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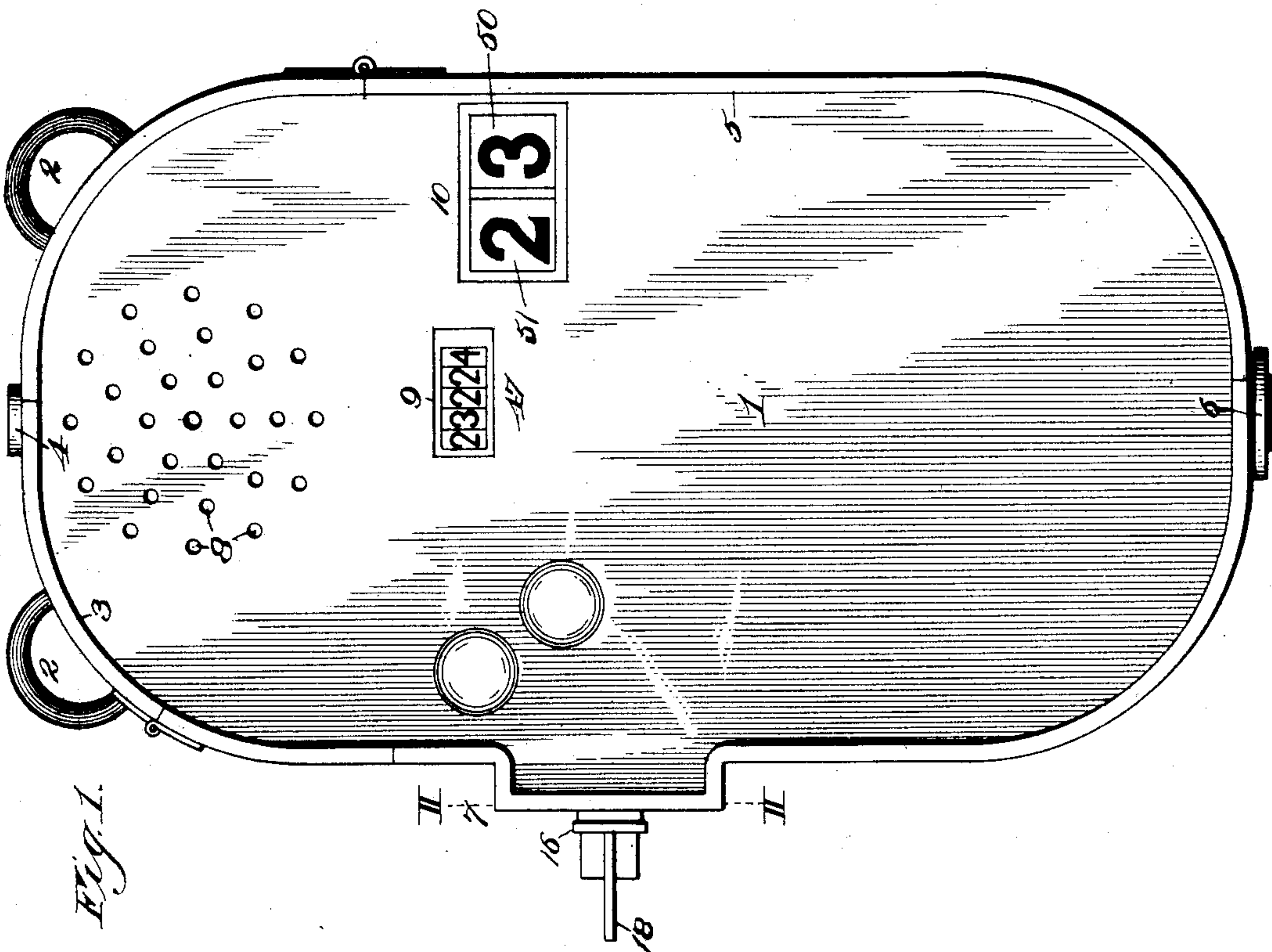
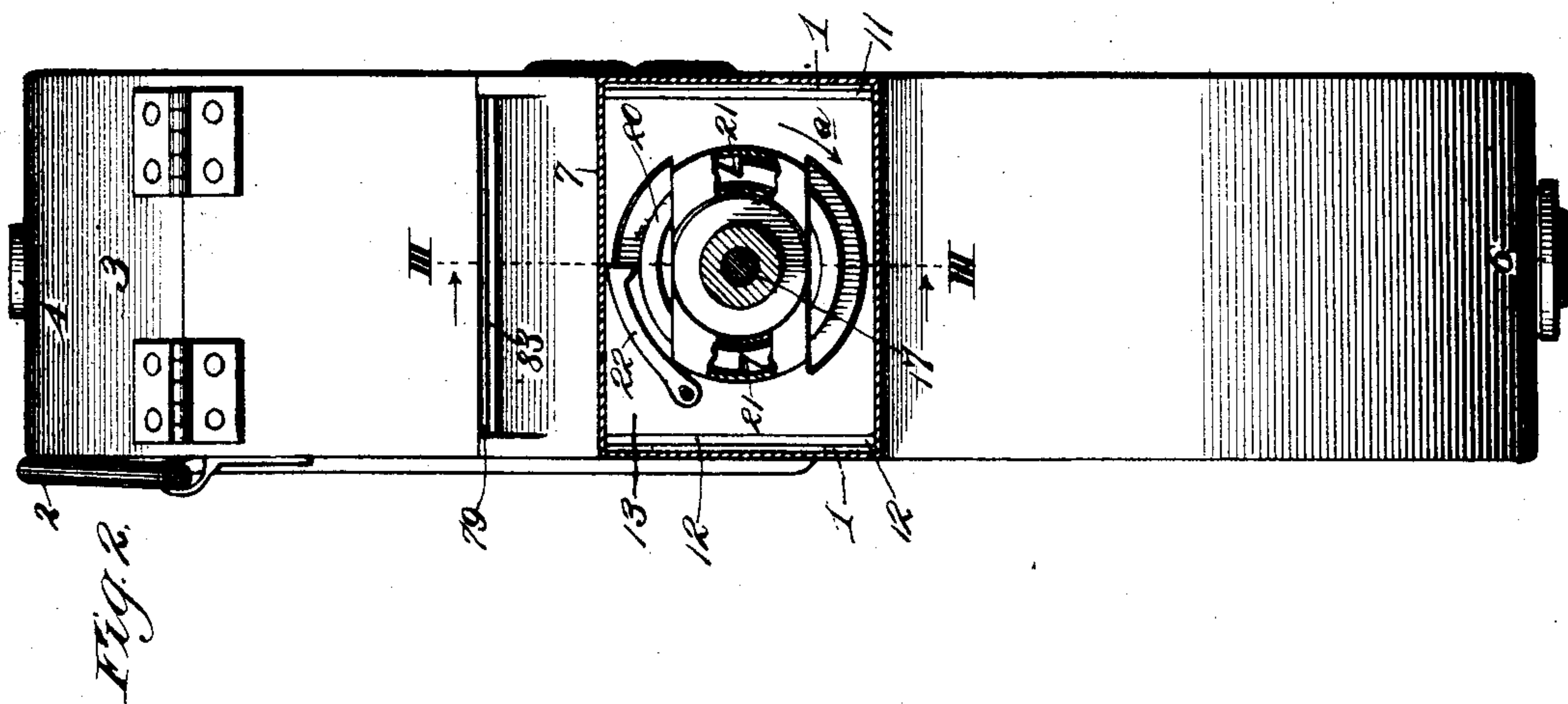
PATENTED MAY 30, 1905.

