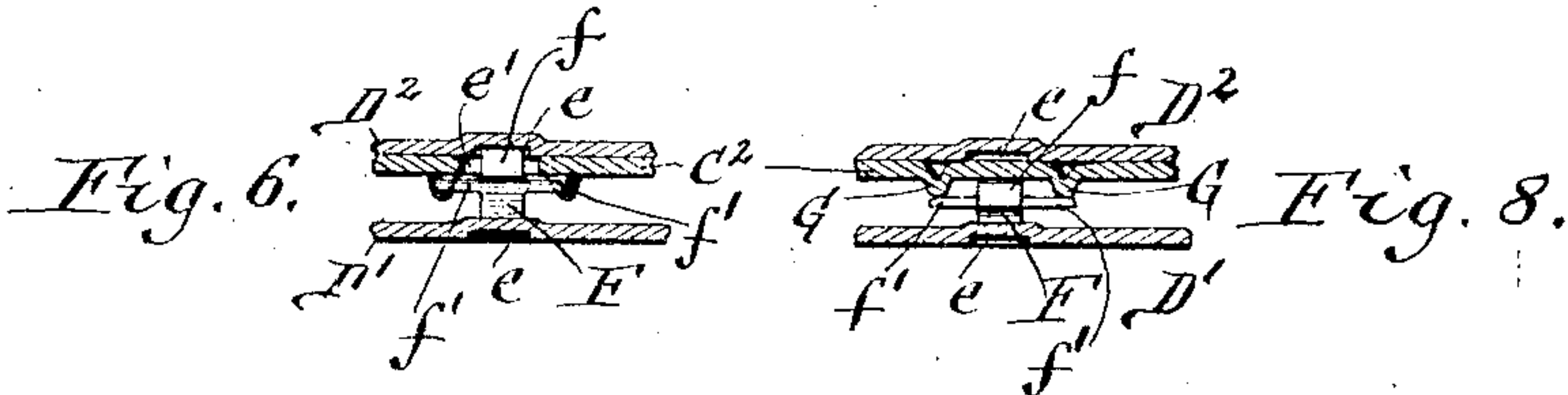
