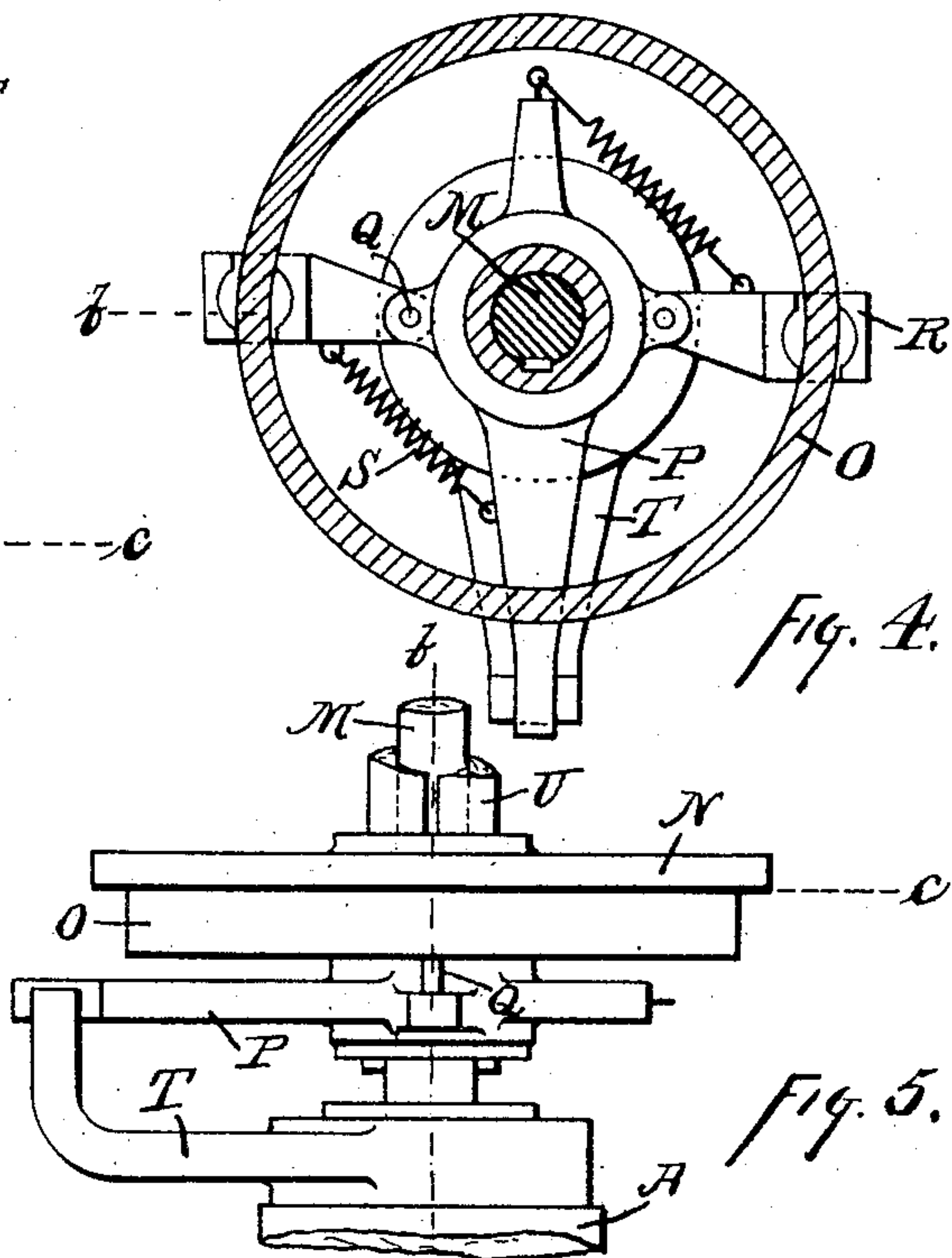