W. D. C. SMITH.

FARE REGISTERING AND TRANSFER TICKET PRINTING AND ISSUING DEVICE.

APPLICATION FILED JAN. 3, 1903.

4 SHEETS—SHEET 1.



Witnesses:

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Inventor:
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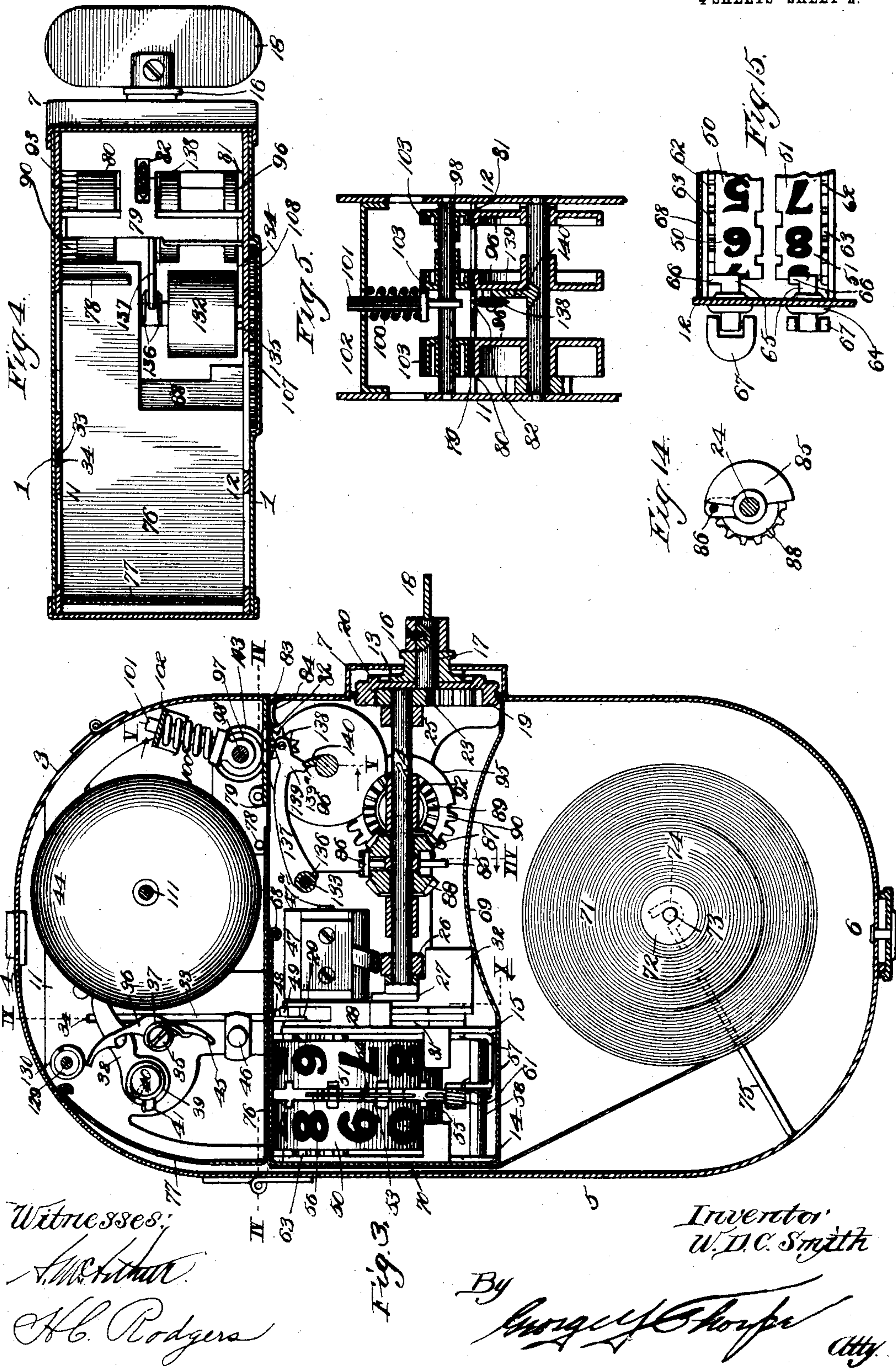
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4 SHEETS—SHEET 2.



Witnesses:

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Fig. 3.

