

No. 611,816.

Patented Oct. 4, 1898.

W. MONK.
SELF ACTING SPINNING MULE.

(Application filed Jan. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.

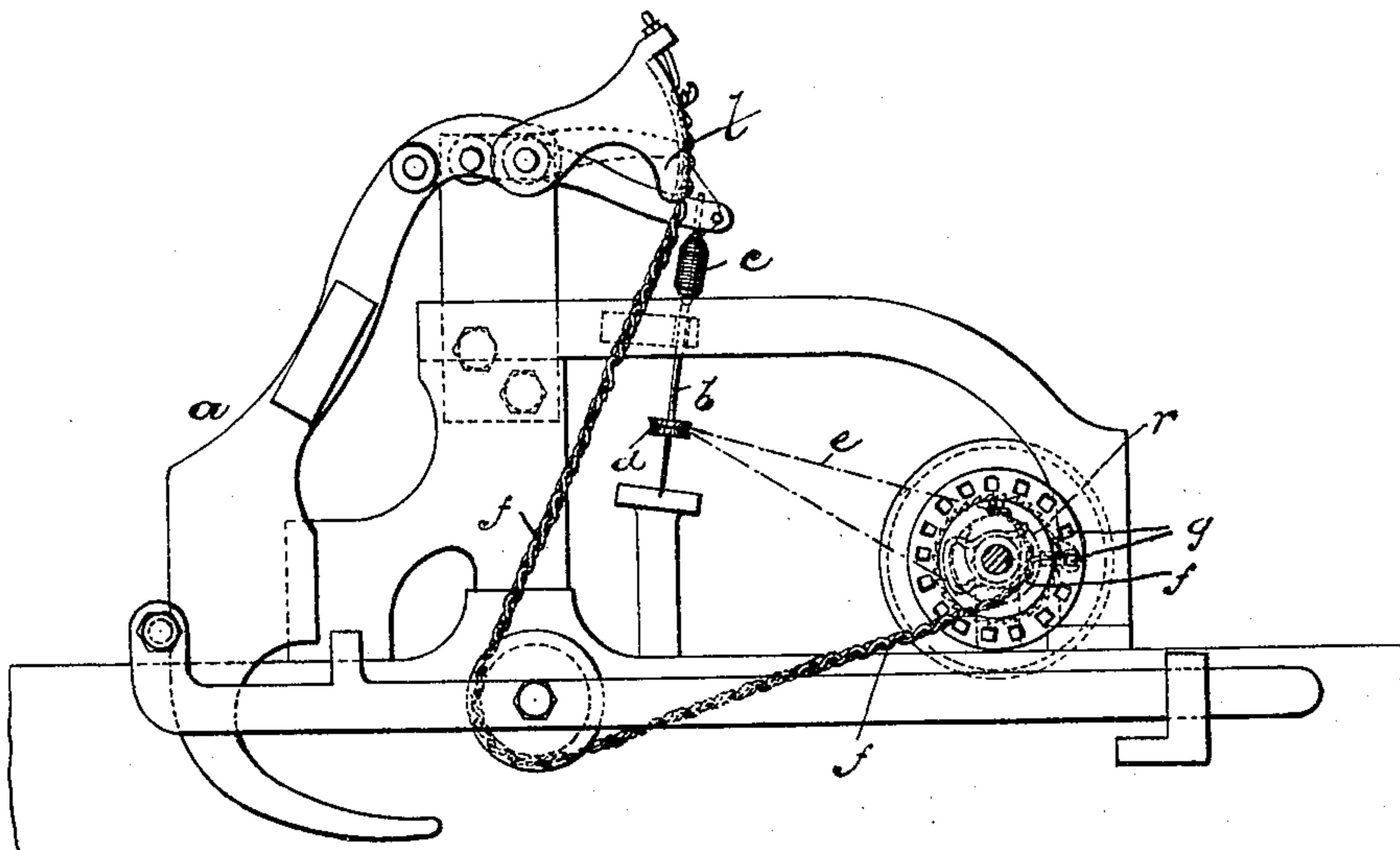


Fig. 1.

