May 4, 1943. W. R. WEST 2,318,443

SEWING MACHINE CABINET

Filed Sept. 23, 1941 2 Sheets-Sheet 1

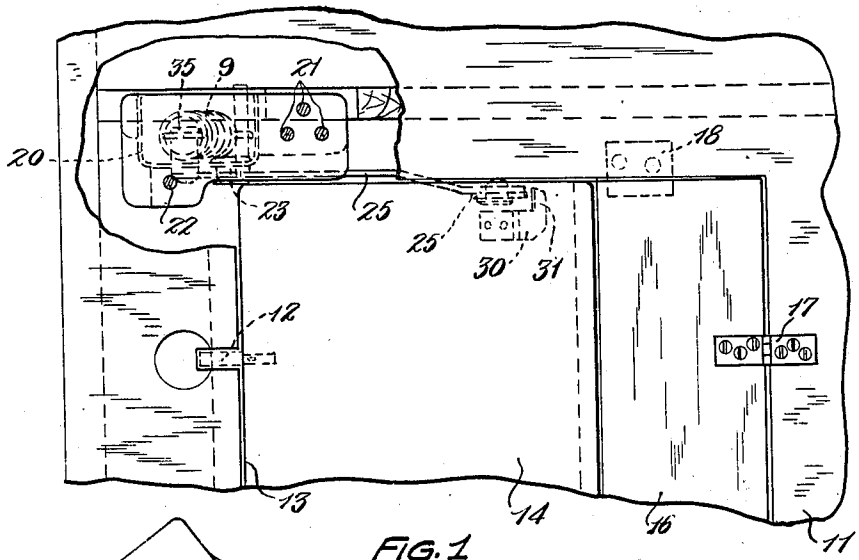


FIG. 1

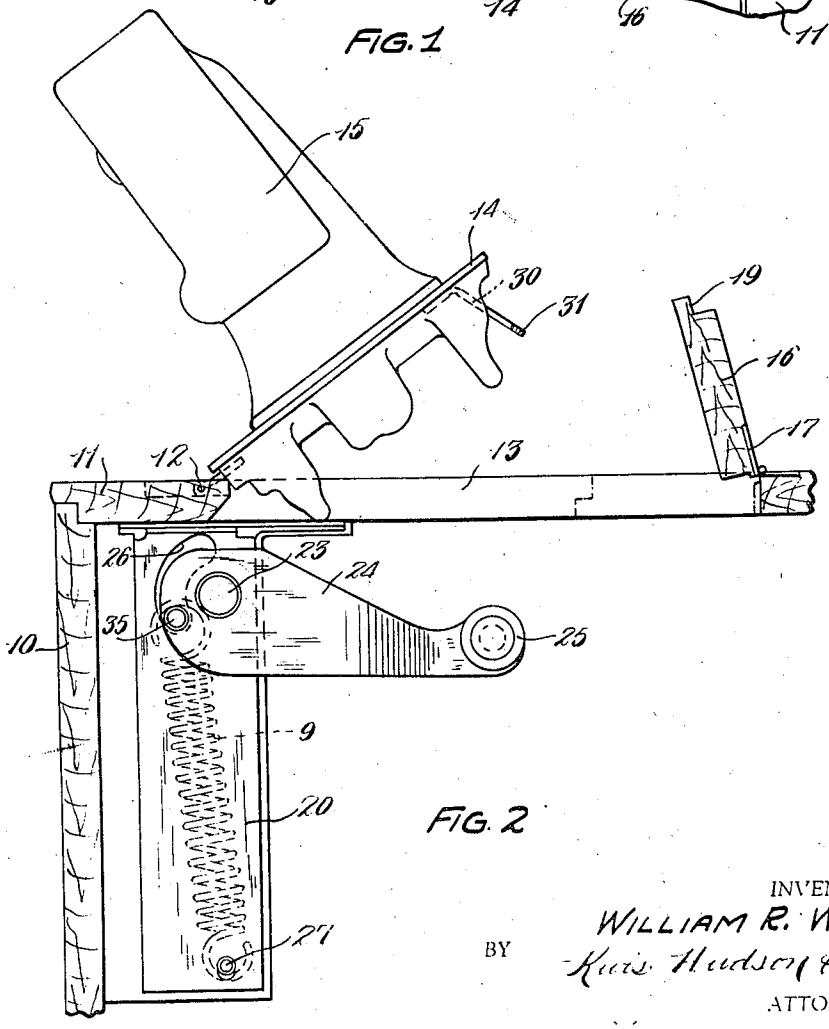


FIG. 2

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SEWING MACHINE CABINET

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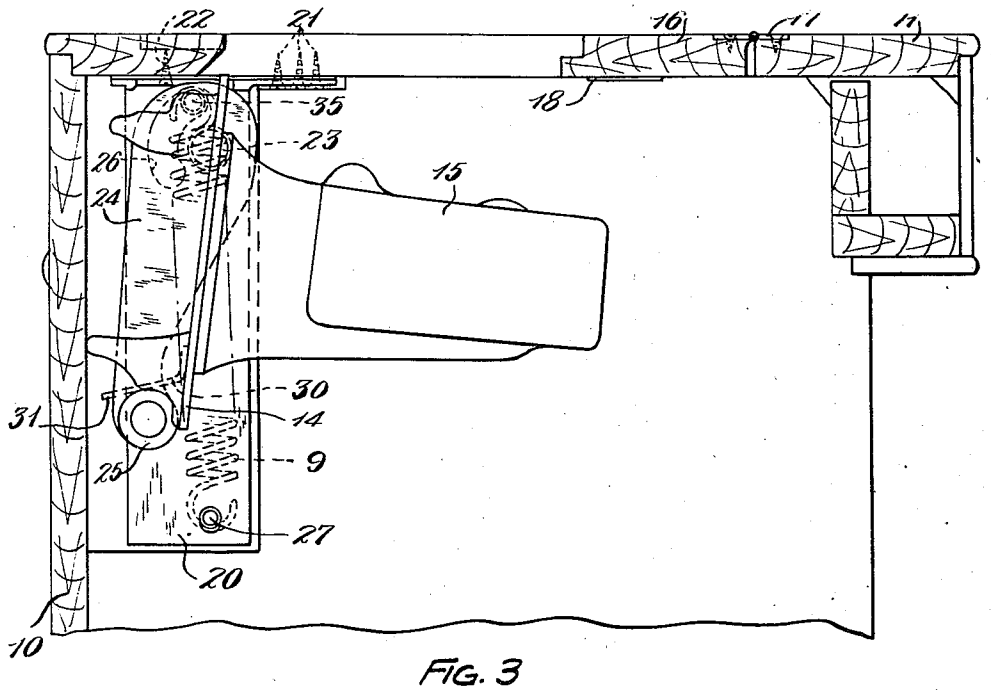


FIG. 3

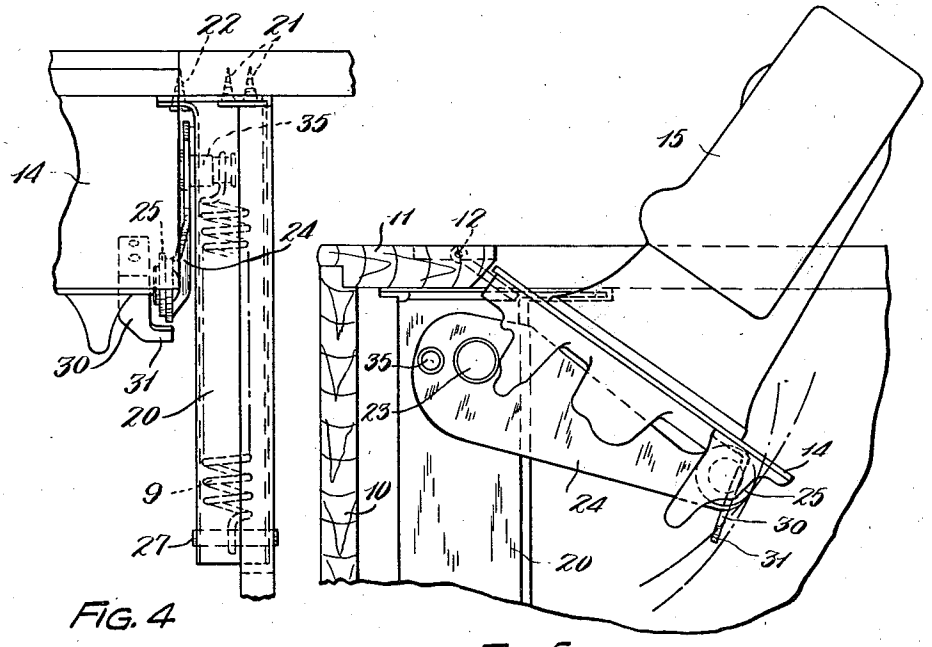


FIG. 4

FIG. 5

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SEWING MACHINE CABINET

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4 Claims. (Cl. 312—30)

This invention relates to improvements in sewing machine cabinets, and particularly to a booster device for assisting the operator in lifting the swinging machine head from its storage space within the cabinet to operative position, that is with its bed plate flush with the cabinet table.