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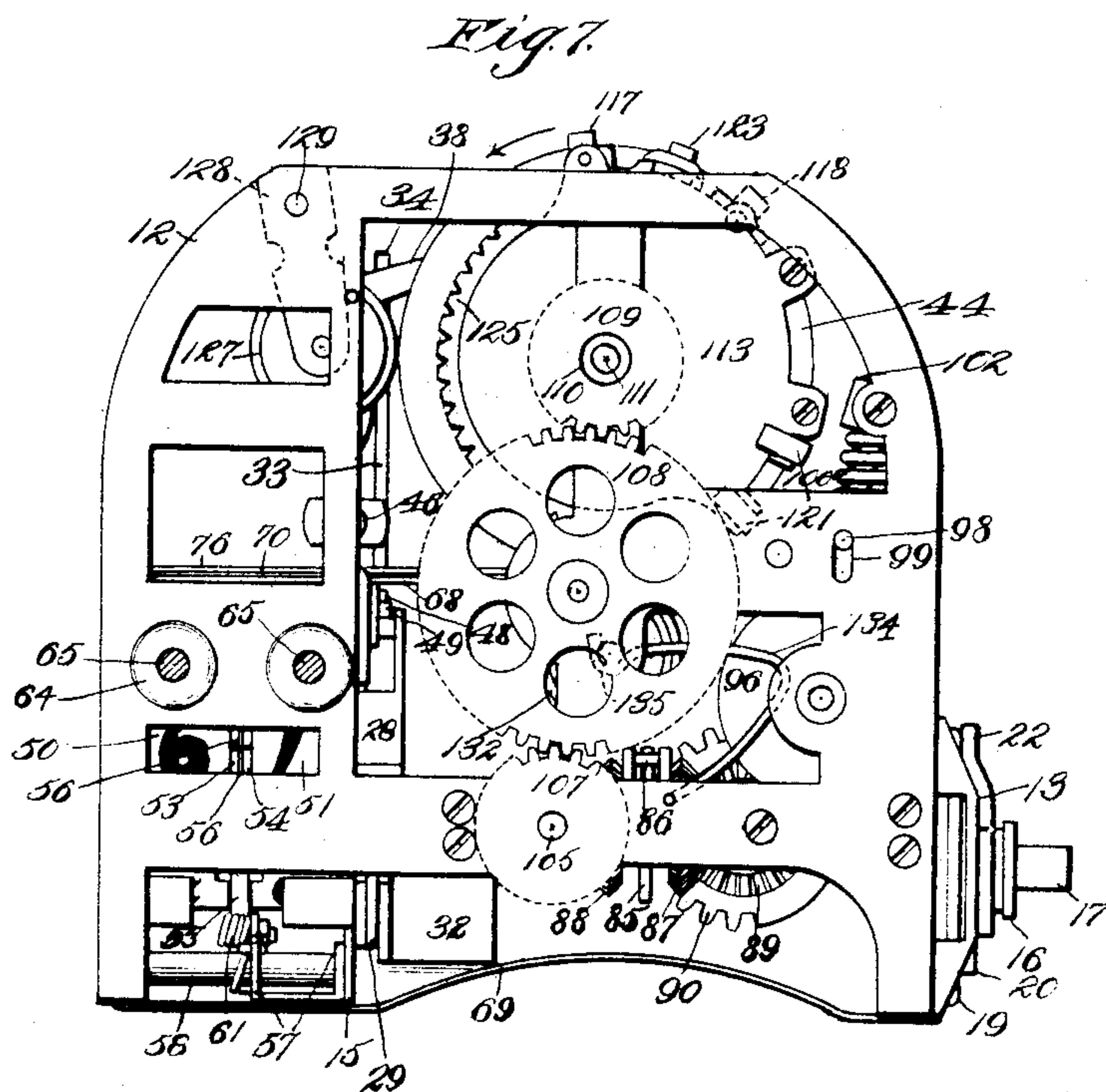
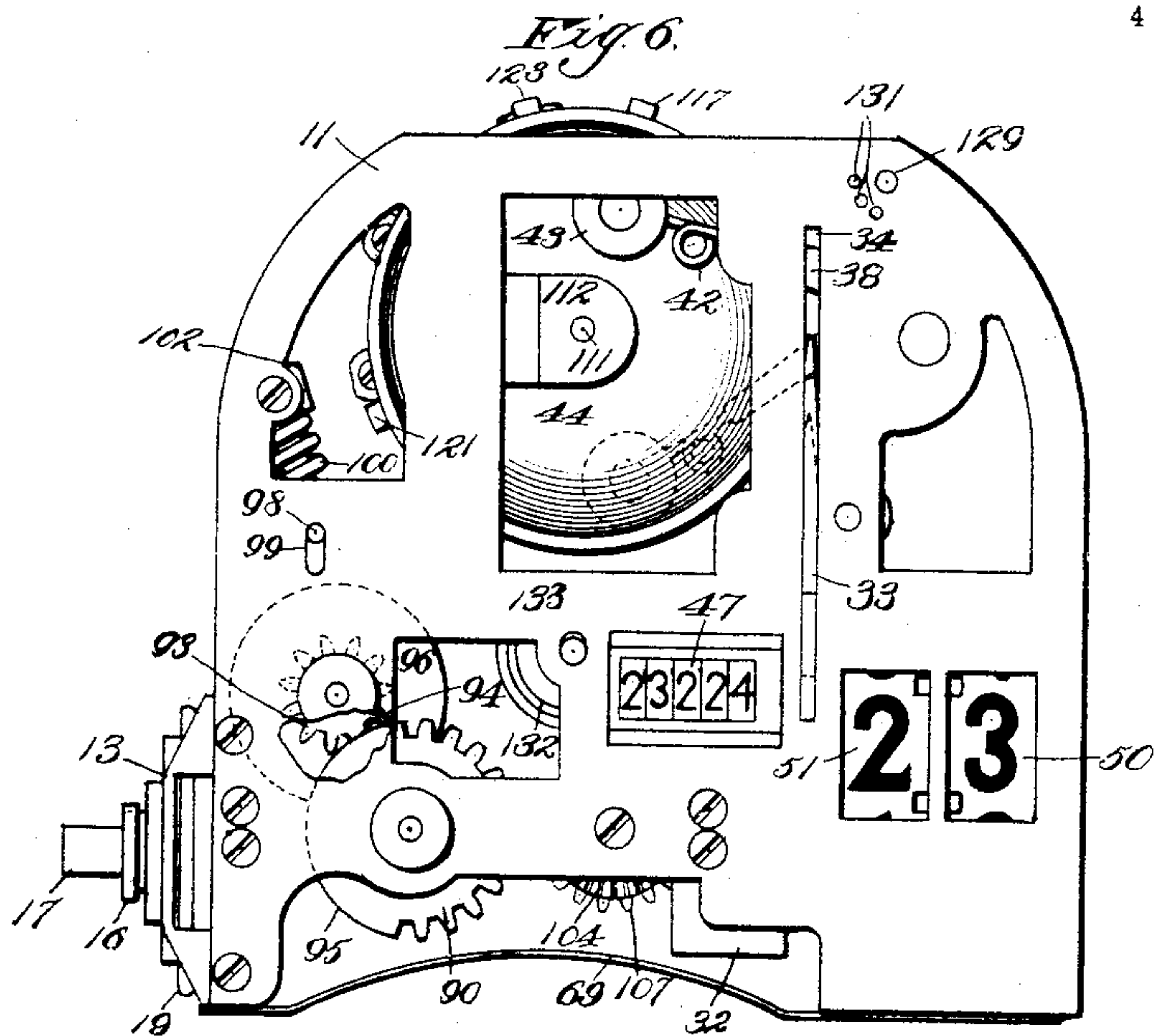
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4 SHEETS—SHEET 3.



