

(No Model.)

F. B. WILDMAN.

TENSION TAKE-UP DEVICE FOR KNITTING MACHINES.

No. 601,297.

Patented Mar. 29, 1898.

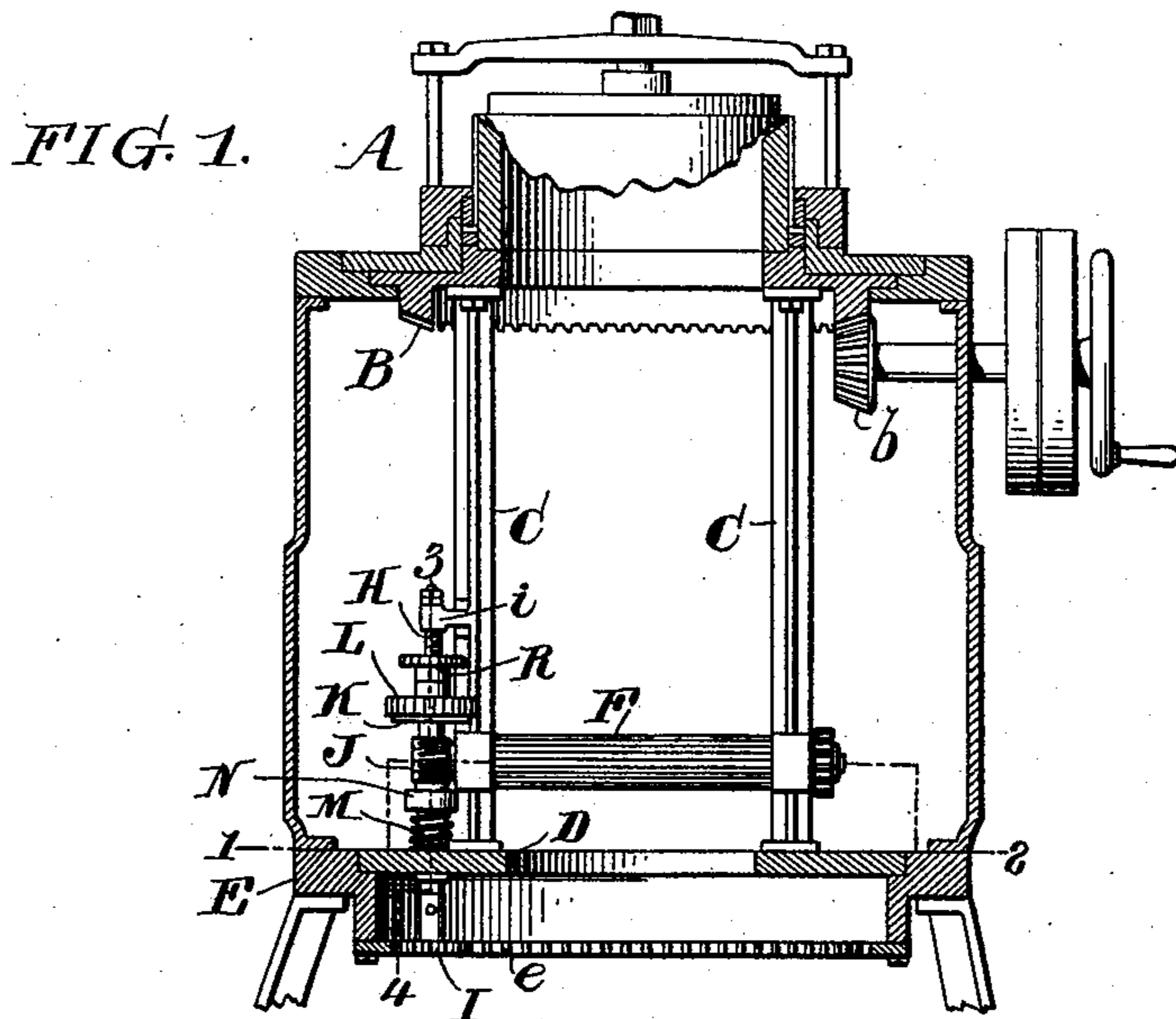


FIG. 2.