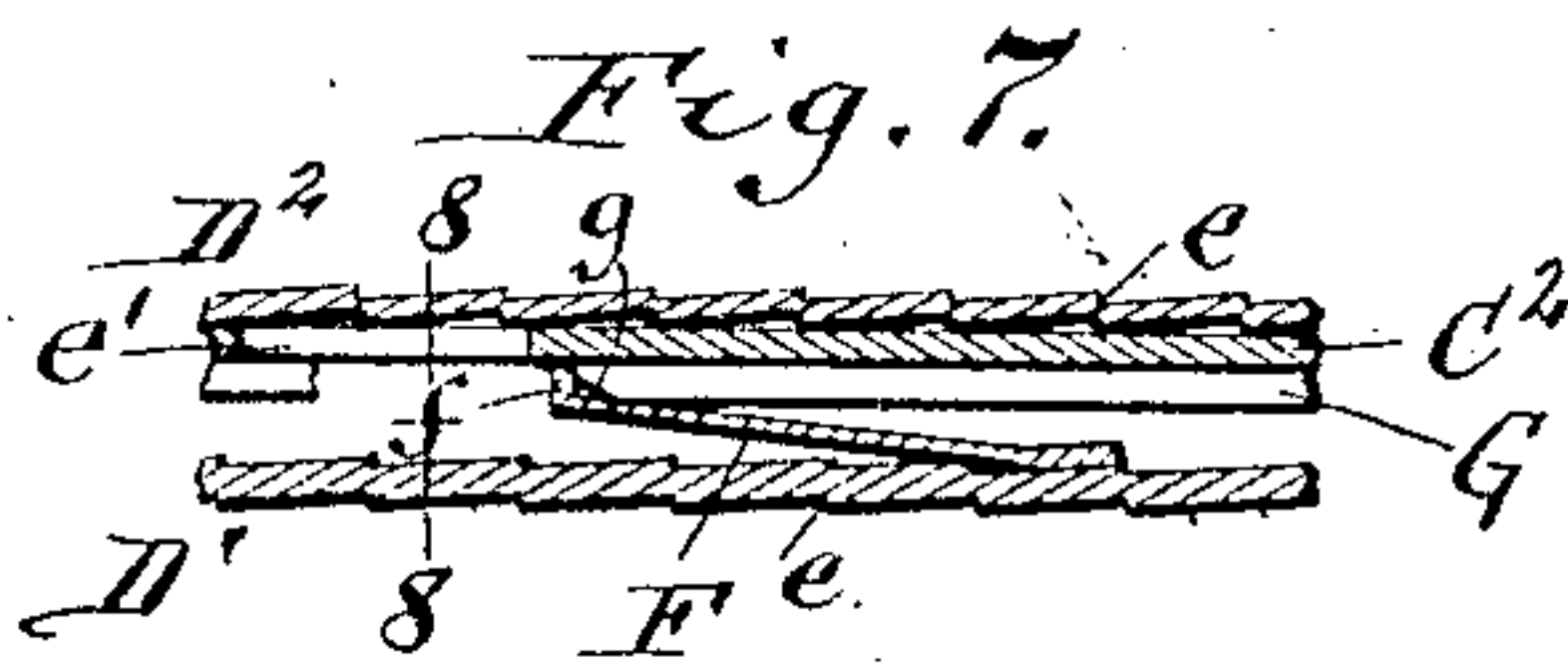
