July 29, 1941. E. ST. PIERRE 2,250,731

FABRIC TAKE-UP

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FIG. 2.

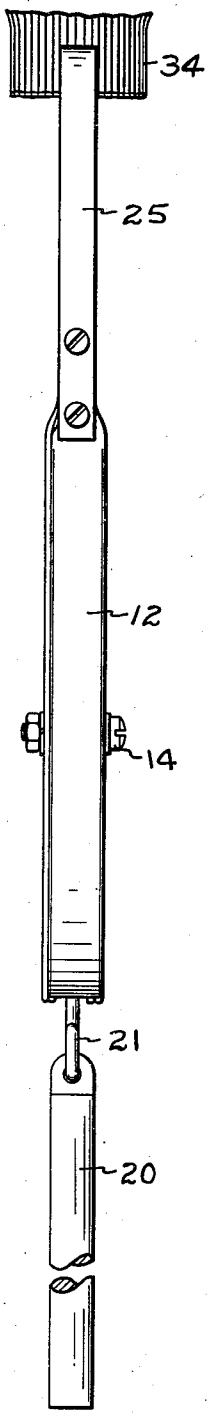
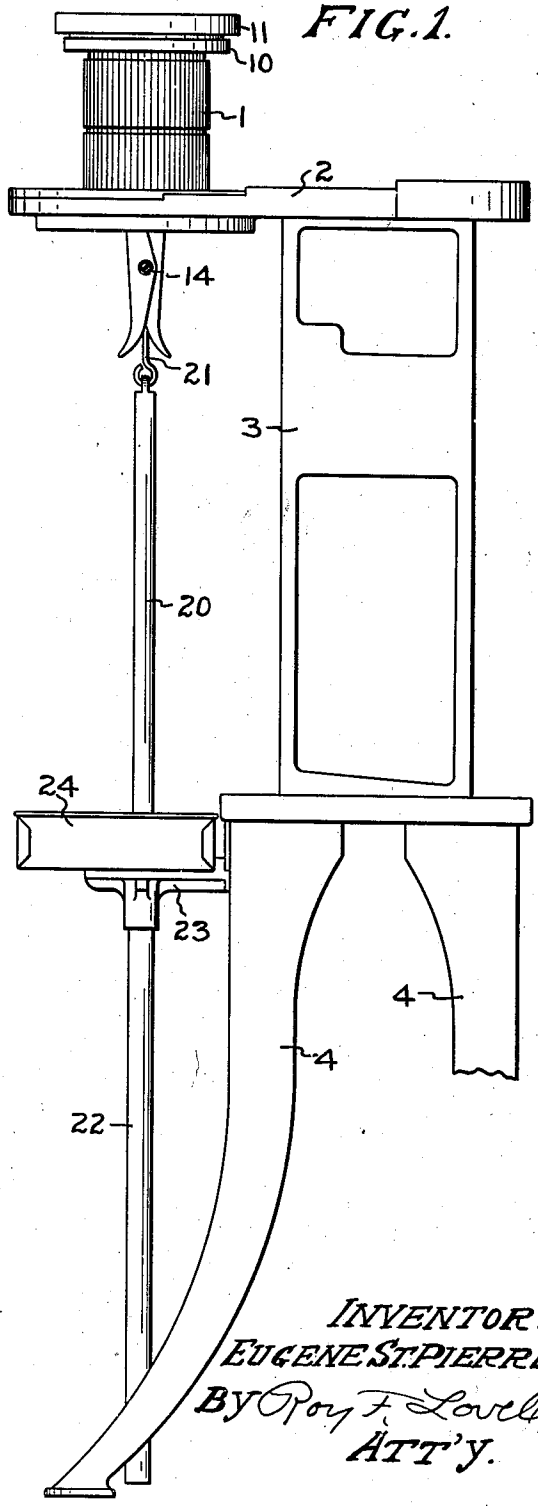


FIG. 1.



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FIG. 3.