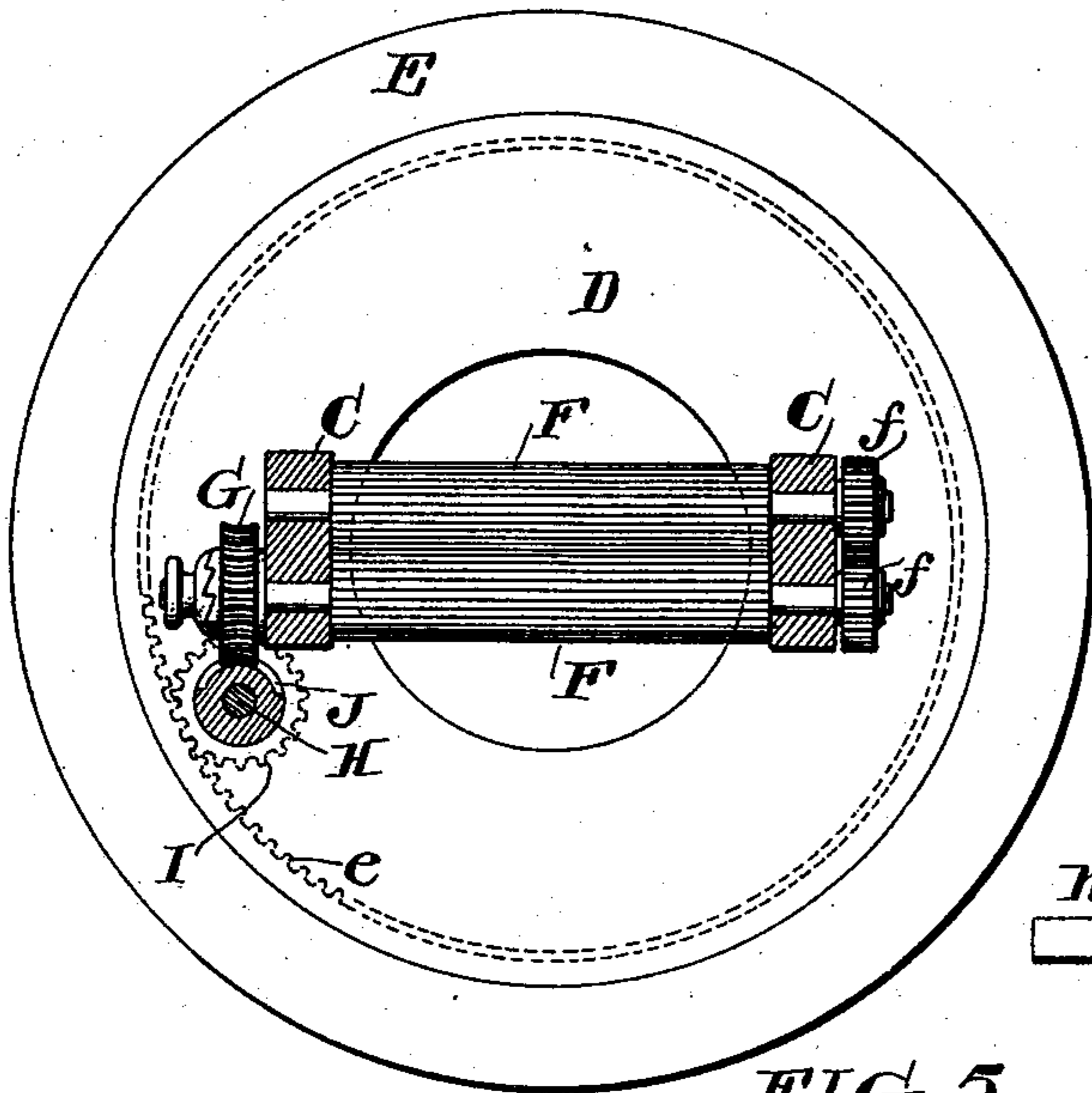


FIG. 3.

