Nov. 18, 1947. R. K. HOHMANN 2,430,932

SEWING MACHINE

Filed July 18, 1942 3 Sheets-Sheet 1

Fig. 1.

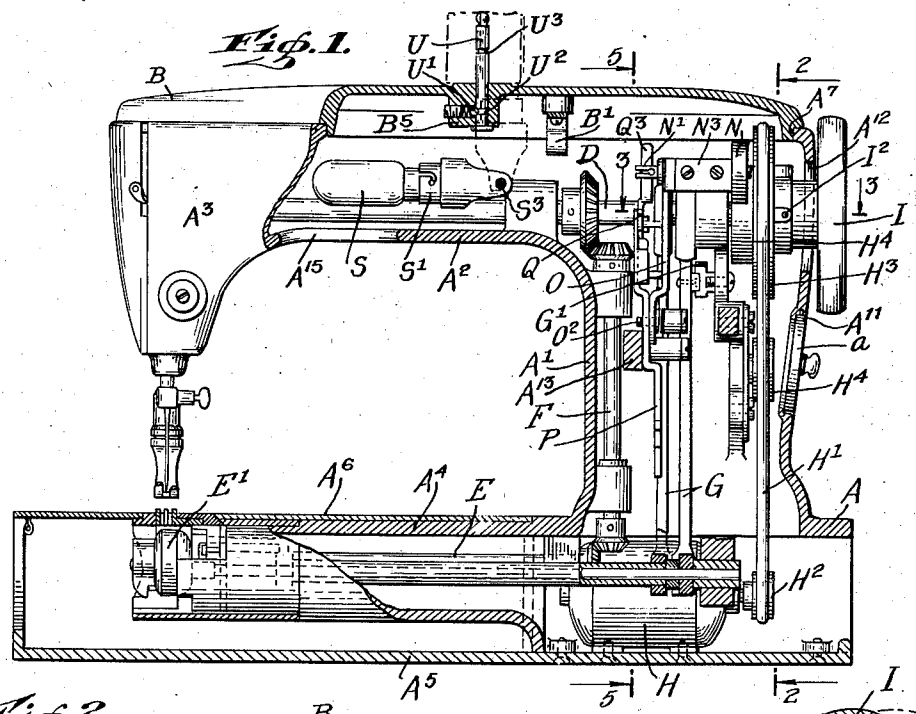


Fig. 2.

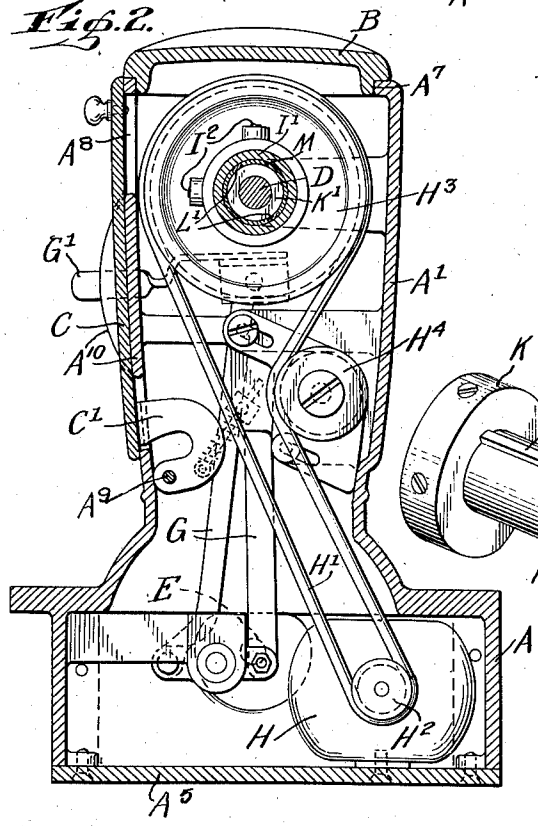


Fig. 3.

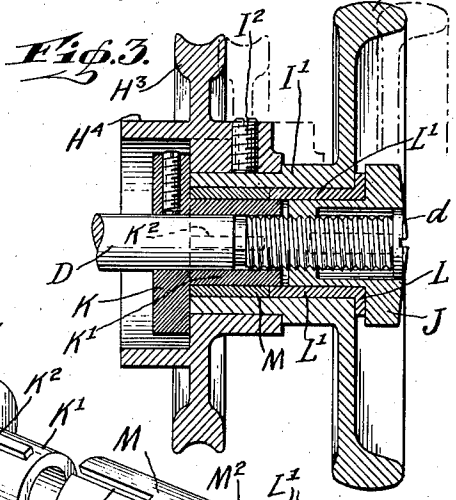
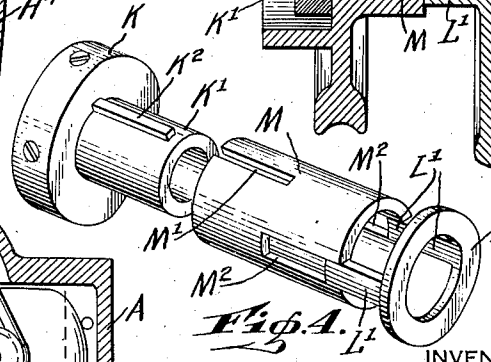


Fig. 4.



