

(No Model.)

3 Sheets—Sheet 1.

C. T. HIGGINBOTHAM.
CYCLOMETER.

No. 576,967.

Patented Feb. 9, 1897.

Fig. 1

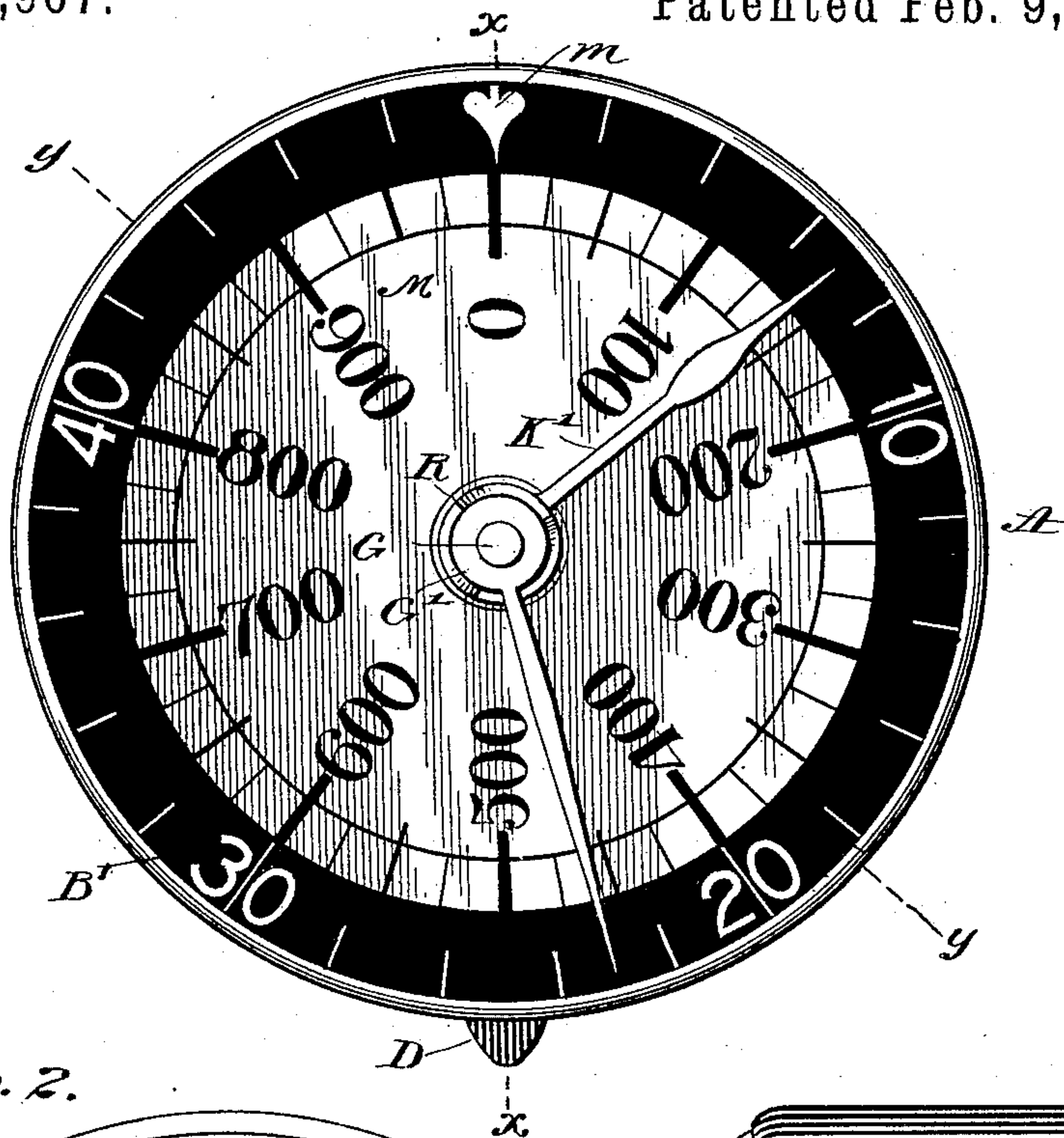
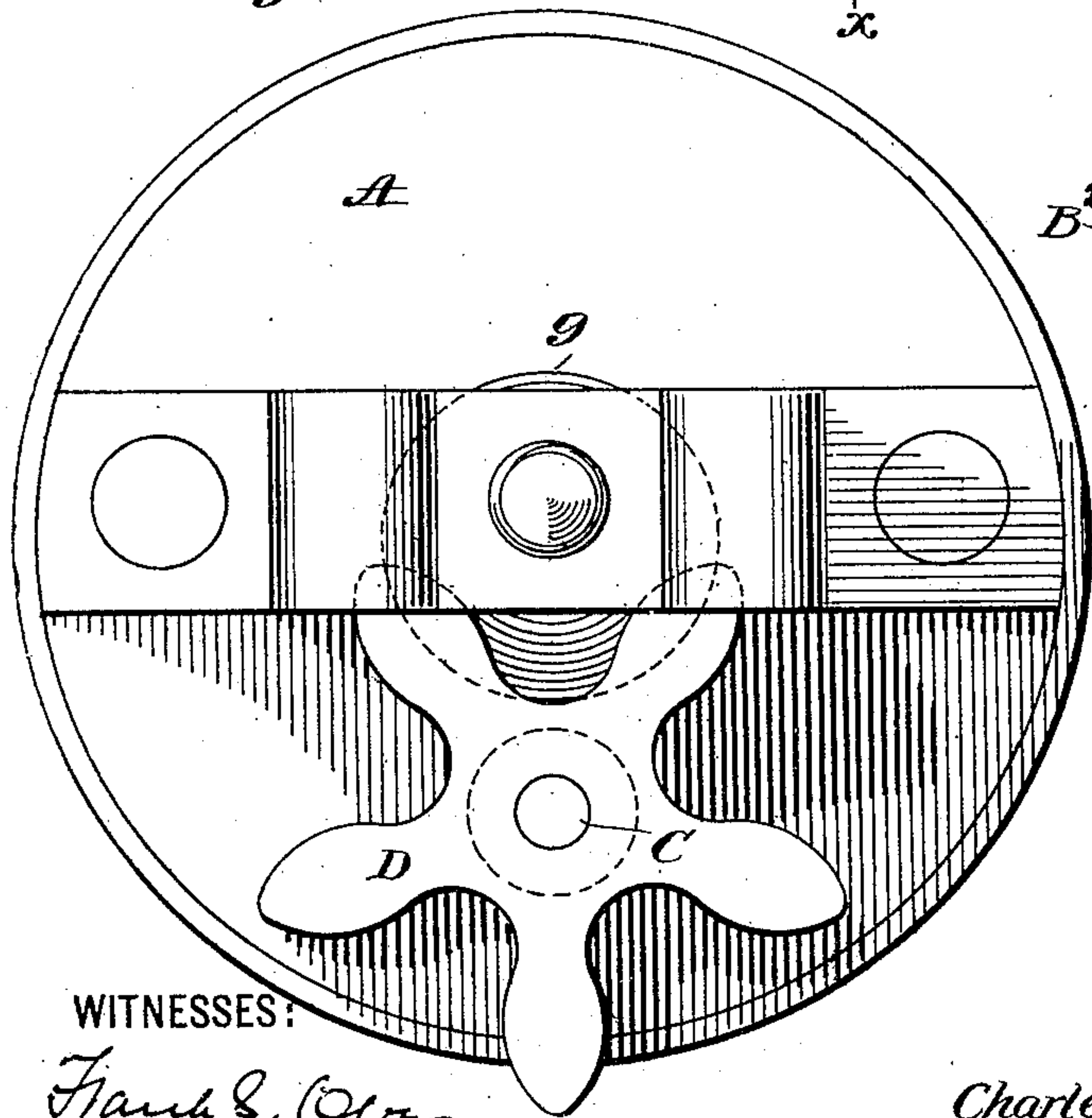


