

(No Model.)

3 Sheets—Sheet 1.

F. R. GREENE.

STRIPING ATTACHMENT FOR KNITTING MACHINES.

No. 544,849.

Patented Aug. 20, 1895.

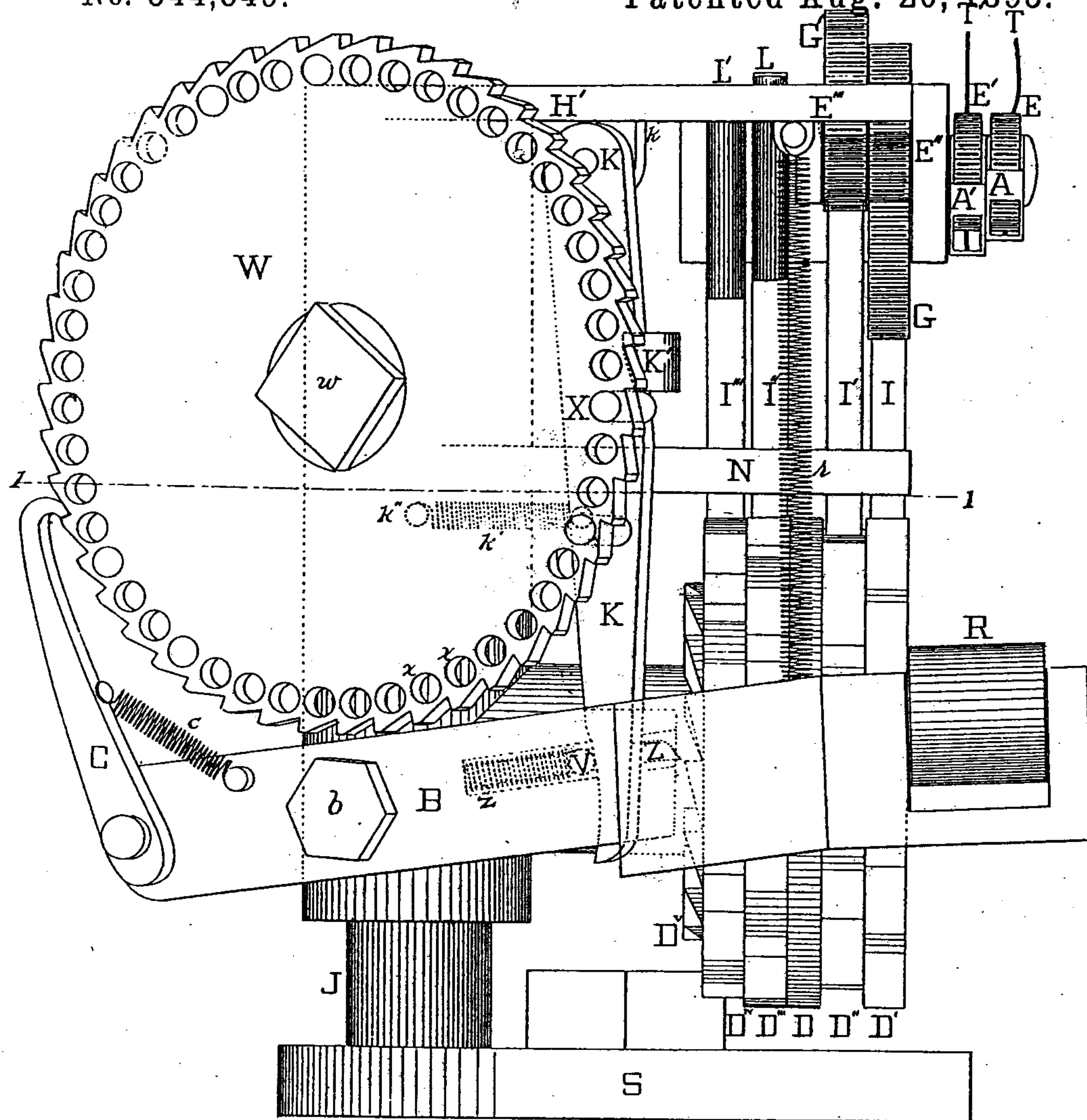


FIG. 1

Fred. R. Greeney,

INVENTOR:

WITNESSES :

W. Hazell
H. E. Crane

87

Edward P. White.

