A. W. IRWIN.

TURNSTILE.

APPLICATION FILED OCT. 6, 1911.

1,077,984.

Patented Nov. 11, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

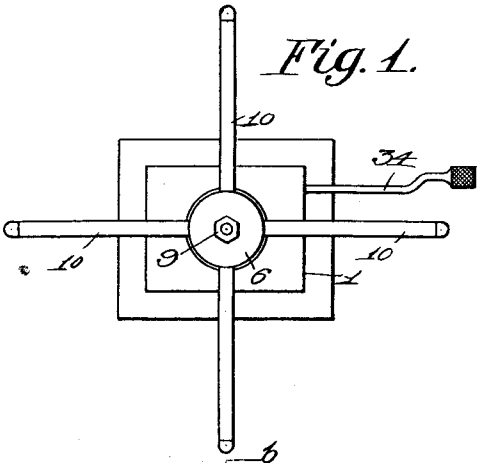


Fig. 2.

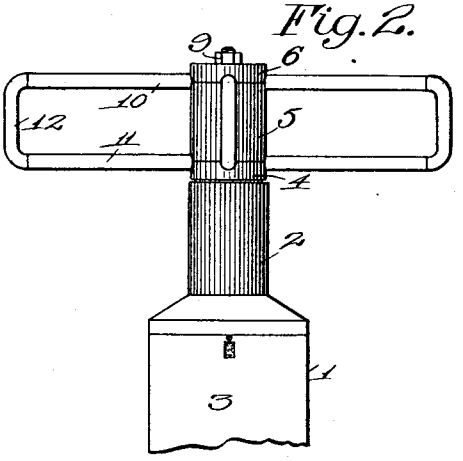


Fig. 3.

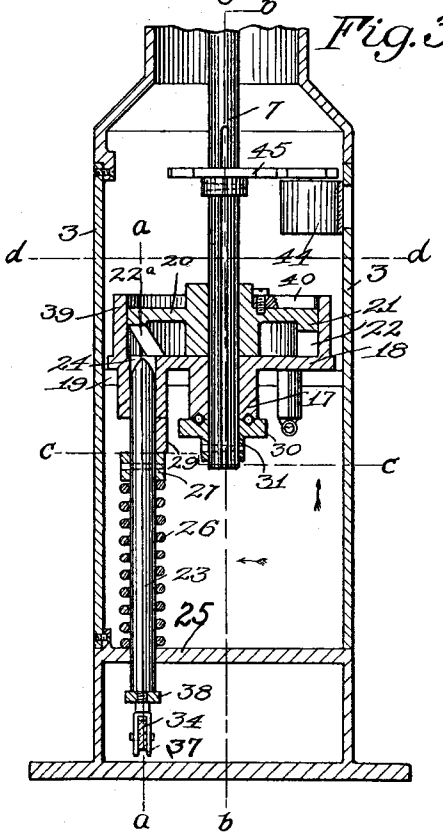
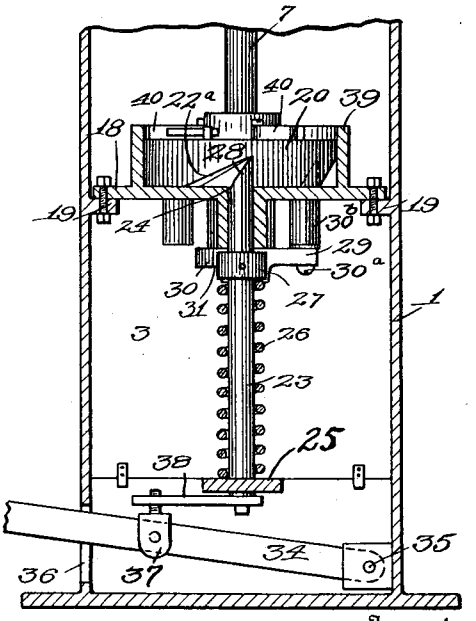


Fig. 4.



