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H. A. HOUSEMAN.

TAKE-UP DEVICE FOR CIRCULAR KNITTING MACHINES.

APPLICATION FILED MAY 17, 1907.

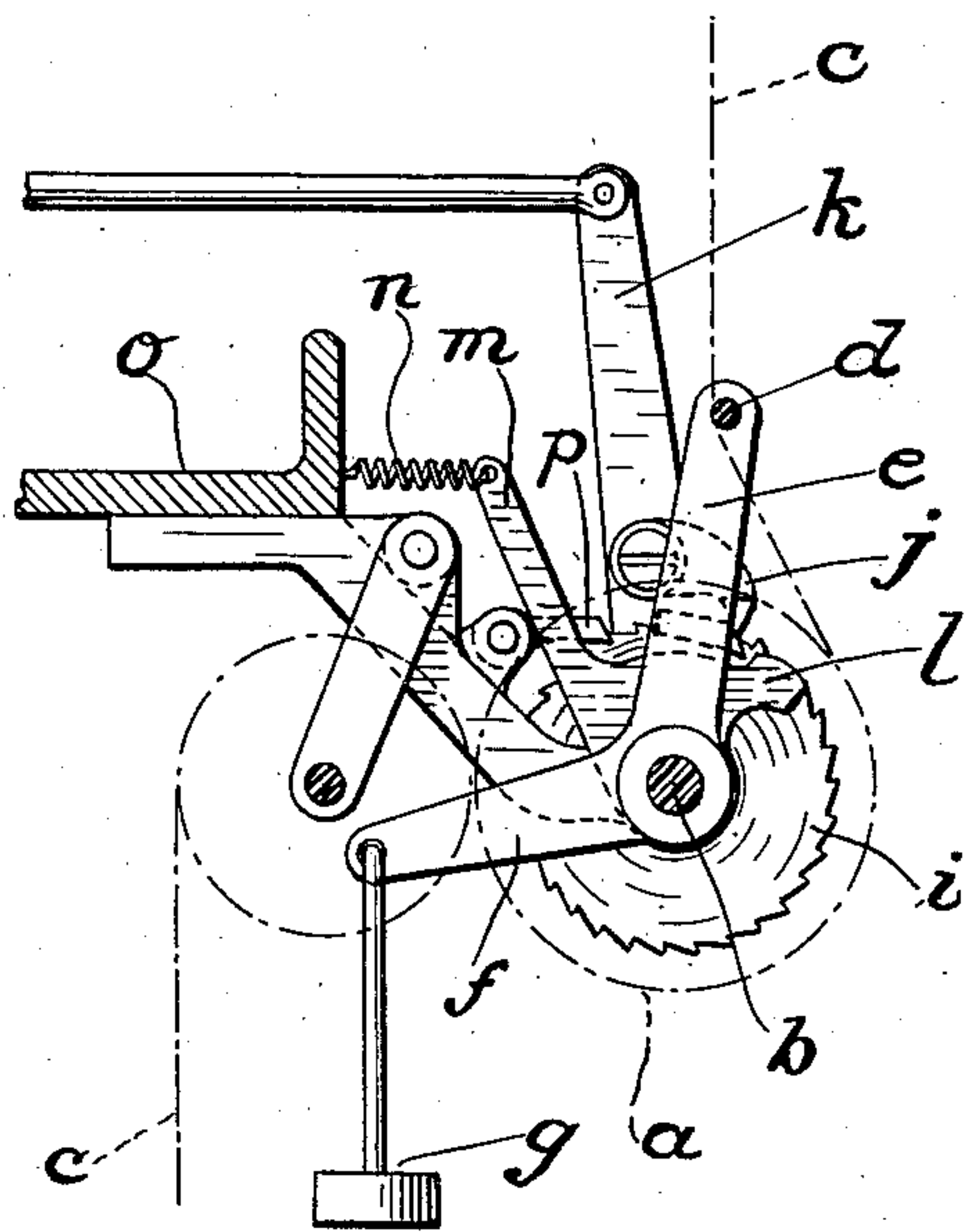


FIG. 1.