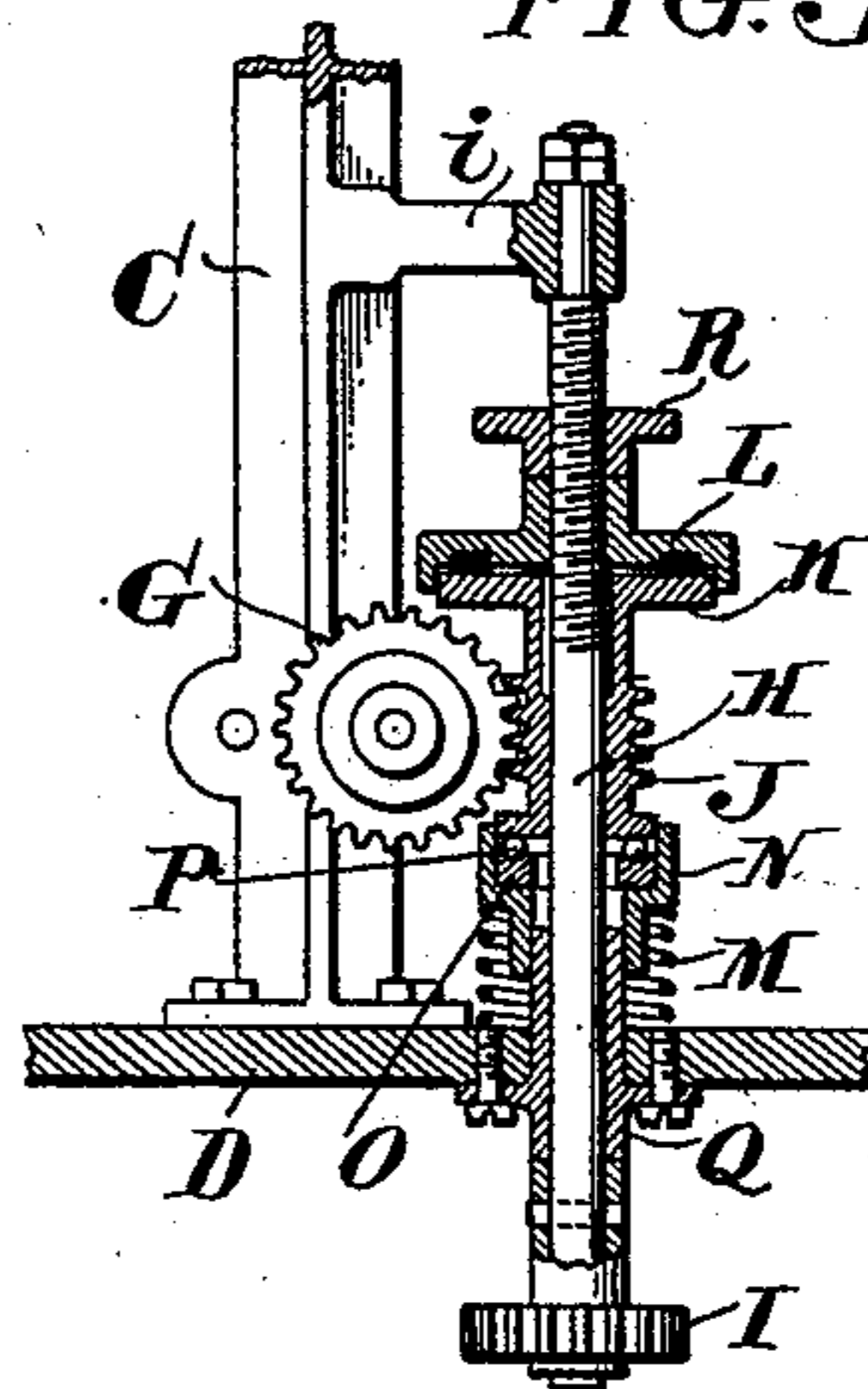


FIG. 4.