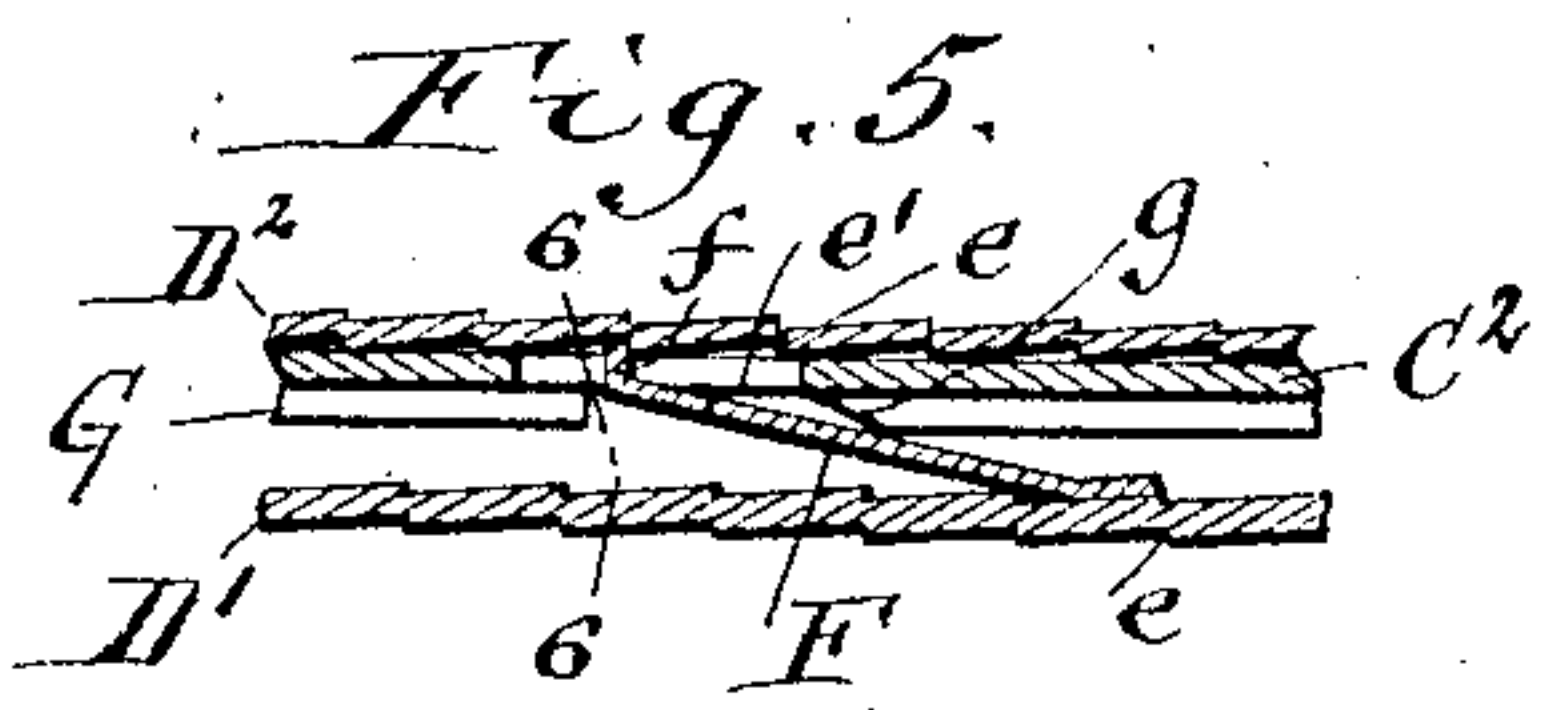
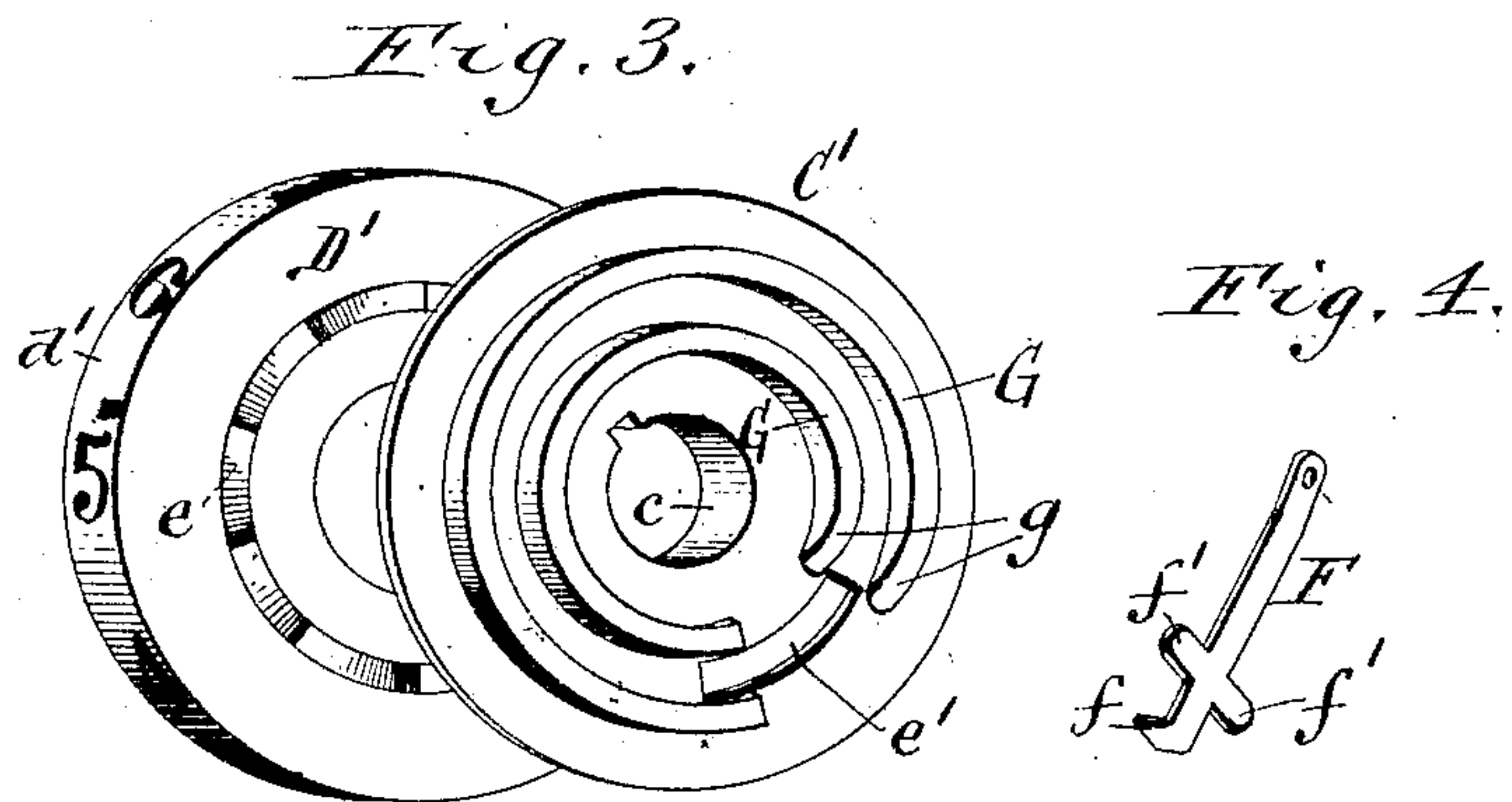