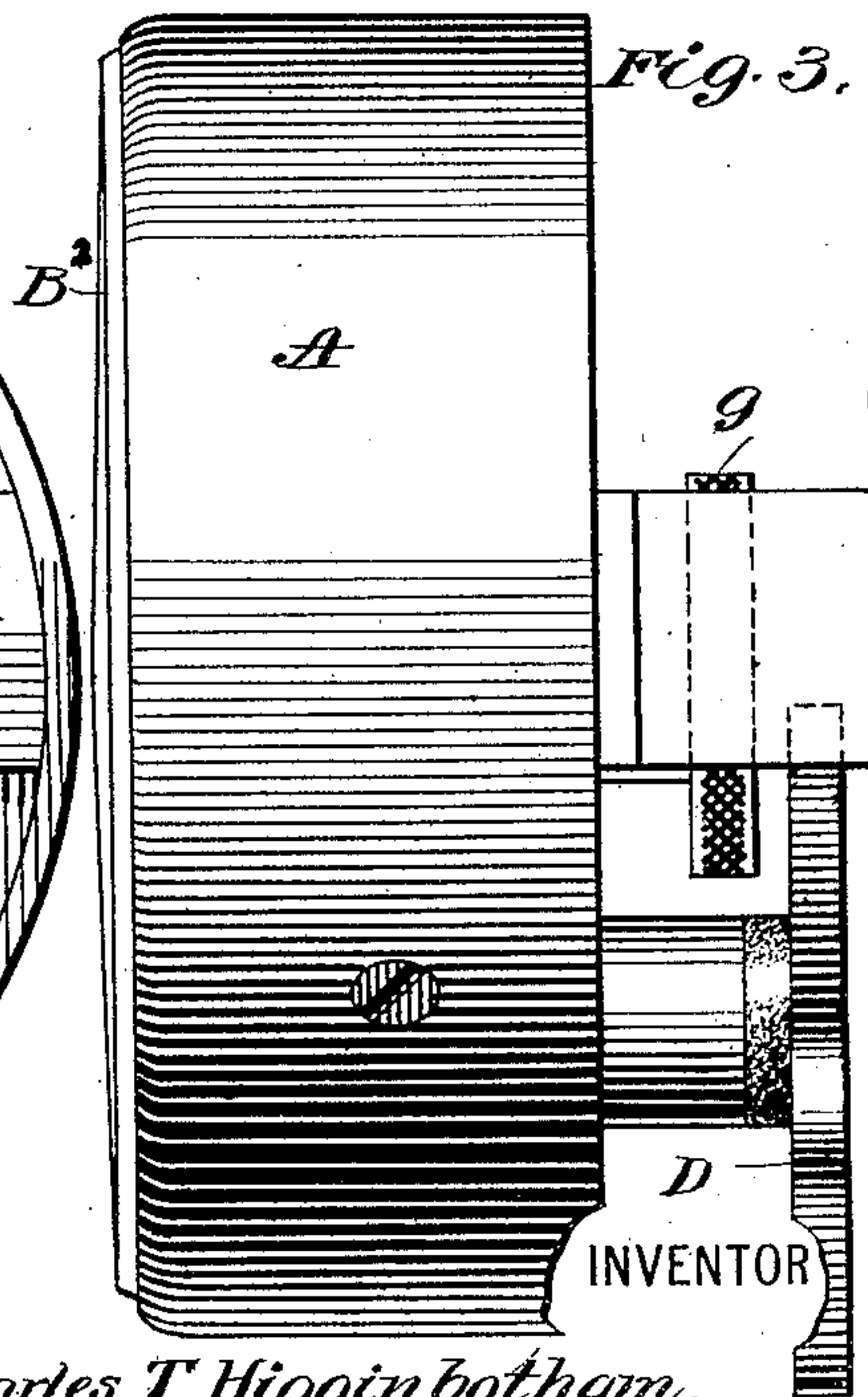
Fig. 2.



