

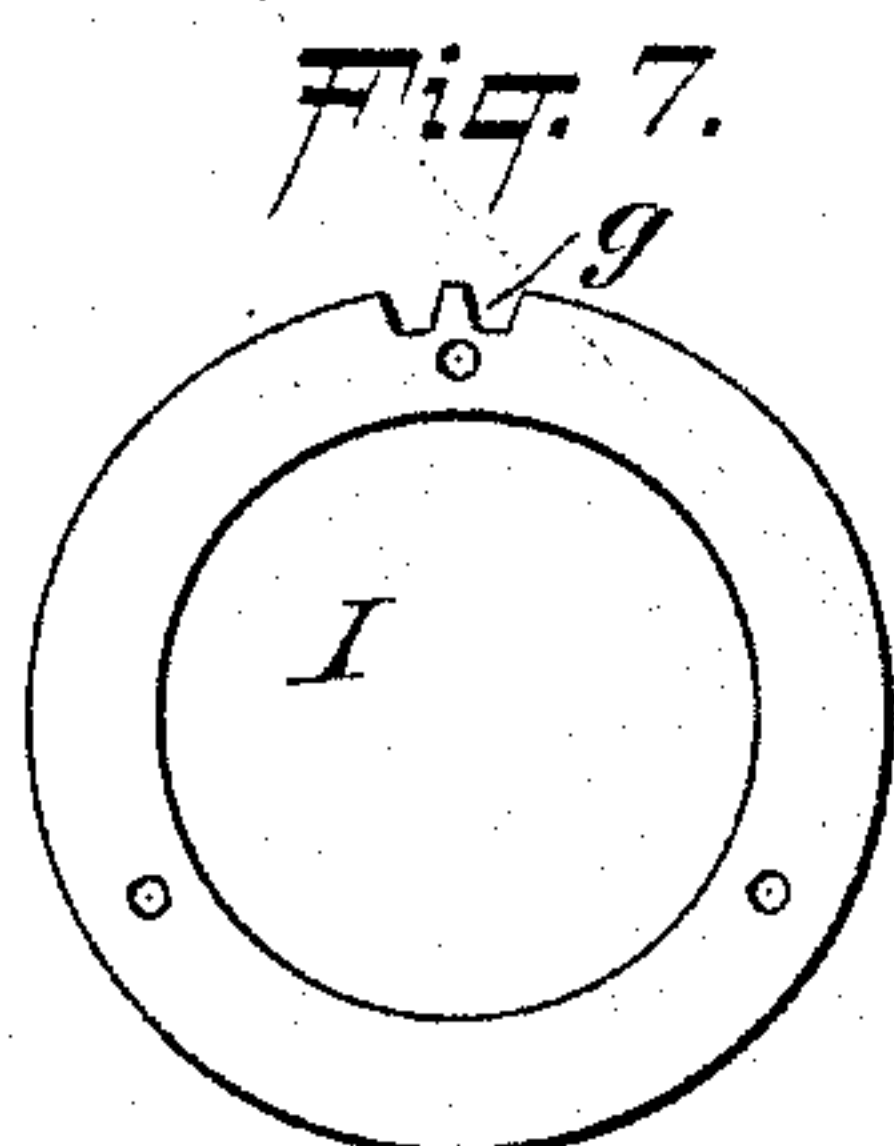
