July 16, 1929. D. H. CHASON 1,721,069

KNEE CONTROL MECHANISM FOR PORTABLE ELECTRIC SEWING MACHINES

Filed June 9, 1928

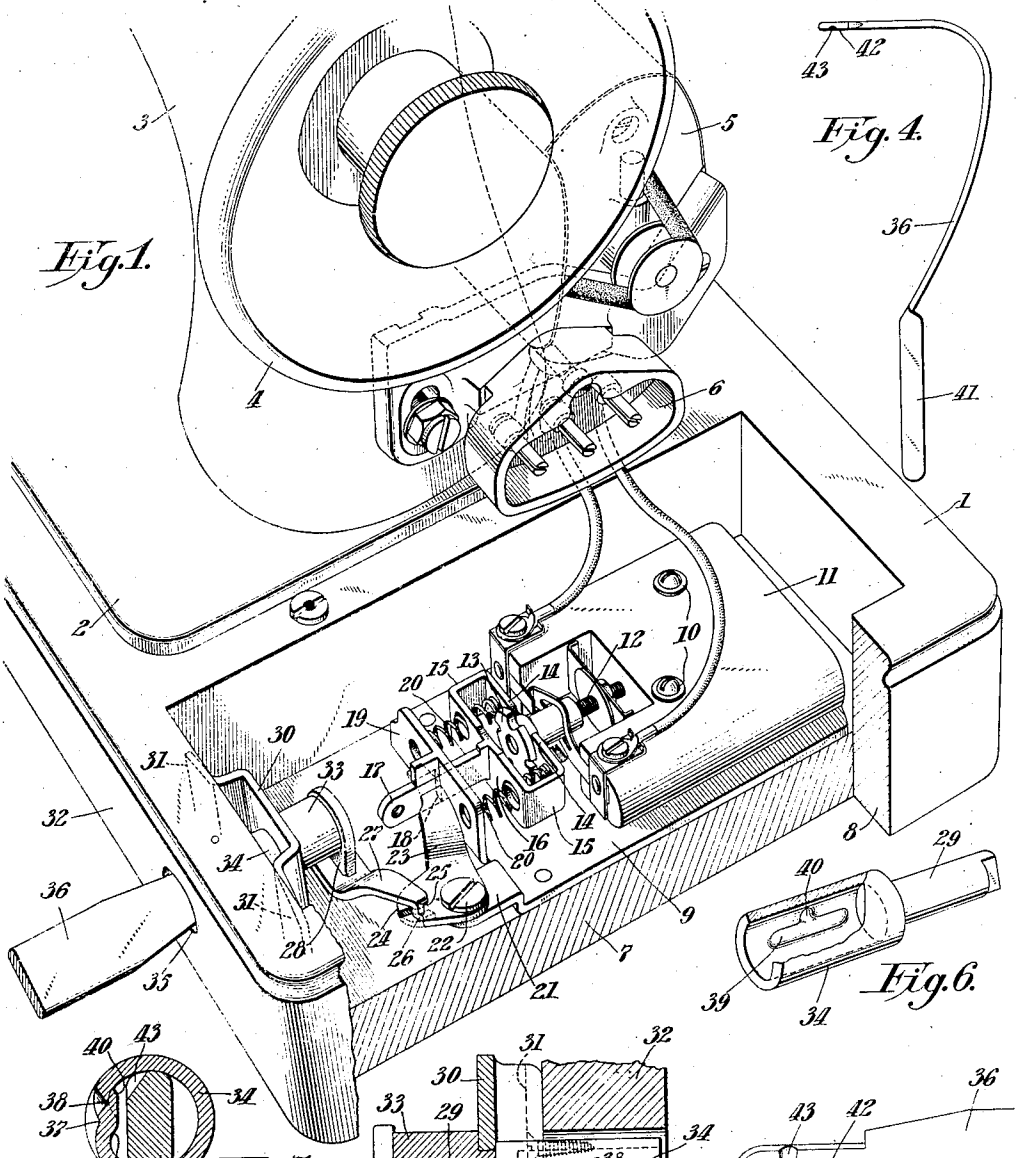

Fig. 1.

Fig. 4.

Fig. 6.

Fig. 7.

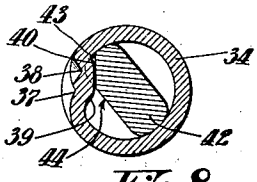

Fig. 8.

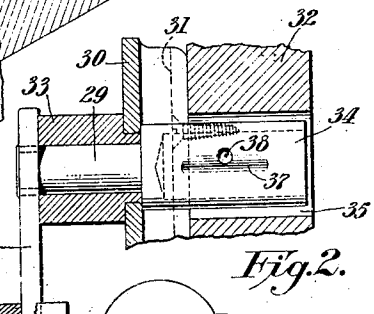

Fig. 2.

