April 20, 1943. T. A. KEEN ET AL 2,317,147

CONTROL FOR TICKET PRINTING AND ISSUING MACHINES

Original Filed Aug. 7, 1939 2 Sheets-Sheet 1

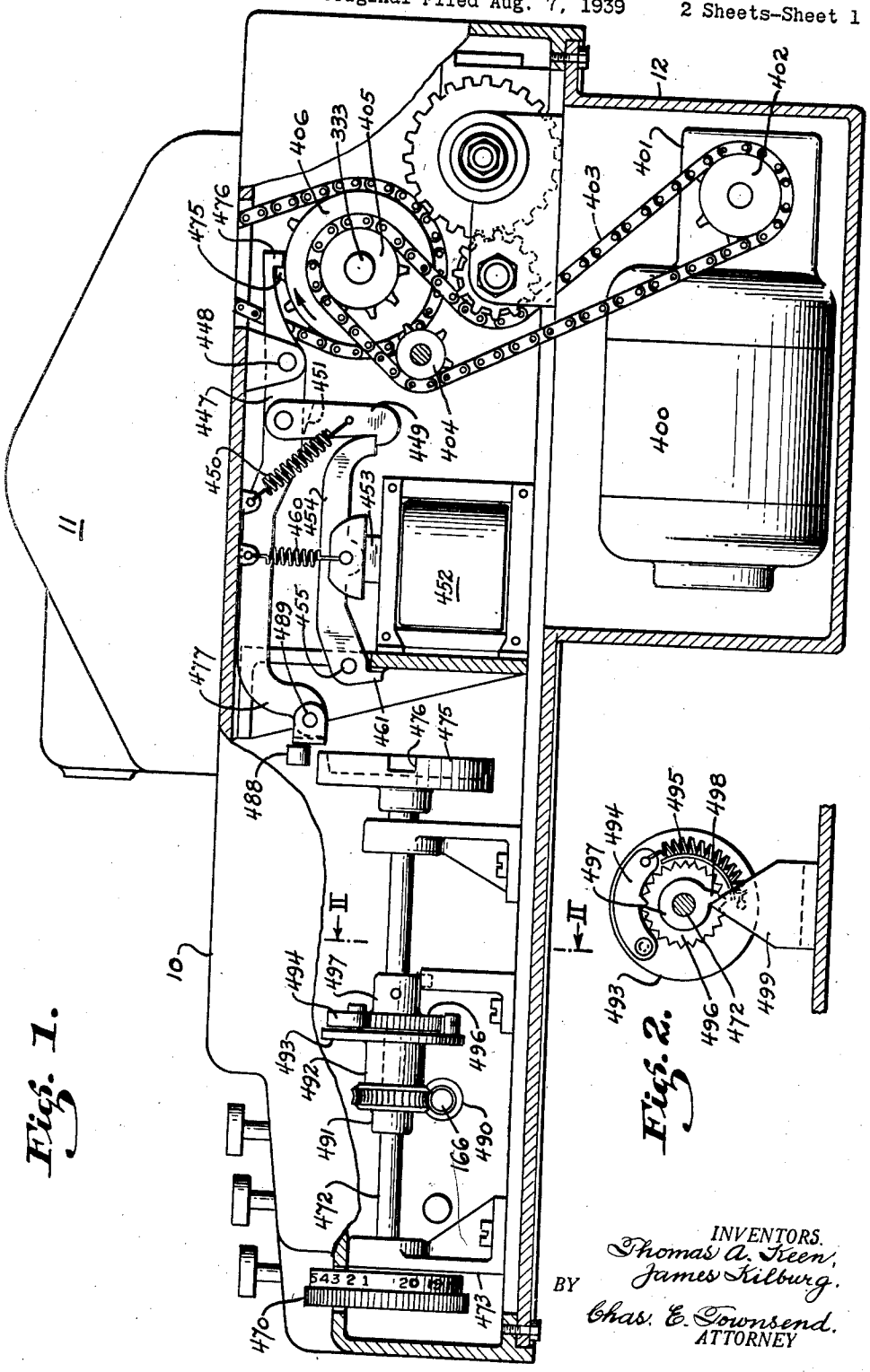


Fig. 1.