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SEWING MACHINE

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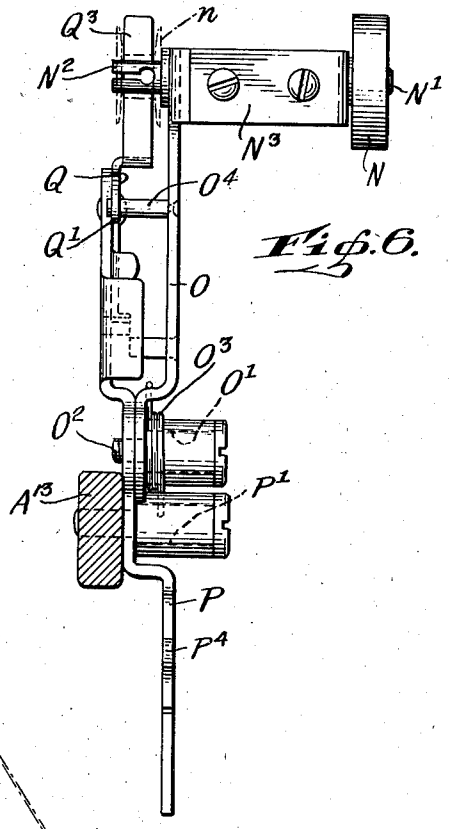
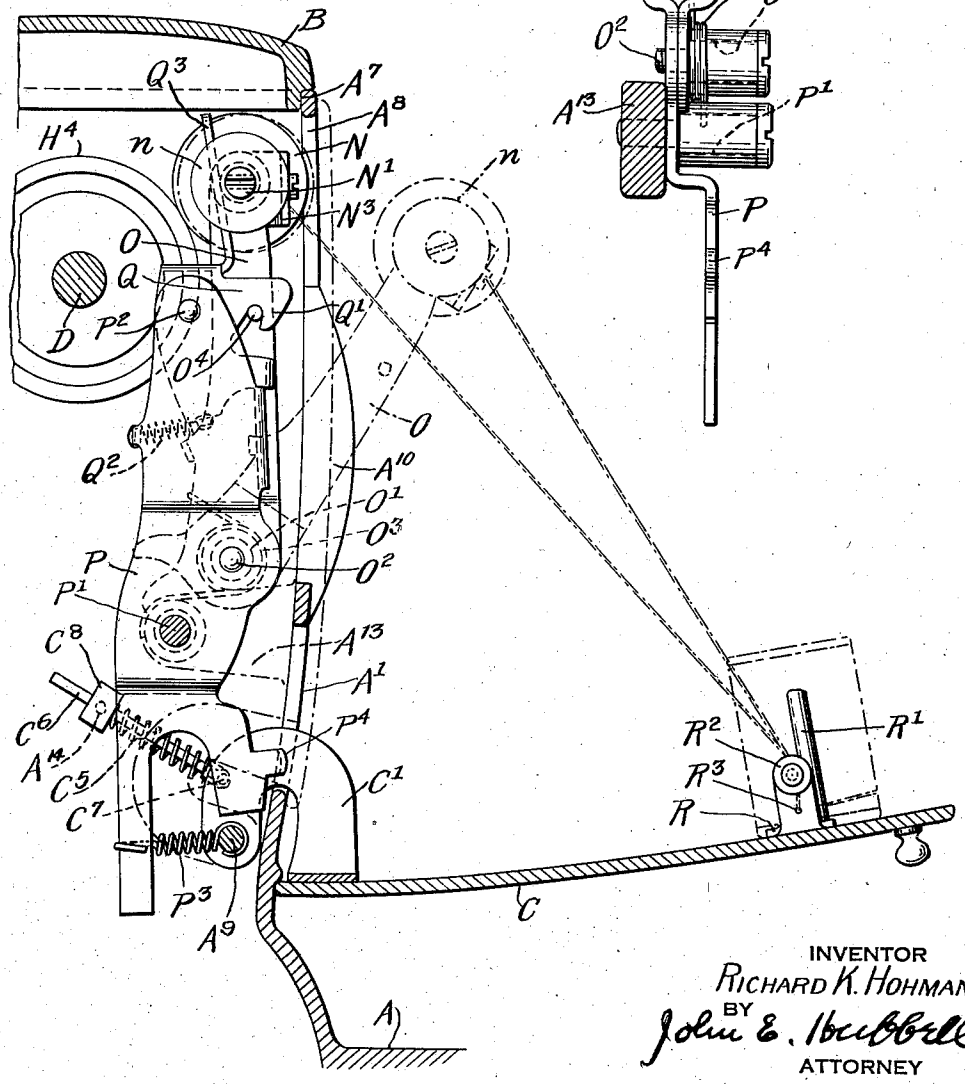


Fig. 6.

Fig. 5.



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SEWING MACHINE

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Fig. 7.

