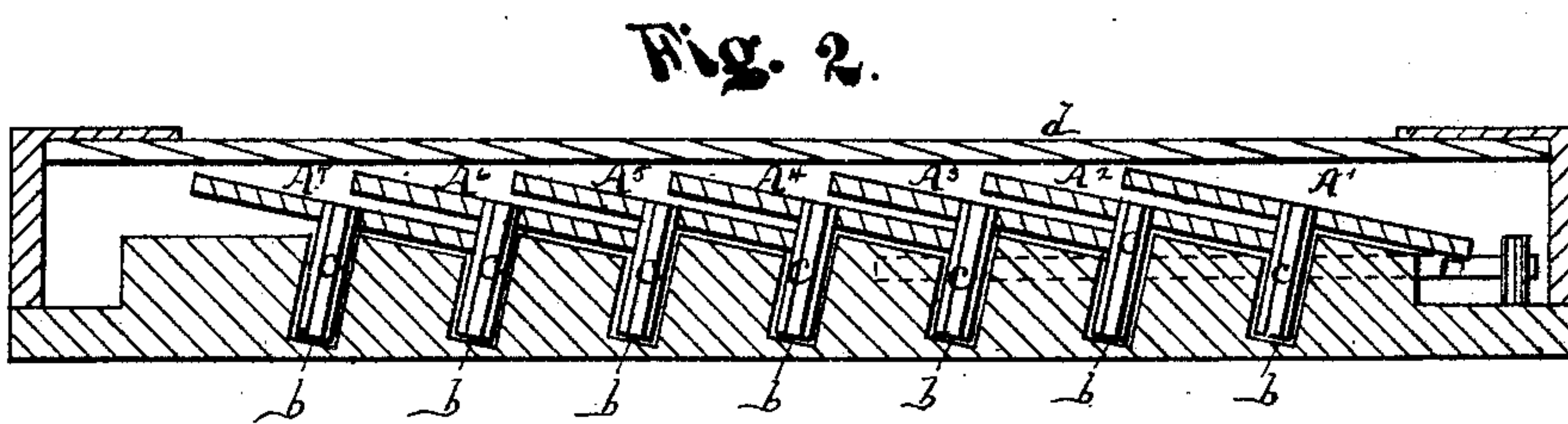
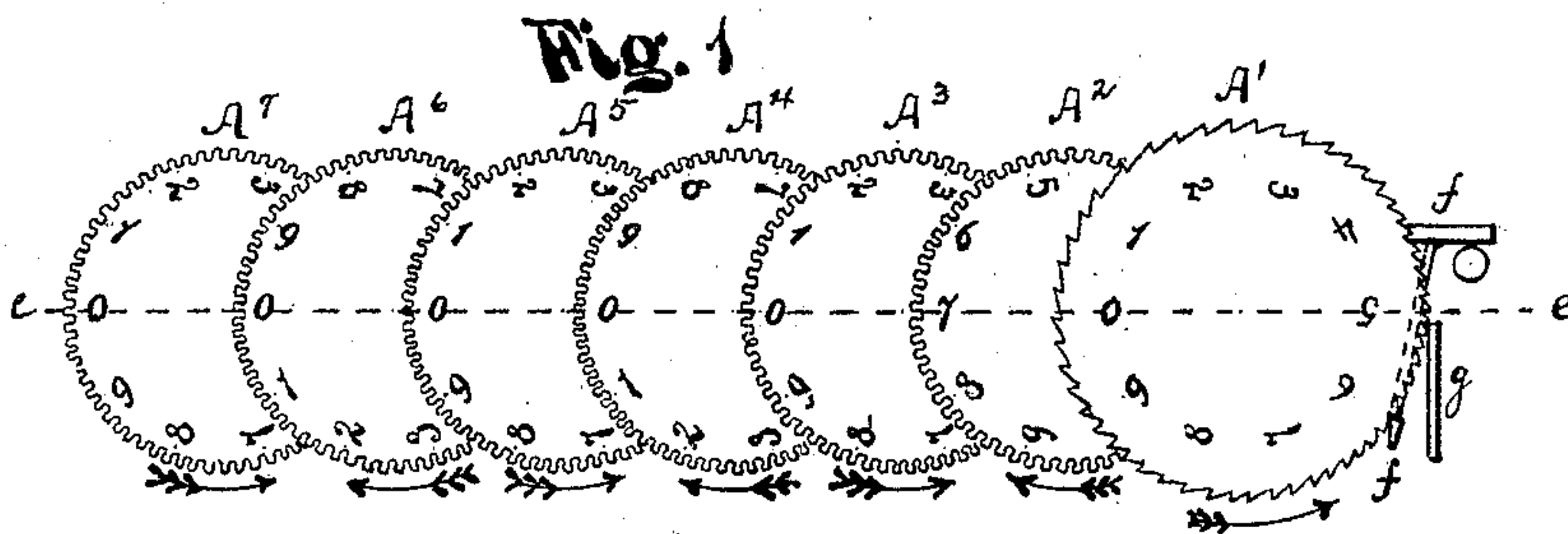


J. A. STENBERG.

REGISTER.

