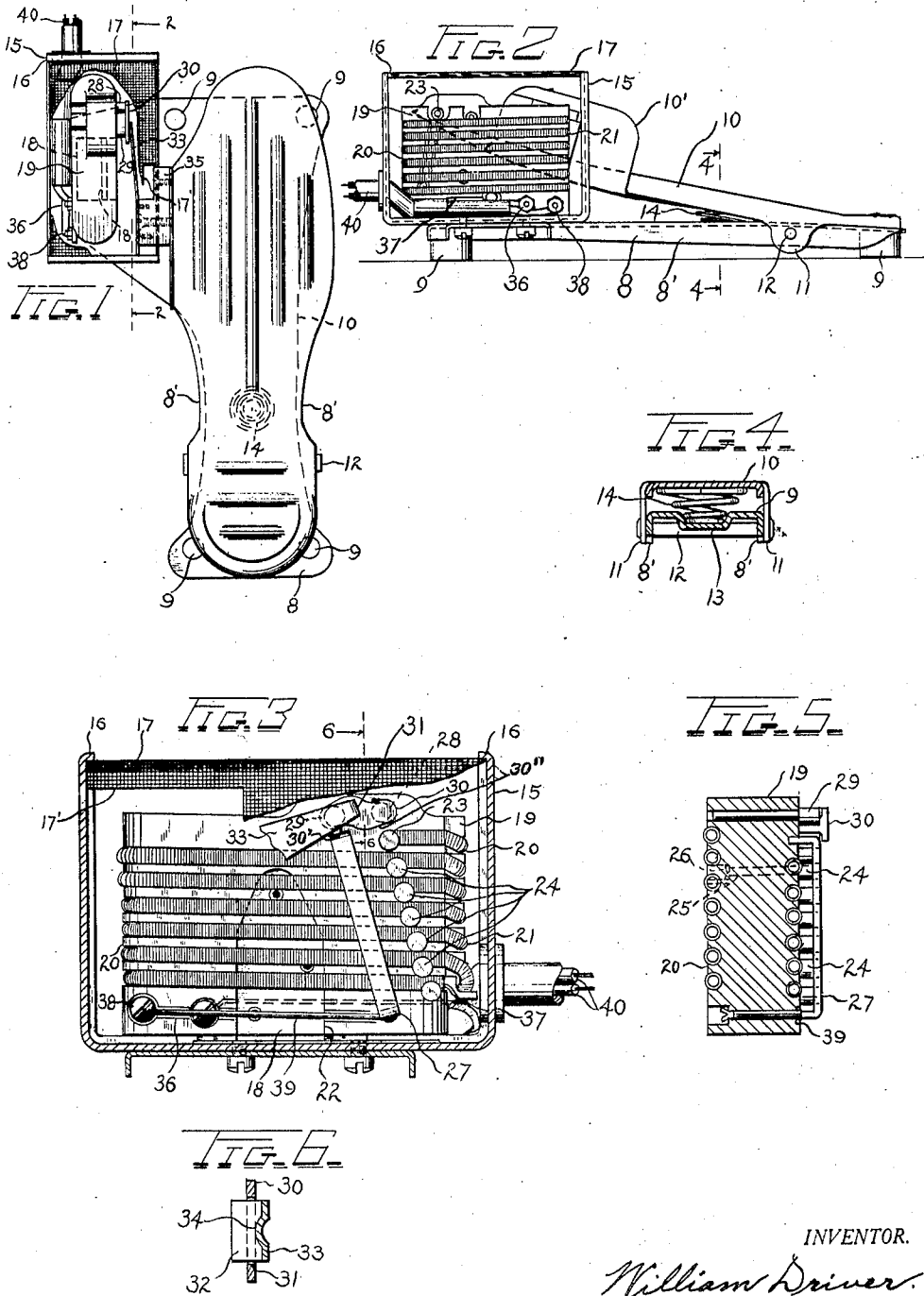
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MOTOR CONTROLLER

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MOTOR CONTROLLER.

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This invention relates to improvements in motor controllers, more particularly adapted for controlling sewing machines, dental lathes or other light machinery.