Fig. 2.

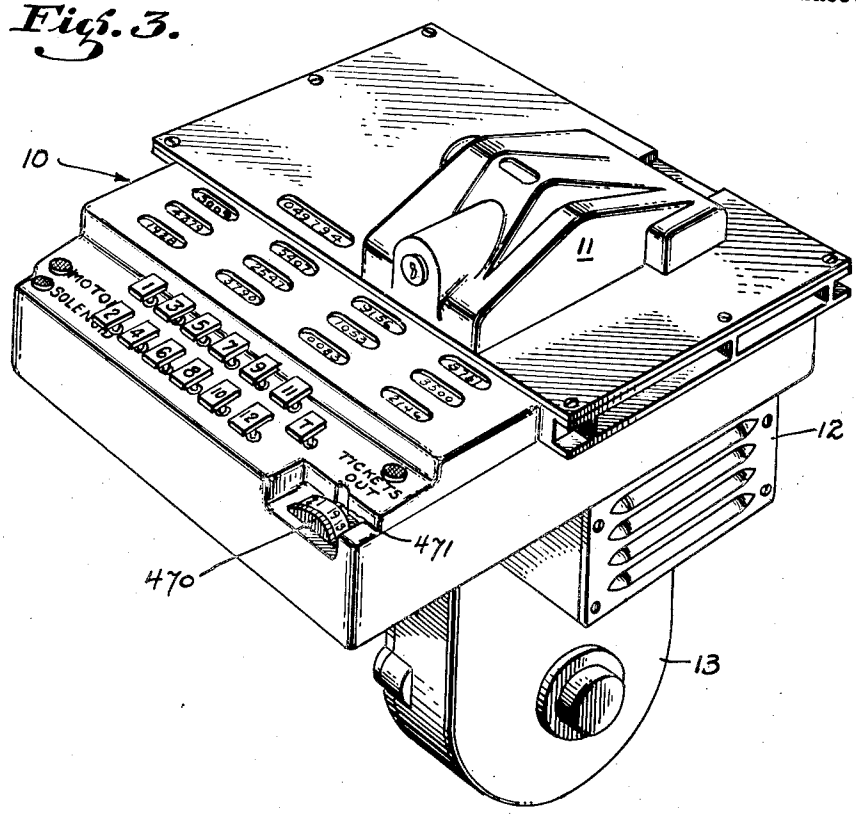
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Fig. 3.



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2,317,147

CONTROL FOR TICKET PRINTING AND ISSUING MACHINES

Thomas A. Keen, San Mateo, and James Kilburg, Redwood City, Calif., assignors, by direct and mesne assignments, of one-half to Hannah M. Smith, Chicago, Ill., and one-half to said Thomas A. Keen

Original application August 7, 1939, Serial No. 288,840. Divided and this application October 9, 1940, Serial No. 360,392

7 Claims. (Cl. 192—139)

The present invention relates to ticket printing and issuing machines of the kind used for issuing tickets as receipts for bets, for example, at races where the pari-mutuel system is employed, and relates particularly to control mechanism through which a predetermined number of tickets may be issued by such a machine upon a single operation thereof, in the interest of saving time when a plurality of identical tickets are to be sold.

The present application is a division of our co-pending application entitled "Ticket printing and issuing machine," filed August 7, 1939, Serial No. 288,840, in which application there is disclosed a complete machine for printing tickets bearing race and entry numbers as well as dates and other identifying subject matter, at the time of the ticket sale.

It is the object of the present invention to provide a control mechanism to be used in connection with ticket printing and issuing machines which will effect automatic printing of a selected number of identical tickets through continuous operation of the machine, and to provide in such control mechanism means for manually selecting the number of tickets to be so printed, and means for mechanically and automatically re-turning the setting mechanism to normal position during the operation of the machine.

Further objects and advantages of the invention are made apparent in the following specification, wherein detailed reference is made to the accompanying drawings.

