

No. 760,206.

PATENTED MAY 17, 1904.

P. A. HOUGHTALING.
RATCHET MECHANISM.
APPLICATION FILED OCT. 21, 1903.

NO MODEL.

Fig. 3.

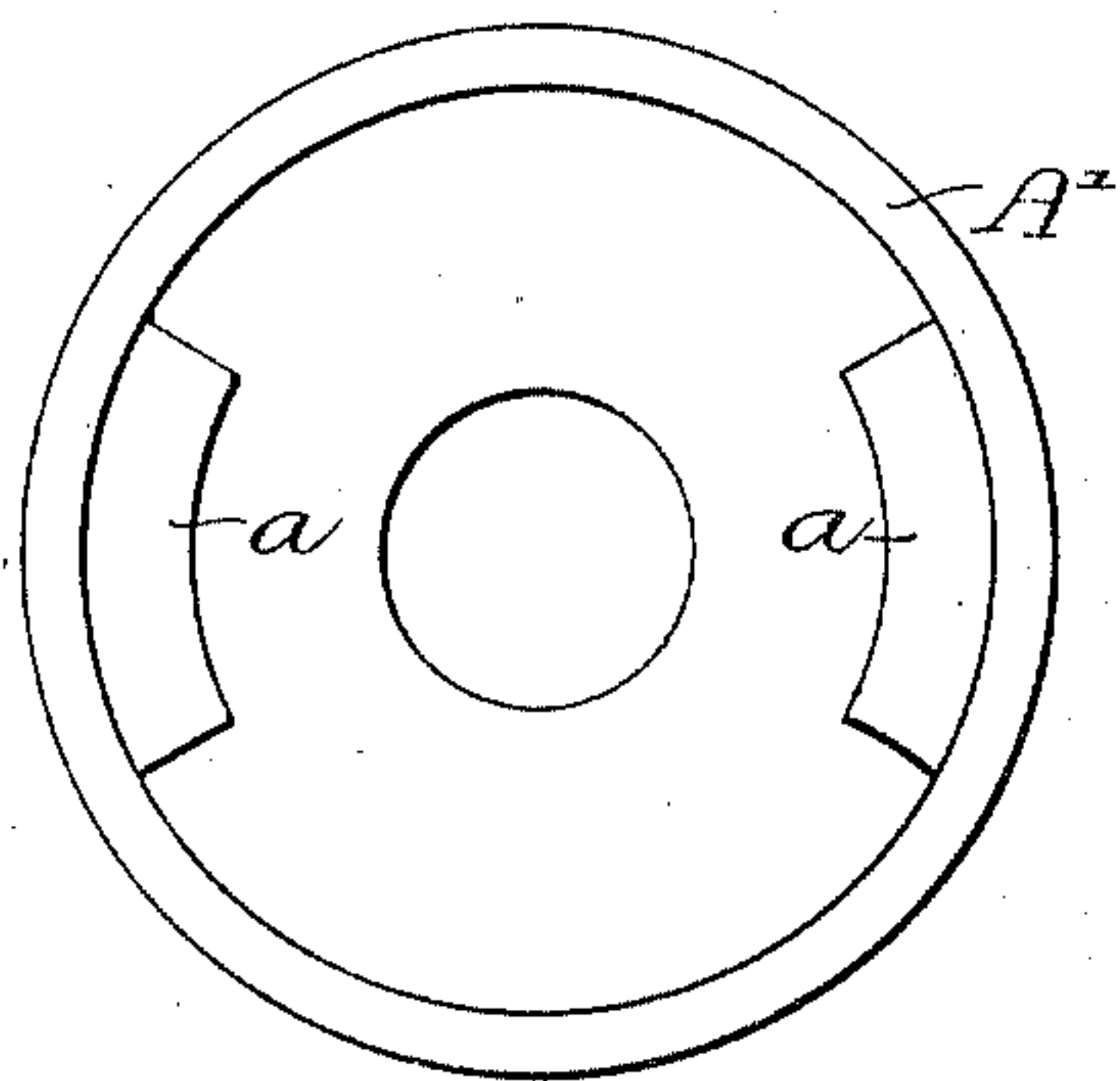


Fig. 2.