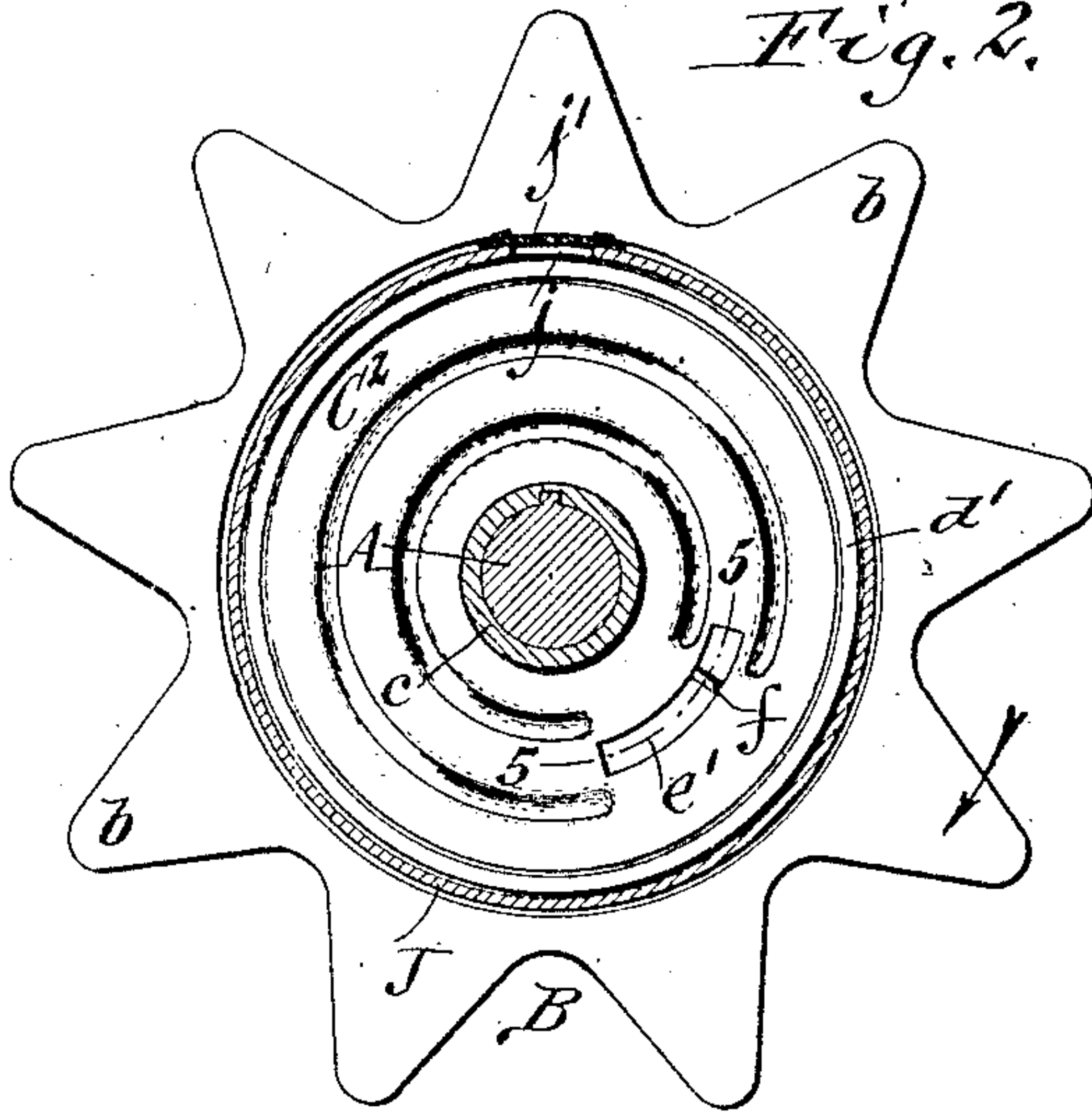