ATTORNEY.

(No Model.)

3 Sheets—Sheet 2

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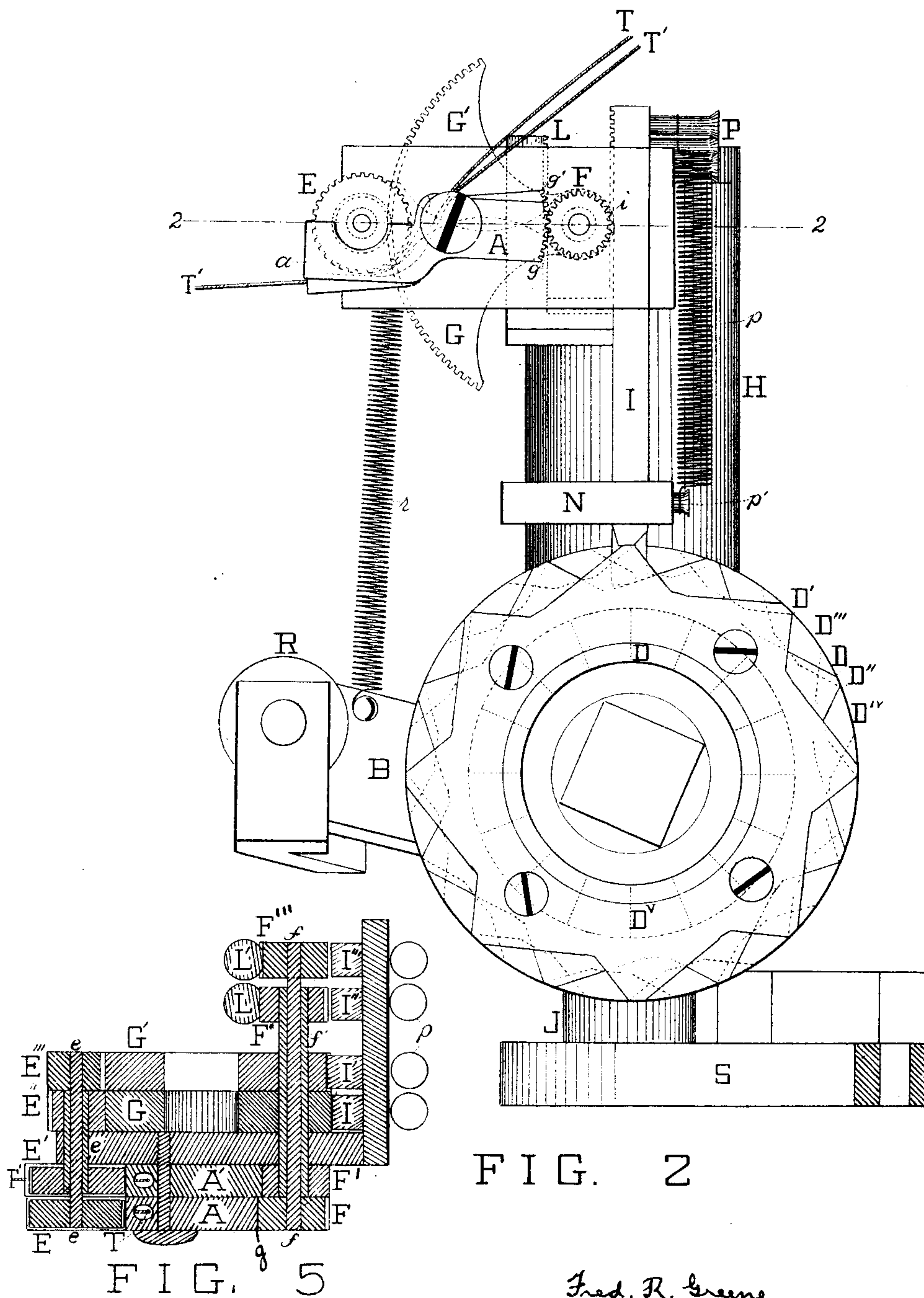


FIG. 2

Fred. R. Greene,

INVENTOR

BY

Edward P. White

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WITNESSES:

[Signature]
H. E. Cram

(No Model.)

