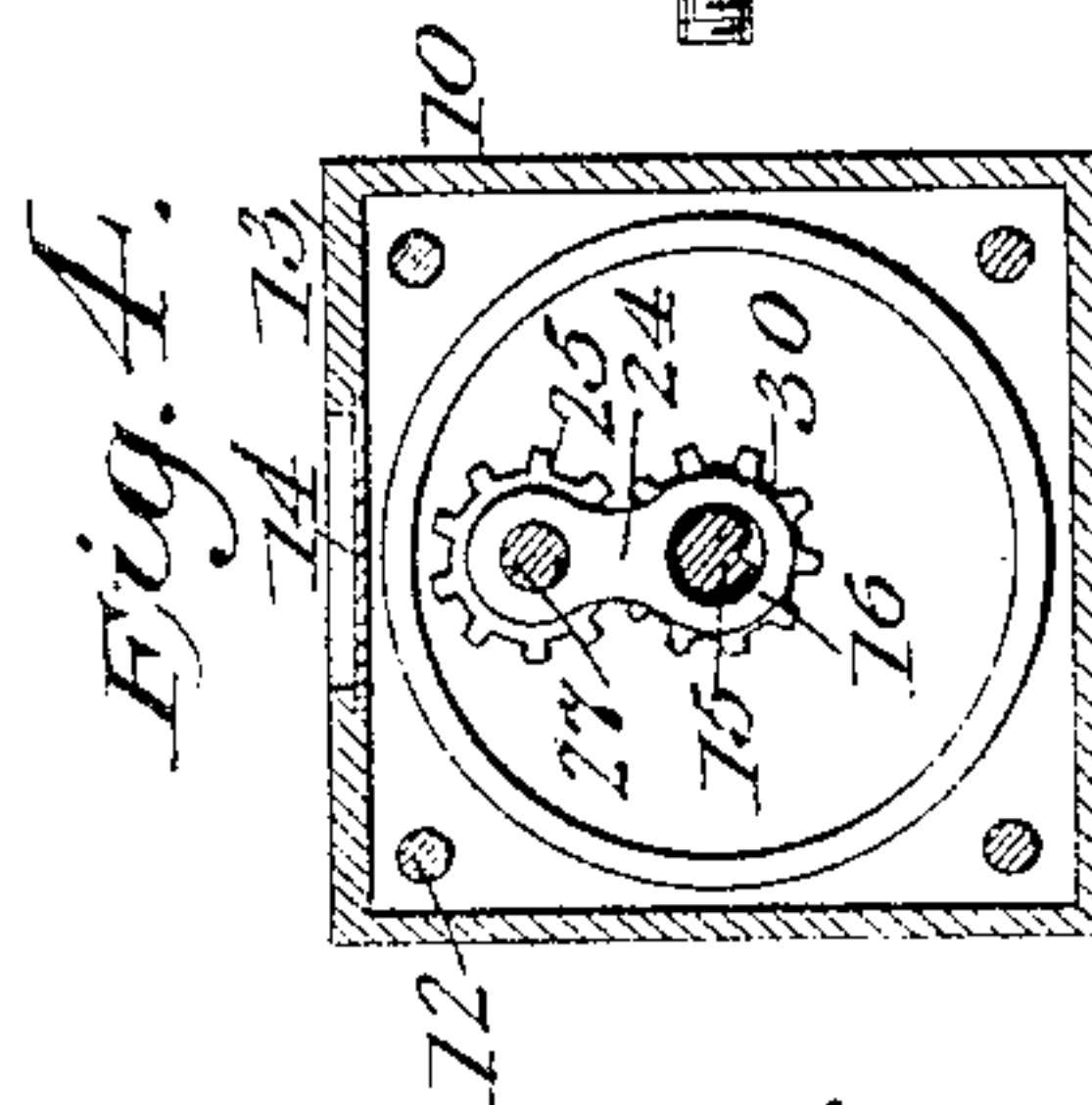