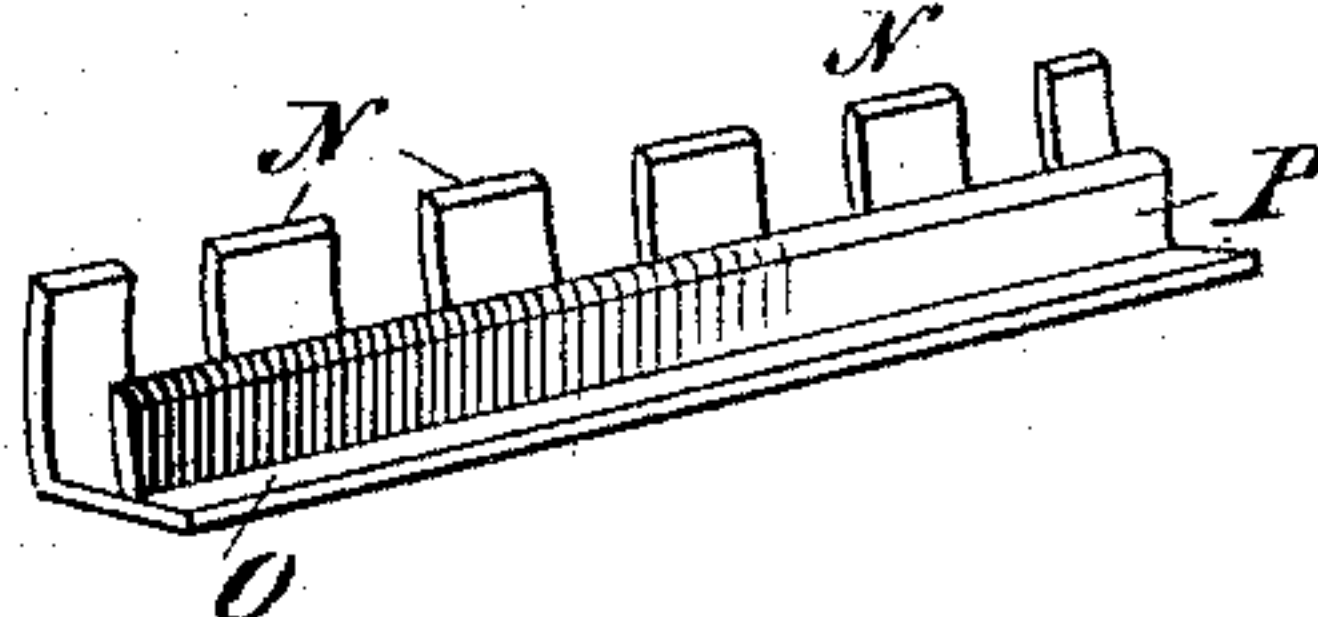
