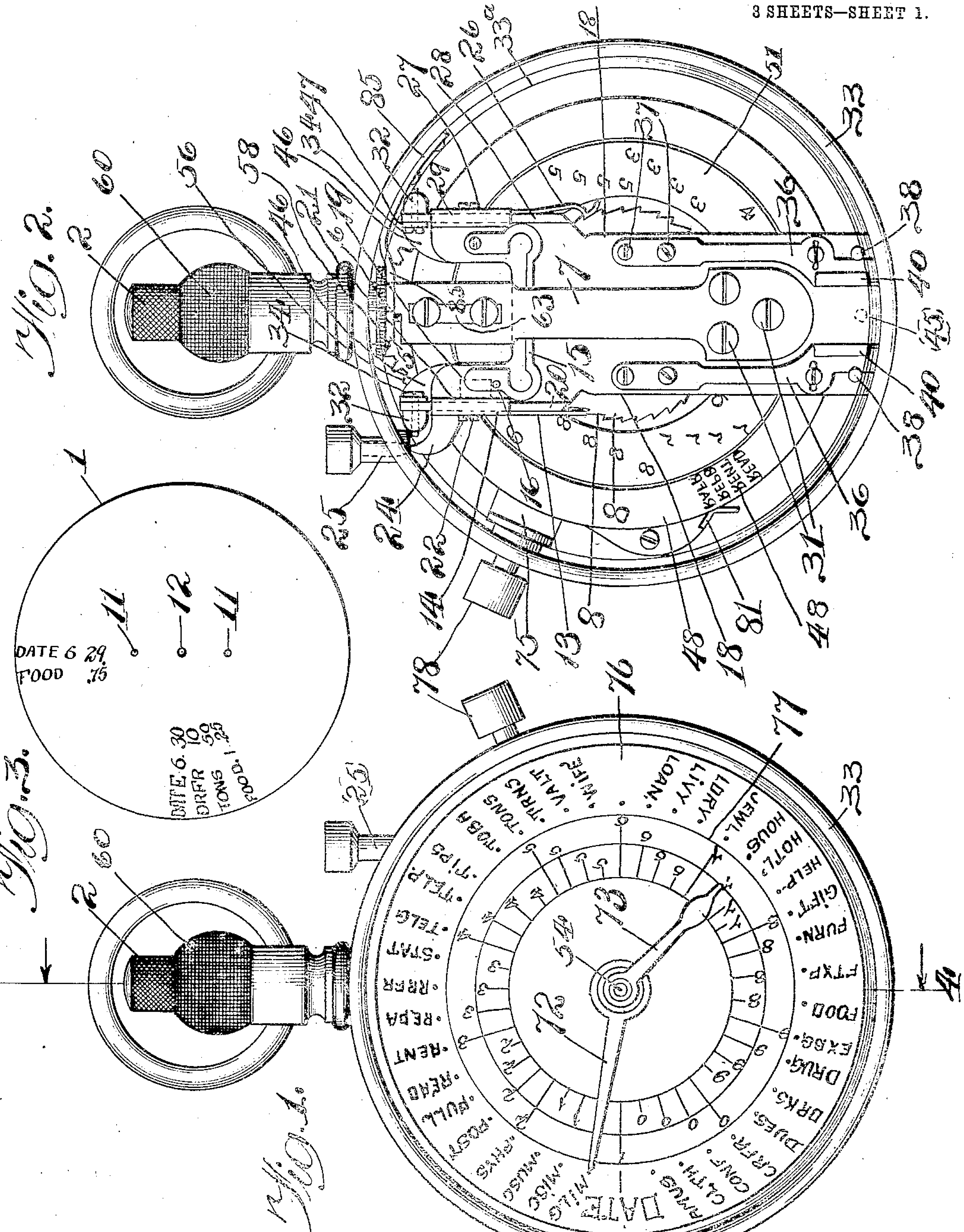
A. G. CARLSON.

CASH REGISTER.

APPLICATION FILED AUG. 25, 1905.

959,840. Patented May 31, 1910.

3 SHEETS—SHEET 1.



Witnesses:

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3 SHEETS—SHEET 2.

Fig. 6.