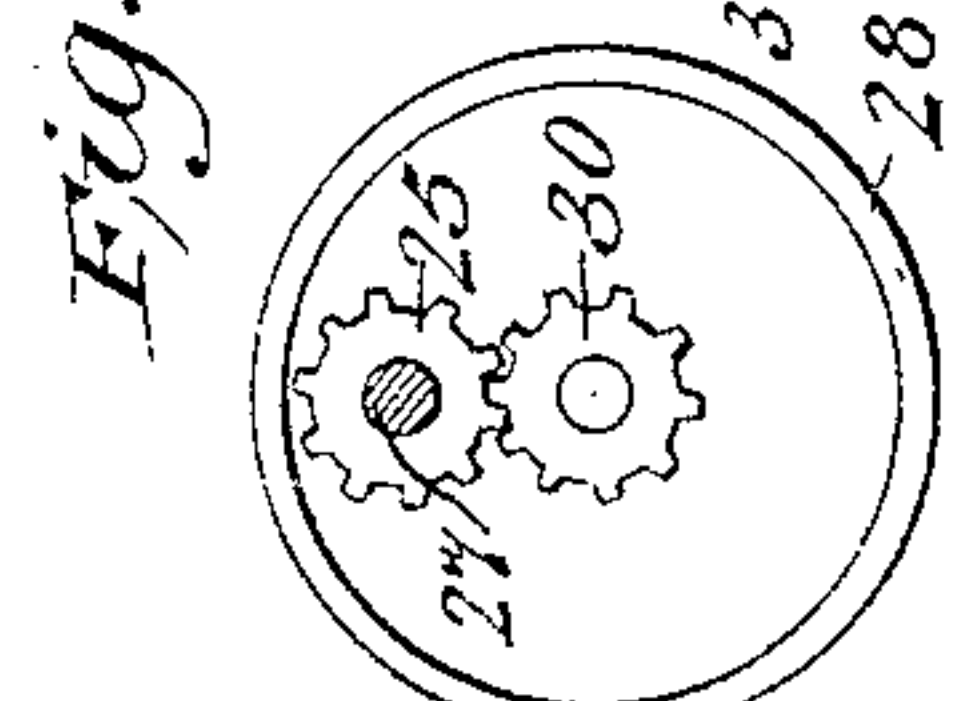