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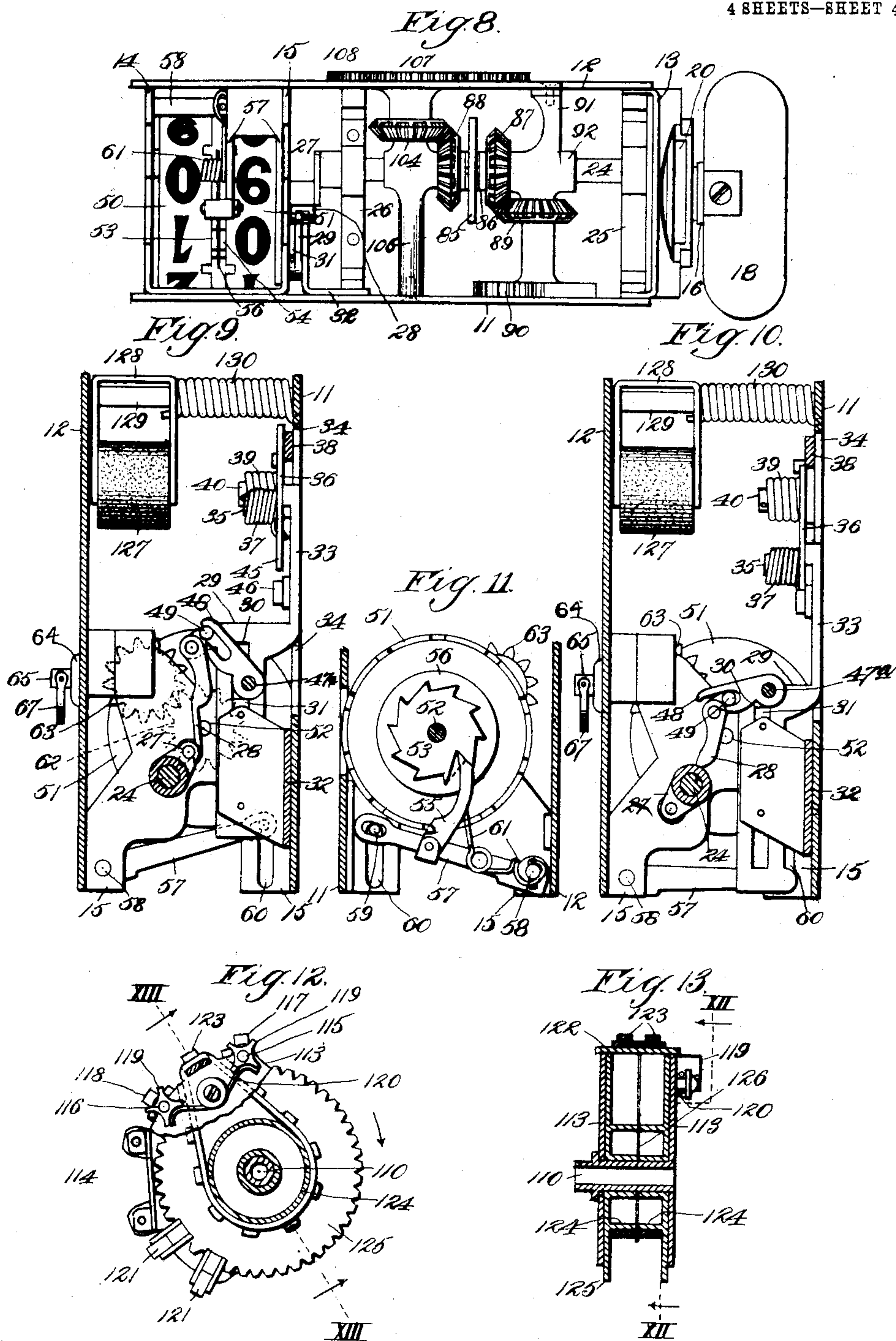
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FARE REGISTERING AND TRANSFER TICKET PRINTING AND ISSUING DEVICE.

APPLICATION FILED JAN. 3, 1903.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

WILLIAM D. C. SMITH, OF KANSAS CITY, MISSOURI.

FARE-REGISTERING AND TRANSFER-TICKET PRINTING AND ISSUING DEVICE.

SPECIFICATION forming part of Letters Patent No. 791,050, dated May 30, 1905.

Application filed January 3, 1903. Serial No. 137,745.

To all whom it may concern:

Be it known that I, WILLIAM D. C. SMITH, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Fare-Registering and Transfer-Ticket Printing and Issuing Devices, of which the following is a specification.

My invention relates to that class of machines whereby conductors of public conveyances, such as street-cars, register the fares received and print and issue transfer-tickets good for passage on intersecting lines; and my object is to produce a fare-registering and transfer printing and issuing device from which it is impossible to issue a good transfer without registering a fare therefor, but by which a fare may be registered without the issuance of a transfer when desirable.

A further object is to produce a machine of this character simple, compact, strong, light, and durable in construction and which can be conveniently suspended from a strap secured upon the conductor in the customary manner.

To these ends the invention consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a front view of a machine constructed in accordance with my invention. Fig. 2 is a section on line II II of Fig. 1. Fig. 3 is a section taken substantially on the line III III of Fig. 2. Fig. 4 is a horizontal section taken on the line IV IV of Fig. 3. Fig. 5 is a vertical section taken substantially on the line V V of Fig. 3. Fig. 6 is a front view of the "works" of the machine removed from the casing. Fig. 7 is a rear view of the works of the machine removed from the casing. Fig. 8 is an inverted plan view of the same with the shield-plate removed. Figs. 9 and 10 are similar sections taken on the line IX X of Fig. 3, but showing certain operative parts in different positions. Fig. 11 is a vertical section taken between the trip-counter wheels. Fig. 12 is a view taken substantially on the line XII XII of Fig. 13. Fig. 13 is a section

taken on the line XIII XIII of Fig. 12. Fig. 14 is a section taken on the dotted line XIV of Fig. 3. Fig. 15 is a horizontal section taken just above the trip-counter mechanism to disclose the keys for returning the trip-counter wheels to their initial positions.

Referring to the drawings in detail, 1 designates a sheet-metal casing, preferably of vertical elongated form and equipped at its upper end and inner side with rings 2 for the convenient attachment of the ends of a strap to suspend it from the conductor. At the upper right-hand end of the casing from the wearer's point of view (and in this connection all reference to "right" or "left" will be from the wearer's point of view unless otherwise stated) is a hinged door 3 to give access to the printing mechanism hereinafter described, and said door is normally locked by turn-button 4. Diagonally opposite door 3, but of much larger size, is a second door 5, also normally locked, as at 6 or in any other suitable or preferred manner, the fastening 6 being of such character that only the officeman having charge of the machines can open it. The right-hand side of the casing is preferably formed with a hollow projection 7 and the upper portion of its front side with a series of perforations 8 to permit the sound of the bell to be more distinctly heard. Below said perforations is an opening 9 and to the left of the latter an opening 10 for a purpose which hereinafter appears.

The works of the machine are preferably secured in a skeleton frame consisting of the front wall 11, back wall 12, end walls 13 and 14, and intermediate wall 15, parallel with end wall 14. Walls 13, 14, and 15 are, in effect, nothing more than small connecting-brackets for walls 11 and 12, and wall 13 is provided with a hub portion 16, projecting through casing projection 7 and forming a bearing for a shaft 17, having a handle 18 at its outer end and an internal gear 19 at its inner end, said gear having an annular shoulder 20, with diametrically opposite notches 21, these notches being of the ratchet type, so that they may readily pass the gravity-dog 22, mounted on wall 13, when moving in the direction indi-

cated by the arrow *a*, Fig. 2, but by engagement with said dog lock the shaft from rotation in the opposite direction.