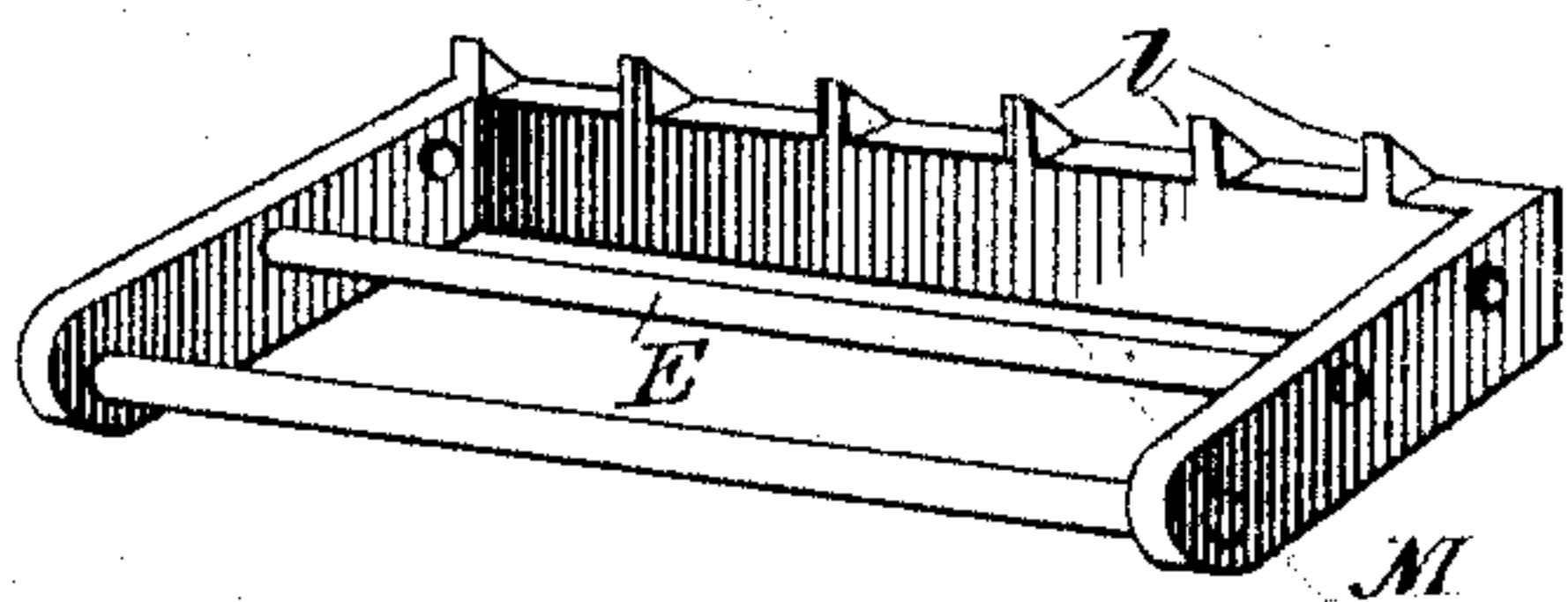
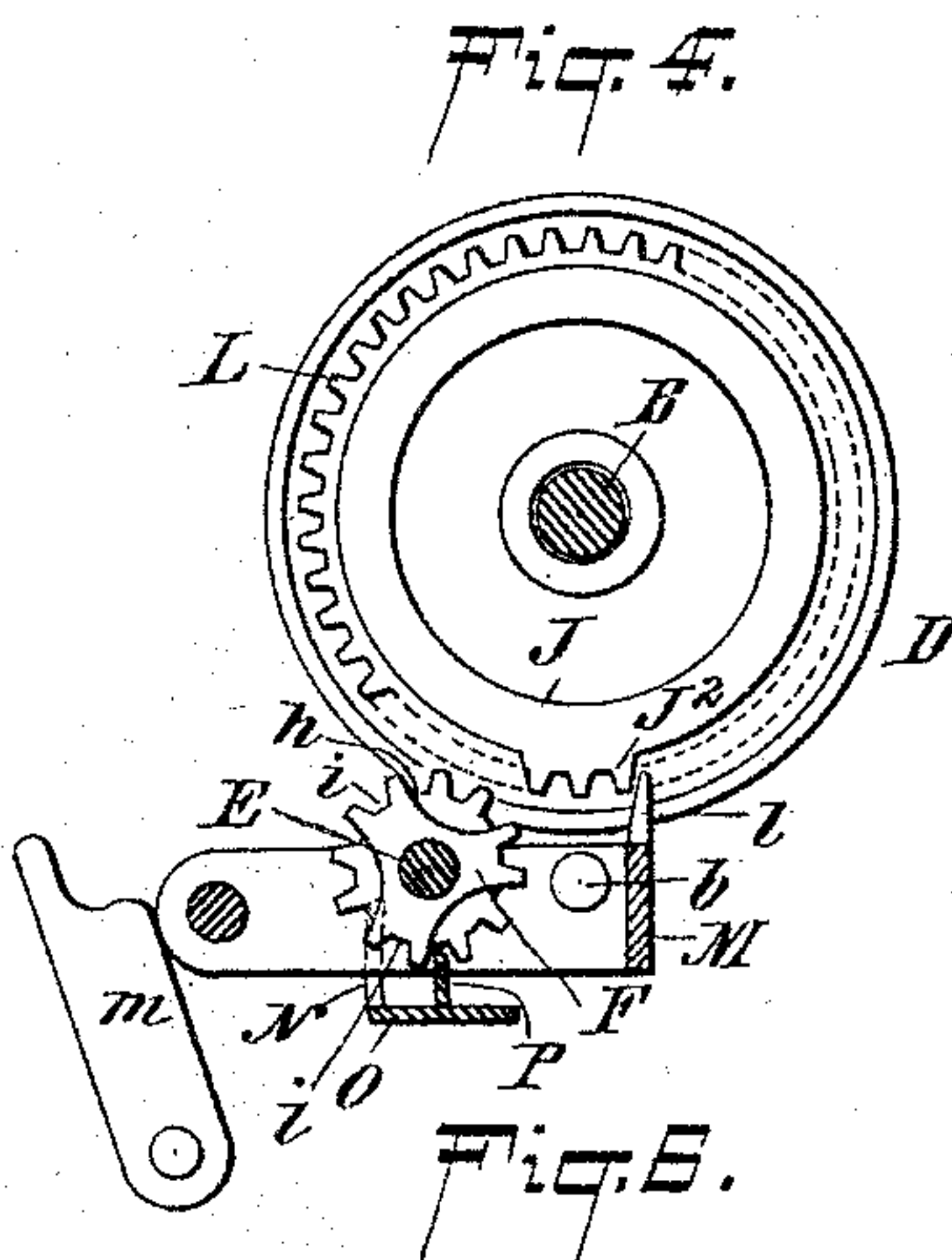
