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YARN TRAP FOR KNITTING MACHINES.

APPLICATION FILED NOV. 4, 1907.

959,252. Patented May 24, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

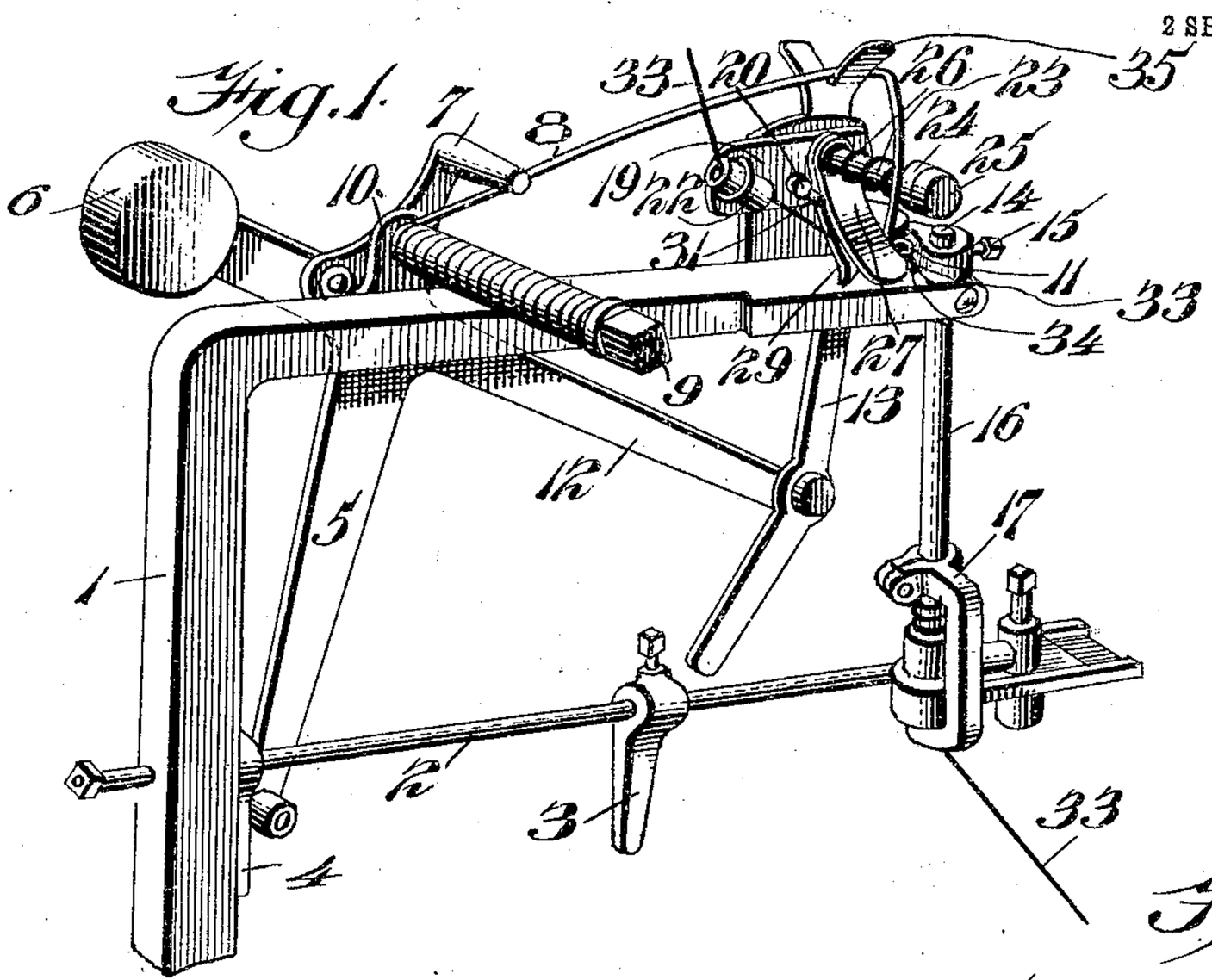
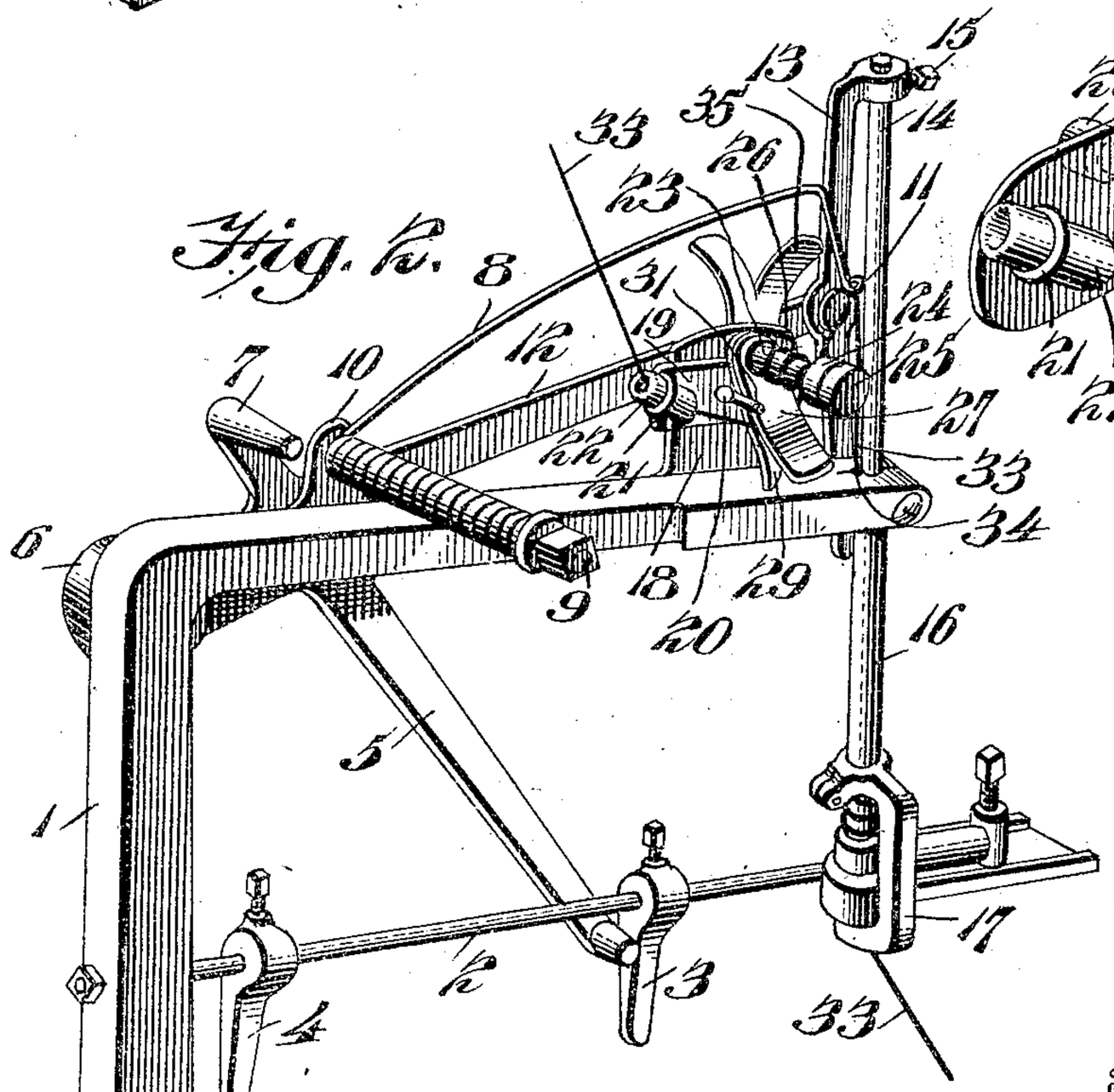