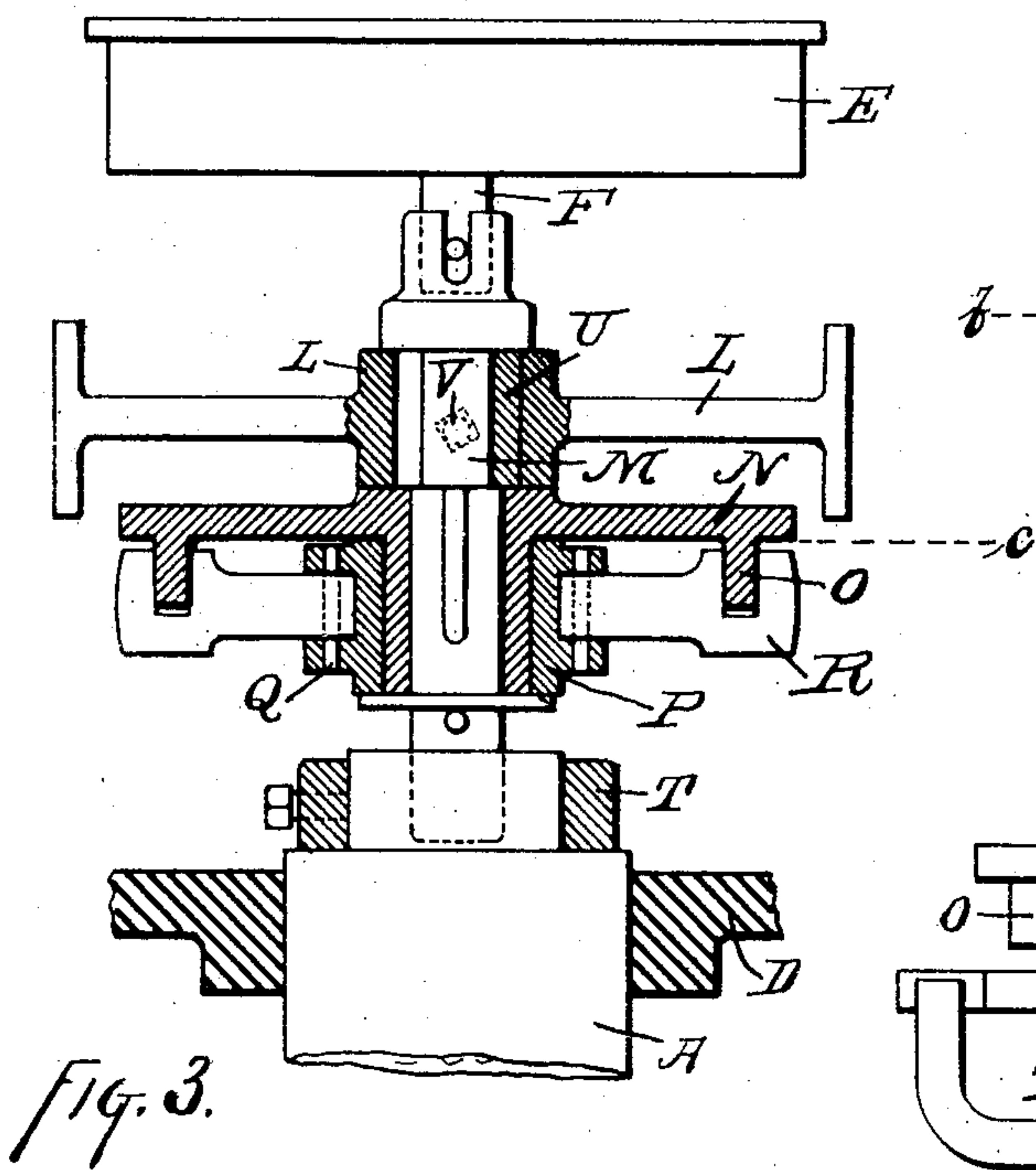
