March 8, 1932. R. S. KELSO ET AL 1,848,353

MOTOR SUPPORT FOR SEWING MACHINES

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Fig. 1.

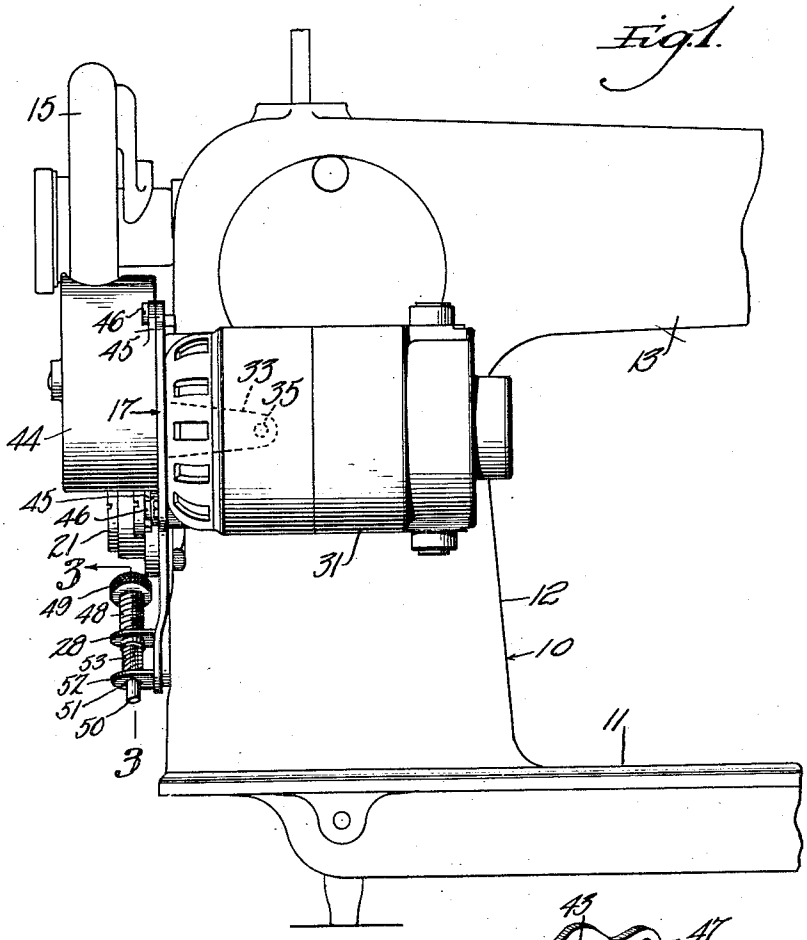
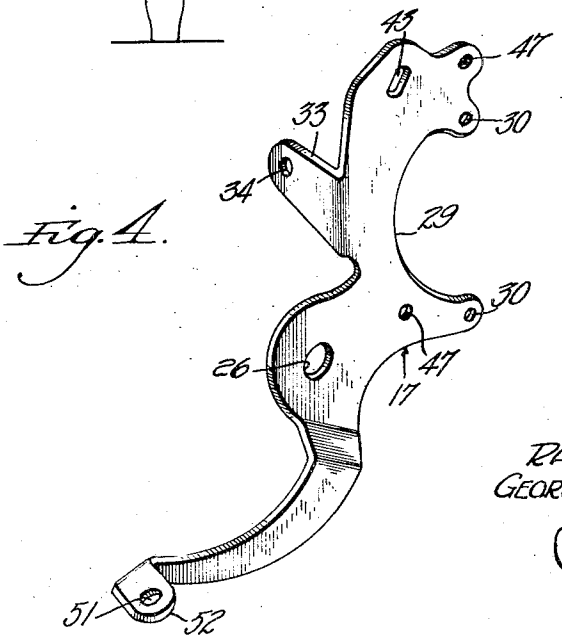


Fig. 4.



