May 20, 1947. C. S. BEST 2,420,695

SEWING MACHINE

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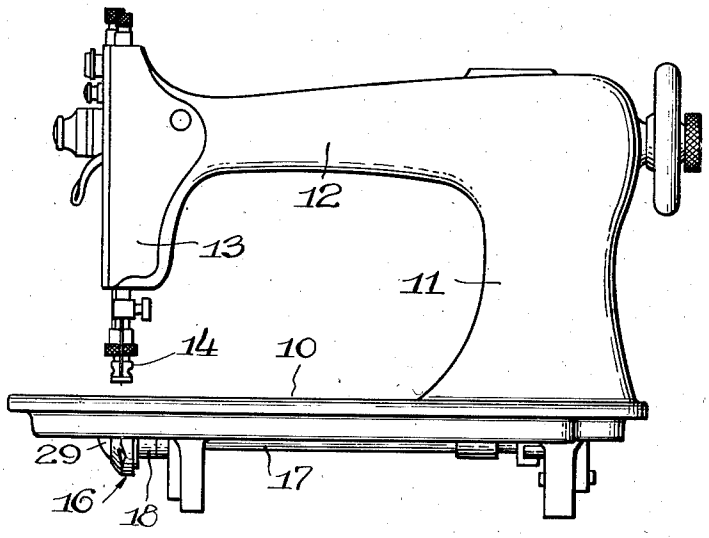

