

No. 713,709.

Patented Nov. 18, 1902.

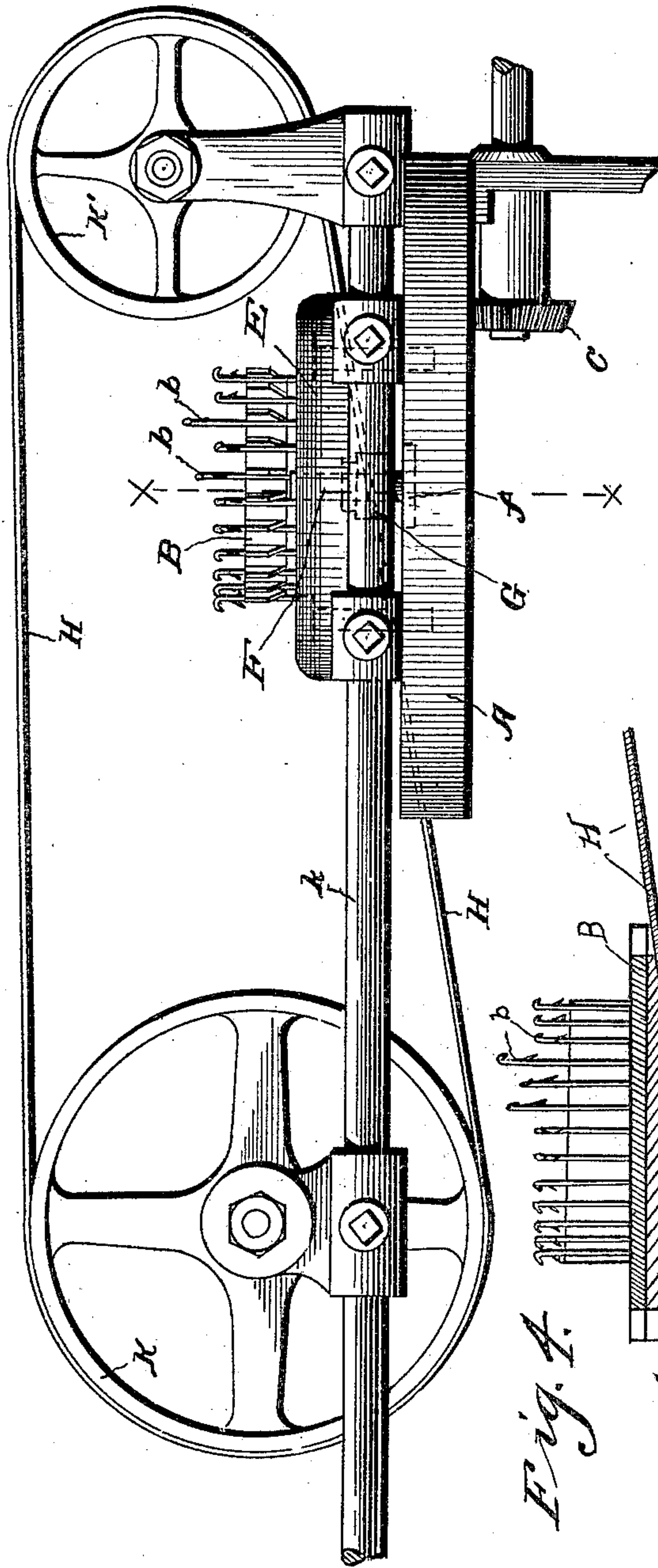
W. STAFFORD & R. C. HOLT.  
KNITTING MACHINE.

(Application filed Mar. 10, 1902.)