WITNESSES:

Frank S. Over
J. S. Oswald

Fig. 3.



INVENTOR

Charles T. Higginbotham.

BY

R. C. Mitchell

ATTORNEY.

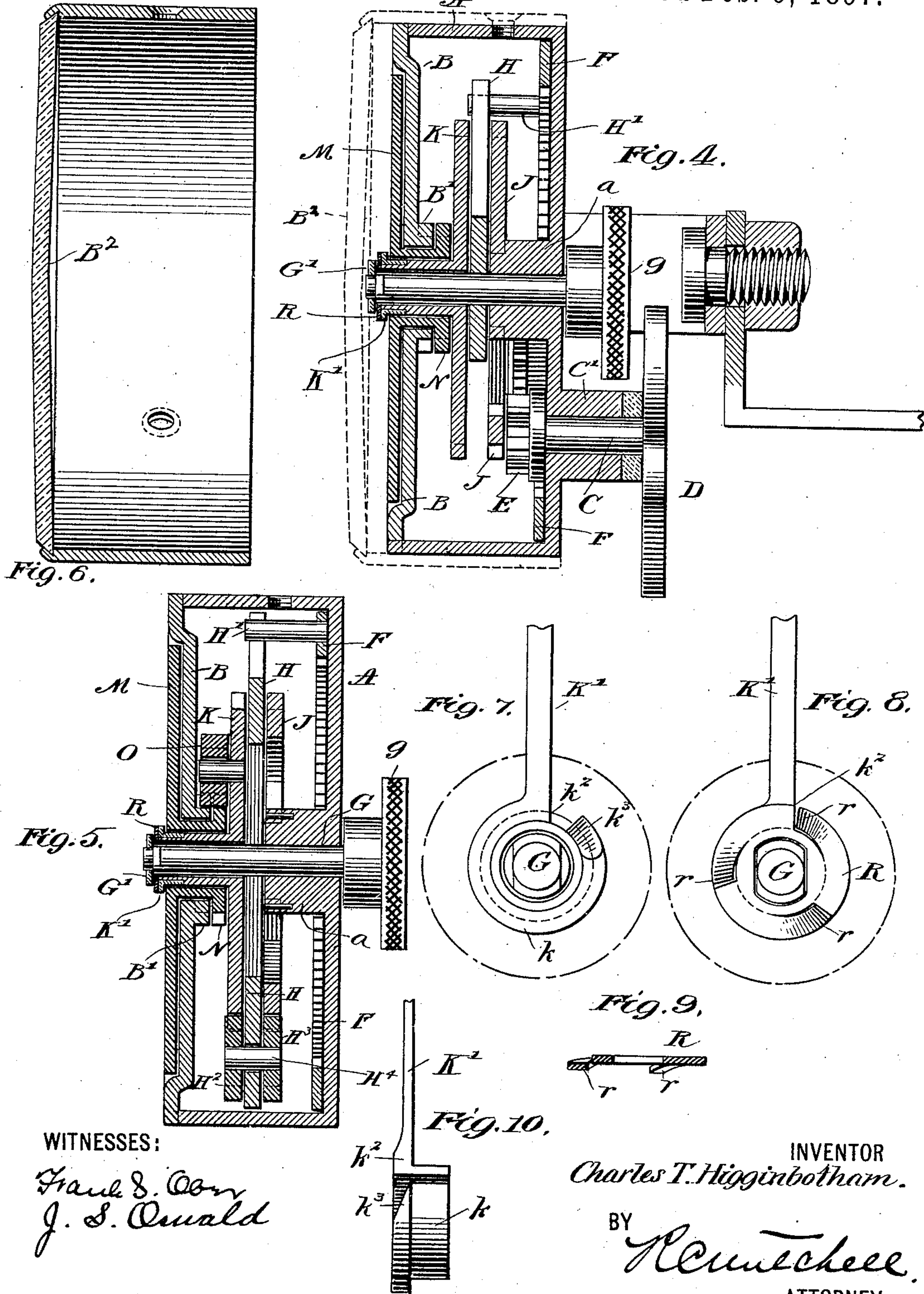
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C. T. HIGGINBOTHAM.
CYCLOMETER.

3 Sheets—Sheet 2.

No. 576,967.

Patented Feb. 9, 1897.



WITNESSES:

Frank S. Conner
J. S. Oswald

INVENTOR
Charles T. Higginbotham.

BY
R. M. Cheele,
ATTORNEY.

(No Model.)

3 Sheets—Sheet 3.

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Fig. 11.

