April 14, 1959 E. ST. PIERRE 2,881,607

YARN CONTROL MECHANISM FOR KNITTING MACHINES

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FIG. 1

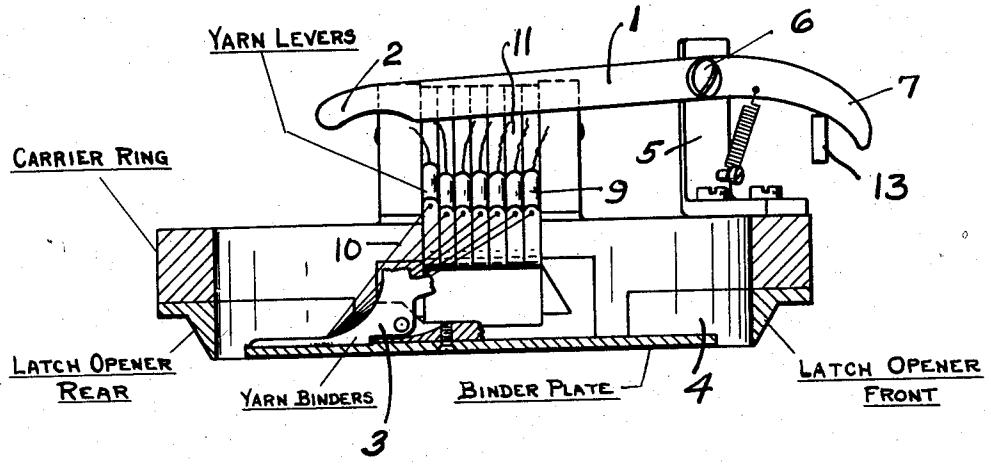
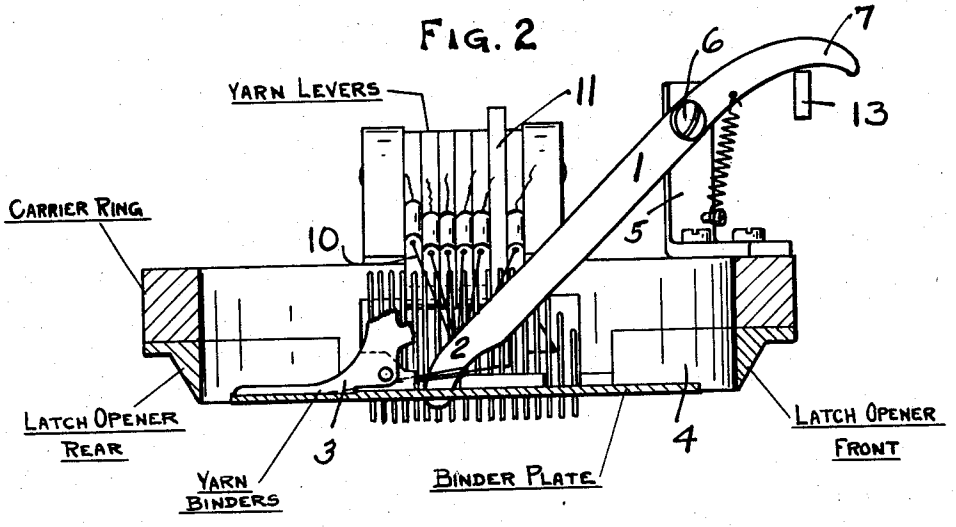