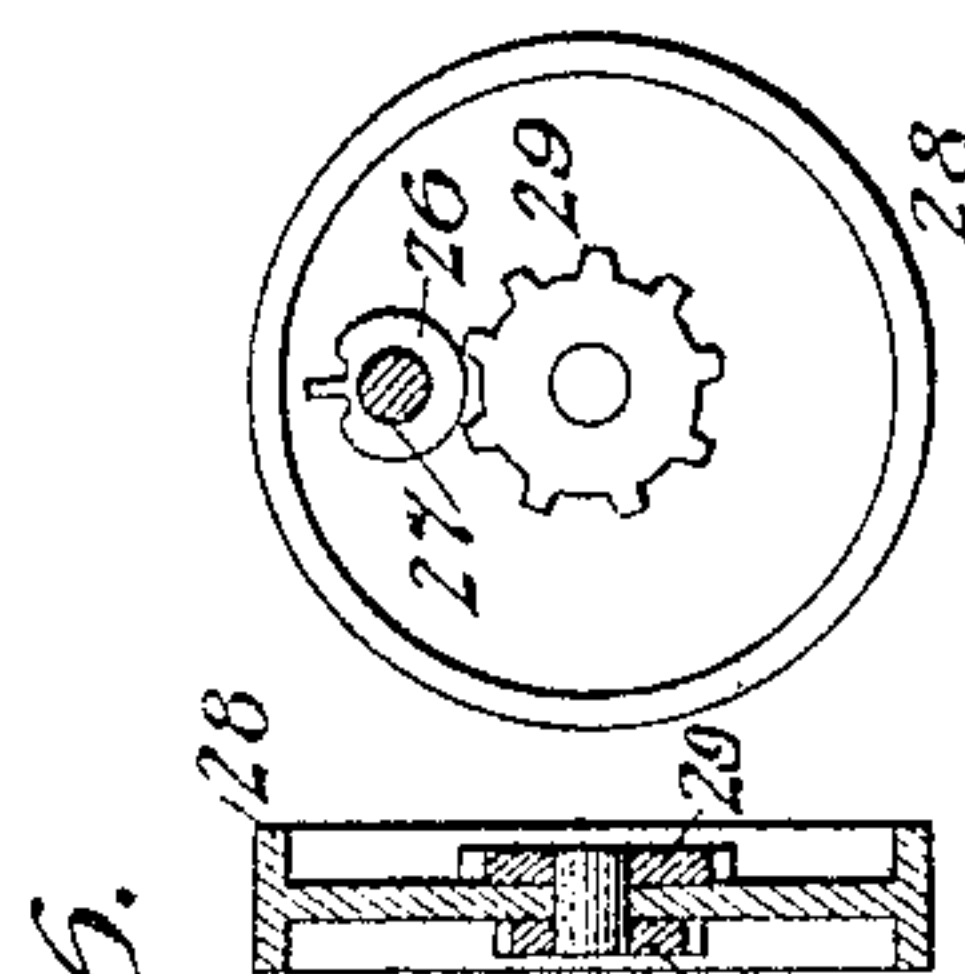
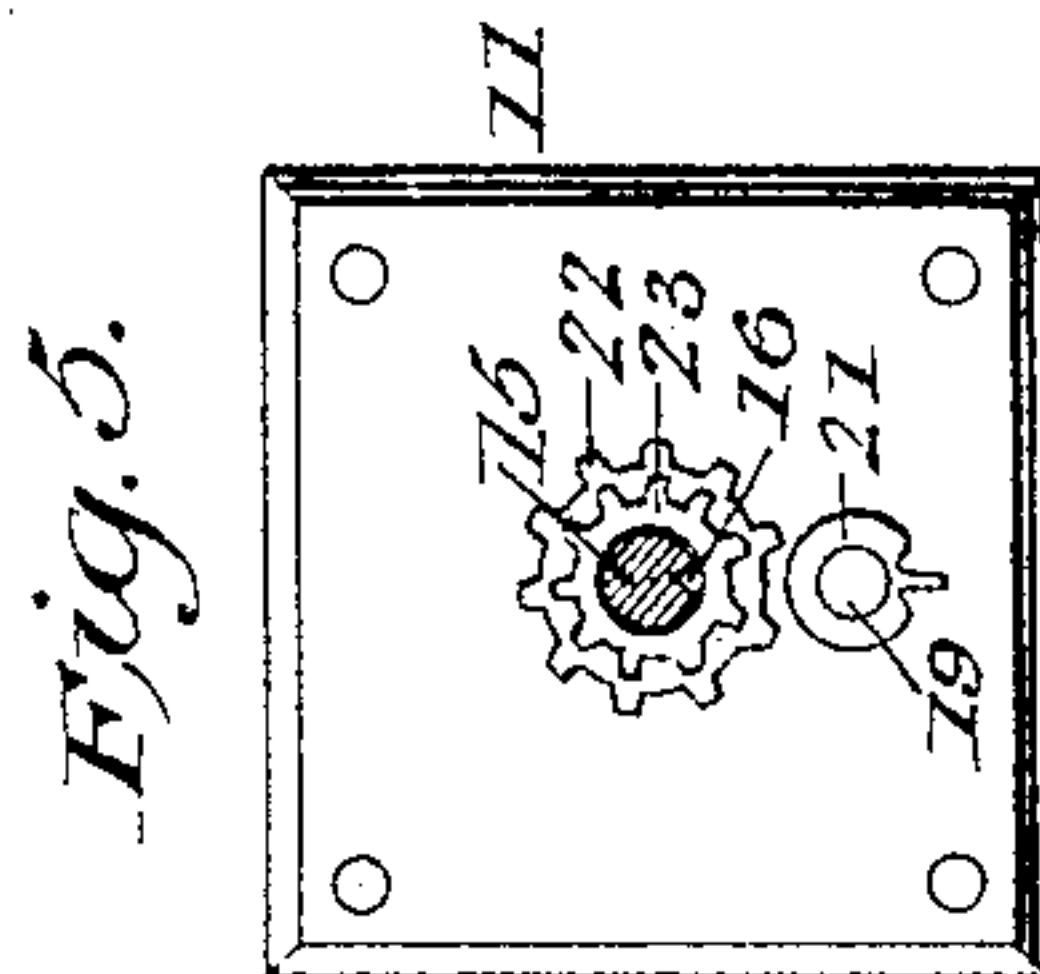