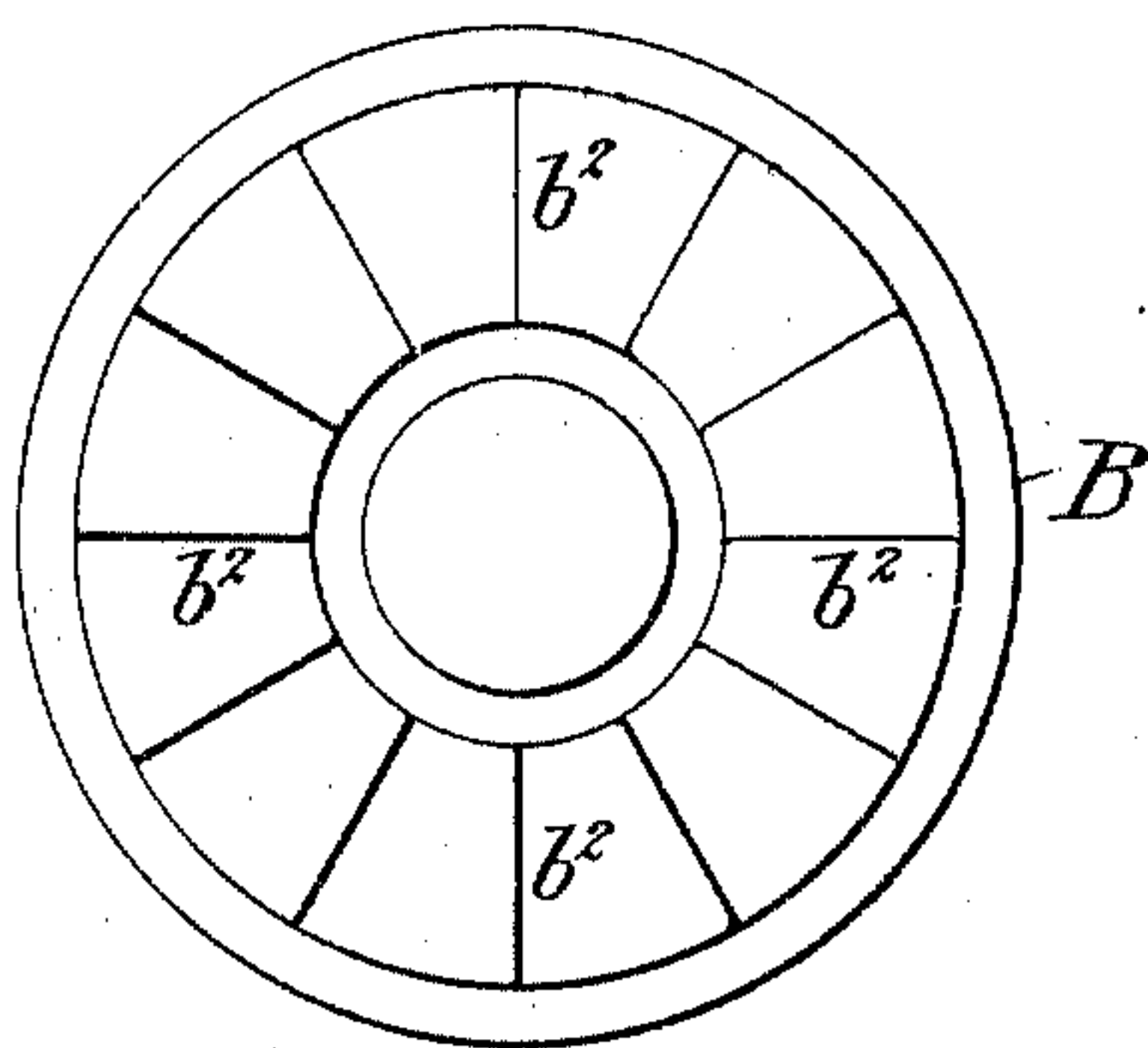


Fig. 1.

