

No. 721,200.

PATENTED FEB. 24, 1903.

C. E. KELLY.
SPEED INDICATOR.

APPLICATION FILED NOV. 14, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

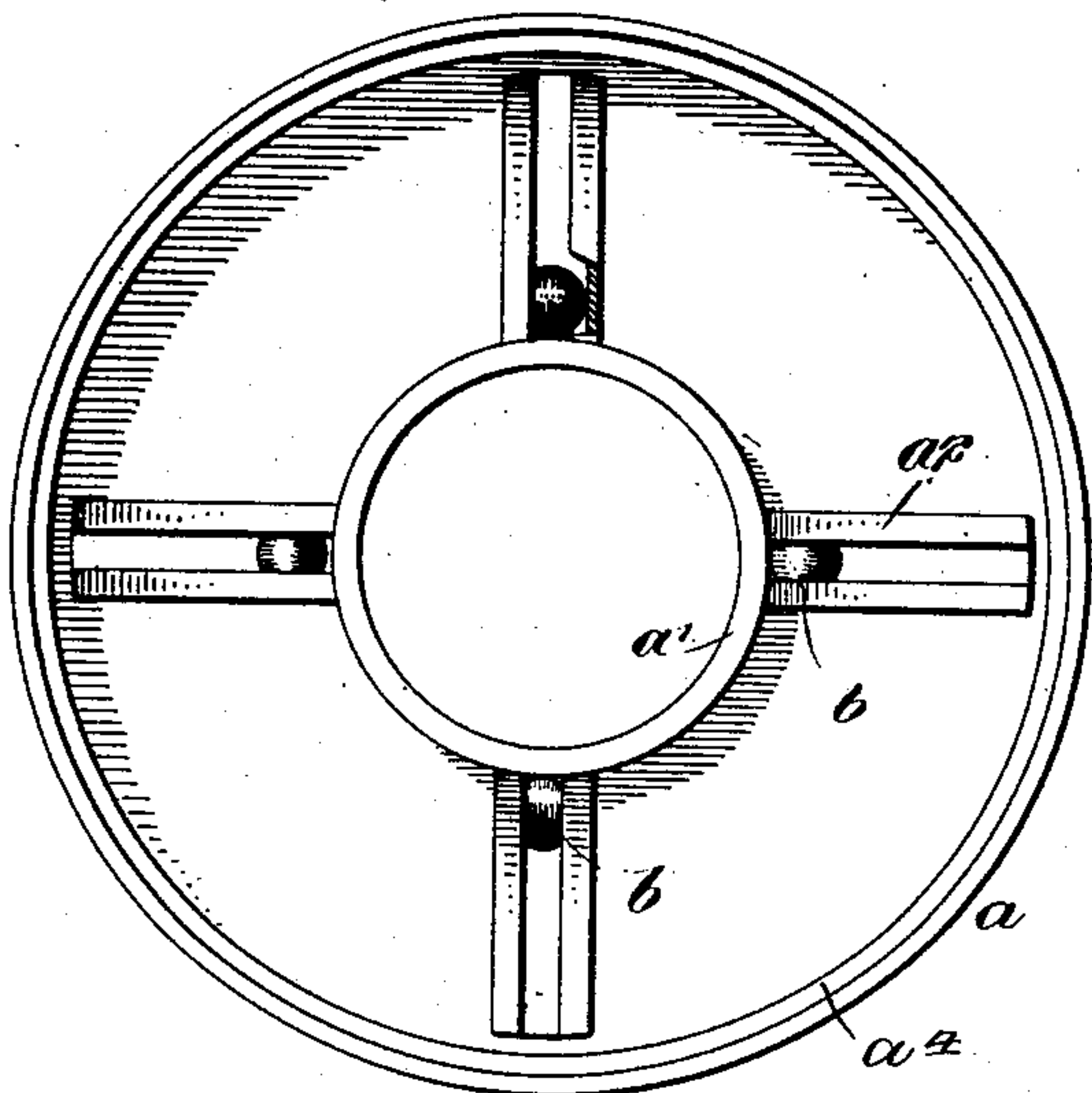


Fig. 2.