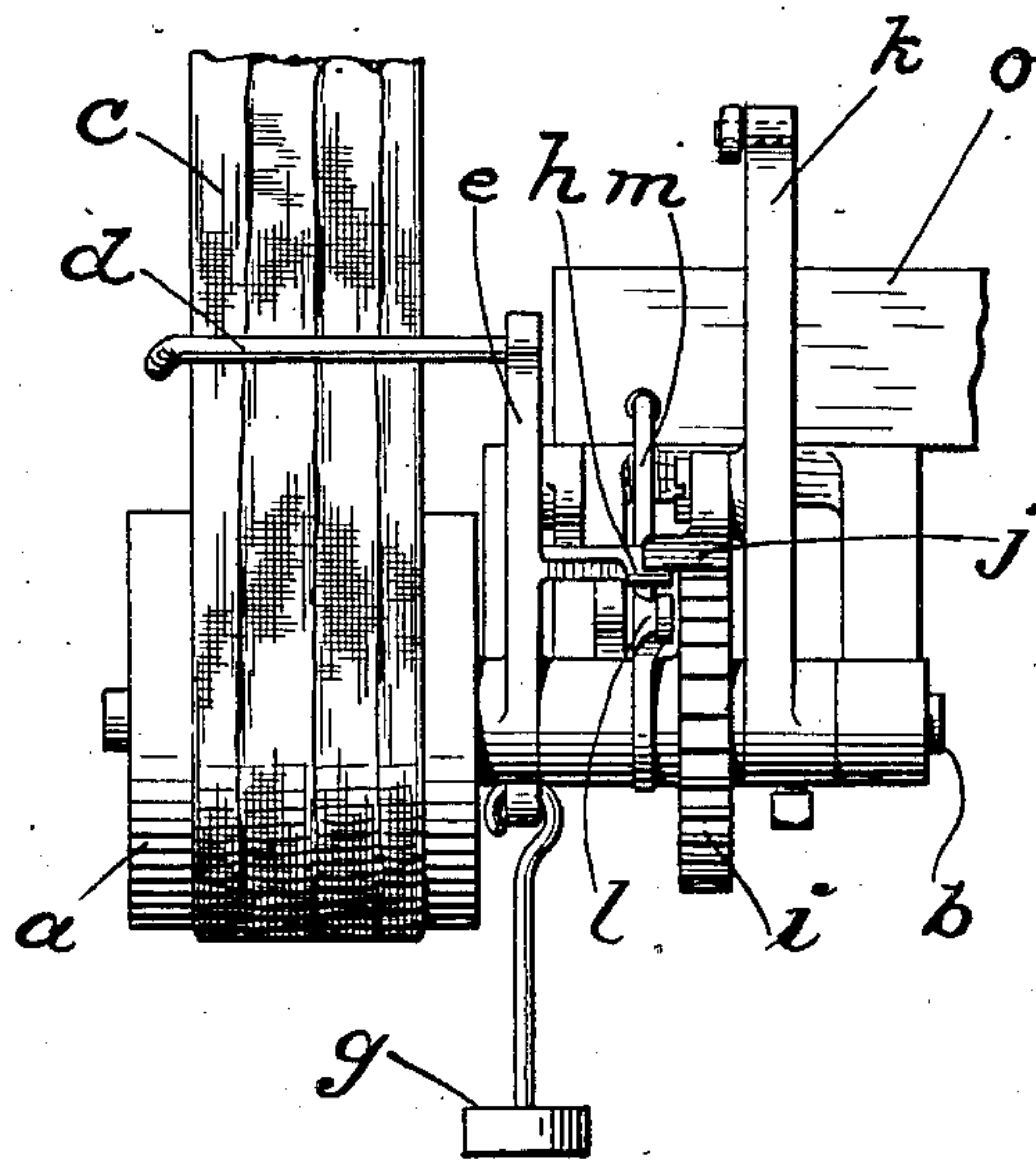


FIG. 2.

