

(No Model.)

2 Sheets—Sheet 1.

J. H. REED.
CIRCULAR KNITTING MACHINE.

No. 408,523.

Patented Aug. 6, 1889.

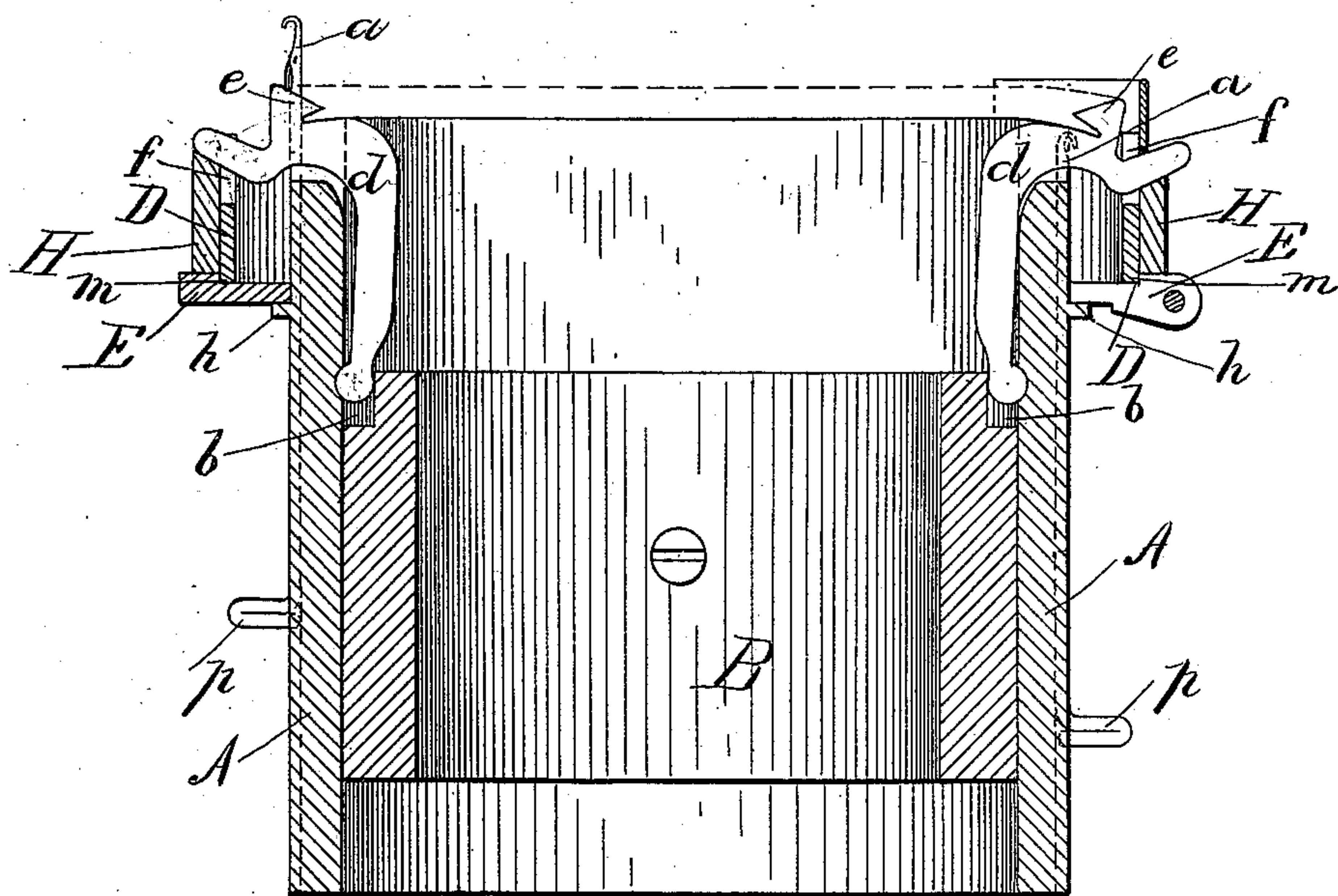


Fig 1.