Witnesses

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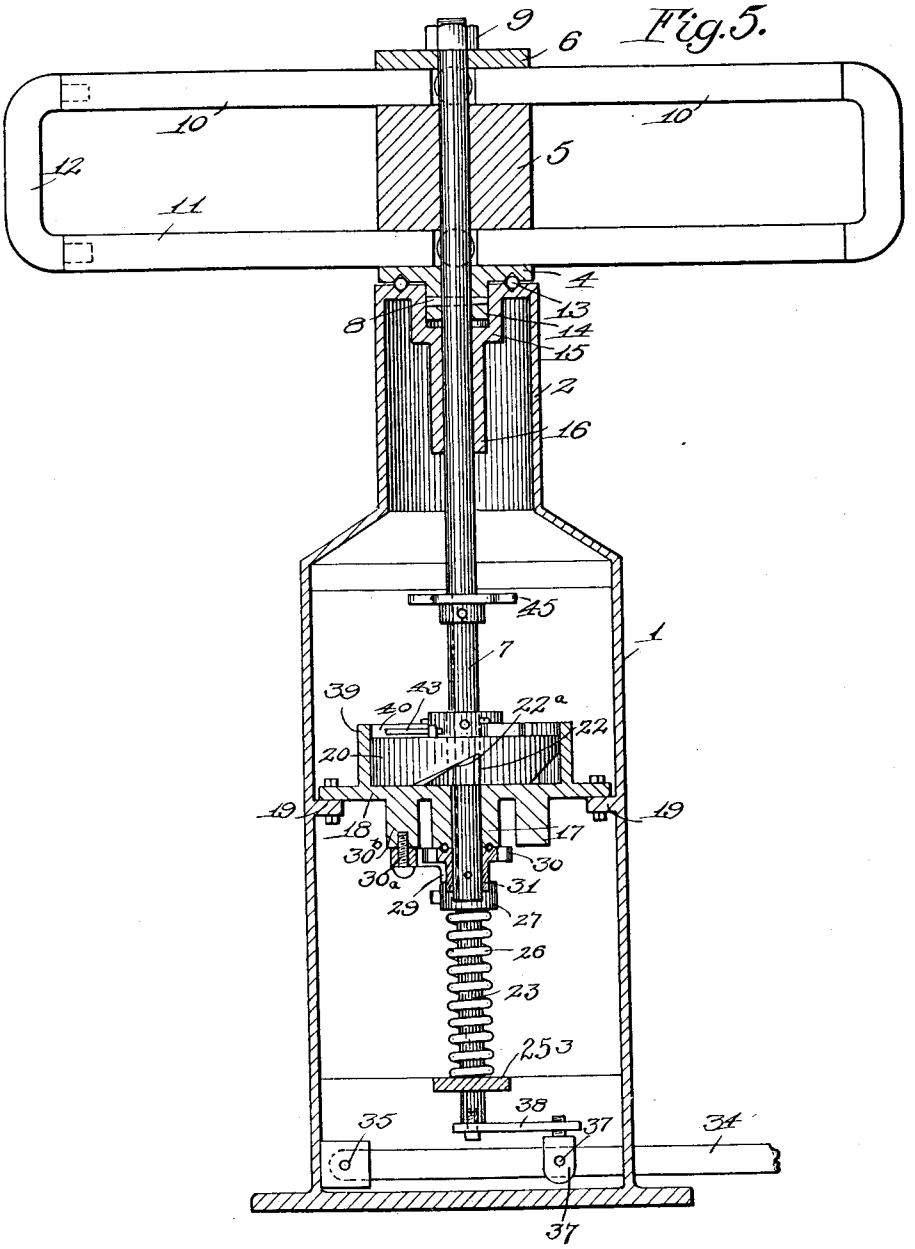
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3 SHEETS—SHEET 2.

Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

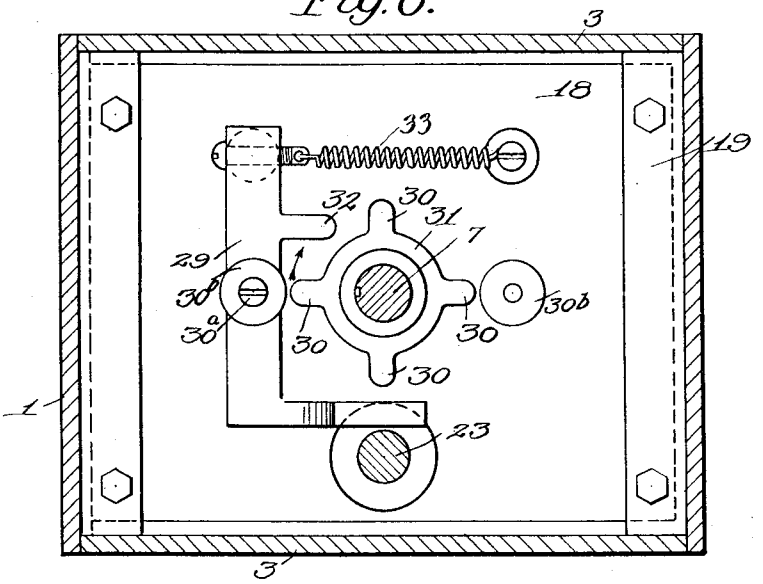
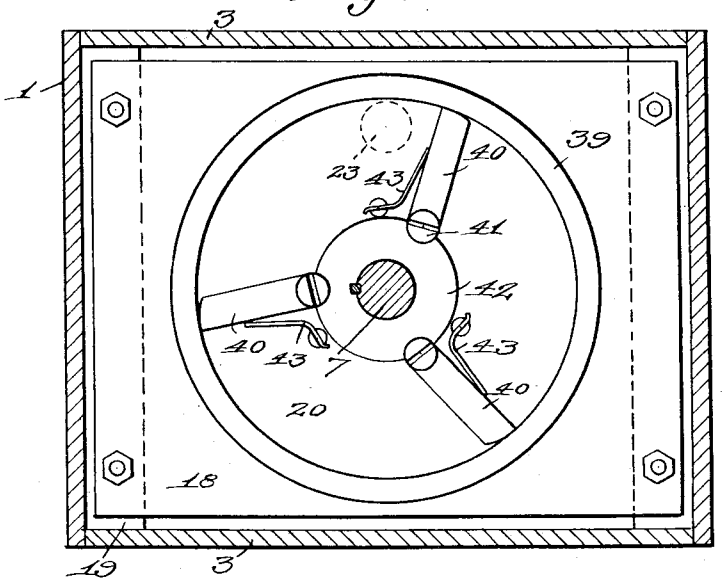


Fig. 7.



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UNITED STATES PATENT OFFICE.

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TURNSTILE.

1,077,984. Specification of Letters Patent. Patented Nov. 11, 1913.

Application filed October 6, 1911. Serial No. 653,112.

To all whom it may concern:

Be it known that I, ANSON W. IRWIN, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Turnstiles, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

The present invention relates to turnstiles, and an object thereof is to provide a construction in which the number of parts is reduced to a minimum while, at the same time, providing effective means for releasing the turnstile head, for holding said head against return movement, and for throwing the head always to a position where the registering device will be operated.

Another object of the invention is to provide a release mechanism having a dog for holding the mechanism in inoperative position, controlled by the turnstile head.

Still another object of this invention is to provide a throwing means which does not impose, on the person passing through the turnstile, the work of operating said throwing means.

To these and other ends the invention consists in certain parts and combinations of parts all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings; Figure 1 is a top view of the turnstile: Fig. 2 is a side view of the upper portion of the turnstile; Fig. 3 is a vertical section in the plane of the throwing plunger and the head shaft; Fig. 4 is a vertical section on the line *a—a* Fig. 3; Fig. 5 is a vertical section on the line *b—b* Fig. 3; Fig. 6 is an enlarged horizontal section on line *c—c* Fig. 3; and Fig. 7 is an enlarged horizontal section on the line *d—d* Fig. 3.

According to this invention there may be provided a hollow base or standard having a rectangular cross section and formed with a reduced cylindrical upper end 2; opposite side walls 3 of the base being removable to permit the interior of the standard to be reached.

Arranged to operate on the standard is a head comprising in this instance three members 4, 5 and 6, each provided with a central opening, said openings being alined and having the head shaft 7 passed therethrough. The lower member 4 is keyed at 8 to the shaft 7 and the shaft has its upper end screw threaded to receive a nut 9 which draws the head members 4, 5 and 6 together. The purpose of this construction of the head is to provide for clamping the turnstile arms which, in this instance, are U-shaped, and have their free ends secured between the members 4, 5, and 6, said arms being preferably formed by two tubes 10 and 11 connected by a U-shaped casting 12 having reduced ends fitting within the tubings. In order to prevent the U-shaped arms of the turnstile slipping in the head the opposed faces of the members 4, 5 and 6 may be notched or grooved to receive the tubes 10 and 11.