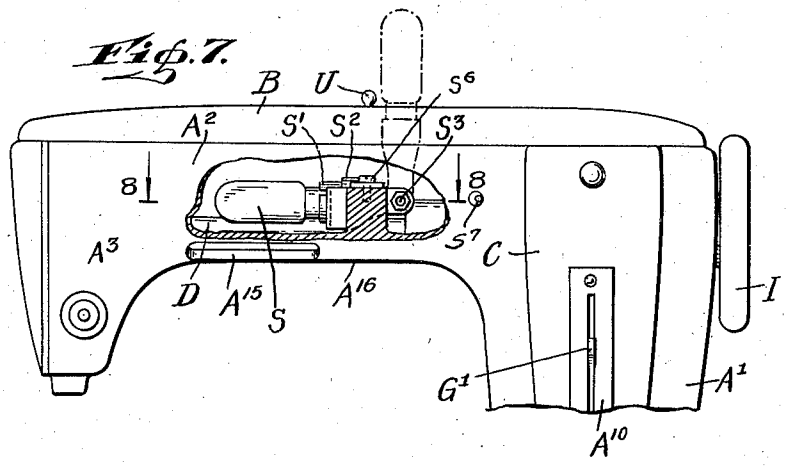


Fig. 8.

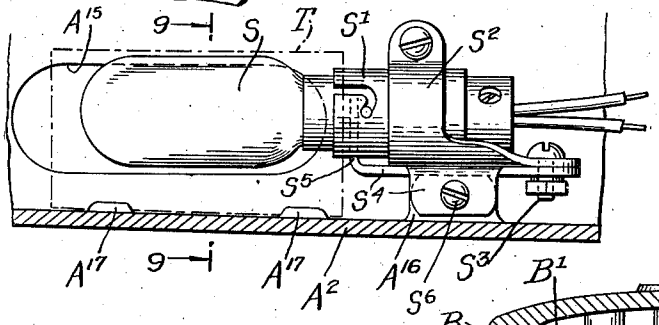


Fig. 9.

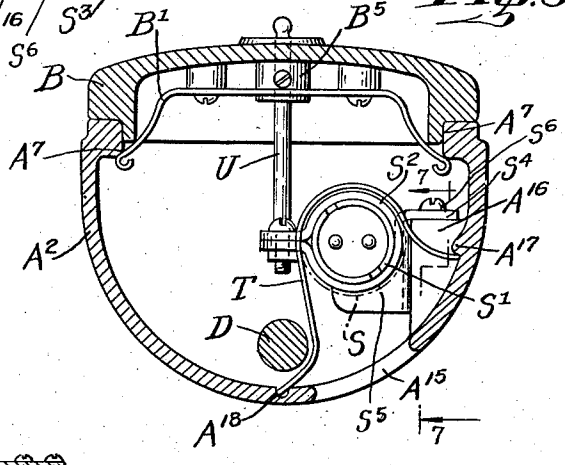
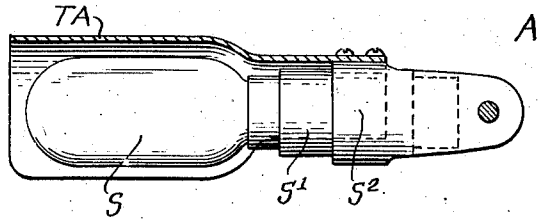


Fig. 10.



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Patented Nov. 18, 1947

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UNITED STATES PATENT OFFICE

2,430,932

SEWING MACHINE

Richard K. Hohmann, Jamaica, N. Y., assignor to Sears, Roebuck and Co., Chicago, Ill., a corporation of New York

Application July 18, 1942, Serial No. 451,422

12 Claims. (Cl. 112—218)

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The general object of the present invention is to provide a sewing machine of improved construction. More specifically, the invention has for a primary object, the incorporation in the hollow sewing machine head or frame of sewing machine parts or adjuncts which heretofore have customarily been external to the head or frame. One specific object of the invention is to provide a sewing machine with a simple and effective bobbin winding mechanism which is normally concealed in the sewing machine frame, but can be partially advanced out of the frame to facilitate the use of said mechanism. Another specific object of the invention is to provide bobbin winding mechanism improvements, which while adapted for mounting within the sewing machine frame are not restricted to such use.

Other specific objects of the invention are to provide a sewing machine with improved work illuminating means comprising an electric lamp mounted within an upper portion of the frame, and to provide an improved driving connection between a motor mounted in the base portion of the sewing machine frame and the needle bar actuating shaft mounted in the upper portion of the frame and including a driving belt within the hollow standard portion of the frame.

A further object of the invention is to provide a sewing machine frame characterized by a greater accessibility to the interior of the entire upper portion of the frame than has been customary heretofore, this improved accessibility is of especial importance in a sewing machine frame which is adapted for use in the attainment of the previous mentioned objects of the invention, and which to that end, has its upper portion somewhat larger in horizontal cross section than is customary.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, its advantages, and specific objects attained with its use, reference should be had to the accompanying drawing and descriptive matter in which I have illustrated and described preferred embodiments of the invention.