FIG. 2



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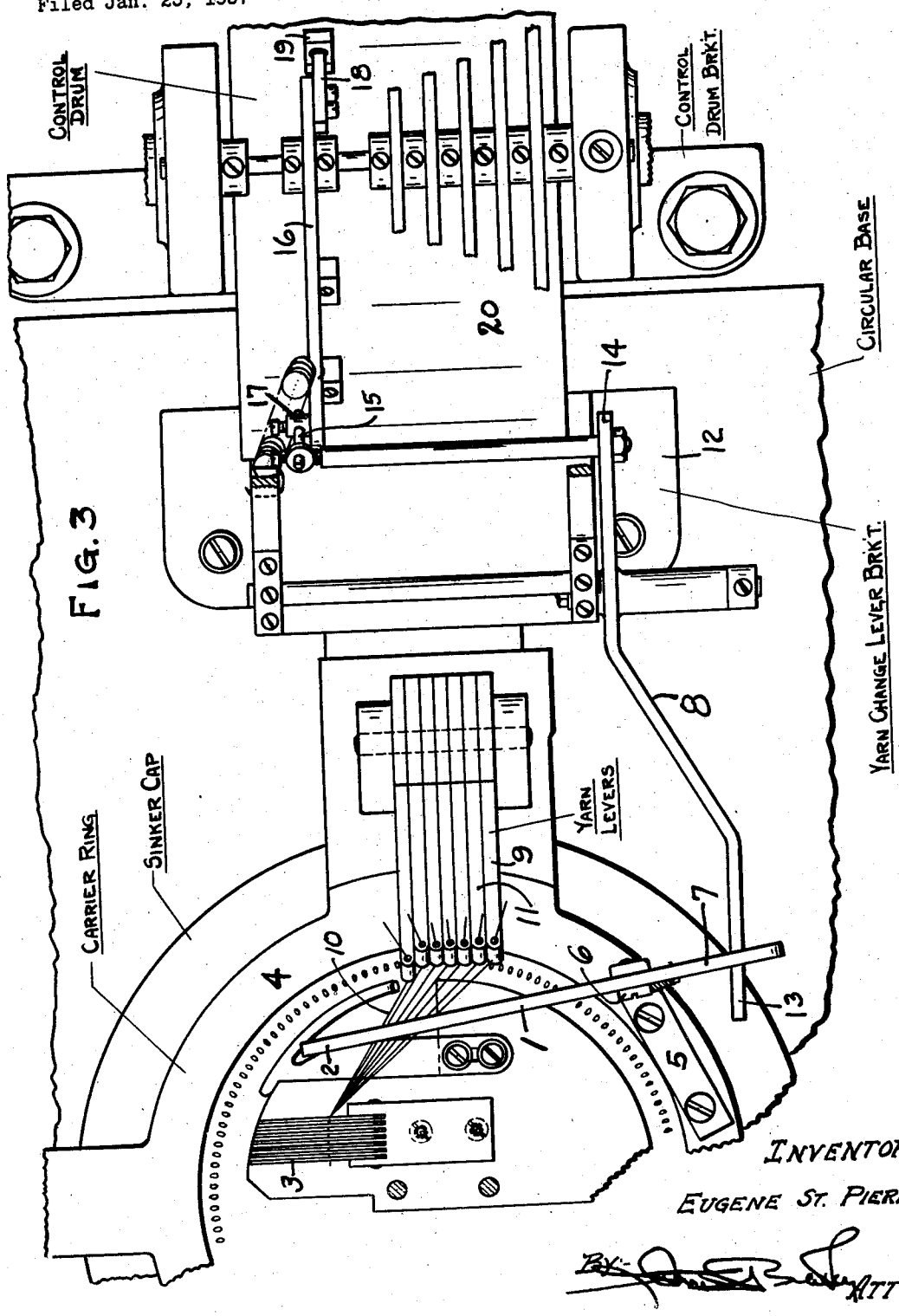