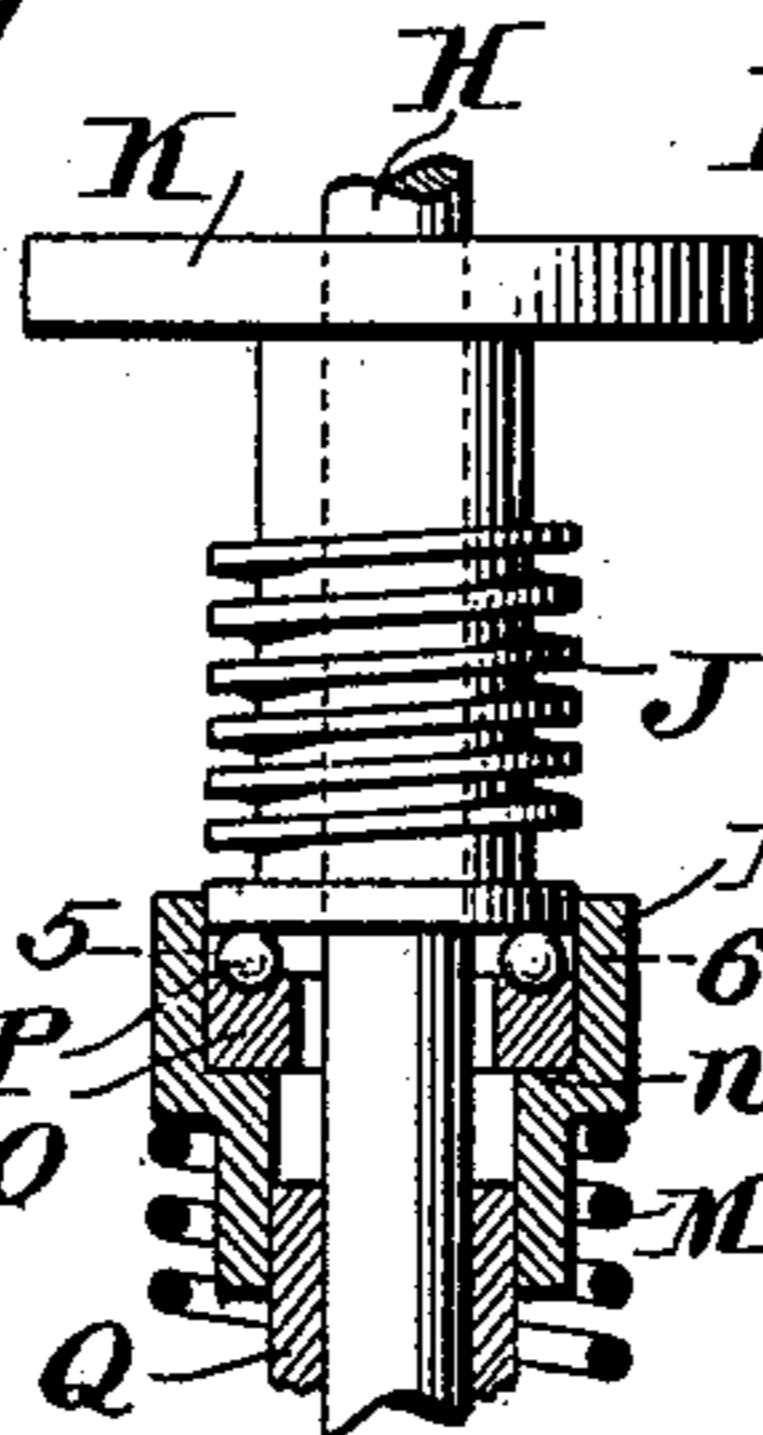
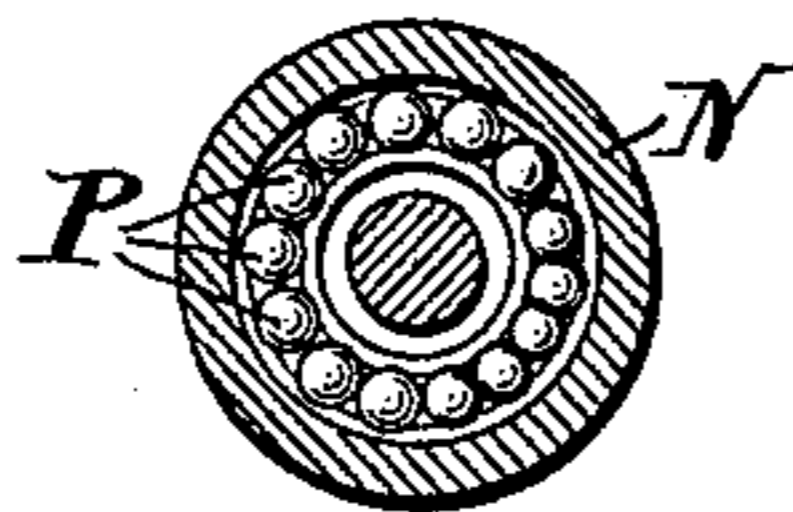