3 Sheets—Sheet 3.

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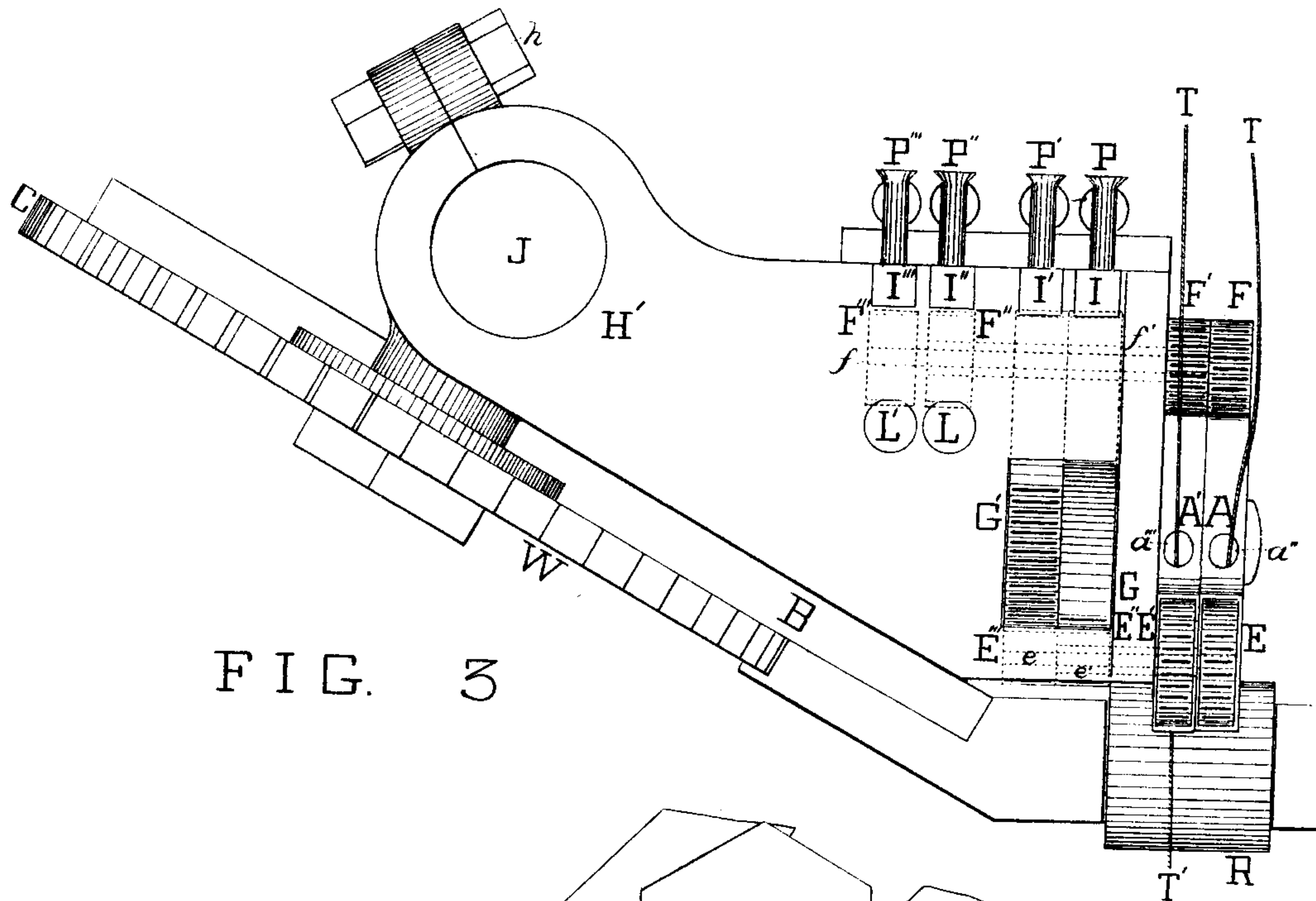


