July 12, 1938. W. M. CAMP 2,123,499

LAP PREVENTER

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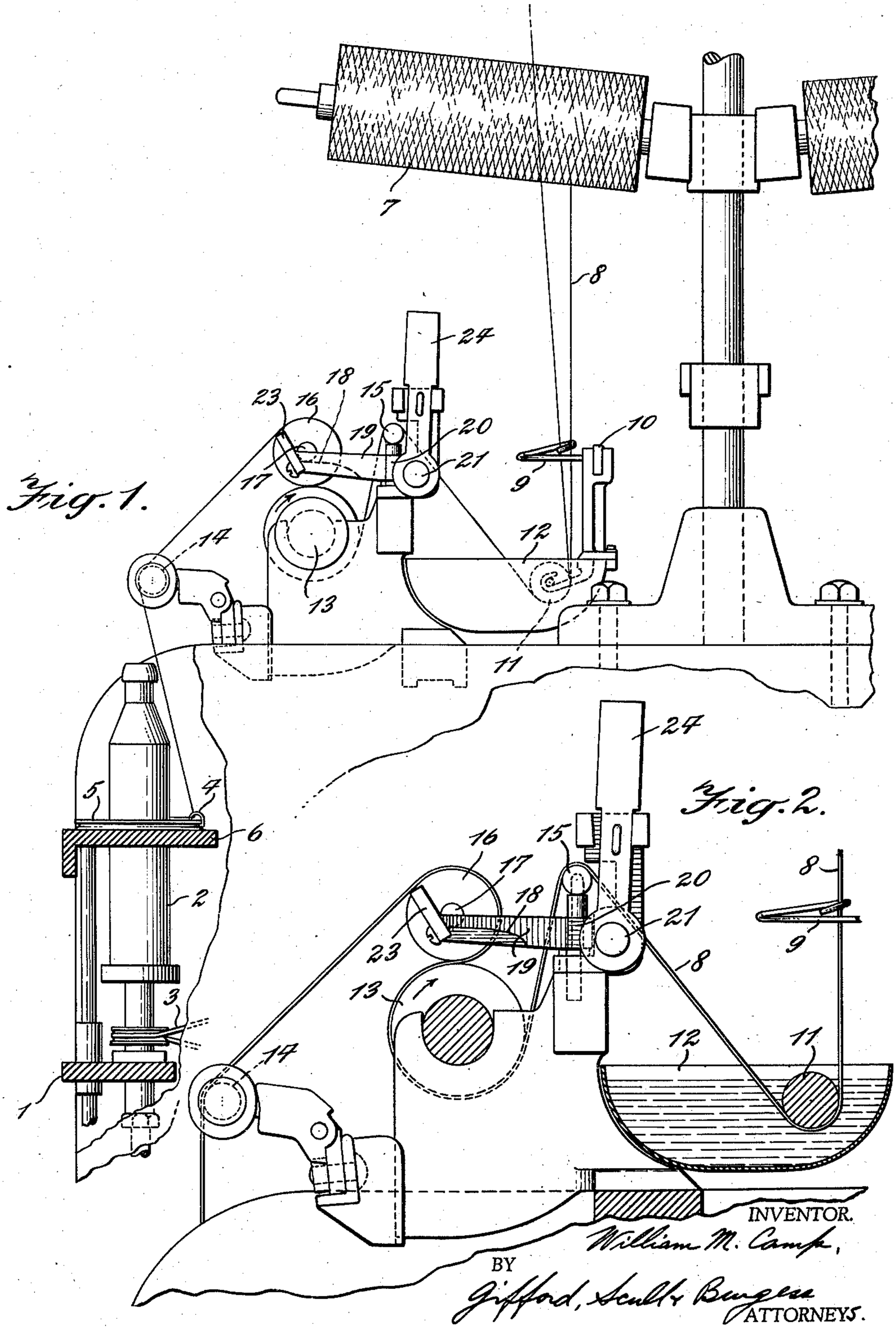

Fig. 1.

Fig. 2.

