Jan. 28, 1958 W. MEHNERT 2,821,073

FLAT KNITTING MACHINE FOR PRODUCING TWO OR MORE DOUBLE PIECES OF FABRIC INDEPENDENT FROM EACH OTHER

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Fig. 1.

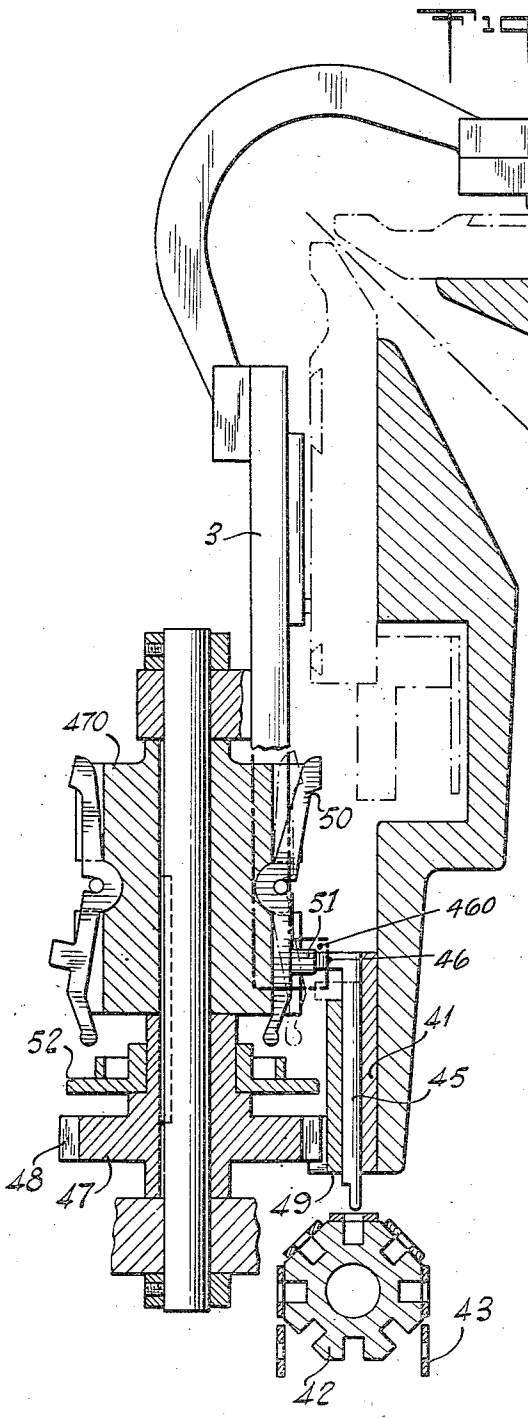


Fig. 2.

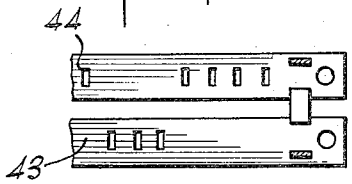
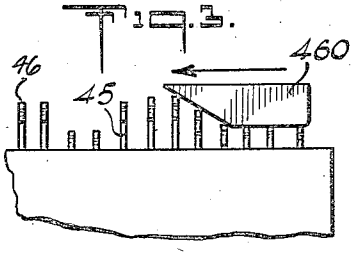


Fig. 3.