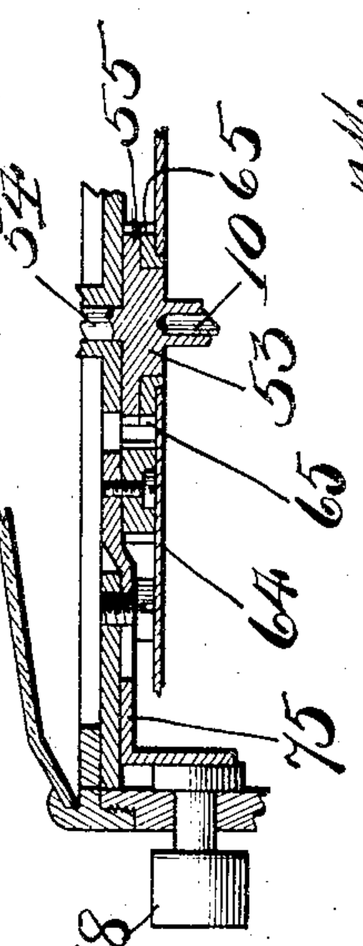

Fig. 5.

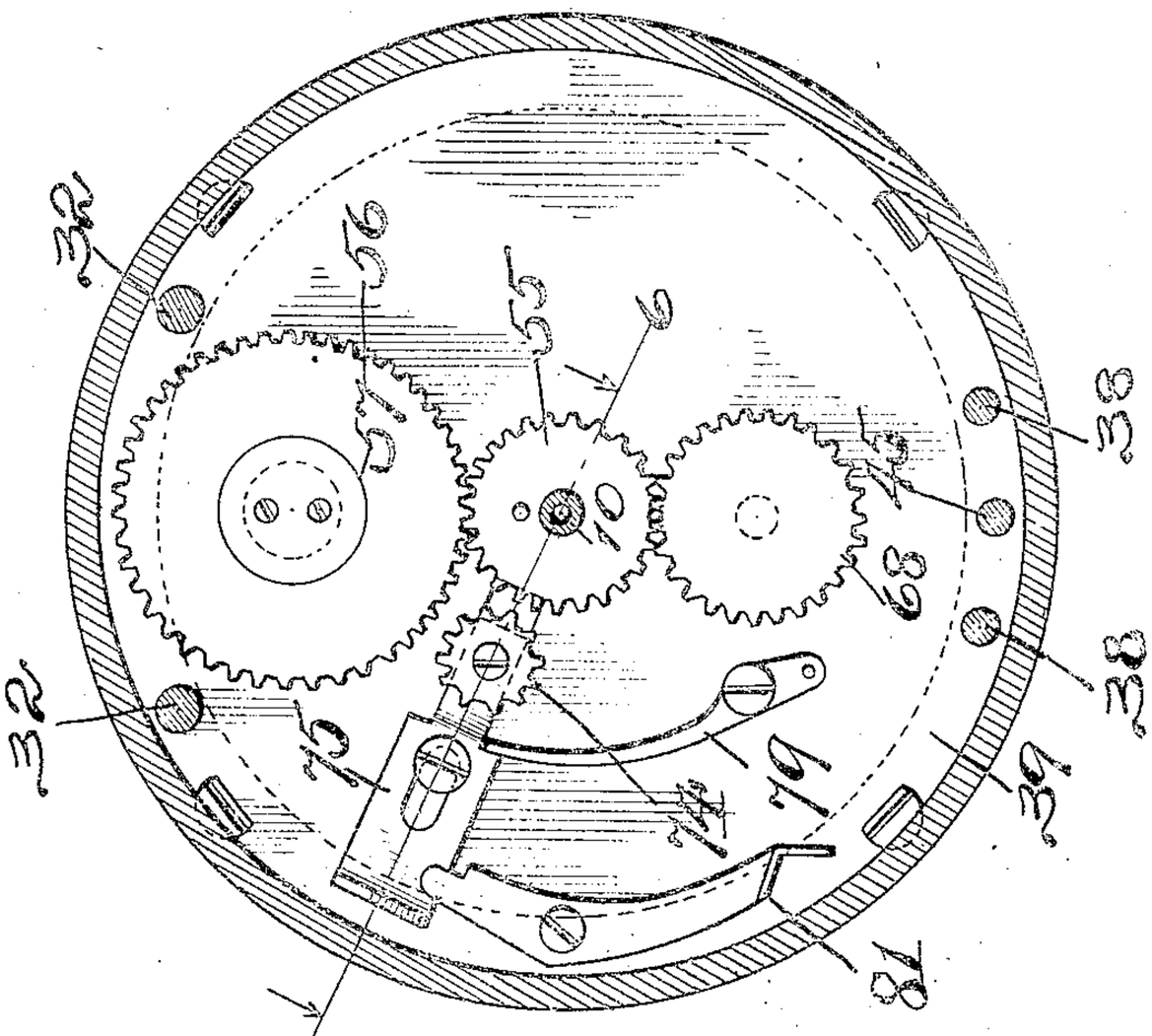

Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 8.

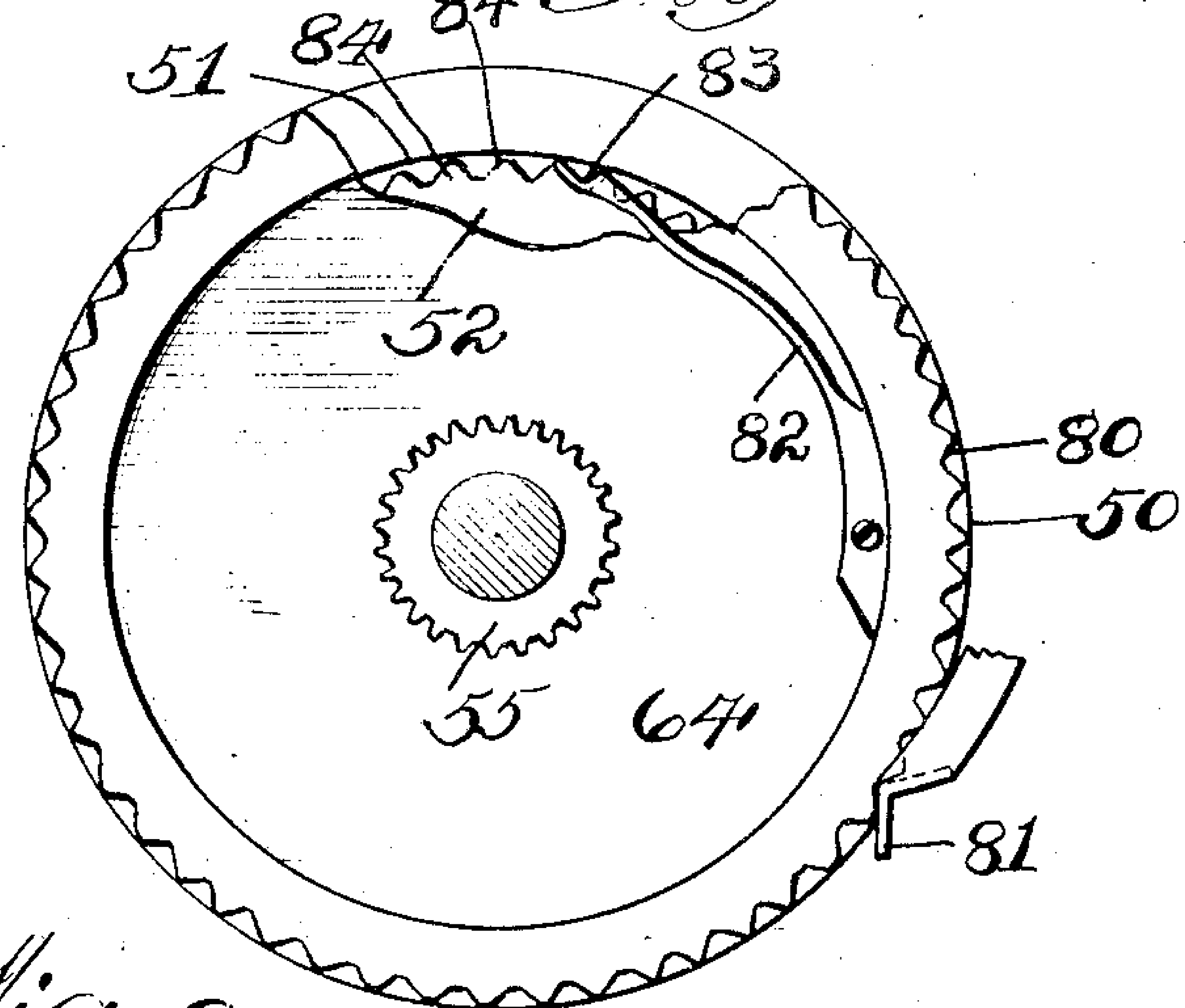


Fig. 9.