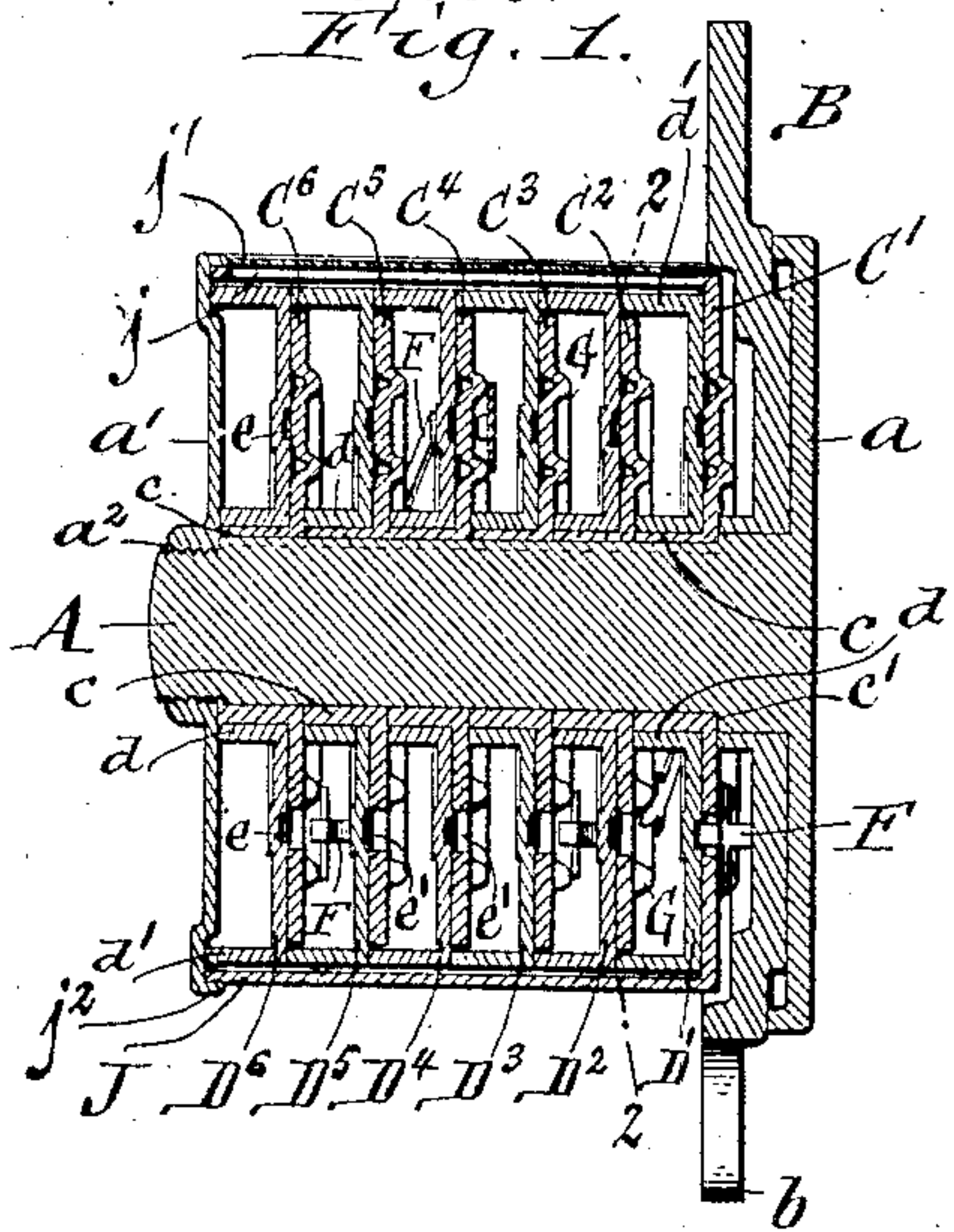


