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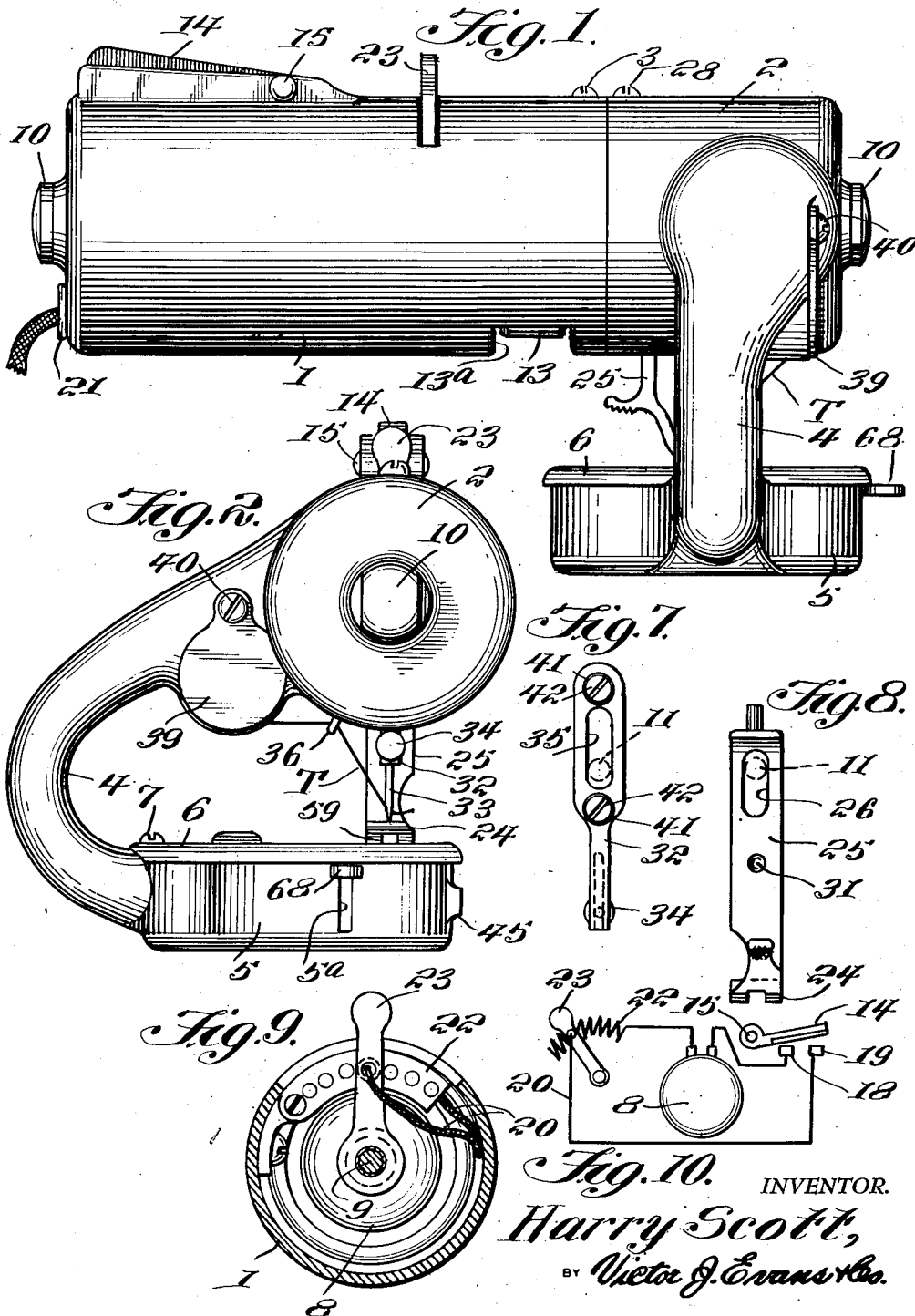
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2,573,499