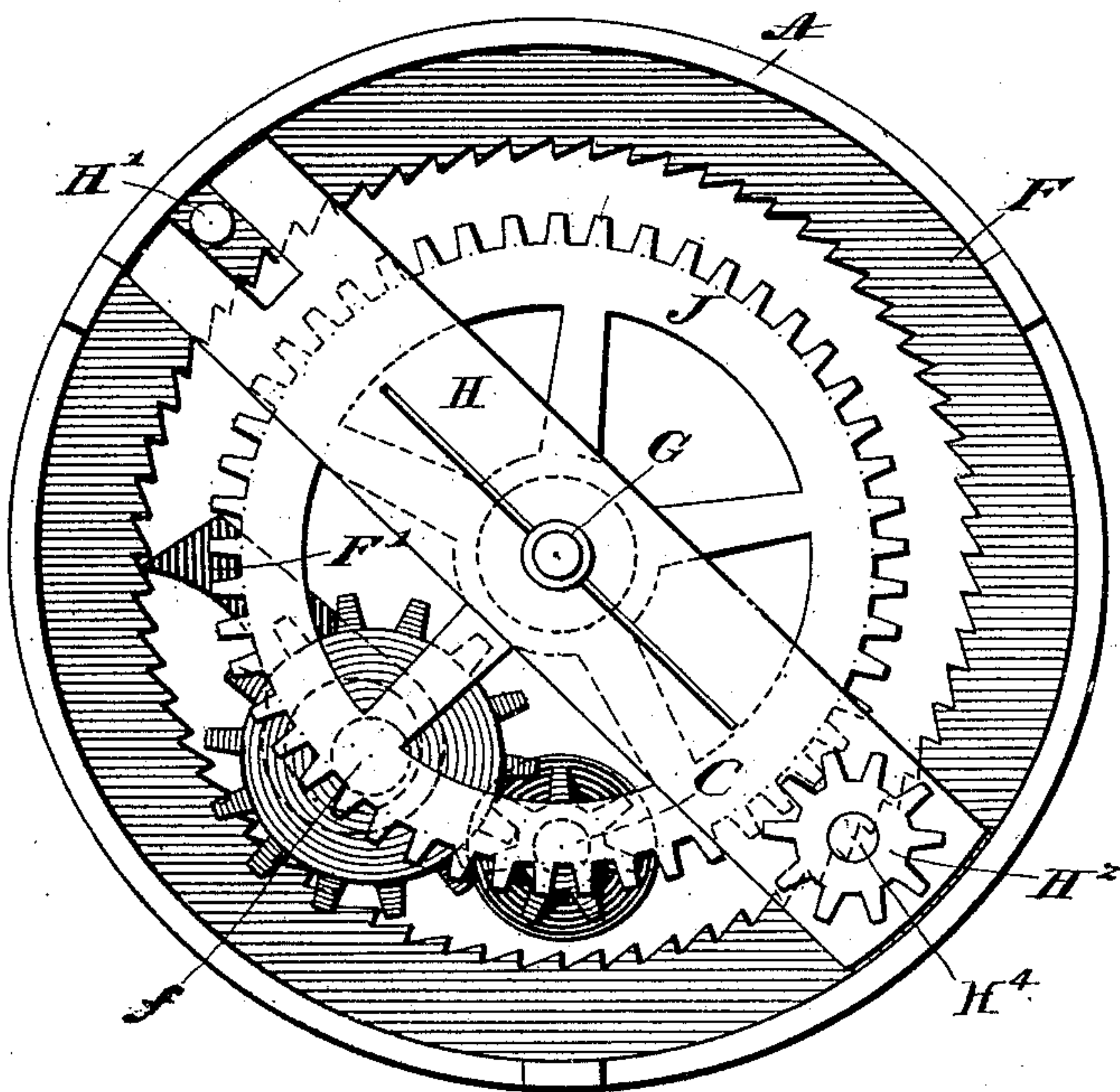


Fig. 14.