FIG. 3

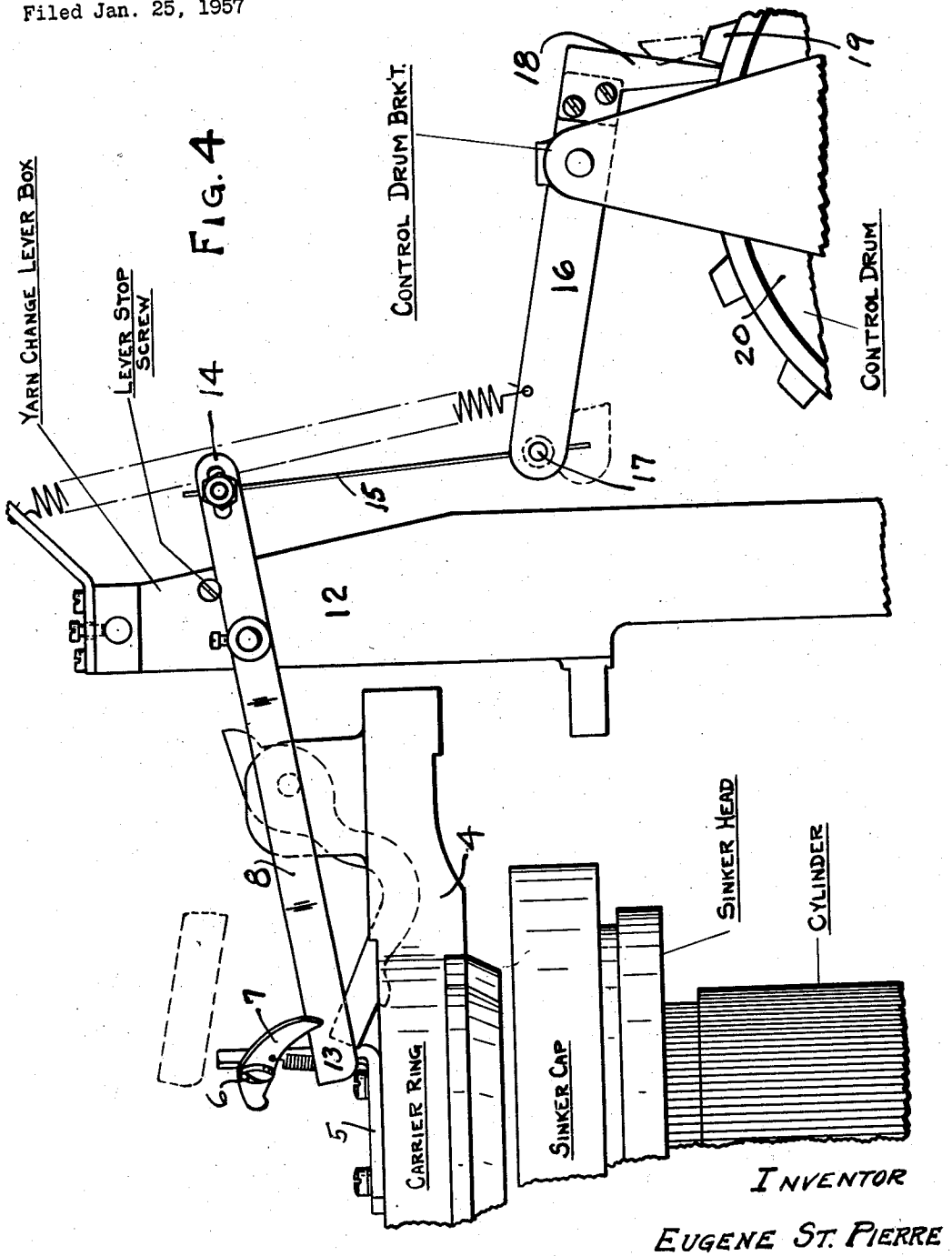
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YARN CONTROL MECHANISM FOR KNITTING MACHINES

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FIG. 4



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YARN CONTROL MECHANISM FOR KNITTING MACHINES

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Application January 25, 1957, Serial No. 636,267

4 Claims. (Cl. 66—140)

This invention relates to a new and useful improvement in yarn feeding mechanisms intended primarily for circular, independent needle, knitting machines, but not necessarily limited to them.

In certain types of knitting, by means of a circular, independent needle, knitting machine, upon less than the full complement of needles as, for example, in patterning, the idle needles are rendered inactive by being raised above the others so that their shanks are at the same height as the hooks of the needles which are in use or to be used. Under these conditions, when a yarn lever is being lowered to feed a yarn to the active needles, the yarn is first engaged by the shanks of inactive needles before it has dropped to feeding level and is displaced so that it may be missed by the hook of the first needle which is supposed to receive it. This invention is effective in preventing such a happening.

One form of the invention is shown in the drawing, of which

Figure 1 is an elevation, partly in section, of the carrier ring and binder plate of a circular hosiery knitting machine, showing the yarn levers of the invention in idle position;

Figure 2 is a similar view showing one of the yarn levers in yarn feeding position and the manner in which this invention insures that its yarn will be properly fed;

Figure 3 is a plan view of substantially the same parts; and

Figure 4 is an elevation showing, primarily, an operating mechanism for the yarn controlling device proper.