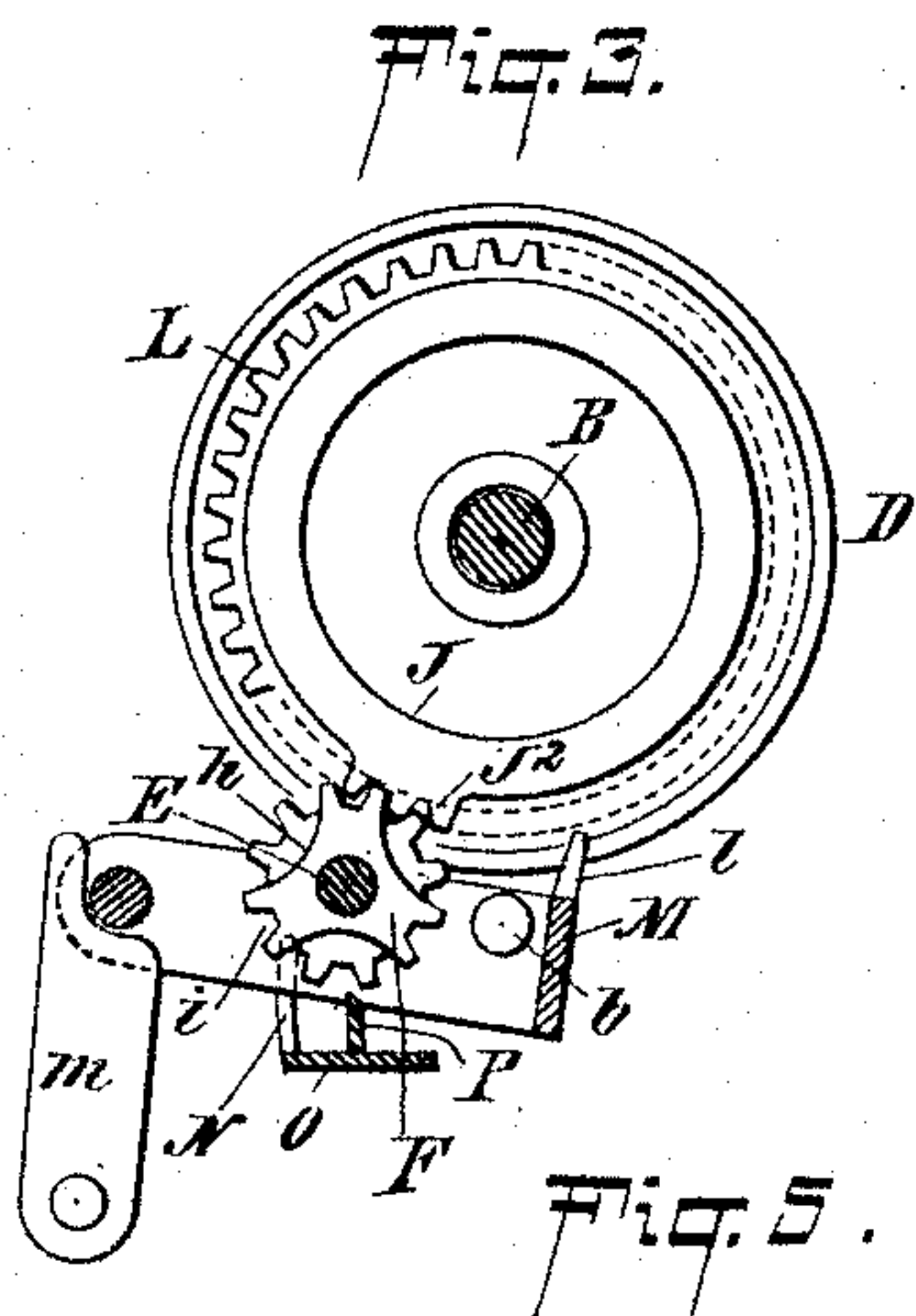
