

(No Model.)

2 Sheets—Sheet 1.

R. A. GAGE.

LOOPING ATTACHMENT FOR CIRCULAR KNITTING MACHINES.

No. 431,046.

Patented July 1, 1890.

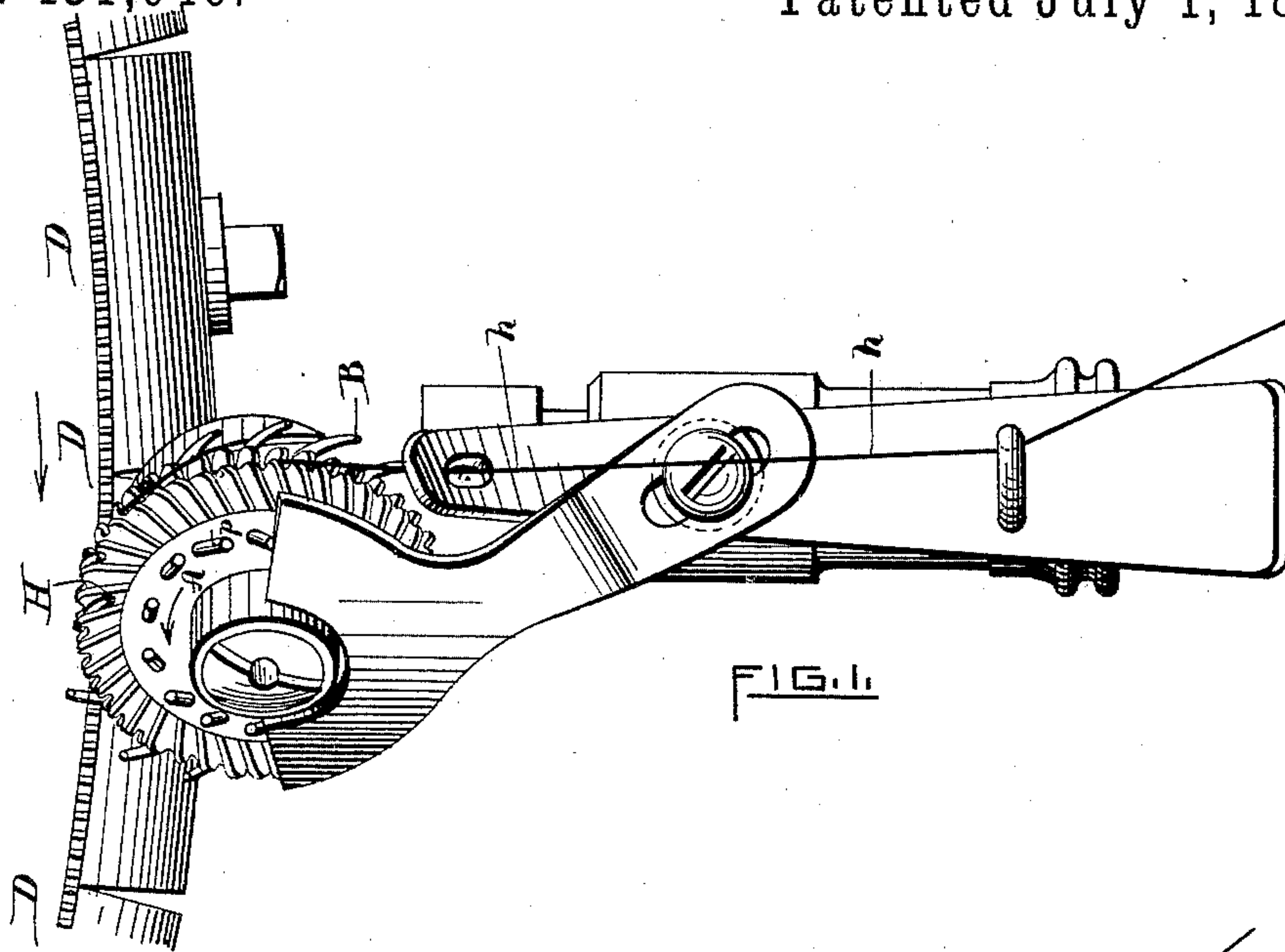


FIG. 1.

