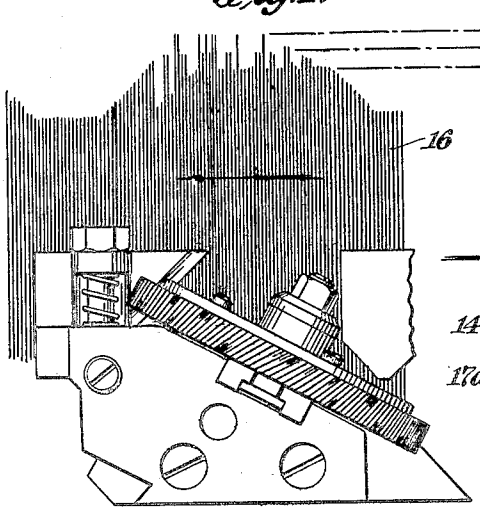
Sept. 29, 1936. H. AGULNEK 2,055,599

PATTERN WHEEL

Original Filed Dec. 17, 1935 2 Sheets-Sheet 1

Fig. 1.



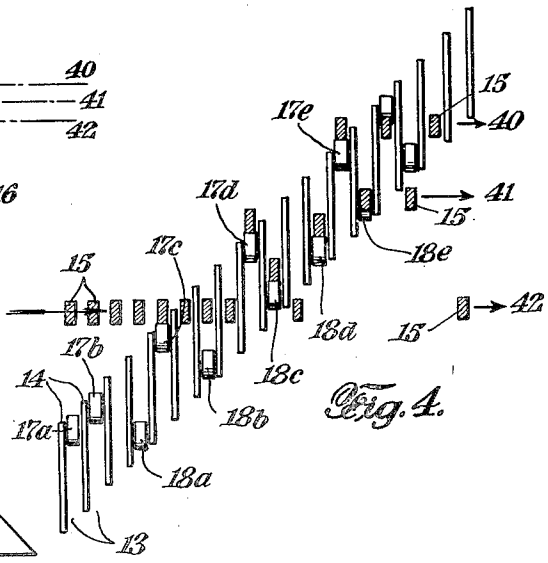


Fig. 4.

Fig. 8.

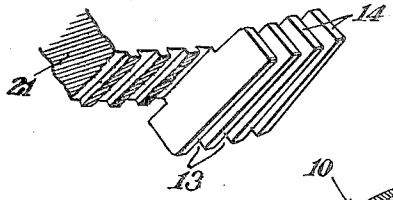


Fig. 3.

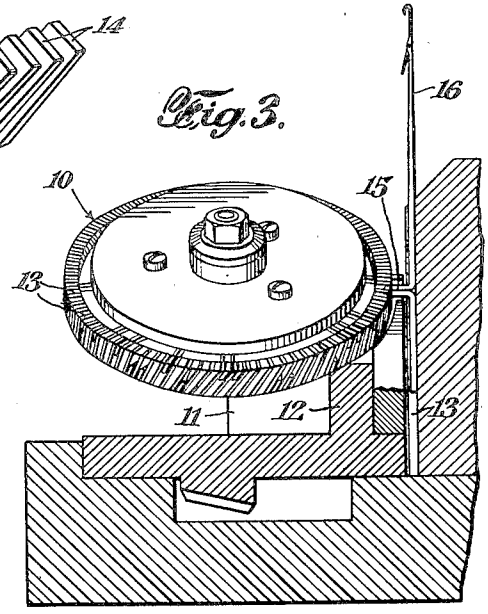
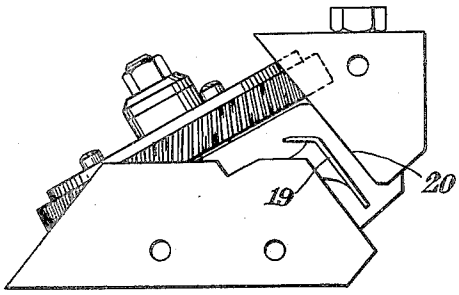


Fig. 2.



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PATTERN WHEEL

Original Filed Dec. 17, 1935 2 Sheets-Sheet 2

Fig. 5.

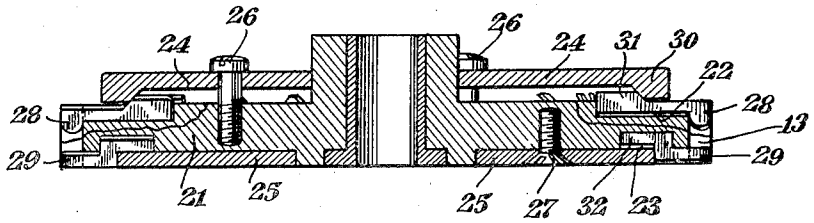


Fig. 6.