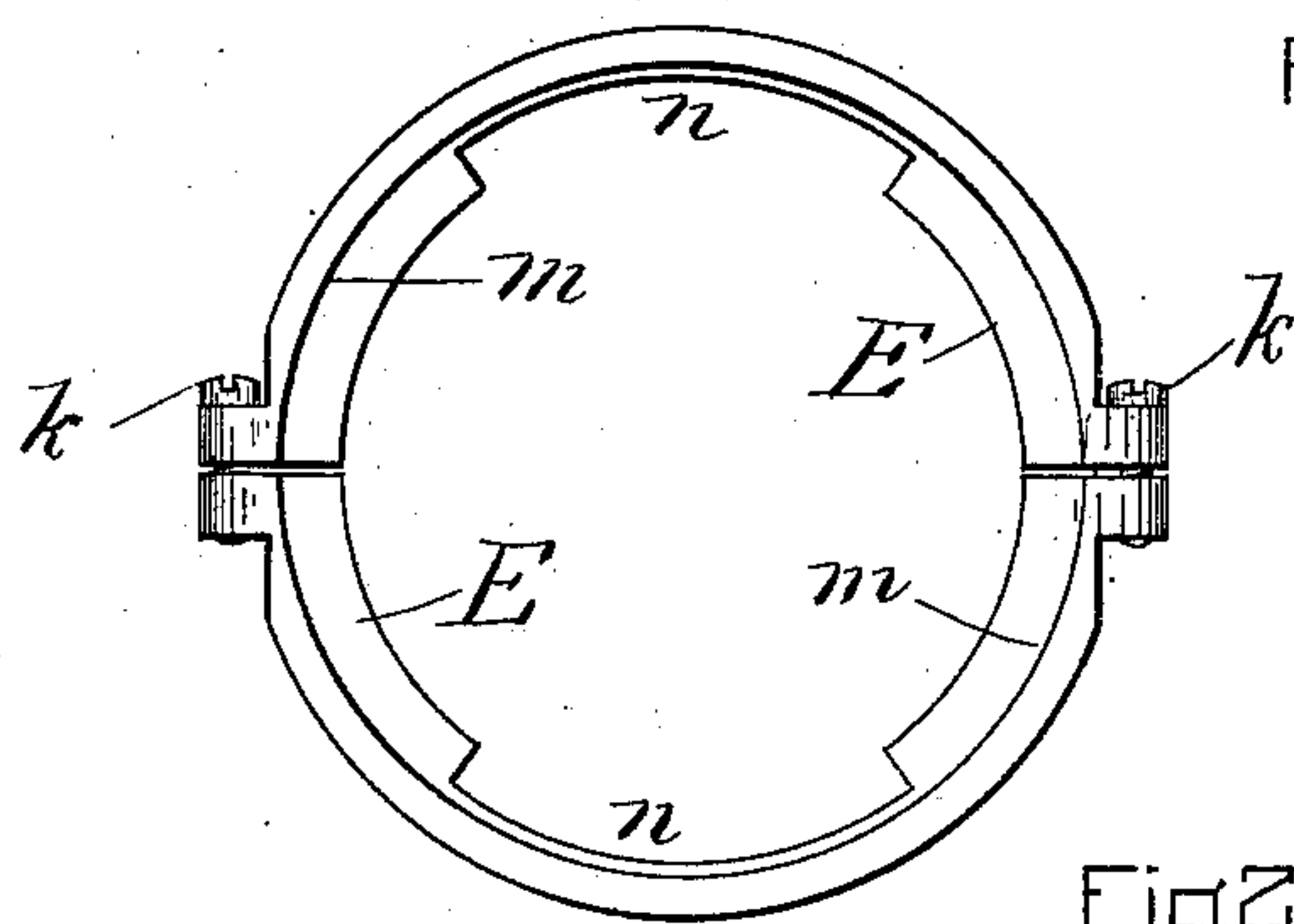


Fig 2.