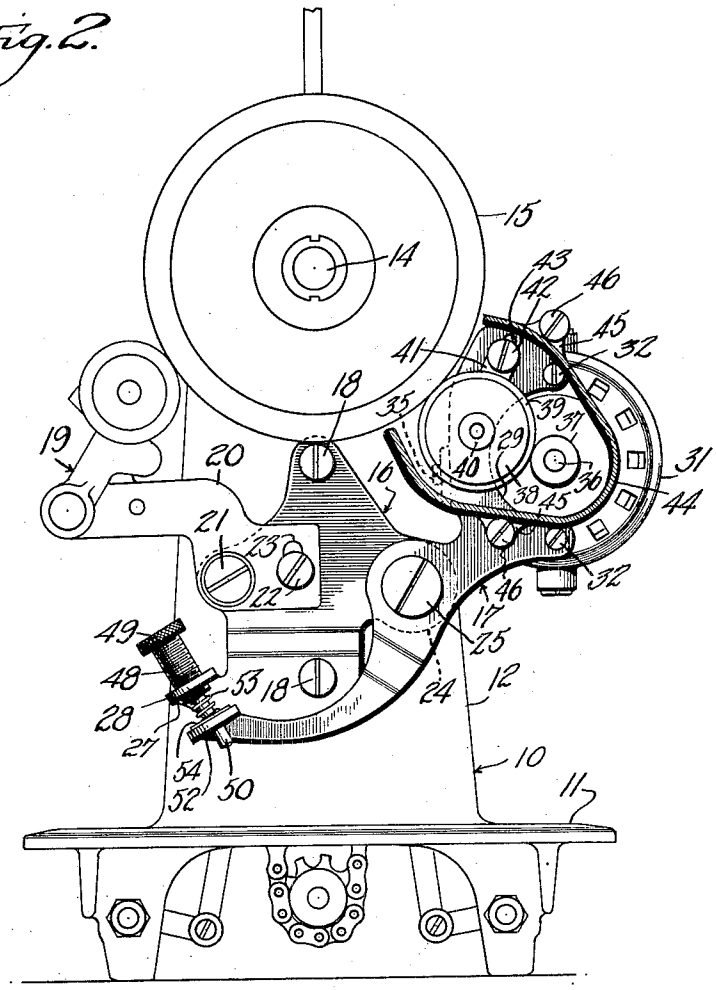
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Fig. 2.



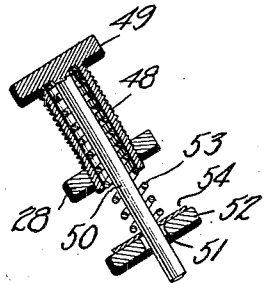


Fig. 3.

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UNITED STATES PATENT OFFICE

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MOTOR SUPPORT FOR SEWING MACHINES

Application filed October 6, 1930. Serial No. 486,816.

This invention relates to motor supports for sewing machines.

The present invention is, in a sense, an improvement over the construction shown in the copending application of Ralph S. Kelso, Serial No. 410,562, filed November 29th, 1929. In the latter application, there is disclosed a motor for sewing machines having a friction driving element on the shaft thereof, and an intermediate friction wheel is arranged between the friction element of the motor shaft and the hand wheel of the sewing machine. The motor is pivotally supported with respect to the head of the machine, and spring means is employed which tends to move the motor about its pivot to maintain the proper engagement between the various frictional surfaces.

The present invention relates generally to a support for the motors of sewing machines and is particularly intended for use with the type of driving mechanism illustrated in the copending application referred to. It will become apparent, however, that the invention is not limited to its application to the type of friction drive means referred to, but may be employed advantageously in connection with other types of drive means for sewing machines, such as the types wherein the friction element carried by the motor shaft is arranged in direct driving engagement with the hand wheel of the sewing machine.

An important object of the present invention is to provide a novel motor supporting bracket which is simple in construction and which readily may be adjusted to vary the frictional engagement between the driving elements.

A further object is to provide novel supporting means for a sewing machine motor all of the parts of which are arranged externally of the head of the machine to render them readily accessible.

A further object is to provide pivotal supporting means for a sewing machine motor in combination with resilient means tending to move the motor about its pivot, the motor supporting means being of such nature that the parallel relationship between the motor shaft and the shaft of the sewing machine is retained in all adjusted positions of the motor.

A further object is to provide a novel supporting bracket for the motor and associated elements of a sewing machine, which is arranged at one end of the head of the machine and is adapted to swing about an axis parallel to the axis of rotation of the hand wheel whereby the parallel relationship between the latter axis and that of the motor is retained in all adjusted positions of the latter.

A further object is to provide novel resilient means tending to urge the motor toward the hand wheel to provide the proper engagement between the surfaces of the various frictional driving elements.

A further object is to provide a two part supporting bracket for a sewing machine motor, one part of the bracket being rigidly connected to the head of the sewing machine, the other part of the bracket being pivotally connected to the first part and directly supporting the motor, and to provide resilient means connected between the parts of the bracket for urging the friction driving element of the motor shaft toward the hand wheel of the sewing machine.

