

[54] **PATTERN WHEEL WITH PIVOTED JACKS
SUPPORTED BY INSERTED WALL
MEMBERS**

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[51] Int. Cl. **D04b 15/76**

[58] Field of Search **66/50 A, 40, 25, 156, 115**

[56] **References Cited**
UNITED STATES PATENTS

2,008,810	7/1935	Agulnek.....	66/50 A
2,055,599	9/1936	Agulnek.....	66/50 A
2,140,078	12/1938	Honnocks et al.....	66/50 A
3,643,470	2/1972	Pernick.....	66/156

3,660,991	5/1972	Mishcon	66/50 A
3,683,645	8/1972	Audia	66/50 A
3,740,972	6/1973	Langham	66/50 A

FOREIGN PATENTS OR APPLICATIONS

176,236	3/1922	Great Britain	
962,128	1/1964	Great Britain	66/115
1,128,944	5/1962	Germany	66/115

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[57] **ABSTRACT**

Jacks pivotally mounted in a pattern wheel for movement between a needle actuating and a non-actuating position are supported in the wheel by and between insertable wall members which are located in slots of the wheel and are secured to the wheel by a bonding agent in contact with an arm of each of the wall members and with the wheel.

2 Claims, 9 Drawing Figures

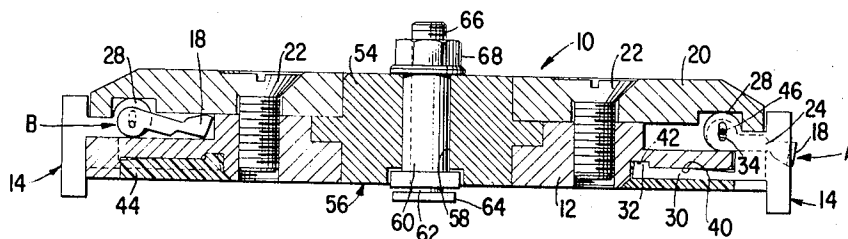


Fig.1

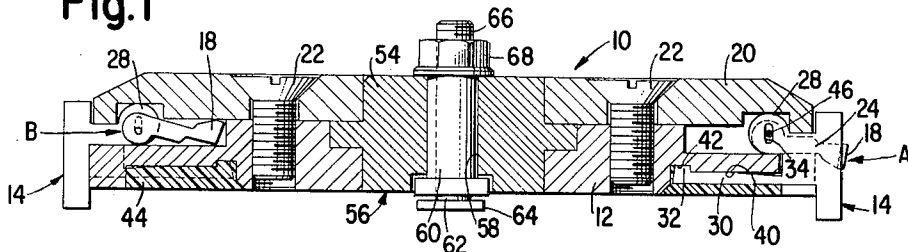


Fig. 2

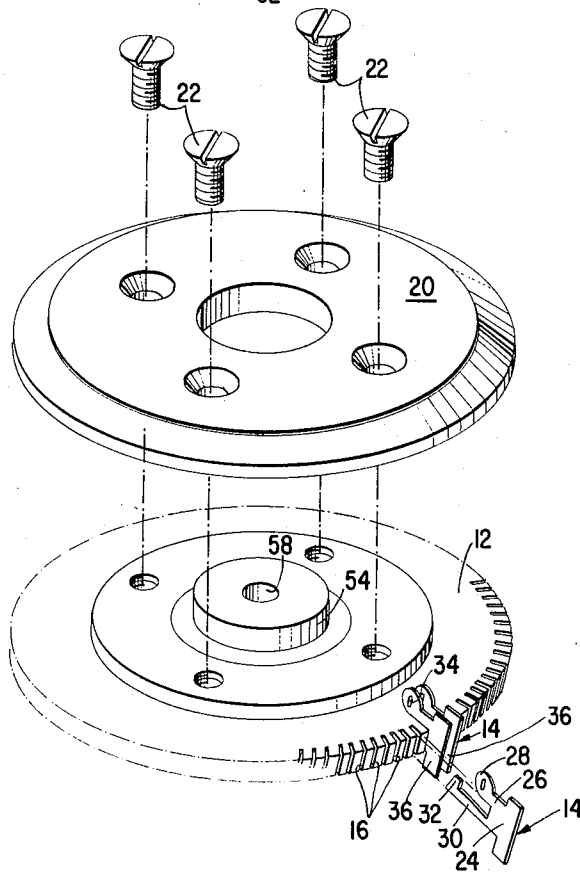
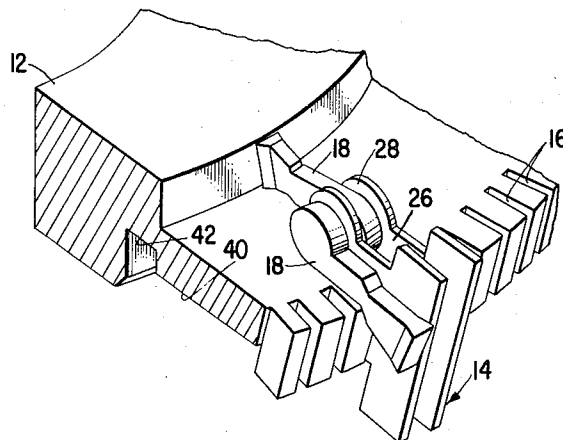