Fig. 3.

Fig. 2.



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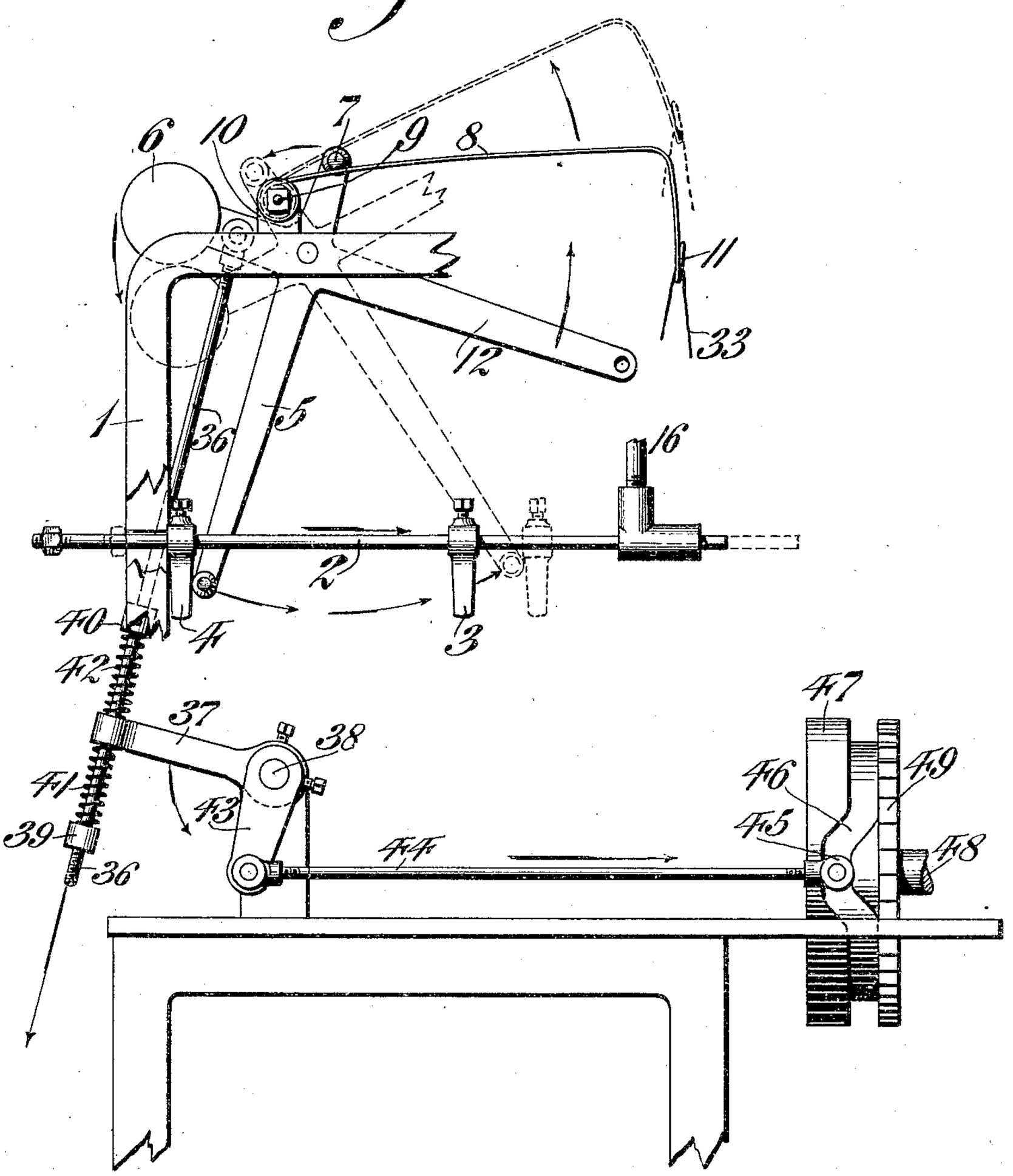
2 SHEETS—SHEET 2.

Fig. 4.



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YARN-TRAP FOR KNITTING-MACHINES.

959,252. Specification of Letters Patent. **Patented May 24, 1910.**

Application filed November 4, 1907. Serial No. 400,558.

To all whom it may concern:

Be it known that we, JOSEPH PEARSON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, and HARRY CARTER, a citizen of the United States, residing at Wrightsville, in the county of York, State of Pennsylvania, have invented a new and useful Yarn-Trap for Knitting-Machines, of which the following is a specification.

In knitting machines especially adapted for knitting articles such as stockings, in which the heel and toe are made on the same machine, there is a liability in the ordinary construction of such machines of the slack yarn being drawn into the stocking during the reciprocating movement of the machine thereby causing defective work.

The object of our invention is to devise an automatic yarn trap with which the knitting yarn will engage during the reciprocating movement of the machine, our device being so located that when the circular portion of a stocking or other fabric is being produced the yarn will not engage therewith.

To the above ends our invention comprises broadly a plurality of presser members, an adjustable tension device therefor and means for securing said device to the knitting machine.

In our preferred embodiment, our device comprises a plate adapted to be secured to the machine and provided with a preferably angularly inclined yarn guide, said plate having a rod attached thereto, on which is mounted a pair of spring pressed members, the outer ends of which are deflected outwardly, said presser members being normally maintained in engagement by means of a tension device and said plate being provided with pins whereby the lateral movement of said presser members is prevented.

Our invention further consists of other novel features of construction all as will be hereinafter fully set forth.

In order to illustrate our invention we have shown in the accompanying drawings one form thereof, since this embodiment best illustrates the principles thereof and has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which our invention consists can be variously arranged and organized and that our invention is not limited to the precise arrangement and organization of these instrumentalities as herein set forth.