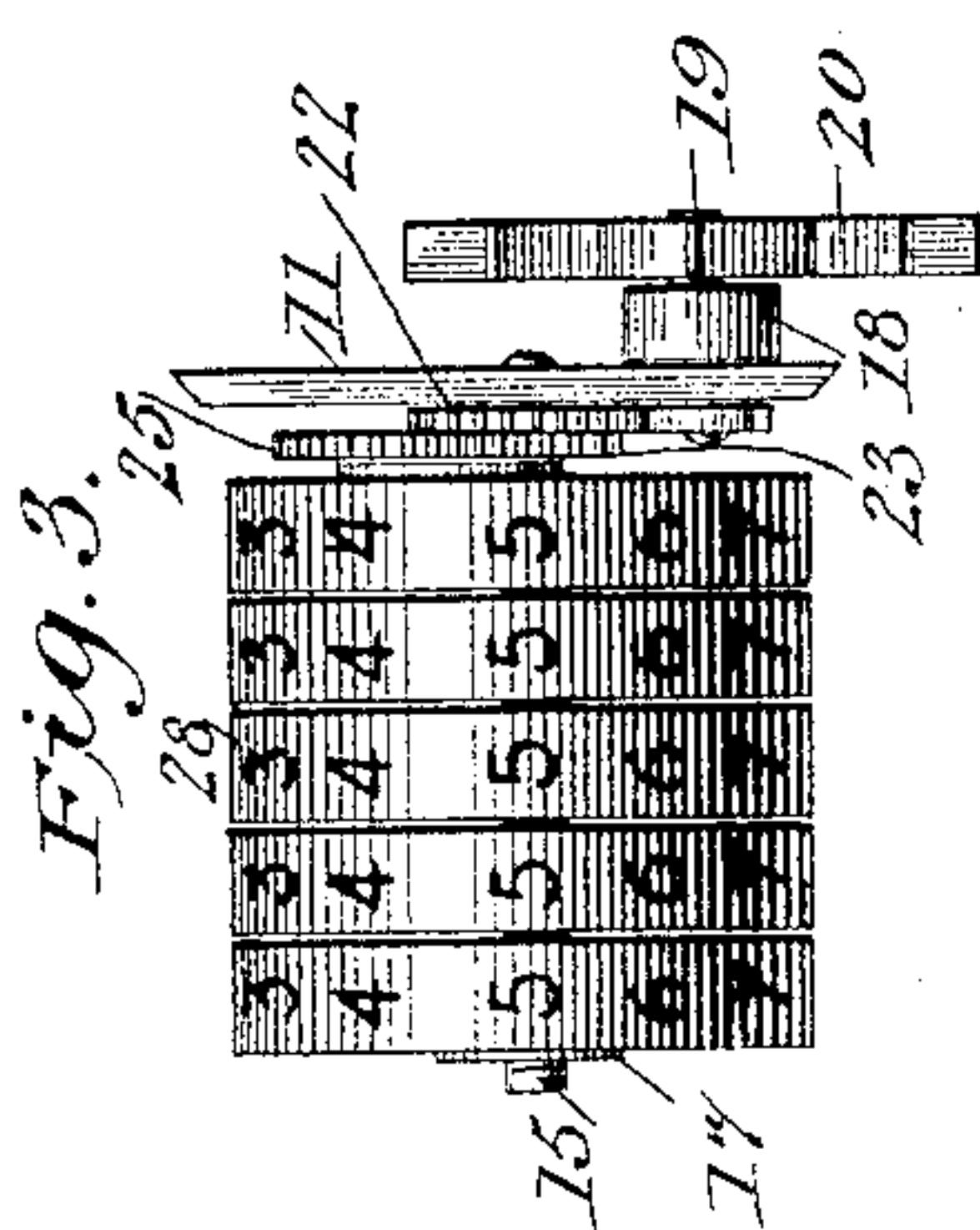