One of the objects of the invention is the provision of booster mechanism of compact character which may be assembled as a unit and readily attached to a sewing machine cabinet.

Another object is the provision of booster mechanism which is entirely separate from the machine head, permitting the head after it is raised by the booster to be swung upwardly through the table opening independently of the booster.

Another object of the invention is the provision of means for insuring the movement of the booster mechanism from its lowered position when the machine head is swung upwardly, thereby preventing sudden and violent action of the booster in the event of its sticking in lowered position initially.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawings, in which

Fig. 1 is a fragmental plan view of a sewing machine cabinet, certain parts of which are broken away in order to more clearly illustrate the invention.

Fig. 2 is an end elevational view, partly in section, with the machine head swung upward and back from its operative position.

Fig. 3 is a view similar to Fig. 2, with the machine head and booster mechanism in their lowered position.

Fig. 4 is a fragmental front elevational view showing the machine head in partially raised position, and

Fig. 5 is an end view, partly in section, with the parts in the position illustrated in Fig. 4.

In the drawings 10 represents a sewing machine cabinet having a table top 11. In the table 11 there are two hinges 12, one only of which is illustrated. These hinges, which are mounted in the table at one side of the opening 13, support one edge of the bed plate 14 of a sewing machine head 15. At the opposite side of the opening 13 a flap 16 is mounted by means of hinges 17, one only of which is illustrated herein. One or more metal plates 18 secured to the bottom of the table serve as stops to prevent the flap 16 from swinging down beyond a position flush with the surface of the table. The inner edge of flap 16 is rabbeted as shown at 19 so as to accommodate the free edge of the bed plate 14 and support the latter in operative position flush with the table top. When the head is to be raised to operative position the flap 16 is swung back so as to clear the upper part of the head, which is then swung up to about the position of Fig. 2, after which the flap is permitted to descend to the dotted line position of that figure and the head is swung down until the bed plate 14 fills the remaining portion of the opening 13, the free edge of the head then resting upon the flap 16.

The booster mechanism comprises an elongated metal casing 20. Although it is feasible to mount this casing horizontally, I prefer to arrange it vertically just beyond one end of the opening 13, and to secure it to the bottom surface of the table 11 by screws 21 and 22. I prefer to employ a single booster mechanism at one end only of the opening but two such mechanisms located at opposite ends of the opening may be employed if desired. In one wall of the casing 20 there is mounted a pivot 23 which carries exterior of the casing an arm 24, upon the outer or free end of which is an anti-friction roller 25 which is adapted to engage the under surface of the bed plate 14.

In the arm 24 near pivot 23 there is mounted a pin 35 which extends through an arcuate slot 26 in the casing wall, the ends of this slot constituting stops to limit the throw of the lever arm in both directions. The portion of pin 35 which extends into the casing carries the upper end of a tensile coil spring 9, the lower end of which is anchored to a fixed pin 27 near the bottom of the casing. The tendency of spring 9 is to hold arm 24 in the position of Fig. 2.

Fig. 3 illustrates the parts in the lowered position where the machine head is stored within the cabinet. Here the position of pin 35 is such that the line of centers of the ends of spring 9, in other words the axis of the spring, lies close to the center of pivot 23. Consequently the leverage through which the spring acts upon the arm at this stage is very short. On this account and in spite of the fact that at this time the spring is extended, the weight of the head 15, applied in opposition to the spring, overbalances the spring action. Hence the parts are stable when in the position of Fig. 3.

On account of the fact that with the parts in the lowered position the arm 24 is near dead center, it might be possible under certain un-

favorable circumstances, as where the friction on the parts became excessive through long standing, for the machine head to be raised without the lever arm 24 following it. This might result seriously if the arm were inadvertently disturbed later while the machine head remained up, as the arm would then be free to fly up with considerable force. I have provided means to prevent this condition, such means acting to positively impart to the lever arm a starting motion transmitted from the moving head. To this end there is attached to the under side of bed plate 14 a bracket 30 having a laterally extending end or hook 31 which lies behind the arm 24 when in its lowered position. When the operator grasps the head and lifts it towards raised position the hook 31 exerts a pull against the arm 24 and starts it into motion, overcoming any friction. A very short movement of this kind will serve for the purpose, and thereafter the spring will hold the arm roller 25 against the machine head. The hook 31 remains behind and below the arm 24 until the parts reach the position approximately of Fig. 5, at which time because of the different pivot points 12 and 35 the hook moves outwardly beyond the end of that arm. Consequently when the arm is in its upper position, shown in Fig. 4, the head 15 may be swung further upward independently of the arm 24. This independent movement of the head is important because it permits the head to be swung back from operative position, as indicated in Fig. 2, in order to provide access to the working parts in the bottom of the head, as when oiling the sewing mechanism.