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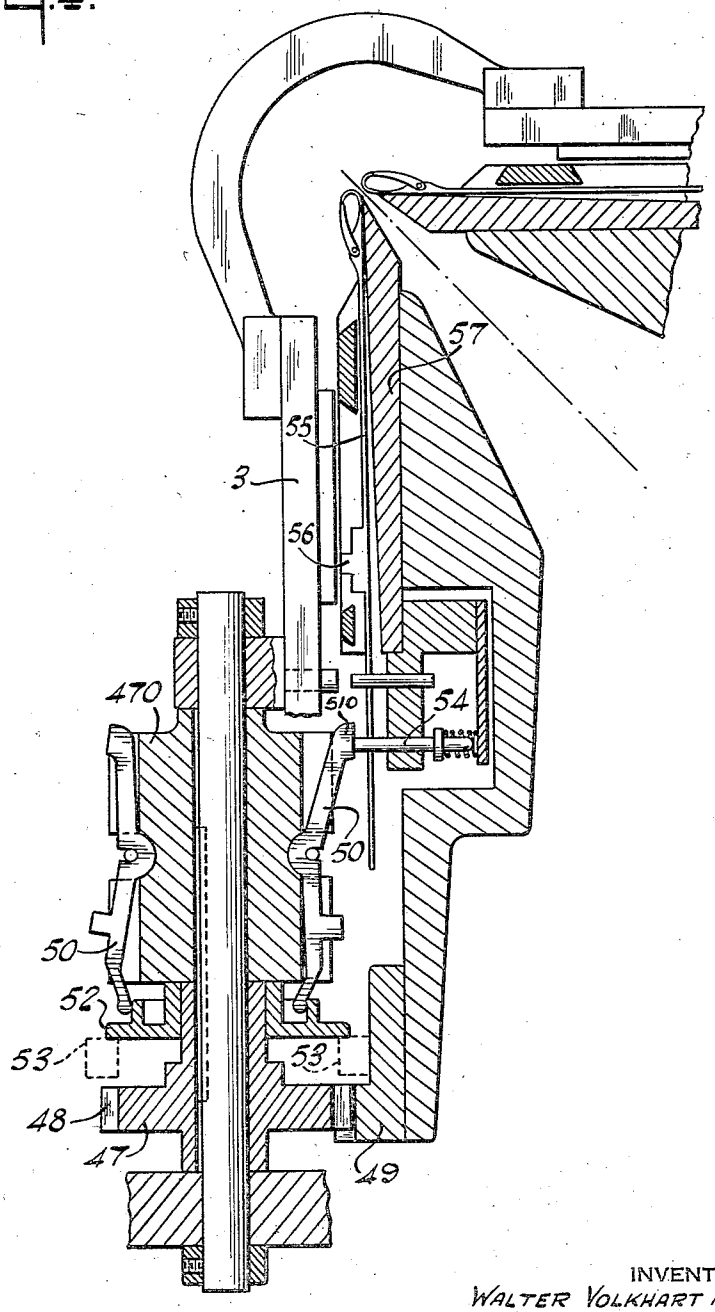
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Fig. 4.



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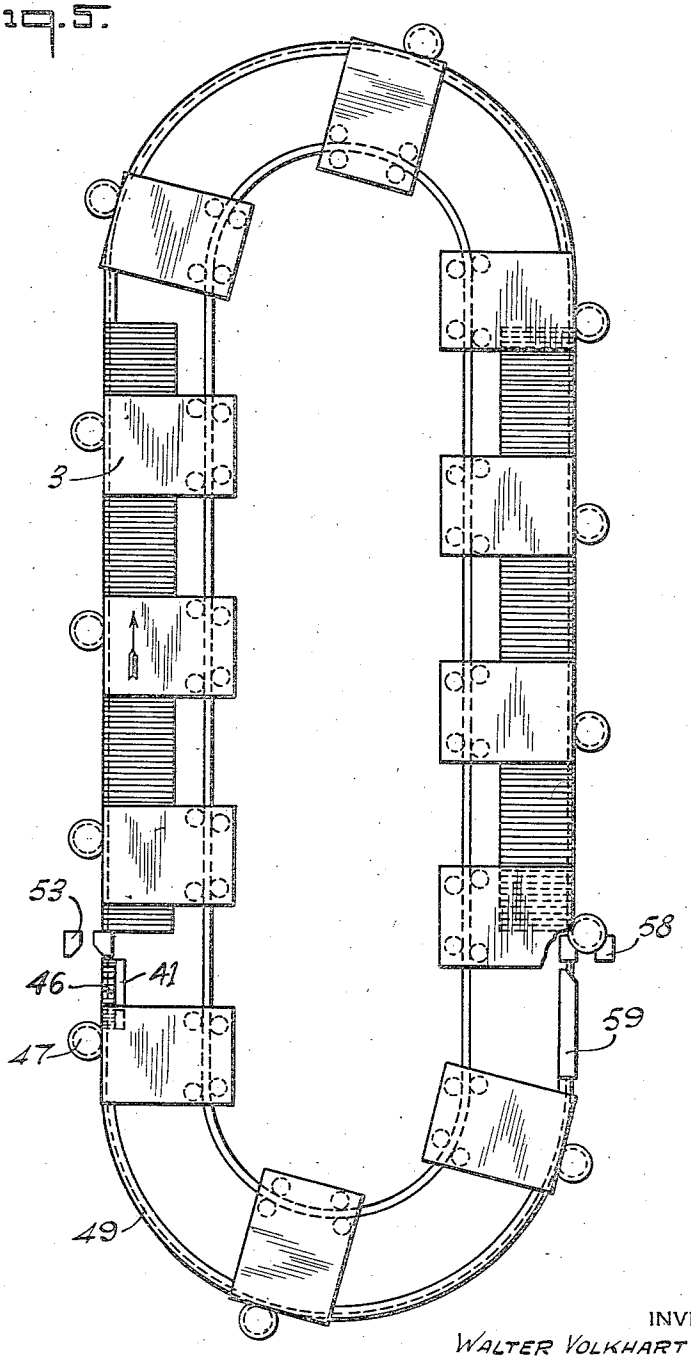
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Fig. 5.