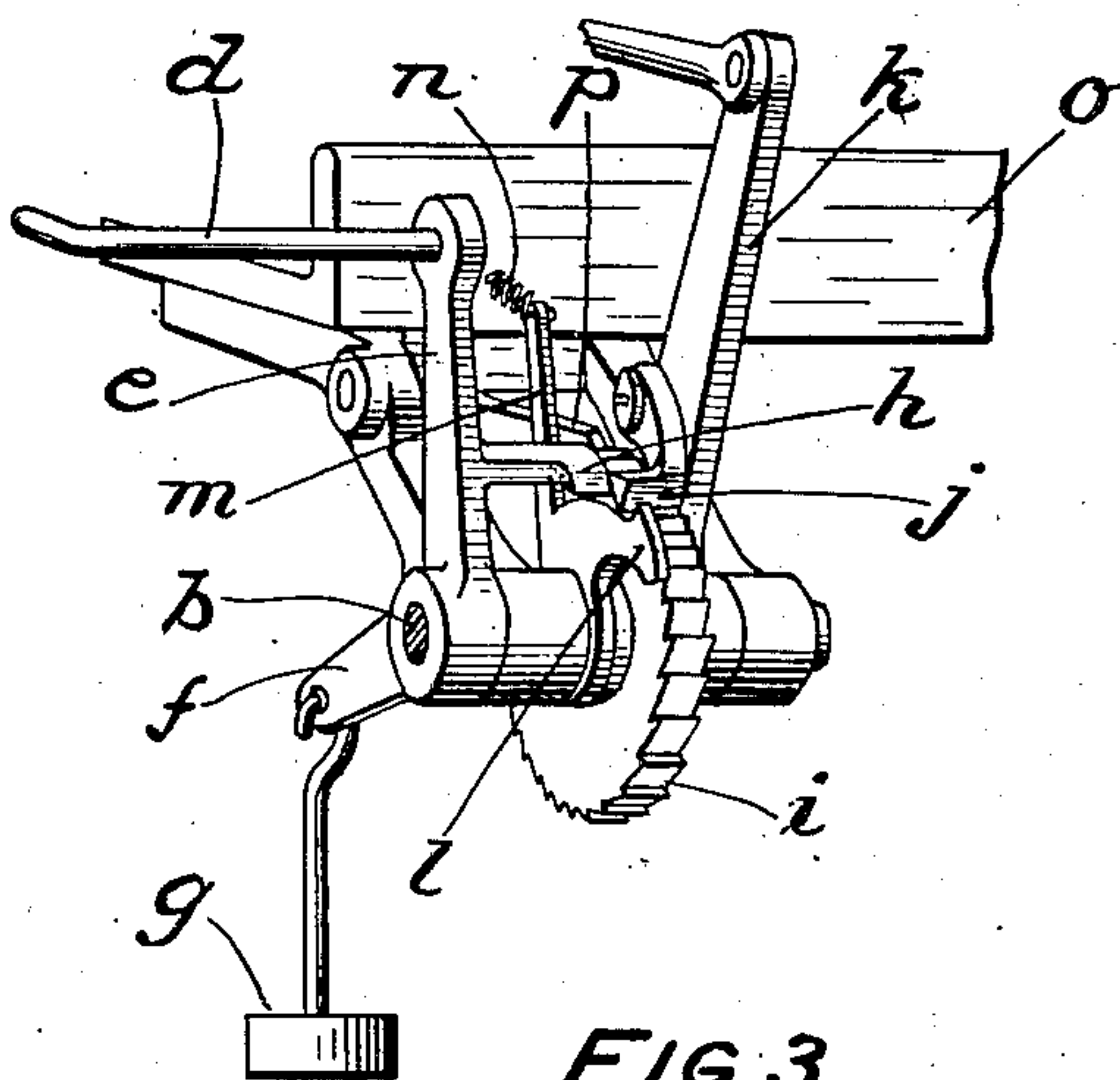


FIG. 3.