(No Model.)

W. G. SHAW.  
REGISTER.

No. 597,695.

Patented Jan. 18, 1898.



Witnesses:  
 Ernest Pulsford.  
 Theo. L. Popp.

W. G. Shaw Inventor,  
By Wilhelm Bonnet.  
Attorneys.



# UNITED STATES PATENT OFFICE.

WILLIAM G. SHAW, OF BUFFALO, NEW YORK, ASSIGNOR TO JOHN W. LINCOLN AND GEORGE A. LAMB, OF NEW YORK, N. Y.

## REGISTER.

SPECIFICATION forming part of Letters Patent No. 597,695, dated January 18, 1898.

Application filed April 18, 1896. Serial No. 588,178. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. SHAW, a subject of the Queen of England, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Registers, of which the following is a specification.

This invention relates to that class of registers or indicators embodying a series of indicator wheels or disks which are arranged axially side by side.

The object of my invention is the production of a simple and durable register of this character which is reliable in its operation and which can be manufactured at comparatively small cost.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved register, which is particularly designed for use as a cyclometer. Fig. 2 is a transverse section thereof in line 2 2, Fig. 1. Fig. 3 is a perspective view of one of the indicator-wheels and the adjacent partition-disk. Fig. 4 is a perspective view of one of the pawls whereby motion is intermittently transmitted from one indicator-wheel to another. Fig. 5 is a fragmentary section in line 5 5, Fig. 2, showing the pawl of one indicator-wheel in engagement with a tooth of the next indicator-wheel. Fig. 6 is a section in line 6 6, Fig. 5. Fig. 7 is a fragmentary section similar to Fig. 5, showing the pawl of one indicator-wheel retracted out of engagement with the tooth of the next indicator-wheel. Fig. 8 is a section in line 8 8, Fig. 7.

Like letters of reference refer to like parts in the several figures.

Although my register can be adapted for indicating the number of cycles of any moving body, I have shown the same arranged for indicating the number of revolutions of bicycle-wheels and will describe the same in this connection.

A represents a central arbor or rod which forms the support for the working parts of the register and which is provided at one end with a fixed head *a* and at its opposite end with a removable head *a'*, which is secured

to the respective end of the arbor by a screw-thread connection *a*<sup>2</sup>.

B represents the starting-wheel, which is actuated by the movement of one of the bicycle-wheels and from which the movement is transmitted to the operating parts of the register. This starting-wheel is journaled upon the arbor adjacent to the inner side of its fixed head and is provided on its periphery with teeth *b*, with which a projection on the bicycle-wheel is adapted to engage for turning the starting-wheel the extent of one tooth during each revolution of the bicycle-wheel.

C<sup>1</sup> C<sup>2</sup> C<sup>3</sup> C<sup>4</sup> C<sup>5</sup> C<sup>6</sup> represent a series of stationary partitions or disks which are mounted side by side and axially in line on the arbor between the starting-wheel and the removable head and separated from each other and from said head and wheel, so as to form an intervening space between adjacent disks and between each of the end disks and the adjacent starting-wheel and removable arbor-head. Each of the partitions is provided on its rear side with an inner annular flange or collar *c*, which is secured to the arbor. The collar of each intermediate partition bears against the adjacent partition, while the outer ends of the collars on the outermost disks C<sup>1</sup> C<sup>6</sup> bear, respectively, against a shoulder *c'* on the arbor and the removable head of the arbor, thereby forming spacing-rings or washers, which hold the partitions in their proper relative position.

D<sup>1</sup> D<sup>2</sup> D<sup>3</sup> D<sup>4</sup> D<sup>5</sup> D<sup>6</sup> represent a number of indicator-wheels which register the number of revolutions which are made by the bicycle-wheel and which are arranged axially in line with the partitions. One of these indicator-wheels is arranged adjacent to the rear side of each partition and is provided with an inner sleeve *d*, which is mounted on the collar of the respective partition, and with an outer annular flange *d'*, which is provided on its periphery with an annular row of numerals. The inner sleeves of the indicator-wheels fill the spaces between the intermediate partitions and between the rearmost partition and the rear head of the arbor, and the outer flanges of the indicator-wheels are fitted close



together, as shown in Fig. 1, thereby producing a compact construction. Each of the indicator-wheels is provided on its front side with an annular row of teeth  $e$ , one tooth being provided for and corresponding with each number on the periphery of its outer flange. Each of the partitions is provided with an opening  $e'$ , arranged opposite the teeth of the adjacent indicator-wheel and extending about the length of one tooth.