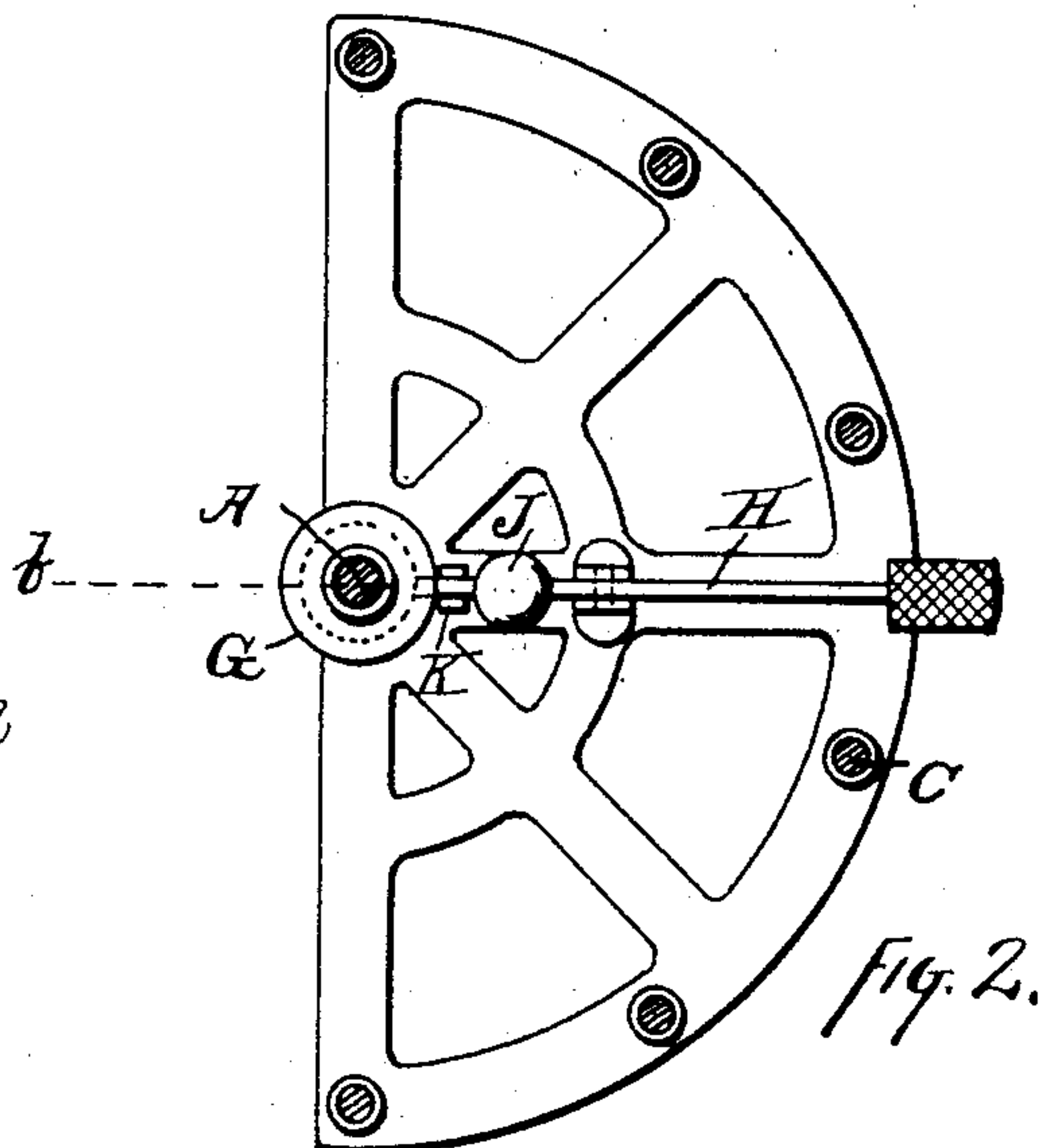