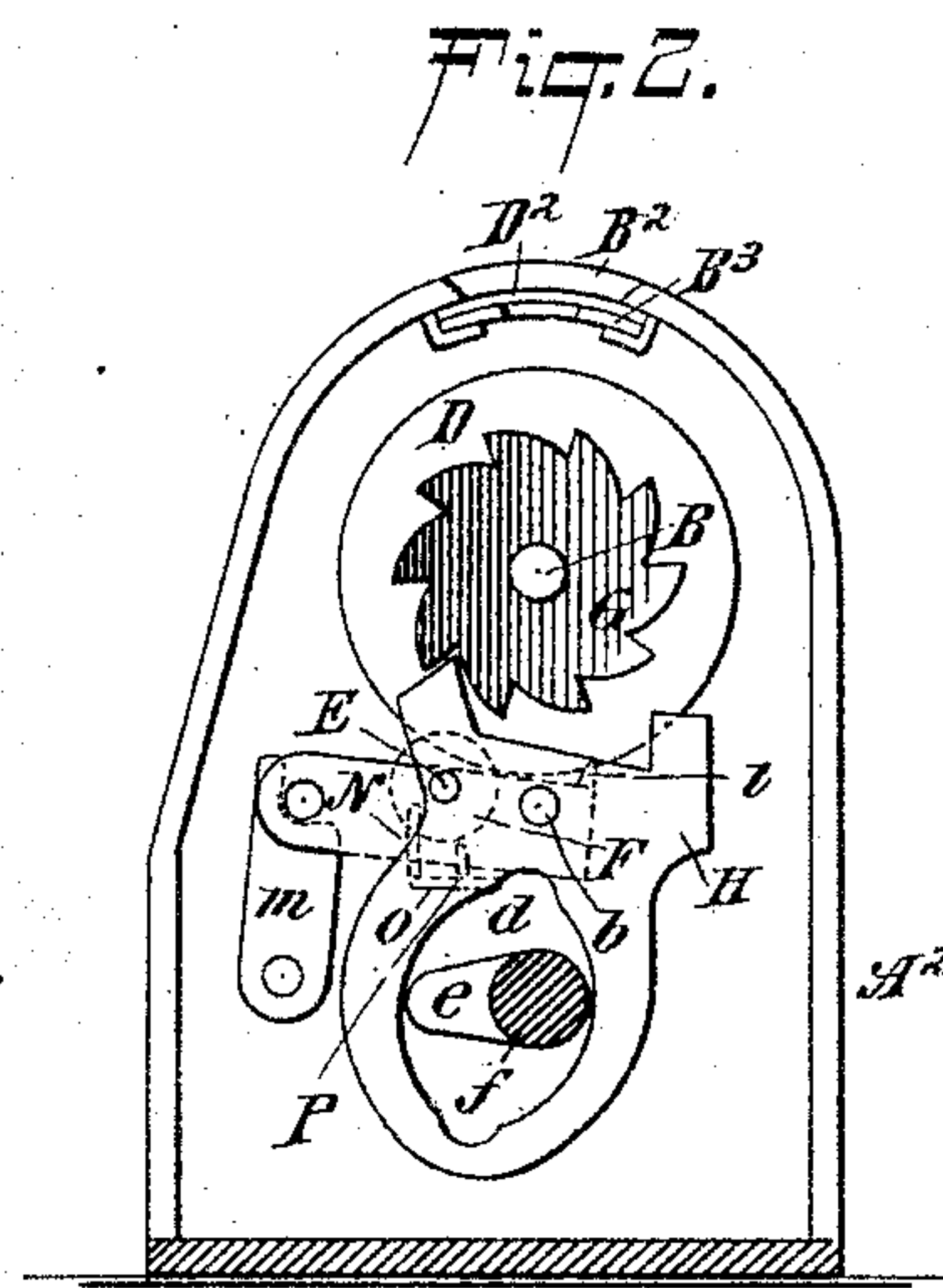