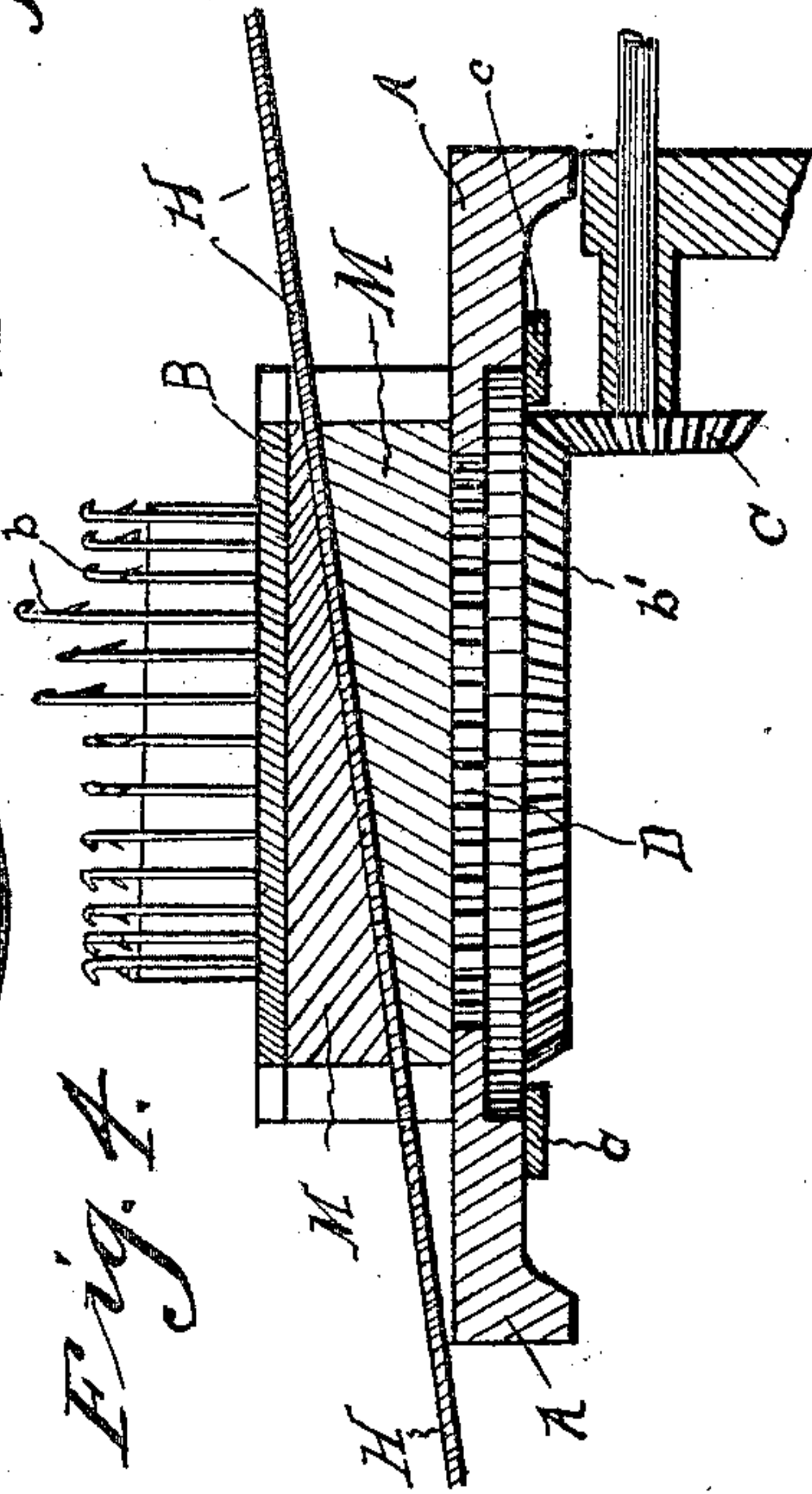
(No Model.)

2 Sheets—Sheet 1.

*Fig. 1.*



*Fig. 4.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

WALTER STAFFORD AND ROBERT C. HOLT, OF LITTLEFALLS, NEW YORK.

## KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 713,709, dated November 18, 1902.

Application filed March 10, 1902. Serial No. 97,654. (No model.)

*To all whom it may concern:*

Be it known that we, WALTER STAFFORD and ROBERT C. HOLT, both citizens of the United States, residing at Littlefalls, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Knitting-Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to circular-knitting machines of that class in which stripes or other designs are formed in the fabric; and its object is to provide an attachment which will increase the range of the pattern-controller and render the operation of the machine more efficient.

With this object in view the invention consists in the novel construction of parts and their arrangement and aggroupment in operative combination, as will be hereinafter fully described, so as to distinguish our improvement from other inventions in the art, and then particularly pointed out and distinctly claimed.

We have fully and clearly illustrated the improvement in the accompanying drawings, forming a part of this specification, and wherein—

Figure 1 is a side elevation of a knitting-cylinder with our improvement applied thereto. Fig. 2 is a view in elevation and partly in section, the section being taken on the line  $xx$  of Fig. 1. Fig. 3 is a top plan view with the parts broken away to show the pattern-controller band and its pinion. Fig. 4 is a sectional view on a vertical plan parallel to Fig. 1 through the band H.