The lower face of the member 5 and the upper end 2 of the standard are grooved to receive antifriction balls 13, and a depending boss 14 is also formed on the under side of member 4 to fit within a bearing 15 at the upper end 2 of the standard. The upper end of the standard also has a bearing sleeve 16 in which the shaft 7 turns. The lower end of the shaft 7 turns in a depending bearing 17 on a plate 18 which is bolted to and rests upon ribs 19 formed on opposite interior walls of the standard 1. This plate 18 also serves as a support for a release mechanism which may comprise a ratchet wheel 20 preferably in the form of a horizontal disk secured to the shaft 7 above the plate 18 and having a depending notched flange 21 formed with shoulders 22 parallel with the axis of rotation of the wheel and inclined faces 22^a. For coöperation with the shoulders 22 a release pawl is provided comprising preferably a plunger 23 guided at 24 in plate 18 and also in plate or bar 25, below plate 18, a spring 26 surrounding the plunger pawl 23 and bearing against the bar 25 and a collar 27 on plunger 23 to force the upper end of the latter upwardly through the plate 18 and into cooperation with the ratchet wheel. The upper end of the plunger is beveled at 28 and enters the notches to engage first one of the inclined faces 22^a and then one of the shoulders 22.

In order to lock out the release mechanism so that the head may turn freely, there may be provided a lock-out dog 29 pivoted at 30 to the under side of the plate 18 and having a portion moved by a spring 33 into engagement with the lower end of bearing 24 and into the path of a shoulder formed by a collar 27 when the plunger 23 is lowered. This dog is preferably con-

trolled by the turnstile head so as to insure the release of the plunger in proper time to limit the rotation of the head, and to this end one of the projections 30 on a collar 31, secured to the shaft 7, coöperates with an arm 32 on the dog 29 about the time that the first part of each incline face 22^a reaches the plunger 23, so that the latter is freed and moves upwardly under the action of its spring 26 against the inclined face 22^a which, coöperating with the beveled end of the plunger, throws the turnstile head around until the adjacent shoulder 22 coöperates with the side of the plunger. The collar 31 coöperates with the lower end of the bearing sleeve 17 to take up end thrust of the shaft 7 due to the action of plunger 23.

For operating the plunger 23 a foot lever 34, pivoted at 35 to the interior of the standard 1 and extending to the exterior of said standard through a slot 36, has a yoke 37 pivoted thereto and connected to an arm 38 extending laterally from the plunger 23. This connection between the foot lever and the plunger gives greater movement to the plunger than when the foot lever is connected directly to the plunger for the reason that the arm 38 permits connection with the lever 34 at a point more remote from the pivot of the lever than the plunger 23.

To prevent the turnstile-head rotating in the reverse direction, there is employed a back stop which preferably consists of an annular flange 39 extending from the upper face of the plate 18 about the ratchet wheel 20 on the shaft 7. Coöperating with this flange 39 is a plurality of dogs 40 pivoted at 41 to the upper side of the ratchet wheel 20, the pivots 41 being arranged equidistant about the shaft 7 and the dogs 40 coöperating at their free ends with the interior face of the flange 39. The centers of the pivots of the dogs are at a distance from the inner face of the flange less than the length of any one dog so that when the shaft 7 is turned in one direction the dogs bind against the inner face and when the shaft is turned in the other direction said dogs ride freely over said face, springs 43 tending to move said dogs against the flange.

It will be noted that the pivot 30 of the dog 29 is carried by a boss 30^b on the under side of the plate 18. Two of such bosses are provided one on the opposite side of the shaft 7 in order that the position of the dog 29 may be changed to permit the dog to be used in a right or a left hand turning turnstile.

A registering mechanism 44 may be arranged within the casing and controlled by a spur wheel 45 on the shaft 7.

In using this invention, an attendant is placed in charge of the turnstile, and, as each person passes through the turnstile, the attendant depresses the lever 34 by his foot, thus lowering the plunger 23 and permitting the person to turn the turnstile head. When the plunger 23 is depressed, the dog 29 passes above the collar 27 and holds the said plunger down until after the turnstile head has been operated so that the end of the plunger lies beneath the first portion of one of the inclined faces 22^a of the ratchet wheel, when the dog 29 is shifted by projection 30 and releases the plunger so that the latter moves upwardly with force against the inclined face 22^a, causing the turnstile head to be shifted until the shoulder 22 is engaged by the plunger. During the rotation of the head in the proper direction, the dogs 40 ride over the inner face of flange 39, but, if the rotation of the head is reversed, immediately the dogs engage the flange in such a manner that the head is locked against movement in the reverse direction.