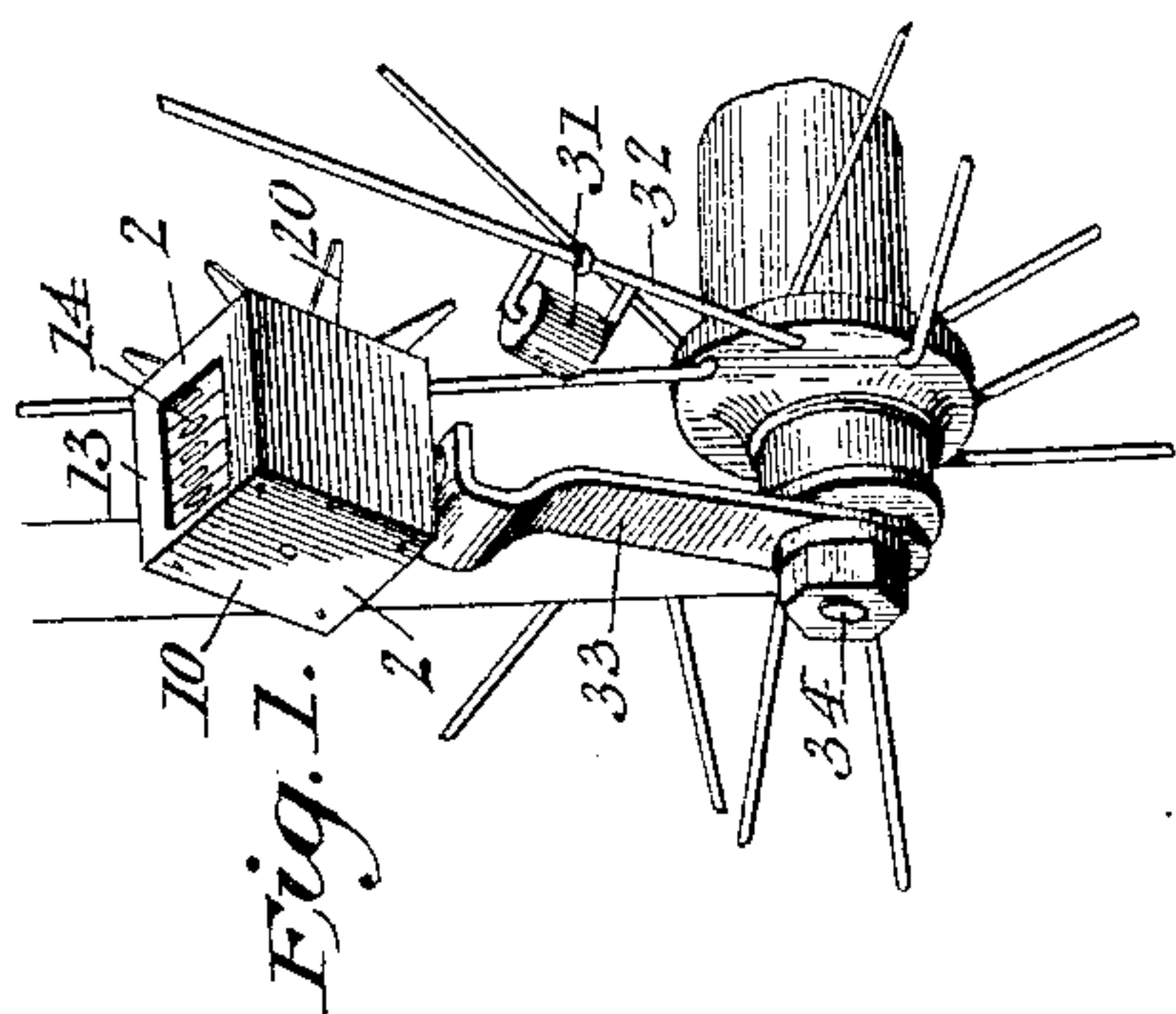