Fig. 5.

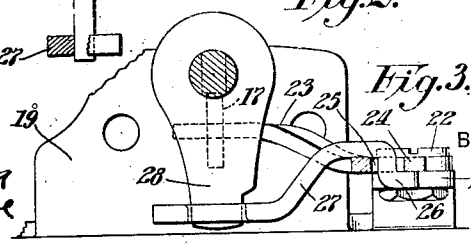

Fig. 3.

WITNESSES

Joseph Peccina

John F. Heine

INVENTOR

Daniel H. Chason

BY Henry J. Miller

ATTORNEY

Patented July 16, 1929. 1,721,069

UNITED STATES PATENT OFFICE.

DANIEL H. CHASON, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF ELIZABETH, NEW JERSEY, A CORPORATION OF NEW JERSEY.

KNEE CONTROL MECHANISM FOR PORTABLE ELECTRIC SEWING MACHINES.

Application filed June 9, 1928. Serial No. 284,180.

This invention relates to knee-controlled portable electric sewing machines and has for an object to provide a simple knee-operated mechanism adapting a standard straight-pull or draw-bar operated motor-controller unit, useful with sewing machine outfits of various types, for easy installation in the base of the carrying case of an electric sewing machine of the portable type.

Another object of the invention is to provide a simplified and efficient coupling for detachably connecting the knee-shift lever with the controller mechanism in the base of the machine.

According to the present invention, the controller-unit and the bearing-support for the knee-lever are separately constructed and separably mounted in the base of the carrying case. The controller-unit is of the standard straight-pull type and is secured to the bottom wall of the portable base. The bearing-support for the knee-lever is secured separately from the controller-unit to the front wall of the portable base. Journaled in the bearing-support is a rock-shaft carrying the socket-element of a coupling-device into which the knee-lever may be inserted. The rock-shaft has fixed to its inner end a downwardly extended crank-arm which enters a slot in one end of a link the other end of which has an offest end entering a hole in one arm of a bellcrank-lever fulcrumed on the controller-supporting base-plate. The other arm of the bellcrank-lever projects through a hole in the straight-pull controller-operating rod.

The present improvement permits of the construction and mounting of the operating rock-shaft separately from the controller-unit; the connecting mechanism being of such a nature that it is not necessary to position the controller-unit and rock-shaft support relatively to one another with machine-like precision for successful operation.

The knee-lever coupling-device comprises a cylindrical socket formed at one end of the controller operating rock-shaft and having a dent in its outer wall forming a rib projecting inwardly from the inner wall of the socket. The dent is of such shape that the rib has a portion extending lengthwise of the socket and a portion extending circumferentially of the socket. The knee-shift lever is constructed from flat metal or bar-stock and is formed at one end with a flat tongue adapted to enter the socketed end of the rock-shaft. This tongue has a recess in one edge which engages the portion of the socket-rib extending circumferentially of the socket, while permitting the face of the tongue adjacent said edge to operatively engage the portion of the socket-rib extending lengthwise of the socket.

In the accompanying drawings, Fig. 1 is a perspective view of a portable electric sewing machine embodying the invention. Fig. 2 is a detail sectional view through the front wall of the base-member of the sewing machine carrying case, showing the operating rock-shaft for the motor-controller. Fig. 3 is a sectional view through the socketed end of the controller operating rock-shaft looking toward the controller unit. Fig. 4 is a side elevation of the controller-operating knee-shift lever. Fig. 5 is an under face view of the tongue-element at the upper end of the knee-shift lever. Fig. 6 is a perspective view of the socket element on the controller operating rock-shaft. Fig. 7 is a section through the coupling device between the controller operating rock-shaft and the knee-shift lever, showing the position of the tongue when inserted in the socket and Fig. 8 is a similar view with the tongue rotated to working position in the socket.

The preferred embodiment of the invention illustrated comprises the hollow wooden base 1 of the usual sewing machine carrying case, on which base rests the bed 2 of a sewing machine having the usual gooseneck 3, balance wheel 4, driving motor 5 and plug-connector element 6 for the current supply.

Mounted on the bottom wall 7 of the base 1 adjacent the end wall 8 is the standard straight-pull carbon controller-unit, such as disclosed in my copending applications Serial No. 240,587, filed Dec. 16, 1927, and Serial Nos. 284,181 and 284,182, filed herewith. Such a controller-unit comprises a base-plate 9 to which is fastened by screws 10 a carbon compression type rheostat 11 including a pull-rod 12 on which is screwed a head 13 embraced by the ends of the arms 14 which extend inwardly from the side-members 15 at the ends of the cross-head 16 connected to the draw-bar or straight-pull operating member 17 which passes through an aperture 18 in the wall 19 bent upward-

ly from the base-plate 9. Recovery springs 20 serve to restore the draw-bar 17 to initial or "off" position when the pull thereon is relieved.