A further object is to provide a device of the character just referred to having novel means for substantially obscuring the resilient means from view to improve the appearance of the device.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings we have shown one embodiment of the invention. In this showing,

Figure 1 is a fragmentary rear elevation of a portion of a sewing machine head, showing the invention applied,

Figure 2 is an end elevation of the same,

Figure 3 is an enlarged detail section on line 3—3 of Figure 1, and,

Figure 4 is a detail perspective view of the swinging bracket member.

Referring to the drawings the numeral 10 designates the body of a sewing machine as a whole comprising a bed 11 and a head includ-

ing a standard 12 and a horizontal arm 13. The sewing machine, aside from the driving means to be described, operates in the usual manner and forms no part of the present invention. As shown in Figure 2, the machine is provided with the usual operating shaft 14 carrying a hand wheel 15 of substantially smaller diameter than ordinary constructions.

The device forming the subject matter of the present invention comprises a two-piece bracket, the parts of which are indicated by the numerals 16 and 17. The bracket member 16 is secured against the outer face of the standard 12 by screws 18 as shown in Figure 2. The bracket member 16 is adapted to support a bobbin winder indicated as a whole by the numeral 19, and including an arm 20 secured to the bracket member 16 by screws 21 and 22. The latter screw extends through a slot 23 formed in the inner end of the arm 20 to permit the latter to assume adjusted positions.

The bracket member 16 is provided rearwardly thereof with a relatively large ear 24, to which the bracket member 17 is pivotally connected by means of a bolt 25, passing through an opening 26 formed in the bracket 17. The forward end of the bracket member 16 is provided with a projecting portion 27 which terminates in an outstanding lip 28 for a purpose to be described.

Above the opening 26, the bracket member 17 is provided with a substantially semicircular cut-out portion 29, and above and below this cut-out portion, the bracket member is provided with openings 30. The semicircular cut-out portion is adapted to extend around the end portion of the casing of an electric motor 31, and screws 32 extend through the openings 30 and into the motor casing for securing the latter to the bracket member 17. An integral arm 33 is carried by the bracket member 17 and extends along one side of the motor casing parallel thereto. This arm is provided in its end with an opening 34 through which passes a screw 35 for securing the arm to the motor casing. It will be apparent that the screws 32 and 35 serve to rigidly secure the motor to the bracket member 17.

The motor 31 is provided with the usual armature shaft 36, and a friction driving member 37 is carried by this shaft. Referring to Figure 2, it will be noted that an intermediate friction wheel 38 is arranged between the friction element 37 and hand wheel 15, and is provided with a peripheral rubber or other resilient portion 39 to provide an efficient frictional engaging face. The intermediate friction wheel is rotatable on a shaft 40 carried by one end of an arm 41. A bolt 42 passes through the upper end of the arm 41 and through a slot 43 formed in the upper end of the bracket member 17, as shown in Figures 2 and 4. The slot 43 obviously permits the bolt 42, and consequently the friction wheel 38, to be arranged in adjusted positions with respect to the bracket member 17, and the arm 41 freely pivots about the bolt 42 to permit the friction wheel 38 to seek its proper position in equal frictional engagement with the friction element 37 and hand wheel 15. As shown, the axis of the shaft 40 is arranged to one side of a plane passing through the shafts 14 and 36.

A cover 44 is arranged over the frictional driving means, as shown in Figures 1 and 2. The cover is provided with ears 45 through which pass screws 46, and these screws are threaded in openings 47 formed in the bracket member 17. The end of the cover 44 adjacent the hand wheel 15 obviously is open to permit the latter to extend into the cover and into engagement with the friction wheel 38.

The ear 28 receives a screw 48 threaded therein and provided with a knurled head 49. The screw 48 is in the form of a sleeve, as shown in Figure 3, and includes a central stem 50 extending a substantial distance therebelow. The stem 50 extends through a slightly elongated opening 51 extending through an ear 52 formed integral with the lower end of the bracket member 17 and arranged substantially parallel to the ear 28. A coil spring 53 is arranged in the sleeve 48 and contacts at its lower end with a small washer 54 arranged on the ear 52.

