Sept. 16, 1947. V. J. SIGODA 2,427,372

RUFFLING ATTACHMENT FOR SEWING MACHINES

Original Filed Nov. 6, 1941 2 Sheets-Sheet 1

Fig. 1.

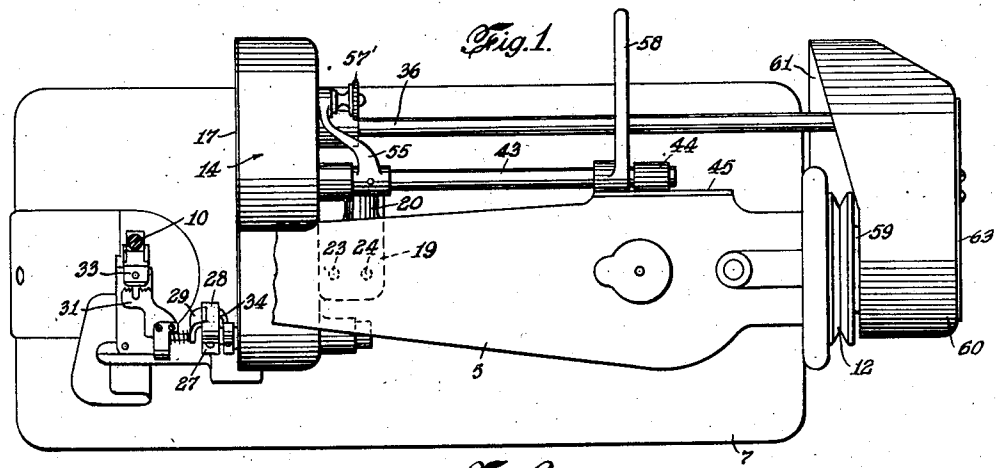

Fig. 2.

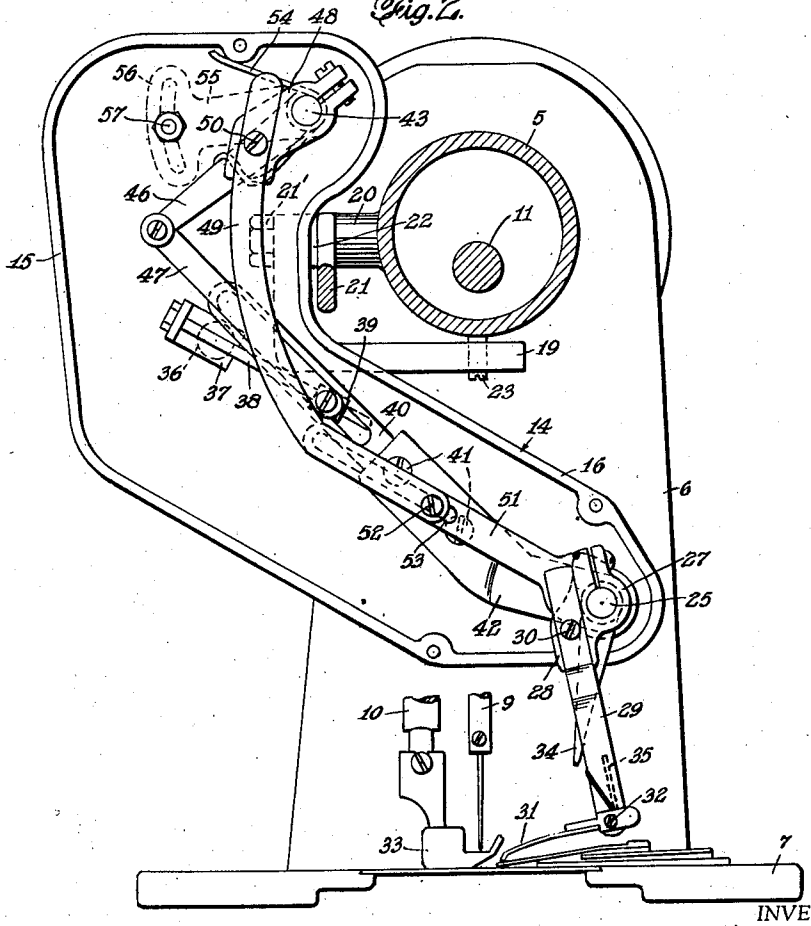

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Fig. 3.