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FLAT KNITTING MACHINE FOR PRODUCING TWO OR MORE DOUBLE PIECES OF FABRIC INDEPENDENT FROM EACH OTHER

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Application February 24, 1956, Serial No. 567,587

Claims priority, application Germany February 4, 1956

6 Claims. (Cl. 66—64)

This invention relates to controls for knitting machines and the like. Patent No. 2,705,408 which issued from application Serial No. 308,057 refers to a flat knitting machine with two needle rows or groups of needle rows arranged one behind the other and consisting of two single needle rows each, the machine being provided with a common cam slide guided along and around the rows. Two or more double-faced pieces of fabric independent of one another can be knitted on this machine.

An object of this invention is to make suitable a machine of the type shown in Patent No. 2,705,408 for the production of pieces of fabric patterned by the use of Jacquard mechanisms. This modification has been applied to known flat knitting machines and raises no difficulties with respect thereto because the associated cam slide provides a simple motion to and fro. This adaptation is not practical in a machine of the kind in question because the cam slide is always guided in one and the same direction around the two or more needle rows or groups of needle rows.

The object of the invention is gained in that the cam slide or each single slide of the machine is provided with a selecting drum with jacks turning in accordance with a gauge at each movement of the slide or slides; these jacks are controlled, in accordance with a pattern by means of a Jacquard device fastened at one of the curves in the track of the cam slide or each single slide circulating therealong and a stationary mechanism is placed before the Jacquard device controlling the jacks. The last mentioned mechanism is arranged so that the selecting drums can operate several rows in one and the same pattern position.

The invention will be apparent from the following description when read in conjunction with the accompanying drawings forming part of the specification wherein:

Fig. 1 is a sectional view of a selecting drum and the Jacquard device;

Fig. 2 illustrates a part of a pattern card;

Fig. 3 shows a cam to convey jacks working with the Jacquard device;

Fig. 4 illustrates a selecting drum in working position;

Fig. 5 is a top plan view of the machine.

In accordance with Patent No. 2,705,408, the machine possesses 2 needle rows consisting of two single needle rows each. The first mentioned needle rows can be divided lengthwise into single needle groups side by side. The cam slide consisting of an endless uninterrupted chain of single slides **3** with one cam system each (Fig. 5) is moved in a track along and around these two needle rows or groups of needle rows. Each of these single slides **3** is provided with a selecting drum **470**, the axle of which is parallel to the needle bed **57** of the outer single needle row. These selecting drums **470** are fastened on a shaft which carries a gear wheel **47**. It engages a rack **49** by means of its teeth **48**. The pattern drums **470** have longitudinal slots in which pivoted jacks **50** are placed. The end of each of the jacks **50** above the associated pivot point shows a butt **510**. Below the turning point, the jacks **50** are provided with a butt **51**. The

lower disengaged end of each of the jacks **50** extends out of the selecting drum **470**. The butt **510** acts upon resilient needle guides **54**. When such a jack **50** is in operating position, it presses in the needle guide and also the associated knitting needle **55**. This causes the butt **56** of the knitting needle **55** to be drawn out of the cam system (Fig. 4).