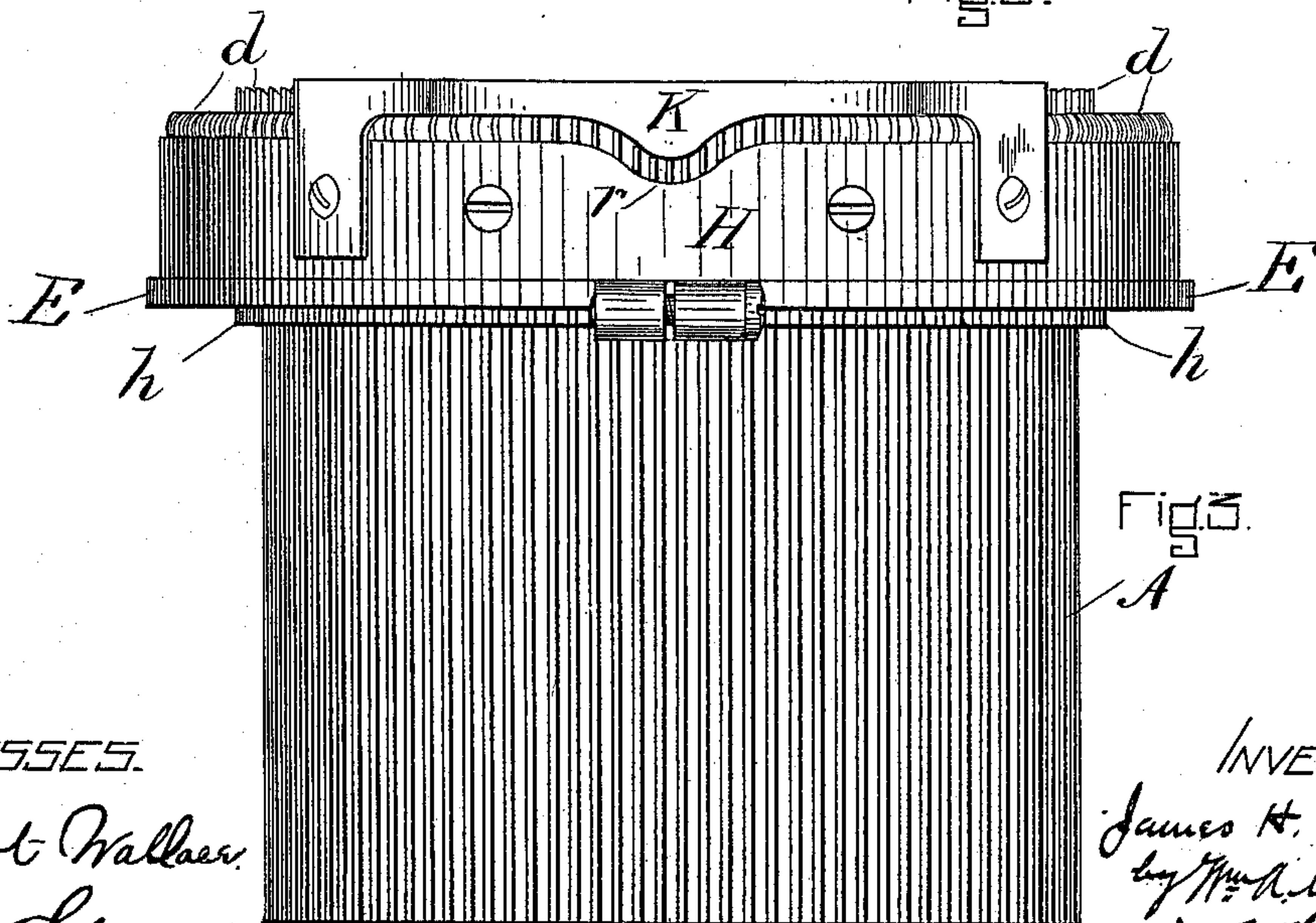


Fig 3.

WITNESSES.

Robert Wallace.
Chas. Spaulding.