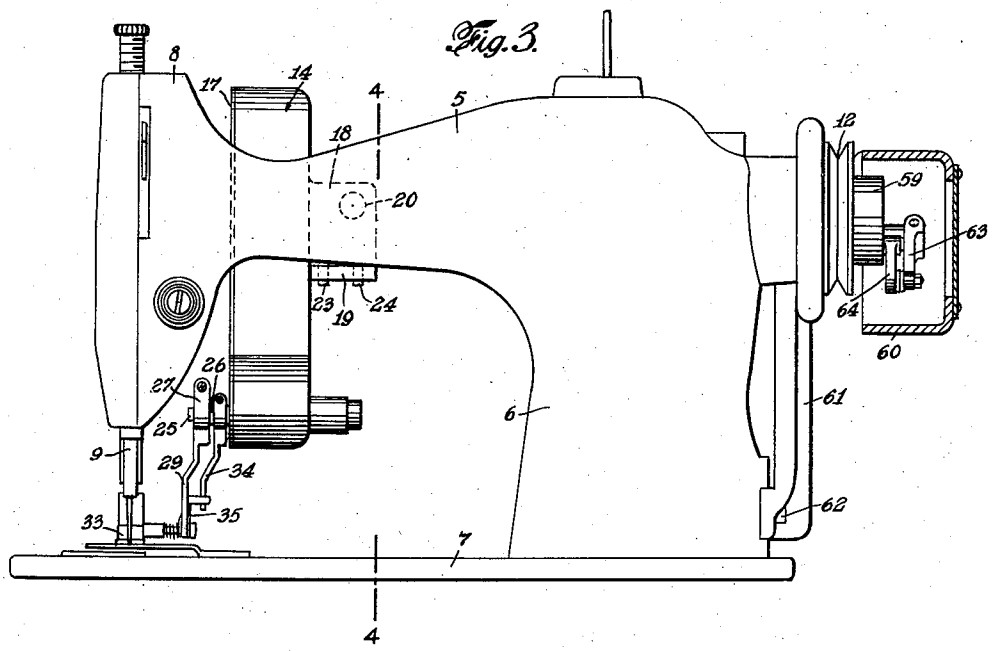


Fig. 4.

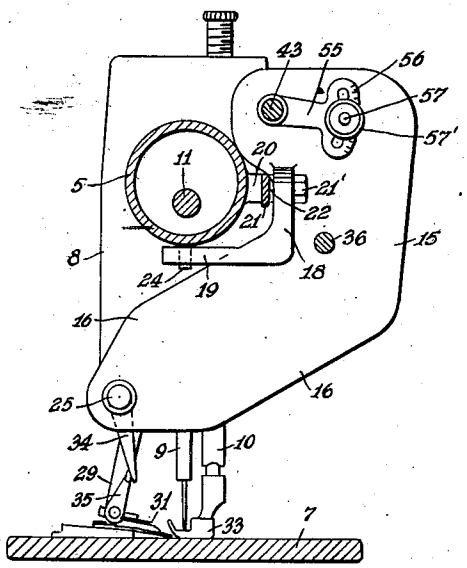
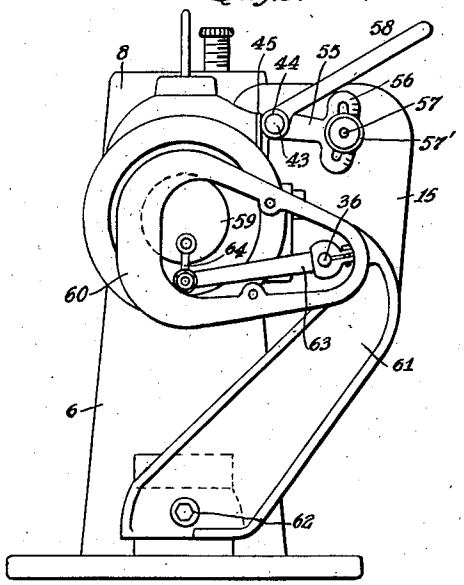


Fig. 5.



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2,427,372

RUFFLING ATTACHMENT FOR SEWING MACHINES

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Substituted for abandoned application Serial No. 417,996, November 6, 1941. This application April 2, 1945, Serial No. 586,237

5 Claims. (Cl. 112—134)

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This invention relates to ruffling or gathering attachments for sewing machines and has for its general object and purpose to provide certain improvements in ruffling attachments of the type shown and described in Patents No. 2,233,752, March 4, 1941, and No. 2,245,877, June 17, 1941, in which the operating mechanism for the oscillatory ruffling blade is operatively arranged in a housing of minimum dimensions and means is provided for facilitating the mounting of said housing upon the rear side of the conventional sewing machine arm and its easy and quick adjustment relative thereto to accurately position the ruffling blade relative to the sewing machine presser foot and whereby the operator is afforded a clear, unobstructed vision of the work.