Of the drawings:

Fig. 1 is a side elevation of a sewing machine head partly broken away and in section;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a partial section on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view illustrating details of the drive mechanism;

Fig. 5 is a partial section on the line 5—5 of Fig. 1;

Fig. 6 is a side elevation of a portion of the mechanism shown in Fig. 5;

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Fig. 7 is a side elevation of a portion of the frame partly broken and in section on the line 7—7 of Fig. 9 to illustrate the mounting of a lamp within the arm portion of the frame;

Fig. 8 is a partial section on the line 8—8 of Fig. 7;

Fig. 9 is a section on the line 9—9 of Fig. 8; and

Fig. 10 is an elevation of the lamp and its supporting means and a modified form of reflector.

In the accompanying drawings I have illustrated the use of the improvements disclosed and claimed herein, in a convertible sewing and darning machine which is of the general character disclosed in Patent 2,247,379, granted July 1, 1941, on an application filed by Frederic Osann and me as joint inventors, and which is adapted for mounting in a drop head sewing machine cabinet, in the general manner disclosed in Patent No. 2,247,380, granted July 1, 1941, on my application. It is to be noted, however, that my said improvements are not restricted to use in sewing machines constructed and mounted as disclosed in said prior patents.

In the preferred form illustrated, the sewing machine frame comprises a main frame casting, which includes a pedestal portion A, a standard A^1 extending up from the pedestal portion, an arm A^2 extending horizontally away from the upper end of the standard and terminating at a distance from the latter in a needle head A^3, and a cylinder arm A^4 extending horizontally away from one side of the pedestal beneath the arm A^2. Detachably secured to the pedestal portion of the main frame casting is a base member A^5 comprising a flat bottom portion, and an uprising rim portion displaced from the cylinder arm A^4, and comprising portions at opposite sides of the latter and a connecting end portion remote from the pedestal. A removable flat work bed part A^6 may be supported by the cylinder arm A^4 and the rim of the base member A^5, to adapt the machine for ordinary flat sewing operations, or may be removed to facilitate sewing, darning and repairing operations on tubular work pulled over the free end of the cylinder arm A^4.

The hollow standard A^1 and horizontal arm A^2 portions of the frame are relatively larger in transverse cross section than has been customary heretofore, and are adapted to house mechanism parts heretofore customarily mounted externally of the frame. The sewing machine frame shown in the drawing is also characterized by its formation with a top opening A^7 which extends horizontally for substantially the full length and width of the arm A^2 and across the upper end portion of the standard A^1. The opening A^7 is normally closed by a readily removable cover B, which is advantageously provided with a spring lever or other yielding retaining device B^1 adapted to re-

leasably secure the cover in place. The standard is also formed with an opening A^8 in its front wall normally closed by a door or cover member C which has an inwardly extending arm C^1 pivoted to the frame at A^9. The opening A^8 is provided to give access to, and to facilitate the use of a novel form of bobbin winding mechanism devised by me and hereinafter described.

The horizontal needle bar actuating shaft D which forms the main driving shaft of the sewing machine is mounted in the lower portion of the chamber space in the arm A^2, and extends across the upper end of the chamber space in the standard A^1. The under bed sewing machine mechanism comprises a hook shaft E mounted in the cylinder arm A^4 and carrying a rotary hook E^1 at its front end. A vertically disposed shaft F journalled in the standard A^1 is gear connected at its ends to the shafts D and E and thus forms means through which the driving shaft D rotates the hook shaft E. As shown, the sewing machine includes a feed mechanism comprising a pair of levers G extending upward through the standard A^1 from about the level of the shaft E, and operatively connected at their upper ends to the driving shaft D. The said feed mechanism forms no part of the present invention and may be, and as shown is, identical with that disclosed in said prior Patent 2,247,379, and need not be further described herein.

Note, however, that the manually adjustable lever G^1 which by its angular adjustment determines the direction of the work feed and the length of the stitches formed, extends through a slot formed for the purpose in the central portion of the door C, and through a portion A^{10} of the frame casting which extends directly back of the cover C when the latter is in its closed position.

The driving shaft D is rotated in normal operation by an electric motor H mounted in the pedestal portion of the frame and connected to the shaft D by a belt H^1. The belt H^1 extends about a driving pulley H^2 on the shaft of the motor H and about a pulley H^3 surrounding and adapted to be releasably clutched to the driving shaft D as hereinafter described. A guide pulley or idler H^4 adjustably mounted in the standard A^1 engages the belt and keeps it taut. The pulleys H^3 and H^4 and belt H^1 are located within the space surrounded by the unitary, standard forming, portion of the main frame casting, which is formed with an opening A^{11} through which the idler H^4 may be adjusted and through which the belt H^1 may be manipulated in belt replacing operations. The opening A^{11} is normally closed by a removable cover part *a*.

