No. 817,776. PATENTED APR. 17, 1906.

J. B. HIPWELL.

PICKER MECHANISM FOR KNITTING MACHINES.

APPLICATION FILED OCT. 10, 1905.

Fig. 1.

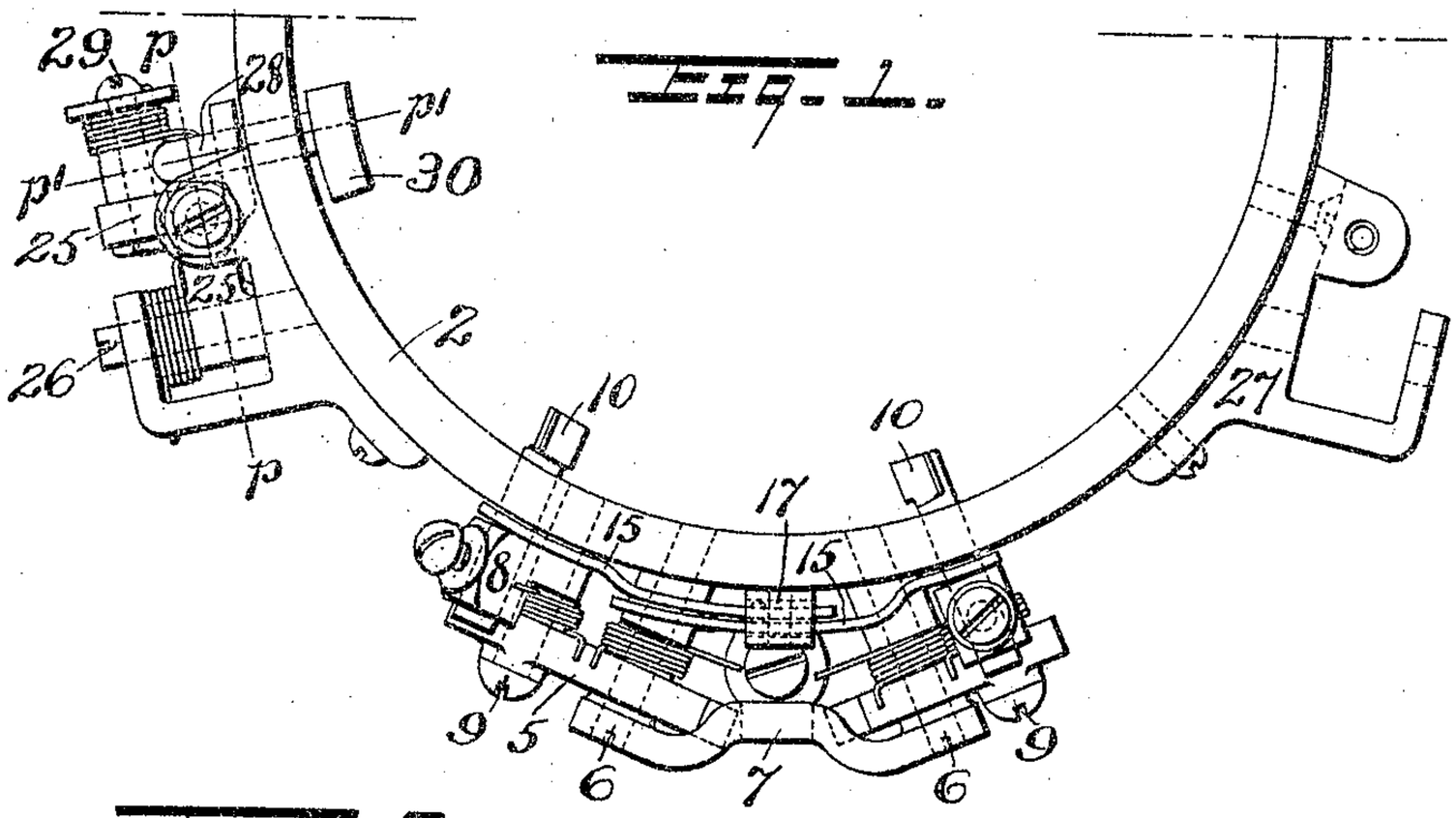


Fig. 2.