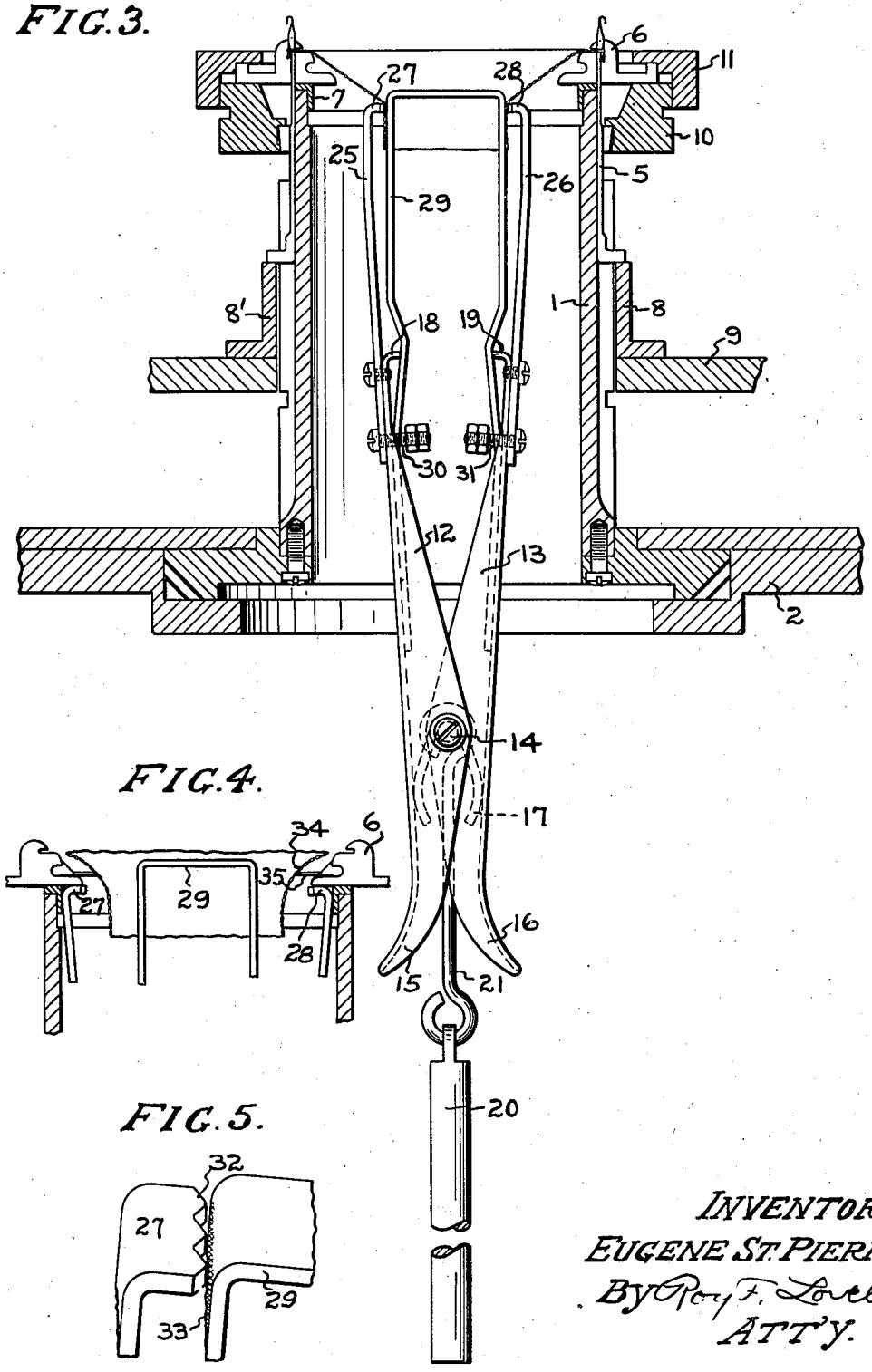


FIG. 4.

FIG. 5.

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UNITED STATES PATENT OFFICE

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FABRIC TAKE-UP

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Application February 24, 1939, Serial No. 258,236

7 Claims. (Cl. 66—149)

The subject of invention in this case is a clamp or clamp weight such as may be employed for drawing hosiery or other knitted articles from the needles of a knitting machine.

In the figures of drawings:

Fig. 1 is an elevation of as much of a typical hosiery machine as is necessary to show the general relationship of the clamp and other parts of the machine;

Fig. 2 is an elevation showing the clamp as applied to a hosiery top;

Fig. 3 is a sectional view showing the clamps as applied to a hosiery top within a typical needle cylinder of a machine, the clamp being shown as viewed from the side rather than from the edge as in Fig. 2;

Fig. 4 is a sectional view showing a part of the upper end of the needle cylinder, sinkers and fabric as it would hang from the needles with the clamp opened or in that position it assumes when fabric is to be engaged; and

Fig. 5 is a detail showing the fabric engaging jaws.