Referring to the drawings, A represents the bed-plate, in which is mounted the cylinder B, carrying the needles  $b$  and having the depending rack  $b'$ , which meshes with the driving-pinion C. On the bottom of the bed-plate is secured an annular gib  $c$  to hold the cylinder in place, and on the cylinder above the bed-plate is a driving-gear D, which drives the driving-pinion for the pattern-controller.

On the bed-plate is secured a bracket E, carrying the driving mechanism for the pattern-controller band. This driving mechanism consists of a vertical pattern-controller

shaft F, having a pinion  $f$  on its lower end driven by the gear D on the cylinder. The bracket is formed with forwardly-projecting lugs  $f'$ , between which is mounted a pattern-controller gear G, which is keyed on the shaft F and which meshes with the teeth  $h$ , formed in one edge of the pattern-controller band H. The pattern-controller band H is endless and supported on two idle pulleys K and K', adjustably mounted on the ends of a rod  $k$ , which is supported by and longitudinally adjustable on the bracket E.

One of the idle pulleys on the rod  $k$  is higher than the other, so that the endless controller-band will be in the same vertical plane as the needle-cylinder, but arranged at an angle to the horizontal plane of the same, and the band is provided on its edge with notches L, spaced apart the required distance to form projections I, adapted to engage the needle butts of certain needles to elevate them, while those needles which pass the edge of the band between the projections are not engaged thereby and not elevated.

It will be seen that the band is removable, so that bands with notches at different distances apart may be employed to form different designs.

On the bed-plate contiguous to the periphery of the cylinder in front of the bracket E are removable guide-plates M, which maintain the pattern-controller band in operative position and which may be removed to permit the introduction of different bands.

The operation is as follows: When the cylinder is revolved by means of the driving-pinion C, the gear D revolves the pinion  $f$  and which in turn transmits its motion to the pattern-controller band H by means of the intermediate pattern-controller gear G, the relative dimensions of the gears D,  $f$ , and G being such as to move the pattern-controller band at a speed equal to the circumferential speed of the cylinder. The machine has generally two different feeds of yarn, and when a projection on the pattern-controller band engages under a butt of a needle it will gradually lift the same until the rotation of the cylinder has carried the needle out of the path of the band, when the needle will engage onto the cam situated adjacent to the band. The yarn taken up by this raised needle is



knit in the fabric to produce a stripe or design therein, while the needles which pass the band opposite the notches are not raised to engage the said cam and for that reason do  
 5 not knit at all on this feed of the machine.

By means of the longitudinal movement of the pattern-controller band the needles are in engagement therewith for a longer period and are raised higher than with machines in  
 10 which the pattern-controller rotates. Thus the range of the pattern-controller is increased.

Having thus described our invention, what we claim is—

15 1. An attachment for circular-knitting machines consisting of a bracket mounted on the bed-plate of the knitting-machine a longitudinally-adjustable rod carried by the bracket and having pulleys on the ends, a pattern-  
 20 controller band on the pulleys disposed at an angle to a horizontal plane to the knitting-cylinder, said bracket having a shaft provided with a gear to engage the pattern-controller and a pinion on its ends driven from  
 25 the cylinder, substantially as described.

2. An attachment for circular-knitting machines consisting of a pattern-controller band movable longitudinally at an angle to the horizontal plane of the knitting-cylinder and

provided with projections on its edge adapted to engage under the butts of the needles in combination with means for driving the said pattern-controller band, substantially as described. 30

3. An attachment for circular-knitting machines comprising a pattern-controller consisting of an endless band having notches formed on its edges and movable longitudinally at an angle to the horizontal plane of the knitting-cylinder and means whereby the  
 40 band is driven by the cylinder, substantially as described.

4. An attachment for circular-knitting machines comprising a pattern-controller consisting of an endless band having projections  
 45 adapted to engage the needle-butts of the machine, said band being movable longitudinally at an angle to the horizontal plane of the knitting-cylinder, in combination with means for driving said band, substantially as described. 50

In testimony whereof we have affixed our signatures in presence of two witnesses.

WALTER STAFFORD.

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Witnesses:

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