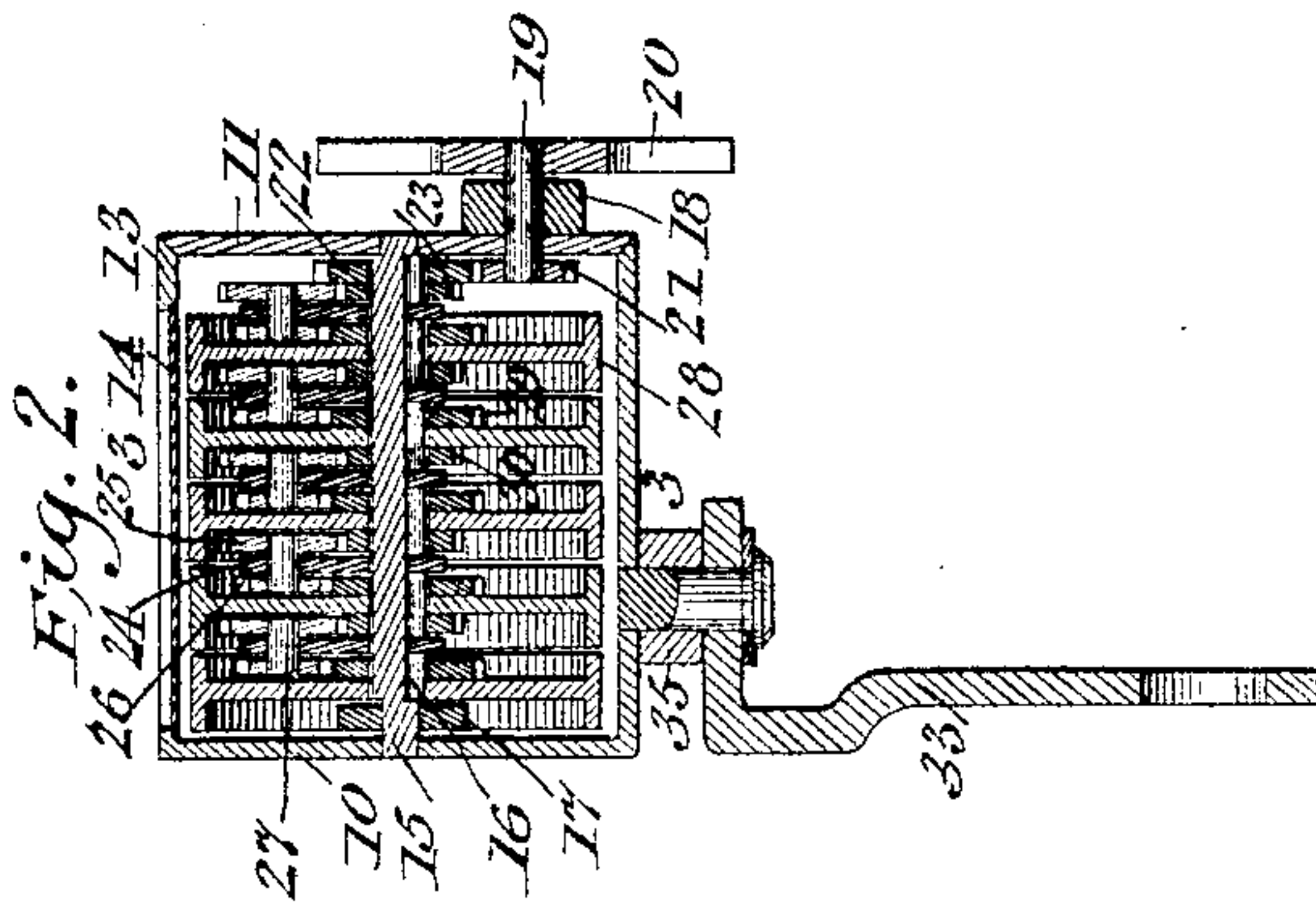