No. 180,165.

Patented July 25, 1876.



Witnesses:

John W. Munday
A. Kleininger

Inventor:

John A. Stenberg

UNITED STATES PATENT OFFICE.

JOHN A. STENBERG, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN REGISTERS.

Specification forming part of Letters Patent No. **180,165**, dated July 25, 1876; application filed [November 23, 1874.

To all whom it may concern:

Be it known that I, JOHN A. STENBERG, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Registers for Meters, &c., of which the following is a specification:

This invention relates to numerical registers or indicators, to be applied to meters or to any other apparatus where the registration or indication of revolutions or vibrations is required.

In this invention I employ a series of circular disks, which form cog-wheels, and each of which is provided with a pinion, which pinion forms itself the shaft upon which both pinion and disk turn, obviating the necessity for a separate shaft, and the whole series is so arranged that the pinion of the first disk engages the periphery of the next, and so on, as in a diminishing train of gear-wheels, each remove lessening the motion. Each disk is marked upon its face with the Arabic numerals, and constitutes a revolving dial.

The series are brought nearly into a single plane by inclining all of the axes or shafts, and overlies or overlap each other like the scales of a fish. This forms a very simple and compact register.

Motion is imparted to the right-hand disk and diminishes in proper ratio toward the left, so that by reading along a guide-line from left to right the true amount indicated may be read as ordinary figures placed in a line, the first disk at the right indicating units, the second tens, the third hundreds, and so on, the teeth upon peripheries and pinions being apportioned so that they shall move in this ratio to each other, as will be understood from the following description and the accompanying drawing, which forms a part of this specification, and in which drawing—

Figure 1 is a face view of the register with the casing removed, and Fig. 2 a longitudinal central section of casing and register.

In the said drawing, $A^1 A^2 A^3 A^4 A^5 A^6 A^7$ represent the series of overlapping toothed disks, each carried upon an inclined shaft, b , and furnished with a pinion, c , the shaft being formed by the extension downward of

the pinion. This enables me to make pinions in large quantities by simply drawing a metal wire through a suitable-shaped aperture to give it the proper form, the same being cut to proper lengths and applied to the disks. This greatly cheapens and simplifies the manufacture.

The right-hand or units disk, A^1 , I prefer to tooth ratchet fashion, as it receives the power, and I find it more convenient to convert the motion to be registered into a vibratory motion and impart it to the units-disk by means of a double pawl, as shown in the drawing, and as will be presently described. The remaining disks and all of the pinions are simple cog-gears.

The disks, being geared together, move, of course, alternately in opposite directions. The numerals from 0 to 9 are, therefore, arranged differently upon each alternate disk, increasing in the direction of the rotation, which is indicated at Fig. 1 by the arrows below the disk.

Upon the glass cover d is marked a median line, the position of which is indicated in Fig. 1 by the dotted line $e e$. This serves as a guide-line in reading the register. The same result would be effected by a slit in the metal cover, or a row of holes; but I prefer a line upon the glass. In case a metal cover is used, the shafts b may extend up to it for a bearing.

The ordinary and well-known rule for reading continuous-motion registers is observed in this invention—that is to say, the lesser numeral nearest the line is read the same as in dials where a moving pointer is employed, in which the lesser numeral nearest the pointer or index is read to the exclusion of others.

In this case, owing to the arrangement of the disks, the entire amount registered may be read at a glance from left to right in natural order.

It will be seen that, by inclining the shafts and disks to the plane of the reading-line, I am enabled to greatly condense the mechanism and reduce it to a compact form, the disks themselves forming the dials.

Motion is imparted to disk A^1 by means of the spring lifting-pawl f , while a check-pawl, g , prevents any return. The pawl f may

communicate with the apparatus the motion of which is to be registered.

Having thus fully described the construction and operation of my invention, I claim as new and desire to secure by Letters Patent—

The register, consisting of a train or series of inclined overlying toothed disks and pin-

ions, the bearings or shafts of which consist of the elongated pinions projecting into a base-plate, as described and shown.

JOHN A. STENBERG.

Witnesses:

JOHN W. MUNDAY,
A. KLEIMINGER.