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Fig. 3.

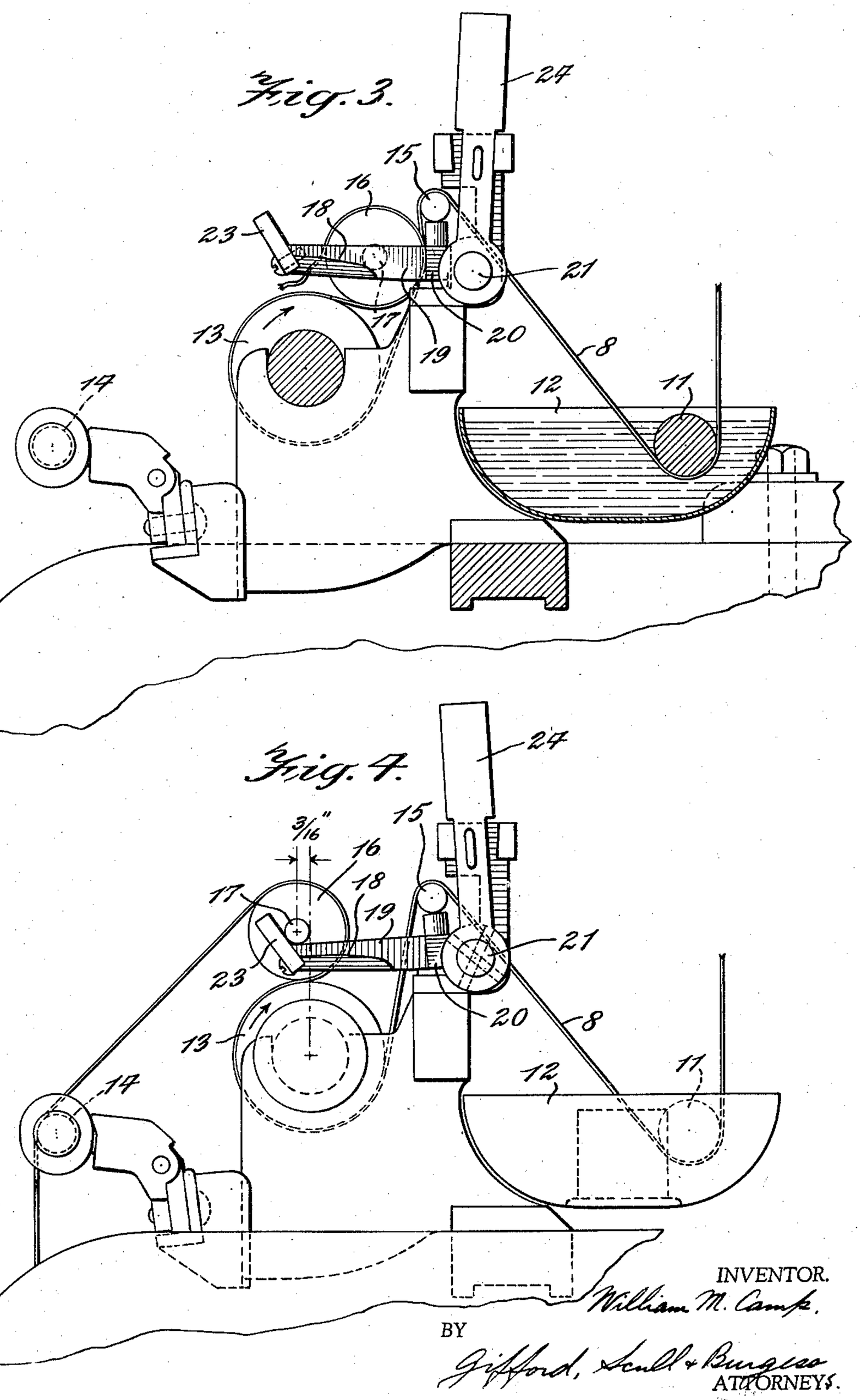

Fig. 4.