Fig. 3



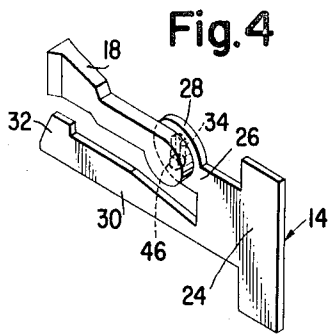


Fig. 4

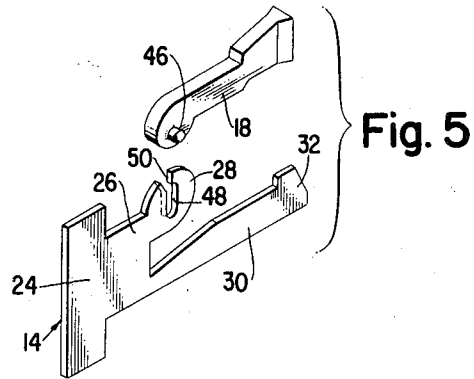


Fig. 5

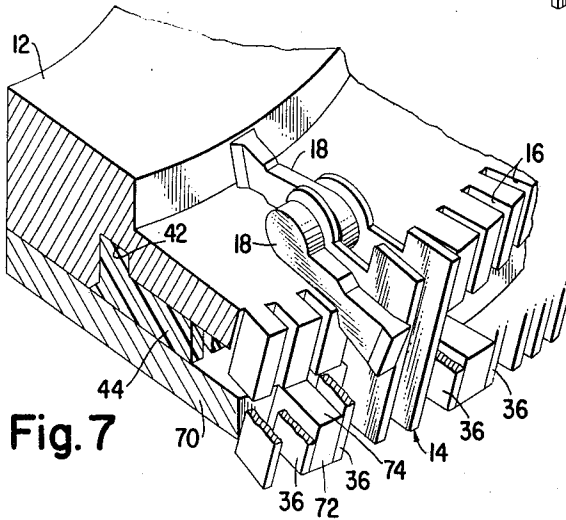


Fig. 7

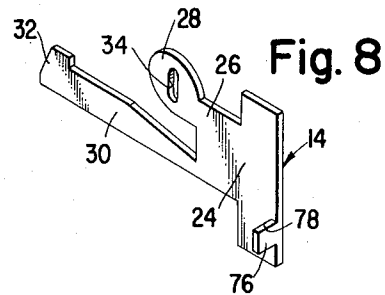


Fig. 8

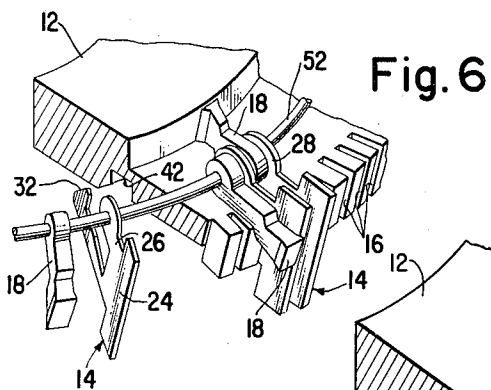


Fig. 6

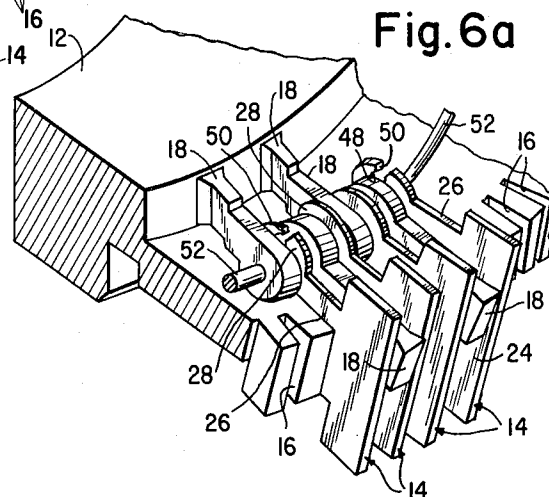


Fig. 6a

PATTERN WHEEL WITH PIVOTED JACKS SUPPORTED BY INSERTED WALL MEMBERS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to pattern wheels for circular knitting machines and more particularly is directed to such pattern wheels in which jacks are pivotally mounted for movement between a needle-actuating position and a non-actuating position.

2. Description of the Prior Art

It is known to pivotally mount jacks in pattern wheels, examples of pattern wheels in which jacks are pivotally mounted being shown for example a bonding agent such as in U.S. Pat. No. 3,660,991 for "Pattern Wheels with Pivotally Mounted Jacks" issued May 9, 1972 and British Pat. No. 176,236 for "Improvements in or Relating to Patterning Devices for Circular Knitting Machines", applied for Feb. 10, 1921.

The primary object of this invention is to provide an improved pattern wheel with pivotal jacks, which is simple in construction, inexpensive to manufacture and easy to repair.

SUMMARY OF THE INVENTION

The pattern wheel of the invention is provided with wall members which are insertable in and removable from slots in the wheel. Jacks pivotally mounted for movement between a needle-actuating position and non-actuating position are supported in the wheel by and between such wall members which are preferably secured to the wheel in a bed of molded plastic but may be secured in any other suitable manner.

DESCRIPTION OF THE DRAWING

FIG. 1 is a vertical sectional view taken through the diameter of the pattern wheel of the invention;

FIG. 2 is an exploded perspective view illustrating the manner in which inserted walls are mounted in the pattern wheel of the invention;

FIG. 3 is an enlarged fragmentary perspective view showing jacks pivotally mounted on inserted walls in said pattern wheel according to the invention;