FIG. 3

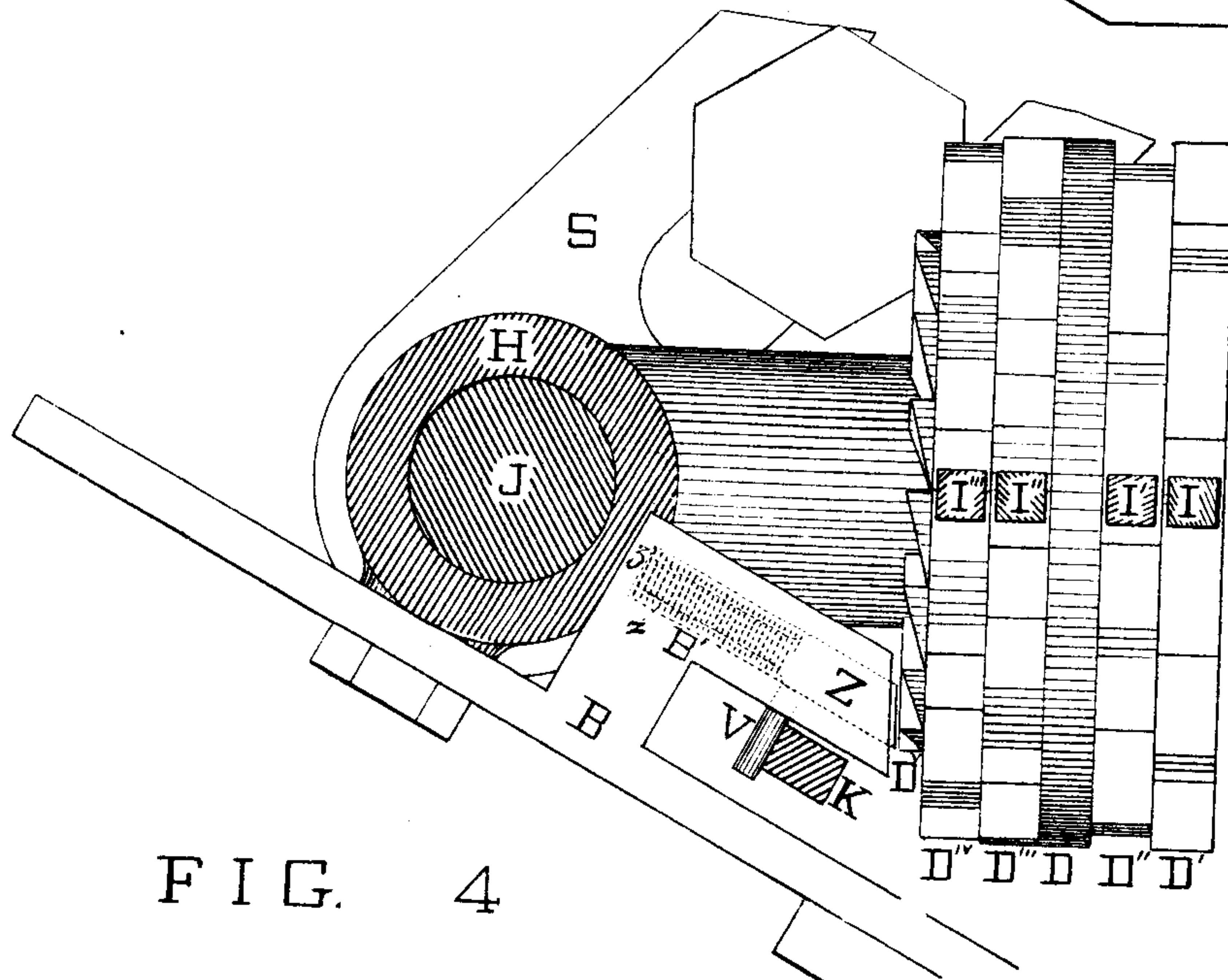


FIG. 4

WITNESSES:

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H. E. Crane

Fred. R. Greene, INVENTOR

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UNITED STATES PATENT OFFICE.

FRED R. GREENE, OF AMSTERDAM, NEW YORK.

STRIPING ATTACHMENT FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 544,849, dated August 20, 1895.

Application filed March 25, 1895. Serial No. 543,114. (No model.)

To all whom it may concern:

Be it known that I, FRED R. GREENE, a citizen of the United States, residing at the city of Amsterdam, county of Montgomery, State of New York, have invented a new and useful Improvement in Striping Attachments for Knitting-Machines, of which the following is a specification.