INVENTOR.
James H. Reed
by Wm. H. Macleod
his atty

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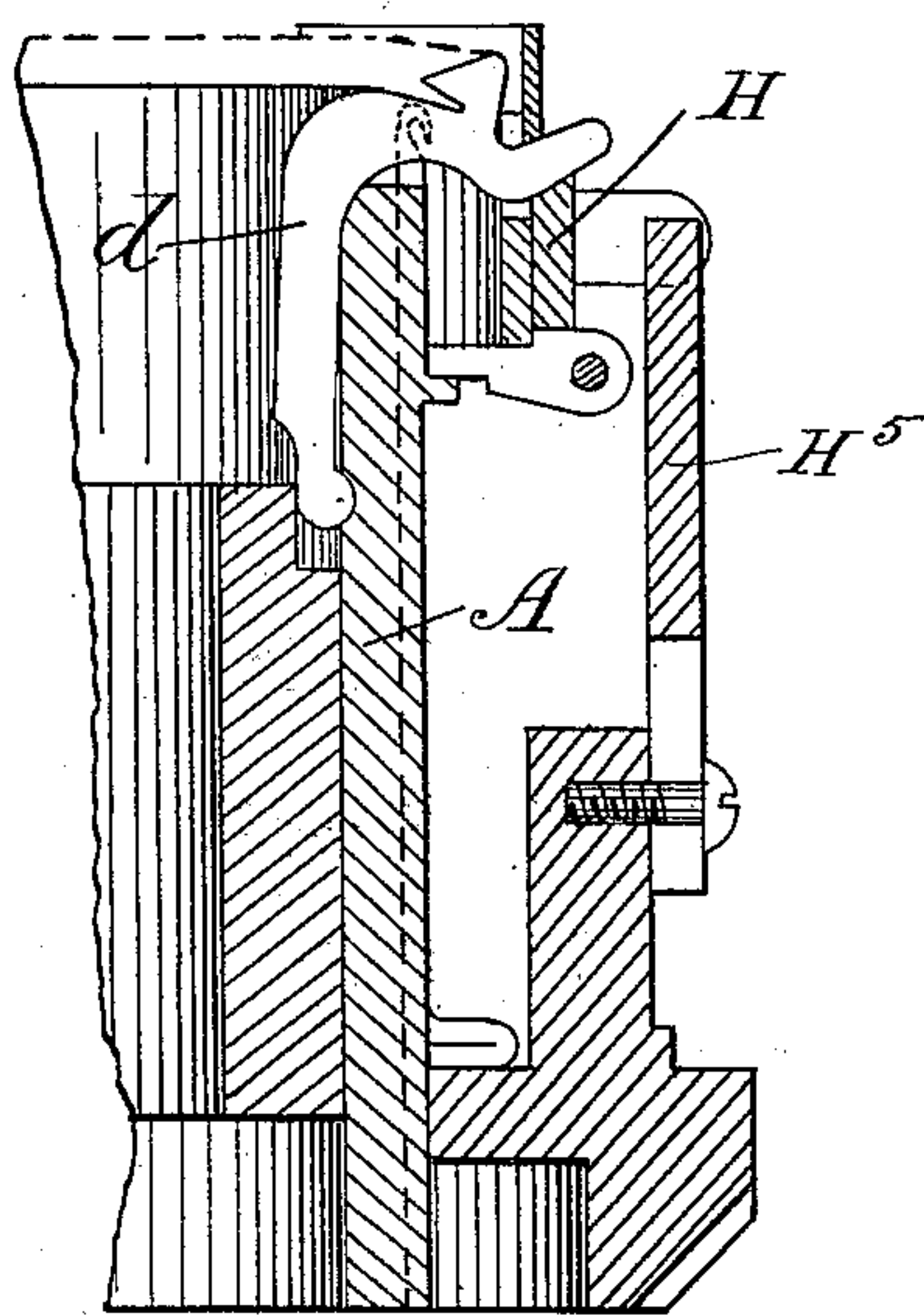


Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES H. REED, OF LYNN, MASSACHUSETTS.

CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 408,523, dated August 6, 1889.

Application filed June 25, 1888. Serial No. 278,136. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. REED, of Lynn, county of Essex, State of Massachusetts, have invented certain new and useful
5 Improvements in Circular-Knitting Machines, of which the following is a specification, reference being had to the drawings accompanying and forming a part hereof, in which—

Figure 1 is a vertical section through the
10 needle-cylinder with my improvement applied. Fig. 2 is a plan view of the clamping-ring reduced in size. Fig. 3 is an elevation showing the needle-cylinder of a circular-knitting machine with my improvement at-
15 tached. Fig. 4 is a section showing the means by which the sinker or cam-ring H is actuated from the cam-ring proper of the machine.

My present invention is an improvement on the machine shown and described in a
20 pending application for Letters Patent filed by me in the United States Patent Office, Serial No. 264,613. In the machine shown in my said application the jacks, which operate to throw the last strand of yarn which has
25 been knitted into the work back against the preceding strands, are liable to get bent in use, and thus to become partially or wholly inoperative.

To avoid this difficulty and to insure the
30 positive operation of the jacks are the chief objects of my invention, which consists in mounting the jacks in slots cut in a ring set outside of the needle-cylinder in such position that the rear ends of the jacks will lie
35 in the slots, and the jacks will thus be protected from any lateral strain arising from the operation of the cam-ring and rider by which they are operated; and it further consists in the construction and arrangement of
40 the ring and rider by which the jacks are actuated, all as will be hereinafter set forth.