PORTABLE SEWING MACHINE

Filed Dec. 12, 1947

2 SHEETS—SHEET 1



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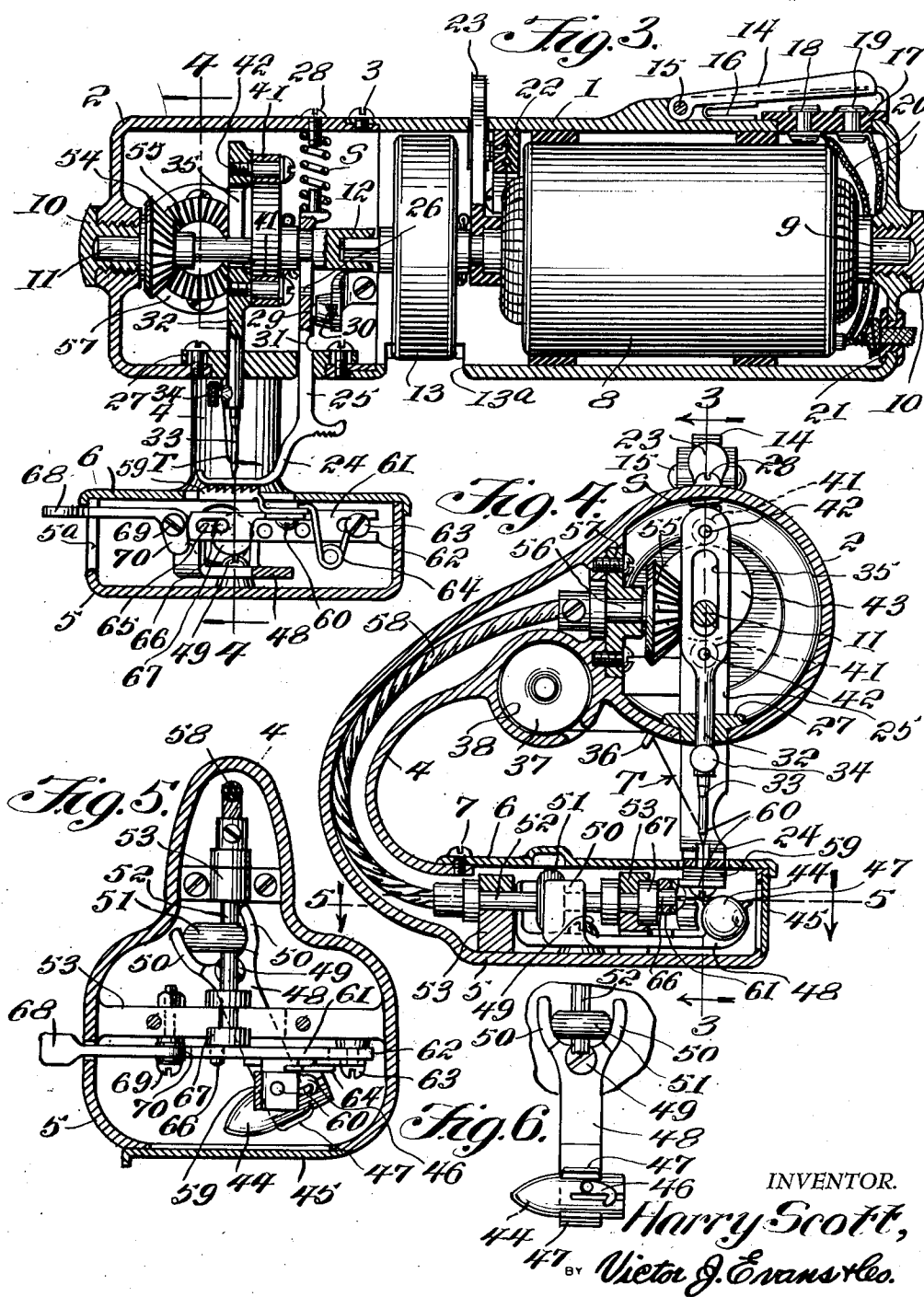
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2 SHEETS—SHEET 2



UNITED STATES PATENT OFFICE

2,573,499

PORTABLE SEWING MACHINE

Harry Scott, Dayton, Ohio

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2 Claims. (Cl. 112-169)

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My present invention relates to the general class of sewing machines of the portable hand manipulated and motor operated type, and more specifically to an improved portable sewing machine employing a single needle and shuttle mechanism, together with a material feeding device, and of a size and shape which readily adapt the hand implement for manipulation in one hand while the other hand is used in guiding the goods or material to be stitched.

Although the motor operated machine is well adapted for attachment to a suitable support for use as a stationary appliance, I have herein illustrated and referred to the invention as embodied in a hand implement that is light in weight and of convenient size and shape for facile manipulation in the process of sewing or stitching various kinds of work; and while I have illustrated an electric motor which may be plugged in and connected by an extension cord to a suitable electrical outlet for power in operating the machine, it will be understood that the mechanism may be operated by other means.

The invention involves a minimum number of standardized parts that may with facility be manufactured at comparatively low cost of production, and the parts may be assembled with convenience to provide a hand implement that is readily manipulated and which is durable, and efficient in the performance of its functions.

The invention consists essentially in certain novel features of construction and combinations and arrangements of parts involving a motor housing including a power transmission case, a hollow base or operating head and a tubular arm uniting the operating head and housing or transmission case, together with a motor, power transmission mechanism located in the case and tubular arm and operated by the motor within the housing, and stitch-forming and material feeding mechanism mounted in the operating head, as will hereinafter be described and more particularly set forth in the appended claims.