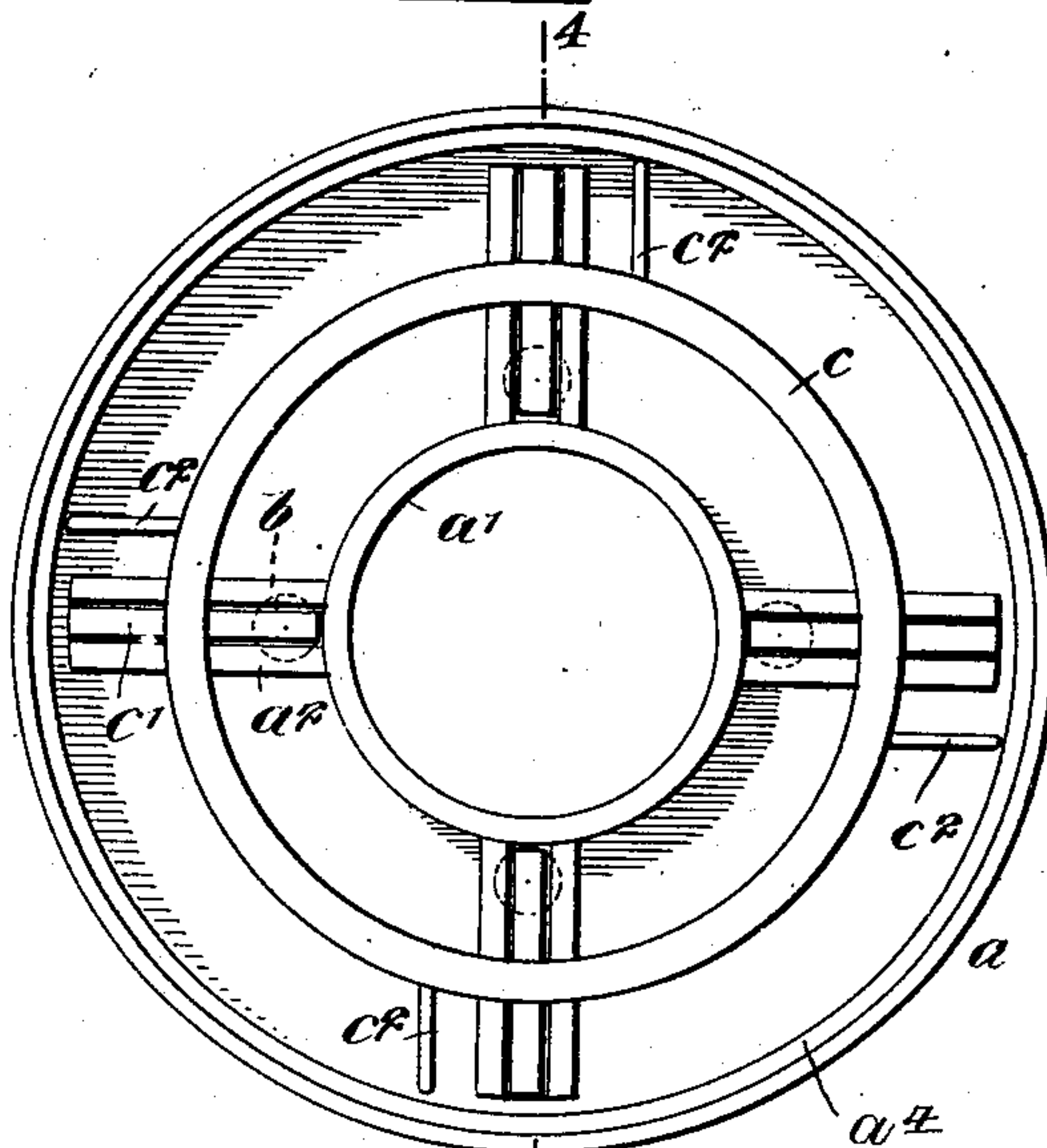


Fig. 3.