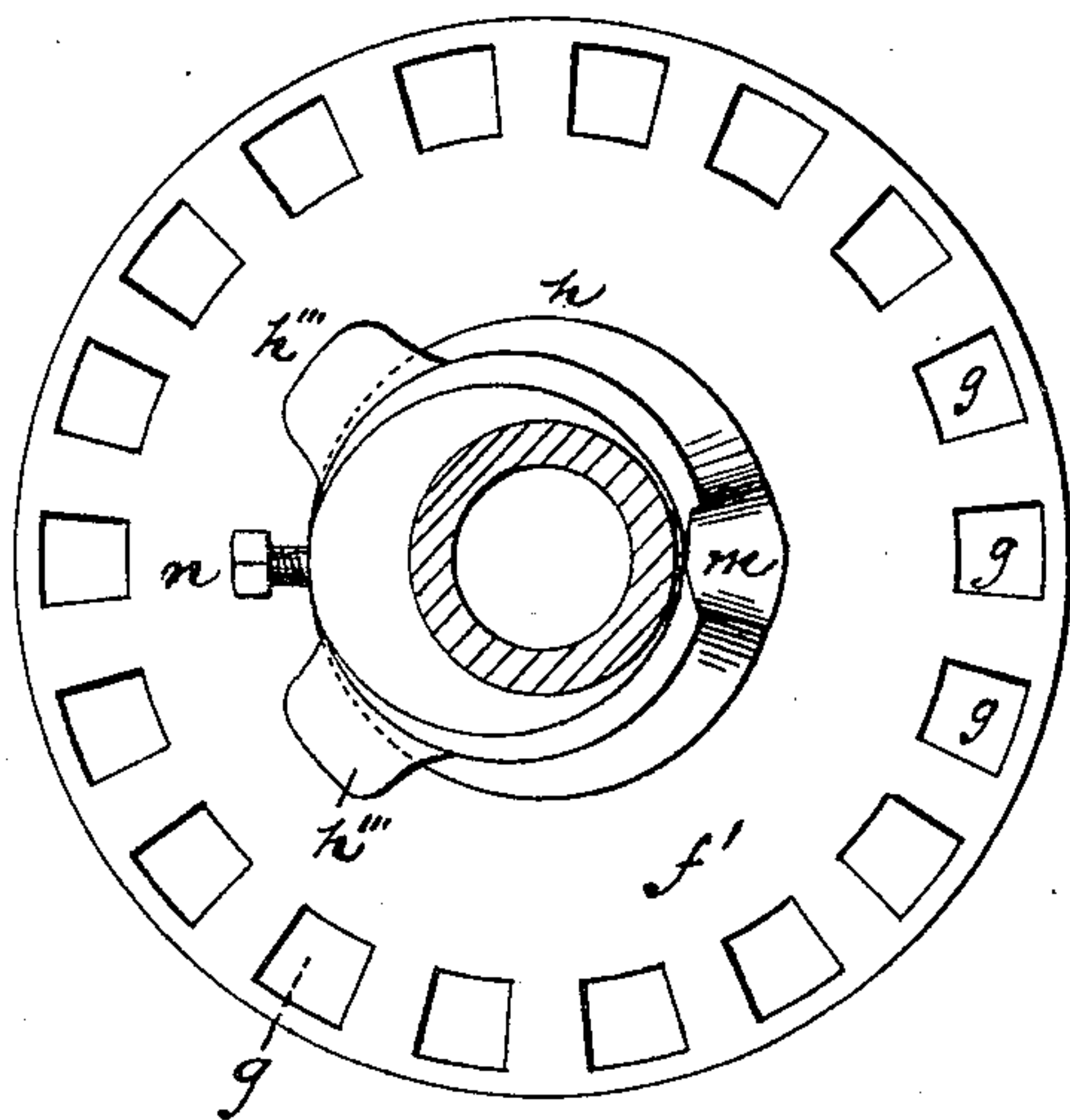


Fig. 2.