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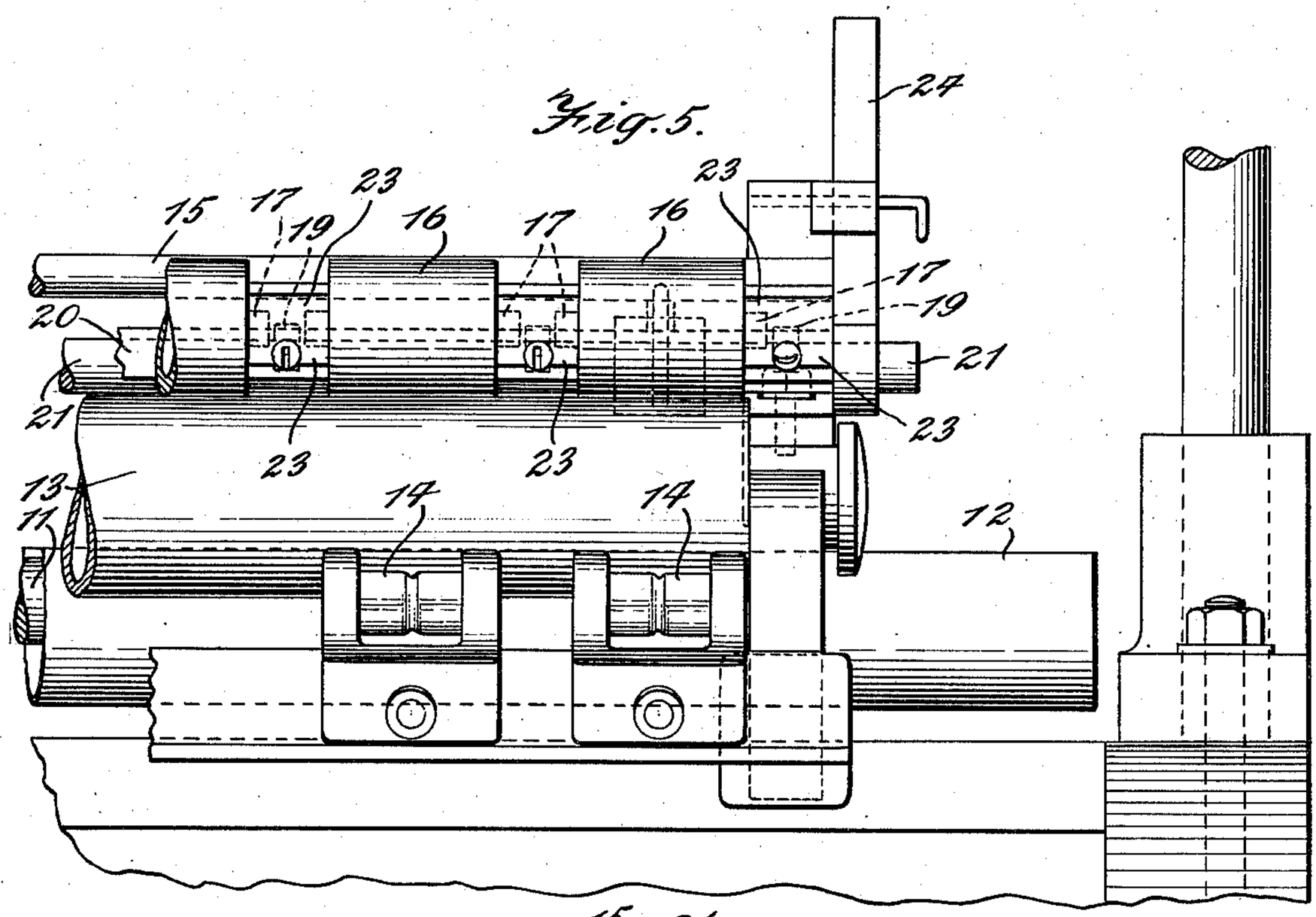
Fig. 5.