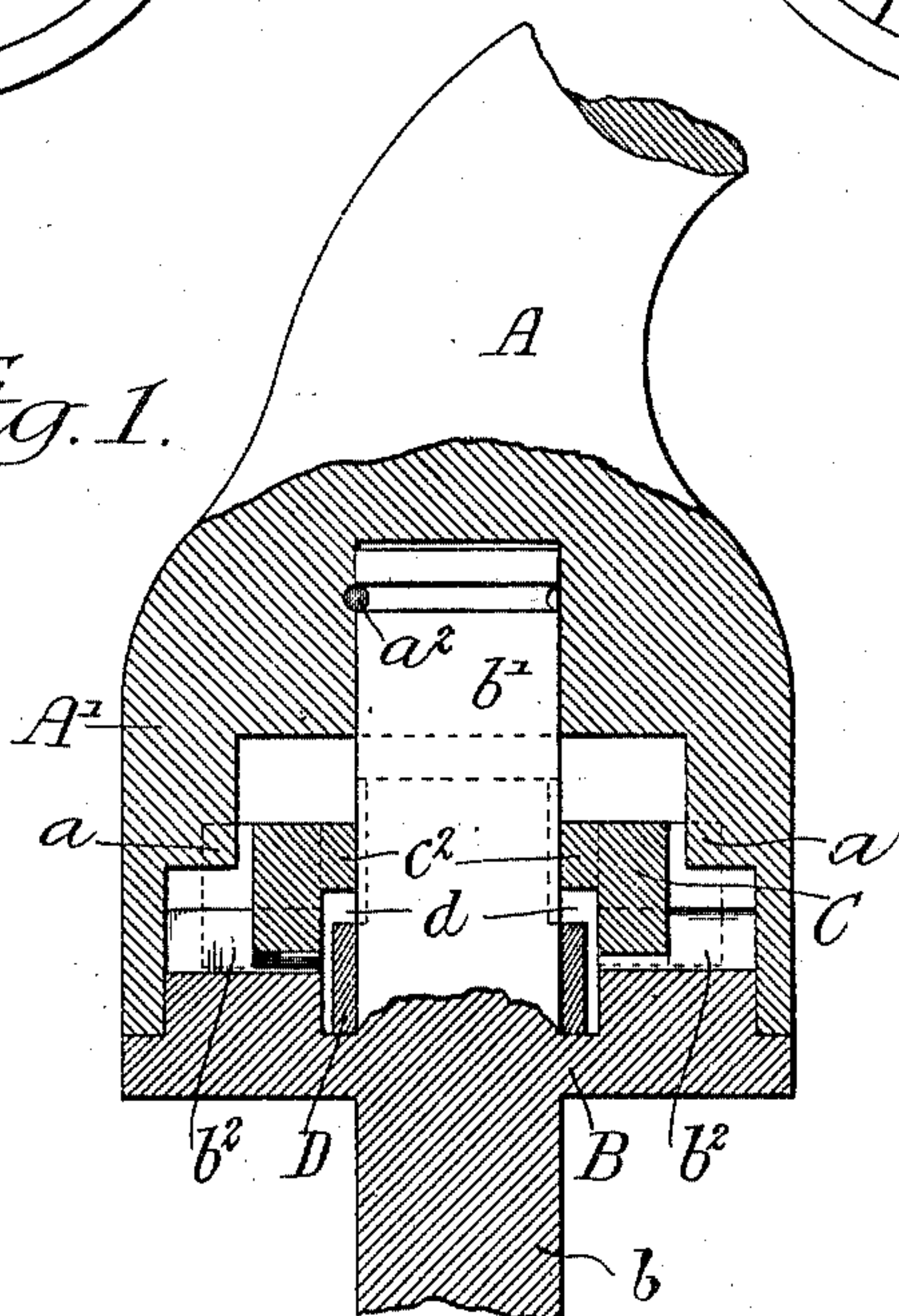


Fig. 4.