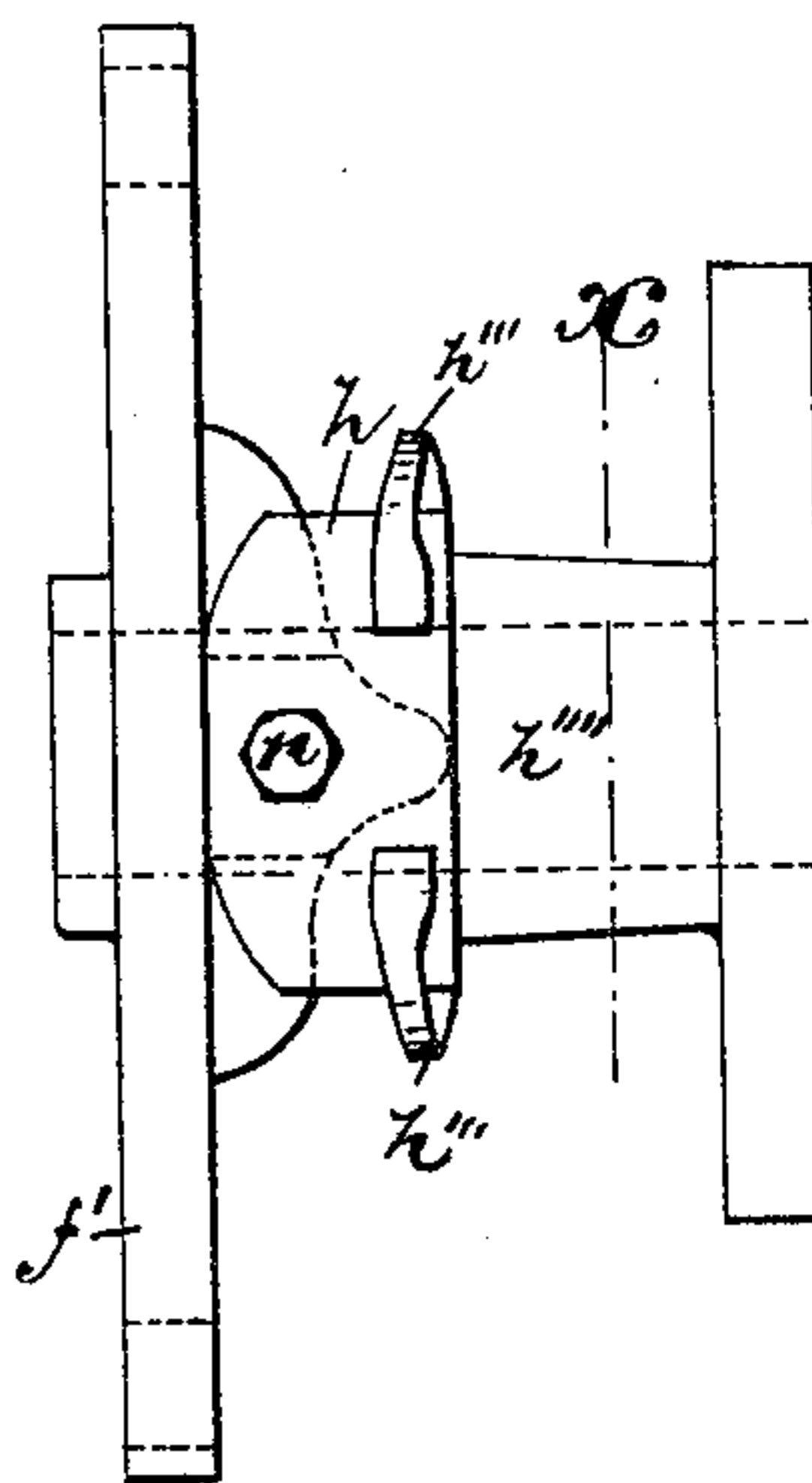


Fig. 3.

WITNESSES:

A. R. Krouse.

Russell M. Everett.

INVENTOR

William Monk,

BY

Drake & Co.

ATTORNEYS.

No. 611,816.

Patented Oct. 4, 1898.

W. MONK.
SELF ACTING SPINNING MULE.

(Application filed Jan. 29, 1898.)

(No Model.)

