June 3, 1930. A. M. WENZEL 1,761,899

AUTOMATIC PRESSER FOOT LIFTING MECHANISM

Filed May 22, 1929

Fig. 1.

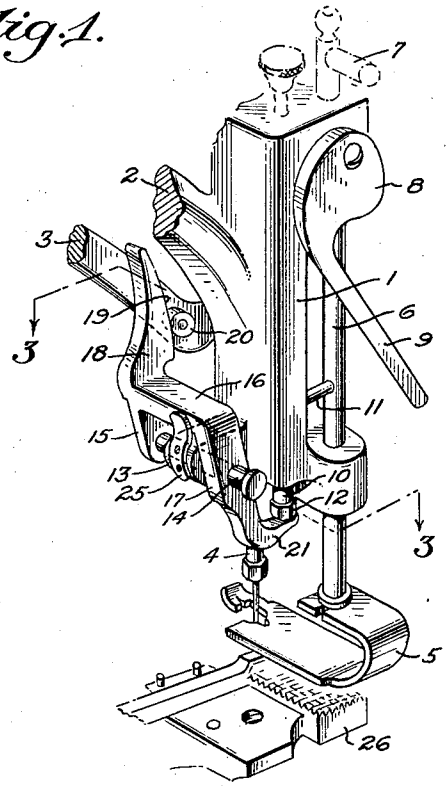


Fig. 4.

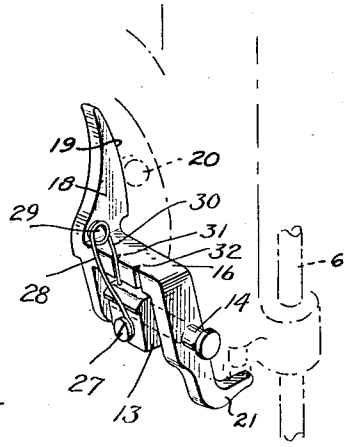


Fig. 3.

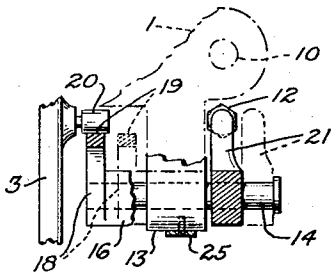
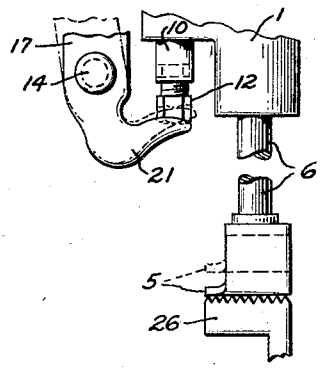


Fig. 2.



Inventor

A. M. Wenzel

By

Attorney

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UNITED STATES PATENT OFFICE

ANNA M. WENZEL, OF BROOKLYN, NEW YORK

AUTOMATIC PRESSER-FOOT-LIFTING MECHANISM

Application filed May 22, 1929. Serial No. 365,140.

This invention relates to sewing machines and more particularly to automatic presser foot lifting mechanisms therefor, having for its object the provision of a construction simple in parts, more efficient in use and less costly to manufacture than those heretofore proposed.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts as will be more fully disclosed hereinafter and particularly pointed out in the claims. This application constitutes a continuation in part of my co-pending application Serial No. 281,762 filed May 31, 1928, on improvements in sewing machine.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views,—

Fig. 1 is a perspective view of the invention illustrating the tipper or lifting mechanism in assembly with the needle bar housing;

Fig. 2 is a rear elevational view of some of the parts shown in Fig. 1;

Fig. 3 is a sectional view taken as on the line 3—3 of Fig. 1 and looking in the direction of the arrows; and

Fig. 4 is a perspective view of a modification of the construction shown in Fig. 1.

This invention contemplates a novel construction which is adapted for making possible stitching of material having various thicknesses. That is to say, it is desirable to use the same sewing machine for stitching relatively thin material in single or plural layers and then to immediately change to thick material without the necessity of using a separate machine. This invention therefore is directed to a construction by which this change can be rapidly made.

1 represents that portion of the headstock which is integrally secured to the main body casting 2 of the sewing machine. At 3 is shown the end portion of the pivoted lever employed for reciprocating the needle bar 4, while 5 indicates the presser foot carried at the base of the presser foot bar 6 slidable in suitable guides in the headstock and having at its upper end an extending pin 7 adapted to be struck by a pivoted cam 8 actuated by the handle 9 in the well known manner to raise said presser foot. 10 is a second rod slidable in the headstock and which is connected as by the pin 11 in parallel relation with the presser foot bar 6 as will be readily understood from the art. This rod 10 extends out of the headstock at the lower end thereof and is provided with screw threads for receiving a nut 12.