(No Model.)

C. S. LABOFISH.
CYCLOMETER.

No. 581,865.

Patented May 4, 1897.



Witnesses.
Vernon C. Hodge
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UNITED STATES PATENT OFFICE.

CHARLES S. LABOFISH, OF WILLIAMSPORT, PENNSYLVANIA, ASSIGNOR
OF ONE-FOURTH TO CHARLES R. HARRIS, OF SAME PLACE.

CYCLOMETER.

SPECIFICATION forming part of Letters Patent No. 581,865, dated May 4, 1897.

Application filed August 12, 1896. Serial No. 602,496. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. LABOFISH, a citizen of the United States, residing at Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Cyclometer, of which the following is a specification.

My invention relates to improvements in cyclometers; and it consists of certain features of construction and combination of parts, which will be hereinafter described and claimed.

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

Figure 1 is a perspective view of the meter embodying my invention applied to the wheel of a bicycle. Fig. 2 is a sectional view on the line 2 2 of Fig. 1. Fig. 3 is a view of the entire counting mechanism as it appears when removed from the case. Fig. 4 is a cross-section on the line 3 3 of Fig. 2. Fig. 5 is a view of the gearing employed to indicate fractions of a mile. Fig. 6 is a detailed view of one of the indicating-wheels. Fig. 7 is a detailed view of one of the arms with its accessories mounted upon the grooved shaft.

The meter is provided with a suitable case 10, which is preferably similar to a die, to the end that the thin sheet metal of the case may be better supported by the four corners to prevent indentations in the case, and also that the lid may be held in position by four screws, five sides of the case being preferably struck up from a single piece of sheet metal, and the edges of the orifice beveled off inwardly, while the lid 11 thereof is made in a separate piece, its edges beveled off so as to fit water-tight into the orifice of the case. The lid is secured to the body of the case preferably by four screws 12 or a nut at the near end of the shaft or by any other suitable means. The top of the case 13 is provided with an elongated opening 14, through which the numerals on the indicating-wheels located within the case can be read. In order to protect the internal mechanism from dust and rain, I secure, preferably by cement, a thin transparent sheet of

celluloid or mica to the under side of the top 13, thus practically sealing the opening through which the numerals are read and absolutely preventing the ingress of dust or water into the case. Secured to the lid 11 is a boss 18, arboring a pin 19, which connects a star-wheel 20 to a one-toothed intermittent pinion 21 of the character shown in Fig. 5.

In the center of the lid 11 is fixed a shaft 15, in which a longitudinal groove 16 is cut between the threaded part of the shaft. A series of indicating-wheels bearing numerals from "9" to "0" and representing fractions of a mile, units, tens, hundreds, and thousands of miles, respectively, and intermediate fixed arms supporting certain gears for actuating the indicating-wheels are arranged upon the grooved part of the shaft, the whole series being held upon the shaft by a threaded nut 17, screwed up to the shoulder of the grooved parts of the shaft, as clearly shown in Figs. 2 and 3. Thus the entire mechanism may be readily removed from the case for inspection and cleaning.

By referring to Fig. 2 the precise order of arrangement of the mechanism upon the shaft will readily be seen and understood. A gear-wheel 22, to which a similar gear-wheel of smaller diameter 23 is solidly attached, is journaled upon the shaft 15, the gear-wheel 22 being driven by the one-toothed intermittent pinion 21, hereinbefore mentioned, when the star-wheel 20 is actuated by the wheel of a vehicle or other machine to which the meter is attached. When the one tooth of the pinion 21 is out of operation, the gear-wheel 22 is practically immovable, being locked by the circumference of the pinion 21, which is entered between two teeth of the gear-wheel 22, as clearly shown in Fig. 5. The number of teeth of the gear-wheel 22 varies with the size of the wheel of the vehicle.

A radial arm 24, carrying a small gear-wheel 25, which is constantly in gear with the gear-wheel 23 and connected to the intermittent one-toothed pinion 26 by a pin 27, is preferably fixed upon the shaft 15 by a projection 24^a, formed in the eye of the arm 24 and fitting snugly into the groove 16 of the shaft 15, the connecting-pin 27 being held to revolve in a bearing formed at the outer extremity of the arm 24. In juxtaposition to