2 Sheets—Sheet 2.

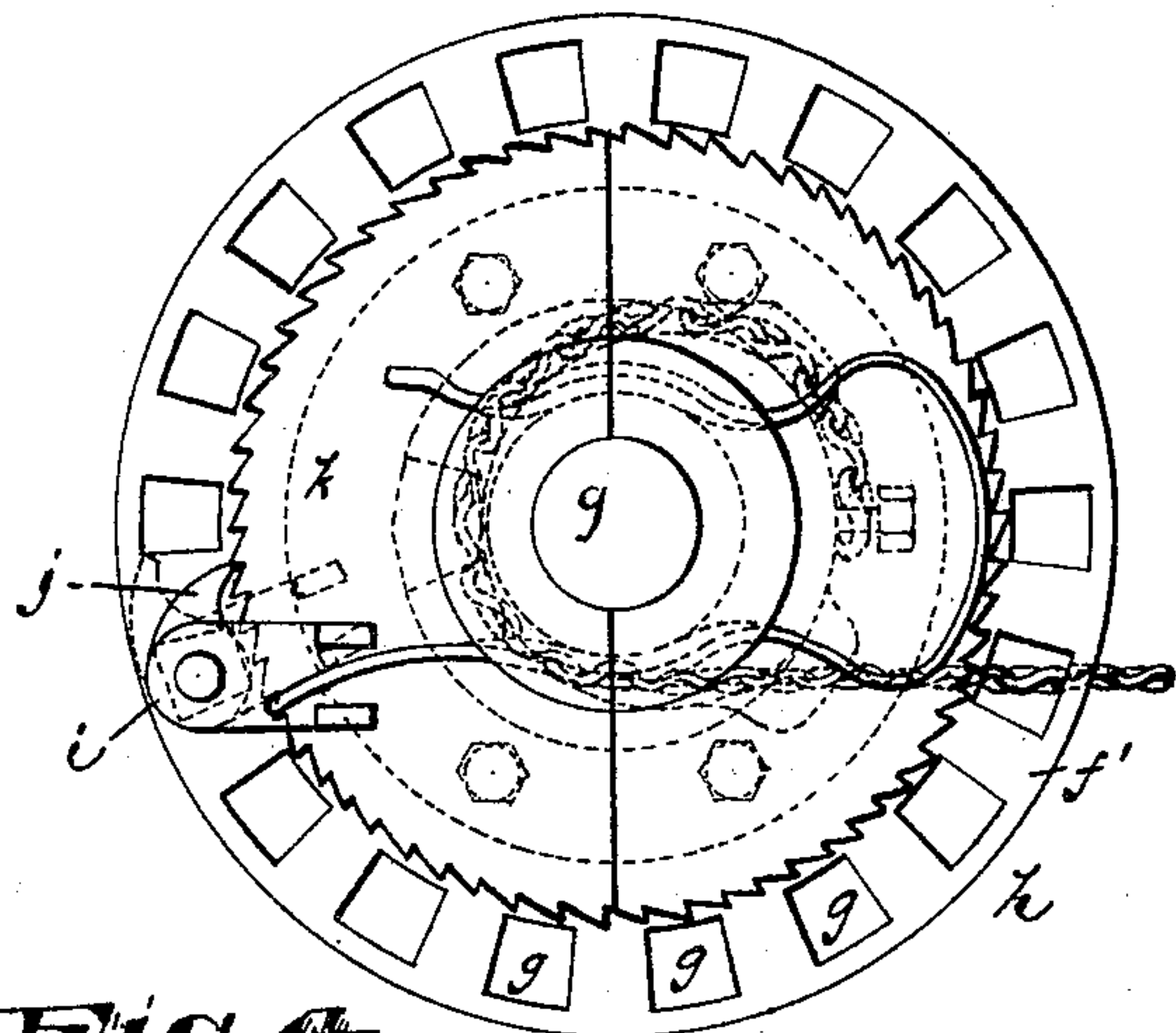


Fig. 4.