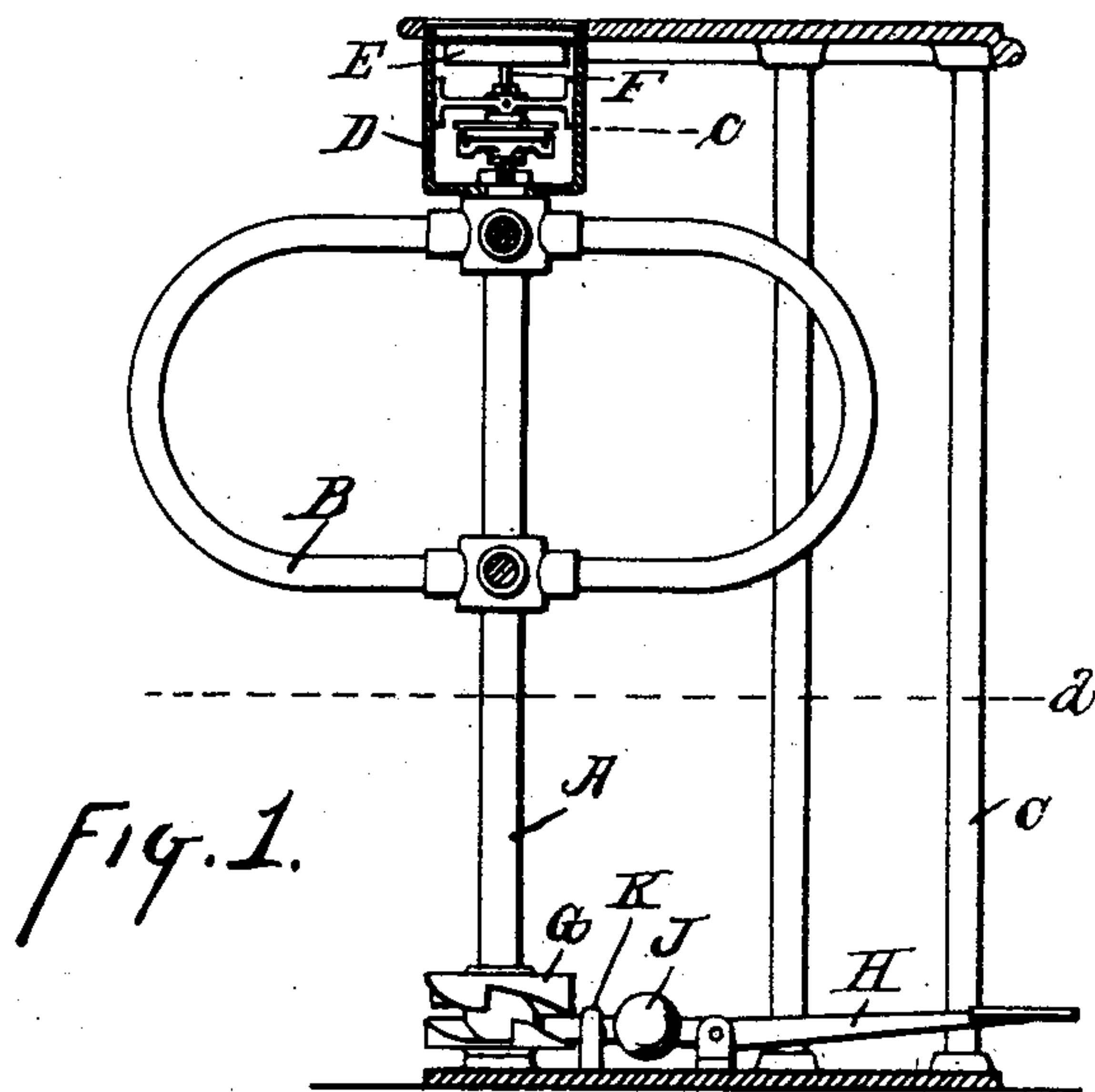