FIG. 4 is an enlarged perspective view showing an insertable wall member apart from the pattern wheel and a jack pivotally mounted thereon;

FIG. 5 is an enlarged perspective view showing a modified insertable wall member and its associated jack;

FIG. 6 is an enlarged fragmentary perspective view showing jacks pivotally mounted on a wire hoop in the pattern wheel of the invention;

FIG. 7 is an enlarged fragmentary perspective view similar to FIG. 3 but illustrating the use of a tucking ring providing a tuck level in the pattern wheel of the invention; and

FIG. 8 is an enlarged perspective view of an insertable wall member adapted to provide a tuck level in a pattern wheel according to the invention.

FIG. 6A is a view similar to FIG. 6 showing wall members according to FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 through 4 of the drawings, the pattern wheel 10 of the invention may be seen as in-

cluding a ring 12, wall members 14 in evenly spaced slots 16 located in a peripheral marginal portion of the ring, jacks 18 pivotally mounted on the wall members, and a cover 20 securable to the ring 12 by screws 22.

Although the slots 16 appear in the drawings in only a portion the ring and only a few selected wall members 14 are shown, it is to be understood that slots are provided all around the ring, that normally each slot 16 is fitted with a wall member 14, and that a jack is provided between each pair of adjacent wall members.

Each wall member 14 includes a body portion 24, an upper arm 26 with an enlarged end portion 28, and a lower arm 30 having a finger 32 formed thereon. The enlarged end portion 28 of each upper arm 26 includes an elongated slot 34. The body portions 24 of the wall members extend in part into the slots 16 and in part project beyond the periphery of the ring 12 to define needle-butt engaging walls 36. Arms 30 and fingers 32 thereon extend into recesses 40 and 42 respectively formed in the underside of ring 12 wherein they are secured as by applying a suitable plastic material 44, as for example, a bonding agent such as an epoxy cement; about the parts and permitting it to harden in place to thereby cause the parts to be bonded to the plastic and the plastic to be bonded to the ring.