The clamp or clamp weight, as such devices are sometimes called, is constructed for manual operation to grip hosiery tops, especially short tops, and has special means for their engagement. The said clamp is further adapted to be more or less universal in its application as it may be used with certain of its parts detached, that is, without the means which specially adapt it to the engagement of extremely short hosiery tops. Other objects and the mode of operation will be apparent from the following description.

Referring to Fig. 1, a few of the more essential parts of a hosiery frame are shown, a cylinder being indicated at 1, circular base at 2 and frame at 3 which stands upon the legs 4. The cylinder, as more clearly shown in Fig. 3, has within its slots the needles 5 which cooperate with sinkers 6 to draw knitted stitches. The sinkers are slidable within a stitch ring 7 which is of more or less the usual construction employed and which is fixed at the upper end of the cylinder. Cams 8, 8' on a cam plate 9 serve to actuate needles or to guide them in predetermined pathways along with other cams of conventional nature. Sinkers 6 are further guided within slots in a sinker head 10 and are controlled by conventional sinker cams in a cap 11.

It is customary in certain instances to transfer tops such as rib tops containing elastic yarns or possibly, plain rib tops, which are of varying lengths to the needles of one of these machines prior to knitting the remainder of a stocking or other article of hosiery in continuation of said top. In other instances the machine is actuated to knit an entire article of hosiery including the top itself which in most such instances will have an elastic yarn or yarns incorporated therein in accordance with one of several different methods. Frequently these tops such as last mentioned or possibly certain of the rib tops which are transferred to the needles, may be extremely short and thus do not contain sufficient material to be gripped or seized by any of the usual clamps employed heretofore. The particular clamp herein described and claimed is especially constructed to grip these tops but it is to be understood that its use is not limited in that respect since the same may as easily be employed upon tops of longer or conventional lengths.

The clamp comprising among other parts a pair of tongs 12 and 13 which are hinged at 14 and have extensions 15 and 16 at the opposite side of the hinge point by means of which the machine operator may grip the said clamp and open it preparatory to engaging it about a stocking top or other fabric. A spring 17 normally tends to keep the tongs or the clip as it might be called, in closed or fabric engaging position. The said tongs 12 and 13 have jaws 18 and 19 which are useable without other appurtenances to grip longer stocking tops or fabrics and it is the intent of the inventor herein to use these tongs or this clip for gripping such fabrics, thus making the device more or less universal.

A combined guiding rod and weight 20 is connected to the parts previously described by a link 21 which engages one end of the rod and also about the pivot or hinge 14. This rod as will be seen in Fig. 1, is vertically slidable within a tube 22 which is fixed to a bracket 23 attached at the side of the machine and in such position that the rod 20 will be guided substantially in alignment with the center of the needle cylinder. A pan 24 is also supported on this bracket 23 and serves to catch the stocking or other knitted article when it is dropped from the needles.

Now referring to Figs. 2, 3, 4 and 5, the tongs 12 and 13 have extensions 25 and 26 attached by suitable screws or other connecting means, these extensions terminating in jaws 27 and 28 which are similar to the jaws 18 and 19. These jaws 27 and 28 engage against the sides of a U-shaped element 29 which is retained in position by the screws 30 and 31, said screws serving the dual purpose of holding the extensions 25 and 26 in position and of retaining the U-shaped element 29 which is engaged more or less loosely

by said screws 30 and 31. These screws 30 and 31 pass through large openings in the part of the U-shaped element through which they project and merely retain it from motion lengthwise of the mechanism whereas the same is retained against movement in other directions by its engagement between the channelled sides of the tongs 12 and 13. The screws 30 and 31 each have two nuts at their inner ends which are jammed against each other and which merely serve to prevent excess movement or excessive opening of the clamp. The screws are otherwise free to move within the enlarged openings in the U-shaped element 29. As shown in Fig. 5, the jaws 27, etc. have small teeth 32 which engage the fabric against the side of the U-shaped element 29, the latter being roughened or scored as at 33.