In the drawings—

Fig. 1 is a side elevation with parts broken away of a ticket printing and issuing machine such as disclosed in our above mentioned co-pending application, and showing particularly the main driving mechanism and a control mechanism constructed in accordance with the present invention;

Fig. 2 is a sectional view illustrating details of construction of a portion of the control mechanism, and taken on line II—II of Fig. 1; and

Fig. 3 is a perspective view of the entire machine illustrated in Fig. 1.

The ticket printing and issuing machine, as generally indicated in Fig. 3, comprises a main housing **10** which supports a keyboard, as illustrated, and which encloses a key actuated selecting mechanism, a registering mechanism, and power transmission. A removable cover **11** surmounts the casing **10** and encloses the principal portions of a ticket printing mechanism; and a motor housing **12** and ticket strip housing **13** are disposed beneath the main housing **10**.

A brief description of the operation of the ticket printing and issuing machine illustrated in Fig. 3, in preface to a detailed description of the present invention, will serve to facilitate understanding of the latter. The machine, as shown in Fig. 3, when in readiness for printing and issuing tickets for a particular race, is operated by depression of one of its keys, the number of which corresponds to the number of the entry upon which a bet is to be placed. Depression of this key effects selection of a corresponding number on the ticket printing mechanism and also places the machine in operation for a single complete cycle, during which operation a ticket strip carried on a reel in the housing **13** is advanced under the printing mechanism, printed upon, sheared, and ejected from the machine in a position where it is accessible to the patron placing the bet. A complete description of the mechanism employed for effecting these operations and also for effecting registration of the number of tickets sold on any entry, as well as the total number of tickets sold by the machine, is set forth in our co-pending application above identified.

One of the primary objectives in the printing and issuing of tickets in machines of this character is speed; and as some patrons purchase a plurality of tickets on a single entry, it is desirable that the machine be capable of continuous operation upon depression of any one of the entry keys to sell a plurality of tickets on said entry, and thus save the time required for depressing the entry key repeatedly, as well as the time required in counting and carefully checking the number of tickets issued.

It is to the mechanism for printing and issuing a predetermined plurality of identical tickets, or to what may be referred to as a multiple ticket printing control, that the present invention is particularly directed.

As shown in Fig. 1, a continuously operating electric motor **400** is enclosed in the motor housing **12** and, through suitable reduction gears enclosed in a gear housing **401**, drives a sprocket **402** which, through a chain **403** leading over an idler roller **404**, imparts continuous rotation to a sprocket **405** secured to the outer or driving member of a clutch **406**, the inner or driven member of which (not shown) is fixed to a main shaft **333**. The clutch **406** may be briefly described as a single cycle clutch normally disengaged and adapted to be engaged upon initiation

of a ticket printing operation to impart a single complete rotation to the main shaft 333. From this main shaft is taken the power for effecting the several functions necessary to the complete ticket printing and issuing operation.

The clutch 406 includes a lug 445 projecting radially from its driven part, and the hooked end 446 of a lever 447 normally engages behind this lug, as illustrated in Fig. 1 of the drawings, and prevents engagement of the clutch. Upon raising of the hooked end of this lever to clear the lug 445, the clutch engages and drives the main shaft 333 one complete rotation, bringing the lug 445 again into contact with the end of the lever. This lever 447 is pivoted as at 448 and carries a downwardly extending pivoted pawl 449. A spring 450 urges the pawl 449 to the left into a position substantially perpendicular to the lever 447, at which position it is stopped by a shoulder 451 which engages with the lower edge of the lever. The pawl 449 thus normally assumes the position illustrated but is free to swing to the right against the tension of the spring 450. A solenoid 452 has a retractable armature 453 pivoted to a lever 454 which is in turn pivoted as at 455 at one end and engages with the pawl 449 at its opposite end. A spring 460 tends to raise the armature and lever 454 upwardly to a position limited by a stop tail 461 on the lever. The solenoid 452 is energized upon depression of any one of the numbered keys on the key board through switch mechanism illustrated in detail in the co-pending application above referred to. Energization of the solenoid retracts its armature which, through the lever 454 and pawl 449, swings the lever 447 about its pivot 448 to raise its end 446 free of the lug 445 to permit engagement of the clutch. The end of the pawl 449 swings away from the lever 454 during this operation, its movement being on an arc struck from the center of the pivot 448. Consequently, a single cycle operation is insured even though the operator should fail to release the key which effects energization of the solenoid.