Fig. 1

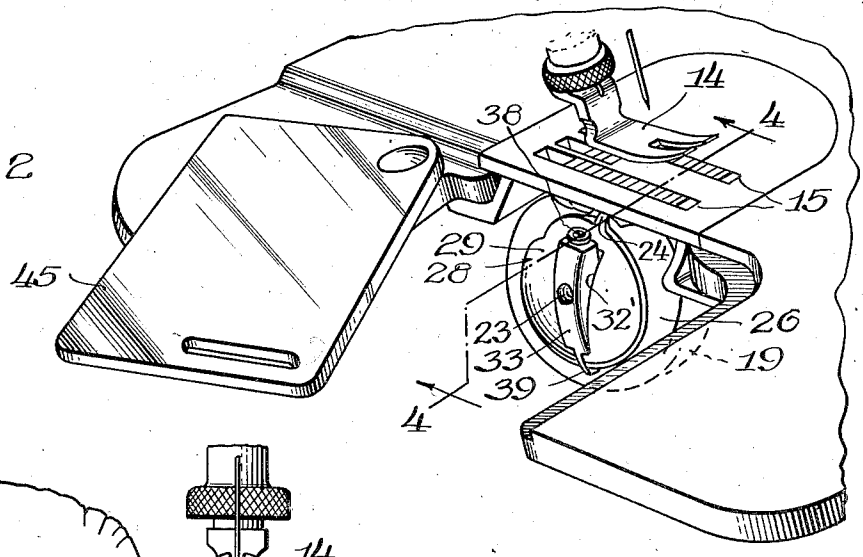

Fig. 2

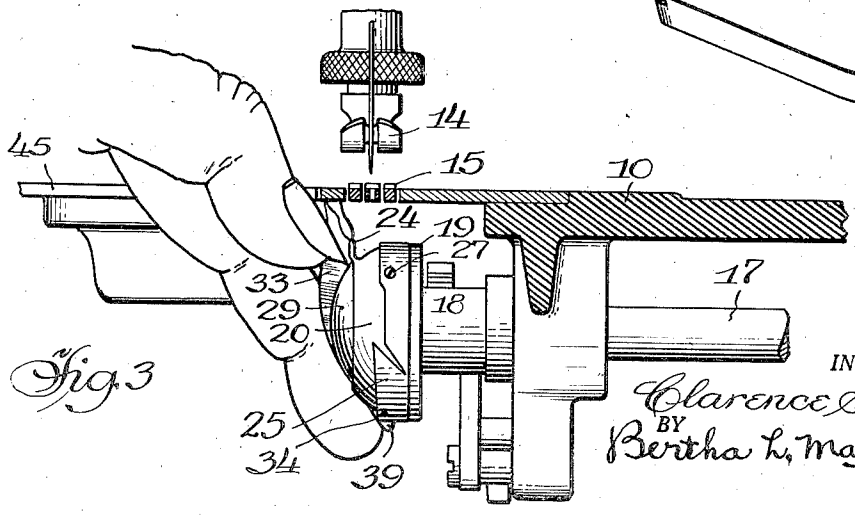

Fig. 3

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Fig. 5

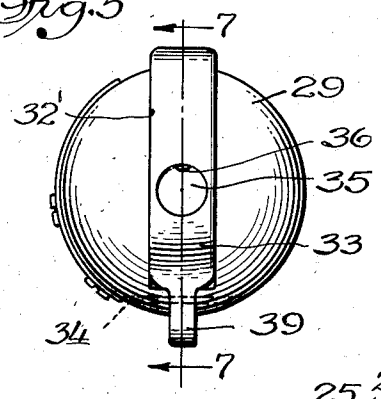


Fig. 7

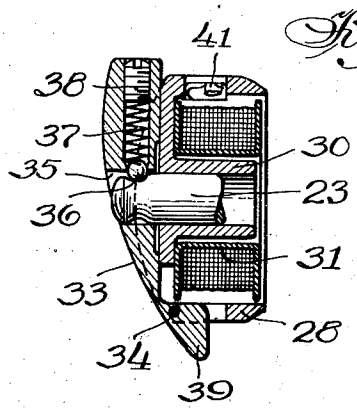
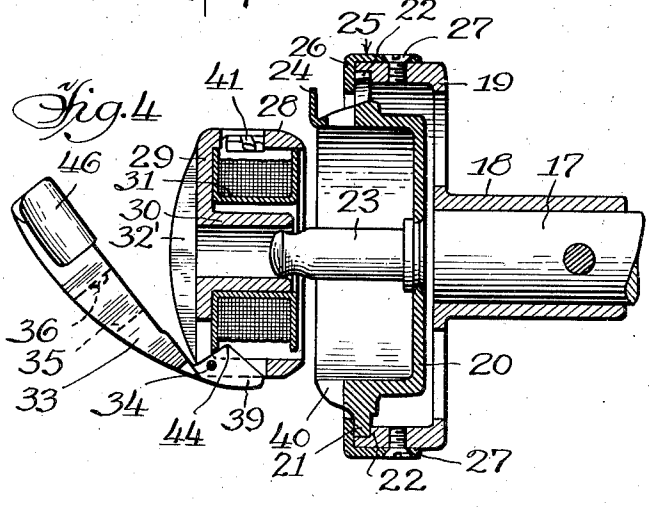