In the accompanying drawings I have illustrated one complete example of a physical embodiment of my invention wherein these parts are combined and arranged in accord with the best mode I have so far devised for the practical application of the principles of my invention. It will however be understood that changes and alterations are contemplated and may be made in these exemplifying drawings and mechanical structures, within the scope of my claims, without departing from the principles of the invention.

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Figure 1 is a view in side elevation of a hand implement embodying my invention; and Figure 2 is a front end elevation as seen from the right in Fig. 1.

Figure 3 is a longitudinal vertical sectional view on 3-3 of Fig. 4 showing in detail the operating parts of the machine.

Figure 4 is a transverse vertical sectional view at line 4-4 of Fig. 3 illustrating the transmission of power from the power output shaft or operating shaft to the shuttle and feed mechanism in the hollow base or operating head.

Figure 5 is a horizontal sectional view transversely of the hollow base, as at line 5-5 of Fig. 4.

Figure 6 is a top plan view of the shuttle lever and bobbin detached.

Figure 7 is a view in elevation of the needle bar, with the needle omitted; and Figure 8 is a similar view of the presser bar and foot.

Figure 9 is a vertical sectional view transversely of the motor housing showing the speed controlling rheostat for the electric motor; and Figure 10 is a diagram of the motor circuit including the motor control switch and the rheostat.

In carrying out my invention I employ as a frame or support for the operating parts of the machine, a unitary structure which includes a cylindrical motor housing 1 of desired shape and size to be grasped as a handle in manipulating the machine, and this housing also includes a front gear case or power transmission case 2 that is fastened to the housing as an extension by means of screws 3 at an overlapping joint.

This unitary structure also includes a tubular outwardly curved arm 4 integral with the gear case 2, and also integral with a hollow base or operating head 5 arranged in horizontal position beneath the gear case, and the upper open top of the hollow base is provided with a cover plate 6 that is secured to the base by screw 7.

A suitable electric motor 8 is mounted within the motor housing, with its rotary shaft 9 journaled at one end in a bearing boss 10 that is threaded into the rear end of the housing and a power output shaft 11, which forms an axial extension of the motor shaft, is jointed at 12 to the motor shaft, and also journaled in a bearing boss 10 at the front end of the gear casing 2.

The motor shaft is equipped with a transversely mounted balance wheel or fly wheel 13 located between the motor housing and the gear case, and the under side of the housing is slotted as at 13A for convenient access by a thumb or finger in turning the needle operating mechanism.

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nism for lifting the needle when desired, or necessary.

The operation of the motor is controlled by a hand actuated lever 14, which is pivoted at 15 on the exterior upper face of the motor housing, and this switch lever is initially held in open position by means of a spring as 16 interposed between the switch lever and the housing. The switch lever is depressed, when the housing is grasped in a hand, into a slot of the housing, to close the control switch for the motor, and the switch includes an insulated contact holder 17 mounted in a slot of the housing and two stationary contacts 18 and 19 mounted in the holder for co-action with the switch lever in closing a motor circuit 20, the wires of which circuit enter the rear end of the housing 1, and lead to a suitable electrical outlet.

The speed of the motor may be controlled by manipulation of a variable rheostat 22 included in the motor circuit and located in the motor housing in front of the motor, and a control lever 23, which is pivotally mounted transversely of the motor shaft, projects upwardly through a slot in the housing wall where it is readily accessible for manipulation by a thumb of the machine operator.

A vertically movable and adjustable presser foot 24 having a shank 25 is disposed in upright position with the shank passing transversely through the gear case 2, and the shank is provided with a slot 26 that straddles the power output shaft 11 for guidance. The shank or bar of the presser foot also passes through a guide plate 27 that is fastened, as by screws, in an opening in the bottom wall of the gear case 2, and a spring S is interposed between the upper end of the presser foot bar and the adjoining inner face of the wall of the gear case; an anchoring screw 28 being provided for the upper end of the spring. The spring resiliently holds down the presser foot, but it may be lifted by hand and retained in elevated position by means of a spring pressed ball 29 mounted in a fixed bracket 30 in co-action with a socket 31 in the rear face of the presser foot bar or shank 25.

The stitching mechanism includes a vertically reciprocable needle bar 32, having a socket at its lower end in which the needle 33 is secured by a set screw 34, and the needle bar is located in front of and parallel with the presser foot shank, a slot 35 being provided in the needle bar for passage therethrough of the power shaft 11 and for guidance of the needle bar in its reciprocating movement. The thread T is guided to the eye of the needle through an eyelet 36 on the exterior of the gear case from a spool or reel 37 that is rotatably mounted in a pocket or recess 38 offset from and integral with the outwardly curved arm 4, and this pocket is closed by means of a cover plate 39 pivoted at 40 on the tubular arm.