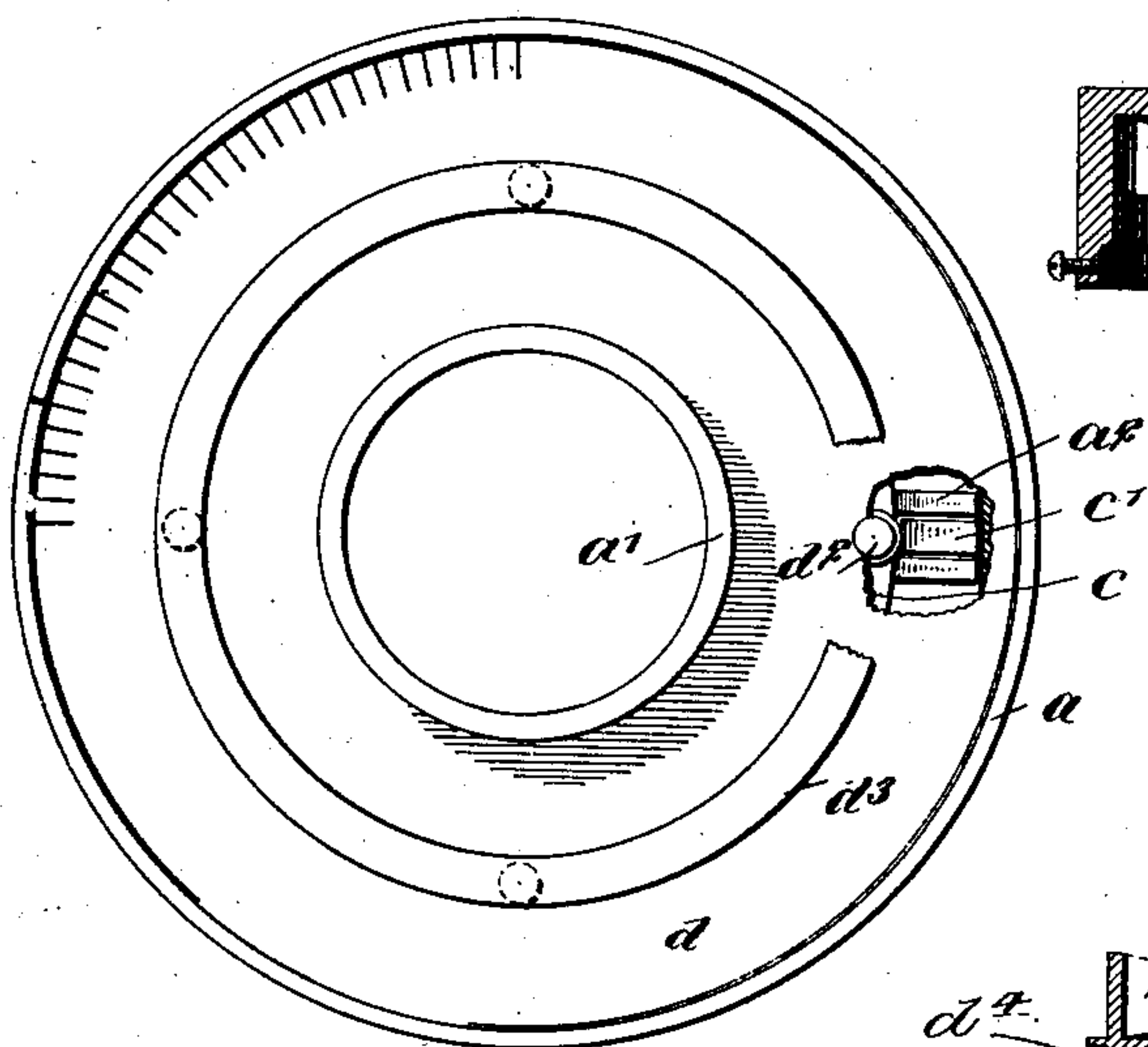


Fig. 4.