Fig. 4



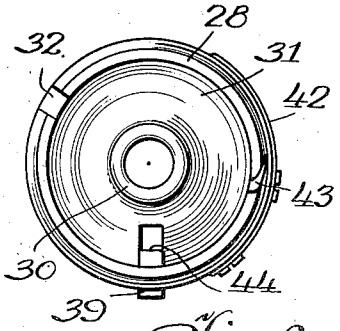


Fig. 6

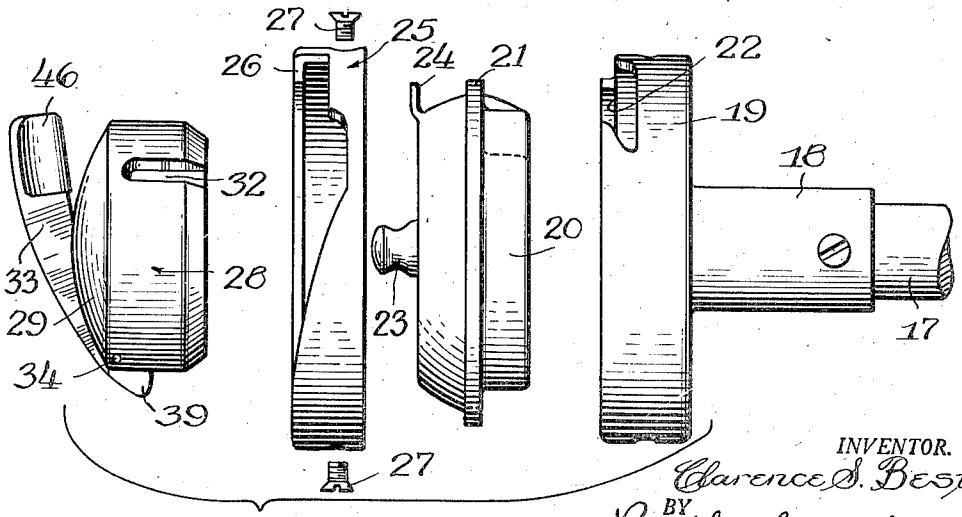


Fig. 8

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Patented May 20, 1947

2,420,695

UNITED STATES PATENT OFFICE

2,420,695

SEWING MACHINE

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Application May 21, 1945, Serial No. 594,805

12 Claims. (Cl. 112—231)

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This invention relates to improvements in sewing machines and particularly to improvements in the hook, bobbin case holder and bobbin case, referred to herein as the hook and bobbin case holder assembly.

One of the objects of the invention is to design the several parts of the hook, bobbin case holder and bobbin case so as to simplify the manufacturing processes as well as the assembly of the parts, and to thereby facilitate repairs when required. The hook and bobbin case holder of my invention comprise only three parts held together by two screws, whereas it has been customary heretofore to use a shim in addition to the aforementioned minimum number of parts and to assemble the mechanism by at least four screws.

Another object of the invention is to provide a bobbin case which can be handled by the operator without danger of dropping the spool from the case; which can be positioned in the holder and removed therefrom without injury to the fingers or finger nails of the operator; and which is easily accessible to the operator and can be correctly positioned for use by feeling without the need for careful scrutiny of the mechanism by the operator. These objects are attained by the provision in the bobbin case of a specially designed lever, pivotally connected to the case, which also serves as a convenient means for handling the bobbin case when the lever is in open position, at which time it engages the spool and holds it against removal from the bobbin case. The pivoted lever also serves to guide the bobbin case to proper position in its holder, and when locked it holds the bobbin case in operative position in the holder.

In the drawings:

Fig. 1 is an elevational view of a conventional sewing machine head embodying my invention.

Fig. 2 is a perspective view of a portion of the bed plate, with the hook cover in open position, disclosing the hook, bobbin case holder and bobbin case in operative position beneath the feed dog in the bed plate.

Fig. 3 is a longitudinal, vertical sectional view through the sewing end of the bed plate, with the hook, holder and bobbin case in elevation, showing the fingers of an operator in the act of removing the bobbin case from the holder.

Fig. 4 is a longitudinal, vertical sectional view of the hook and holder complete, taken in the plane of the line 4—4 of Fig. 2, but showing the bobbin case removed from the holder.

Fig. 5 is a front elevational view of the bobbin case.

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Fig. 6 is a rear elevational view of the same.

Fig. 7 is a vertical sectional view taken in the plane of the line 7—7 of Fig. 5.

Fig. 8 is an elevational view showing the several parts constituting the hook, bobbin case holder and bobbin case, detached.

In that embodiment of my invention shown in the drawings, 10 indicates the bed plate, 11 the upright standard, 12 the overhanging arm, 13 the sewing head, 14 the presser foot and 15 the feed dog of a conventional sewing machine.

The hook, bobbin case holder and bobbin case assembly, embodying my invention in preferred form, indicated as a whole at 16 in Fig. 1, are located beneath the bed plate 10 and presser foot 14. The separate parts of the mechanism, best shown detached in Fig. 8, include the hook shaft 17 on which is mounted the hollow shank 18 of the hook member 19. The cup shaped bobbin case holder 20 is provided with a circumferential flange 21 adapted to seat on the annular shoulder 22 of the hook 19. A stud 23 projects centrally from the base of the cup shaped holder 20 and is of greater length than the depth of the holder. A finger 24 projects radially from the holder 20. After the holder has been positioned in the hook 19, a hook cover consisting of a cylindrical portion 25 and inturned flange 26 is placed over the holder 20 and hook 19 and secured to the latter by two screws 27. The assembled hook and holder are shown in section in Fig. 4.