It is a more particular object of the invention to provide an improved construction of the attachment housing with means which enables me to utilize the mounting for the conventional presser foot adjusting lever as a single point of oscillatory support for the housing at the rear side of the sewing machine arm, together with means for rigidly locking the housing in adjusted relation to said arm and the vertically reciprocating needle bar.

It is also an additional object of the invention to provide a ruffling attachment having the above noted advantages and in which the operating mechanism for the oscillatory ruffling blade as shown in said issued patents is simplified and greater operating efficiency realized.

The present application is a substitute for abandoned application Serial No. 417,996 filed November 6, 1941.

With the above and other objects in view, the invention consists in the improved ruffling attachment for sewing machines in the form, construction and relative arrangement of the several parts as will hereinafter be more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings wherein I have disclosed one simple and practical embodiment of the invention and in which similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a top plan view of a sewing machine of standard make having one embodiment of the present invention applied thereto, the needle bar guide head of the sewing machine arm being omitted;

Figure 2 is an end elevation, the face plate of the attachment housing being removed and the sewing machine arm shown in section;

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Figure 3 is a front side elevation of the sewing machine arm with the attachment applied thereto, a part of the latter being shown in section;

Figure 4 is a transverse sectional view taken on the line 4—4 of Figure 3, and

Figure 5 is an end elevation illustrating the mounting of parts of the operating connections between the attachment and the main shaft of the sewing machine.

Referring in detail to the drawings, 5 indicates the usual hollow sewing machine arm extending horizontally from the upper end of the vertical pedestal 6 which is integrally formed with or suitably mounted upon the machine bed plate 7, adapted to be attached to and supported by a sewing machine table in the usual manner.

The other end of the arm 5 is provided with the usual guide head 8 for the vertically reciprocating needle bar 9 and the presser foot bar 10. The main operating shaft 11 is suitably mounted within the arm 5 and driven by the usual motor (not shown), by means of a driving belt engaged with the belt wheel 12 fixed to one end of said shaft. At its opposite end within the guide head 8, the shaft 11 is operatively connected by conventional actuating means with the needle bar 9.

It will be understood that while, for the purposes of the present explanation, I have shown my attachment as applied to a well known standard type of single needle sewing machine, it may also be advantageously used in connection with multiple needle or zigzag sewing machines of the several makes now in common use.

The attachment which forms the subject matter of the present invention embodies a housing 14 having an upright end portion 15 adapted to be positioned at the rear side of the sewing machine arm 5 and the obliquely inclined portion 16 extending downwardly and forwardly beneath the said arm. One side of this housing is open and is adapted to be closed by a removable face plate 17. To the side wall of the upright end portion 15 of said housing the vertical leg 18 of an L-shaped bar is welded or otherwise rigidly secured, the horizontal arm 19 of said bar being adapted to extend forwardly beneath the sewing machine arm 5.

The rear side of the arm 5 is provided with the usual integrally formed boss 20 having a threaded bore to receive a bolt upon which the conventional adjusting lever indicated at 21, for the sewing machine presser foot bar 10 is mounted. In applying my attachment, I remove this supporting bolt for the lever 21 and substitute a similar but somewhat longer bolt 21',

which is first inserted through an opening in the vertical portion 18 of the L-shaped bar on the housing wall, and after receiving the spacing washer indicated at 22 and the lever 21, is then threaded into the boss 20. Thus it will be understood that the housing has a single point of oscillatory support upon the rear side of the sewing machine arm and adjacent to the inner side of the needle bar guide head 8. This housing may be rigidly fixed in an adjusted position relative to said arm by the laterally spaced apart screws 23 and 24, respectively, which are threaded in the horizontal arm 19 for bearing contact upon the under side of the sewing machine arm 5. It will be noted, from reference to Figure 3 of the drawings that screw 23 is spaced from one side of the vertical plane passing through the axis of the boss 20 while the screw 24 is located adjacent to said plane at the opposite side thereof. Thus by first loosening one of the screws and adjusting the other screw against the arm 5, the housing structure may be bodily rocked about the axis of the supporting bolt in either direction to vertically position the same relative to the arm 5 and accurately locate the oscillatory ruffling blade with respect to the sewing machine presser foot. The housing is then rigidly locked in such adjusted position by adjusting both screws into binding contact against the arm 5.