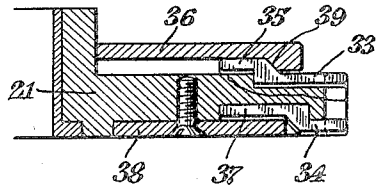
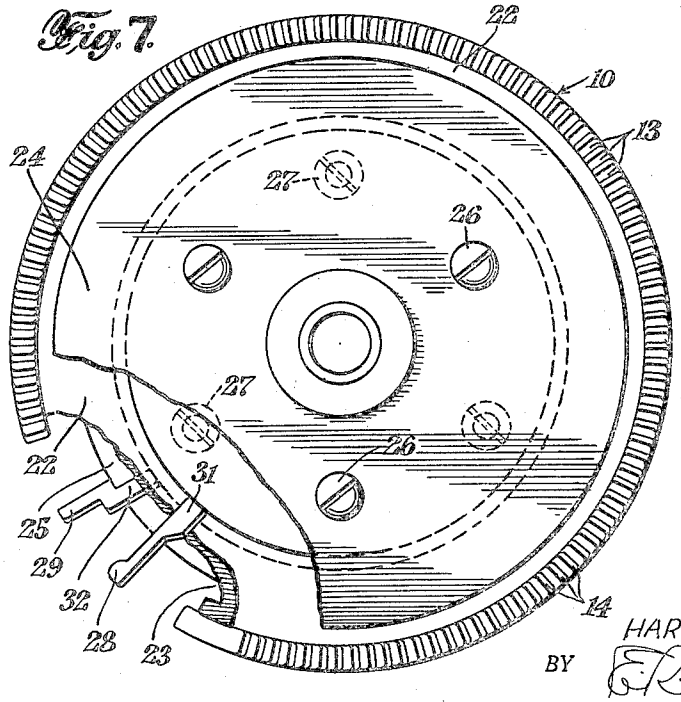


Fig. 7.



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UNITED STATES PATENT OFFICE

2,055,599

PATTERN WHEEL

Harry Agulnek, Brooklyn, N. Y., assignor to Samuel Mishcon, doing business as Supreme Knitting Machine Co., Brooklyn, N. Y.

Original application December 17, 1935, Serial No. 54,823. Divided and this application April 16, 1936, Serial No. 74,684

10 Claims. (Cl. 66—50)

This invention relates to knitting machines having pattern or design wheels adapted to accommodate jacks at more than one level, so as to effect elevations of the coacting needles to certain predetermined levels,—this invention being a division of the application for Pattern wheels filed December 17, 1935, Serial No. 54,823.

Cognizance is taken of the fact that various forms of pattern wheels have been devised for performing the aforesaid function, but as one skilled in the art it has been my observation that such devices have generally been relatively intricate in structure, and requiring excessive care in fabrication and assembling to insure free and unobstructed travel of the needle butts through the slots of the wheel. It is within the contemplation of this invention to overcome these drawbacks by enabling a simple unitary wheel to operatively accommodate, with a minimum of adjustment, jacks or inserts at two or more levels so as to elevate the needles either to the knit-off position, above the sinker level, or to below the latch clearing level or tuck position, and to permit unelevated needles to pass through the wheel to be depressed, if desired, by an intermediate or auxiliary cam, to an inactive welt position; and it is my further object to accomplish this purpose by the use of a single wheel provided with two oppositely positioned plates for holding the two or more sets of jacks in their proper relative positions, the wheel containing peripheral slots uninterruptedly across the width of the wheel for permitting the unobstructed passage therethrough of coacting needles.

Other objects, features and advantages will appear from the drawings and the description hereinafter given.

Referring to the drawings,

Figure 1 is a semi-diagrammatic view showing a section of the cylindrically disposed needles and illustrating the relative positions of the pattern wheel constituting my invention and the knitting machine cams.

Figure 2 is an elevation of a portion of the knitting machine looking from the cylinder thereof, showing the pattern wheel, lifting cam, intermediate or auxiliary cam, and stitch cam.

Figure 3 is a vertical sectional view of a portion of the knitting machine, showing the pattern wheel constituting my invention in operative position.

Figure 4 is a diagrammatic view looking from the cylinder outwardly showing the relative positions of the needle butts, pattern wheel slot walls, and a number of inserts at two different levels.

Figure 5 is a sectional elevation of one form of the pattern wheel, showing two plates and two sets of inserts in place.