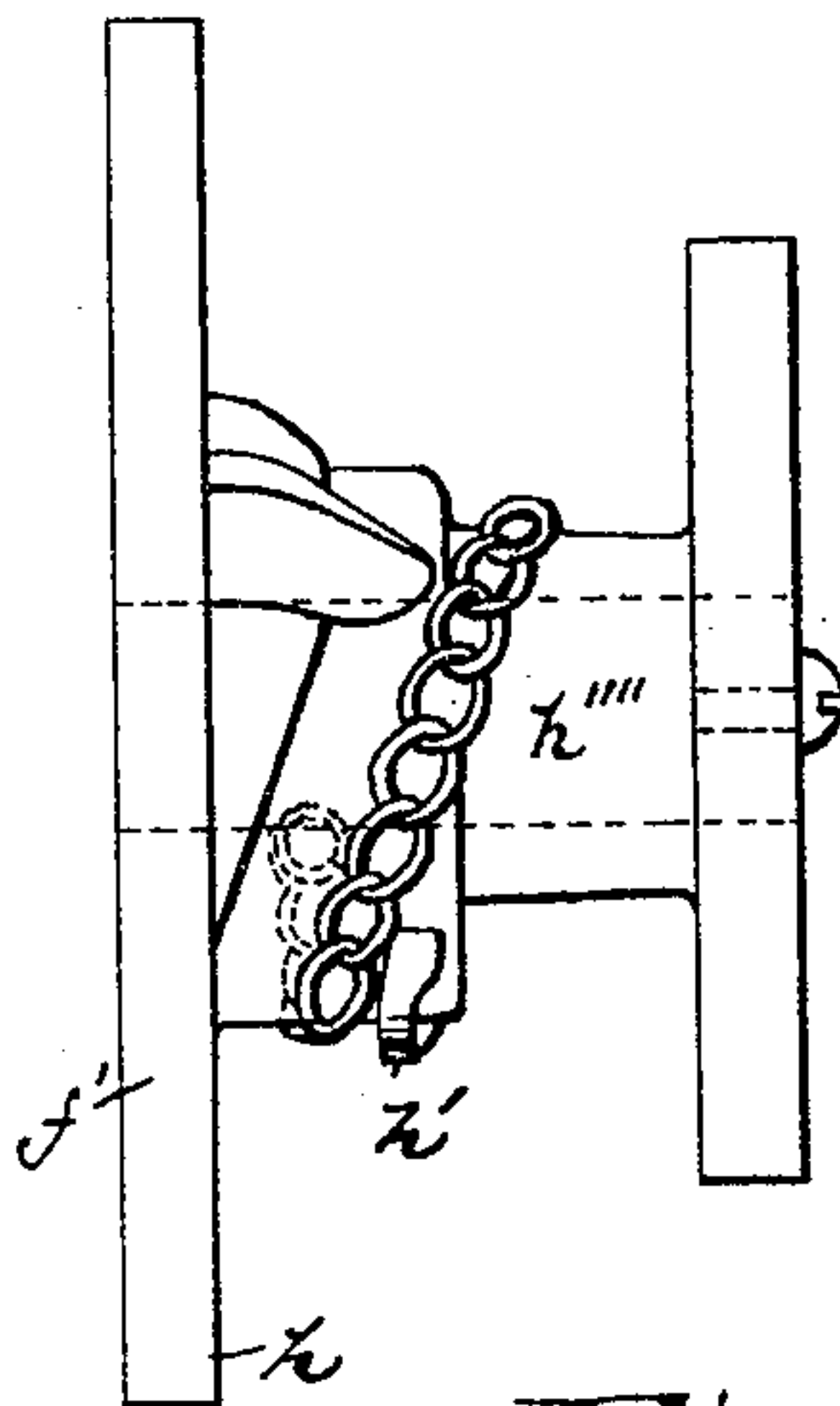


Fig. 5.