The selection of the jacks **50** occurs by means of a known Jacquard device which consists of the prism **42** and the Jacquard card **43** with the perforations **44**. The Jacquard card **43** acts upon the axially adjustable jacks **45** which are guided in a stationary bed **41**. The position of the bed **41** is best seen in Figs. 1 and 5. The upper end of each of these jacks **45** has a but **46** (indicated in Figs. 1 and 3) which works together with the butt **51** of the jacks **50** of the selecting drums **470**. The jacks **45** which meet with no perforations **44** in their Jacquard card **43**, arrive at the working position according to Fig. 1. The butt **46** presses in the associated jack **50** at the lower end so that the butt **510** then causes the pressing in of the corresponding needle guide **54**. The Jacquard device is fastened at a curve of the circulating single slides **3** (Fig. 5). By reason of simplicity the bed **41** for the jacks **45** of the Jacquard device is shown here only. The selecting drums **470** are turned in accordance with the gauge. When their jacks **50** are in a position as required, they are bolted. At the shaft of each selecting drum **470**, an axially movable ring **52** is disposed showing a kind of collar open upwardly. It is in the position of application in Fig. 4.

The jacks **50** are seized at their lower end by this collar according to their position. The ring **52** is moved into the position of application by the cams **53** which are stationary directly behind the Jacquard device. The cams **58** (Fig. 5) are placed ahead of the Jacquard device **42**. These cams have the purpose of moving the ring **52** into the initial position according to Fig. 1 after each revolution of the slide, to clear the position of the jacks **50** for the next selection.

A small rail **59** (Fig. 5) following the cams **58** has the purpose of conveying into the inactive position, by their butts **510**, all jacks **50** previously set in operating position. The cams **58** and the small rail **59** can be disengaged temporarily, when the one and the same position is required of the selecting drums **470** for several revolutions.

To control the jacks **45**, the Jacquard prism **42** is arranged to be raised and to be lowered. It is lowered after the jacks **45** are controlled accordingly to the pattern and these have again controlled the jacks **50**. By means of a special cam **460**, seen in Figs. 1 and 3, provided for each single slide **3**, and secured thereto, the jacks **45** are brought again into their initial position afterwards, i. e. when the selecting drum has moved over the jacks **45** with their butts **46**, the element **460** returns the jacks into the starting position.

The direction of movement of the cam **460** is indicated by the arrow in Fig. 3.

Since Fig. 1 is a cross section, it cannot be seen therefrom that a series of jacks **45** is provided. However, Figs. 3 and 5 clearly show such series. These jacks **45** are actuated by the Jacquard device with its pattern card **43**.

Upon selection of the jacks **45**, the jacks **50** with their butts **51** are actuated by the butts **46** of the jacks **45**. The jacks **45** have been shown in Figs. 1 and 3.

The apparatus provided in accordance with the invention can provide two or more fabrics dependent on the number of needle beds which are arranged one behind the other.

What is claimed is:

1. A flat knitting machine, with at least two needle rows arranged one behind the other and consisting of two single

needle rows each for the production of at least two double-faced pieces of fabric independent of one another, comprising a curved cam slide constituted by a plurality of single slides and movable along the needle rows, a selecting drum positioned at each single slide and turning at the movement of the cam slide in accordance with the gauge, said drums comprising first jacks for controlling the needles, a stationary Jacquard device fastened at one of the curves in the cam slide and controlling said jacks, and a stationary mechanism adjacent the Jacquard device for conveying the jacks into inactive position.

2. A flat knitting machine according to claim 1 wherein said stationary mechanism is disengageable.

3. A flat knitting machine according to claim 1 comprising a stationary bed, movable jacks guided in said bed, the Jacquard device acting upon said movable jacks, said movable jacks each including a butt for controlling the first jacks of the selecting drums, the cam slide supporting a cam to convey the movable jacks into rest position after control of the first jacks.

4. A flat knitting machine according to claim 1 wherein

the first jacks are in a slewable disposition extending out of their respective selecting drums in a lower disengaged end, an axially movable ring beneath said drums with a collar open upwardly to engage the lower disengaged ends of the first jacks.

5. A flat knitting machine according to claim 4 wherein the stationary mechanism consists of cams to lower the axially movable ring and a small rail which presses in the jacks at their upper butts acting upon the knitting needles.

6. A flat knitting machine according to claim 4 wherein stationary cams are positioned adjacent the Jacquard device, said stationary cams raising the axially movable rings.

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