FIG. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

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TENSION-TAKE-UP DEVICE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 601,297, dated March 29, 1898.

Application filed April 6, 1896. Serial No. 586,397. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. WILDMAN, of Norristown, Montgomery county, Pennsylvania, have invented an Improvement in Tension-Take-Up Devices for Knitting-Machines, of which the following is a specification.

My invention relates to tension-take-up devices for knitting-machines; and it consists of the improvements which are hereinafter described and claimed.

My invention is particularly adapted to tension-take-up devices of the general character shown in Letters Patent No. 535,392, dated March 12, 1895, and granted to me jointly with A. McMichael; and it consists of improvements designed especially to reduce the friction and wear and to render the device more sensitive in its action.

My invention also embraces improvements in the means employed for regulating or adjusting the take-up devices, which improvements are designed to simplify the construction and facilitate their operation.

In the drawings, Figure 1 is a vertical sectional view of a knitting-machine having my improved take-up devices employed. Fig. 2 is a sectional plan view of the same, on an enlarged scale, taken on the line 1 2 of Fig. 1. Fig. 3 is a vertical sectional view of a portion of the apparatus on the line 3 4 of Fig. 1. Fig. 4 is an enlarged view of a portion of the apparatus with part in vertical section, and Fig. 5 is a horizontal sectional view on the line 5 6 of Fig. 4.

A is the knitting-head, which may be of any suitable construction.

The particular form or type of knitting-machine employed is immaterial. The machine shown is taken merely as an illustration.

B is the rotating driving-gear, by which the machine is operated through a bevel-gear *b*.

D is a disk carried by depending rods C C, secured to a rotating part of the machine and guided in an annular frame E, below which is located the annular toothed rack *e*.

F F are two transversely-arranged rollers, preferably corrugated or grooved, journaled in bearings in the frames C C and geared together at one end by gears *f f*, so as to rotate

together at uniform speed. The knitted fabric is fed between these rollers F F.

G is a worm-wheel carried by the shaft of one of the rollers F.

H is a vertical shaft journaled in a bracket *i* of one of the frames C and having its lower end, which projects below the disk D, provided with a pinion I, engaging the teeth of the stationary rack *e*.

J is a worm on the shaft H, engaging the worm-wheel G.

L is a disk constituting the fixed member of a friction-clutch carried fast upon the shaft H. K is the other member of the friction-clutch, connected with the worm J.

M is a spring acting on the worm J to force the disk K upon the fixed disk L, so that the worm will rotate with the shaft H.

So far as I have described the apparatus it is similar to what is shown in Letters Patent No. 535,392, before referred to. In that apparatus the spring M pressed directly against the base of the clutch and the tension of the spring was regulated by an adjustable plate, which supported the base of the spring.

I shall now describe my improvements as applied to this apparatus, which are designed to give a firmer bearing for the worm J, to reduce friction, and to make the take-up device as a whole more sensitive to its action.