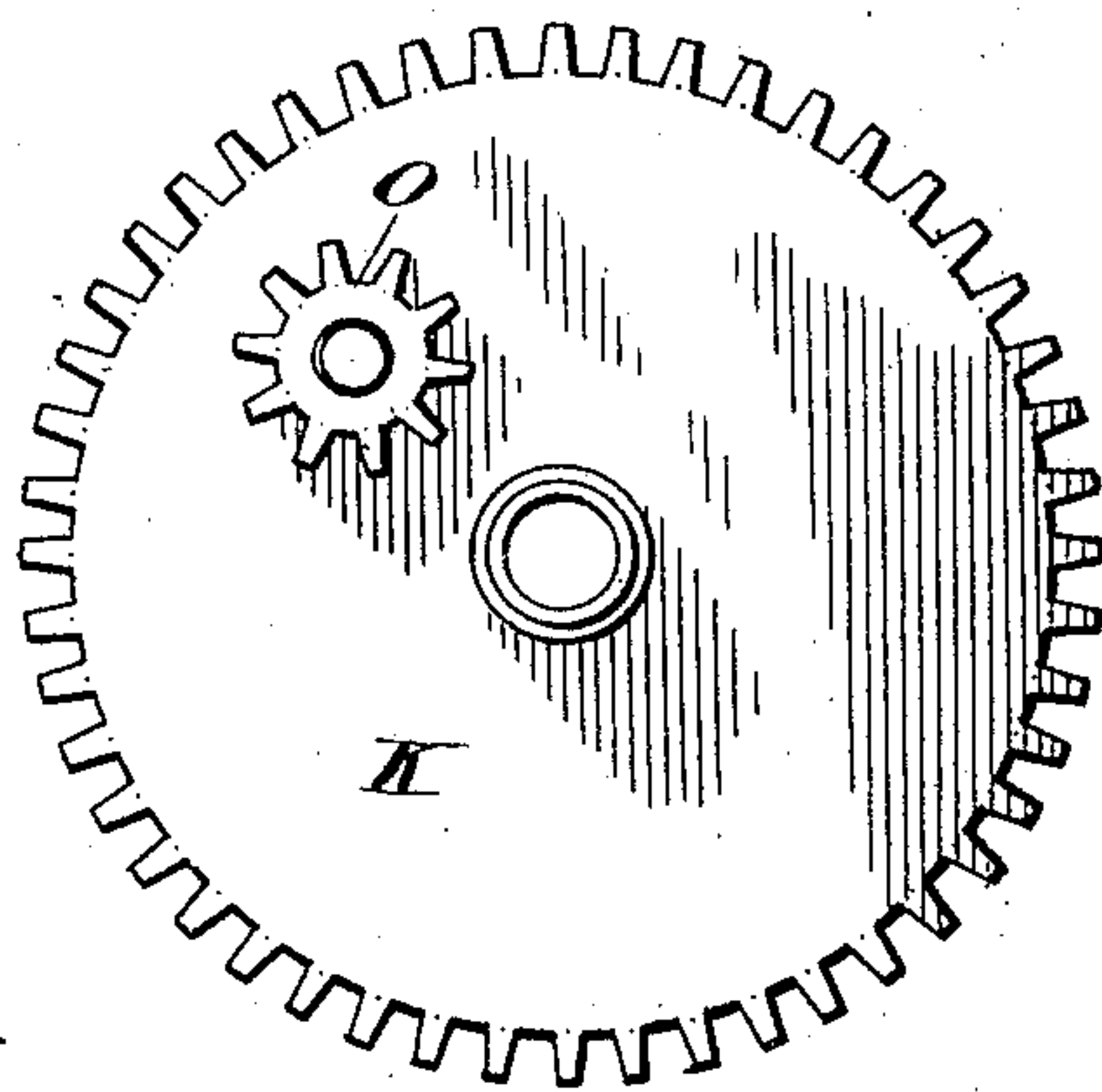


Fig. 12.

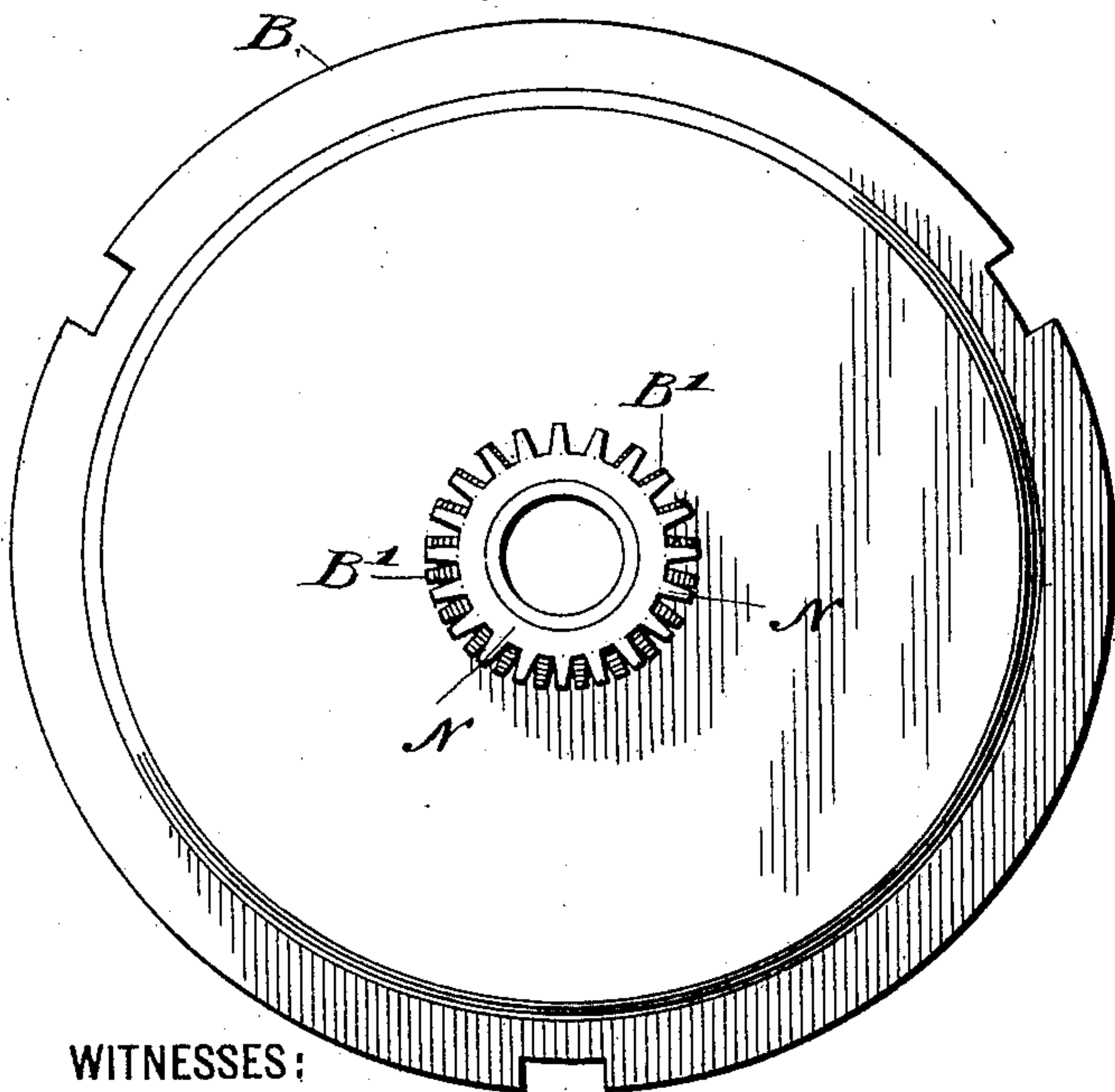


Fig. 13.

