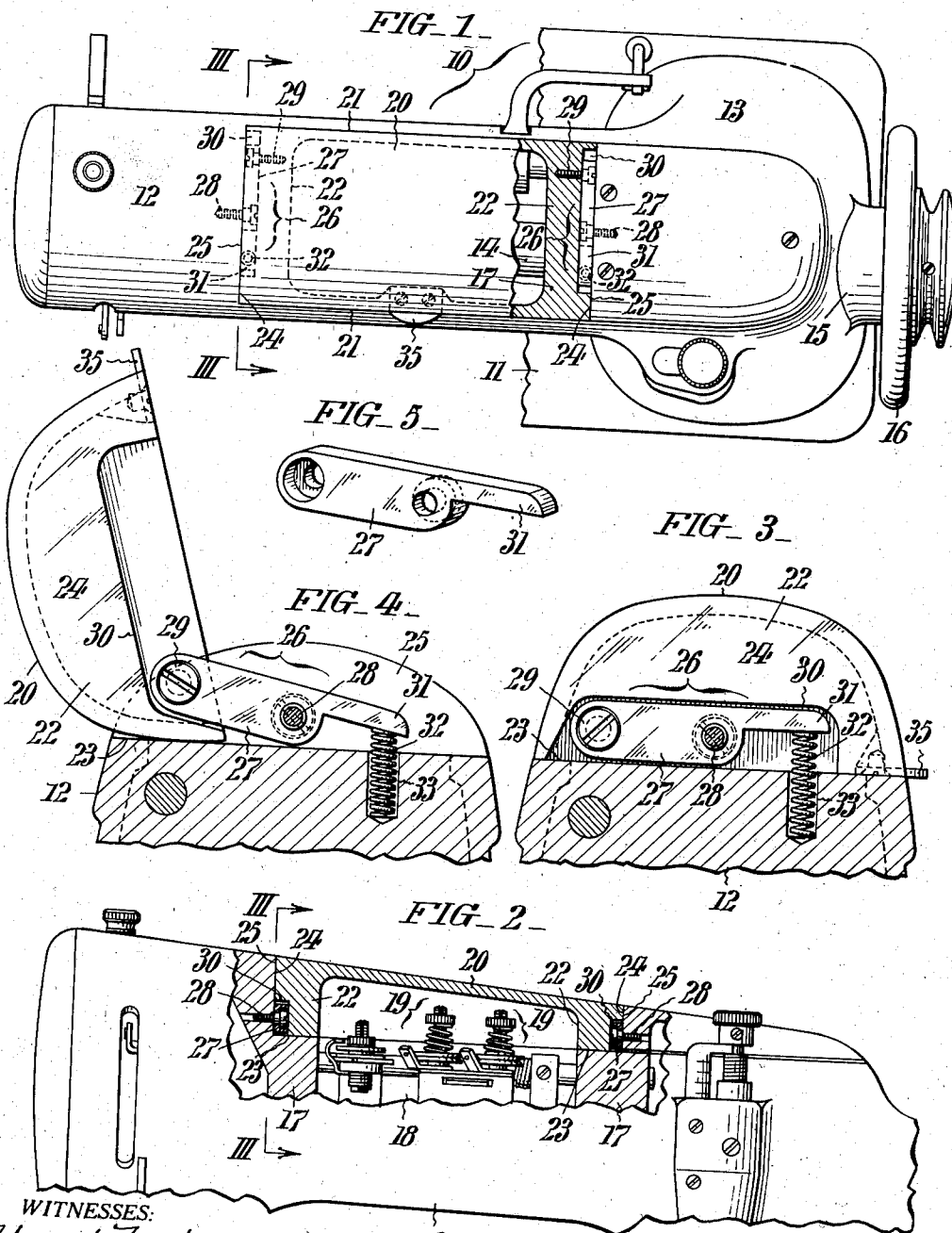


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CLOSURE HINGE MEANS
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CLOSURE HINGE MEANS

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This invention relates to hinge means for closures and has reference more particularly to hinge mountings of the concealed type. In certain forms of embodiment such as hereinafter exemplified, my invention is particularly useful in connection with retractable covers on the needle arms of sewing machines, or with covers for other cavities in sewing machines to which access is desirable.

The chief aim of my invention is to provide a closure hinge means which is simple; which is inexpensive to produce and assemble; which is reliable in its operation; which is capable of yieldingly holding the closure either in its open or in its closed position; and which moreover is entirely concealed when the closure is shut.

Other objects will appear from the following detailed description of the attached drawing, wherein Fig. 1 is a fragmentary view partly in top plan and partly in horizontal section, of a sewing machine whereof the needle arm is hollow and provided with a top closure or cover which is connected by hinge means conveniently embodying my invention.