My invention relates to improvements in knitting-machines; and the object of my invention is to produce a device and mechanism by means of which different-colored threads or yarns may be knit in stripes in a uniform manner and so arranged that the exact amount of yarn or thread in each stripe may be predetermined and the yarn or thread broken positively and the next thread taken up and knit in without overloading or dropping a stitch. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a plan. Fig. 4 is a horizontal section through 1 1 on Fig. 1, and Fig. 5 is a horizontal section along the line 2 2 on Fig. 2.

Similar letters refer to similar parts throughout the several views.

I attach the slotted bar S to the table of a knitting-frame, which carries a standard J, about which I place a sleeve H, securing the frame H', and held in position by the clamping-bolt h. The lever B is pivoted to the sleeve H at b, and is operated by means of a cam upon the knitting-cylinder, which comes in contact with the roller R at one end of the lever B. Between the fulcrum b and the point of application of power I arrange a spring r, secured to the lever and to the frame H' near the top of the machine. The function of the spring is to raise the lever B after the cam has been removed therefrom.

To the end of the lever B opposite that acted upon by the cam I arrange the pawl C, to which I attach the spring c, which is secured at one end to the lever B, which tends to hold the pawl in contact with the notched pattern-wheel W, whose periphery is notched, and which wheel W is movable about the axle w, projecting from the sleeve H. To the bracket k, depending from the frame H', I pivot the upper end of the arm K, and about

midway between its ends I arrange the lug K', which may be operated upon by a pattern-screw X, placed within the series of perforations x x, extending through the wheel W contiguous to its periphery. The lower end of the arm K rests against the pin V, which is secured to the plunger Z, which plunger Z fits within a recess in a bracket B', secured to the lever B and operated by a coiled spring z, the resiliency of which tends to throw the plunger Z out of the recess and in contact with the notches D^v on the wheel D. The function of the arm K is to hold the plunger Z away from and out of contact with the wheel D, and when the pattern-screw X in one of the perforations x x on the wheel W comes into contact with the lug K' on the arm K the coiled spring k', attached at one end to the sleeve H and at the other end to the arm K, causes the arm K to return and to force the plunger Z into the recess after the pattern-screw X has passed the lug K'.

When the cam operates the lever B, the pawl C is raised one notch, when the spring r, after the cam has ceased to operate the lever, draws the lever B upward and thus the pawl C downward, causing the wheel W to revolve, which brings the pattern-screw X in contact with the lug K' and the plunger Z in contact with the notches D^v on the wheel D, preparing it for the next revolution of the cam, which will cause the wheel D to revolve one notch.

The wheel D has its periphery divided into five sections, lettered, respectively, D^I D^{II} D^{III} D^{IV}, and provided along its interior face with a series of notches D^v, by means of which contact is made with the plunger Z and motion imparted to the wheel. Each of the sections in the periphery—to wit, D^I D^{II} D^{III} D^{IV}—are constructed with a different system of elevations and depressions, as shown in Figs. 2 and 4. Resting upon the sections D^I D^{II} D^{III} D^{IV}, respectively, I arrange the rods I^I I^{II} I^{III} I^{IV}, suitably supported in the frame N and H', I and I' having near their upper end each a toothed rack i engaging with the gears upon the rear ends of the two segments G and G', respectively, the front ends of which are also geared and engage with the pinions E'' and E'''. The segments G and G' are arranged to revolve in parallel vertical planes.

One of the pinions E'' and E''' is fixed to the shaft, the other fitted to the sleeve e' around the shaft. Each pinion operates a feed-wheel, the pinion E''' revolving a feed-wheel E, placed upon the other end of the shaft, while the sleeve-pinion revolves the feed-wheel E', fitted upon the sleeve around the shaft. The feed-wheels E and E' are milled in such a manner as to readily feed the yarn. The racks L and L' on the rods I'' and I''', respectively, engage with the pinions F'' and F''', the pinion F''' placed on a shaft f, to the end of which shaft is a gear-wheel F'. The pinion F'' is on a sleeve f' on the shaft f, which is attached to the gear-wheel F', said gear-wheels meshing with the racks g g', respectively, on the end of the thread-guides A A', respectively. The upper end of each of the rods I I' I'' I''' is provided with a screw P P' P'' P''', to which is attached the upper end of a spring p, the lower end of which spring is attached to a screw p' in the frame N, and which tends to hold the rods in touch with the sections D^I D^{II} D^{III} D^{IV} of the wheel D, respectively.