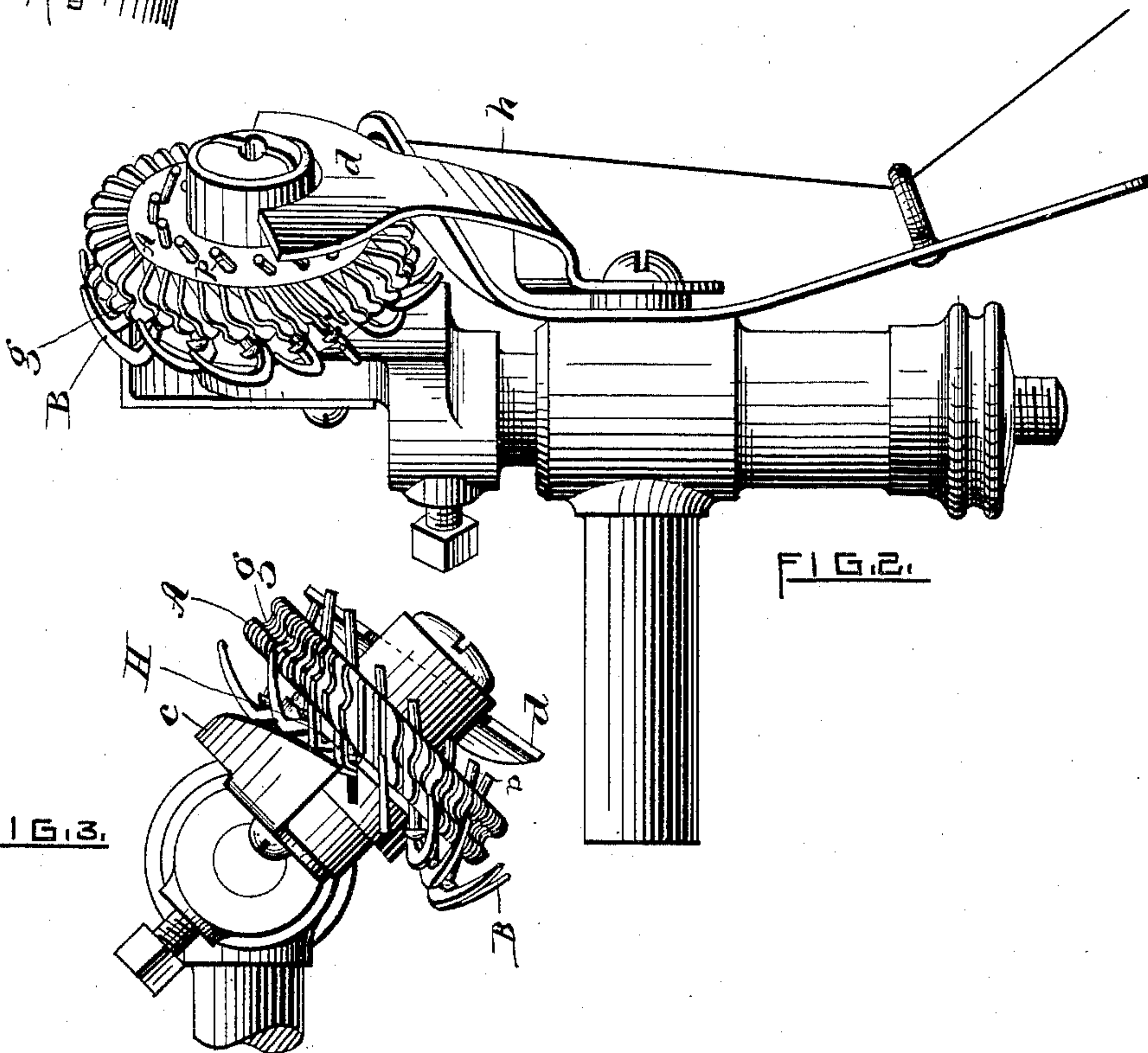


FIG. 2.

FIG. 3.

WITNESSES.

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W. L. Funnell

INVENTOR.

R. A. Gage
By J. E. Goldworthy atty

(No Model.)