WITNESSES:

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HARRY A. HOUSEMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO STANDARD MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

TAKE-UP DEVICE FOR CIRCULAR-KNITTING MACHINES.

No. 883,958.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed May 17, 1907. Serial No. 374,120.

To all whom it may concern:

Be it known that I, HARRY A. HOUSEMAN, a citizen of the United States, residing at Philadelphia, county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Take-Up Devices for Circular-Knitting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to intermittently and positively move the take-up device a fixed distance.

Speaking generally, I drive the take-up device, which, as shown, is a take-up roller, by a ratchet and pawl. I also provide a tension device which rests against the fabric as it passes to the tension roller. A guard, which normally holds the pawl inactive, is controlled by this tension device. When the slack of the goods reaches a certain point, the tension device has moved sufficient to release the guard and allow the pawl to act upon the ratchet and move the tension device and the take-up roller an amount sufficient to take up this slack. During this movement the tension device is moved by the fabric, in the opposite direction, an amount sufficient to again bring the guard into action and move the pawl out of action.

My invention also consists in certain details which will hereinafter be more fully described.

In the drawings: Figure 1 is an end view of my improved take-up device with take-up roller indicated in broken lines. Fig. 2 is a front view of the take-up device. Fig. 3 is a perspective view of the same with take-up roller omitted.

a is the take-up device, a take-up roller, revolving with the shaft *b*.

c is the fabric.

d is the tension arm, connected to the arm *e*, loose on the shaft *b*.

f is a crank arm connected to arm *e* and having connected to its outer end, the weight *g*. The effect of the weight *g* is to move the arm *d* in a direction toward the fabric. Connected to the arm *e* is the guard or shield *h* which, with the fabric taut, is slightly above the teeth of the ratchet *i*. When the fabric

commences to become slack, the arm *d* moves backward until, with a certain amount of slack, it will have moved the shield or guard *h* backward so as to uncover the guarded tooth.

j is the operative pawl for the ratchet. This pawl is pivoted on the arm *k*, which is reciprocated, in the well known manner, by mechanism not shown.

When the fabric is taut, the guard or shield *h* holds the pawl from action but when the fabric reaches a given slackness, the shield is moved backward and the pawl becomes active, moving the ratchet and the take-up roller, both revolving with shaft *b*, an amount sufficient to take up this slack. By this arrangement the take-up-roller is positively driven, but still its movement is dependent upon the feed or making of the fabric. I thus retain all the advantage, in the latter respect, of moving the take-up roller by a weight or spring, while, on the other hand, I avoid all the defects of non-positive driving, inherent in said last mentioned arrangement.

In order to avoid the effect of the pawl, in its idle reciprocation, striking the face of the tooth in advance of the tooth masked by the tension device guard, I provide an independent guard *l*, which is connected to arm *m*, to which arm is connected one end of the spring *n*, the other end being connected to frame *o* of the machine. This guard *m* is normally held by spring *n*, in such position as to mask the tooth of ratchet *i* in advance of tooth masked by the tension device guard, and extends toward said tooth a distance so that the rear of this guard is in alinement with the tooth masked by the tension device guard, and is struck by the pawl when the tension device guard is released. Thus during the idle play of the pawl both the tooth, guarded by the tension device guard, and the next tooth forward are guarded. When the tension device guard is released the pawl moves this independent guard forward against the action of spring *n*, which spring, in the backward movement of the pawl, returns said independent guard to its proper position.

The distance between the ratchet teeth and the movement of the tension device to release the tension device guard are adjusted so that the pawl will be rendered active with

the proper amount of slack of the goods, and the active movement of the pawl will cause the ratchet to move sufficiently only to take up that slack. p is the holding pawl to prevent the ratchet moving in the opposite direction.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

10 1. In combination, a take-up roller, a ratchet and pawl for moving said roller, a tension device, adapted to rest against the fabric, a guard, connection between said guard and said tension device, whereby in one position of the tension device the guard renders the pawl inactive and the other position renders it active, and a pawl guard, independent of and in advance of the tension device guard.