As shown in Figure 1, the invention consists of a finger **1**, one end **2** of which is adapted to engage yarn between the yarn feeding levers and the binder **3**. Finger **1** may be mounted upon the carrier ring **4** by a suitable bracket **5** to which it is pivoted as at **6**. Engageable with the other end **7** of finger **1** is the lever **8** by which this end **7** can be raised and the other end **2** correspondingly lowered, as shown in Figure 2.

In Figure 1, the yarn levers **9** are idle, with the yarns **10** running from them to the binder **3**. In Figure 2, one of the yarn levers **9**, which has been numbered **11** to differentiate it from the others, is down in yarn feeding position. Normally, the yarn fed by this lever **11** would be taken by the hooks of the needles without difficulty; but, when knitting upon only a part of the needles as in patterning, and when the remaining needles are rendered idle by being raised so that they will pass over the stitch cams, the yarn fed by yarn lever **11** will be engaged by the shanks of idle needles as it is being lowered and deflected out of hook-engaging position. To avoid this, all of the yarns are engaged momentarily by the finger **1** before yarn finger **11** is lowered, as shown in Figure 2, and moved to feeding height with respect to the hooks of the active needles. Consequently, even though the yarn fed by yarn lever **11** is first engaged by the shanks of idle needles preceding the first needle which is to knit at a height above

the hook of this needle, it will enter the hook of this first needle. Before this occurs, lever **11** will have dropped to feeding position and the yarn fed by it will feed properly to the remaining needles without assistance. Similarly, when a succeeding yarn is substituted, the device operates again upon this yarn in the same way and for the same purpose.

The means for operating finger **1** consists of the lever **8**, already mentioned, which is pivotally mounted on a suitable bracket **12** supported by any convenient part of the machine. One end **13** of lever **8** underlies end **7** of finger **1**, as already explained. The other end **14** of lever **8** is connected by a suitable link **15** to a pivoted rocker **16** as at **17**, the other end **18** of said rocker being adapted to follow suitable cams **19** upon a drum **20**.

Cams **19** are so spaced upon drum **20**, and drum **20** is so rotated, that end **2** of finger **1** will be momentarily lowered to deflect an incoming yarn, as described, through the passage of end **18** of rocker **16** over a cam **19**, as shown in dotted lines in Figure 4.

Although finger **1**, when operated, engages and lowers all of the yarns running from yarn levers **9**, only the yarn from yarn lever **11** will be directed to the needle hooks because all of the other yarn levers are up out of action and holding their yarns within the needle circle so that they cannot engage the hooks of any needles. Of course, at each change of yarns one yarn is brought in and another is taken out of action. As a yarn is removed from action, the finger should be raised to permit that yarn to enter the binder in a normal manner.

Cams **19** may, if desired, be located on the drum which controls yarn levers **9** since the operation of finger **1** has a definite timed relation to the operation of the yarn fingers. Whenever the drum is rotated to cause a change of yarn, the same rotation can be utilized to operate finger **1**.

I claim:

1. In a circular, independent needle knitting machine having a needle cylinder, needles, yarn feeding fingers positioned outside said cylinder and needles and movable to and from an active yarn feeding position, and a yarn cutter and binder within said cylinder in a position to retain those yarns which are to be maintained temporarily inactive, and a yarn engaging member periodically movable under pattern control for pressing those yarns which extend from inactive feeding fingers to said binder downwardly just prior to and during a yarn change.

2. Mechanism as defined in claim 1 wherein said member comprises a pivoted lever one end of which is in position to press downwardly upon said yarns and the other of which is connected for actuation by a pattern means.

3. Mechanism as defined in claim 1 wherein said member comprises a pivoted lever one end of which is in position to press downwardly upon said yarns and the other of which has connection to a pattern controlled system of levers.

4. In a circular, independent needle knitting machine having a needle cylinder, needles, yarn feeding fingers positioned outside said cylinder and needles and movable to and from an active yarn feeding position and a yarn cutter and binder within said cylinder in a position to retain those yarns which are to be maintained temporarily inactive, and pattern controlled means for periodically pressing those yarns which extend from inactive feeding fingers to said binder downwardly just prior to and during a yarn change.

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