N is a bearing-sleeve interposed between the spring M and the worm J and supporting on an annular shoulder *n* a wearing-ring O, between which and the base *j* of the worm J are interposed antifriction-balls P. The base of the clutch J thus rests upon a roller-bearing and may turn freely without undue friction.

I have shown the shaft H journaled in a tubular bearing-sleeve Q, secured to the disk D and projecting up into the sleeve N, which embraces it. The spring M is shown surrounding the bearing Q and sleeve N.

Instead of adjusting the tension of the spring from below to regulate the sensitivity of the device, which proved both inconvenient and objectionable, I accomplish the adjustment by means of the friction-disk L, which I have shown threaded on the shaft H,

so that by turning the disk L it may be moved up or down, thus adjusting the frictional contact with the disk K, which is pressed upward by the spring M. The outer rim of the disk L may be enlarged and knurled, as shown, to facilitate the turning of it.

R is a jam-nut threaded on the shaft H above the disk L, which acts to lock the disk against accidental movement.

10 The operation of the device will be readily understood. As the plate D and frames C rotate the shaft H is driven through the rack and pinion I. The worm J is rotated through the friction-clutch L K and turns freely on the spring-pressed ball-bearing N O P, thus driving the take-up rollers F F. When the tension upon the rollers F F due to the upward pull of the fabric between them becomes excessive, the worm J is moved down upon the shaft H by the worm-wheel G, thus moving the disk K and relieving the frictional contact on the disk L, so that the driving of the rollers F F by the worm J ceases. The instant that the upward pull on the rollers F F is released the spring M, acting on the bearing N O P, raises the worm J and presses the disk K in contact with the disk L, thus restoring the driving connection between the shaft and worm.

30 The minor details of construction may be varied without departing from the invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

35 1. In a tension-take-up device for a knitting-machine, the combination with the take-up rollers, of a rotary shaft, gearing between the take-up rollers and the rotary shaft, one member of which is carried loosely on said shaft, a spring-pressed roller-bearing for said member at one end, and a friction-clutch on the rotary shaft, one member of which is fast thereon, and the other connected with the member of the gearing which is loosely carried by said shaft.

45 2. In a tension-take-up device for a knitting-machine, the combination with the take-up rollers, of a rotary shaft, gearing between

the take-up rollers and the rotary shaft, one member of which is carried loosely on said shaft, a spring-pressed roller-bearing for said member at one end, and a friction-clutch on the rotary shaft, one member of which is fast thereon, but with means for longitudinal adjustment, and the other connected with the member of the gearing which is loosely carried by said shaft.

3. In a tension-take-up device for knitting-machines, the combination of the take-up rollers, rotary shaft H, worm-wheel G on the shaft of one of the rollers, spring-pressed worm J loose on the shaft H and engaging the worm-wheel G, the friction-disk K loose on the shaft H and carried by the worm J, of the friction-disk L threaded on the shaft H and adapted when turned to move longitudinally thereon to adjust the frictional contact between the disks L and K.

4. In a tension-take-up device for knitting-machines, the combination of the take-up rollers, rotary shaft H, worm-wheel G on the shaft of one of the rollers, spring-pressed worm J loose on the shaft H and engaging the worm-wheel G, the friction-disk K loose on the shaft H and carried by the worm J, of the friction-disk L threaded on the shaft H and adapted when turned to move longitudinally thereon to adjust the frictional contact between the disks L and K, and a jam-nut R for locking the disk L when it has been adjusted.

5. In a tension-take-up device for knitting-machines, the combination of the take-up rollers, the rotary shaft H, the worm-wheel G on one of the rollers, the worm J loose on the shaft H, the clutch member K carried by the worm, the clutch member L carried by the shaft, with the bearing N, spring M and the antifriction-balls P interposed between the bearing N and worm J.

In testimony of which invention I have hereunto set my hand.

FRANK B. WILDMAN.

Witnesses:

MAGGIE POTTER,
AVONIA FRICK.