(No Model.)

W. T. ELLISON, Jr. & J. UNSWORTH, Jr.  
TURNSTILE.

No. 501,680.

Patented July 18, 1893.



Witnesses:  
M. S. Belden  
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# UNITED STATES PATENT OFFICE.

WILLIAM THOMAS ELLISON, JR., OF SALFORD, AND JAMES UNSWORTH, JR.,  
OF MANCHESTER, ASSIGNORS TO GEORGE THOMAS, OF MANCHESTER,  
ENGLAND.

## TURNSTILE.

SPECIFICATION forming part of Letters Patent No. 501,680, dated July 18, 1893.

Application filed February 17, 1893. Serial No. 462,799. (No model.) Patented in England February 19, 1892, No. 3,225.

*To all whom it may concern:*

Be it known that we, WILLIAM THOMAS ELLISON, Jr., residing at Salford, and JAMES UNSWORTH, Jr., residing at Manchester, in the county of Lancaster, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Turnstiles, (patented to me in England on the 19th of February, 1892, No. 3,225,) of which the following is a specification.

This invention pertains to improvements in turnstiles for use in checking the admission of the public to places of amusement, &c., and for recording the number of admissions.

Our improvements will be readily understood from the following description taken in connection with the accompanying drawings in which—

Figure 1, is a side elevation of a turnstile exemplifying our invention, the fender appearing in vertical section in the plane of line *b* of other figures; Fig. 2, a horizontal section in the plane of line *a*; Fig. 3, a vertical section in the plane of line *b*; Fig. 4, a horizontal section in the plane of line *c*; and Fig. 5, a side elevation at the top of the turnstile-shaft the gripping arm *R* being omitted. Figs. 3, 4, and 5 are upon an enlarged scale.

In the drawings:—*A*, indicates the shaft of the turnstile; *B*, the usual wings; *C*, the usual fender; *D*, a cylindrical casing supported by the fender at the top of the turnstile-shaft and forming the top bearing for the shaft and containing also the recording mechanism; *E*, the recording device or counter, which may be of any of the usual constructions, this recording device being disposed within the casing *D* over the turnstile-shaft; *F*, the spindle of the recording device, through which the mechanism of that device receives its motion, this spindle projecting downward axially over the turnstile-shaft; *G*, a collar fast on the lower portion of the turnstile-shaft and provided with a circumferential series of upwardly projecting stops one stop for each wing of the turnstile, these stops being joined by cam-surfaces extending from the base of one stop to the top of the next stop, these stops facing in such direction that any

rigid part engaging one of them will resist the turning of the turnstile in the direction of admission, the series of stops thus forming a vertical cam. The collar bears a similar but reversed cam over the first, the collar thus virtually forming a grooved cam.

*H* is a foot lever pivoted at the base of the structure and having its outer end in position to be engaged by the foot of the attendant, and having its inner end engaging the cam-groove of the collar so that the inner end of the lever, in normal position will engage a stop and prevent the rotation of the turnstile.

*J* is a weight upon the inner end of the lever, tending to hold that end of the lever downward in position to engage the stops.

*K* are rigid jaws straddling the inner end of the lever close to the collar *G* and serving to resist the side strains upon the lever.

*L* is a spider supporting a journal-bearing in the case *D*, between the upper end of the turnstile-shaft *A* and the recording device *E*, this bearing being in the axial line of the turnstile-shaft. *M* is a spindle journaled in this bearing and having its lower end stepped in the top of the turnstile-shaft *A*, the upper end of this spindle engaging the spindle *F* of the recording device. *N* is a disk fast on this spindle; *O*, a concentric flange projecting downwardly from the face of this disk; *P*, an arm loose on spindle *M*, the illustration showing this arm as having its hub encircling the hub of the disk.

*Q* are two oppositely disposed vertical hinge pivots carried by the hub of arm *P*, these pivots being parallel with the spindle *M*.

*R* is a pair of gripping arms, their inner ends engaging the hinge pivots *Q* and their outer ends slotted loosely to engage the flange *O*. The outer end of each gripping arm is set angularly in advance of a radial line cutting its hinge pivot and the axis of the spindle *M*, whereby angular advance of the hinge pivot in the admission-direction of the turnstile causes the gripping slots to bite forcibly upon flange *O*.

*S* are springs, one for each gripping arm, attached to the gripping arms and to arm *P*



and tending to drag the gripping arms in the direction opposed to the admission-direction of the turnstile.

T is an arm fast on the upper end of the turnstile-shaft, its upper end turning upwardly into forked driving engagement with the outer extremity of arm P.