the arm 24 is journaled upon the shaft an indicating-wheel 28, provided with a gear-wheel of ten teeth 29 at one side of the web and a similar gear-wheel 30 of a smaller diameter at the opposite side of the web of the indicating-wheel, forming a sort of a double hub to the indicating-wheel 28. In precisely the same manner are formed and mounted the remaining intermediate radial arms and indicating-wheels of the series referred to hereinbefore, as clearly shown in Fig. 2, in which figure it will also be seen that the small gear-wheels 25 are meshing with the gear-wheels 30 of the indicating-wheels, and the intermittent one-toothed pinions 26 are also held with their circumference entered between the teeth of the gear-wheels 29 when the one tooth is out of operation, as clearly shown in Fig. 6. It is obvious that when the tooth of the pinions 26 is out of operation the gear-wheels 29, and consequently the indicating-wheels to which they are attached, are securely locked in the most efficient and positive way, without the aid of a spring or springs, and cannot be displaced by the most violent jarring of the machine to which the meter is applied.

The cyclometer is also provided with a suitable stud 33, by which it is attached to the axle of the bicycle 34. A point or roller 31 is attached to the spokes of the vehicle-wheel 32, which engages one tooth of the star-wheel 20 at each complete revolution. Each complete revolution of the star-wheel 20 propels the gear-wheel 22, through the medium of the intermittent pinion 21, a distance of one tooth. Each complete revolution of the gear-wheel 22 transmits one-tenth of a revolution to the first indicating-wheel 28 through the medium of the small gear-wheel 25, which is in gear with the small gear-wheel 23 and the one-toothed intermittent pinion 26, which is meshing with the teeth of the gear-wheel 29 of the indicating-wheel 28 when the pinion 26 has made a complete revolution. Each complete revolution of the first indicating-wheel transmits one-tenth of a revolution to the next indicating-wheel, and so on throughout the whole series, which is arranged in multiple progression by tens, (10's.)

It will be seen that this meter is comparatively simple and durable in construction and infallible in its action, having positive bearings not depending upon the action of a spring or springs, and being composed of detachable indicating-wheels and arms; it may be taken apart and put together unerringly by any person of ordinary intelligence without any extra tools, and, again, the mechanism being inclosed in a cube-shaped case which is supported by the metal of the corners the case is much less subject to indentations and consequently injury to the mechanism.

It will also be seen that the arms 24 do not necessarily have to be attached to the shaft 15 to perform their functions, as they may be

efficiently secured to the case, if desired, and adjusted to hold the pinions 25 and 26 in the proper position.

It is evident that numerous slight changes might be made in the general arrangement of parts herein shown and described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not limit myself to the precise details shown, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a cyclometer, the combination with a casing, a shaft therein, and indicating-disks loosely mounted on the shaft, said disks each having toothed hubs, of arms on the shaft carrying two gear-wheels adapted to mesh with the teeth on hubs of adjacent disks, a star-wheel having a spur-wheel thereon adapted to engage and turn the disk adjacent thereto step by step, and lock it against turning when the spur has passed from the teeth, substantially as set forth.

2. In a cyclometer, the combination with a case, a shaft therein and indicating-disks loosely mounted thereon, said disks having a large and small gear-wheel on opposite ends of its hub, arms secured on the shaft and carrying each a large and small gear-wheel adapted to mesh respectively with a small and large gear-wheel of adjacent disks, and a star-wheel having a spur-wheel thereon which turns and locks a gear-wheel on the shaft, substantially as set forth.

3. In a cyclometer, the combination with a casing, a shaft fixed therein, a series of registering-wheels provided with toothed hubs journaled thereon, a series of interposed fixed radial arms, each carrying a gear-wheel and mutilated wheel having a projecting spur, said gear and mutilated wheel in constant engagement with the toothed hubs and communicating intermittent motion to the next adjacent registering-wheel and locking it securely in position, said radial arms with their gear-wheels and mutilated wheels being arranged within and inclosed by the cylindrical space bounded by the peripheries of the registering-wheel.

4. In a cyclometer, the combination with a casing, a shaft therein, and a series of registering-wheels loosely mounted on the shaft, said wheels having flanged peripheries and toothed hubs, of a combined gear and mutilated wheel interposed between every two registering-wheels and bounded and inclosed thereby and operating in connection with the toothed hubs of the wheels to communicate motion from one registering-wheel to the next and to lock the registering-wheels.

CHARLES S. LABOFISH.

Witnesses:

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ARTHUR STAMBACH.