Figure 1 represents a perspective view of a portion of a knitting machine having a yarn trap, embodying our invention, secured thereto. Fig. 2 represents a perspective view similar to Fig. 1 but showing the parts in a different relation to each other. Fig. 3 represents a perspective view of the yarn trap in detached position. Fig. 4 represents a side elevation, partly broken away, of a portion of the knitting machine showing certain features of the operating mechanism.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates the upper portion of the frame of the machine, in which is mounted a laterally movable rod or shaft 2, said shaft having adjustably mounted thereon the contact members 3 and 4, which are adapted to be actuated at a suitable time by the deflected end or roller of the lever 5, which is suitably fulcrumed to the frame 1, said lever 5 being provided with a weighted arm or counterbalance 6, the purpose of which is to take some of the strain from the members 3 and 4. The lever 5 has also secured thereto a deflected lever 7 which is adapted to engage at certain times a spring 8 mounted on a rod 9 carried by the bracket 10, supported by the frame 1, said spring 8 having at its outer or free end an eyelet 11 through which the yarn is adapted to pass. The lever 5 has also secured thereto a lever 12 which has secured at its end a bracket 13, the outer end of which is deflected to form a set within which is adjustably mounted the rod 14 by means of a set screw 15, it being noted that said rod 14 is journaled in the frame 1 in which it has a bearing. The lever 5 is rocked each time the machine changes from a reciprocating motion to a circular motion and when it changes from a circular to a reciprocating motion. The rod 14 works within the tube or cylinder 16 which is secured to the bracket 17 and the frame 1 and is adapted to receive the splicing yarn when a reinforced fabric is being made.

18 designates a bracket carried by the frame 1 to which is secured a plate or support 19, by means of a set screw or equivalent device 20.

21 designates a clip or clamp by means of which the hollow conduit or guide 22 is secured thereto.

23 designates a rod one end of which is fixed to the plate 19 in any suitable manner, the other end thereof being suitably threaded thereby adapting the same to receive the adjusting nut 24 and the lock nut 25.

26 designates a spiral spring mounted on the rod 23 and engaging the upper presser member 27, one end of which is mounted on the member 23 and the outer end of which is deflected outwardly as indicated at 28. The inner presser member 29 is also mounted on the member 23 and has its outer end deflected in a reverse direction to that of the member 28, as is indicated at 30.

31 and 32 designate pins fixed to the plate 19 on opposite sides of the members 27 and 29 whereby lateral movement is positively prevented. These pins also serve to limit the distance to which the knitting yarn may pass between the presser members 27 and 29. It is to be noted that the yarn guide 22 is preferably angularly located with respect to the presser members 27 and 29.

35 designates a stop for the take-up spring 8 and with which it engages in one of its positions as seen in Fig. 1.

36 designates a rod one end of which is pivoted to the arm or counterbalance 6 the other end thereof passing through the lever 37 mounted on a shaft 38. The rod 36 has mounted thereon on opposite sides of the lever 37 the adjusting nuts 39 and 40 between which and the lever 37 are located the springs 41 and 42 respectively.

43 designates a lever fixedly mounted on the shaft 38 and to which is pivoted a rod 44 which at its free end is provided with a roller 45 which works in the groove 46 of a cam 47, the latter being mounted on a shaft 48 which is controlled by the driving shaft of the knitting machine.

49 designates a ratchet wheel rigidly mounted on the shaft 48 so as to rotate in unison with the cam member 47. The ratchet wheel 49 co-acts with a suitable pattern chain (not shown).

The operation of our novel construction of yarn trap will now be apparent.

When the machine is making circular work the parts are in the position indicated in Fig. 1, at which time the knitting yarn 33 passes from the bobbin through the guide 22 and thence to the aperture 34; from thence the yarn passes through the hollow member 16 and thence to the needles as will be apparent to those skilled in this art, it being noted that the yarn at this time does not engage with the presser members 27 and 29.

When the machine is making the heel or toe of the stocking or similar work, the needle cylinder does not rotate but oscillates back and forth, whereupon the lever 5 is moved toward the right to the position indicated in Fig. 2 so that the deflected lever 7 is disengaged from the spring 8 and said spring is permitted to assume its normal position as is indicated in Fig. 2. This causes the yarn 33 to be drawn upwardly since the same passes through the eyelet 11 of the spring 8 and the yarn is forced between the spring pressed members 27 and 29 as is indicated in Fig. 2, so that yarn will not be drawn from the bobbin at this time. On the return movement of the needle cylinder the arm 5 is moved to the position indicated in Fig. 1 whereupon the lever 7 will cause the spring 8 to be depressed and the parts will assume the position seen in Fig. 1, at which time the yarn 33 does not engage with the presser members 27 and 29 but passes freely to the needle cylinder.