One of the objects of the present invention is to provide a foot operated motor controller which may be electrically connected to a motor and placed upon the floor and engaged by the foot of the operator, and as the foot pedal is pressed with greater or less force, the speed of the motor will be correspondingly increased or diminished.

A further object of the invention is to provide a motor controller in which the electric circuit through the controller is opened at a point other than the last terminal contact of the resistance unit to prevent arcing and roughness of the contacts.

A further object of the invention is to provide a motor controller in which the electric circuit is opened at the end of an elongated contact so that any roughness to the movable contact member caused by arcing will be smoothed down by the rubbing of the movable contact member against the elongated contact.

A further object of the invention is to provide a motor controller associated with a resistance unit in such a manner that as the foot treadle is pushed downwardly, portions of the resistance unit will be cut out of the circuit in which they are included, in successive order to control the speed of the motor which is also included in the circuit.

A further object of the invention is to provide a motor controller which is associated with the resistance unit in a unitary structure, which is compact in size, and is simple in construction.

A further object of the invention is to provide a motor controller in which the contact member is loosely connected to the contact arm in a manner to permit an intimate engagement between the fixed contacts and the slidable member.

A further object of the invention is to provide a motor controller which is of simple construction, is strong and durable, and is well adapted for the purpose described.

With the above and other objects in view, the invention consists of the improved motor controller and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawing, in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a top view of the improved motor controller, portions of the resistance unit casing being removed to show interior construction;

Fig. 2 is a side view thereof with the casing portion thereof in section;

Fig. 3 is an enlarged view partly in section of the resistance unit and connected parts;

Fig. 4 is a sectional detail view taken on line 4-4 of Fig. 2;

Fig. 5 is a vertical sectional detail view of the resistance unit; and

Fig. 6 is a sectional detail view of the movable contact member taken on line 6-6 of Fig. 3.

Referring to the drawing, the numeral 8 indicates a base member which is formed of sheet metal and is provided with rubber feet or pads 9. A foot treadle or member 10 is positioned above the base member 8 and is provided with downwardly extending eyed ears 11 which engage and are pivotally connected to the side flanges 8' of the base member 8 by a pivot pin 12. The base member is formed with a depressed portion 13 for receiving the lower end portion of a coiled spring 14 which is interposed between the base member and the foot treadle to yieldingly hold the treadle in its upper position. A U-shaped casing member 15 is mounted on the base member 8 and extends upwardly therefrom, and is formed with edge flanges 16 for receiving a U-shaped piece of screen material 17 which forms the other and ventilating part of the casing.

An L-shaped bracket 18 is mounted within the casing and extends upwardly therefrom, and has connected thereto an insulating block of material 19 which is formed with a spirally trending groove 20 for receiving the convolutions of resistance wire 21, wound thereon. To prevent contact between the wire and the bracket 18, the insulating block 19 is formed with a recess 22 to receive the upper portion of the bracket and space said portion from the resistance wire. The upper end portion of the resistance is clamped between the insulating block 19 and a fixed contact stud member 23 which is mounted in the block. Other contact studs 24 engage the resistance wire convolutions in

successive order from the upper to the lower portion of the block, as shown in Fig. 3. The fixed contact studs have reduced diameter shank portions 25 which extend partly through the insulating block and are riveted or spread at their end portions, as indicated by the numeral 26, to securely hold the studs in position. A fixed elongated contact member 27 of U-formation is also mounted on the insulating block 19 in a line parallel to the line of fixed studs and spaced from the convolutions of resistance wire and the studs, as shown in Figs. 3 and 5. The end portions of the elongated fixed contact member extend into the insulating block, and one of said ends is riveted to hold the member in position.

Two insulated studs 28 and 29 are positioned above the elongated contact member 27 and the upper stud 23 to support the movable contact member 30 when in its off position. Said movable member is of the floating type to form an intimate electrical contact between the movable member and the fixed contacts, and to accomplish this result, it is provided with a transversely extending slot 31 for loosely receiving the intumed end 32 of the yielding contact arm 33.

The movable contact member 30 is also of angular or offset formation, as clearly shown in Fig. 3, so that in moving upwardly to open the circuit, the offset edge 30' will disengage the upper end of the elongated fixed contact 27 and open the circuit through the controller before the other portion 30'' of the movable contact 30 disengages the fixed contact 23. Any roughness to the portion 30' of the movable contact 30 which might be caused by arcing will be quickly worn off by the rubbing of the movable contact on the elongated fixed contact and thus prevent the roughness extending over an increasing area.