At one side of the feed-wheels E and E', I pivot two thread-guides A' and A, which have a little greater thickness than the wheels. The recesses a and a' are hollowed out in the ends of the guides, respectively, in which the under part of the feed-wheels revolve. The yarn enters the apertures a² and a³ in the feed-guides, passing through the recesses a a' under the feed-wheels E and E', and out through the other aperture to the burr-wheel. When a thread-guide is raised by action of the rods I or I', it acts as a shoe upon the feed-wheel, the yarn is held fast, and the end connected with the knitting-cylinder is broken off by its revolution. The elevations and depressions upon the wheel D are so arranged that when one of the feed-wheels is revolved the corresponding feed-guide is released as soon as sufficient yarn has been fed out, and it then runs freely into the fabric until a change is desired, when the other feed-wheel revolves, feeding out the other thread. While the thread-guide is released, the segment is brought back into place and made ready to repeat. By decreasing the size of elevations or depressions upon the cam-wheels—that is, upon the wheel D which operates the feed-wheel—a partial revolution of the feed-wheels E E' may be produced and the length of yarn fed out may be regulated, as desired.

One of the greatest advantages to be derived from my construction of the mechanism is that while feeding in a sufficient length of yarn to insure its invariably being caught up and knit into the fabric the other thread can be cut so quickly that a long lap is avoided, the length of the lap corresponding to the relative positions of the cams upon the cam-wheel operating the guides and the corresponding feed-wheels.

The operation of my device is easily understood from the description. Having attached the same to the knitting-frame in such a man-

ner that a cam on the knitting-cylinder shall operate the lever B, the threads T T are placed in contact with the burr-wheel, one of the threads being allowed to feed readily into the fabric. The operation of the cam causes the revolution of the wheel D, which, by setting in motion the rods, and therefore the gears, causes the thread-guide to feed out one of the threads and break the other. I also arrange mechanically, so that the exact amount of yarn is predetermined, the breaking taking place positively at the same time that the thread desired is released and fed to the burr-wheel, or at any time during the feeding in of the new thread.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a striping device for knitting machines, two thread guides each provided with a feed wheel, two segments operating said feed wheels, reciprocating racks meshing with said segments, a cam wheel adapted to impart motion to said reciprocating racks, a pinion adapted to raise or lower each of said thread guides, reciprocating racks adapted to operate said pinions, said racks operated by said cam wheel, substantially as described and for the purpose set forth.

2. In a striping device for knitting machines, a standard mounted on a knitting frame, a pawl carrying lever, a notched wheel operated by said lever, a cam wheel rotated by said lever, a means for regulating the movement of said cam wheel actuated by said notched wheel, a series of vertical rods having their ends resting upon said cam wheel, racks at the upper ends of said rods, gears meshing with said racks, segments carrying said gears, pinions meshing with said segments, feed wheels operated by said pinions, a thread guide mounted at one side of each feed wheel, substantially as described and for the purpose set forth.

3. In a striping device for knitting machines, two or more thread guides centrally pivoted, a passageway in each of said guides for a thread or yarn, a wheel adapted to rotate in each of said guides in contact with said thread or yarn, a means for actuating said guides, each of said thread guides adapted to be brought in contact with its respective feed wheel alternately, by the operation of which the yarn is held fast in one of said thread guides, and the end of the yarn is thus broken by the continued revolution of the knitting cylinder, while the yarn in the other thread guide is running freely into the fabric.

4. In a striping device for knitting machines, two or more thread guides centrally pivoted to the machine, racks, pinions and shafts operating said thread guides, a passageway in each of said thread guides under each feed wheel for the thread or yarn, a wheel operated within each thread guide in contact with said thread or yarn, said racks and pinions adapted to raise and lower said thread guides in such a manner as to bind or

loosen the thread in connection with its respective wheel, each of said thread guides adapted to be brought in contact with its respective feed wheel alternately, by the operation of which the yarn is held fast in one of said thread guides, and the end of the yarn is thus broken by the continued revolution

of the knitting cylinder, while the yarn in the other thread guide is running freely into the fabric.

FRED R. GREENE.

Witnesses:

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JOSEPH N. WHITE.