As collectively shown in Figs. 1, 2 and 3, the pulley H^3 surrounds an elongated hub portion I^1 of the hand wheel I, and is normally secured to said hub portion by set screws I^2. The body portion of the hand wheel I is external to the frame, and its elongated hub I^1 extends loosely through an opening A^{12} formed in the side of the standard and substantially concealed and closed by the hand wheel I. The pulley H^3 and hand wheel I are releasably clamped to the driving shaft D for sewing operations, or are freed to rotate about the then stationary shaft D in bobbin winding operations, by angular adjustments, relative to the shaft D, of a clamping nut J screwed on the threaded inner end of the shaft D. When the nut J is rotated in the clamping direction relative to the shaft D, the hub I^1 is clamped between an outwardly extending flange portion of a member K surrounding the shaft D and rigidly secured thereto by set screws and a washer L which is interposed between the head of the clamping screw J and the outer side of the hand wheel I. The outer portion of the bore of the nut J is enlarged to receive the head *d* of a screw threaded into the end of the shaft D. The screw head *d* is larger in diameter than the shaft D and is provided to prevent the nut from being inadvertently screwed off the shaft D.

To provide a suitably long bearing for the pulley H^3 and hand wheel I, and to permit their movement to the right, as seen in Fig. 1, to facilitate replacement of the driving belt H^1, I make use of a bearing sleeve M which surrounds both the elongated hub portion K^1 of the member K and the aligned tubular body of the clamping nut J. Longitudinal slots M^1 formed in the inner end of the member M receives spline ribs K^2 carried by the hub portion K^1. As shown, the member M is also formed at the outer end with longitudinal slots M^2 which receive lateral projections L^1 from the washer L. The outer surfaces of the parts L^1 form extensions of the cylindrical outer surface of the member M and elongate the bearing surface from the hub I^1 when the clamping screw J is backed off and the parts I and H^3 are moved relative to the shaft D into their dotted line positions shown in Fig. 3. Such displacement of the pulley H^3 facilitates belt manipulations of the belt, in the course of belt replacement effected through the frame opening A^{12}. The member M also provides a spline connection between the clamping washer L and the part K and shaft D which facilitate the clamping of the pulley H^3 to said shaft.

At its inner side, the pulley H^3 is provided with a cylindrical flange H^4 which during the bobbin winding operation serves as a driving roll engaged by and rotating a friction wheel N. The latter is secured on one end of a bobbin winding spindle or shaft N^1 which has its opposite end bifurcated to enter the central passage of a bobbin *n* and frictionally secure the latter to said spindle. The spindle N^1 is journalled in a bearing block N^3 carried by the upper end of an arm O which has its lower end journalled on a pivot O^1, which has a threaded extension O^2 anchored in a supporting member P. The latter is vertically disposed in the standard A^1 and adjacent its lower end is pivoted on a pivot pin P^1 having a threaded extension anchored in a frame casting lug or projection A^{13}. The shaft N^1, and pivot pins O^1 and P^1 are all parallel to the driving shaft D.

A spring P^3 subjects the member P to a bias force tending to turn the member in the counterclockwise direction as seen in Fig. 5 and thus maintain the friction wheel N in operative engagement with driving pulley flange H^4. However, such engagement can be effected only when the cover C is in its open position, since as the cover moves into its closed position it engages a projection P^4 of the member P and turns the latter into a position in which the friction wheel N is held out of engagement with the flange H^4.

A spring O^3 coiled about a hub portion of the arm O and having its opposite ends in operative engagement with said arm and the frame P, respectively, provides a bias force tending to move the arm O clockwise into the dotted line position shown in Fig. 5. Normally, however, the arm O is held in its full line position within the standard A^1 by a latch member Q pivoted to the support P and having a hook Q^1, which normally

engages a latch pin O^4 secured to the arm O. The latch Q is biased by a spring Q^2 into locking engagement with the pin O^4, and is provided with an extension arm Q^3 through which the latch Q may be adjusted clockwise, as seen in Fig. 5, about its pivot P^1 to release the pin O^4 and permit the member O to turn into its dotted line position shown in Fig. 5.

The latch member Q with its projection Q^3 may be manually engaged through the opening A^8 to release the member O and permit the latter to move out through the opening A^8 into its dotted line position, in which the spindle N^1 is conveniently disposed for mounting a bobbin on, and removing a bobbin from said spindle. The latch member Q with its projection Q^3 also forms a means for automatically interrupting the bobbin winding operation when the proper amount of thread is wound on the bobbin. This action results from the fact that as the bobbin becomes filled with thread, the thread mass engages and deflects the arm Q^3 and thus moves the latch Q out of operative engagement with the pin O^4.

The cover member C is yieldingly held either in its open position shown in Fig. 5, or in its closed position shown in Fig. 2, by means of a spring connection between the door and the sewing machine frame. The connection shown comprises a helical compression spring C^5 surrounding a guide rod C^6 which has one end connected by a pivot pin C^7 to the door bracket C^1 and which has its opposite end portion extending through a passage formed in a spring abutment member C^8. The member C^8 is supported by a pivot pin A^{14} carried by the frame casting and parallel to the cover supporting pivot A^9. The spring C^5 acts between the abutment member C^8 and an abutment shoulder on the guide rod C^6 adjacent the pivot C^7. The pivots C^7, A^9 and A^{14} are so relatively disposed that the line of action of the spring C^5 shifts from one side to the other of the pivot A^9 as the cover C moves between its wide open and fully closed positions, so as to oppose movement of the cover C away from its wide open position shown in Fig. 5, and to oppose movement of the cover C out of its fully closed position shown in Fig. 2. The cover closing force exerted on the cover C when the latter is in its closed position, should be somewhat in excess of the opening force then impressed on the cover C by the bias spring P^3, which acts on the cover through the projection P^4 of the member P.