The portion of the arm 33 adjacent the end is indented to form an intumed shoulder 34 which bears centrally on the movable contact member and permits said member to rock longitudinally and transversely to compensate for the inequalities of the alinement of or the surfaces of the fixed contacts. The opposite end of the arm 33 is connected to an insulating block 35 and said block is firmly mounted on the outer side portion of an upturned guard formed on one side edge of the foot treadle 10, so that when the treadle is pressed downwardly, the resistance will be cut out of the circuit, in which the controller is included in a step by step movement.

The lower end of the resistance wire is connected to a post 36 by a wire 37, and the lower end of the elongated contact member 27 is connected to the binding post 38 by a wire 39.

Wires 40 provide for connecting the controller to a circuit.

The cover 17 of screen material is cut away as indicated by the numeral 17' to permit the oscillation of insulating block 35.

From the foregoing description, it will be seen that the motor controller is of very simple construction, and is well adapted for the purpose described.

What I claim as my invention is:

1. A motor controller, comprising a support, an insulating block carried by the support and having grooves formed therein, a coil of resistance wire included in an electric circuit and wound around the insulating block and extending into said grooves, a line of fixed contacts intersecting portions of the resistance wire, an elongated fixed contact extending in a line adjacent the line of fixed contacts but free from contact with the resistance wire, a circuit wire connected to the elongated fixed contact, a circuit wire connected to one end of the resistance wire, a treadle pivotally mounted on the support, means for yieldingly holding the treadle in its upper position, an arm carried by and insulated from the treadle and having an intumed end portion, and a movable contact member engaging the elongated contact member and the fixed contacts and having an opening through which the intumed end portion of the arm extends to form a freely movable engagement therebetween, said movable contact member disengaging the elongated contact and opening the circuit before it disengages the last resistance wire fixed contact.

2. A motor controller, comprising a support, an insulating block carried by the support and having grooves formed therein, a coil of resistance wire wound around the insulating block and extending into said grooves, a line of fixed contacts intersecting portions of the resistance wire, an elongated fixed contact extending in a line adjacent the line of fixed contacts but free from contact with the resistance wire, a circuit wire connected to the elongated fixed contact, a circuit wire connected to one end of the resistance wire, a treadle pivotally mounted on the support, means for yieldingly holding the treadle in its upper position, an arm carried by and insulated from the treadle and having an intumed end portion, and a movable contact member engaging the elongated contact member and the fixed contacts and having a transversely extending elongated opening through which the intumed end portion of the arm extends to form a freely movable engagement therebetween.

3. A motor controller, comprising a support, an insulating block carried by the support and having a spirally extending groove formed therein, a coil of resistance wire wound around the block and extending into the groove, a line of fixed contacts intersecting the portions of the resistance at spaced

intervals, an elongated fixed contact extending in a line substantially parallel to the line of contacts but free from contact with the resistance wire, a circuit connected to the elongated fixed contact, a circuit wire connected to the lower end portion of the resistance wire, a treadle pivotally mounted on the support, a coiled spring means for yieldingly holding the treadle in its upper position, an arm carried by and insulated from the treadle and having an inturned end portion and an inwardly extending medial shoulder, and a movable contact member engaging the elongated contact member and the fixed contacts and having a transversely extending opening through which the inturned end portion of the arm extends, the medial shoulder of the arm bearing on the movable contact member to form a freely movable engagement therebetween.

4. A motor controller, comprising a support, an insulating block carried by the support, a resistance carried by the block and having fixed contacts associated therewith, another fixed contact associated with the block, a treadle pivotally mounted on the support, and arm carried by the treadle and having an inturned end portion, and a floating slotted contact member for pivotally receiving the inturned end portion, said movable contact member carried by the arm and having edgewise offset portions which engage the resistance fixed contacts and the other fixed contact, said offset portions providing for disengaging said other fixed contact before disengaging the resistance contacts in moving to off position.

In testimony whereof, I affix my signature.

WILLIAM DRIVER.