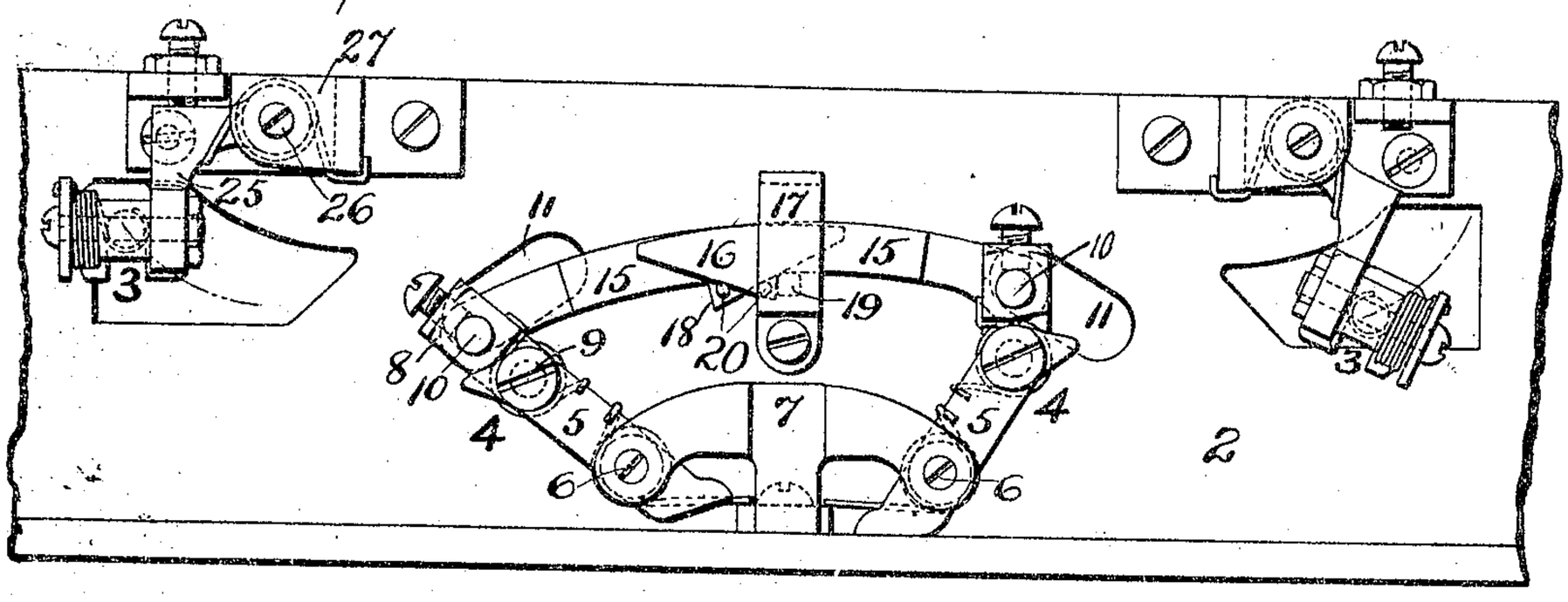
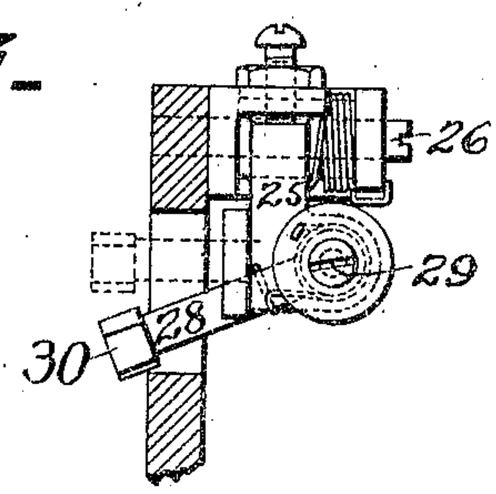


Fig. 3.