The mounting and arrangement of the ruffling blade and the actuating mechanism therefor within the housing is in many respects quite similar to that disclosed in Patent 2,245,877, above referred to, but in certain details thereof has been improved and simplified in the interest of greater operating efficiency. Thus, in the lower front end of the housing the relatively oscillatable shaft 25 and sleeve 26 are mounted, said shaft and sleeve at one of their ends extending through an opening provided in the face plate 17 of the housing and being suitably mounted at their other ends in bearing means on the inner side wall of said housing. To the projecting end of the shaft 25, a member 27 is rigidly fixed and has a depending channeled portion 28 within which the upper end of the arm 29 is securely fixed by means of the screw 30. Upon the lower end of this arm, the ruffling blade 31 is yieldably pivoted at one of its ends as at 32 and extends rearwardly therefrom toward the presser foot 33.

To the corresponding end of the sleeve 26 the downwardly extending arm 34 is fixed and is adapted to cooperate with an upwardly projecting part 35 on the pivoted end of the ruffling blade 31 in the same manner as disclosed in my issued patent.

The actuating means for the ruffling blade 31 includes a rock shaft 36 mounted at one of its ends in the rear wall of the housing structure and having fixed thereto an angular bracket member 37 to which one end of a rod 38 is rigidly connected. This rod is slidably engaged with the block 39, which in turn is slidably connected with the slotted lever 40 fixed at one of its ends by means of the screws 41 to an arm 42 which is rigidly connected with the oscillatory shaft 25. Substantially the same means is provided for adjusting the slide block 39 to regulate the stroke of the ruffling blade or for rendering the same inoperative when desired, as that shown in the issued Patent 2,245,877, comprising the rock shaft 43 mounted at one of its ends in a suitable bearing on the housing wall

and at its other end in a bearing 44 on the cover plate 45 for an access opening in the rear side wall of the arm 5. To the end of the shaft 43 within the housing one end of an arm 46 is rigidly fixed, the other end thereof being connected by the link 47 with the slide block 39.

There is also fixed to the end of shaft 43 a relatively short arm 48 with which the curved upper end of lever 49 is rigidly connected by the screw 50. The lower end of lever 49 is connected for movement relative to a second lever 51 which is rigidly fixed at its lower end to the sleeve 26, by means of the pin or stud 52 fixed to the lower end of lever 49 and movable in the longitudinal slot 53 of the lever 51. A coiled wire spring 54 is turned about the shaft 43 and has one of its ends exerting downward bearing pressure on the arm 46 and its other end bearing against the top wall of the housing structure as clearly shown in Figure 2. This spring tends to yieldingly resist rocking motion of the shaft 43 in one direction.

Exteriorly of the housing structure an arm 55 is fixed at one end to the shaft 43 and at its other end is formed with a slotted quadrant 56 movable upon the stud 57 fixed in the housing wall. This stud has a threaded section receiving the clamping member 57' whereby the quadrant 55 may be fixed in any predetermined adjusted position.

To the other end of the rock shaft 43 a lever arm 58 is fixed at one of its end and may be connected with a suitable foot treadle (not shown). Thus, as in the issued Patent 2,245,877, by loosening the clamping member 57, shaft 43 may be rocked against the resistance of spring 54 and through arm 46 and link 47, the slide block 39 is thereby moved along the lever 40 to a neutral position in coaxial relation with the shaft 36 so that in the rocking motion of said shaft no movement will be transmitted to the ruffling blade 31. This is desirable, in the execution of intermittent ruffling or gathering during the sewing operation. The stroke of the ruffling blade may be regulated in accordance with the desired width of the ruffles by operating the shaft 43 to move the slide block 39 and position the same relative to the axis of shaft 36 as determined by the proper adjustment of the graduated quadrant 56.

In the movement of the slide block 39 to neutral position, the lower end of lever 49 moves in a downward arc from the axis of shaft 43, thereby actuating lever 51 to rock the sleeve 26 and cause the arm 34 to engage the member 35 and lift the free end of ruffling blade 31 upwardly out of contact with the material.

While any desired means may be provided for transmitting motion to the rock shaft 36 from the needle operating shaft 11, as herein shown, I provide the belt wheel 12 with a hub portion 59 which extends within the open side of a suitably formed housing 60 on the upper end of an arm 61 which is rigidly bolted or otherwise fixed as at 62 to the pedestal 6 of the sewing machine. The right hand end of rock shaft 36 is suitably supported in one end of said housing and to the same one end of an arm 63 is rigidly fixed, the other end of said arm being connected with the hub 59 at a point radially spaced from the axis thereof by means of the pitman link 64. However, it will be understood that if desired in place of the hub 59 and link 64 the conventional eccentric and strap connection with the arm 63 may be substituted.