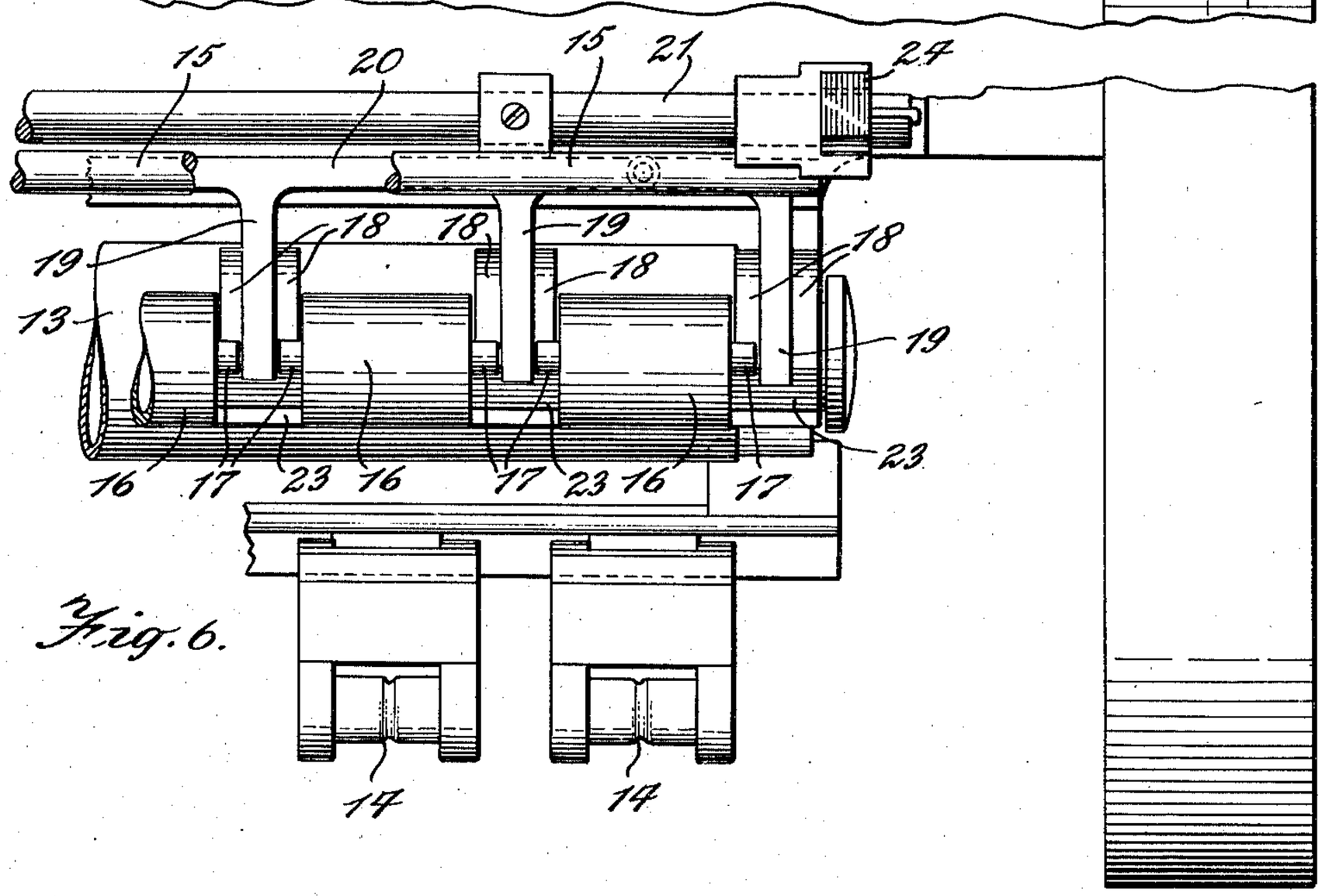


Fig. 6.