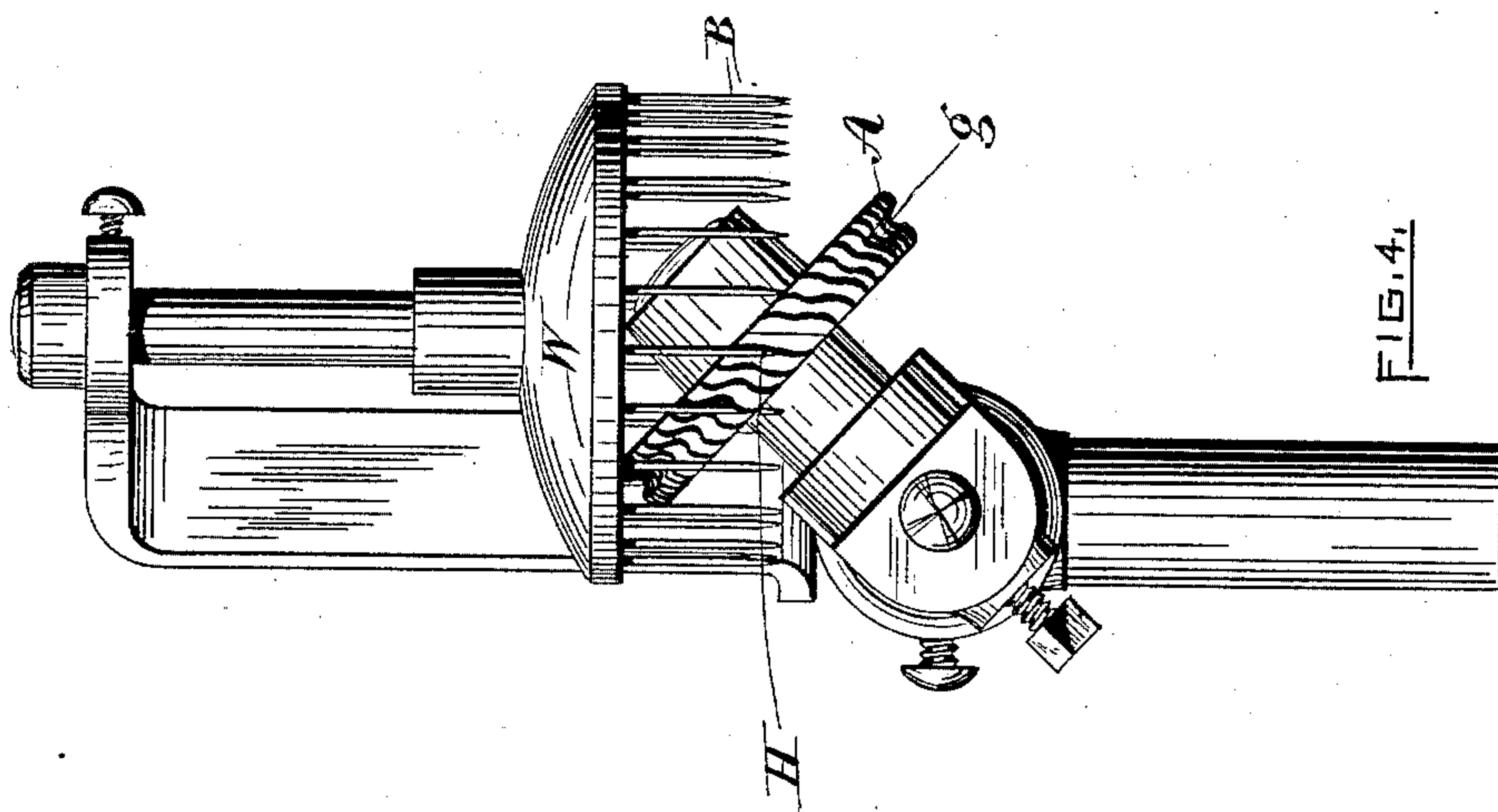