It will, of course, be undestood that the machine is provided with the usual feed mechanism with which the presser foot **33** cooperates, to intermittently feed the material of the machine. The ruffling blade **31** operates above the usual guide means for the base fabric and the material to be ruffled and successively feeds the ruffles beneath the front end of the presser foot to be stitched to the base material on the downstroke of the needle in the usual manner. The operation of the ruffling blade by means of the actuating mechanism above described, and the regulation and control thereof is substantially the same as explained in my issued Patent 2,245,877.

It will be seen from the foregoing that I have provided a ruffling attachment in which the protecting housing for the actuating mechanism has a single point mounting on the rear side of the sewing machine arm with the provision of means whereby bodily adjustment of said housing to position the ruffling blade relative to the sewing machine presser foot may be easily and quickly made and said housing then rigidly locked in position with respect to the sewing machine arm, to thereby effectually prevent oscillatory vibration of said housing during the operation of the machine. It is also an important consideration in the use of such attachments in large quantity production establishments that the mounting of said attachment shall require no material mechanical alterations in the standard sewing machine. In the present instance, this requirement is met since I utilize the supporting means for the presser foot adjusting lever with which such machines are equipped for the purpose of mounting the attachment, the only additional part necessary being the somewhat longer attaching bolt **21'** in place of the standard lever attaching bolt. It will also be seen that this mounting of the actuating mechanism and its housing upon the sewing machine arm has the further advantage, in that there is no projection beyond the end of the sewing machine arm **5** and the projection of the housing to position the ruffling blade in front of the needle bar is also reduced to a minimum. This permits of clear and unobstructed vision of the work as it is fed to the sewing machine presser foot by the operator.

From the foregoing description considered in connection with the accompanying drawings, the construction, manner of operation and several advantages of the present invention will be clearly understood. It will be appreciated that the same embodies several important practical improvements over the disclosures contained in my issued patents which contribute to economical production, and increased efficiency in operation. I have herein illustrated and described an embodiment of the present invention which has given excellent results in practice. Nevertheless, it is to be understood that the same is susceptible of more or less modification in the form, construction and relative arrangement of the several cooperating elements. Therefore, the privilege is reserved of embodying the essential features of the present disclosure in such other alternative structural forms as may fairly be considered within the spirit and scope of the appended claims.

I claim:

1. In combination with a sewing machine arm and stitch forming mechanism mounted on one end thereof; a ruffling unit attachment including actuating mechanism for a movable ruffling blade and a housing therefor, said sewing machine arm being provided with a boss on the rear side thereof, a bracket member secured to the housing, a pivot bolt for supporting the presser foot adjusting lever detachably engaged through an opening in the bracket member and threaded in said boss and constituting the sole attaching and supporting means for said housing, said bracket member having a part extending transversely beneath the sewing machine arm, and means mounted on said part of the bracket member and adjustable relative thereto into bearing contact with the underside of the sewing machine arm to rigidly secure the housing against oscillatory vibration relative to said pivot bolt.

2. In combination with a sewing machine arm and stitch forming mechanism on one end thereof; an accessory unit including a work engaging member, operating mechanism therefor, and a housing for said mechanism; means for pivotally mounting said unit at one side of the machine arm with said housing vertically positioned relative to said arm, said mounting means constituting the sole supporting means for said unit and comprising a stud bolt fixed to the machine arm and projecting transversely therefrom and a bracket fixed to said housing and mounted on said bolt to support said unit in a vertical plane substantially parallel with the path of movement of the work to said stitch forming mechanism, and means for rockably adjusting said housing about the axis of the supporting bolt to transversely position said work engaging member with respect to the feed path of the work.

3. The combination defined in claim 2, in which said adjusting means comprises means mounted on said bracket and manually adjustable relative thereto into coacting relation with the machine arm to rigidly fix the housing in adjusted position relative thereto.

4. The combination defined in claim 2, in which said unit is mounted on the rear side of the machine arm and extends forwardly beneath the same, and said adjustable means comprises manually adjustable members carried by the housing and coacting with the under side of the machine arm.

5. The combination defined in claim 2, in which said unit extends above and below said stud bolt and said supporting bracket is fixed to a side wall of the housing intermediate its ends.

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REFERENCES CITED

The following references are of record in the file of this patent:

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