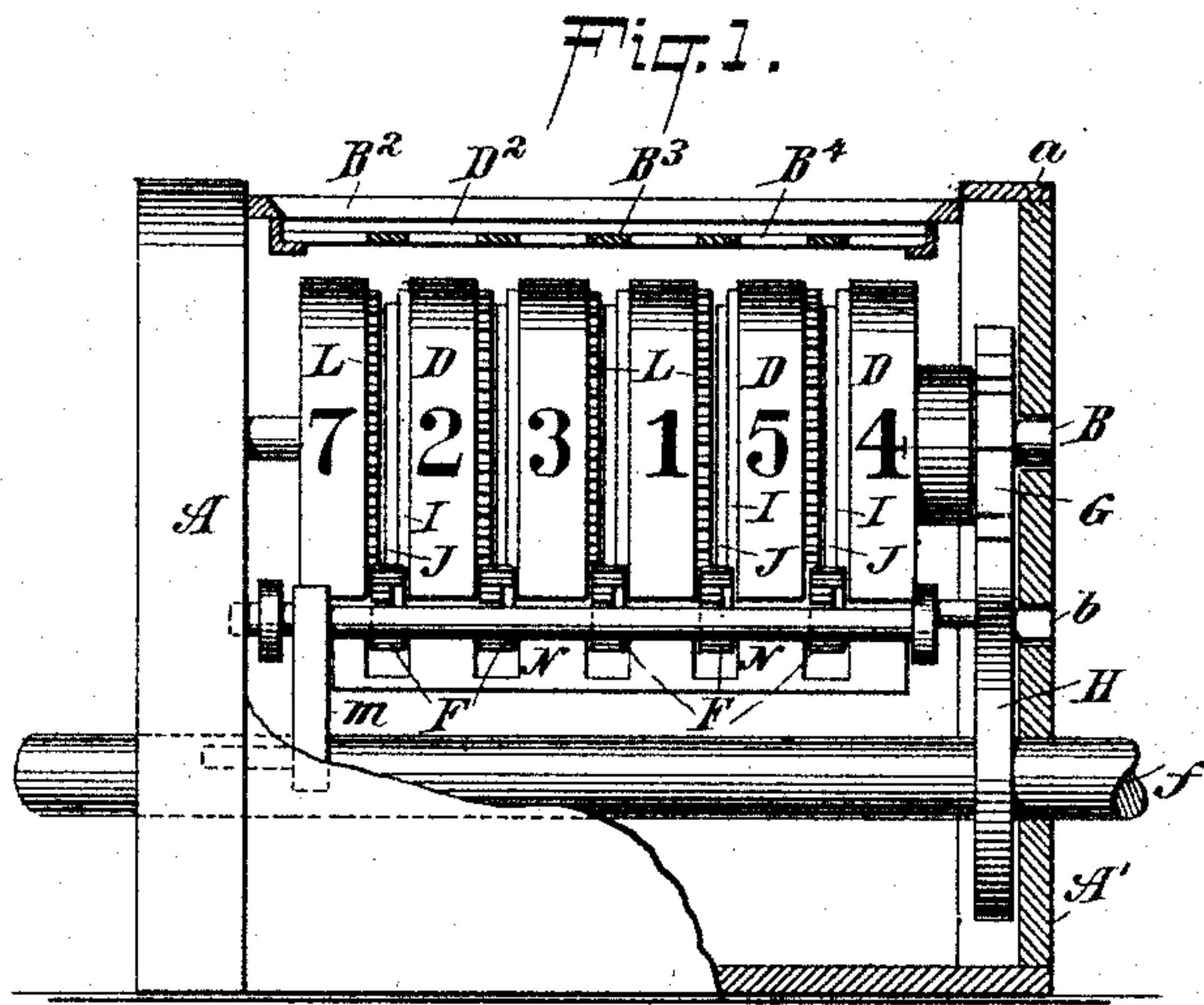
(No Model.)