If, due to such improper operation, the solenoid and lever 454 remain in their down position, the spring 450 returns the pawl 449 and the lever 447 to normal and in being returned the pawl 449 rides over the end of the lever 454. Upon subsequent deenergization of the solenoid, the lever 454 will rise about its pivot under the tension of the spring 460 and in so doing, its end will swing the pawl out of the way and come to rest in the position illustrated. Thus, upon depression of any key on the key board, the clutch 406 will engage for a single cycle only, to drive the machine through a single complete ticket printing and issuing operation.

While the mechanism just described is adequate for the issuance of single tickets, there are many sales of tickets in groups, and the present invention provides for automatically issuing any desired number of tickets on a single entry in rapid succession and upon a single depression of the key corresponding to the entry upon which the tickets are sold.

To accomplish this, a manually rotatable numbered dial 470 is provided for operation by the ticket vendor, and is associated with a clutch actuating member in a manner to permit the clutch which normally operates for a single cycle to rotate a number of times, determined by the setting of the dial 470, and therefore to cause the machine to issue through continuous operation the number of tickets selected on the dial, upon a single depression of the key corresponding to the entry upon which they are sold.

The control dial 470 is drum-shaped and provided with peripherally spaced numbers, for example, from one to twenty, any one of which may be brought into alignment with a reference line 471 on the exterior of the case 10 to determine the number of tickets to be issued. The control dial 470 is fixed to the end of a shaft 472 which is supported for rotation in bearing brackets 473 and 474. The opposite end of the shaft 472 carries a drum 475, the edge of which is provided with a notch 476. The clutch lever 447 has a long tail 477 at the end of which a roller 488 is carried by a pivoted support 489 which is free to swing upwardly about its pivot but which is limited in its downward swinging movement at a point normally supporting the roller with its axis in a horizontal position. When the dial 470 is set at one, the notch 476 in the drum 475 is in its uppermost position, where it is disposed directly beneath the roller 488. Consequently, upon clutch releasing movement of the lever 447, the tail 477 thereof swings down and up, and the roller 488 passes freely through the notch 476 without interruption by the drum 475.

To print more than one ticket, the dial is set to the number desired, moving the notch 476 out of registry with the roller 488, as it is shown in Fig. 1. Consequently, upon downward movement of the roller which results from a clutch releasing movement of the lever 447, it strikes the periphery of the drum and the support 489 pivots upwardly so that the roller 488 falls to a position within the drum where it engages the inner surface thereof. This holds the clutch lever 447 up and permits continued engagement of the clutch until the notch 476 is again brought into registry with the roller 488 and the clutch lever is permitted to move to its clutch disengaged position.

In order to rotate the drum so that its notch 476 approaches the uppermost or release position upon the sale of the number of tickets that has been predetermined by setting of the dial 470, a worm 490 is keyed to one end of a shaft 166 which, for the purpose of the present invention, may be described as a selector cam shaft which makes a single complete rotation upon each ticket issuing operation of the machine. This worm 490 meshes with a worm gear 491 carried by a hub 492 which is rotatable on the shaft 472. The hub 492 also carries a disc 493 to which, as shown in Fig. 2, there is pivoted a pawl 494 which, by means of a spring 495, is drawn into engagement with a star wheel 496. The star wheel 496 is carried by a hub 497 which is keyed to the shaft 472. The driving ratio of the worm 490 and worm gear 491 is such that upon each operation of the machine, which results in a complete rotation of the worm 490, the worm gear 491 is driven through one-twentieth part of a rotation (this being on the assumption that the dial 470 is numbered from one to twenty). It is to be understood, however, that this mechanism may be designed to permit a total of more than twenty tickets if desired.