The cover part C is provided at its inner side with an attachment R which comprises a spool spindle R^1 for supporting a spool from which thread is wound on a bobbin, as shown in Fig. 5. The attachment R includes tension discs R^2, and is formed with a thread guide passage R^3 from the supply spool on the spindle R^1. The thread passes to the bobbin *n* on which it is being wound from the tension device R^2, and the latter maintains the thread properly taut during the bobbin winding operation.

The fact that the standard and upper overhanging arm portions of the sewing machine are larger in horizontal cross section than is customary, coupled with the free access to the interior of the arm and standard provided by the large opening A^7 and removable cover B, not only facilitates the described disposition of the bobbin winding mechanism within the standard A^1, but also makes it readily feasible to locate a work illuminating electric lamp S within the arm A^2.

As shown in Figs. 1 and 7, the lamp S is mounted in a socket S^1 normally so disposed that the lamp may suitably illuminate the work on which the machine is operating through an opening A^{15} in the bottom wall portion of the arm A^2. In the particular arrangement shown, the lamp socket S^1 is clamped in a bracket S^2, supported by a pivot S^3, carried by a sheet metal part S^4 which is secured by a screw S^6, to a lug or projection portion A^{16} of the arm A^2. The bracket S^4 includes a portion S^5 which forms a cradle like support for the lamp socket S^1 when the latter is in its normal position. The lamp socket bracket S^2 may be turned about the pivot S^3 to move the lamp and lamp socket from their normal positions shown in full lines, into their positions shown in dotted lines in Fig. 7. In its dotted line position the lamp S is conveniently disposed for insertion in and removal from the socket S^1. As shown, the lamp and socket have bayonet joint connecting provisions as is customary for small sewing machine lamps. Light radiated horizontally and upwardly from the lamp S, is reflected through the opening A^{15} by a reflector T which may be formed of enamelled sheet metal. The reflector T may have its opposite edges releasably snapped into engagement with frame locking shoulders A^{17} and A^{18} as shown in Figs. 8 and 9. Alternatively, a reflector TA may be secured to the lamp socket, or to the socket supporting bracket S^2 as shown in Fig. 10. A switch S^7 controlling the energization of the lamp S is mounted on the arm A^2.

As shown, a spool spindle U normally extends upward from the top cover B as shown in Fig. 1 to support the thread spool which supplies thread to the sewing machine needle. Advantageously, the spindle U is connected to the cover B so that it may be readily detached, or displaced from its normal operating position, so as to reduce the required bulk of a suitable shipping container in which the sewing machine may be packed for transportation. The detachment or displacement of the spindle U also substantially eliminates risk of spindle injury while the sewing machine is in transit and while it is being moved into and out of the shipping container in which it is transported. In the particular construction shown, the spindle U is normally mounted in a vertical passage extending through the cover B and an integral boss B^5 at the underside of the cover. A spring pressed ball U^1 mounted in the boss B^5 forms a locking detent adapted to enter a groove U^2 in the spindle U and hold the latter in its operative position shown in Fig. 1, and also adapted to engage a shoulder U^3 at the upper end of the spindle U, and hold the latter in a retracted position as shown in Fig. 9. The spindle U may be readily moved between its Fig. 1 and Fig. 9 positions, and, when desired, may easily be moved down out of and be readily reentered in the cover passage in which it is received as shown in Fig. 1 and Fig. 9.

As will be readily apparent to those skilled in the art, my improved sewing machine possesses practically important structural and operating advantages, some of which have already been mentioned. The location of the lamp S and the bobbin winding mechanism within the hollow frame not only simplifies the external form and improves the appearance of the frame, but substantially eliminates risk of contacts with the lamp and bobbin winding mechanism which may result in injury to them, or to the operator, or to the work.

The unusually free and extended access to the

interior of the arm A^2 and standard A^1, resulting from the disposition and large size of the opening A^7, is especially advantageous because the arm A^2 and standard A^1 are unusually large in horizontal cross section and house the lamp S and bobbin winding mechanism, and also because it facilitates the inspection, adjustment and repairs of the sewing mechanism parts customarily mounted in the upper portion of the frame. Furthermore, the disposition and size of the opening A^7 makes it practically feasible to provide effective lubricating provisions made accessible by the removal of the cover B for practically all of the sewing machine bearings requiring lubrication, except those located in the cylinder arm A^4 adjacent its free end. The resultant elimination of oiling holes extending into the frame from its outer surface, not only improves the appearance of the sewing machine but eliminates trouble due to the accumulation of oil and dirt on the surface of the machine, and also facilitates the use of simpler and more effective lubricating provisions.