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UNITED STATES PATENT OFFICE

2,123,499

LAP PREVENTER

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Application March 8, 1937, Serial No. 129,566

3 Claims. (Cl. 117—30)

This invention relates to a novel and improved lap preventer particularly adapted for use with twisting frames or the like, and the novel features will be best understood from the following description and the annexed drawings, in which I have shown a selected embodiment of the invention and in which:

Fig. 1 is a side elevation of a portion of a twisting frame having my invention applied thereto;

Fig. 2 is a view, partly in elevation and partly in section, showing part of the same apparatus as appears in Fig. 1;

Figs. 3 and 4 are views similar to Fig. 2 but showing the parts in different positions with respect to each other;

Fig. 5 is an elevation of the structure appearing in Fig. 2 as seen from the left of that figure;

Fig. 6 is a plan view of the structure appearing in Fig. 5.

For the purpose of illustration, I have shown the invention as applied to a twisting frame of the ring type embodying a spindle rail 1 upon which a plurality of bobbins 2 are mounted and rotated as by belts 3. Only one such bobbin and its driving means is shown, although it will be understood that normally the frame carries a multiplicity of such bobbins.

The yarn is wound on the bobbin and given a twist by means of a traveler 4 on a ring 5 supported by a ring rail 6. The details of operation of these parts will not be further described, as that operation is well known in the art and is not necessary for an understanding of the invention.

The yarn passing to the bobbin is here shown as coming from a source of supply exemplified by a cheese 7 from which the yarn 8 may pass downwardly through a guide 9 on a traverse bar 10 around a roller 11 in a trough 12 where it may be wet, after which the yarn passes to the bobbin over the driven feed roll 13 and a lappet 14.

Various devices have been used in the prior art to guide the yarn over the feed roller and to prevent its winding around that roller when the yarn breaks. The feed roller is driven so that its rotation is in the direction indicated by the arrows in the various figures, and when the yarn breaks the broken end quickly winds around the feed roller, which of course continues its rotation, and by the time an operator can reach the scene usually a large amount of yarn has been tangled on the roller. This is prevented in an effective manner by the following mechanism.

I preferably lead the yarn 8 over a guide rod 15 back of the feed roller and thence downwardly beneath that roller and around to a place near its top where it is then extended rearwardly between the top surface of the feed roller and the bottom surface of a tension roller 16. It is then passed around this tension roller 16 to the bobbin, which in this instance is below the rollers, although that position of the bobbin is not essential to a successful operation of my invention.

Preferably, each bobbin has a separate tension roller associated with it, and each roller is preferably provided with an axle 17 projecting from opposite ends of the tension roller and engaging tracks 18 on arms 19 of a carriage 20 pivoted at 21 on the frame of the machine. As best shown in Fig. 6, this carriage extends longitudinally of the frame, and the arms 19 extend forwardly therefrom between adjacent tension rollers 16. Each arm 19 has on the opposite sides thereof one of the tracks 18, as plainly shown in Fig. 6. Also supported on the carriage is the guide rod 15 over which yarn passes before it reaches the feed roller 13.

The tracks 18 form bearings for the axles 17, and these bearings are preferably inclined slightly towards the rear of the machine, it being understood that the front of the machine is that part thereof at the left of Fig. 1. The forward ends of the tracks or bearings are provided with upwardly and forwardly inclined extensions 23.

In operation, the yarn is threaded through the apparatus as indicated in Figs. 1 and 2. The axis of the tension roller is substantially in vertical alignment with the axis of the feed roller, although I preferably place the axis of the tension roller slightly in front of that of the feed roller, say, $\frac{1}{16}$ of an inch in front thereof. Then the tension of the yarn passing to the bobbin holds the tension roller in the position indicated in Figs. 1 and 2, so long as the yarn does not break and so long as undue slack does not occur in the yarn. However, upon breakage of the yarn, the tension roller is at once released, and since the surfaces of the two rollers are substantially in contact, and since the top part of the feed roller is moving towards the rear, the tension roller will at once be caused to move in that direction down the inclined bearings and until it reaches some such position as indicated in Fig. 3. Then it is out of contact with the feed roller. At the same time, the tension roller will bind the loose end and also the thread coming to the feed roller against the carriage 20, as plainly shown in Fig. 3. Thus forming of laps

by winding of the loose end around the feed roller is effectively prevented. All that is necessary for the operator to do is to splice the loose end and return the tension roller to the position shown in Figs. 1 and 2. Until that is done, the loose end will occupy some such position as shown in Fig. 3, where it will be effectively held against winding around the feed roller by the weight of the tension roller bearing against the carriage.