The bobbin case comprises a cylindrical member 28 and slotted face 29. The case is open on that face opposite the face 29. The face 29 has formed on its inner surface an inwardly directed hollow spindle 30 adapted to fit over the stud 23 of the holder 20. The annular space within the bobbin case, between the cylindrical member 28 and spindle 30, contains the thread spool 31. The cylindrical part 28 is slotted at 32. The face 29 is slotted at 32' to receive a lever 33 which is pivotally mounted on the body portion of the bobbin case as indicated at 34. Said lever 33 is provided between its ends with an aperture 35 adapted to register with and fit over the stud 23 of the bobbin case holder 20 when the parts are assembled in operative position. The upper end of the lever 33 is bored longitudinally to receive a ball detent 36 against which presses the spring 37 retained in the bore by the screw 38. The opening in the wall of the aperture 35 of the lever 33 communicates with the bore in said lever and is slightly less in diameter than the diameter of the detent 36, which prevents the detent from falling out of the bore. The detent 36 partially enters the aper-

ture 35 and bears against the grooved portion of the stud 23 as shown in Fig. 7, when the lever 33 is in locked position. In that position, the lower end of the lever 33 engages a notch 40 in the holder 20 as will be understood by reference to Figs. 2, 3 and 4.

A thread tension device 41 is provided in the bobbin case. 42 indicates a spring and 43 a slot to guide the thread.

The hook 19, bobbin case holder 20 and cover 25, having been assembled as shown in Fig. 4, are mounted on the hook shaft 17 to rotate therewith, as shown in Fig. 3. The thread spool 31 is placed in the bobbin case through its open face while the lever 33 is in the position indicated in Fig. 8, so that the shoulder 44 (see Fig. 4) of the lever 33 will not interfere with the placing of the spool. After the spool 31 has been placed in the bobbin case, the lever 33 is conveniently pivoted away from the face 29 of the case, as shown in Fig. 4, in which position the shoulder 44 engages the flange of the spool 31 and retains it in the case so that the spool cannot fall from the case while it is being handled and placed in the holder 20 with the aid of the lever 33 as a handle. As shown in Figs. 2 and 3, the hook cover 45 is swung out of the way to disclose the hook and bobbin case holder, and then the operator can place the bobbin case and its spool into proper position by registering the lever end 39 with the notch 40 in the holder 20 (see Fig. 4), and moving the pivoted lever 33 inwardly until it occupies the space provided by the slot in the face 29. Then the aperture 35 of the lever receives the stud 23 and the detent 36 engages the grooved end of the said stud, as shown in Figs. 2, 3 and 7.

It will be understood that while the hook 19 rotates with the shaft 17, the holder and bobbin case are held stationary by means of the finger 24 on the holder 20 contacting a fixed part of the machine bed 18. The notch 40 in the holder is located so that when the bobbin case is in operative position, the lever 33 will be vertically disposed, and the protruding end will be uppermost, in a position accessible to the operator for convenient use of the lever 33 as a handle for removing the bobbin case.

To remove the bobbin case and spool, the operator takes hold of the protruding end of the lever and moves it pivotally away from the bobbin case face 29, thus retaining the spool in the case by engagement of the lever shoulder 44 with the flange of the spool 31, while using the lever as a handle for easy lifting of the bobbin case and spool out of the holder.

Preferably the upper end of the lever 33 is shaped as indicated at 46 so as to provide frictional engagement between the lever and the slotted face 29 of the bobbin case, and also to provide convenient holding means when the lever serves as a handle.

Changes may be made in details of construction without departing from the scope of my invention as set forth in the appended claims.