Figure 6 is a partial section of a modified form of pattern wheel.

Figure 7 is a plan view of the pattern wheel of Figure 5, with fragments removed, and

Figure 8 is a fragmentary perspective of a peripheral portion of the slotted disc constituting part of the pattern wheel.

In the drawings, the inclined pattern wheel 10 is suitably mounted upon the section 11 which is secured to the cam ring 12. Circumferentially disposed about the wheel are the slots 13 formed by the walls 14 extending completely across the width of the wheel to provide a continuous and unobstructed passageway for the butts 15 of the needles 16 operatively mounted on the cylinder. The rotation of the cylinder in the direction of the arrows (see Figure 4) will cause an intermeshing of the butts of the needles with the slotted walls of the wheel, in conventional manner, to effect a lifting of the needles wherever the said needle butts operatively encounter jacks or inserts such as those identified by the numerals 17*a*, 17*b*, 17*c*, 17*d*, 17*e*, 18*a*, 18*b*, 18*c*, 18*d* and 18*e*,—and to permit a continuous path of the butts passing through unfilled slots until they engage a depressing cam such as the auxiliary or intermediate cam 19, or the stitch cam 20 (Figure 2).

The pattern wheel constituting this invention, being of the type adapted, in one form thereof, to selectively raise needles to either of two predetermined levels, has been devised to operatively accommodate two sets of inserts at different positions the slots being made wide enough for the purpose, and the wheel being provided with detachable retaining means to hold said inserts in place, all as will be more specifically hereinafter described.

By referring to Figure 5, it will be seen that the wheel consists of a peripherally slotted disc 21 having circular recesses 22 and 23 on the upper and lower faces thereof, respectively, communicating with the slots 13 of the wheel,—and the upper and lower plates 24 and 25, respectively, detachably secured to the disc by the screws 26 and 27 and employed as retaining means for holding the jacks or inserts 28 and 29 in place. In this form of my invention, the insert 28 can be of the conventional type as shown, the plate 24 having an enlarged or beaded peripheral portion

30 engageable with the inner enlarged portion 31 of the jack to prevent an outward radial movement of the said insert; and the lower insert 29 is of substantially Z-shaped construction, the inner portion thereof extending upwardly and inwardly within the recess 23 of the disc, the plate 25 underlying the inwardly extending arm 32 of the insert 29. It will be noted that the lower surface of said plate 25 is substantially flush with the lowermost portions of the insert 29, and that the screws 27 are countersunk, thereby presenting a relatively flat and smooth lower face for the wheel.

Instead of employing the two forms of inserts shown in Figure 5, the modified form of Figure 6 can be used. Here the upper and lower inserts 33 and 34 are of the same shape and size, being substantially Z-shaped in form, but reversible for operative positioning. When placed on the upper portion of the wheel, the short arm 35 extends inwardly and is in engagement with the plate 36. In the lower position, the long arm 37 extends inwardly and is in operative engagement with the retaining plate 38. It will also be noted that the diagonal surface 39 is in abutment with the diagonally disposed inner wall of the peripheral portion of the plate 36, whereas in the lower position of the insert, the corresponding diagonal surface permits the proper positioning of the plate 38 below the arm 37 of the insert to retain it in place.

Whichever of the two above-referred-to forms is employed, the method of operation and the structural advantages are identical. An important feature in both constructions is the use of a single slotted disc, the peripheral walls of which extend across its entire width to form a plurality of continuous slots to permit the uninterrupted passage therethrough of the needles. Both faces of the disc have means thereon for operatively accommodating and retaining the inserts, which are selectively positioned to effect a predetermined design.

In the operation of the device, it will be seen, by referring to Figures 1 and 4, that the needles can occupy one of three different positions,—the knit-off position, above the sinker level, identified by the level 40, effected by the upper inserts 17*a*, 17*b*, 17*c*, 17*d* and 17*e*, the below latch-clearing or truck position indicated by level 41, effected by the lower inserts 18*a*, 18*b*, 18*c*, 18*d*, and 18*e*, and the unelevated position 42 maintained by needles passing through slots without inserts to be depressed to an inactive knitting position by suitable cam means such as the auxaliary cam 19.

It will also be observed that the jacks can be quickly and readily inserted in place without any special adjusting operation except that of operatively securing the top and bottom plates in place.

It is of course understood that the various embodiments above described and shown in the drawings are illustrative of my invention and not employed by way of limitation, inasmuch as numerous changes and modifications may be made within the scope of the appended claims without departing from the spirit of this invention.