U is a split bushing in the bearing L of spindle M: and V, is a set-screw by which this bushing may be clamped more or less tightly upon the spindle, the bushing therefore forming a friction clutch to resist the turning of the spindle.

The inner end of lever H is normally down, held so by weight J or, if desired, by an equivalent spring. The lever engages one of the stops of the collar and prevents the forcible turning of the turnstile in the admission-direction. Jaws K directly meet these strains close to the point of application. The attendant may depress the outer end of lever H, thus releasing the stop, and the turnstile may turn in the admission-direction, the lever automatically catching upon the succeeding stop. The lever must thus be operated by the attendant at the passage of each person through the turnstile. But when the turnstile is turned in the exit direction the attendant need not operate the lever as it will automatically rise and clear the stops. The upper portion of the collar G enforces the downward motion of the inner end of the lever in front of each stop, thus preventing the possibility of the turnstile being rushed around by two or more persons for one lift of the lever, as every person will be obliged to wait for the attendant to raise the lever before he can pass through. It will be observed that it is the office of the upper part of collar G to insure the pushing down of the lever in front of each succeeding stop.

As the turnstile-shaft A turns, in either direction, loose arm P is forced to turn, being driven by arm T. When the parts turn in the exit direction of the turnstile the gripping arms R drag idly upon the flange O, with only so much friction as is imposed by the springs S. The friction at the bearing L is in excess of this friction and consequently neither the spindle M or the recording device turns. But when the turnstile is turned in the admission direction then the gripping jaws R take an unyielding bite on the flange O and force disk N and spindle M to turn, thus causing the recording device to operate. The action of the gripping arms, in their idle backward motion when the turnstile is used for exit purposes, and also in their forward or active motion when the turnstile is used for admission-purposes, is entirely noiseless, and the action of the parts will not be disturbed by such wear as will take place in the operation of the device.

We claim as our invention—

1. In a turnstile, the combination, substan-

tially as set forth, with the turnstile-shaft and its wings, of a circumferential series of stops carried by the shaft, one stop for each wing, a lever arranged to engage in front of said stops and prevent the forward turning of the turnstile and adapted to be moved out of such engaging position by the attendant, means, as a weight, for holding said lever in engaging position, and cam-surfaces carried by the turnstile-shaft and engaging said lever and serving to force the lever into engaging position in front of each of said stops successively.

2. In a turnstile, the combination, substantially as set forth, of two rotary parts, one forming the turnstile-shaft and the other forming the spindle of the recording device, a flanged disk turning with one of said rotary parts, a hub turning with the other of said rotary parts, one or more gripping arms hinged to said hub and provided with a slot engaging said flange, and a spring for each of said gripping arms tending to drag the gripping arm backward.

3. In a turnstile, the combination, substantially as set forth, of a turnstile-shaft, a recording device having the axis of its spindle in line with the axis of the turnstile-shaft, an intermediate spindle connected with the spindle of the recording device and extending toward the turnstile-shaft, a friction-clamp for resisting the rotation of said intermediate spindle, and devices, substantially as set forth, connecting the turnstile-shaft with said intermediate spindle and serving to force said intermediate spindle to turn with the turnstile-shaft when the latter moves in admission-direction and permitting said intermediate spindle to remain at rest when the turnstile-shaft turns in the opposite direction.

4. In a turnstile, the combination, substantially as set forth, of a turnstile-shaft, a bearing at the top of the same, a step-bearing in the top of the turnstile-shaft, a bearing above the top of the turnstile-shaft, a spindle journaled in said last-mentioned bearing and stepped in said step-bearing, and devices, substantially as set forth, connecting said turnstile-shaft and spindle.

5. In a turnstile, the combination, substantially as set forth, with a turnstile-shaft and a recording device, of a flanged disk connected with and turning with the recording device, a loose hub concentric with said flanged disk, an arm fast on the turnstile-shaft and engaging said hub and forcing the hub to turn with the turnstile-shaft, and one or more gripping arms hinged to said loose hub and engaging said flanged disk.

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