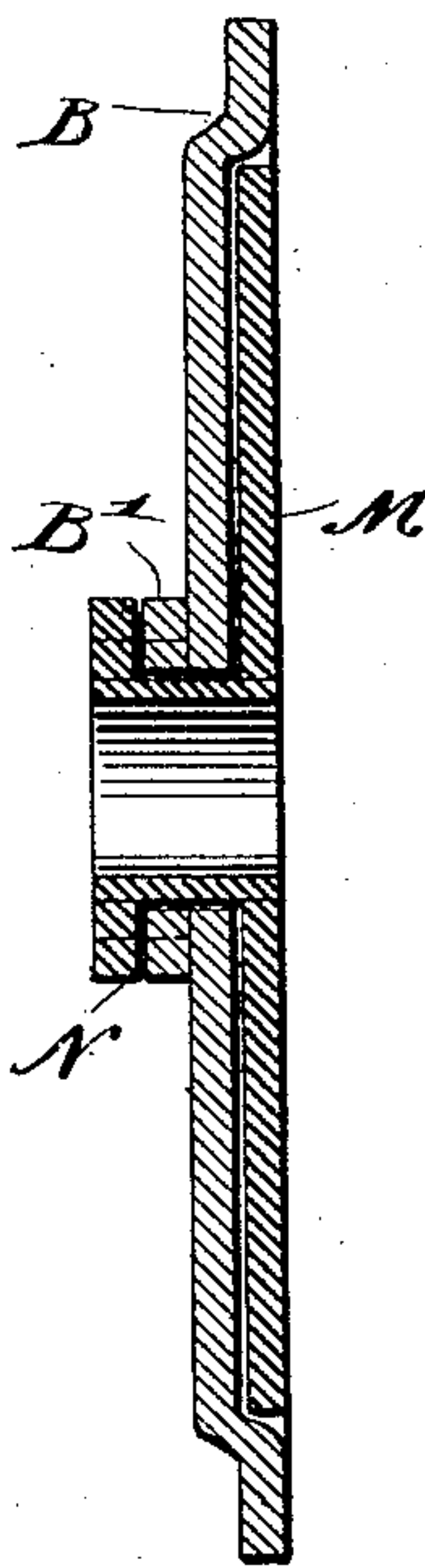
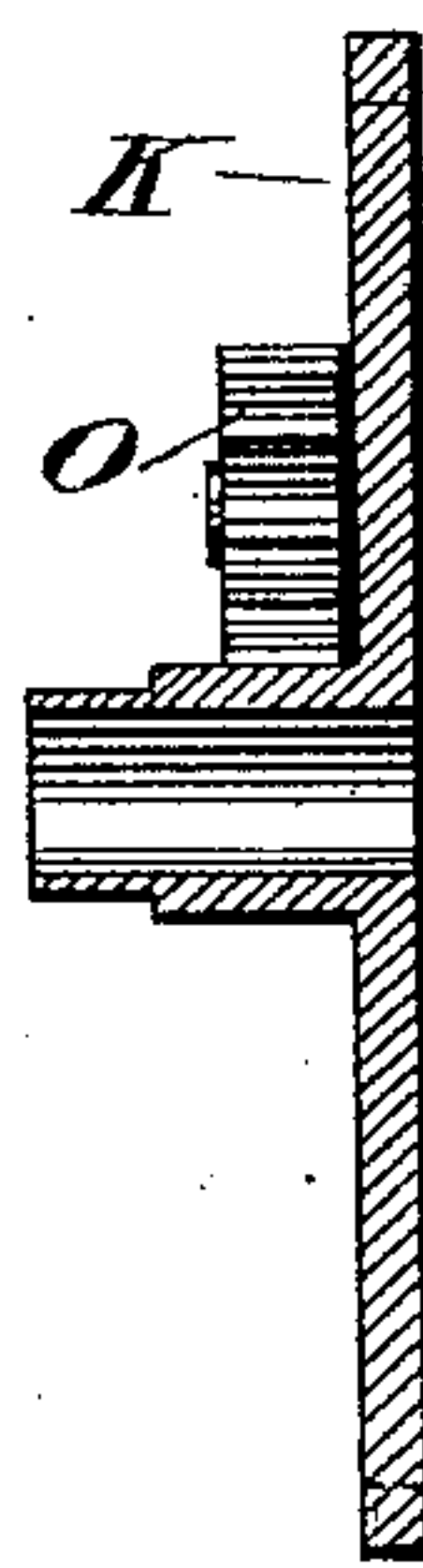


Fig. 15.



WITNESSES:

Frank S. Obier
J. S. Oswald

INVENTOR

Charles T. Higginbotham,

BY

R. C. Mitchell,

ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES T. HIGGINBOTHAM, OF THOMASTON, CONNECTICUT, ASSIGNOR TO
THE SETH THOMAS CLOCK COMPANY, OF CONNECTICUT.

CYCLOMETER.

SPECIFICATION forming part of Letters Patent No. 576,967, dated February 9, 1897.

Application filed August 22, 1896. Serial No. 603,574. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. HIGGINBOTHAM, a citizen of the United States, residing at Thomaston, in the county of Litchfield, State of Connecticut, have invented certain new and useful Improvements in Cyclometers, of which the following is a full, clear, and exact specification.

This invention relates to new and useful improvements in cyclometers.

The object is to provide in a device of this character mechanism for indicating the number of miles traveled by the vehicle up to a predetermined number, which mechanism may be reset to zero, as desired, while at the same time by an additional means the total number is registered of miles traveled up to another and much larger predetermined number. In other words, while the whole distance traveled by the vehicle is made and preserved the operator is at liberty to reset a portion of the device at any time at zero to register each particular trip or portion thereof or to register distance covered in a given time.

My invention consists in the special arrangement and construction of parts hereinafter fully described.

In the drawings, Figure 1 is a face view of my improved cyclometer shown on an enlarged scale. Fig. 2 is a rear view of the same. Fig. 3 is a side elevation thereof. Fig. 4 is a section on line xx of Fig. 1, with certain parts removed. Fig. 5 is a section on line yy of Fig. 1, with similar parts removed. Figs. 6, 7, 8, 9, and 10 are views of details. Fig. 11 is a face view of the interior mechanism. Fig. 12 is a rear elevation of the register-disks. Fig. 13 is a section of Fig. 12. Fig. 14 is a detail, and Fig. 15 is a section of Fig. 14.

Similar letters refer to similar parts.

A represents a casing containing the working parts of the device and provided, as shown, by a transparent cover B^2 for the protection of the internal mechanism. C is a shaft revolubly mounted in the casing at C' and carrying on its outer end the star-wheel D and on its inner end the pinion E, Figs. 4

and 11. The star-wheel D is operated in the usual manner by one of the wheels of the vehicle to which the cyclometer is attached in any well-known manner, and it is designed to rotate step by step an internally-toothed ratchet ring or wheel F through the medium of the eccentrically-mounted pawl F'. This pawl F' may be mounted directly on the shaft C, but I prefer to mount it, as shown in the drawings, on a stud f , having a gear-wheel thereon meshing with said pinion E.