In Fig. 4 the parts are in such position as they occupy when the operator has projected the clamp upwardly within the needle cylinder holding it open to the extent allowed by the inner diameter of the cylinder. The top 34 has either been knitted on or transferred to the machine and has been pushed down inside the cylinder as far as it will go. As the clamp is pushed upwardly it finally brings up as the jaws 27 and 28 engage beneath the inner ends of sinkers 6. A flat ring 35 prevents sinkers being lifted from their slots. In this position the operator releases the clamp whereupon the spring 17 causes the jaws to close upon the fabric as in Fig. 3 in which position the machine is ready to be started and the clamp will thereafter draw fabric downwardly within the cylinder as it is knitted. The weight 20 exerts sufficient force to accomplish this purpose but is not heavy enough to cause any damage to the fabric. This weight may take the form of a shorter piece of metal larger in diameter in which instance it will not be guided within any tube or the like. Preferably, the rod guided within the tube is used since in rotary needle cylinder machines, the cylinder, fabric and clamp will be rotated at a relatively rapid rate and guiding of the weight 20 tends toward smoother action. However, in certain machines it is impossible to use the construction herein illustrated as a preferred form, in which event a weight of another shape may be employed and which will preferably be sheathed in rubber or at least will have rubber buffers to eliminate noise and to prevent danger to other parts of the machine as it strikes against them.

The clamp may be readily converted from a simple form of clip without the elements 25, 26 and 29 in which instance jaws 18 and 19 will be employed to grip a fabric. It takes but little time to convert from one form to the other and such changes may be made by a relatively unskilled person, no adjustments being necessary. So long as the stocking is of sufficient length to extend downwardly for a slight distance below the sinkers, it may be gripped and held by this clamp. The invention is defined in the following claims:

I claim:

1. A fabric take-up for a circular knitting machine including in combination an inner member for projection upwardly within a stocking top and spring pressed elements having fabric engaging jaws at either side of said inner member for engaging the fabric in cooperation with said inner member and of such construction as to be capable of holding the fabric against the inner member with a force sufficient to support the take-up and draw the fabric from the machine.

2. A fabric take-up for circular knitting machines including elements constructed for movement upwardly within a needle cylinder including an inner member for projecting within a stocking top, fabric engaging elements having jaws in alignment with said inner member and at either side thereof and spring means for engaging said jaws with the fabric and with the inner member, the said jaws being of such construction and so engaged with the inner member as to be capable of holding the fabric against the inner member with a force sufficient to support the take-up and draw the fabric from the machine.

3. A fabric take-up for circular knitting machines including a pair of spring pressed tongs, jaws at the fabric engaging ends of said tongs, a U-shaped element between said tongs and in a position to be engaged by said jaws when the tongs are closed.

4. A fabric take-up for a knitting machine including in combination a pair of tongs spring pressed and having jaws at their fabric engaging ends, extensions to said tongs terminating in similar fabric engaging jaws, said extensions being readily detachable, a U-shaped element attached to said tongs and extending between said second mentioned jaws, the construction being such that when said extensions and U-shaped members are employed, short fabric tops may be engaged, but wherein said U-shaped member and extensions may be detached and the first mentioned tongs employed for the engagement of a fabric to be taken up.

5. A fabric take-up for circular knitting machines including in combination a pair of tongs, jaws at each of said tongs, a member for projection upwardly within a tubular fabric and against which the said jaws are to engage when the tongs are closed, the construction being such that the tongs may be opened, then inserted upwardly within a needle cylinder of a circular knitting machine until the member for engagement within the fabric has entered a fabric projecting downwardly within the cylinder whereupon the jaws may be closed and the fabric engaged.

6. Mechanism as set forth in claim 5, further characterized by a spring for maintaining said tongs closed and a weight hanging from said tongs for the purpose of tensioning the fabric and drawing the same downwardly from the machine.

7. A fabric take-up for circular knitting machines including in combination clamping means and a complementary inner member against which said clamping means may engage fabric, the construction being such that as the take-up is projected upwardly within a needle cylinder of such machine, the complementary inner member will project within the fabric and the clamping means will be disposed outside the fabric in a position to close and grip the fabric against said inner member with a force sufficient to grip the fabric so that it will not slip between the said clamping means and inner member, but will hold the take-up suspended from the fabric and thereby draw the fabric from the machine.

EUGENE ST. PIERRE.