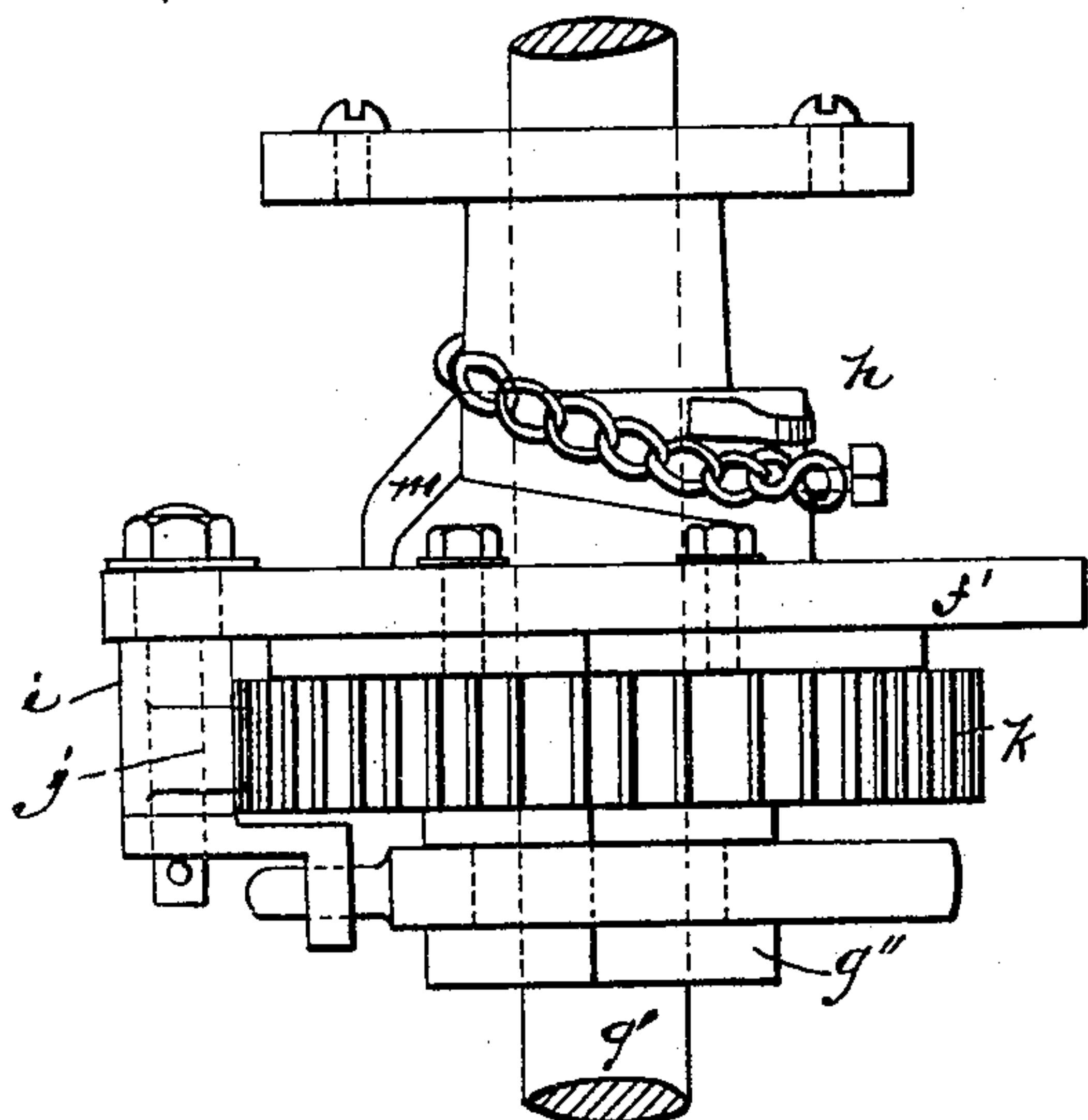


Fig. 6.

