A. F. McCOLLUM.

PRESSER FOOT.

APPLICATION FILED JUNE 28, 1918.

1,325,365. Patented Dec. 16, 1919.

Fig. 1.

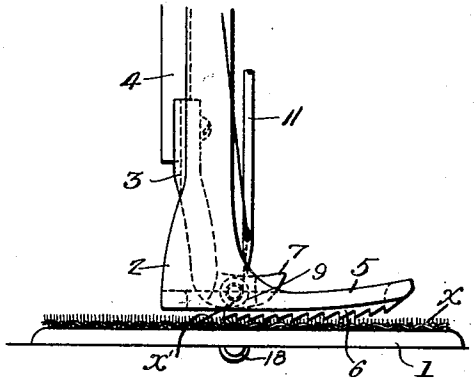


Fig. 2.

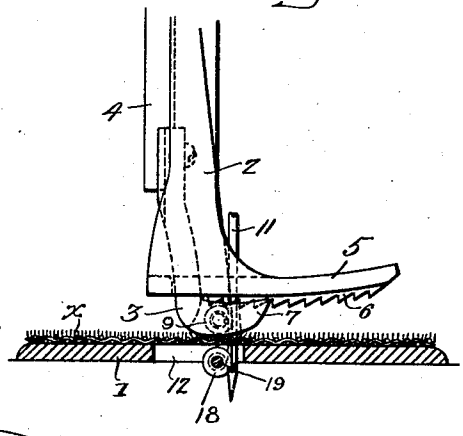


Fig. 6.

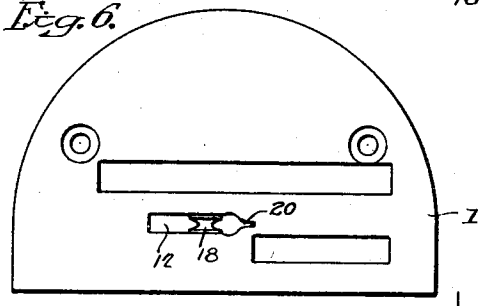


Fig. 4.

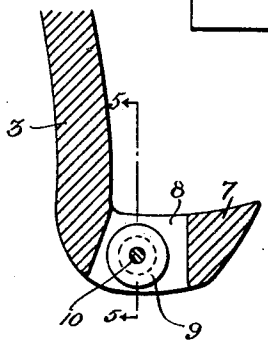


Fig. 5.

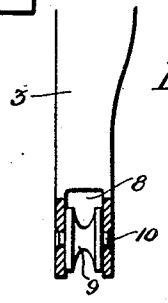
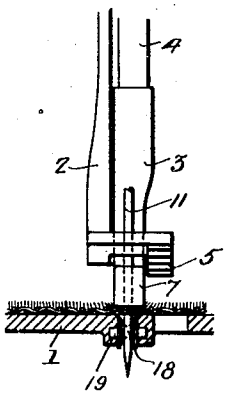


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALFRED F. McCOLLUM, OF BLOOMSBURG, PENNSYLVANIA, ASSIGNOR OF THREE-FIFTHS TO JAMES MAGEE, 2D, OF BLOOMSBURG, PENNSYLVANIA.

PRESSER-FOOT.

1,325,365. Specification of Letters Patent. **Patented Dec. 16, 1919.**

Application filed June 28, 1918. Serial No. 242,473.

To all whom it may concern:

Be it known that I, ALFRED F. McCOLLUM, a citizen of the United States, residing in Bloomsburg, Columbia county, State of Pennsylvania, have invented Presser-Feet, of which the following is a specification.

One object of my invention is to provide a relatively simple, substantial and reliable device for supporting the needle of a sewing machine against bending in the line of movement of the material operated on with a view to preventing breakage of said needle and the production of imperfect work by the machine.

It is further desired to provide a novel means for preventing the upper thread of a sewing machine from cutting into or binding upon the side of the opening in the presser foot through which it passes and with this idea in view I mount on the presser foot a roller or pulley which at certain times is engaged by the upper thread and at other times is called upon to support the needle.

Another object of the invention is to provide a presser foot of novel construction which shall be capable of not only supporting the needle against lateral movement but which shall also insure the thread leading from said presser foot to the material operated on, in a line at all times bearing substantially the same angular relation to the line of movement of the needle.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings in which:

Figures 1 and 2 are side elevations, the latter partly in section, illustrating a presser foot and its associated parts constructed in accordance with my invention;

Fig. 3 is a front elevation also partly in vertical section further illustrating the parts shown in Fig. 2;

Fig. 4 is a vertical section taken through the lower part of the presser foot transversely to the roller-supporting spindle;

Fig. 5 is a transverse vertical section on the line 5—5, Fig. 4; and Fig. 6 is a plan of the thread plate.

In the above drawings, 1 represents the top plate, 2 the upper feeding foot, and 3 the presser foot of a sewing machine, the latter being detachably mounted on a vertically reciprocable bar 4. The feeding foot 2, as is customary in certain sewing machines, has its lower end 5 forwardly extended and is provided, on its under face, with a series of backwardly pointing teeth 6. This foot is connected to mechanism forming no part of the present invention whereby after being moved down into engagement with the body x of the fabric or other material, it is moved rearwardly, and after being raised, is moved forwardly and again lowered into engagement with said material. Its forwardly extended portion 5 is longitudinally slotted to permit of the passage through it of the presser foot 3 and its teeth are preferably formed on but one side as indicated in Fig. 3.