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PICKER MECHANISM FOR KNITTING-MACHINES.

No. 817,776. Specification of Letters Patent. Patented April 17, 1906.

Application filed October 10, 1905. Serial No. 282,087.

To all whom it may concern:

Be it known that I, JOHN B. HIPWELL, a citizen of the United States, residing in the city of Reading, county of Berks, and State of Pennsylvania, have invented certain new and useful Improvements in Picker Mechanism for Knitting-Machines, of which the following is a specification.

My invention relates to picker mechanisms for knitting-machines, and more particularly to what is commonly known as the "two-and-one" type of mechanism, in which during the widening operation two raised needles are lowered jointly by each drop-picker action and one of them reraised by a lifter-picker on the reverse reciprocating movement, the effect of which action upon the fabric is well known.

In my improved mechanism I employ a novel coöperating arrangement of pickers in which the drop-pickers are left free of controlling devices, while the lifter-pickers are provided with automatic controlling means, said means being adapted, as hereinafter described, to cause the lifting action of each of the lifter-pickers alternately to effect the locking of the same in final inoperative position and the simultaneous setting of the other lifter-picker into operative position.

The several novel features of the invention are fully described in connection with the accompanying drawings and are specifically pointed out in the claims.

Figure 1 is a partial plan view of a cam-cylinder of a knitting-machine, showing my improved picker mechanism in preferred form applied thereto, such ordinary features of knitting-machine construction as it is unnecessary to show being omitted. Fig. 2 is an exterior elevation of the same developed upon a plane and showing one of the drop-pickers and one of the lifter-pickers in raised position and the others in depressed position. Fig. 3 is a separate view of one of the drop-pickers.

In connection with other knitting-cams employed as usual upon the cam-cylinder 2, and which need not be particularly referred to, I provide a picker mechanism comprising a pair of drop-pickers 3 3, each of which, as shown, is independent of controlling devices and arranged to be directly operated by the needles, and a pair of lifter-pickers 4 4, each of which, as shown, is controlled by automatic locking and setting means, whereby each raising movement of either lifter-picker is adapted to release and set the other picker into operative position for a succeeding movement and to finally cause the locking of said first-mentioned picker in inoperative position, where it is positively held out of unnecessary contact with the passing needles until it is required to act again.

The lifter-pickers 4 4, as shown, correspond substantially with those described and claimed in Patent No. 799,933, issued to me January 19, 1904, each comprising a main arm 5, pivoted at 6 to a fitting 7 on the cam-cylinder, and a secondary arm 8, pivoted to the main arm 9 and carrying a needle-engaging finger 10, which projects through an opening 11 in the wall of the cam-cylinder, and each of said arms being spring-pressed in one direction and limited in their pivotal movements, as indicated. In my improved mechanism these lifter-pickers are provided with controlling devices as stated, which in the preferred construction shown comprise a latch-bar 15 for each lifter, pivotally carried by the latter at a convenient point, as the needle-finger axis 10, and having its free end 16 guided in a fitting 17 on the cam-cylinder and hooked at 18, so as to engage a catch 19 when the lifter has been elevated with a contacting end needle. In order that each operating movement of either picker may not only effect the locking of the same in final inoperative position, but may also effect the setting of the other picker into proper position for a succeeding operating movement, the separate latch-bars 15 of the respective pickers in the preferred construction shown have their free ends 16 tapered and each provided with an engaging projection 20, whereby the latch-bar of the raised picker is lifted out of engagement with its catch 19 by the elevating movement of the lowered picker, thus permitting the raised picker to drop into lowered operative position as the other picker is rising with an engaged needle.