The separable hand wheel I and driving pulley H^3 are formed and associated with the driving shaft D, in a practically simple and effective manner and are characterized by the relative ease with which they may be assembled and disassembled. The detachable mounting of the pulley H^3 on the hub of the hand wheel I, and the provisions made for disconnecting them from the drive shaft D, make it possible to locate the hand wheel outside, and the pulley within the frame, while permitting the frame opening A^{12} through which they are connected, to be substantially smaller in diameter than either the pulley or the hand wheel.

To separate the hand wheel I from the pulley H^3 and shaft D preparatory to their removal from the frame, it is necessary only to loosen the set screws I^2, remove the screw *d*, and screw the clamping nut member J off of the shaft D. The hand wheel I and bearing sleeve member M may then be removed from the machine, and thereafter the driving shaft D may be displaced in its bearings, to the left as seen in Fig. 1, far enough to clear the pulley H^3, and the latter may then be moved upwardly out of the arm A^2 through the opening A^7. The assembly of the above mentioned parts may be effected by operations the reverse of those just mentioned. The novel arrangement of the hand wheel I, pulley H^3 and driving shaft D disclosed but not claimed herein, is disclosed and claimed in my application Serial No. 739,436, filed April 4, 1947, as a division of this application.

The bobbin winding mechanism is mechanically simple and reliable, and the bobbin winding operation may be effected quickly and easily. Preparatory to that operation the cover C is moved from its closed to its open position, and the latch member Q is turned to release the locking pin O^4 and permit the arm O to swing into its dotted line position shown in Fig. 5. With the cover C in its open position, the latch projection Q^3 may be actuated to release the locking pin O^4 by the finger of the operator extended into the standard through the upper portion of the opening A^8.

With the member O in its position shown in dotted lines in Fig. 5, the spindle end N^2 is conveniently disposed for the placement thereon of a bobbin *n* to be filled with thread, and for the connection to the bobbin of the thread to be wound in the bobbin. That thread is drawn through the guide opening R^3 and tension discs R^2 of the attachment R which supports the spindle R^1 on which the bobbin thread supply spool is ordinarily placed after the cover C is moved into its open position. The member O may then be returned to and latched in its normal position, and in which the driving motor may then be started into operation to rotate the spindle N^1. Normally and desirably, however, the clamping nut J is backed off to operatively disconnect the pulley A^3 from the driving shaft D before the motor is energized and begins to rotate the bobbin spindle through the pulley flange H^4 and wheel N.

In the preferred construction shown, the projection Q^3 is so shaped and disposed that when the desired amount of thread has been wound on the bobbin, the external diameter of the annular thread body on the bobbin will be sufficient to move the projection Q to the left, as seen in Fig. 5 far enough to lift the hook Q^1 above the locking pin O^4 and thereby automatically return the arm O to its dotted line position. The resultant movement of the friction wheel N away from the driving flange H^4 terminates the bobbin winding operation and the filled bobbin is then in a position for easy removal from the spindle end.

After the removal of the bobbin thread filled and the relatching of the arm O to the member, and the removal of the bobbin thread spool from the spindle R^1 and the movement of the cover C into its normal closed position, the machine is restored to its normal condition for stitch forming operations. As the cover C moves into its closed position, it engages the projection P^4 and thereby gives the member P the clockwise adjustment, as seen in Fig. 5, needed to move the friction wheel N out of engagement with the periphery of the flange H^4.

While in accordance with the provisions of the statutes, I have illustrated and described the best forms of embodiment of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the forms of the apparatus disclosed without departing from the spirit of my invention, as set forth in the appended claims and that in some cases certain features of my invention may be used to advantage without a corresponding use of other features.

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

1. In a sewing machine, the combination with a sewing machine frame including a hollow standard with an opening in its wall, of a bobbin winding spindle, supporting means therefor normally within said frame and adjustable to move said spindle through said opening between one position in which said spindle is within said standard and a second position in which said spindle is external to said standard.

2. In a sewing machine, the combination with a sewing machine frame including a hollow standard with an opening in its wall, of a bobbin winding spindle, supporting means therefor normally within said frame and adjustable to move said spindle through said opening between an operative position within said standard and a second position external to said standard, and means for rotating said spindle while the latter is in said operative position.

3. In a sewing machine, the combination with a frame having a hollow standard portion with an opening in its wall, of sewing mechanism in-

cluding a horizontal shaft mounted in said frame and extending into the upper portion of said hollow standard, a bobbin winding spindle, a supporting arm at one end of which said spindle is mounted, a connection within said frame between the other end of said arm and said frame permitting movement of said arm relative to said frame to move said spindle through said opening from a position in which the latter is within said standard and is operatively connected to said shaft and a second position in which said spindle shaft is external to said standard and is operatively disconnected from said shaft.

4. A sewing machine as specified in claim 3, comprising a cover mounted on said frame for movement into and out of a normal position in which it closes said opening and acting on said connection as it moves into said normal position to operatively disconnect the bobbin winding spindle from said horizontal shaft.