Fig. 2 is a fragmentary view of the sewing machine partly in front elevation and partly in longitudinal section.

Fig. 3 is a detail cross sectional view taken as indicated by the angled arrows III—III in Figs. 1 and 2 and drawn to a larger scale with the needle arm closure cover in closed position.

Fig. 4 is a view like Fig. 3, with the needle arm closure cover in open position; and

Fig. 5 is a perspective view of one of the hinge elements.

With more detailed reference to these illustrations, the numeral 10 comprehensively designates the frame of the sewing machine, the same including a work support 11, and an over-reaching needle arm 12 which extends horizontally from the top of a standard 13 at one end of said work support. As shown, the needle arm 12 is hollow, and lengthwise within it is a needle actuating shaft 14 whereof one end protrudes through a bearing boss 15 on the standard 13 carries a combined hand and belt drive wheel 16 for convenience of manual or power operation. Set apart within the hollow of the needle arm 12 by a pair of spaced transverse partitions 17, (Fig. 2) is a central chamber 18 in which needle thread tensions 19 and other parts of the machine mechanism are housed and protected, said chamber having a retractable closure cover 20 which fits snugly into a recess 21 in the top of said arm. As shown in Figs. 1 and 3, the closure cover 20

is of hollow cross sectional configuration, rounded exteriorly into flush relation with the outer surface of the arm 12, and has vertical end walls 22 whereof the bottom edges rest on shoulders 23 at the tops of the partitions 17, and the outer faces 24 directly abut the contiguous side vertical end faces 25 of the recess 21.

For the purpose of connecting the closure cover 20 to the arm 12, I have provided in accordance with my invention, counterpart hinge means 26 respectively located at opposite ends of said cover. As shown, each of these hinge means includes a hinge element in the form of a short lever 27 which is fulcrumed intermediate its ends upon a shouldered and headed screw 28 whereof the shank threadedly engages laterally into the corresponding end face 25 of the recess 21 in the needle arm 12. At one end the hinge levers 27 are pierced for pivotal connection with shouldered and headed screws 29 whereof the shanks threadedly engage laterally into the end walls 22 of the cover closure 20 adjacent the rear edge of the latter, said walls 22 being recessed as at 30 in their outer sides to provide clearance spaces for said levers when the cover is in closed position as shown in Figs. 1—3. The opposite ends of the levers 26 are narrowed as at 31 to the form of fingers which respectively bear upon the tops of vertically-arranged helical compression springs 32 lodged in socket holes 33 in the tops of the partitions 17. In their action upon the levers 27, the springs 32 operate to normally hold the closure cover 20 yieldingly in its closed position with its bottom edges resting firmly on the margins of the opening in the needle arm as shown in Fig. 3. When the cover is raised with the aid of a finger grasp 35 provided at its front edge, said cover will pivot on the axes of the screws 29 with attendant compression of the springs 32, while the levers 27 concurrently rock on the screws 28 as the rear edge of the cover moves beneath them. Eventually, the cover will assume the open position shown in Fig. 4 in which it will be yieldingly retained likewise by action of the springs 32 upon said levers 27.

Having thus described my invention, I claim:

1. Closure hinge means including a hinge element in the form of a single lever arranged along one end of the closure; a fixed axis on which the lever is fulcrumed intermediate its ends; a pivot connecting the lever at one end to the corresponding end of the closure adjacent the rear edge of the latter; and a compression spring influential upon the opposite end of the lever to

yieldingly resist movement of the closure from either its open position or its closed position.

2. Closure hinge means according to claim 1, in which a recess is provided in the end of the closure to accommodate the lever.

3. Hinge means useful in connection with a sewing machine having a hollow needle arm with a recess to receive a retractable cover, said hinge means being arranged along opposite ends of the cover, and each including a single lever; studs extending laterally from the contiguous faces of the recess, each stud providing fulcrum for the corresponding lever intermediate its ends; a pivot stud connecting one end of the lever to the corresponding end of the cover adjacent the rear edge of the latter; and a compression spring operative upwardly on the opposite end of the lever to yieldingly resist movement of the cover from either its open position or its closed position.

4. Hinge means according to claim 3, in which the cover fits snug at its ends into the recess in the top of the needle arm of the sewing machine, and in which the end faces of the cover are recessed to receive the levers.

5. Closure hinge means including a hinge element in the form of a single lever which is arranged transversely of the closure; a fixed axis on which the lever is fulcrumed intermediate its ends; a pivot connecting the lever at one end with the closure adjacent the rear edge of the latter; and a compression spring influential upon the opposite end of the lever to yieldingly resist movement of the closure from either its open position or its closed position.

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