F represents coupling pawls or catches whereby the starting-wheel and the indicator-wheels are coupled intermittently, so that one of these members is compelled to move with the adjacent member during the extent of one tooth. One of these pawls is secured to the rear side of the starting-wheel and each indicator-wheel, so that its annular path is in line with the opening in the adjacent partition. Each of these pawls is secured with its front or advancing end to the member which carries the same and is provided on its rear or trailing end with a hook  $f$ , which is adapted to project through the opening in the adjacent partition and engage with one of the teeth of the next adjacent indicator-wheel for compelling these two members to move together. The coupling-pawls are preferably made of spring metal, and each pawl is constantly moved rearwardly away from the member which carries the same toward the next rearward partition and indicator-wheel, so that the pawl upon reaching the opening in the partition will be moved through the same and into engagement with a tooth of the next rearward indicator-wheel.

G represents circular guide rails or flanges whereby the movement of the pawls is controlled. A pair of these rails is arranged on the front side of each partition on opposite sides of and concentric with the annular path of the pawl in front of the respective partitions. The guide-rails of each partition do not extend past the opening thereof, but terminate abruptly with their rear ends adjacent to the front end of said opening and provided at their front ends, which are adjacent to the rear end of said opening, with inclines  $g$ . The coupling-pawl is provided on opposite sides with wings or lugs  $f''$ , which are adapted to ride on the rails of the partition.

During the idle portion of each revolution of the starting-wheel its pawl is held in a retracted position by the guide-rails of the partition  $C'$ . When the pawl reaches the rear end of the guide-rails and clears the latter during the intermittent forward movement of the starting-wheel, the pawl is projected through the opening in the partition  $C'$  and engaged with the adjacent tooth of the indicator-wheel  $D'$ , so that the latter is carried forward with the starting-wheel during the continued forward movement of the same. After the indicator-wheel  $D'$  has been moved

forward the extent of one tooth the pawl is moved out of engagement with the tooth of said indicator-wheel and out of said opening by reason of its lugs riding upon the inclined front ends of the guide-rails, where it is held until it again reaches the rear end of the guide-rails. At the end of each revolution of the indicator-wheel  $D'$  its pawl is released by the guide-rails of the partition  $C^2$  and projected through the opening in the latter and into engagement with a tooth on the indicator-wheel  $D^2$ , whereby the latter is moved forwardly the extent of one tooth by the indicator-wheel  $D'$ . The indicator-wheel  $D^2$  is coupled with and uncoupled from the next indicator-wheel  $D^3$ , so that the latter is moved forward the extent of one tooth during each complete revolution of the indicator-wheel  $D^2$ . Each of the remaining indicator-wheels is actuated one tooth at a time in like manner from the adjacent preceding indicator-wheel during a complete revolution of the latter. The number of teeth on each indicator-wheel and the corresponding numerals may be varied according to the desired kind of divisions.

J represents a cylindrical casing which incloses the indicator-wheels and extends from the foremost partition to the rear head of the arbor. This casing is provided with a longitudinal slot  $j$ , which is covered by a transparent plate  $j'$ , and through which the registering-numbers of the several indicator-wheels are visible in a row. The case is preferably made integrally with the foremost partition, as shown in Fig. 1, and the rear arbor-head is provided with an annular flange  $j^2$ , which surrounds the rear end of the case and holds the same in place.

I claim as my invention—

1. In a register, the combination with a circular partition provided with an opening and with a concentric guide-rail which projects from the side of the partition and extends from one side of said opening to the other side thereof, so as to form a gap between the ends of the rail adjacent to said opening, of two rotary members arranged on opposite sides of the partition, an annular row of teeth formed on one of the rotary members in line with the opening in the partition, a pawl mounted on the other rotary member and provided with a hook arranged in line with said opening, and a lug projecting laterally from the side of the pawl and adapted to drop into the gap between the ends of the rail for permitting the hook of the pawl to pass through the opening in the partition and engage with said teeth and to ride upon said rail for disengaging the hook from the teeth, substantially as set forth.

2. In a register, the combination with the partition provided with an opening, of two rotary members arranged axially in line and on opposite sides of said partition, an annu-

lar row of teeth arranged on one of said rotary members, a spring-pawl secured with its front end to the other rotary member and provided at its opposite end with a hook  
5 adapted to project through said opening and engage with said teeth, lugs arranged on opposite sides of the pawl and a pair of concentric guide-rails arranged on the partition and engaging with the lugs of the pawl, each of

said rails having an inclined front end and an abrupt rear end, substantially as set forth.

Witness my hand this 11th day of April, 1896.

WILLIAM G. SHAW.

Witnesses:

THEO. L. POPP,

E. R. DEAN.