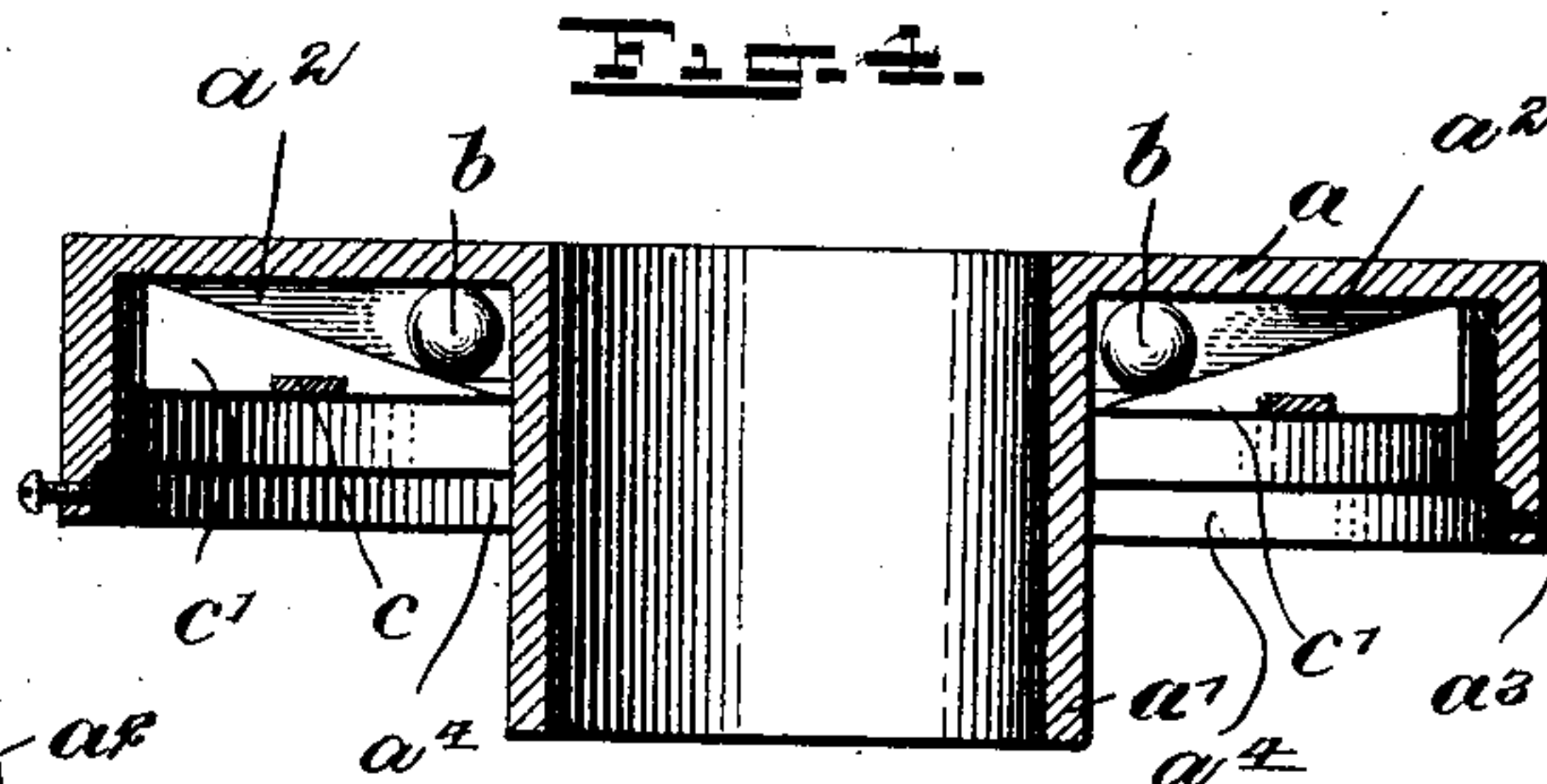


Fig. 5.