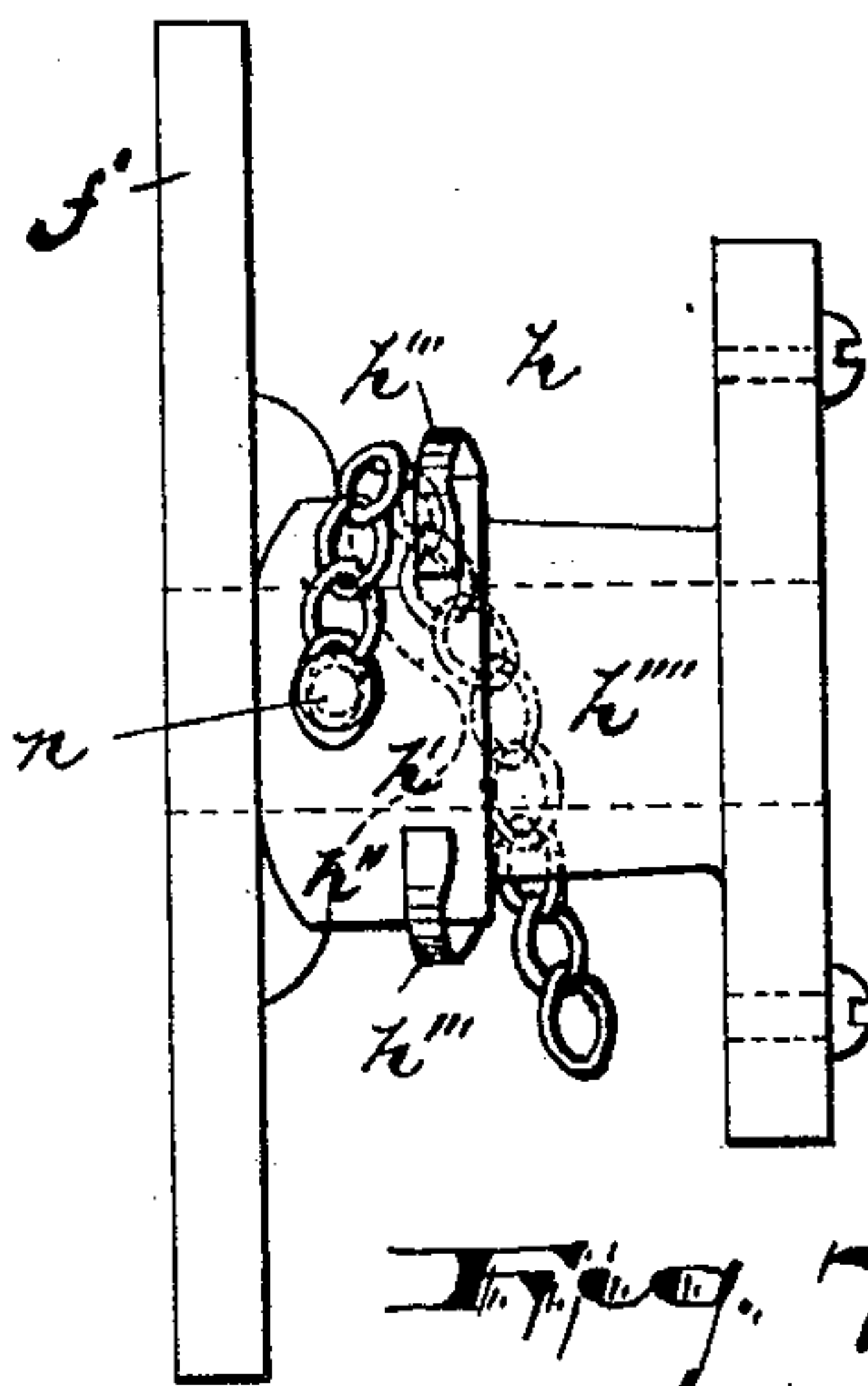


Fig. 7.

WITNESSES:

A. R. Krousse
Russell M. Everett.

INVENTOR:

William Monk,

BY

Drake & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM MONK, OF NEWARK, NEW JERSEY.

SELF-ACTING SPINNING-MULE.

SPECIFICATION forming part of Letters Patent No. 611,816, dated October 4, 1898.

Application filed January 29, 1898. Serial No. 668,391. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MONK, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Self-Acting Spinning-Mules for Thread; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates more particularly to certain improvements in that class of self-acting mules employed in the manufacture of spool-cotton, and particularly to improvements in the snail or spiral wheel used for operating the "copping-faller."

Heretofore it has been necessary when changing the direction of rotation of the spindles and making a thread with a reverse twist to remove each spindle-operating band from its pulley on said spindle and twist the said band or untwist it to secure reverse rotation, as will be apparent. Inasmuch as each mule carries a thousand spindles, more or less, with their pulleys and bands taking power from the "tin roller" such an operation has heretofore involved a large amount of labor, and the operation of stretching the bands over the side flanges of the pulleys has tended to produce a fullness in said bands, and thus impair their capacity for transmitting motion to said spindles. To secure a proper adjustment of all the bands after the reversing operations required much loss of time.

The objects of my invention are more particularly to avoid the tedious operations above described and the danger of stretching the bands and to enable the said bands to transmit reverse motion without removal and without the operations above described and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved spinning-mule, the improved faller-operating snail therefor, and in the arrangements and

combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of a portion of a spinning-mule having the improved faller-operating snail and coöperating parts. Fig. 2 is an enlarged sectional view of said faller-operating snail, the section-line being taken at line *x*, Fig. 3. Fig. 3 is a side view of said faller-operating snail. Fig. 4 is an end view of the same in connection with a certain ratchet-wheel, showing the faller-operating chain arranged on the hub of said snail. Fig. 5 is another side view of the snail-wheel. Fig. 6 is a plan showing the parts represented in Fig. 4, and Fig. 7 is another side view showing the chain in a different position from that shown in Fig. 5.