S. M. BALZER.

REGISTER TO COUNT THE OPERATIONS OF MECHANISMS.

No. 489,892.

Patented Jan. 10, 1893.



WITNESSES:

WITNESSES:
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UNITED STATES PATENT OFFICE.

STEPHEN M. BALZER, OF NEW YORK, N. Y.

REGISTER TO COUNT THE OPERATIONS OF MECHANISM.

SPECIFICATION forming part of Letters Patent No. 489,892, dated January 10, 1893.

Original application filed April 21, 1892, Serial No. 430,013. Divided and this application filed July 16, 1892. Serial No. 440,245.
(No model.)

To all whom it may concern:

Be it known that I, STEPHEN M. BALZER, a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Registers, of which the following is a specification.

This application is a division of an application for a patent on registers, filed by me on April 21, 1892, Serial No. 430,013.

My invention relates to the class of registers or numbering devices in which the numbers are carried on disks or wheels.

The invention has for its object to permit ready and accurate re-setting of the number disks or wheels at any time without dislocating their respective actuating devices.

The invention consists in the novel details of improvement and the combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein

Figure 1 is a partly broken side elevation of my register having means to permit accurate re-setting of the number disks; Fig. 2 is an end view thereof the end plate of the casing being removed; Fig. 3 is a cross section showing the parts in their operating positions; Fig. 4 is a similar view showing the parts in position for re-setting the number disks, Figs. 5 and 6 are detail perspective views hereinafter more fully described and Fig. 7 is a side view of one of the rings for the disks.

In the accompanying drawings the letter A indicates a suitable casing or frame that carries a shaft B, upon which is loosely hung the desired number of disks or wheels D, upon the peripheries of which are suitable numerals or symbols. The end A' of the casing A is removable to permit access to the parts and it can be held in place in any suitable manner, say by a screw *a*. The part A² of casing A is also preferably removable. The casing A has an opening B² on one side (say the upper side) of sufficient width to permit one figure of each disk D (and thereby a row of figures) to be seen as in Fig. 1. The opening B² is preferably provided with a glass D² to exclude dust &c. and also with a plate B³ having apertures B⁴ arranged in line with the figures on the disks D, so that the figures can

be seen without observing the mechanism. The arrangement for permitting the figures to be seen can be varied as desired.

E is a shaft parallel with the shaft B, but outside of the disks D (see Fig. 3). Upon the shaft E is hung loosely a number of pinions F, to actuate the disks D with the exception of the units disk.

The disk D representing units is to be turned by the shaft, wheel, or other part whose motions are to be counted and for this purpose I have connected to said disk a toothed wheel G, that can be actuated or turned by a pallet or pawl H, which is suitably supported to swing within the casing A, say on a pivot *b*. The pallet H is shown having a cam-like opening *d*, within which works a projection *e*, on a shaft *f* as shown. As the shaft *f* turns its projection *e*, will rock the pallet H, and thus turn the wheel G, and thereby the units disk D. But any other suitable means may be used to turn said disk if desired.