The needle, as usual, reciprocates vertically through a slot of the presser foot, and the needle bar is equipped with a pair of vertically spaced friction rollers 41 journaled above and below the guide slot 35 on screws 42 threaded in the needle bar. For co-action with the rollers in reciprocating the needle an eccentric disk 43 is mounted on to revolve with shaft 11 as best seen in Figs. 3 and 4, and the eccentric and rollers reciprocate the needle bar through a complementary slot in the guide plate 27.

For co-action with the needle a shuttle mechanism is mounted within the hollow base or operating head, which includes a conventional

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tapered shuttle 44 that is readily accessible for replacement through a side opening of the operating head that is normally closed by a slide plate 45.

As indicated in the detail Fig. 6, the shuttle is provided with a tension spring 46 for the thread passing from the interior of the shuttle through a slot, and the shuttle is frictionally engaged or retained by a pair of opposed retaining flanges 47 projecting upwardly from one end of a shuttle bar or lever 48, which is pivoted to oscillate upon a bearing or screw 49 threaded in the bottom wall of the operating head.

At the pivotal end of the shuttle lever a U-shaped yoke 50 is fashioned for co-action with and to receive movement and power from a cam head or eccentric 51 which revolves with a cam shaft 52 journaled in bearings 53 rigidly mounted on the upper face of the bottom wall of the operating head or base. The cam shaft 52 is disposed horizontally, and transversely of the power shaft or operating shaft 11, and motion and power are transmitted from the output shaft to the cam shaft through a bevel gear couple including a gear 54 on the shaft 11, and a complementary gear 55 on a jack shaft 56 that is journaled in a bearing 57 mounted at a junction between the gear case 2 and the tubular arm 4.

A flexible shaft or cable 58 is extended through the tubular arm and connected at its ends with the jack shaft and the cam shaft for transmitting power to the latter, as will be readily understood.

The cam shaft 52 also actuates the feed mechanism for the material or goods to be stitched as the material is pinched between the lower face of the presser foot 24 and a toothed or corrugated feed plate 59 located below the presser foot within an open slot of the base plate 6. This feed plate 59 is rigidly mounted at 60 upon a horizontally disposed and vertically arranged reciprocable bar or plate 61, which is pivotally suspended on a horizontal axis at its slotted end 62 on a fixed pin or screw 63, and the bar is resiliently retained by means of a V-shape spring 64 anchored at one end to the screw 63 and with its other end bearing down on the feed bar or plate.

The opposite end of the feed plate or bar is slotted at 65 to receive an eccentric pin 66 on a revolving cam disk 67 rigidly mounted on the cam shaft 52, and as will be apparent the feed plate has imparted thereto a compound movement, vertically and horizontally, that feeds the material from left to right in Fig. 3.

A hand lever 68 which extends outwardly from the interior of the hollow base or operating head 5 through a slot 5a in its side wall, is pivoted at 69 within the hollow base and is provided with a cam head or lever arm 70 arranged for contact with the adjoining end of the feed bar 61, so that the lever may be depressed to push the feed bar longitudinally to regulate the throw of the feed plate 59. The lever 68 is maintained immobile in its adjusted positions by means of the pivot pin construction 69, since there is sufficient friction between these parts to prevent accidental movement of the lever 68.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a sewing machine as described, the combination with a power shaft and a spaced cam shaft, and a flexible shaft uniting these shafts, of a slotted presser foot bar mounted on and guided by the power shaft, resilient means for depressing the bar, and means for retaining said

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bar in uplifted position, a slotted needle bar mounted on and guided by the power shaft for co-action with the presser foot bar, a pair of spaced rollers journaled on the needle bar, and a cam rigid with the power shaft for co-action with said rollers.

2. In a sewing machine, a frame including a housing adapted to be gripped in the hand, a gear case secured to said housing, an arm projecting from said gear case, a hollow head arranged below said case and secured to said arm, an electric motor arranged in said housing, a power output shaft driven by said motor, a fly-wheel mounted on said power output shaft, there being a slot in said housing for gaining access to said flywheel, an actuating lever pivotally connected to said housing for controlling actuation of said motor, a rheostat electrically connected to said motor and arranged in said housing, a control lever projecting through said housing for operating said rheostat, there being an opening in the lower side of said gear case, a vertically movable adjustable presser foot bar projecting from in said gear case through the opening in the lower side of said gear case, spring means

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for normally urging said presser foot bar downwardly toward said head, a stitching mechanism including a vertically reciprocable needle bar coacting with said presser foot, an eccentric disc mounted on said power output shaft and having driving engagement with the needle bar, a shuttle mechanism mounted within said head, and a flexible shaft extending through said arm and operatively connected to said power output shaft and said shuttle mechanism.

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