In connection with the automatically-controlled lifter-pickers described I employ free drop-pickers 3 3, comprising, as shown, a main arm 25, pivoted at 26 to a fitting 27 on the cam-cylinder, so as to swing in a plane *p p* approximately tangent to the latter, and a needle-engaging arm 28, pivoted at 29 upon the outer portion of said main arm, so as to

swing in a plane at right angles to said tangent plane. This needle-engaging arm 28 is swung with the main arm 25 around the pivotal point 26 in carrying down the needles engaged by the terminal finger 30, as indicated in Fig. 2, while on the reverse movement of the cam-cylinder, as shown, the needle-engaging arm 28 is moved vertically downward out of the way of the passing needles, its swing upon the pivotal connection 29 to the main arm being approximately in a vertical plane p' p' radial to the cam-cylinder.

In reciprocating the cam-cylinder 2 during the widening operation the needle-finger 30 of each drop-picker 3 engages two idle needles and is momentarily swung downward to lowered position, as indicated to the right of Fig. 2, thereby lowering said needles into action, the raised needles thereafter merely depressing the drop-picker arm 28 (see Fig. 3) in the plane p' p' until two additional needles are to be lowered thereby. In the reverse reciprocating movement of the cam-cylinder one of the last-lowered pair of needles engages the finger 10 of one of the lifter-pickers 4 (then in lowered position) and swings said lifter-picker upward with said needle, the latch 15 of said picker by such movement first releasing the other lifter-picker to set it into operative position and thereafter engaging the catch 19 to hold the raised picker in elevated position free from the passing needles until similarly released and set by the action of said other lifter-picker. Thus, each of said lifter-pickers is automatically locked in inactive position until set by the action of a lowered end needle upon the other. The drop-pickers are left free to the action of the raised needles except when swung entirely out of action, by means not shown, during the narrowing operation.

During circular knitting of course the lowered needles pass under the usual fixed cam on the cylinder upon which the lowered lifter-picker rests, so that there is no contact of the needle-hubs with said lifter-picker and no wearing action whatever upon either picker.

The preferred detail construction, which has been specifically described and shown, may obviously be readily varied without departing from my invention as particularly pointed out in the claims.

What I claim is—

1. In a knitting-machine the combination of drop-pickers arranged to throw down two needles at once with lifter-pickers having controlling devices whereby the lifting action of each of said pickers alternately effects the locking of the same in final inoperative position and the setting of the other picker into operative position.

2. In a knitting-machine the combination with a pair of alternately-operating pickers, of controlling devices therefor whereby the operating movement of each effects the locking of the same in final inoperative position and the setting of the other picker into operative position.

3. In a knitting-machine the combination with a pair of alternately-operating lifter-pickers, of controlling devices therefor whereby the operating movement of each effects the locking of the same in final inoperative position and the setting of the other picker into operative position.

4. In a knitting-machine the combination with a pair of alternately-operating pickers, of latching means acted upon by each operating movement of either picker to effect the locking of said pickers in final inoperative position and the setting of the other picker for a succeeding operating movement.

5. In a knitting-machine the combination with a pair of alternately-operating pickers, of a latch for each of said pickers and a catch therefor, each of said latches being adapted to release the other in moving into engagement with the catch.

6. An automatic picker for a knitting-machine comprising a main arm pivotally mounted exteriorly upon the cam-cylinder so as to rise and fall in a plane approximately tangent thereto, and a needle-engaging arm pivotally carried by said main arm so as to swing approximately at right angles thereto and extending through an opening in the cylinder-wall.

7. An automatic picker for a knitting-machine comprising a main arm pivotally mounted exteriorly upon the cam-cylinder so as to be capable of swinging downward in a plane approximately tangent thereto, and a needle-engaging arm pivotally carried by said main arm and extending at right angles therefrom through the cylinder-wall, said needle-engaging arm being adapted to be swung downward in an approximately radial plane by the passing needles, substantially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN B. HIPWELL.

Witnesses:

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