What I claim is:

1. In a knitting machine, a pattern wheel comprising a single peripherally slotted disc the slots of which are of a width sufficient to operatively accommodate the terminal portions of two sets of needle-elevating inserts at different levels, inserts at one of said levels and operatively positioned within the disc at one face thereof, other inserts at the other of said levels and operatively positioned within the disc at the opposite face thereof, and retaining means on the opposite faces of said disc in engagement with and operatively holding the inserts in place.

2. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels thereof the terminal portions of two sets of needle-elevating inserts, inserts at one of said levels and operatively positioned within the disc at one face thereof, other inserts at the other of said levels and operatively positioned within the disc at the opposite face thereof, and retaining means on the opposite faces of said disc in engagement with and operatively holding the inserts in place.

3. In a knitting machine, a pattern wheel comprising a single peripherally slotted disc the slots of which are of a width sufficient to operatively accommodate the terminal portions of two sets of needle-elevating inserts at different levels, inserts at one of said levels and operatively positioned within the disc at one face thereof, for elevating coacting needles to a knit-off position, other inserts at the other of said levels and operatively positioned within the disc on the other face thereof for elevating coacting needles to a position below latch-clearing level, and plates secured to the opposite faces of said disc and in engagement with said inserts for operatively holding them in place.

4. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels thereof the terminal portions of two sets of needle-elevating inserts, inserts at one of said levels and operatively positioned within the disc at one face thereof, other inserts at the other of said levels and operatively positioned within the disc at the opposite face thereof, and plates detachably secured to opposite faces of said disc and in engagement with said inserts for operatively holding them in place, the undersurface of the lower of said plates being substantially flush with the lowermost surfaces of the lower level inserts.

5. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels thereof the terminal portions of two sets of needle-elevating inserts, the upper and lower faces of the disc having annular recesses adjacent the peripheral portion thereof and communicating with the slots therein, inserts at one of said levels and operatively positioned within the disc at one face thereof, other inserts at the other of said levels and operatively positioned within the disc at the opposite face thereof, the inwardly extending portions of said inserts being positioned within said recesses, and plates detachably secured to said upper and lower faces of the disc and in engagement with said inserts for operatively holding them in place.

6. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels

thereof the terminal portions of two sets of needle-elevating inserts, the upper and lower faces of the disc having annular recesses adjacent the peripheral portions thereof and communicating with the slots therein, inserts at one of said levels for elevating coacting needles to a knit-off position, other inserts at the other of said levels for elevating coacting needles to a position below latch-clearing level, the inwardly extending portions of said inserts being positioned within said recesses, the inserts of one of said sets being of substantially Z-shaped structure, and plates detachably secured to said upper and lower faces of the disc and in engagement with said inserts for operatively holding them in place, the plate engaging said Z-shaped inserts being adjacent the inwardly extending arms thereof.

7. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels thereof the terminal portions of two sets of needle-elevating inserts, inserts at one of said levels for elevating coacting needles to a knit-off position, other inserts at the other of said levels for elevating coacting needles to a position below latch-clearing level, the inserts of the lower of said sets being of substantially Z-shaped structure with one arm extending upwardly and inwardly of the disc, and plates detachably secured to said upper and lower faces of the disc and in engagement with said inserts for operatively holding them in place, the lower of said plates underlying said inwardly extending arms of said Z-shaped inserts.

8. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels thereof the terminal portions of two sets of needle-elevating inserts, inserts at one of said levels and operatively positioned within the disc at one face thereof, other inserts at the other of said levels and operatively positioned within the disc on the opposite face thereof, and retaining means on the said disc operatively holding the inserts in place.

9. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels thereof the terminal portions of two sets of needle-elevating inserts, inserts at one of said levels and operatively positioned within the disc at one face thereof, other inserts at the other of said levels and operatively positioned within the disc on the other face thereof, and means detachably secured to the disc and in engagement with said inserts for operatively holding them in place, the undersurface of the disc being substantially flush with the lowermost surfaces of the lower level inserts.

10. In a knitting machine, a pattern wheel comprising a disc having continuous peripheral slots thereon extending uninterruptedly across the entire width of the disc, said slots being of a width sufficient to operatively accommodate at two levels thereof the terminal portions of two sets of needle-elevating inserts, this disc having recessed portions adjacent the peripheral portions thereof and communicating with the slots therein, inserts at one of said levels and operatively positioned within the disc at one face thereof, other inserts at the other of said levels and operatively positioned within the disc at the opposite face thereof the inwardly extending portions of said inserts being positioned within said recessed portions, and means detachably secured to the disc and in engagement with said inserts for operatively holding them in place.

HARRY AGULNEK.