

Oct. 22, 1935.

G. M. EAMES

2,018,624

MOTOR SUPPORT AND BOBBIN WINDER OF SEWING MACHINES

Filed April 7, 1932

2 Sheets-Sheet 1

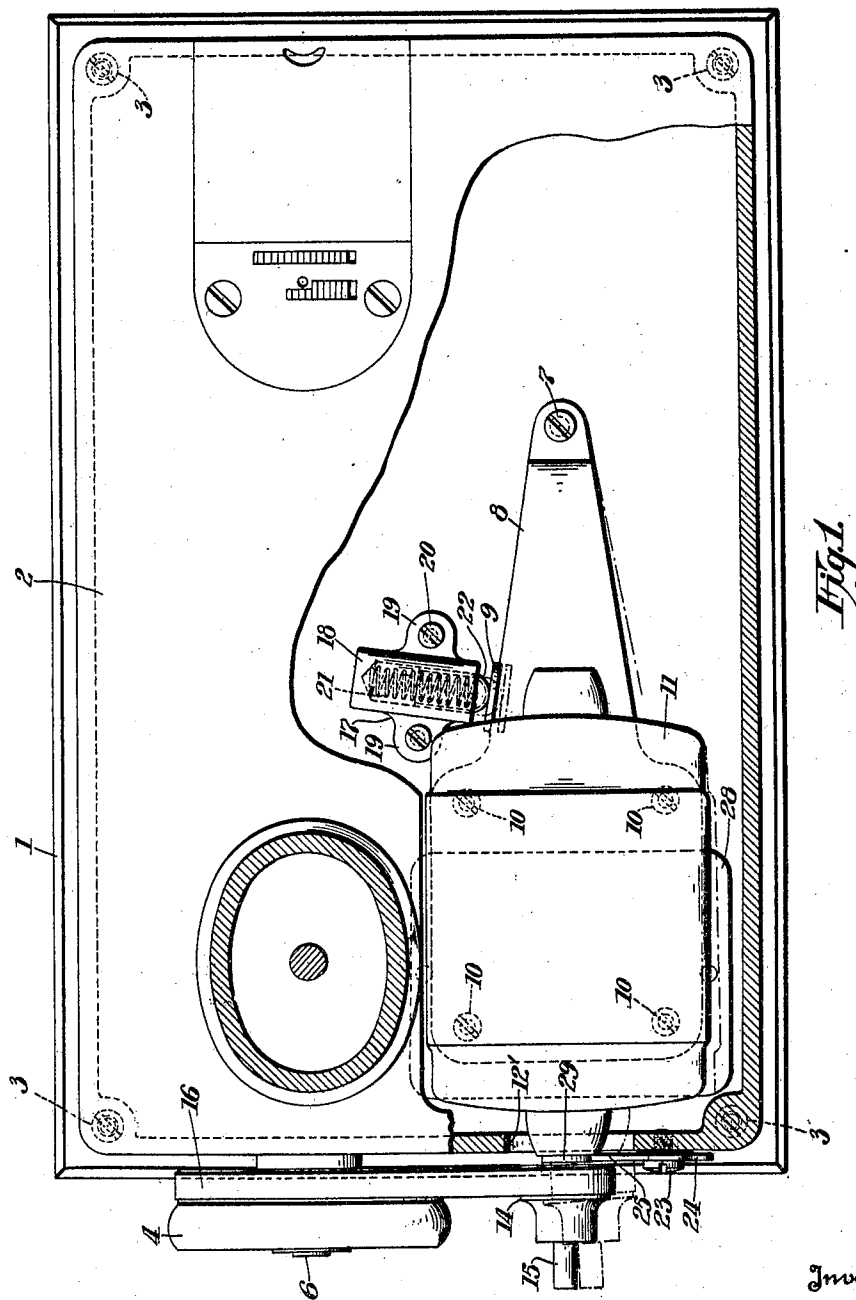


Fig. 1

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2 Sheets-Sheet 2

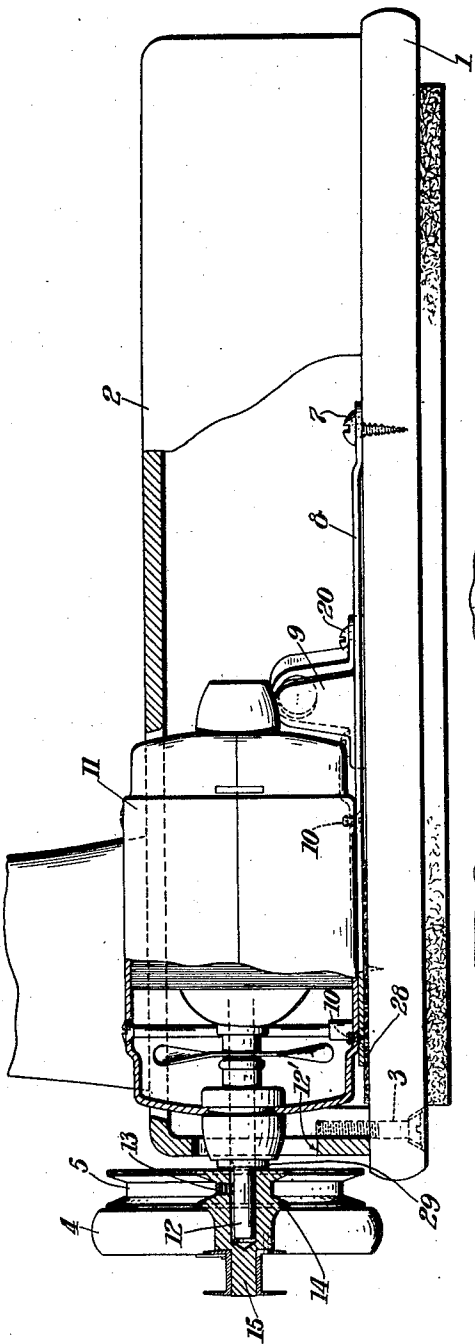


Fig. 2.

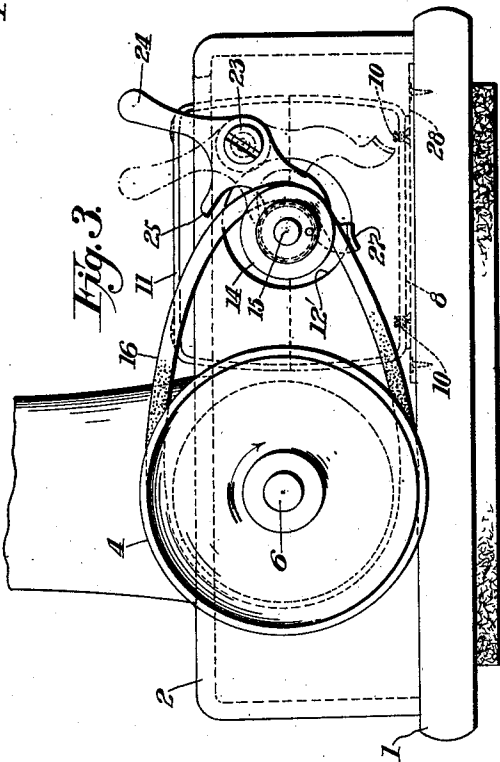


Fig. 3.

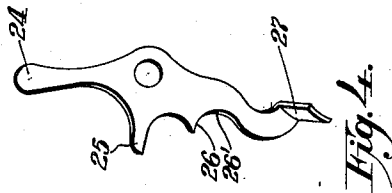


Fig. 4.

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UNITED STATES PATENT OFFICE

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MOTOR-SUPPORT AND BOBBIN-WINDER
OF SEWING MACHINES

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8 Claims. (Cl. 112—220)

This invention relates to sewing machines and more particularly to electric drives and bobbin-winders therefor.

During the operation of lock-stitch sewing machines it is frequently necessary to rewind the bobbin which supplies the lower thread to the stitch-forming mechanism. In certain types of sewing machines as heretofore constructed the driving means has been connected to the balance-wheel of the sewing machine which is connected to the stitch-forming mechanism by suitable means including a clutch so that the balance-wheel could be disengaged from the stitch-forming mechanism when it is desired to wind the bobbin. This arrangement for disconnecting the driving means from the stitch-forming mechanism was provided to prevent the stitch-forming mechanism from disturbing a partially completed seam; to make it unnecessary to unthread the machine; and to prevent unnecessary wear and undue vibration during the bobbin-winding operation. These machines were provided with a bobbin-winding supporting spindle mounted independently of the sewing machine mechanism and adapted to be connected to the driving