Master-gear 19 meshes with small gear 23 on longitudinal shaft 24, journaled in cross-bars 25 and 26, secured to the frame.

At its opposite end the shaft has a crank 27 pivotally connected by a link 28 to a reciprocatory frame 29, said frame having a vertical slot 30 engaging and guided upon a rib 31 of bracket 32, secured to the framework, and said slide-frame 29 also has an upwardly-projecting arm 33, engaging a slot 34 in frame-wall 11 and pivotally carrying on pin 35 a dog 36, a spring 37, secured to said pin at one end and the dog at the other, tending to hold the latter so that it shall reliably engage the lug of a bell-clapper 38, the bell-clapper being normally elevated by spring 39, secured at one end to the framework-stud 40, on which the clapper is pivoted, and bearing at its other upon a lug 41 of the clapper. The clapper preferably embodies the resilient or spring portion 42 between its body and head 43, so that the latter after striking the bell 44 in the upper part of the frame may rebound easily, and thus enable the bell to ring properly. The dog has a depending curved arm 45, which in its downward movement strikes and is operated by pin 46 of the framework until its tooth has been disengaged from the lug of the clapper to enable the latter to be instantly raised to its original position by spring 39 and ring the bell. The operation of this bell occurs once in each forward revolution of shaft 24, said shaft through the gearing described making one revolution to each half-revolution of the handle.

Secured to wall 11 of the frame and exposed to view through opening 9 of the casing and an opening of the framework which registers with opening 9 is a device 47 for registering the total number of fares rung up by the conductor. This register being of well-known construction is not detailed and is operated by having its shaft 47^a, equipped with a slotted crank-arm 48, engaging a pin 49, projecting from the slide-frame 29. By this construction it will be apparent after referring to Figs. 9 and 10 that with each revolution of the crank-shaft crank-arm 48 is first depressed and then restored to its original position, this action serving to count one fare registered, and in this connection it will also be noticed by reference to said figures that the above effect is accomplished without regard to the direction of rotation of shaft 24. In other words, the register counts and the bell is rung with each revolution made by shaft 24 when turned forward and each half-revolution backward, dog 22 and notches 21 preventing further backward movement.

As it is frequently important or desirable to count the fares rung up on each trip or part thereof—for instance, where a street-car op-

erates in two cities controlled by different municipal bodies—I have provided what I term a "trip-counter" for counting the fares received for a single trip or part thereof, the same consisting of a pair of wheels 50 51, shown in this instance as adapted to count as high as ninety-nine, (99,) the former being a units and the latter a tens wheel. The shaft 52, on which these wheels are journaled, is provided with ratchet-wheels 53 and 54, each having ten notches, one notch of wheel 53 being a deep notch. A dog 55 is bifurcated to fit over the washer 56 between the ratchet-wheels and has its tooth for engagement with ratchet-wheel 53 longer than that for wheel 54 by at least the depth of an ordinary notch, so that ordinarily the operation of the dog rotates the units-wheel only. On the tenth step, however—that is, when said wheel returns from "9" to "0"—the long tooth drops into the deep notch of ratchet-wheel 53 and the other tooth drops into a notch of its ratchet-wheel, so that both wheels turn together, the units-wheel exposing its "0" and the tens-wheel its "1" through the opening 10 and the registering opening of the framework. (See Fig. 6.) As the method of totalizing by a series of wheels is old and as the particular mechanism I have briefly described is also old, the same has not been illustrated to any extent in detail outside of Fig. 11.

The dog 55 is pivotally carried by a swinging frame consisting of a pair of connected arms 57, pivoted on the shaft 58, one arm carrying the dog, as shown in Fig. 11, and the other and longer arm having a pin-and-slot connection, as at 59, with the vertical slide-frame 29, the wall 15 having a vertical slot 60 to enable said parts to be thus connected together, because they are located on opposite sides of said wall. The dog is pressed yieldingly against the ratchet-wheels by means of a spring 61, secured to the framework and shaft 58.

It will be seen from the drawings, taken in connection with the above description, that with each revolution of shaft 24 this trip-counter registers one, (1,) and in order that it may be reset by the conductor at the end of the trip wheels 50 and 51 are each provided with a key-wheel 62, meshing with an idle cog-wheel 63, suitably journaled in the path of the permanent keys 64, said keys consisting simply of a shaft 65 having a tooth 66 at its inner end and a pivoted handle 67 at its outer end, the handle being adapted to hang pendently when not grasped by the conductor for the purpose of rotating the wheels around until they both present "0" with their printing mechanism to the observer.

Arranged horizontally between the bell and the counter mechanism is a sheet-metal partition 68, the same extending from a point contiguous to the hinge of door 5 about halfway to the other side of the casing, and below

the counting mechanism and the shaft 24 is a shield 69, which is preferably formed integral with the partition 68 and connected to the same by the vertical portion 70, the shield 69 being to prevent the transfer-roll 71, should it become unwound or partially unwound from any cause, from coming in contact with the works above described, and thus interfering with the operation of the machine.

10 The roll of transfer-tickets is in the form of a continuous strip mounted upon a spool 72, having its spindles 73 occupying pockets 74 at the upper ends of guide-tracks 75, secured in any suitable manner to the internal
15 surface of the front and back sides of the casing for the purpose of guiding the spindles of the roll to their proper positions in said casing. The web or strip of the roll extends upwardly between the door 5 and plate 70 and
20 over horizontal partition 68, being held flatly upon said plate by the superposed sheet-metal partition 76, having an upwardly-projecting arm 77 secured to the framework as shown or in any other suitable manner. Partition
25 76 is substantially L-shaped in plan view, (see Fig. 4,) with the stem portion projecting beyond the partition 68 and underlying a pin 78, projecting from wall 11 of the frame, and beyond and in about the same plane as said
30 stem is a guide-plate 79, provided with openings 80, 81, and 82 and having its right-hand end occupying the exit-opening 83 of the casing and forming a cutting edge on which the transfer-tickets as issued are severed from the
35 body of the web, the casing being formed with an inwardly-projecting tongue 84 to assist in guiding and holding the web in its proper relation to the "guide and cutter plate," as plate 79 is hereinafter termed.

40 Secured rigidly on shaft 24 is a segmental plate 85, adapted as long as shaft 24 is turned forwardly to press against a cross-pin 86, rigidly connecting two bevel-gears 87 88, journaled upon the shaft, and turn said gears
45 at the same speed as the shaft, but which may be turned backward one-half a revolution, so as to operate the register and trip-counter and ring the bell without turning said bevel-gears. To operate said counters and bell, the
50 conductor simply turns the handle back a quarter of a revolution, which effects the objects mentioned, then turns it forward again the same distance, then backward one-quarter, and so on, repeating these operations for
55 each cash fare received where the passenger does not desire a transfer.