My invention will be clear from the following description of the machine shown in the drawings, in which said invention is embodied.
45

A is a circular needle-cylinder of the well-known construction, with vertical grooves on its exterior for the reception of the needles *a*. Inside this needle-cylinder I secure a ring or
50 cylinder B, which is cut away or grooved at its upper edge next the needle-cylinder, as

shown at *b*, to receive the lower rounded ends of the jacks *d*, which rest in a groove on the inside of the needle-cylinder and are held in the said groove by the ring B. By thus seat- 55 ing their rounded lower ends the jacks are allowed to move forward and backward relatively to the needle-cylinder. The jacks are of the shape shown in Fig. 1, and rise vertically inside the cylinder A and then bend 60 outwardly over the top of the cylinder, slots being provided therein, as shown in Fig. 1, to receive them. The jacks alternate with the needles, and are each provided on top with a beak *e*, forming a mouth, in which the strand 65 of yarn is received as the jack moves forward. Rearwardly of the beak *e* the jack is provided with a projection which lies in a slot *f* in the guide-ring D, Fig. 1. The slots in the ring D and the top of the needle-cylinder form two 70 guides for the upper portion of each jack, and the jacks are thus prevented from being bent laterally and their free movement is insured. The ring D is of somewhat greater diameter than the needle-cylinder, as shown, 75 in order that it may be in the right position relatively to the jacks, and it is supported by means of a clamping-ring E. (Shown in reduced size in Fig. 2.) This ring rests on a ledge *h* on the outside of the needle-cylinder, 80 and is constructed in two parts secured to each other by screws *k*, so that it may be clamped securely around the needle-cylinder. The upper surface of the clamping-ring is recessed, forming a shoulder at *m*, inside which 85 the ring D rests. The clamping-ring thus bears on the ring D and serves to secure the ring D rigidly in place. The clamping-ring is cut away, as shown at *n*, Fig. 2, so that if a needle requires to be removed from the cyl- 90 inder the clamping-ring has only to be loosened and slipped around until one of the spaces *n* is opposite the needle, when the needle may be slipped up and its shank *p* passed through the opening or space *n* in the clamp- 95 ing-ring. This arrangement permits a needle to be removed and replaced without taking off the clamping-ring and connected parts. The jacks are actuated by means of a cam- 100 ring H, which rests on the clamping-ring immediately outside the ring D, as shown, and which is slightly beveled on top (see Fig. 1)

to receive the outward projections of the jacks. The cam-ring II has a depression or cam (shown at *r*, Fig. 3) at one point, and above this depression a rider K is secured, 5 the lower edge of the rider corresponding in curvature to the curvature of the depression or cam. The rider projects downwardly at each end and is secured rigidly to the cam-ring. The horizontal portion of the rider is 10 offset or bent inwardly, so as to overlies the ends of the jacks, and a sufficient space is left between the rider and cam-ring to receive the ends or projections of the jacks. By this arrangement it will be clear that the jacks 15 will be carried downward and backward by the cam-ring and rider as the cam-ring revolves.

For the purpose of operating the cam-ring H, it is provided with projections secured 20 thereto, which co-operate with a vertical arm or projection H⁵, secured to the cam-ring proper—that is, the needle cam-ring of the machine, as will be clear from Fig. 4.

It will be noted that the cam-ring and rider 25 for actuating the jacks bear on the jacks very close to the point at which they pass through the slots in the ring D, and thus the danger

from bending the jacks while they are being operated is reduced to a minimum.

What I claim is—

1. A knitting-machine provided with jacks 30 seated inside the needle-cylinder and extending upwardly and outwardly over said cylinder, and having a guide-ring outside of said cylinder provided with slots which receive 35 the outer ends of the jacks, whereby the jacks are guided and their free movement insured, substantially as shown and described.

2. The combination, with the needle-cylinder, of the jacks seated inside the needle-cyl- 40 inder and extending upwardly and outwardly over said cylinder, the slotted guide-ring outside said cylinder, and the cam-ring and its rider, which actuate the jacks, substantially 45 as set forth.

3. The combination, with the needle-cylinder, of the jacks, the slotted guide-ring placed outside the cylinder and resting on the clamping-ring, and the clamping-ring, sub- 50 stantially as shown and described.

JAMES H. REED.

Witnesses:

WM. A. MACLEOD,
ROBERT WALLACE.