In a suitable bearing a is mounted the central arbor G, extending through the casing and carrying at one extremity the indicator-hand G' and having at the other end outside the casing the head g , by which the hand G' may be manually turned in one direction or the other. The automatic movement of the arbor G is accomplished by means of the cross-piece H, which is in frictional engagement with said arbor, as shown in Fig. 11, said cross-head being connected with the ring F by the stud H'. Thus a complete rotation of the ring F causes a complete rotation of the arbor G and indicating-hand G'. Manual operation of the hand G' by means of the head g does not affect the other parts of the device except as hereinafter described, inasmuch as the connection between the arbor G and the cross-head H is merely frictional.

A toothed abutment-wheel J is fixedly secured to the casing A, as shown, Fig. 5. A gear-wheel K is revolubly mounted on the arbor G and has an elongated hub extending through a stationary disk B. H^2 H^3 are gear-wheels of equal diameter and fixedly mounted on a revoluble shaft H^4 , so as to move as one pinion. These wheels are located one on each side of the cross-head H, by preference. The wheels H^2 H^3 engage with the gear-wheels K J, respectively. The diameters of the latter are by preference equal, but the wheel K has a slightly greater number of teeth than the stationary wheel J. Therefore the rotation of the cross-head causes the wheel H^3 of the pinion to roll in the teeth of the abutment-wheel J, and thus revolve, through the medium of the wheel H^2 of the pinion, the wheel K a distance proportionate to the difference

in the numbers of the gear-teeth on said wheels K J, the principle being that of the differential gear.

Mounted on the stationary disk B is a revolvable disk M of a less diameter than the disk B and having suitable graduations around its periphery. The disk M carries at the extremity of its hub a fixed gear-wheel N. Another gear-wheel B', of equal diameter, is fixedly secured to the stationary disk B and stands in the same axial line with the gear N, fixed to the hub of the wheel B'. A pinion O, loosely mounted upon the revoluble wheel K, engages both of said gears N B'. There being a slightly greater number of teeth on the stationary gear B' than on the revoluble gear N the rotation of the wheel K causes the pinion O to roll in the teeth of the stationary gear B' and thus advance the disk M through the medium of its gear N a distance proportionate to the difference in the numbers of the teeth on said gears B' N, the principle being, as above, that of the differential gear. An indicator-hand K' is mounted on the hub of the revoluble wheel K.

The device in the drawings is so designed that one revolution of the ring F causes one revolution of the shaft G and the indicator-hand G' and one-fiftieth of a revolution of the wheel K and hand K', the ratio between the gears J and K being forty-nine to fifty, respectively.

One revolution of the gear K causes one-twentieth of a revolution of the disk M, the ratio between the gears N and B' being twenty to twenty-one, respectively. It should be understood, however, that my invention is not confined to any particular ratio of gearing.

The indicator-hands G' and K' move from left to right over a suitably-graduated scale on the fixed disk B, while the disk M carries a suitably-graduated scale thereon and moves from right to left, the scale on the disk M being read with relation to any fixed point adjacent thereto, such as indicated by *m*. The particular advantage in causing the internal dial M to move from right to left is the fact that it permits the numerals on said dial to be arranged around the periphery of the same in the ordinary manner, thus obviating any confusion in reading the same.

As mentioned hereinbefore, the indicator-hand G' is adapted to be manually moved at will in either direction. It is not desirable, however, that the hand K' should be capable of any manual movement in a forward direction, and to prevent this I provide the hand K' with a hub-ring *k*, having an opening preferably slightly smaller than the hub of wheel K. This hub-ring *k* is split, as shown, at a point closely adjacent to the butt of the hand K', and is designed to fit spring-tight on said hub. A metallic washer R is placed over the square portion of the shaft G, so as to revolve therewith, and stands between the hands K' and G', and has downwardly-inclined spring-

blades *r* of any desired number adapted to impinge against the edge *k*² of the hand K'. When it is desired to manually reset both indicator-hands to zero, the hand G' is first turned from right to left by means of the head *g*, and as it is turned the downwardly-inclined spring-blades *r* engage the hand K', as described, moving it in the same direction (right to left) toward the zero-mark, the split hub of said hand K' tending to open at the point of separation, thus increasing its internal diameter and permitting it to move freely in that direction on its hub. When the hand K' reaches the zero-mark, the movement of the hand G' is reversed, it being then moved in a complete circle from left to right, thus bringing both hands to the zero-mark. During the movement of the hand G' from left to right the hub of the hand K' clutches its supporting-shaft and remains stationary. The movement of the hand G' from left to right is easily effected, as the inclined spring-blades *r* readily ride over the surface of the hub *k*, which, if desirable, may also be provided with the inclined face *k*³, as shown.

In the ordinary operation of the device both hands move in the same direction, the hand G' being permitted to move at a much faster pace than the hand K', the incline of the spring-blades being in a direction such as to permit the increased speed of the hand G'.

In reading the cyclometer-face shown in Fig. 1 the dial and pointers indicate that the rider has traversed a distance of six and twenty-three fiftieths of a mile, thus illustrating how the cyclometer registers to a nicety the exact distance. The stationary dial B is divided into points, each representing a twenty-fifth of a mile as regards the hand G', while as regards the hand K' each point represents two miles. Obviously the number of points may be increased or diminished, as desired. The revoluble dial M is shown as divided into forty points, each representing twenty-five miles. Thus the dial M registers a total distance traveled of one thousand miles and then repeats, so that while the rider may at any time reset the hands K' G' to zero the resetting of said hands will not disturb the position of the dial M, which performs the function of a total adder, registering the entire distance traveled from the time when the cyclometer was first attached to the vehicle.