Where the passenger desires a transfer, the handle must invariably be turned forward a half-revolution, and in each movement the
60 segmental plate 85 by pressure against cross-pin 86 rotates said gear-wheels one revolution, as hereinbefore stated, gear 87 in turn rotating the bevel-gear 89 and its rigidly-connected but larger mutilated gear 90 an
65 equal distance, these last-named gears 89 and

90 being secured to a short shaft journaled in wall 11 and bearing-bracket 91, secured to wall 12 of the framework, the inner end of bearing-bracket 91 being sleeved, as at 92, upon shaft 24 that the latter may serve as a
70 support for the bracket and shaft journaled therein.

The mutilated gear 90 meshes with the similar but smaller gear 93, having one tooth less than the larger gear and having one blank
75 tooth 94 for engagement with the longer blank tooth 95 of the large gear, the arrangement being such that the mutilated gear makes a half-revolution—viz., while its blank tooth 95
80 is in engagement with blank tooth 94 of wheel 93—without operating the last-named wheel, the last half-revolution of the wheel 90 causing said wheel 93 to make a complete revolution. As the result of this it will be seen
85 that the sectional feed-roller 96, secured rigidly on the same shaft as wheel 93, makes its full revolution on the second quarter of each half-turn of the handle, the transfer-web of course moving as said feed-roller moves, because it is held upon the latter by the sec-
90 tional tension-roller 97, said roller engaging the paper through the openings 80 81 of the guide and cutter plate. The tension-roller is secured on a shaft 98, journaled in slots 99 in the front and back walls of the casing and
95 held yieldingly depressed by means of spring 100, encircling a guide-rod 101 and bearing at its lower end against the head of said rod and at its upper end against the cross-bar 102 of the frame through which said rod projects.
100 (See Fig. 3.)

To eliminate any possibility of slippage, the periphery of the feed-roller is roughened in any suitable manner (not shown) and the periphery or tread of the tension-roller is of
105 rubber, as at 103.

Gear-wheel 88, which rotates always in the forward movement of the handle, but is unaffected by backward motion thereof, meshes with a similar bevel-gear 104 of a short shaft
110 105, journaled at one end in wall 12 and its opposite end in a bracket 106, sleeved, and thereby supported, upon shaft 24 at its inner end and secured at its opposite end to frame-wall 11, as shown in Fig. 8. On the outer
115 side of wall 12 a small cog-wheel 107 is rigidly secured on shaft 105 and through the medium of the idle gear 108 operates a similar-sized cog-wheel 109, rigidly mounted on a sleeve 110, journaled on a shaft 111, which
120 forms a support for the bell, the inner end of said shaft being secured to a bracket 112, projecting from the wall 11 of the frame, as shown in Fig. 6.

Rigidly secured upon the opposite end of
125 sleeve 110 and between the bell and frame-wall 12 is a printing mechanism, constructed as follows: 113 designates plates secured rigidly on the sleeve and provided with a series of
130 peripheral lugs, two sets of which are connect-

ed rigidly together by a brace 114. Journaled in two other sets are short shafts 115 and 116, the former having metallic type-faces 117, representing "A. M.," "M.," and "P. M.," if desired, and the latter type-faces 118, representing the four points of the compass, "N.," "E.," "W.," and "S." At its inner end each shaft is provided with a handle 119, having concaved faces corresponding by preference to the number of different type-faces, so that the arms of a spring 120, secured to the contiguous plate 113, may serve to hold the type-carrying shafts against accidental rotation, the conductor by opening door 3 having access to them for the purpose of turning said shafts, and thereby presenting the proper type for the printing of the ticket, as will be readily understood. Some distance rearward of type-shaft 116 with reference to the direction of rotation (see Figs. 7 and 12) said plates are provided with two type-blocks 121, permanently secured as far as the conductor is concerned, though capable of removal or replacement with proper tools, one of these type-plates representing the number of the car and the other the day of the month. For the purpose of printing the time of the issue of the transfer-ticket the plates 113 are connected by the cross-bar 122, arranged between faces 117 118, and extending over said bar is a pair of rubber belts 123, one containing figures representing the hours and the other figures representing the fractions thereof, the fractions customarily used being one-fourth, or fifteen minutes. The belts embrace the inwardly-projecting flanges 124 of a pair of serrated disks 125, frictionally journaled upon sleeve 110, so that the belts may be adjusted independently of each other, this being effected by the operator grasping the serrated portion of the disks and turning them, and in order to eliminate any considerable friction between the edges of the belts the sleeve 110 is provided with a central flange 126 of slightly greater diameter than disk flanges 124, as shown in Figs. 12 and 13. The arrangement of the parts is such that when the shaft-handle 18 is horizontal the foremost type-block with respect to its direction of rotation is above and past its axis of movement, substantially as shown in Fig. 7. The result is that, in turning the handle one quarter-revolution, the printing-wheel moves almost its full half-revolution before the first type-block engages the transfer-web, it being also understood that through the medium of the mutilated gearing hereinbefore described the transfer-web does not begin to feed until the handle has been turned a quarter-revolution. It will therefore be seen that the transfer-web begins to move forward just about the time the first type-block presents itself thereto.

In the revolution of the printing-roller its outwardly-presented type successively engage the inking-roll 127 in frame 128, depending

from shaft 129, journaled in the front and back walls of the framework, a spring 130, mounted on said shaft and secured at its opposite ends in one of a series of holes 131 in the frame-wall 12, and frame 128, serving to hold the roller with a yielding pressure in the path of said type, the remaining holes 131 being provided for engagement on the part of said spring in case it is necessary to increase the tension of said roller, as will be readily understood. The platen against which the type-blocks force the transfer-web in making their imprint thereon is in the form of a rubber-tread roll 132, located between partition 68 and guide and cutter plate 79, with its upper surface in about the plane of the former. It is mounted rigidly on the forward half of a transverse shaft 133, journaled at its ends in openings (one only of which appears, see Fig. 6) in the frame, which are slightly vertically elongated, and holding the platen end of the shaft upward with a yielding pressure is a spring 134, secured at one end to the rear wall 12 of the framework and at its opposite end terminating in an upwardly-disposed hook 135, engaging the lower side of the shaft. (See Fig. 7.)

The relative arrangement of the feed and printing mechanisms is such that the latter part of the revolution of the latter prints the number of the register and the day of the month on that portion of the transfer-web to be issued on the next operation of the handle, so that each transfer-ticket that is issued—and in this connection it should be stated that the length of such ticket corresponds to the circumference of the feed-roller—bears upon its front portion the number of the register and the day of the month and upon its rear portion the direction, "N.," "E.," "W.," or "S.," in which the train was moving at the time of issue, the time of such issue, and "A. M.," "M.," or "P. M.," accordingly as it was issued in the morning, at noon, or in the afternoon or evening, it being understood, of course, that other matter may be printed on the ticket by properly-equipped printing mechanism, though it is preferred that the other matter customarily found on transfer-tickets shall be printed in the regular way on the web before it is formed into a roll.