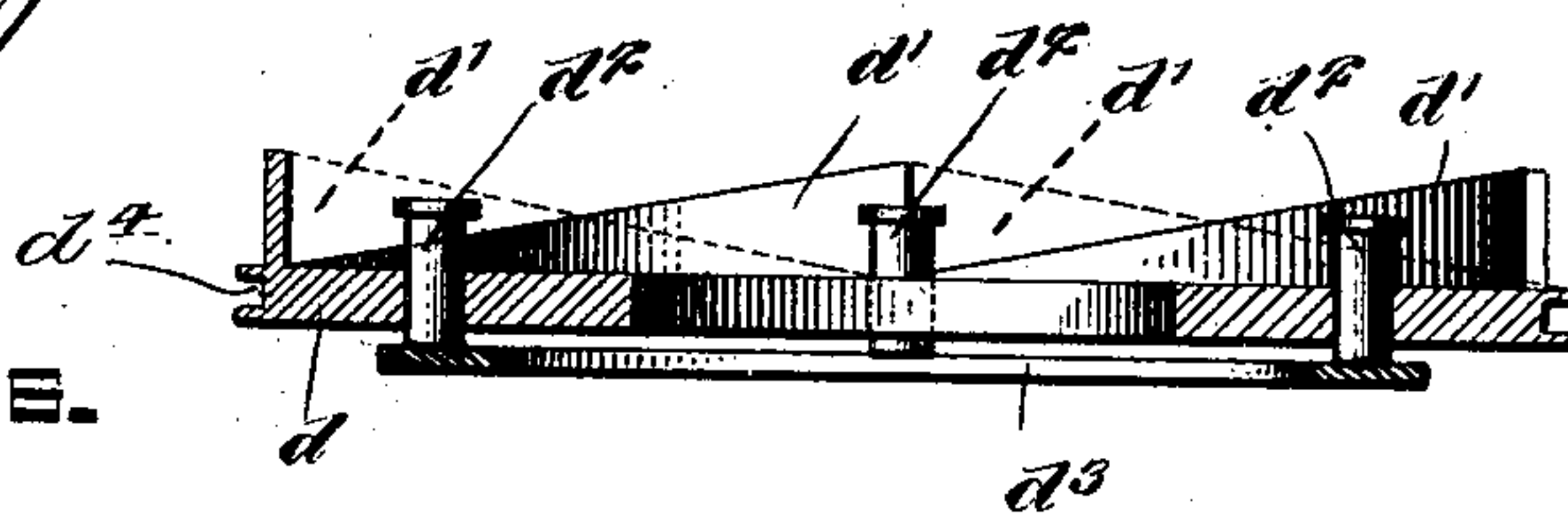
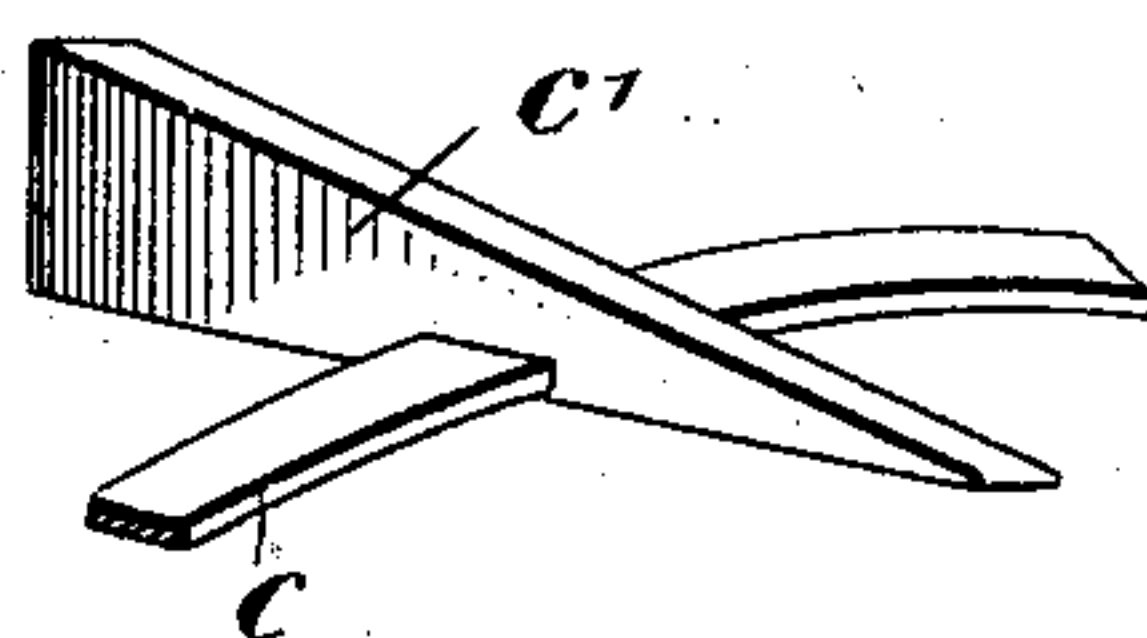


Fig. 6.



WITNESSES:

Geo. W. Maylor
A. Owens

INVENTOR

Clarence E. Kelly

BY

Mum
ATTORNEYS

No. 721,200.

PATENTED FEB. 24, 1903.