Referring now to Fig. 4, I have shown the various parts in the position which they are designed to occupy when the machine is stopped. As noted above, the tension roller is in substantial vertical alignment with the feed roller under normal conditions, and if the machine is stopped, the tension rollers are apt to roll backwards on the feed roller. To prevent this and to maintain the tension rollers in desired position, I have pivoted the carriage on the frame as described above, so that they may move between the positions shown in Figs. 2 and 4, this movement being effected, for example, by means of the handle **24**. When in the position shown in Fig. 4, it will be seen that the arms **19** have been tipped forward, and since the tension roller is substantially in contact with the feed roller, except for the slight thickness of the yarn, the axle **17** of the tension roller will be forced upwardly on forwardly inclined extensions **23**. In short, the purpose of this arrangement is to permit movement of the tension roller forward far enough so that it will not be in any substantial danger of being moved backwardly against the carriage, wherein it would exert too great a tension upon the continuous yarn. In the arrangement shown in Fig. 4, the horizontal distance between the axes of the two rollers is indicated at $\frac{3}{16}$ of an inch, which I have found to be generally satisfactory to achieve this desired result.

From the above description, it is believed that the invention can be fully understood by those skilled in the art. I am aware that changes may be made in the specific arrangement shown without departing from the scope of the invention, as defined in the appended claims.

I claim:

1. A lap preventer for twisting frames or the like comprising a driven feed roller, a tension roller disposed above said feed roller, means guiding thread downwardly back of said rollers, whereby said thread may pass beneath the feed roller and thence rearwardly between the two rollers, rearwardly inclined bearings loosely supporting said tension roller, the tension of the thread normally maintaining the tension roller forwardly in substantial contact with the feed roller and the adjacent contacting surface of the feed roller moving rearwardly, whereby upon breaking of the thread the feed roller will move the tension roller rearwardly on its bearings out of contact with the feed roller, and a carriage pivotally mounted on the machine rearwardly of the rollers and having forwardly extending arms supporting said bearings.

2. A lap preventer for twisting frames or the like comprising a driven feed roller, a tension roller disposed above said feed roller, means guiding thread downwardly back of said rollers, whereby said thread may pass beneath the feed roller and thence rearwardly between the two rollers, rearwardly inclined bearings loosely supporting said tension roller, the tension of the thread normally maintaining the tension roller forwardly in substantial contact with the feed roller and the adjacent contacting surface of the feed roller moving rearwardly, whereby upon breaking of the thread the feed roller will move the tension roller rearwardly on its bearings out of contact with the feed roller, and a carriage pivotally mounted on the machine rearwardly of the rollers and having forwardly extending arms supporting said bearings, said tension roller normally being disposed with its axis substantially in vertical alignment with the axis of the feed roller, and said bearings having upwardly inclined extensions in front of said axes, whereby when said carriage is tipped downwardly on its pivot said tension roller may move forwardly of said axes.

3. A lap preventer for twisting frames or the like comprising a driven feed roller, a tension roller normally disposed above the feed roller, with its axis in substantially vertical alignment with the axis of the feed roller, and a winding device disposed forwardly of the feed roller, the adjacent surfaces of the feed and tension rollers moving rearwardly, means for guiding thread in a path to the feed roller and between it and the tension roller and thence to the winding device, the tension roller normally having its surface resting on the thread between it and the feed roller, an inclined pivotally supported stop member normally contacting with the feed roller to hold the latter in its normal position against the pull of the tension of the thread, and means whereby the stop member may be moved downward to permit the tension roller to roll forwardly a limited distance on the surface of the feed roller.

WILLIAM M. CAMP.