20 2. In combination, a take-up roller, a ratchet and pawl for moving said roller, a tension device, adapted to rest against the fabric, a guard, connection between said guard and said tension device, whereby in one position of the tension device the guard renders the pawl inactive and the other position renders it active, a pawl guard, independent of and in advance of the tension device guard, the rear of said independent guard being normally in alinement with the ratchet tooth masked by the tension device guard and adapted to be struck by the pawl when the tension device guard is lowered.

35 3. In combination, a take-up roller, a ratchet and pawl for moving said roller, a tension device, adapted to rest against the fabric, a guard, connection between said guard and said tension device, whereby in one position of the tension device the guard renders the pawl inactive and the other position renders it active, a pawl guard, independent of and in advance of the tension device guard, the rear of said independent guard being normally in alinement with the ratchet tooth masked by the tension device guard and adapted to be struck by the pawl when the tension device guard is lowered, and means to return said independent guard, when released by said pawl.

50 4. In combination, a take-up roller, a ratchet and pawl for moving said roller, a tension device, a guard, connection between said tension device and guard, whereby, in one position of the tension device the guard is elevated, and the pawl rendered inactive, and in another position the guard depressed and the pawl rendered active, and a pawl guard, independent of and in advance of the tension device guard.

60 5. In combination, a take-up roller, a ratchet and pawl for moving said roller, a tension device, a guard, connection between said tension device and guard, whereby, in one position of the tension device the guard is elevated and the pawl rendered inactive,

and in another position the guard depressed and the pawl rendered active, a pawl guard, independent of and in advance of the tension device guard, the rear of said independent guard being normally in alinement with the ratchet tooth masked by the tension device guard and adapted to be struck by the pawl when the tension device guard is lowered.

6. In combination, a take-up roller, a ratchet and pawl for moving said roller, a tension device, a guard, connection between said tension device and guard, whereby, in one position of the tension device the guard is elevated and the pawl rendered inactive, and in another position the guard depressed and the pawl rendered active, a pawl guard, independent of and in advance of the tension device guard, the rear of said independent guard being normally in alinement with the ratchet tooth masked by the tension device guard and adapted to be struck by the pawl when the tension device guard is lowered, and means to return said independent guard when released by said pawl.

7. In combination, a take-up roller, a tension arm adapted to rest against and move toward the fabric, a ratchet and pawl for operating the take-up roller, a guard for rendering said pawl active and inactive and connection between said pawl and said tension arm, whereby the movement of the arm in one direction moves the guard to render the pawl active and the movement in the other direction moves the guard to render the pawl inactive, and an independent guard in advance of the tension device guard.

8. In combination, a take-up roller, a tension arm adapted to rest against and move toward the fabric, a ratchet and pawl for operating the take-up roller, a guard for rendering said pawl active and inactive and connection between said pawl and said tension arm, whereby the movement of the arm in one direction moves the guard to render the pawl active and the movement in the other direction moves the guard to render the pawl inactive and an independent guard in advance of the tension device guard, the rear of said independent guard being normally in alinement with the tooth masked by the tension device guard and adapted to be struck by the pawl when the tension device guard is released.

9. In combination, a take-up roller, a tension arm adapted to rest against and move toward the fabric, a ratchet and pawl for operating the same, a guard for rendering said pawl active and inactive and connection between said pawl and said tension arm, whereby the movement of the arm in one direction moves the guard to render the pawl active and the movement in the other direction moves the guard to render the pawl inactive, and an independent guard in advance of the tension guard, the rear of said independent

guard being normally in alinement with the tooth masked by the tension device guard and adapted to be struck by the pawl when the tension device guard is released, and means to return said independent guard when released by the pawl.

In testimony of which invention I have

hereunto set my hand, at Philadelphia, on this 13th day of May, 1907.

HARRY A. HOUSEMAN.

Witnesses:

M. M. HAMILTON,
A. M. URIAN.