The operation of the device will be obvious from the foregoing description of its construction. With the parts in the position of Fig. 3 the operator swings the flap 16 upwardly, grasps the head 15 and swings it upward on its hinge 12, the spring 9 assisting in this action so that very little effort is required on the part of the operator. When the arm reaches the position of Fig. 2 it is stopped by the engagement of pin 35 with the lower end of slot 26. The head 15 may then be swung upwardly and rearwardly, for example to the position of Fig. 2, independently of arm 24, after which flap 16 may be returned to horizontal position, bringing rabbet 19 into position to receive the outer edge of the bed plate 14 of the head when the latter is lowered to operative position. When the operator has finished using the machine the head may again be stored in the cabinet by operations the reverse of those described for raising it.

In the foregoing description I have necessarily gone somewhat into detail in order to explain fully the particular embodiments of the invention herein illustrated, but I desire it to be understood that such detail disclosures are not to be construed as amounting to limitations, except as they may be included in the appended claims.

Having thus described my invention, I claim:

1. In a sewing machine cabinet, a table top, a machine head, a pivot for the head permitting it to swing from a lowered position within the cabinet upwardly through an opening in the table top, a booster arm, a pivot for said arm below said head pivot, the free end of said arm having bearing against the lower side of said head in certain positions of the head, force exerting means for swinging said arm and thereby said head upwardly, the outer end of the arm moving inwardly along the head toward the head pivot as the arm and head swing upwardly, and interconnecting means between the head and arm locking those two parts together during a portion of their upward swing, said interconnecting means being cleared by the inward travel of the outer end of the arm relatively to the outer end of the head after the arm and head have completed a predetermined part of their upward swing, whereby the head is incapable of being moved upwardly independently of the arm until the two parts have reached a predetermined position in their upward travel.

2. In a sewing machine cabinet, a table top, a machine head, a pivot for the head permitting it to swing from a lowered position within the cabinet upwardly through an opening in the table top, a booster arm, a pivot for said arm below said head pivot, the free end of said arm having bearing against the lower side of said head in certain positions of the head, force exerting means for swinging said arm and thereby said head upwardly, a hook on said head extending beneath and behind the outer end of said arm when the head and arm are in their lowered position for positively transmitting to the arm lifting force applied to the head, said hook clearing the end of the arm after those two parts reach a predetermined position in their upward travel.

3. In a sewing machine cabinet, a table top, a machine head, a pivot for the head permitting it to swing from a lowered position within the cabinet upwardly through an opening in the table top, a booster arm, a pivot for said arm below said head pivot, the free end of said arm having bearing against the lower side of said head in certain positions of the head, a spring interposed between said arm and a fixed point on the cabinet for swinging said arm and thereby said head upwardly to a raised position, the line of force exerted by said spring when the arm is in lowered position lying close to the arm pivot and exerting minimum turning force on said arm whereby the weight of the head in lowered position overbalances the force of said spring, and means positively interconnecting said head and arm when in lowered position whereby initiation of upward movement of the head positively initiates upward movement of the arm.

4. In a sewing machine cabinet, a table top, a machine head, a pivot for the head permitting it to swing from a lowered position within the cabinet upwardly through an opening in the table top, a booster arm, a pivot for said arm below said head pivot and permitting said arm to swing from a lowered position upwardly within said cabinet, means limiting the upward movement of said arm to a point below said table top, the free end of said arm having bearing against the lower side of said head in certain positions of the head, a spring interposed between said arm and a fixed point on the cabinet for swinging said arm and thereby said head upwardly, said spring when the arm is in lowered position having its line of force lying close to the arm pivot and exerting minimum turning force on said arm whereby the weight of the head in lowered position overbalances the force of said spring, and means positively interconnecting said arm and head when in lowered position whereby upward movement of said head from lowered position positively initiates upward movement of said arm.

WILLIAM R. WEST.