From the mechanism described it will be apparent that with each forward half-turn of the handle a complete transfer-ticket is projected through the opening 83 of the casing, the conductor instantly severing it from the web along the edge of the guide and cutter plate 79 in an obvious manner. It will also be apparent, by reason of the fact that the shaft 24 may be rotated backward a quarter of a revolution, then forward the same distance, and that this manipulation may be continued indefinitely, that fares may be registered by the conductor without the issuance of a transfer. To prevent the issuance of the

latter without registering a fare, I provide the following mechanism: 136 designates a sleeve journaled on shaft 133 between the platen thereon and the opposite frame wall and provided with an arm 137, projecting to the right over and beyond the shaft of the feed-roller, and said arm is provided with a star-wheel 138 and with a depending lug 139, adapted to be engaged and elevated by the cam 140 of the feed-roller shaft, this elevation of the arm projecting the star-wheel up into the guide and cutter plate opening 82 (see Figs. 3, 4, and 5) and effecting the puncture of the transfer at such point and at about the instant the forward movement of the web ceases, in which position the star-wheel remains until the next transfer-ticket is issued. As the feed-wheel starts to move under the next operation of the handle cam 140 moves from below lug 139 and permits the star-wheel arm to drop, as will be readily understood by reference to Fig. 3. It will thus be seen that every transfer issued contains two or three small punctures. It will also be understood, as the elevated position of the star-wheel is its normal position, that it is impossible for the conductor to issue a transfer in the regular way and then without severing, and thus completing it, draw the web through the machine and obtain one or more good transfers, the reason being that the elevated star-wheel will perforate the strip in a continuous line, which is evidence that the transfers have not been issued properly, and the handle not having been turned in their issuance, that fares have not been registered therefor. It will also be evident, by reason of the fact that the fare is registered before the movement of the feed-roller begins, that the conductor cannot turn the handle and the feed mechanism a sufficient distance to permit the star-wheel to drop and then pull the transfer out by grasping its front end, this coöperative relation between the register and bell mechanisms and the printing-roll and feed mechanism practically guaranteeing that for every good transfer issued a fare must be delivered to the company.

The coöperative relation between the printing mechanism and the register is also apparent, in that, while the printing-wheel turns with each forward movement of the handle, still it does not perform its function until after the registration of the fare is effected. Furthermore, the coöperative relation between the printing-wheel and the feeding mechanism is obvious, in that, while the wheel makes practically a half-revolution before the transfer-web begins to move, still it does not engage the transfer until the movement of the latter begins. In fact, it would be impracticable for it to do so, as the imprint would not be clear and legible unless both were moving together. As the accessibility of the printing-wheel would give the conductor an

opportunity to carelessly turn the printing-wheel backward, and thus impart movement of the feed mechanism which would move the web backward from between the feed and tension rollers, I have formed the lug 139 with a stop-wall 139^a. This wall engages the straight side of cam 140 and prevents back rotation of the latter and of the printing mechanism by the only method of effecting such result. (See Fig. 3.)

From the above description it will be apparent that I have produced a machine of the character described which embodies the features of advantage enumerated as desirable in the statement of invention and which is obviously susceptible of modification as regards its detail construction, form, proportion, and arrangement without departing from its principle and scope or sacrificing any of its advantages.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination of registering and ticket-printing mechanisms, a shaft, means whereby the rotation of the shaft in one direction shall effect the operation of the register and the printing of the ticket, and means whereby the reverse operation of said shaft, shall effect the operation of the register only.

2. In a machine of the character described, the combination of registering and ticket-feeding mechanisms, a shaft, means whereby the rotation of the shaft in one direction shall effect the operation of the register and the feeding of the ticket, and means whereby the reverse operation of the shaft shall effect the operation of the register only.

3. In a machine of the character described, the combination of a casing having an exit-opening, fare-registering and transfer-ticket-feeding mechanisms in said casing, a rotatable shaft carried by said casing and geared to operate said mechanisms, and means for automatically applying a mark indicative of fraud, on each ticket illegitimately issued through said exit-opening.

4. In a machine of the character described, the combination of fare-registering and transfer-ticket-feeding mechanisms, a movable perforator for the transfer-web, and means movable with the feeding mechanism for holding said perforator in the path of the transfer-web, until the fare-register has been operated and then permitting said perforator to be removed from such path.

5. In a machine of the character described, the combination of fare-registering and transfer-ticket printing and feeding mechanisms, a shaft, and instrumentalities connecting said registering and printing and feeding mechanisms and adapted as the shaft is turned forwardly to operate the register, and then cause

the feeding mechanism to advance the transfer-web, and the printing mechanism to simultaneously make its imprint upon the same.

6. In a machine of the character described, the combination of fare-registering and transfer-ticket printing and feeding mechanisms, a shaft, instrumentalities connecting said registering and printing and feeding mechanisms and adapted as the shaft is turned forwardly to operate the register, and then cause the feeding mechanism to advance the transfer-web and the printing mechanism to simultaneously make its imprint upon the same, and means to destroy the advanced portion of the transfer-web if advanced other than by the operation of said shaft.

7. In a machine of the character described, the combination of fare-registering and transfer-ticket printing and feeding mechanisms, a shaft, instrumentalities connecting said registering and printing and feeding mechanisms and adapted as the shaft is turned forwardly to operate the register and then cause the feeding mechanism to advance the transfer-web and the printing mechanism to simultaneously make its imprint upon the same, a movable perforator for the transfer-web, and means movable with the feeding mechanism for holding said perforator in engagement with the web until after the register has been operated.

8. In a machine of the character described, the combination of registering, sounder and printing mechanisms, a shaft, means whereby the rotation of the shaft in one direction shall effect the operation of the register, the sounder and the printing mechanisms, and means whereby the reverse operation of the shaft shall effect the operation of the register and sounder mechanism only.

9. In a machine of the character described, the combination of registering, sounder and feeding mechanisms, a shaft, means whereby the rotation of the shaft in one direction shall effect the operation of the register, the sounder and the feeding mechanism, and means whereby the reverse operation of the shaft shall effect the operation of the register and sounder mechanisms only.

10. In a machine of the character described the combination of fare-registering, sounder, and feeding mechanisms, a shaft, instrumentalities whereby the forward operation of the shaft shall effect the synchronous operation of the registering and sounder mechanisms and then the feeding mechanism, and means for effecting the destruction of the advanced portion of the transfer-web unless advanced by the feeding mechanism through the instrumentality of said shaft.