On the side of the headstock away from the presser foot bar there is integrally formed a lug 13 provided with a central horizontal bore extending from front to back of the machine and adapted to receive a pin or shaft 14 therethrough. On this pin and straddling said lug is mounted a tripper mechanism by means of which the presser foot is automatically raised as the needle bar is lowered so as to free the material being sewed. This tripper mechanism comprises an inverted U-shaped frame having one side 15 connected as by the bridge portion 16 in parallel relation with the opposite side 17, the pin 14 passing through both of said sides. The side 15 has an upward extension 18 provided with a cam edge 19 which is adapted to be struck by a roller 20 carried by the oscillating lever 3 which reciprocates the needle bar. The other side 17 is downwardly extended and has its end angularly bent in a direction toward the headstock to provide a hook or foot 21 whose upper surface is adapted to contact with the underside of the nut 12 mentioned above.

The distance between the sides 15 and 17 is made greater than the width of the lug 13 disposed therebetween so that the tripper mechanism as a whole may be moved axially of the pin 14 as and when desired. With particular reference to Fig. 3 it will be readily seen that when the tripper mechanism is in the position shown in full lines the cam surface 19 lies in the same vertical plane with the roller 20 and will be struck thereby as the needle reciprocating bar 3 is actuated, but that when the tripper mechanism is moved to the position indicated by the dotted lines the cam 19 will be out of the operating plane of said roller. It is also to be observed

that when the mechanism is in the full line position the foot 21 will lie beneath and in axial registry with the nut 12 of the pressure foot auxiliary rod 10 but when the parts are moved to the dotted line position said foot will be out of engagement therewith.

A flat spring 25 is rigidly secured at one end to the lug 13 with its free end bearing against a side edge of the bridge 16 so that normally and when not being automatically operated, the tripper mechanism will have its foot 21 swung downwardly away from any contacting position with the nut 12. When, however, the roller 20 contacts with the cam surface 19 the tripper mechanism will be oscillated about the pin 14 so that the foot 21 will be moved into contact with and raise the nut 12 with attendant raising, through the well-known intermediate connections, of the presser foot 5 from the feed dog 26.

It is thus evident that it is a simple matter for the operator of the machine to move the tripper mechanism at will in either direction on its supporting pin and that when it is moved toward the front of the machine it will be in position to be automatically operated by the needle bar reciprocating lever to cause an increased raising of the presser foot. By employing a flat spring 25 bearing against the flat surface of the bridge 16 there is made possible a free sliding engagement therebetween at all times, and further by the particular construction of the tripper mechanism, there is no interference with the goods being sewed and no parts so disposed as to obstruct sight of the sewing.

In Fig. 2 is clearly shown in diagram the results obtained as above described. That is to say, the foot 21 of the tripper mechanism is shown in full lines disposed out of the vertical plane of the presser foot auxiliary bar 10 but is shown in dotted lines not only in the plane of said rod but supporting the nut 12 so that the presser foot 5 is raised to its dotted line position. The movement of the foot 21 is clearly shown to be oscillatory about the pivot pin 14.

In Fig. 4 there is disclosed a slight modification of the construction hereinbefore described, the modification constituting a change in the spring tension placed upon the device. Stated in other words, and as will be seen, the lug 13 is provided with a screw 27 securing one end of a double action spring 28 which extends upwardly and over into the loop 29 and then has its free end 30 extending downwardly in substantially parallel relation with the member 28 of said spring. The member 30 of the spring is thus adapted to bear against the flat side of the yoke 16 the surface of which is provided with two vertical grooves 31 and 32. When the device is in its forward position the spring will engage the groove 32 and hold the device so it will not accidentally slide on the pin 14 out of operative position.

When, however, the presser foot lifting device is not desired to be in use and is pushed to the rear of the machine, the spring will automatically leave the groove 32 and engage the groove 31 and hold the device in inoperative position. The screw 27 may be of sufficient length to serve as a set screw for the pin 14 preventing accidental dislodgment thereof.