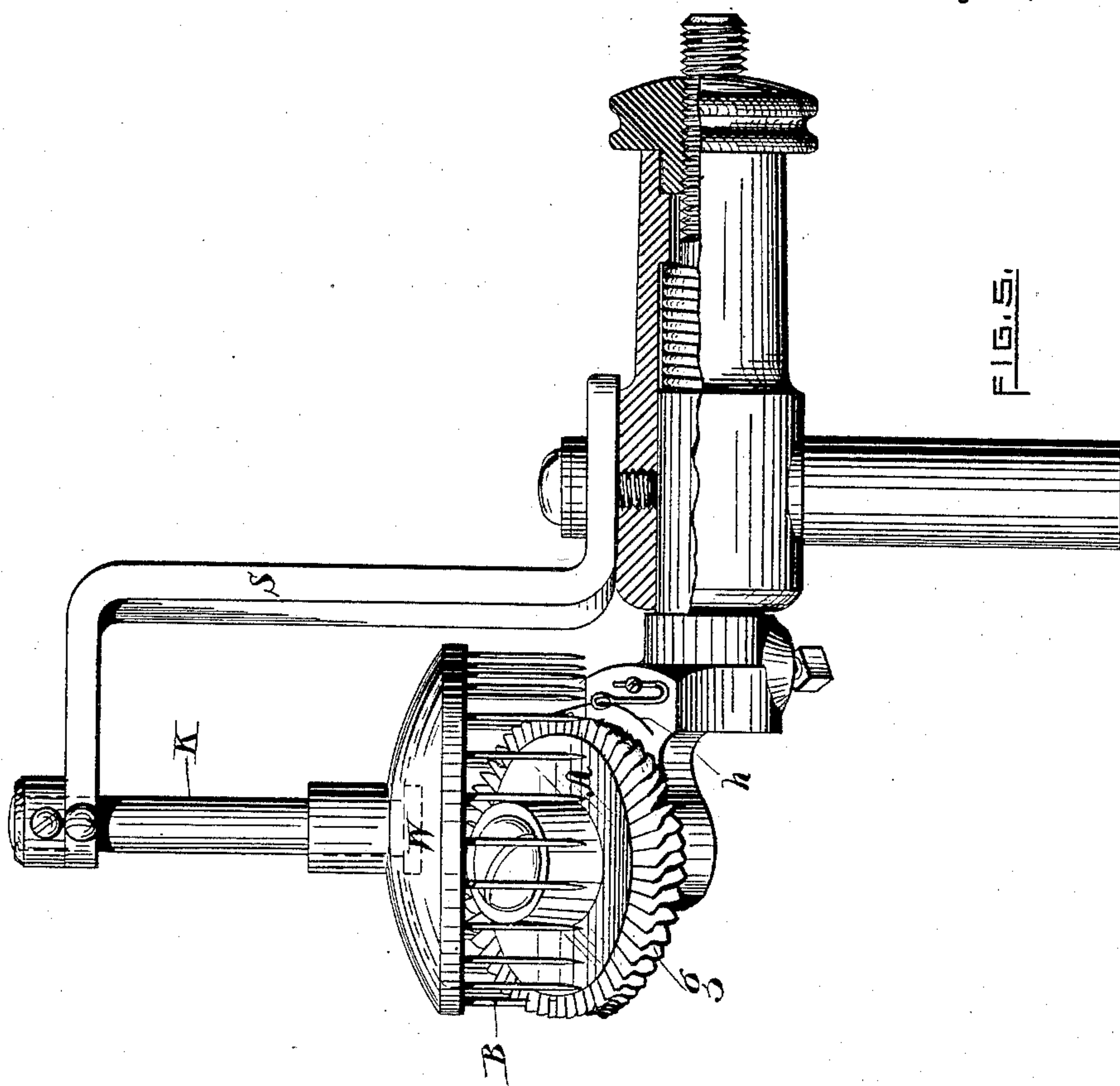
2 Sheets—Sheet 2.