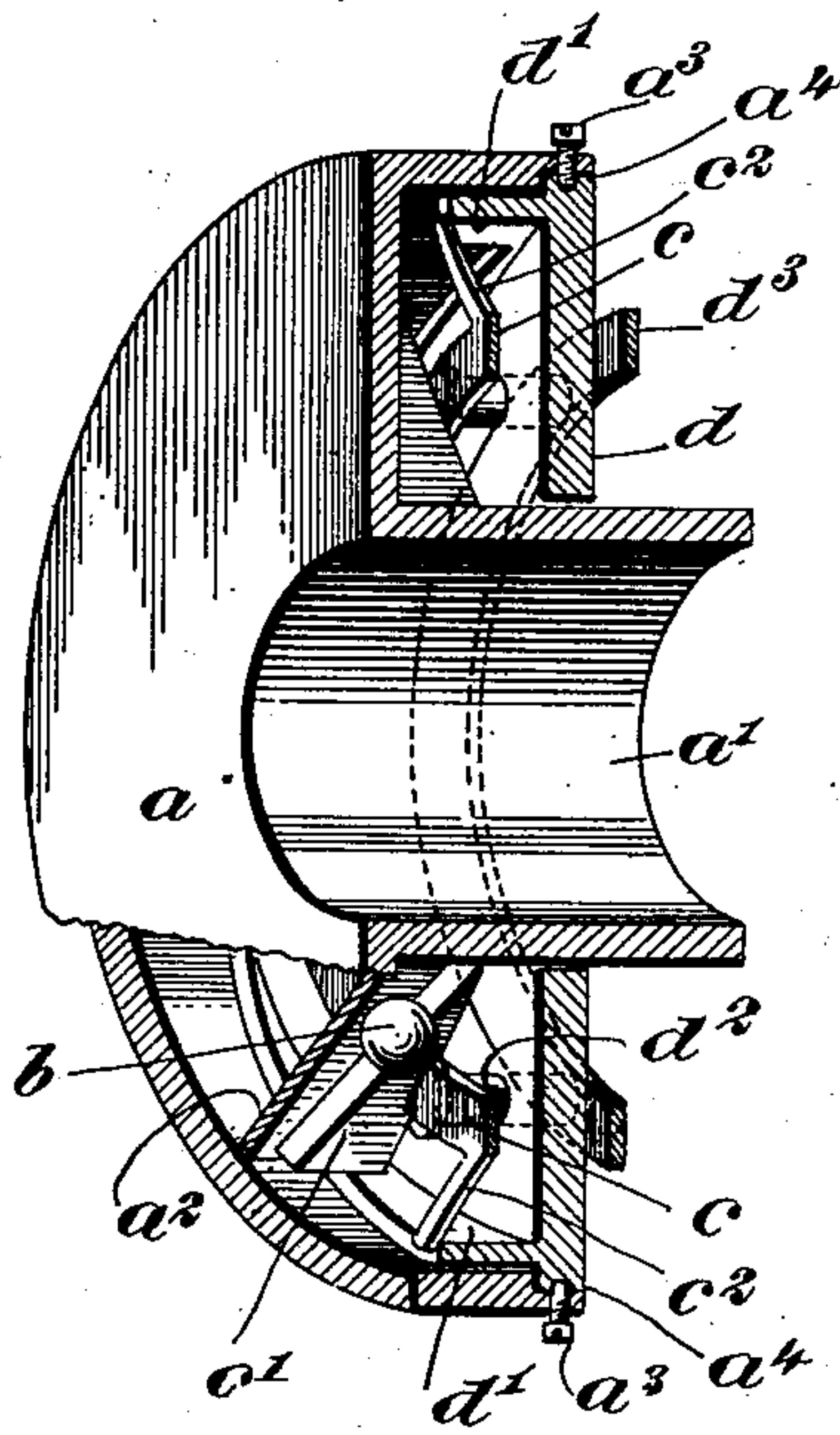
C. E. KELLY.
SPEED INDICATOR.

APPLICATION FILED NOV. 14, 1901.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 7.



WITNESSES:

Geo. W. Maylor.

J. B. Owens.

INVENTOR

Clarence E. Kelly.

BY

Wm. W. Maylor
ATTORNEYS

UNITED STATES PATENT OFFICE.

CLARENCE E. KELLY, OF ANDERSON, INDIANA, ASSIGNOR OF ONE-HALF
TO WILLIAM H. FORSE, JR., OF ANDERSON, INDIANA.

SPEED-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 721,200, dated February 24, 1903.

Application filed November 14, 1901. Serial No. 82,205. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. KELLY, a citizen of the United States, and a resident of Anderson, in the county of Madison and State of Indiana, have invented a new and Improved Speed-Indicator, of which the following is a full, clear, and exact description.

This invention relates to a centrifugally-controlled means for transmitting movement to a speed-indicator. It is applicable to any rotary part, as will be apparent from the drawings and description.

This specification is a specific description of one form of the invention, while the claims are definitions of the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an interior view of the casing. Fig. 2 is a similar view with the ring and radial inclines in place. Fig. 3 is an exterior view of the apparatus with parts broken away. Fig. 4 is a section through the line 4-4 of Fig. 2. Fig. 5 is a section of the casing-cover. Fig. 6 is an inverted fragmentary detail view of the ring and one of the radial inclines, and Fig. 7 is a sectional perspective of the complete device.

The casing *a*, as best shown in Figs. 4 and 7, has a hub *a'*, which is adapted to be fastened on a shaft or other rotary member the movement of which is to be measured. This casing *a* has within it a number of radial guideways *a²*, wherein are fitted spherical weights *b*. These weights are adapted to be actuated by centrifugal force, and they in turn act on radially-disposed inclined ribs *c'*, fastened to a ring *c*. The ring *c* lies in the casing *a* concentrically to the hub *a'*, and its inclined ribs *c'* are so disposed that they fit in the guideways *a²*, so that as the weights *b* move outward they ride along the inclined edges of the ribs *c'* and force the ring *c* to move longitudinally of the hub *a'*—that is, along the axis of the casing *a* and the shaft whereon the said casing is mounted.