mechanism after the latter has been disconnected from the stitch-forming mechanism. In the small portable types of sewing machines having their main or driving shaft located below the bed-plate no provision is made for disconnecting the stitch-forming mechanism from its actuating means. The bobbin, in such instances, is usually wound upon a bobbin-supporting extension on the upper or needle-bar actuating shaft. The disadvantages of this construction are: unnecessary wear and undue vibration; and the necessity of unthreading the machine during the bobbin-winding operation.

The objects of this invention are: to greatly simplify the mechanism required to disconnect the actuating means from the stitch-forming mechanism; to provide simple and effective means for winding the bobbin; to construct a bobbin-winder which is light in construction and can be manufactured and assembled at little expense; to provide improved means whereby the friction between the driving and driven means remains constant; and to provide means whereby the element transmitting power from the driving to the driven means can be replaced readily.

With the above and other objects in view, as will hereinafter appear, the invention consists in the devices, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred em-

bodiment 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 drawings:

Figure 1 is a top plan view of the base of a family type portable sewing machine embodying my improved motor-support and bobbin-winder, partly broken away to show the relation of the parts.

Figure 2 is a rear elevation, partly in section, of the machine.

Figure 3 is an end elevation.

Figure 4 is a perspective view of the lever for shifting the driving means into and out of driving relation with the main shaft.