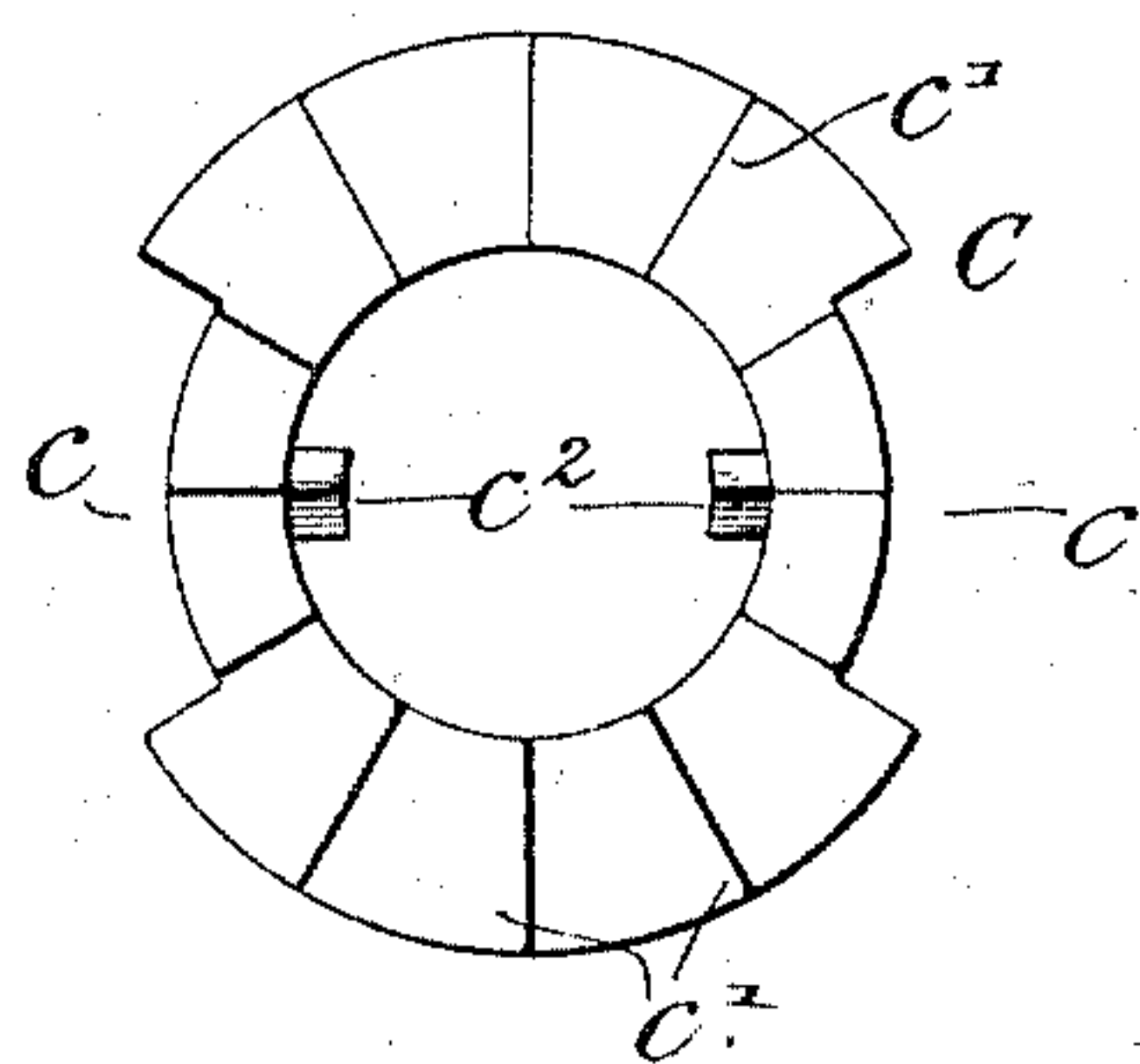
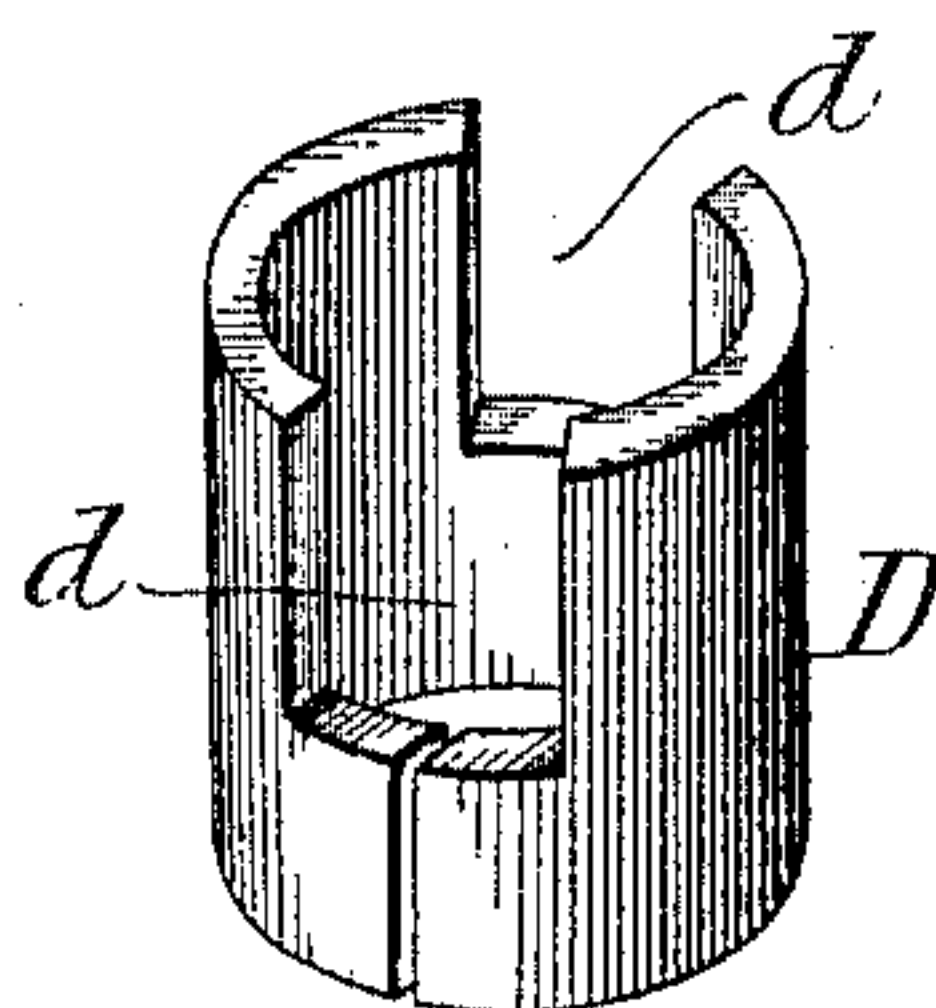