The presser foot 3 is of the ordinary construction except that in its forwardly extended lower end 7 it is provided with an enlarged opening 8 in which a roller or grooved pulley 9 is rotatably supported upon a short spindle 10 extending transversely of the presser foot. This roller or pulley is so mounted relatively to the needle 11 that the latter will bear upon and turn it when under operating conditions the material x operated on is pressed or fed toward the rear of the machine, and it is to be noted that when the needle is raised, the thread x^1 leading therefrom into the material x likewise passes around said roller which is so placed in the presser foot that it does not project below the plane of the under surface of the latter.

The top plate 1 of the machine is also slotted from front to rear to provide an opening 12 in which is mounted a second roller 18 carried upon a spindle 19 parallel with the spindle 10 of the roller 9 and immediately under the same so that it is engaged by and supports the lower end of the needle against rearward bending after it has passed through the material x.

While the above described parts may be used with advantage on any forms of sewing machines, they are particularly valuable in connection with those of the class described and claimed in my Patent No.

1,257,900, dated February 26, 1918, in which the material operated on is relatively heavy carpet or rug fabric and is supported on an inclined series of rollers so that it is fed past the sewing machine by gravity.

Immediately before the parts occupy the positions shown in Fig. 1 the needle 11 is moved to the upper position illustrated and the subsequent rearward movement of the material x over the plate 1 under the action of the feeding foot 2 causes the thread x^1 to be drawn around the roller 9 and led rearwardly therefrom to the last stitch formed, the feeding foot holding the fabric from further movement at the completion of its rearward stroke until the presser foot 3 has been lowered into the position shown in Fig. 2 whereupon said feeding foot is raised and moved forwardly as shown. In the meantime the needle 11 is lowered and by reason of the tendency of the material x to move to the rear, is forced back the short distance necessary to bring it into bearing engagement first with the roller 9 and then with the roller 18, which very effectually prevent its bending and breakage.

In thus moving down said needle causes turning of these two rollers in one direction and after it is raised in returning to its original position said needle again turns the rollers but in a reversed direction. After moving above the upper roller 9, the thread x^1 is drawn around the upper roller, thereby again turning it so as to effectually prevent the customary cutting into the rear side of the opening in the presser foot through which it passes. Not only is this wear on the presser foot with the possible injury and interference with the movement of the thread effectually prevented, but the movement of the needle is rendered easier by reason of the supports provided by the two rollers. There is thus not only a prevention of the breakage and cutting hitherto occurring but there is a very appreciable lessening of the power required to operate the machine as will be appreciated when it is noted that the needle operates at a speed of three thousand strokes per minute.

In addition to supporting the needle against rearward bending, the lower roller 18 also supports and guides the lower or bobbin thread in its passage to the fabric and the groove of said roller is preferably of a V-shaped section in order that the needle may be supported by said roller as above noted, without pressing upon the thread.

In order to insure that the bobbin thread, after being run through the slot 12 of the top plate preparatory to putting the machine in operation, shall enter the groove of the lower roller 18 and not find its way between one or the other end of this and the adjacent side of the slot 12, I provide the forward end of said slot with a narrow guiding throat or recess 20 formed in its central plane. With such a construction the operator, in drawing the thread through the slot 12 in front of the roller, causes it to be automatically centered so that when the machine is put in operation it is drawn rearwardly in the central plane of the slot and neccessarily enters the roller groove without tending to enter either of the narrow spaces between the ends of the roller and of the slot walls.

I claim:

1. The combination of a presser foot having a needle opening therein and a roller mounted in said opening in position to support the needle against rearward movement while being free of the material operated on by said presser foot.

2. A presser foot consisting of two portions at right angles to each other of which the lower or foot portion is longitudinally slotted; with a grooved roller mounted in the slot of said presser foot in position to be alternately engaged by the needle and the thread carried thereby to support the same against pressure in the direction of the slot.

3. A presser foot consisting of two portions at right angles to each other of which the lower or foot portion is longitudinally slotted; with a roller mounted in the slot of said presser foot in position to be alternately engaged by the needle and the thread carried thereby to support the same against pressure in the direction of the slot, said roller being mounted above the plane of the under side of said presser foot.

4. The combination of a presser foot; a roller mounted on said presser foot in a position wholly above the plane of the under side thereof; and a reciprocating needle operative in a line substantially tangent to the roller.

5. The combination of a presser foot; a roller mounted thereon; a top plate; a second roller carried by said plate; and a reciprocatory needle mounted to be laterally supported by said two rollers at certain portions of its path of movement.

6. The combination of a presser foot; a grooved roller mounted thereon in a position above the plane of the under side of said presser foot; with a needle operative adjacent said roller and carrying a thread, said roller being positioned to be engaged by the thread at predetermined times and supporting the same out of engagement with the body of the presser foot.

7. The combination of a presser foot having a work-engaging portion formed with a longitudinal slot; a roller mounted in said slot above the plane of the under side of the presser foot; a top plate having a slot; a second roller mounted in the slot of said plate;

and a reciprocating needle operative in a line substantially tangent to said two rollers; the latter being positioned to be engaged by and to guide the needle- and bobbin threads.

8. The combination in a sewing machine of a top plate having a needle slot; a presser foot also having a needle slot; and two rollers respectively mounted in the slots of the top plate and of the presser foot in positions to be respectively engaged by the needle and bobbin threads.

In witness whereof I affix my signature.

ALFRED F. McCOLLUM.