The operation of the device is as follows: The frictional driving means per se operates identically with the corresponding means of the copending application Serial No. 410,562 above referred to. Rotation of the frictional driving member 37 transmits its rotation to the intermediate wheel 38 through the resilient band 39, and the latter rotates the hand wheel 15. The use of the intermediate wheel 38 permits the use of a much smaller hand wheel than is employed with ordinary constructions, thus improving the appearance of the sewing machine. The shaft 40 of the intermediate wheel 38 swings freely about the axis of the bolt 42 and accordingly the intermediate wheel seeks its proper position to cause the same frictional pressure to be exerted between the wheel 38 and the elements with which it is in frictional engagement.

It will be apparent that the spring 53 exerts a resilient force downwardly and rearwardly against the adjacent arm of the bracket 17, and thus the motor tends to move inwardly and upwardly toward the hand wheel 15. Thus the spring exerts the proper resilient force to maintain the frictional driving elements in engagement with each other, and this resilient force obviously may be adjusted by rotating the knurled head 49 of the screw 48. The stem 50 serves to retain the lower end of the spring 53 in proper position, and

it also acts as a guide for the adjacent end of the bracket member 17, by operating in the opening 51. This opening is only sufficiently elongated to permit the bracket member 17 to partake of limited swinging movement.

It will be apparent that the swinging movement of the bracket member 17 takes place about the axis of the bolt 25, which is parallel to the axes of all of the shafts 14, 36 and 40. Regardless of the position assumed by the bracket 17 under the influence of the spring pressure, therefore, the parallel relationship between the various axes referred to will be retained. With the usual constructions, the swinging movement of the motor takes place about an axis arranged at an angle to the axis of rotation of the hand wheel, thus causing the frictional driving member of the motor shaft to assume increasingly greater angles with respect to the operating shaft as wear takes place between the frictional driving elements. This result obviously is prevented with the present construction.

With the usual constructions, the spring means employed for urging the frictional driving elements into proper engagement with each other is mounted within the standard 12. With the present construction the spring, as well as all of the other operating parts, is mounted externally of the head of the machine, and these parts accordingly are readily accessible. It will be apparent that the entire apparatus readily may be detached from the sewing machine merely by removing the two screws 18. The arrangement of the greater portion of the spring 53 within the threaded sleeve 48 substantially hides the spring from view, thus improving the appearance of the device.

While the device has been illustrated in connection with friction drive means including the intermediate drive wheel 38, it will be apparent that it advantageously may be employed in connection with the more conventional types of driving means wherein the frictional member carried by the motor shaft contacts directly with the hand wheel of the sewing machine.

It is to be understood that the form of our invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of our invention or the scope of the subjoined claims.

We claim:

1. The combination with a sewing machine including a rotatable element, a motor, and frictional driving elements connected between the shaft of the motor and said rotatable element, of a bracket having a cut-out portion at one end extending around said motor, said bracket further being provided with an arm extending along the side of said motor, fastening means for securing said arm and the portions of said bracket on opposite sides of the cut-out portion thereof to said motor, a supporting bracket carried by the sewing machine, pivot means for connecting said first named bracket intermediate its ends to said second named bracket, and a spring arranged between said supporting bracket and the other end of said first named bracket to tend to swing the latter about its pivot axis to maintain said driving elements in engagement with each other.

2. The combination with a sewing machine including a rotatable element, a motor, and frictional driving elements connected between the shaft of the motor and said rotatable element, of a swinging bracket having a cut-out portion at one end extending around said motor and provided on opposite sides of said cut-out portion with openings, an arm formed integral with said swinging bracket and extending along said motor and provided with an opening, fastening elements extending through said openings for securing said motor to said bracket, a supporting bracket carried by the sewing machine, pivot means for connecting said first named bracket intermediate its ends to said supporting bracket to swing about an axis parallel to the axis of said rotatable element, an ear formed on the other end of said swinging bracket, and a spring carried by said supporting bracket and operating against said ear to tend to swing said first named bracket about its pivot axis to maintain said driving elements in engagement with each other.

3. The combination with a sewing machine including a rotatable element, a motor, and frictional driving elements connected between the shaft of the motor and said rotatable element, of a bracket having portions at one end arranged at opposite sides of the axis of said motor at one end thereof and provided with openings therein, said bracket further being provided with an arm extending along one side of said motor with an opening therein, said openings being adapted to receive fastening means for securing said motor to said bracket, a supporting bracket carried by the sewing machine, pivot means for connecting said first named bracket intermediate its ends to said second named bracket, and a spring arranged between said supporting bracket and the other end of said first named bracket to tend to swing the latter about its pivot axis to maintain said driving elements in engagement with each other.

In testimony whereof we affix our signatures.

RALPH S. KELSO.
GEORGE R. WAINWRIGHT.