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

PAUL A. HOUGHTALING, OF RIVERTON, NEW JERSEY.

RATCHET MECHANISM.

SPECIFICATION forming part of Letters Patent No. 760,206, dated May 17, 1904.

Application filed October 21, 1903. Serial No. 177,929. (No model.)

To all whom it may concern:

Be it known that I, PAUL A. HOUGHTALING, a citizen of the United States, residing in Riverton, New Jersey, have invented certain Improvements in Ratchet Mechanism, of which the following is a specification.

My invention relates to certain improvements in that class of ratchets particularly designed to operate without noise, the object of the present invention being to provide a device of such type which shall be simple in construction and whose parts shall be of such a nature as will not be likely to require frequent attention or repairs. These objects I attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of my improved ratchet. Fig. 2 is a plan view of the bottom member of the ratchet. Fig. 3 is an inverted plan view of the top member of the ratchet. Fig. 4 is an inverted plan view of the dog, and Fig. 5 is a perspective view of the ring for holding the dog in an elevated position when one member of the ratchet is moved backward.

In the above drawings my improved ratchet is illustrated as designed for application to a car-brake; but it will be understood that it may with advantage be employed in any other forms of apparatus in which it is desired to detachably connect a driving with a driven member.

In the device illustrated A represents the handle of a brake, this being enlarged at its lower portion into a casing A', which fits upon a plate B in such a manner as to be completely closed. Said plate forms part of or is rigidly attached to the brake-staff b and has in its upper surface within the limits of the casing A' a series of ratchet-teeth b², arranged radially, though not extending all the way to the central spindle b'. This latter enters a recess in the body of the handle and is held therein by a pin or key a². Between the spindle b' and the teeth b² is a space within which is a ring D, preferably split, which has in each side and at points preferably opposite to each other two recesses d. Said ring extends to a height above the teeth b² and above the top of the toothed ring or dog C, it being

seen that the casing A' is recessed for the accommodation of these parts. The clutch-ring C is, as shown in Fig. 4, provided with teeth similar in form and arrangement to those upon the lower member B of the ratchet, though there are two recesses in said ring, as indicated at c, these being, as noted in the case of the recesses d of the ring D, preferably placed opposite one another. The width of the teeth c' of the ring C is the same as that of the teeth on the part B, and there are two lugs c² extending inwardly from the inner portions of said rings placed to enter the recesses d of the ring D. The clutch-ring C, while being free to move up and down on the spindle b', is prevented from turning independently of the upper ratchet member A' by means of the two lugs a, formed on the inside of the casing and placed so as to enter the recesses c of said ring. The ring D is therefore compelled by the lugs c² to turn with the clutch-ring C, and hence with the casing or upper ratchet member A'.