One end of the casing *a* has a rabbet-groove *a⁴* formed therein, and in this groove fits loosely a cover-plate *d*, (see Figs. 3 and

7,) this plate lying around the hub *a'* and having a groove *d⁴* in its periphery, in which are received screws or other fastening devices *a³*, carried by the side walls of the casing *a*. By means of these screws the cover-plate *d* may be held in place normally to turn with the casing and yet to be adjustable around the hub *a'* when desired. The ring *c* is provided with a number of outwardly-projecting springs *c²*, which correspond with the number of guideways *a²*. On these springs *c²* are adapted to bear inclined ribs *d'*, formed on the inner face of the plate *d*. These ribs *d'* lie against the inner face of the side wall of the casing *a* just beyond the outer ends of the guideways *a²*. Carried in the cover-plate *d* are a number of pins *d²*, bearing on the ring *c*. These pins are preferably the same in number as the guideways *a²* and their appurtenances. The pins *d²* are freely movable in the cover-plate *d* and have their outer ends attached to an annulus *d³*, which is adapted to have engagement with a means for operating the indicating device. These devices may, so far as the present case is concerned, be of any kind desired or suggested to a skilled mechanic. Now it is clear that as the casing *a* turns the weights *b* will be thrown outward, and this tends to move the inclined ribs *c'* and ring *c*. The movement of the ring *c* imparts corresponding movement to the pins *d²* and ring *d³*. If the case is turning rapidly, the movement of the weights *b* will be greater than when the case is turning slowly, and the annulus *d³* follows this movement, thus transmitting impulses to the indicating device, which impulses accurately correspond to the speed of the apparatus to which the invention is applied. By turning the cover-plate *d* relatively to the casing *a* a greater or less pressure may be applied by the inclined ribs *d'* to the springs *c²*, and thus the movement of the ring *c* may be retarded to any extent desired. This enables the apparatus to be accurately adjusted according to the form and movement of the element to which it is applied.

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

1. The combination of a rotary carrier, a

centrifugally-operating part carried thereby, an inclined rib bearing on said part, a spring in connection with said rib, and an inclined member adjustably bearing on the spring to vary the tension thereof.

2. The combination of a rotary carrier, a centrifugally-operating part carried thereby, an inclined rib bearing on said part, a ring in connection with said rib, a spring attached to the ring and means for varying the tension of the spring.

3. The combination of a rotary carrier, a centrifugally-operating part carried thereby, an inclined rib bearing on said part, a ring in connection with said rib, a spring attached to the ring and means for varying the tension of the spring, said means for varying the tension of the spring including a second inclined rib adjustably bearing on the spring.

4. The combination of a rotary carrier in two relatively movable parts, a centrifugally-operating part carried on one part of the carrier, an inclined rib bearing on the centrifugally-operating part, a spring connected with the rib, an inclined rib carried on the second part of the casing and bearing on the spring, and means for transmitting the movement of the first-named rib.

5. The combination of a rotary carrier in two relatively movable parts, a centrifugally-operating part carried on one part of the carrier, an inclined rib bearing on the centrifugally-operating part, a spring connected with the rib, an inclined rib carried on the second part of the casing and bearing on the spring, and means for transmitting the movement of the first-named rib, said means including a ring attached to the rib and a pin movably carried in the second part of the carrier and bearing on the ring.

6. The combination of a two-part carrier, a centrifugally-operating part carried on one part of the carrier, an inclined rib bearing on said centrifugally-operating part, means for transmitting the movement of said rib, a spring connected to the rib, and a second inclined rib attached to the second part of the carrier and bearing adjustably on the spring.

7. The combination of a rotary carrier, a centrifugally-operating part carried thereby, an inclined rib bearing on said part, a ring in connection with the rib, a spring attached to the ring, means for varying the tension of the spring, pins movably mounted in the carrier and engaging the ring, and an annulus held by the pins outside of the carrier.

8. The combination of a rotary carrier, a centrifugally-operating part carried thereby, an inclined rib bearing on said part, a ring in connection with said rib, a spring attached to the ring, a second inclined rib adjustably bearing on the spring to vary the tension thereof, pins held movably in the carrier and engaging the said ring, and an annulus held by the pins outside of the carrier.

9. The combination of a rotary carrier, a centrifugally-operating part carried thereby,

an inclined rib bearing on said part, a ring in connection with said rib, a spring attached to the ring, means for varying the tension of the spring, and means for transmitting the movement of the ring.