From the foregoing it will thus be seen that by this invention there is contemplated a tripper mechanism for raising the presser foot of a sewing machine having in combination a support including the lug 13 and the pin 14 passing therethrough, with a frame slidably mounted on said pin and straddling the lug, said frame having an extension 17 adapted to engage one of the connections between the frame and the bar 10 associated with the presser foot 5, the engagement of the foot 21 of said extension being only permitted when the frame is at one limit of its movement on the pin 14 and disengaged therefrom when the frame is slid to its other limit on said pin. There is also provided the second extension of the frame 18 which is adapted to be engaged by an oscillating member 3 of the machine when the foot 21 is engaged with the said connections to the presser foot whereby the frame is oscillated about the pin 14 and the presser foot raised. There is provided spring means 25 carried by the lug 13 to normally disengage the foot 21 from the presser foot connections, said spring means adapted to apply equal pressure on the frame when the frame is substantially contacting with either side of the lug 13. By this construction it will be seen that the tripper mechanism can be slid at will by the operator of the sewing machine to cause intermittent and automatic raising of the presser foot.

It is obvious that those skilled in the art may vary the details of construction as well as arrangements of parts without departing from the spirit of the invention and it is therefore not desired to be limited to the foregoing disclosure except as may be demanded by the claims.

What is claimed is:—

1. In a tripper mechanism for raising the presser foot of a sewing machine the combination of a support including a pin; a frame slidably mounted on said pin; a bar and connections for slidably supporting said presser foot; an extension of said frame adapted to engage one of said connections when said frame is at one limit of movement on said pin but be disengaged therefrom when said frame is slid to the other limit thereon; and a second extension of said frame adapted to be engaged by an oscillating member of said machine when said first named extension is engaged with said con-

nections whereby said frame is oscillated about said pin and said presser foot raised.

2. In a tripper mechanism for raising the presser foot of a sewing machine the combination of a support including a lug and a pin passing therethrough; a frame slidably mounted on said pin and straddling said lug; a bar and connections for slidably supporting said presser foot; an extension of said frame adapted to engage one of said connections when said frame is positioned against one side of said lug but be disengaged therefrom when said frame is positioned against the other side of said lug; and a second extension of said frame adapted to be engaged by an oscillating member of said machine when said first named extension is engaged with said connections whereby said frame is oscillated about said pin and said presser foot raised.

3. In a tripper mechanism for raising the presser foot of a sewing machine the combination of a support including a lug and a pin passing therethrough; a frame slidably mounted on said pin and straddling said lug; a bar and connections for slidably supporting said presser foot; an extension of said frame adapted to engage one of said connections when said frame is positioned against one side of said lug but be disengaged therefrom when said frame is positioned against the other side of said lug; spring means to normally urge said extension from said connections at all positions of said frame; and a second extension of said frame adapted to be engaged by an oscillating member of said machine when said first named extension is engaged with said connections whereby said frame is oscillated about said pin and said presser foot raised.

4. In a tripper mechanism for raising the presser foot of a sewing machine the combination of a support including a lug and a pin passing therethrough; a frame slidably mounted on said pin and straddling said lug; a bar and connections for slidably supporting said presser foot; an extension of said frame adapted to engage one of said connections when said frame is positioned against one side of said lug but be disengaged therefrom when said frame is positioned against the other side of said lug; spring means carried by said lug to normally urge said extension from said connections, said means adapted to apply equal pressure on said frame when contacting with either side of said lug; and a second extension of said frame adapted to be engaged by an oscillating member of said machine when said first named extension is engaged with said connections whereby said frame is oscillated about said pin and said presser foot raised.

5. A tripper device for raising the presser foot of a sewing machine the same comprising a U-shaped frame adapted to be slidably mounted on a pin carried by a lug on said machine, said pin passing through opposite sides of said frame, an extension of one of said sides provided with a cam surface adapted to be contacted by the end of an oscillating lever of said machine, an extension of the other side of said frame provided with a projection adapted to cause a lifting of the presser foot of said machine, and a spring carried by said lug and contactingly associated with said frame.

6. A tripper device for raising the presser foot of a sewing machine the same comprising a U-shaped frame mounted on a pin carried by a lug on said machine, said pin passing through opposite sides of said frame and said sides connected by a bridge of a greater length than the width of said lug whereby said frame may be slid at will on said pin to contacting position with either side of said lug, an extension of one of said sides provided with a cam surface adapted to be contacted by the end of an oscillating lever of said machine when said frame is contacting with one side of said lug, an extension of the other side of said frame provided with a projection adapted to cause a lifting of the presser foot of said machine when said cam surface is being actuated by said lever, and a spring carried by said lug and contactingly associated with a surface of said bridge portion of said frame.

In testimony whereof I affix my signature.

ANNA M. WENZEL.