In operation as long as the handle or member A is turned in one direction the lugs a turn the clutch-ring c and with it the ring D. Since the teeth c' of the clutch-ring engage the teeth of the plate B of the second member of the ratchet, this latter will also turn, and the staff b will have power transmitted to it from the handle A. If now the direction of motion of the said handle is reversed, the lugs a are immediately moved backward, and since the teeth both on the ring C and on the plate B are beveled in the well-known manner said ring will be forced to move vertically on the spindle b', the faces of the teeth sliding upon one another. The split ring D is preferably made to fit the spindle b' rather tightly, so as not to turn with too great freedom, and as the clutch-ring rises its lugs c² bear upon the vertical or, if desired, slightly-inclined edges of the recesses d, and thereby retain it in an elevated position as long as the member A is moved backward even when the recessed portion of one of the teeth b² would otherwise allow the ring to fall to its normal position. Such action is due to the friction between the coacting surfaces of the lugs a and the recesses c of the ring C, as well as to the friction be-

tween the lugs c^2 and the walls of the recesses d of the split ring D, which, as before noted, is more or less difficult to turn. By this means the clutch-ring is kept from alternately rising and falling as the handle A is moved back, and consequently there is none of the objectionable chattering noise ordinarily noted when a device having a ratchet of the type to which my invention belongs has one of its members moved while the other remains still. When the handle A is again moved in a forward direction, the clutch-ring at once falls, so that its teeth come into engagement with the teeth of the plate B and the two members of the ratchet are immediately coupled, so as to be compelled to move in unison.

I claim as my invention—

1. The combination in a ratchet mechanism of two members of which one has a face provided with a series of teeth, a piece connected to the second member and having a tooth or series of teeth placed in position to engage the teeth of said first member, said piece being free to move relatively to said second member and being compelled to turn therewith, with means frictionally engaging one of the members for holding the piece so that its teeth are out of operative engagement with those of the toothed member under certain conditions of operation, substantially as described.

2. A ratchet mechanism having two members, with a piece between them free to move parallel to the axis of the ratchet and connected to one member so as to turn therewith, teeth upon said piece and on the second member, and means frictionally engaging the second member for holding said piece in a definite position relatively to said second member so as to prevent the piece from rising and falling when the first member is turned backward, substantially as described.

3. The combination with a ratchet mechanism having two members of which one has a surface provided with a series of teeth, of a piece having a surface parallel to that of said member and provided with a tooth or series of teeth, with a spring-sleeve placed to engage said piece and bearing upon one of the members for retaining the toothed piece in a position away from the toothed member, substantially as described.

4. The combination in a ratchet mechanism of two members, one of the same having teeth, a toothed piece for engaging said member, said piece being connected to the second member so as to be movable longitudinally but compelled to turn with the same, with a sleeve having a surface for receiving a por-

tion or portions of the toothed piece whereby said piece is held in a position away from the toothed member when one of the members is moved independently of the other, said sleeve bearing upon a portion of one of the members so that its revolution is retarded thereby, substantially as described.

5. The combination of a spindle having attached to it a toothed plate forming one member of a ratchet mechanism, a toothed piece adjacent to said plate provided with a projecting portion, a second member having a pin-and-recess connection with said piece and a sleeve on the spindle having a recess for the reception of the projection on said piece, substantially as described.

6. The combination of a spindle having a portion formed with radially-placed teeth and serving as one member of a ratchet mechanism, a sleeve on the spindle adjacent to the inner ends of said teeth, a toothed ring normally in engagement with the toothed member and having portions for engaging the sleeve on the spindle, with a second member connected to the toothed ring so as to revolve the same, substantially as described.

7. The combination in a ratchet mechanism of two members of which one has a series of teeth, a toothed piece for engaging the said teeth, said piece being free to move longitudinally but compelled to turn with the second member, and a sleeve frictionally held by one of the members for holding said piece so that its teeth are out of operative engagement with those of the toothed member as long as the second member is moved independently of the other member, substantially as described.

8. The combination in a ratchet mechanism of two members, of which one is provided with teeth, a toothed piece connected to the other member for engaging said teeth of the first member, with a sleeve having a recess-and-projection connection with the toothed piece and revolvably carried on the toothed member, said sleeve bearing upon said member so as to have its revolution retarded thereby and being constructed to retain the said toothed piece in a position away from the toothed member as long as one of the members is moved independently of the other, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL A. HOUGHTALING.

Witnesses:

WILLIAM E. BRADLEY,
JOS. H. KLEIN.