11. In a machine of the character described, the combination of fare-registering, sounder, printing and feeding mechanisms, a shaft, instrumentalities whereby the operation of said

shaft shall cause the synchronous operation of the registering and sounder mechanisms, and cause the feeding mechanism to advance the transfer-web and the printing mechanism to print the same, and means for effecting the destruction of the advanced portion of the transfer-web unless advanced by the feeding mechanism through the instrumentality of said shaft.

12. In a machine of the character described, the combination of a fare-register, a printing-wheel, instrumentalities for simultaneously operating the register and the printing-wheel, and type-blocks disposed on the printing-wheel so that part of its movement shall be described before said blocks come into contact with the transfer-web and after the register has been operated.

13. In a machine of the character described, the combination of a fare-register, a printing-wheel, and a feeding mechanism, instrumentalities for simultaneously operating the register and turning the printing-wheel part of its distance, and then operating the feeding mechanism to advance the transfer-web, and type-blocks so disposed on the printing-wheel that they shall engage the transfer only while the latter is in motion.

14. In a machine of the character described, the combination of fare-registering and transfer-ticket-feeding mechanisms, a movable perforator for the transfer-web, a shaft, means movable with the feeding mechanism for holding said perforator in the path of the transfer-web until after the fare-register has been operated, and means for preventing movement of the transfer by means of the feeding mechanism except when the latter is operated through the instrumentality of said shaft.

15. In a machine of the character described, the combination of feeding and printing mechanisms, means for operating the same to respectively advance and print the transfer-web, means for effecting the destruction of the advanced portion of the transfer-web if the latter is actuated by other means than that which operates the feeding mechanism, and means for permitting the destroying means to be shifted to inoperative position out of contact with the transfer-web when the latter is actuated by the same means which operates the feeding mechanism.

16. In a machine of the character described, the combination of a feeding mechanism, a printing mechanism, means for operating the same to respectively advance and print the transfer, a device for perforating the advanced portion of the transfer-web if the latter is actuated by other means than that which operates the feeding mechanism, and means movable with the feeding mechanism, for holding said perforating device in the path of the transfer-web while the feeding mechanism is at rest and for causing such perforating de-

vice to move out of the path of the transfer-web when the feeding mechanism is in operation.

17. In a machine of the character described, the combination of a feeding mechanism, a printing mechanism, means for operating the same to respectively advance and print the transfer, a rotary device for perforating the transfer-web, and means to hold said device in the path of the transfer while the feeding mechanism is at rest.

18. In a machine of the character described, a shaft, a rotary printing and a rotary feeding mechanism, gearing connecting the shaft with the printing and feeding mechanisms to cause the former to operate with the entire forward movement of the shaft, and the feeding mechanism to operate with the latter portion of the shaft movement, means for effecting the destruction of the advanced portion of the transfer-web if advanced other than by the feeding mechanism, and means movable with the latter to effect the removal of the destruction means from the transfer-web as the feeding movement begins and to restore it to its original position as such movement ends.

19. In a machine of the character described, a printing-wheel, comprising a shaft, parallel plates rigid thereon, type-blocks carried by said plates, a cross-bar carried by said plates, disks journaled on said shaft between said plates and provided with circular inwardly-projecting flanges and endless type-bands frictionally mounted on said flanges and extending over said cross-bar.

20. In a machine of the character described, a printing-wheel, comprising a shaft, parallel plates rigid thereon, type-blocks carried by said plates, one or more of said type-blocks being rotary, and provided with type at different points, means for yieldingly holding said type-blocks in the desired position, a cross-bar carried by said plates, disks journaled on said shaft between said plates, and provided with circular inwardly-projecting flanges, and endless type-bands frictionally mounted on said flanges and extending over said cross-bar.

21. In a machine of the character described, a shaft suitably journaled and provided with a segmental plate, a pair of gear-wheels journaled on the shaft at opposite sides of said plate and provided with a cross-bar intersecting the path of movement of said plate.

22. In a machine of the character described, a shaft suitably journaled and provided with a segmental plate, a pair of gear-wheels journaled on the shaft at opposite sides of said plate and provided with a cross-bar intersecting the path of movement of said plate, and a handle geared and adapted in one-half of a forward revolution to rotate the shaft a complete revolution in a forward direction.

23. In a machine of the character described, a shaft suitably journaled and provided with

a segmental plate, a pair of gear-wheels journaled on the shaft at opposite sides of said plate and provided with a cross-bar intersecting the path of movement of said plate, a handle geared and adapted in one-half of a forward revolution to rotate the shaft a complete revolution in a forward direction, and means for preventing the handle from turning backward more than a quarter-revolution.

24. In a machine of the character described, the combination of a guide and cutter plate provided with openings, guides to advance the transfer-web below said guide and cutter plate, a rotary feed mechanism above and below said plate, and engaging the transfer with a yielding pressure through the openings of said plate, a rotary perforator, and means movable with the feed mechanism for normally projecting the perforator up through the transfer and into one of the guide and cutter plate openings.

25. In a machine of the character described, a suitable casing, a rotary printing-wheel therein having peripheral type, an inking-roller held yieldingly in the path of said type, a platen-roller vertically below the printing-wheel, guides for the transfer-web in the plane of the space between the printing-roller and the platen, a registering mechanism, and a shaft geared to operate the registering and printing wheel respectively when turned in one direction, and to operate the register only when turned in the opposite direction.

26. In a machine of the character described, the combination of registering, sounder, transfer-ticket printing and feeding mechanisms, and means connected to said mechanisms in such a manner that when operated in one direction, it shall effect the operation of all of the mechanisms, but when operated in the reverse direction, it shall effect the operation only of the register and sounder mechanisms.

27. In a machine of the character described, the combination of fare-registering, sounder, and ticket printing and feeding mechanisms, a shaft, means whereby the rotation of the shaft in one direction shall effect the operation of the register and sounder, and the printing and feeding or issuing of the ticket, and means whereby the rotation of the shaft in the opposite direction shall effect the operation of the register and sounder only.

28. In a machine of the character described, the combination of registering and ticket feeding or issuing mechanisms, a shaft, means whereby the rotation of the shaft in one direction shall effect the operation of the register and the feeding or issuing of a ticket, means whereby the reverse operation of the shaft shall effect the operation of the register only, and means for preventing the issuance of a perfect transfer except when the feeding mechanism is operated by said shaft.

29. In a machine of the character described, the combination of a casing having an exit-

opening, fare-registering and transfer-ticket feeding and printing mechanisms therein, a rotatable shaft carried by the casing and geared to operate said mechanisms, and means
5 for automatically applying a mark indicative of fraud, on each ticket illegitimately issued through the exit-opening.

30. In a machine of the character described, the combination of a casing having an exit-
10 opening, fare-registering and transfer-ticket-feeding mechanisms therein, means to oper-

ate said mechanisms, and means for automatically applying a mark indicative of fraud, on each ticket illegitimately issued through the exit-opening. 15

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM D. C. SMITH.

Witnesses:

H. C. RODGERS,
G. Y. THORPE.