A turnstile constructed in accordance with the invention has all necessary functions, yet is simple in operation, durable in use and inexpensive to manufacture. The parts are so located as to be subject to immediate repair. The head arms may be quickly removed or inserted because of the construction of the head. The release mechanism has been improved to cheapen its structure and add to its durability, having in addition the function of throwing the turnstile head, so that there is provided a head throwing means in which the energy is stored by the attendant and is not imposed upon the person passing through the turnstile. The locking dog for the releasing means is operated automatically by the rotation of the turnstile, thus not requiring an operation on the part of the attendant.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a turnstile, the combination with a turnstile standard, of a head having a shaft turning in the standard, said head comprising a member secured to the shaft, a member fitting on the shaft, arms having their ends between said members, and means coöperating with the shaft for clamping said members on the arms.

2. In a turnstile, a head comprising two members, arms having portions lying between the members, and means for clamping said members on the arms.

3. In a turnstile, a head comprising three members, U-shaped arms having their ends secured between said members, and means for clamping said members on the arms.

4. In a turnstile, the combination with a standard, of a head comprising a shaft turning in the standard, three members fitted to the shaft, one being rigidly secured thereto,

U-shaped arms having their ends secured between said members, and means coöperating with the shaft for clamping said members on the arms.

5. In a turnstile, the combination with a hollow standard having a bearing sleeve at the top thereof, of a head resting upon the upper end of the standard and having a shaft turning with and depending therefrom through the bearing sleeve into the standard, a plate supported in the standard and having the shaft turning therein, and a collar on the shaft below the plate to take up end thrust in the shaft.

6. In a turnstile, the combination with a standard, of a head turning thereon, and automatic lock-out mechanism for holding the release mechanism out of operation during the first part of the head-turning movement.

7. In a turnstile, the combination with a standard, and a head turning thereon, of release mechanism comprising a ratchet wheel connected to the head, a pawl for coöperation with the ratchet wheel, the coöperation between the pawl and the ratchet being such that the head is shifted or thrown by such pawl, a device under the control of the attendant for shifting said pawl to release the head, and automatic lock-out mechanism for holding the pawl against movement until the head reaches a certain position.

8. In a turnstile, the combination with a standard and a head turning thereon, of release mechanism comprising a ratchet wheel having a shoulder and an inclined face, a spring-pressed pawl coöperating with the shoulder to limit the rotation of the head and with the inclined face to shift the head, a device under the control of the attendant for shifting the pawl against the action of its spring to release the head, and automatic lock-out mechanism for holding the pawl against movement until the head reaches a certain position.

9. In a turnstile, the combination with a hollow standard, of a head having a shaft turning in the standard, a plate supported in the standard and having the shaft turning therein, a ratchet wheel arranged on the shaft above the plate, a vertically movable plunger movable through the plate to coöperate with the ratchet wheel, and automatic lock-out mechanism for holding the pawl against movement until the head reaches a certain position.

10. In a turnstile, the combination with a standard, and a head mounted to turn thereon, of spring means for throwing said head to certain positions, and automatic lock-out mechanism for holding said spring-means against action until the head is turned to a certain position.

11. In a turnstile, the combination with a standard, and a head mounted to turn thereon, of release mechanism having a lever for controlling the same, a combined head releasing and throwing pawl controlled by said lever and automatic lock-out mechanism for holding the pawl against movement until the head reaches a certain position.

12. In a turnstile, the combination with a standard and a head rotatable thereon, of releasing mechanism, and a lock-out for said releasing mechanism operated by the movement of said head.

13. In a turnstile, the combination with a standard and a head rotatable thereon, of a release mechanism embodying a pawl, and a lock-out for said pawl operated by the head to free the release mechanism.

14. In a turnstile, the combination with a standard and a head having a shaft turning in the standard, of a ratchet wheel on the shaft, a pawl for coöperation with the ratchet wheel, a lock-out for said pawl, and means operated from said shaft for moving said lock-out to release the pawl.

15. In a turnstile, the combination with a standard and a head having a shaft turning in the standard, of a ratchet wheel on the shaft, a spring-pressed pawl for coöperation with the ratchet wheel, means under control of the operator for moving the pawl out of engagement with the ratchet wheel, a lock-out for holding the pawl out of such engagement, and a device for moving the lock-out to release the pawl when the head reaches a certain position.

16. In a turnstile, the combination with a standard and a head having a shaft turning in the standard, of a ratchet wheel connected to the shaft, a spring-pressed pawl for coöperation with the ratchet wheel, means for moving the pawl out of engagement with the ratchet, a spring-pressed lock-out for holding the pawl away from the ratchet, and a projection on the shaft to move the lock-out from retaining position.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."