Obviously in carrying out my invention some changes in the particular construction and arrangement shown and described may be made, and I would therefore have it understood that I do not limit myself to the specific form and arrangement shown, but hold myself at liberty to make such changes as are fairly within the spirit and scope of my invention.

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

1. In a cyclometer, a revoluble ring, a cross-

head carried thereby, a revoluble arbor G moved by said cross-head, and an indicating-hand carried by said revoluble arbor, a pinion carried by said cross-head, said pinion gearing with a fixed wheel, and a revoluble wheel, said revoluble wheel being loosely supported upon said revoluble arbor, a greater number of teeth on one of said wheels than on the other, an indicating-hand carried by the hub of said revoluble wheel, and a stationary graduated dial.

2. In a cyclometer a revoluble ring, a cross-head carried thereby, a shaft frictionally journaled in said cross-head, an indicating-hand G' carried by said shaft, a pinion carried by said cross-head, said pinion gearing with a fixed wheel and a revoluble wheel, a greater number of teeth on one of said wheels than on the other, an indicating-hand K' carried by the hub of said revoluble wheel, said hand K' being free to revolve on its hub in one direction and carried by the hub in the opposite direction, a washer having spring-blades and carried by the frictionally-mounted shaft, said spring-blades engaging and turning the hand K' on its hub when revolved in one direction, and moving independently thereof when revolved in the opposite direction.

3. In a cyclometer a revoluble ratchet-ring, means as described for intermittently moving said ratchet-ring in one direction, a cross-head carried by said ratchet-ring, a shaft frictionally journaled in said cross-head, an indicating-hand G' carried by said shaft, a pinion carried by said cross-head, said pinion gearing with a fixed wheel and a revoluble wheel, a greater number of teeth on one of said wheels than on the other, an indicating-hand K' carried by the hub of said revoluble wheel, said hand K' being free to revolve on its hub in one direction and carried thereby in the opposite direction, and means as described for causing said hands K' and G' to be manually moved to zero, and a stationary graduated dial.

4. In a cyclometer a revoluble ring, a cross-head carried thereby, a shaft frictionally journaled in said cross-head, an indicating-hand G' carried by said shaft, a pinion carried by said cross-head, said pinion gearing with a fixed wheel and revoluble wheel to gradually advance said revoluble wheel as the cross-head is rotated, an indicating-hand K' carried by the hub of said revoluble wheel, said hand K' having a split spring-hub free to turn in one direction upon its supporting-hub, a washer having inclined spring-blades carried by the frictionally-mounted shaft, said spring-blades engaging and turning the hand K' when revolved in one direction and moving independently thereof when revolved in an opposite direction.

5. In a cyclometer a revoluble ring, a cross-head carried thereby, a shaft journaled therein, an indicating-hand G' carried by said

shaft, a pinion carried by said cross-head, said pinion gearing with a stationary wheel J and a revoluble wheel K, a greater number of teeth on one of the wheels K J than on the other, an indicating-hand K' carried by the hub of the wheel K, a pinion O carried by the wheel K meshing with a stationary gear B', and a revoluble gear N fixed on the hub of a dial M and causing said dial M to be revolved as the wheel K and cross-head are revolved.

6. In a cyclometer a revoluble ring, a cross-head carried thereby, a shaft journaled therein, an indicating-hand carried by said shaft, a pinion carried by said cross-head, said pinion gearing with a stationary wheel and a revoluble wheel, a greater number of teeth on one of said wheels than on the other, an indicating-hand K', a pinion O meshing with a stationary gear B' and a revoluble gear N fixed on the hub of a graduated dial M, said hub passing through the stationary dial B, one of said gears B' N having a greater number of teeth than the other, substantially as described.

7. In a cyclometer a revoluble ring, a cross-head carried thereby, a shaft frictionally journaled therein, an indicating-hand G' carried by said shaft, a pinion carried by said cross-head, said pinion gearing with a stationary wheel J and a revoluble wheel K, a greater number of teeth on one of the wheels K J than on the other, an indicating-hand K' carried by the hub of the wheel K, and a graduated dial B, a pinion O carried by the wheel K and meshing with a stationary gear B' carried by the dial B and a revoluble gear N fixed on the hub of a dial M, said hub passing through the stationary dial B, one of said gears B' N having a greater number of teeth than the other, and means for permitting said indicating-hand to be reset to zero.

8. In a cyclometer, an indicating-hand frictionally mounted, a washer adjacent thereto and concentric therewith, said washer having inclined blades, substantially as described, to engage against a shoulder on the said indicating-hand when said washer is revolved in one direction and freely passing said shoulder when revolved in the opposite direction.

9. In a cyclometer a revoluble ring and means for moving the same, a cross-head carried by said ring, a revoluble shaft journaled in said cross-head, an indicating-hand carried thereby, a pinion carried by said cross-head, said pinion gearing with a fixed wheel and a revoluble wheel loosely mounted on said shaft, a greater number of teeth on one of said wheels than on the other, an indicating-hand carried by the journal of said revoluble wheel, a pinion eccentrically carried by said revoluble wheel and meshing with a fixed wheel and a gear carried on a revoluble dial-plate, substantially as described.

10. In a cyclometer, a revoluble central shaft and means for driving the same, an indica-

tor-hand carried by said shaft, a cross-head journaled on said central shaft, a pinion carried by said cross-head, said pinion geared with a fixed wheel, and a revoluble wheel, 5 the latter being loosely mounted upon said revoluble shaft, a greater number of teeth on one of said wheels than on the other, an in-

dicating-hand carried by the journal of said revoluble wheel.

CHARLES T. HIGGINBOTHAM.

Witnesses:

FRANK H. HOTCHKISS,
GEORGE L. BILL.