I claim:

1. In a sewing machine, a hook and bobbin case holder assembly, consisting essentially of a cup shaped holder provided with a notch in its cylindrical portion, a rotatable hook adapted to receive the holder, a holder-retaining cover connected directly to the hook, a bobbin case removably positioned in the holder, and a spool in the bobbin case, said bobbin case having a lever pivotally mounted near one end in the body portion of the bobbin case, the free end of the lever

protruding beyond the peripheral wall of the bobbin case, the opposite end of the lever being engageable in said notch of the holder to guide and position the bobbin case in the holder when the lever is in locked position abutting the face of the bobbin case.

2. The hook and bobbin case holder assembly defined by claim 1, in which the bobbin case lever is engageable with the spool of the bobbin case to prevent its removal from the bobbin case when the lever is in outwardly pivoted position relatively to the face of the case.

3. The hook and bobbin case holder assembly defined by claim 1, in which the bobbin case lever is vertically disposed when the bobbin case is in operative position in the holder, and its free protruding end is accessible above the peripheral wall of the bobbin case and provides a handle for removing the bobbin case from the holder.

4. The hook and bobbin case holder assembly, defined by claim 1, in which the bobbin case lever is engageable with the spool of the bobbin case to prevent its removal from the bobbin case when the lever is in outwardly pivoted position relatively to the face of the case, and in which said bobbin case lever is vertically disposed when the bobbin case is in operative position in the holder, its free protruding end being accessible above the peripheral wall of the bobbin case and, when outwardly pivoted, providing a handle for removing the bobbin case from the holder.

5. In a sewing machine, a hook and bobbin case holder assembly, comprising a cup shaped holder provided with a notch in its cylindrical portion and a stud projecting axially from its base, a rotatable hook adapted to receive the holder, a holder-retaining cover, a bobbin case removably positioned in the holder, and a spool in the bobbin case, said bobbin case having a lever pivotally mounted near one end in the body portion of the bobbin case, said lever being apertured between its ends and adapted to engage said stud in the holder, and having an inturned shoulder for engaging the notch in the holder when the parts are in operative position.

6. The hook and bobbin case holder assembly, defined by claim 5, in which the bobbin case lever is provided with a spring pressed detent adjacent to the aperture in the lever and adapted to frictionally engage the stud of the holder when said stud is engaged by the lever.

7. The hook and bobbin case holder assembly, defined by claim 5, in which the bobbin case lever is vertically disposed when the bobbin case is in operative position in the holder, and its free end protrudes and is accessible above the peripheral wall of the bobbin case and provides a handle for removing the bobbin case from the holder.

8. The hook and bobbin case holder assembly, defined by claim 5, in which the shoulder on the bobbin case lever engages the spool of the bobbin case to prevent its removal from the bobbin case when the lever is in outwardly pivoted position relatively to the face of the case.

9. In a sewing machine, a hook and bobbin case holder assembly, comprising a cup shaped holder provided with a notch in its cylindrical portion and a stud projecting axially from its base, a rotatable hook adapted to receive the holder, a holder-retaining cover, a bobbin case removably positioned in the holder, said bobbin case having a hollow stud extending axially from the inner side of its face, said face having a slot across its outer side in communication with said hollow stud, a spool in the bobbin case, and a

lever pivotally mounted in the body portion of the bobbin case for movement into and out of said slotted face, said lever being apertured between its ends to receive the stud of the holder, and having a shoulder near one end for engaging the notch in the holder when the parts are in operative position.

10. The hook and bobbin case holder assembly, defined by claim 9, in which the bobbin case lever is provided with a spring pressed detent adjacent to the aperture in the lever and adapted to frictionally engage the stud of the holder when said stud is engaged by the lever.

11. The hook and bobbin case holder assembly, defined by claim 9, in which the bobbin case lever is vertically disposed when the bobbin case is in operative position in the holder, and its free end protrudes and is accessible above the peripheral

wall of the bobbin case and provides a handle for removing the bobbin case from the holder.

12. The hook and bobbin case holder assembly, defined by claim 9, in which the shoulder on the bobbin case lever engages the spool of the bobbin case to prevent its removal from the bobbin case when the lever is in outwardly pivoted position relatively to the face of the case.

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