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WITNESSES.
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W. E. Freeman

INVENTOR.
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UNITED STATES PATENT OFFICE.

RICHARD ANTHONY GAGE, OF PAWTUCKET, RHODE ISLAND.

LOOPING ATTACHMENT FOR CIRCULAR-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 431,046, dated July 1, 1890.

Application filed February 8, 1886. Serial No. 191,131. (No model.)

To all whom it may concern:

Be it known that I, RICHARD ANTHONY GAGE, of the city of Pawtucket, in the county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Looping Attachments for Circular-Knitting Machines; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to improvements in the feed of the filling in circular-knitting machines applied to the manufacture of plush goods; and the object of my improvement is to apply the yarn filling interlaced with the needles without bending or pushing back of certain needles in the circle to permit of the alternate in and out of the yarn in the circuit.

The invention consists, essentially, of fingers or claws moving at stated intervals into certain interstices of a burr-wheel provided with a groove let into the teeth, the fingers depressing the yarn filling below the circumference of such groove, and in the details of construction hereinafter explained.

Figure 1 represents a view of part of a knitting-machine with my device applied thereto. Fig. 2 is an elevation of the burr-wheel, the fingers applied thereto, upper cam, and the stand by which the same are maintained in proper relation to the needles. Fig. 3 represents a side view of the burr-wheel, the fingers, and the upper and lower cams that alternately raise and depress the fingers; and Figs. 4 and 5 represent in elevation two views of my invention wherein the fingers are attached to the periphery of a concave wheel on a shaft elevated above the burr-wheel and the stands that support both wheels. Fig. 5 is shown partly in section.

Similar letters of reference refer to corresponding parts in all the drawings.

D represents needles set vertically in a circular needle-bed, a section of such bed being shown in Fig. 1. The burr feed-wheel A is set obliquely to the needle-bed, and serves to feed the yarn filling *h* to the needles. A groove *g*, which carries the yarn, is cut into the oblique teeth surrounding the wheel A. The relations of the circular needle-bed and

the feed-wheel are substantially the same as two gear-wheels, the needles of the needle-bed operating the teeth in the spaces between the blades of the wheel A. At the point of central contact H the line of the groove *g* carrying the yarn filling passes inside of the circle formed by the needles, and would deposit the continuous thread of filling on the concave surface of the needle-circle, unless, as heretofore, the needles or some portion of them be temporarily pushed back beyond the line of the groove *g* in the wheel A.

That the thread-filling may be deposited partly on both the concave and convex surfaces of the needle-circle, (for this condition is necessary to interweave the filling in the fabric,) the method heretofore employed has been to partially fill certain of the grooves in the feed-wheel A with some hard substance, which, coming in contact with certain needles, would spring them back to permit the filling to be deposited on the convex surface of the needle-circle. Experience has shown that such constant springing of the needles tends to throw them out of line, to break them, and otherwise to rapidly unfit them for service, necessitating the frequent substitution of new needles. My improvement overcomes these objections, inasmuch as none of the needles are pushed or sprung from their vertical position in the needle-bed.

In lieu of the filling of certain grooves in the feed-wheel A to spring the needle back, I employ a corresponding number of fingers or claws B, which at the point of central contact H carry the yarn filling inside the circumference of the groove *g* and deposit the same on the convex surface of the needle-circle just beyond the point H. The fingers are pivoted to the lower hub of the feed-wheel, and are operated below said wheel by the cam *c*, which carries each in turn with the yarn filling inside the groove *g* at the point of central contact H, as shown in Fig. 3. After the point H is passed the finger B by force of gravity, drops and releases the yarn filling.

To make the drop motion of the finger certain after passing the point H, pins *p* are provided for each finger, which, passing under the upper cam *d*, force the fingers into position to be again operated on by the lower cam in every revolution by the feed-wheel.

A modification of the principle is shown in a front and side view, Figs. 4 and 5, wherein the fingers B are attached to the periphery of the wheel W. The wheel W revolves by contact of the fingers in the grooves of the feed-wheel on a stationary shaft K, supported by the stand S, which is attached to the stand of the feed-wheel.

I do not herein claim the specific construction shown in Figs. 4 and 5 of the accompanying drawings, inasmuch as the particular construction shown in said figures is claimed by me in my application, Serial No. 319,294, filed July 31, 1889, as a division of the present application.

I make no claim to the feed-wheel as such, nor to the stand which supports it; but

I claim as new and desire to secure by Letters Patent—

1. The combination, with the feed-wheel,

yarn-guide, and needles of a circular-knitting machine, of fingers or pins, and means, substantially as described, for sustaining and operating said fingers or pins, substantially as specified.

2. The combination, with the yarn-guide and the feed-wheel, of fingers or pins periodically entering given spaces in the said feed-wheel and acting to depress therein the yarn from the yarn-guide, and means, substantially as described, for sustaining and operating the said fingers or pins, all as and for the purposes set forth.

3. The combination of fingers B, pins *p*, cam *c*, cam *d*, and feed-wheel A, substantially as specified.

R. ANTHONY GAGE.

Witnesses:

B. A. GAGE,

H. B. CARPENTER.