In the embodiment of this invention selected for illustration, 1 is the base plate to which is secured by the screws 3 the hollow bed 2 of the sewing machine. The machine is provided with the usual balance-wheel 4 having a belt-groove 5. The balance-wheel 4 is fixed upon the main shaft 6 located in the bed-plate 2 of the sewing machine, which shaft actuates the stitch-forming mechanism in the usual and well known manner.

Pivotally secured upon the base 1 by the pivot screw 7 is a flat arm 8 having an upturned portion 9. Secured by screws 10 to the free end of the flat arm 8 is a dynamo-electric device or motor 11 having a rotor-shaft 12 which protrudes through an aperture 12' in the end wall of the hollow bed 2. Fixed upon the rotor-shaft 12 by the set-screw 13 is a driving pulley 14 in alignment with the belt-groove 5 in the balance-wheel 4 and a bobbin-winding supporting spindle 15 formed integral with the driving pulley. The driving pulley 14 is connected to the balance-wheel 4 by means of a V-shaped belt 16. A hollow casing 17 closed at one end, as at 18, and having outwardly extending ears 19 is secured to the base 1 by screws 20. A compression spring 21 reacting against the closed end 18 of the hollow case 17 urges the plunger 22 into contact with the upstanding portion 9 of the flat arm 8. The compression spring 21 is strong enough to swing the motor 11 in a counterclockwise direction or rearwardly away from the balance-wheel 4. From the foregoing it will be obvious that the motor is mounted in such a manner that it tends constantly to swing or move about its pivot 7 in a direction to tighten the belt 16, thus at all times maintaining the belt 16 under tension.

Pivotally secured upon the end wall of the hollow bed 2 by the shouldered screw 23 is a le-

wheel 4. To disconnect the motor 11 from the balance-wheel 4, the lever 24 is shifted from the dotted line position to the full line position as shown in Figure 3. Shifting of the lever 24 causes the projection 26 of the lever to contact the motor-bearing-bushing 29 and force the motor 11 towards the balance-wheel 4. When the lever 24 reaches the full line position as shown in Figure 3, the bearing-bushing 29 enters the depression 26' where it is locked; due to the contour of the lever 24, until it is released by shifting the lever 24 to the dotted line position shown in Figure 3. During the shifting of the lever 24 from the dotted to the full line position the outwardly extending lip 27 engages the lower or slack run of the driving belt 16 and forces it upward thereby relieving the belt 16 of any tendency to frictionally adhere or engage the driving pulley 14 and establish driving relation with the balance-wheel 4. After the motor has been shifted out of driving relation with the balance-wheel, the bobbin may be wound by placing it on the bobbin-winding spindle 15 and operating the motor control in the usual and well known manner.

50 From the foregoing description considered in connection with the accompanying drawings, the construction, manner of operation and several advantages of my improved motor-support and bobbin-winder will be clearly and fully understood. It is apparent that such a device has a wide variety of uses, and it will be understood that the form, construction and arrangement of the several elements employed may be varied. Therefore, the privilege is reserved of resorting to all such legitimate changes therein as may be fairly embodied within the spirit and scope of the appended claims.

[illegible]

3. In combination with a sewing machine having a main shaft with a balance-wheel fixed thereon, a motor fixed to one end of an arm fulcrumed on a vertical pivot fixed to the bed of the sewing machine frame, said motor having a 15 rotor shaft with a driving pulley and a bobbin-winding spindle fixed thereon, and a single means for shifting and locking said motor into and out of driving relation with said balance-wheel.

5. In combination with a sewing machine having a frame and a main-shaft with a balance-wheel fixed thereon, a motor movably mounted on the frame of the sewing machine, said motor having a rotor shaft with a driving pulley and a bobbin-winding spindle thereon, a belt connecting said balance-wheel and driving pulley in driving relation, spring means for constantly urging said motor away from said balance-wheel to maintain said belt taut, and a lever for shifting said motor towards said balance-wheel against the action of said spring.

7. In combination with a sewing machine having a main-shaft with a balance-wheel fixed thereon, a motor movably secured to the frame of the sewing machine, said motor having a rotor shaft with a driving pulley fixed thereon, a belt connecting said balance-wheel and driving pulley in a driving relation, a spring means consisting of a coiled spring mounted on the rotor shaft and secured to the frame of the sewing machine, and a balance-wheel secured to the rotor shaft, the spring means being adapted to exert a spring force on the balance-wheel to rotate the rotor shaft in a direction opposite to the direction of rotation of the balance-wheel, and a driving pulley on the rotor shaft.

[illegible]

the sewing machine, a driving pulley carried by said motor, a belt connecting said balance-wheel and driving pulley in driving relation, spring means constantly urging said motor away from said balance-wheel to maintain said belt taut, and a lever pivoted to the frame of the machine for shifting said motor towards said balance-

wheel against the action of said spring, said lever being formed with a lip which is adapted to engage and raise the slack run of said belt to further relieve the belt of a tendency to frictionally engage the driving pulley.

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