5. A sewing machine as specified in claim 3 comprising means responsive to the quantity of thread on a bobbin being wound for effecting movement of said spindle into said second position when a predetermined amount of thread is wound on said bobbin.

6. In a sewing machine, the combination with a frame comprising a hollow standard with an opening in its wall, of a rotatable shaft mounted in said frame and extending into the upper portion of said hollow standard, a bobbin winding spindle, supporting means for said spindle comprising a member mounted in said hollow standard for movement relative thereto, a connection between said member and spindle adjustable to move the spindle through said opening between an operative position within said standard and in fixed relation to said member, and a bobbin placement position external to said standard, latching means releasably maintaining said fixed relation, said member being biased for movement in a direction to establish a driving connection between said shaft and spindle when the latter is maintained in said fixed relation to said member and a cover mounted on said frame for movement into and out of a position in which it closes said opening and which actuates said member to interrupt said driving engagement as it moves into its closed position.

7. In a sewing machine, the combination with a frame comprising a hollow standard with an opening in its wall, of a rotatable shaft mounted in said frame and extending into the upper portion of said hollow standard, a bobbin winding spindle, supporting means for said spindle comprising a member mounted in said hollow standard for movement relative thereto, and a connection between said member and spindle adjustable to move the spindle through said opening between an operative position within said standard and in fixed relation to said member and a bobbin placement position external to said standard and biased to move said spindle into said bobbin placement position, latching means releasably maintaining said fixed relation, said member being biased for movement in a direction to establish a driving connection between said shaft and spindle when the latter is releasably connected to said member, and a cover mounted on said frame for movement into and out of a position in which it closes said opening and acting on said member to interrupt said driving engagement as it moves into its closed position, and means responsive to the quantity

of thread on a bobbin being wound for releasing said latching means and terminating the bobbin winding operation when said quantity attains a predetermined value.

8. In a sewing machine, the combination with a frame comprising a hollow standard with an opening in its wall, of a rotatable shaft mounted in said frame and extending into the upper portion of said hollow standard, a bobbin winding spindle, a supporting connection between said frame and spindle adjustable to move the spindle through said opening between an operative position within said standard, and a bobbin placement position external to said standard and biased to move said spindle into said bobbin placement position, latching means releasably maintaining said spindle in its operative position, means establishing a driving connection between said shaft and spindle when the latter is maintained in said operative position, and means responsive to the quantity of thread on a bobbin being wound for releasing said latching means and thereby terminating the bobbin winding operation when said quantity attains a predetermined value.

9. In a sewing machine, a frame comprising an uprising standard arm and a hollow overhanging arm formed with a lower wall opening and with an upper wall opening, and having one end connected to the upper end of said standard and a needle head connected to the other end of said arm, work supporting means beneath said needle head, mechanism mounted in said needle head for actuating a needle operating on work supported by said means, an operating shaft for said mechanism horizontally disposed in said hollow arm for rotation about its own axis, a lamp, a lamp socket supporting said lamp and pivotally mounted in said arm to turn between one position in which the lamp is adjacent the underside of the arm and is adapted to transmit light through said lower opening to illuminate said work, and a second position in which said lamp is accessible for replacement in said socket through said upper wall opening, said lamp and socket being horizontally displaced from the axis of said shaft.

10. A domestic sewing machine including in combination, a frame comprising a hollow standard open at its upper end and a hollow horizontal arm connected at one end to the upper end of said standard and supported by the latter and open at its upper side and formed with an opening in its under side, mechanism mounted in said hollow standard and arm and including an operating shaft horizontally disposed in said hollow arm for rotation about its own axis, cover means normally supported by said frame and closing the open upper end of said standard and the open upper side of said arm and removable to provide access to said mechanism, and a lamp mounted in said arm adjacent the said opening in the underside of the arm and accessible for replacement through the open upper side of said arm and transmitting light through said under side opening, said lamp and socket being horizontally displaced from the axis of said shaft.

11. A domestic sewing machine including in combination, a frame comprising a hollow standard open at its upper end and a hollow horizontal arm connected at one end to the upper end of said standard and supported by the latter and open at its upper side for substantially the full horizontal cross section of said arm, mechanism mounted in said hollow standard and arm, cover means normally supported by said frame and

closing the open upper end of said standard and the open upper side of said arm and removable to provide access to said mechanism, and a bobbin winding mechanism mounted in said standard and forming a portion of the mechanism to which access is provided when said cover means are removed.

12. In a sewing machine, the combination with a frame having a hollow standard portion with an opening in its wall, of sewing mechanism including a horizontal shaft mounted in said frame to extend through the upper portion of said hollow arm, a driving element mounted on said shaft, a bobbin winding spindle, a supporting arm at one end of which said spindle is mounted, a connection within said frame between the other end of said arm and said frame permitting movement of said arm relative to said frame to move said spindle through said opening from a position in which the spindle is within said standard and is operatively coupled to said driving element, and a second position in which said spindle shaft is external to said standard and is operatively uncoupled from said element, and a clutch means including a portion within said standard and a portion external to said standard for adjustment to secure said element to said shaft or to release said element and permit rotation of said bobbin winding spindle without rotation of said shaft.

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