In said drawings, *a* indicates a portion of an ordinary spinning-mule common in the manufacture of sewing-thread, &c. *b* represents one of a series of a thousand, more or less, of spindles operating in said mule to wind the thread in the usual manner. *c* indicates the cop, and *d* the grooved pulley, upon the spindle, which pulley receives its power through a band *e* from the ordinary tin roller *r* or a long cylindrical pulley extending the length of the mule and which is ordinarily of tin, though it may be of any other material.

Upon the tin-roller shaft *g'* at about the middle of the mule, or at a suitable point therein, is arranged the snail *h* for operating the coping-faller *l*. Said snail is arranged loose on the shaft *g'* and is adapted to be brought into fixed relation to said shaft, so as to revolve therewith by any usual clutch device. The clutch device I prefer to employ consists of a split ratchet-wheel *k*, suitably fastened to a flange *g''*, formed or keyed upon the shaft *g*. The snail *h* consists of a cam or spiral pulley for operating the coping-faller at suitable times in the reciprocating actions of the carriage. Heretofore the hub on said snail has been provided with a spiral groove in which the end of the backing-off chain *f* has operated, the said chain winding and unwinding on said hub to operate a coping-faller *l*. The said

snail-wheel in the present construction comprises a single casting having at one end a flange f' , which at its periphery is provided with an annular series of holes g , adapted to receive the stud i of the pawl j , adapted to engage the ratchet-wheel k in the usual manner. At the side of the flange f' opposite the ratchet-wheel the said snail-wheel is provided with the hub h' , which in the prior construction has been spirally grooved and adapted to permit the winding of the chain thereon in one direction, so that when the reverse action above referred to was desired it could only be obtained by changing the spindle-bands e , as described. In the present construction the said hub is formed to permit a winding of the chain in either direction; and to this end said hub is provided with an enlarged head h'' , having near its edge separate lips h''' , adapted to allow the chain to pass between onto the small part h'''' of said hub. A throw-off lip m is formed on the head or larger part of the hub at a point opposite the connection of the chain with said hub. Said lip serves to force the chain onto said small part as the wheel is turned in one direction or the other.

At a point adjacent to the chain-attaching screw or device n I prefer to form an opening between the lips h''' h''' to permit a wrench to be conveniently used in turning said screw in the operation of fastening or detaching said chain.

The throw-off lip is more or less of a wedge shape with oppositely-inclined sides, forming, with the lips h''' h''' , oppositely-inclined grooves which give direction to the chain; but ordinarily there is no automatic adjustment of the chain when the reverse operations are to be effected, the operator usually changing the chain by hand preliminary to changing the direction of the rotation of the snail-wheel shaft.

By my construction thus described it is never necessary to remove the snail-wheel shaft or otherwise disturb the nice adjustments desirable in securing a proper twist in

the thread; but by simply changing the position of the chain f with respect to the snail-wheel the tin roller may be reversed in direction of movement and the pulleys and spindles correspondingly reversed, and the coping-faller will not be adversely affected in its operations, all as will be understood.

Having thus described the invention, what I claim as new is—

1. In a spinning-mule, the combination with the coping-faller, and its backing-off chain, the spindles b , pulleys d , band e , and roller r , of the snail-wheel h , having the hub enlargement h'' , with opposite grooves or recesses for the backing-off chain formed by lips h''' , h''' , and throw-off lip m , substantially as set forth.

2. In a spinning-mule, the combination with the shaft g , of the snail-wheel having the flange f' , to receive clutch mechanisms, a hub having an enlarged head h'' , and small part h'''' , said head having separate lips h''' , means for fastening the chain and a throw-off lip or projection m , substantially as set forth.

3. In a spinning-mule, the combination with the shaft g , of the snail-wheel having the flange f' , to receive clutch mechanisms, a hub having separate lips with an opening between, a chain-fastening device adjacent to said opening and a throw-off at the side of the hub opposite said fastening means, substantially as set forth.

4. In a spinning-mule, the combination with the coping-faller, backing-off chain, spindles, pulleys thereon "tin roller" and its shaft and bands connecting said roller with the spindle-pulleys, of the snail-wheel loose on the tin-roller shaft and clutching devices having lips h''' , h''' , and m , and operating means, all arranged and combined, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of January, 1898.

WILLIAM MONK.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.