Jacks 18 are pivotally mounted on the enlarged end portions 28 of the inserted wall members 14 and for this purpose are provided on one side near one end with a protuberance 46 which extends into elongated slot 34 of a wall member. The jacks may be pivoted between a needle actuating position (position A) and a non-actuating position (position B). In the needle actuating position the jacks extend toward the outer periphery of the ring and into a position between adjacent walls 36, whereas in the non-actuating position the jacks extend away from the periphery of the ring as shown.

When assembling the pattern wheel of FIGS. 1 through 4, the wall members 14 are first inserted and secured in the ring 12, and thereafter the jacks 18 are mounted between adjacent wall members. The arms 26 of the wall members are flexed when mounting the jacks to accommodate protuberance 46 as it is moved into registry with slot 34. In order to provide such flexibility the wall members are preferably formed of thin sheet steel although any other hard durable material which is sufficiently resilient may also be used.

Instead of providing a closed elongated slot 34 in the wall members 14 to receive a protuberance 46 on a jack (FIGS. 1 through 4) each wall member may instead be provided as shown in FIG. 5, with a slot 48 having an opening 50 at one end which is smaller in size than the width of the slot and through which the protuberance 46 may be snapped to lodge the protuberance in the slot and so pivotally mount the jack in the wall member. Still another way of pivotally mounting the jacks in the pattern wheel (see FIG. 6) involves having the jacks pivoted on a wire hoop 52, and having the ring extend not only through the jacks but also through the wall members 14 such that the ring and therefore the jacks thereon are supported by the wall members. When assembling a pattern wheel, the jacks and wall members may all be strung on the wire hoop 52 as for example, in the manner of keys on a split key ring and the wall members then inserted in the slots 16 of the pattern wheel ring. If an open-ended slot is provided in the wall members only the jacks need be strung on the

wire hoop 52. The wall members may be first inserted in slots 16 and the ring with the jacks properly spaced thereon then snapped into the open-ended slots of the wall members (FIG. 6A).

The cover 20 is secured to ring 12 after jacks 18 are disposed in needle actuating and non-actuating positions as desired, and in its secured position serves to maintain the jacks in place in the pattern wheel (see FIGS. 1 and 2). The cover is fitted over boss 54 on a bearing 56 which is affixed to the ring 12, and is secured to ring 12 with screws 22.

The pattern wheel bearing 56 has a central bore 58 in which there is provided a sleeve 60 having an axial length slightly in excess of the bore and a stub shaft 62 having a foot 64 at one end. The other end 66 of the shaft 62 is threaded to receive a nut 68 which may be tightened to affix the position of the foot 64 in a slot on a knitting machine and maintain the sleeve 60 stationary while the wheel is free to rotate on the sleeve.

The pattern wheel to FIGS. 1, 2 and 3 is a two-position wheel, in that when installed for operation on a machine, jacks which are in the needle-actuating position are engageable with needle butts and effective for raising needles to a "knit" position, whereas jacks which are in a non-actuating position permit needles to pass through the pattern wheel without being raised. Such a pattern wheel is, however, convertible to a three-position wheel (FIG. 7) with the addition under the ring 12 of a tucking ring 70 having teeth 72 extending beyond ring 12 and between selected spaces defined by walls 36 to provide surface 74 engageable with

needle butts and effective to raise needles to "tuck" height when the jacks for such selected spaces are in the non-actuating position. As an alternative to the tucking ring 70, selected wall members 14 may be provided as shown in FIG. 8 with a tab 76 extending at right angles to the body portion 24 and providing a surface 78 for raising needles to a "tuck" height.

While the invention has been described in its preferred form, it is to be understood that the words which have been used are words of description rather than of limitation, and that changes within the purview of the appended claims may be made without departing from the true scope and spirit of the invention.

We claim:

1. A pattern wheel comprising a ring with slots in a peripheral marginal portion thereof; an insert in each slot, the inserts extending beyond the slots and defining walls for the pattern wheels, each insert including a jack supporting arm and an additional arm; a bonding agent solidified in place against each of the additional arms and the ring for securing the inserts to the ring; a plurality of pivotally mounted needle-actuating jacks in said wheel supported by and situated between said walls, the jacks being movable between a needle-actuating and a non-actuating position; and a cover secured to said ring for holding down jacks in the actuating position and extending over jacks in the non-actuating position.

2. A pattern wheel as defined in claim 1 wherein the bonding agent is a plastic.

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