Rotation of the worm gear 491, therefore, effects rotation of the disc 493 and through the medium of the pawl 494 and star wheel 496 the shaft 472 is rotated one-twentieth of a revolution for each ticket printing operation. Consequently, if the dial 470 has been set to five in order to print five tickets, a continuous operation of the machine will effect rotation of the shaft 166 five times, at which time the shaft 472 and the drum

475 will have been returned to normal position so that the notch 476 will release the roller 488 on the clutch lever 447, with the result that the clutch will be dis-engaged. The spring pressed pawl 494 and star wheel 496 afford sufficient driving connection to effect rotation of the shaft 472 in the manner just described, but the resiliency of the spring 495 also permits rotation of the shaft manually through the medium of the dial 470, in order that it may be set to the number corresponding to the number of tickets desired to be issued. A lug 498 projecting radially from the hub 497 engages with a stop member 499 when the dial has been turned to its number one position, thus preventing rotation of the drum 475 during normal operation of the machine to print a single ticket. The star wheel and pawl 494, in addition to serving as a friction drive for the shaft 472, also serve as a centering means or detent for setting the wheel 470, as the notches in the star wheel correspond in number and spacing to the numbers on the dial.

Through the use of the present invention, a ticket printing and issuing machine normally operating through a single cycle to issue a single ticket, upon initiation of the operating mechanism, may conveniently be set to issue with accuracy and at great speed a predetermined plurality of tickets by continuous operation.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. Control mechanism for a ticket printing and issuing machine or the like which comprises, a clutch, a lever normally holding said clutch disengaged and pivotable to a position permitting clutch engagement, and a rotatable drum receiving an end of said lever in its clutch engaging position and retaining it in such position, said drum having a notch in its periphery whereby the lever will be released upon rotation of the drum to a point where the notch registers with said lever.

2. Control mechanism for a ticket printing and issuing machine or the like which comprises, a clutch, a lever normally holding said clutch disengaged and pivotable to a position permitting clutch engagement, a rotatable drum receiving an end of said lever in its clutch engaging position and retaining it in such position, said drum having a notch in its periphery whereby the lever will be released upon rotation of the drum to a point where the notch registers with said lever, means for manually rotating the drum away from the release position and means automatically returning it toward release position progressively during engagement of the clutch.

3. Control mechanism for a ticket printing and issuing machine or the like comprising, a starting lever movable between on and off positions and normally urged to off position, a rotatable drum having a notch in its periphery normally positioned to admit the end of the starting lever to the interior of the drum when it is moved to its on position, means to rotate the drum manually to move the notch away from its normal position whereby the lever will be retained in its on position by the drum, and means operating automatically to rotate the drum toward normal position while the lever is so held.

4. Control mechanism for a ticket printing and issuing machine or the like comprising, a starting lever movable between on and off positions and normally urged to off position, a rotatable drum having a notch in its periphery normally positioned to admit the end of the starting lever to the interior of the drum when it is moved to its on position, means to rotate the drum manually to move the notch away from its normal position whereby the lever will be retained in its on position by the drum, means operating automatically to rotate the drum toward normal position while the lever is so held, said lever having a jonted end to permit it to enter the drum when the notch has been moved away from normal.

5. In a machine of the character described a lever movable to effect a single cycle operation, a notched drum adapted to receive the end of the lever when it is moved to starting position, means to rotate the drum in steps to advance the notch away from the lever whereby the drum will retain the lever in starting position, and means effective upon each cycle of operation of the machine to return the drum one step toward the position where the lever will be released through the notch.

6. In a machine of the character described a lever movable to effect a single cycle operation, a notched drum adapted to receive the end of the lever when it is moved to starting position, means to rotate the drum in steps to advance the notch away from the lever whereby the drum will retain the lever in starting position, and means including a friction drive effective upon each cycle of operation of the machine to return the drum one step toward the position where the lever will be released through the notch.

7. In a machine of the character described, a single cycle clutch, a lever for effecting engagement of said clutch, a rotatable drum having a notch formed in its edge through which said lever passes on its clutch engaging movement, means for rotating said drum whereby the lever will be held in clutch engaging position, and means driven by the machine controlled by the clutch to return the drum toward its normal position.

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