The base-plate 9 is formed with an ear 21 supporting the fulcrum-screw 22 for a bellcrank-lever one arm 23 of which projects through an aperture in the draw-bar 17. The other arm 24 of the bellcrank-lever is formed with an aperture 25 through which projects the offset end 26 of the link 27 into the other end of which projects the lower end of the crank-arm 28 fixed to the rock-shaft 29. The offset end 26 of the link 27 bears upwardly upon the under face of the bell-crank-lever arm 24 and supports the other end of the link 27 so that it will not drop away from the crank-arm 28.

The bearing support for the rock-shaft 29 is constructed separately from the controller-unit and includes the bracket 30 having feet 31 screwed to the front side wall 32 of the base 1. Fixed to the bracket 30 is the bearing sleeve 33 for the rock-shaft 29 which is formed at its outer end with a cylindrical socket 34 disposed in the aperture 35 in the front side wall 32 of the base.

It will be understood that the operating mechanism connecting the rock-shaft 29 to the draw-bar 17 is of such a nature that machine-like accuracy is not required in locating the bearing support 30 relative to the controller-unit base 9. Thus a simple standard straight-pull controller-unit of general application, such as disclosed in my said copending applications, is readily installed in the base of the carrying case of a portable electric sewing machine.

The rock-shaft 29 is intended to be operated by a knee-shift lever 36 which is detachably connected to the socketed end 34 of the rock-shaft by a simplified form of coupling. The cylindrical socket 34 is formed with a compound dent in its outer wall such dent including a portion 37 extending longitudinally of the cylinder 34 and a circumferential portion 38 closely adjacent the longitudinally extending portion 37. The indentation forms a raised portion or rib projecting inwardly from the inner wall of the socket; such rib including a portion 39 extending lengthwise of the socket and a portion 40 extending circumferentially of the socket.

The knee-shift lever 36 is made from flat bar stock bent flatwise to form the shank. The lower end of the bar is twisted 90° to present a knee-contacting face 41. The bar 36 is formed at its upper end with a tongue 42 of a width to slip into the socket 34, as shown in Fig. 7. The tongue 42 is formed in one edge with a recess 43 which is engaged by the rib-portion 40 of the socket to lock the knee-lever against withdrawal when it is turned from initially inserted position, Fig. 7, to operating position, Fig. 8, with the face 44 of said tongue in driving engagement with the rib-portion 39. By bending the knee-lever 36 flatwise and twisting its lower end 90°, the lower end of the lever is so disposed that its flat face is engaged by the operator's knee and the upper portion of the lever is stiffened against bending under the operative stresses which are applied flatwise of the lower portion and edgewise of the upper portion of the lever. With the present coupling device there is required a minimum amount of rotation of the knee-lever to lock it in operative position after it is inserted in the socket. This feature is particularly advantageous in case the base 1 is seated in the apertured top of a table and it is required to insert the knee-lever in its socket while the latter is under the table-top.

The rheostat 11 is connected in series with the motor 5 to the outer terminals of the current supply connector-element 6; the center terminal being used only as a binding post in the present outfit.

Having thus set forth the nature of the invention, what I claim herein is:

1. In an electric sewing machine, the combination with a sewing machine support having a front side wall formed with a knee-shift lever receiving aperture, of a draw-bar operated motor-controller unit mounted behind said front wall with the draw-bar extending toward the latter, a rock-shaft and a bearing support therefor constructed and mounted separately from said controller-unit, said rock-shaft and bearing-support being mounted behind said front wall with the rock-shaft in line with said aperture, a crank-arm fixed to the inner end of said rock-shaft, a bellcrank-lever connected to the draw-bar of the controller-unit, a link connected at one end to said crank-arm and at the other end to said bellcrank-lever, and a knee-shift lever detachably connected to said rock-shaft.

2. The combination with a draw-bar operated motor-controller-unit including a bellcrank-lever having one of its arms connected to the draw-bar operating member of said unit, the other arm of said bellcrank-lever being apertured, of an operating rock-shaft, a crank-arm fixed to said rock-shaft, and a link having an offset portion at one end passing through the apertured arm of said bellcrank-lever and engaging one face of the latter, the other end of said link being apertured and entered by said crank-arm.

3. The combination with a bearing support, of a rock-shaft journaled in said bearing support and having a hollow cylindrical socket formed at one of its ends, said socket having a dent in its outer wall forming a rib projecting inwardly from the inner wall and comprising a portion extending length-

wise of the socket and a portion extending circumferentially of the socket, and an operating-bar having a flat tongue adapted to enter said socket, said tongue having a recess in one edge to engage the portion of the socket rib extending circumferentially of the socket while permitting the tongue-face adjacent said edge to operatively engage the portion of the rib extending lengthwise of the socket.

In testimony whereof, I have signed my name to this specification.

DANIEL H. CHASON.