It is to be understood that the lever 5 is automatically rocked when the machine changes from a reciprocating motion to a circular motion or from a circular motion to a reciprocating motion. When the lever 5 is rocked toward the left it engages the block 4 and causes the shaft 2 to be moved toward the left and at such time the splicing yarn is cut off by mechanism actuated by the rod 2. At the same time, owing to the engagement of the member 7 with the take-up spring 8, the tension is taken from said take-up spring. It will be apparent that when the lever 5 is rocked in a reverse direction toward the right it will engage the contact member 3 and cause the rod 2 and its adjuncts to be moved toward the right, as seen in Fig. 2. The purpose of the rod 2, contact members 3 and 4, and their adjuncts, is to cut out the splicing yarn when it is not desired to reinforce the fabric which is being produced.

We wish to call special attention to the members 31 and 32 since these serve not only to prevent improper lateral movement of the presser members 27 and 29, but they limit the extent to which the knitting yarn may pass upwardly between said presser members. By such a construction there is no liability of the lint from the yarn being retained between the presser members and thus clogging the same.

The means for operating the lever 5 at the proper time is old in the art since the same corresponds to the construction shown in the patent to Franck No. 681,209, August 27, 1901. Since large numbers of these machines are now in use, it is deemed unnecessary to describe in detail the operation of

this portion of the knitting machine since the same is well known to those skilled in the art, and reference may be had to the above mentioned patent for a detailed description of the operation thereof.

We have deemed it unnecessary to show or describe in detail the construction and operation of the entire machine since our invention lies wholly in the novel construction of our yarn trap as is indicated in Fig. 3, which is suitably adapted to be used in conjunction with such a machine as we have herein described and we have shown the upper portion of a knitting machine for the purpose of more clearly illustrating the manner in which the yarn is trapped or held during the reciprocation of the needle in one direction, so that there is no liability of slack yarn being drawn into the fabric, thereby causing defective work.

The tension of the spring 23 against the presser member 27 may be adjusted as desired by means of the adjusting nut 24, which latter is maintained in its adjusted position by means of the lock nut 25.

The presser members 27 and 29 are deflected outwardly at their outer ends so that the thread will always pass therebetween at the desired time. Any improper lateral movement of the presser members is positively prevented owing to the provision of the pins or studs 31 and 32.

It will now be apparent that we have devised a novel and useful construction of yarn trap for knitting machine which embodies the features of advantage enumerated as desirable in the statement of invention and the above description and while we have in the present instance shown and described a preferred embodiment thereof which gives in practice satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit and scope of the invention or sacrificing any of its advantages.

Having thus described our invention which we claim as new and desire to secure by Letters Patent is:—

1. In a device of the character described, a support, securing means therefor, presser members carried by said support, a yarn guide for said presser members carried by said support, a tension device for said members, and means for preventing lateral movement of said members, said means also limiting the movement of the yarn between said members.

2. In a device of the character described, a support, securing means therefor, a yarn guide carried thereby, a rod secured to said support, presser members having one end loosely mounted on said rod, a tension device engaging one of said members, and means for preventing improper lateral movement of said members, said means also limiting the movement of the yarn between said members.

3. In a device of the character described, a support, securing means therefor, a yarn guide carried by said support, a rod carried by said support, presser members having one end movably mounted on said rod, an adjusting nut on said rod, a spring intermediate said nut and one of said presser members, a lock nut for said adjusting nut, and means for preventing improper lateral movement of said members, said means also limiting the movement of the yarn between said members.

4. In a device of the character described, a support, securing means therefor, a yarn guide carried by said support, a rod carried by said support, presser members having one end loosely mounted on said rod, a tension device engaging one of said members, and pins on opposite sides of said members and engaging said members to prevent their lateral movement.

5. In a device of the character described, a support, securing means therefor, a yarn guide carried by said support, a rod carried by said support, presser members each having one end outwardly deflected and their outer ends loosely mounted on said rod, a tension device engaging one of said members, and means for preventing improper lateral movement of said members, said means also limiting the movement of the yarn between said members.

6. In a device of the character described, a support, securing means therefor, a yarn guide secured thereto and extending at an angle to the longitudinal axis of said support, a rod carried by said support, presser members having outwardly deflected ends and loosely mounted on said rod, a tension device engaging one of said members, and pins secured to said plate on opposite sides of said members to prevent their lateral movement.

7. In a device of the character described, the combination with a resilient yarn guide and means for intermittently actuating the same, of a support, means for securing said support in proximity to said guide, a yarn guide carried by said support, a plurality of presser members loosely carried by said support, a tension device for said members, and means for preventing improper lateral movement of said members, said means also limiting the movement of the yarn between said members.

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