The disks D on one side (say on their left hand side in Fig. 1) each have a circular external rim or ring I in which are cut depressions *g* (see Fig. 7). On one side each pinion F is cut away as at *h*, in say, three places (see Figs. 3 and 4) two teeth *i*, in three places being left uncut as shown. The cut away parts of the pinions F are adapted to ride on the rims I which prevent the pinions from turning until the teeth *i* encounter depressions *g*, which will then permit said pinions to have partial revolution. The disks D also carry another rim or ring J on the same side as the rim I, and preferably of less diameter, in which are cut one or more teeth J², corresponding to the depressions *g*, the teeth J² and depressions *g* being arranged side by side to receive the leaves of the pinions F, conjointly and simultaneously. The disks D on the side opposite the rims I carry gears L, that mesh with the respective pinions F, one pinion being situated between two disks D (see Fig. 1) whereby one disk will communicate motion to the next, and so on. The gears L and rims I, J, are preferably in the form of rings attached to the disks D, although the parts might be otherwise arranged. The shaft E is carried by a swinging frame M, that is suitably hung (say at *b*) to swing in the cas-

ing A (see Fig. 1) or otherwise, the pinions F being carried by said shaft E. The frame M also carries a number of teeth or projections l , that are each adapted to engage a tooth J^2 of a rim J when said teeth reach the projections l , to limit the turning of the disks D and thus insure the positive stopping of the disks D at "0", or zero, when the disks D are turned to be re-set. The frame M is held up to permit the pinions F to engage their respective parts on the disks D, by a latch or the like m , carried by the casing A.

N is a series of teeth or projections that are adapted to receive between them the pinions F (see Fig. 1) to prevent lateral movement of said pinions, the projections N being shown carried by a cross bar O suitably supported in the casing A. The bar O also carries a bar P that is adapted to enter the teeth of the pinions F, when they are lowered, and thus to prevent turning of said pinions at that time. By this means the proper positions of the pinions F relative to the rims I, J and their teeth will be retained when the pinions are disengaged therefrom.

In operation the disks D are all set with the "0" in line to show through the opening B^2 in casing A, and the frame M is held up to permit the pinions F to engage the rims I, J, and gears L, while the projections l will be lowered to release the rim J as in Fig. 3. The disks D are now ready to turn to register which is accomplished by the shaft f turning to turn the units-disk D, its pinion F thereupon riding on the rim I, which locks the pinion and prevents it from turning. When the units disk D has made about one revolution the teeth J^2 on rim J will engage one set of teeth i of pinion F and thus turn it partially around to bring the next space h in line with rim I, the pinion F in this latter movement turning the next or tens-disk D the distance from one numeral to another, and so on throughout the series of disks. The units

disk D need not carry teeth L, and the disk that indicates the first or highest numeral on the left need not carry the rims I and J. When the disks are to be re-set the frame M is swung down which lowers the pinions F, disengaging them from the disks D &c., the projections l , thereupon rising to engage the teeth J^2 of rims J when the disks are turned back to check them at zero. By removing the parts A' and A^2 of the casing this manipulation can be effected.

It will be understood that other arrangements of gears, rims &c. can be used, if preferred, to co-act with the pinions F.

My device will be found complete, perfect in operation and simple. It is not liable to get out of order and can be made cheaply.

The shaft f can be suitably connected with the reciprocating or rotary part of the mechanism whose motions are to be counted.

Having now described my invention what I claim is:—

1. The combination of a shaft, disks thereon, gears connected with said disks, pinions to engage said gears to turn the disks, a swinging frame carrying said pinions, a bar to lock said pinions when they are swung from the disks, and stops to engage the gears or teeth carried by the disks when the pinions are disengaged therefrom, substantially as described.

2. The combination of a casing, number disks therein, gears and pinions to turn said disks, a swinging frame carrying said pinions and a bar P to hold said pinions when they are removed from the gears, substantially as described.

Signed at New York, in the county of New York and State of New York, this 21st day of June, A. D. 1892.

STEPHEN M. BALZER.

Witnesses:

TIMOTHY J. SHEA,
T. F. BOURNE.