10. The combination of a rotary carrier, a centrifugally-operating part carried thereby, an inclined rib bearing on said part, a ring in connection with said rib, a spring attached to the ring, a second inclined rib adjustably bearing on the spring to vary the tension thereof, and means for transmitting the movement of the ring.

11. The combination of a rotary carrier, a centrifugally-operating part carried thereby, an inclined rib bearing on said part, a spring in connection with said rib, an inclined member adjustably bearing on the spring to vary the tension thereof, and means for transmitting the movement of the said inclined rib.

12. The combination of a rotary carrier, a centrifugally-operating part carried thereby, an inclined rib bearing on said part, a spring in connection with the rib, an inclined member adjustably bearing on the spring to vary the tension thereof, an annulus located outside of the casing, and devices establishing a connection between the annulus and the said inclined rib, whereby to transmit the movement of the rib.

13. The combination of a rotary carrier, comprising a case and a cover-plate therefor, the case having a rabbet-groove therein and the cover-plate fitting in the groove and having a grooved periphery, a means carried in the case and lying adjustably in the groove of the cover-plate adjustably to hold the cover-plate, a centrifugally-operating part carried by the case, an inclined rib bearing on the said centrifugally-operating part, means for transmitting the movement of the rib, a spring in connection with the rib, and a second inclined rib on the cover-plate and engaging the spring, for the purpose specified.

14. The combination of a rotary carrier, comprising a casing with a rabbet-groove therein and a cover-plate fitted in the rabbet-groove, the cover-plate having a grooved periphery, a fastening device carried by the case and adjustably fitted in the groove of the cover-plate, for the purpose specified, centrifugally-operating devices held by the case, means for transmitting the movement of said devices, a spring in connection with the movement-transmitting means, and an inclined rib on the cover-plate and engaging the spring, for the purpose specified.

15. The combination of a rotary carrier, comprising a case with a rabbet-groove and a cover fitted in the rabbet-groove, the cover having a peripheral groove, a fastening device on the case and projecting into the groove of the cover-plate adjustably to hold it, centrifugally-operating devices carried by the case, means for transmitting the movement of said devices, and a regulating device

for the said centrifugally-operating devices, the regulating device comprising a part carried on and movable with the cover-plate.

16. The combination of a rotary carrier, comprising a case with a rabbet-groove and a cover fitted in the rabbet-groove, the cover having a peripheral groove, a fastening device on the case and projecting into the groove of the cover-plate adjustably to hold it, centrifugally-operating devices carried by the case, means for transmitting the movement of said devices, and a regulating device for the said centrifugally-operating devices, the regulating device comprising a part carried on and movable with the cover-plate, and the said means for transmitting the movement of the centrifugally-operating devices comprising pins loosely carried in the cover-plate and an annulus attached to the pins and located outside of the said carrier.

17. The combination of a rotary carrier having means constituting a radially-disposed guideway, a weight mounted loosely in the guideway, an inclined rib set in the guideway and movable relatively to the carrier and engaged by the weight, and means for transmitting the movement of the rib.

18. The combination of a rotary carrier having an essentially radial guideway, a weight mounted loosely in the guideway, an inclined rib set in the guideway and movable relatively to the carrier and engaged by the weight, and means for transmitting the movement of the rib, the said means for transmitting the movement of the rib comprising a ring attached to the rib, a pin mounted loosely in the carrier and engaging the ring, and an annulus held by the pin outside of the carrier.

19. The combination of a rotary carrier, a weight held thereby to move therein under the action of centrifugal force, a member

bearing loosely and directly on the weight, to be moved thereby, a spring in connection with said member yieldingly to resist such movement, means for transmitting the movement of said member, and means for varying the tension of the spring, for the purpose specified.

20. The combination of a rotary carrier, a weight held thereon to move under the action of centrifugal force, a member bearing directly and loosely on the weight and adapted to be moved thereby, a ring located in the carrier, said ring being attached to said member and adapted to move with the same, and means extending to the outside of the carrier and engaged with the ring, whereby to transmit the movement thereof.

21. The combination of a rotary carrier, centrifugally-operating weights held to move thereon, inclined ribs bearing directly on the weights to be actuated thereby, a ring connected with the ribs, an annulus located outside of the case, a connection between the annulus and the ring, a spring attached to the ring, and a second inclined rib bearing adjustably on the spring, for the purpose specified.

22. The combination of a rotary carrier, and means in the carrier, said means forming a radial guideway therein, a centrifugally-operating weight carried in the guideway, an inclined rib projected into the guideway and loosely engaging the weight, and means for transmitting the movement of the rib.

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

CLARENCE E. KELLY.

Witnesses:

MARTIN L. CROMER,
MARC RYAN.