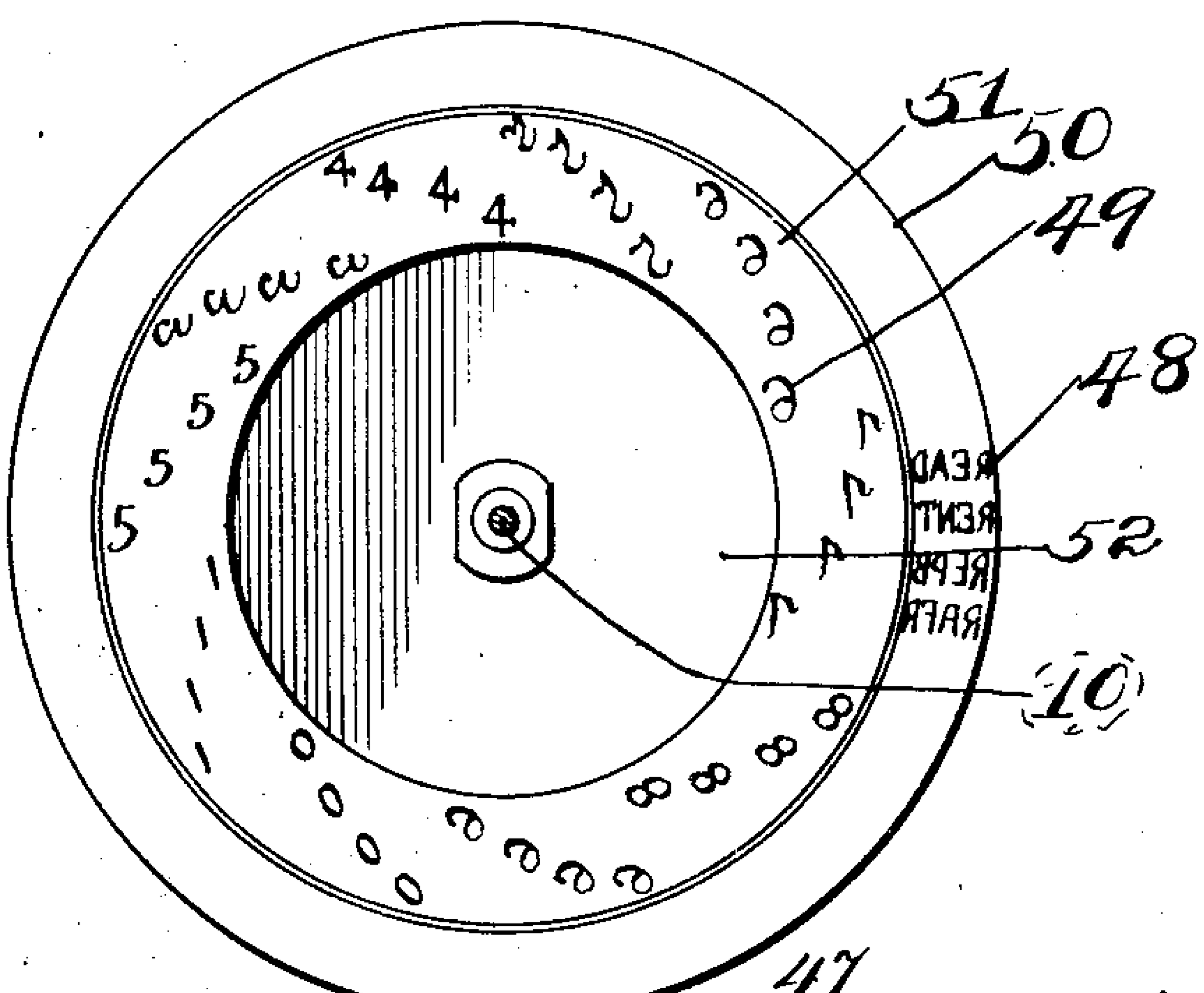


Fig. 10.

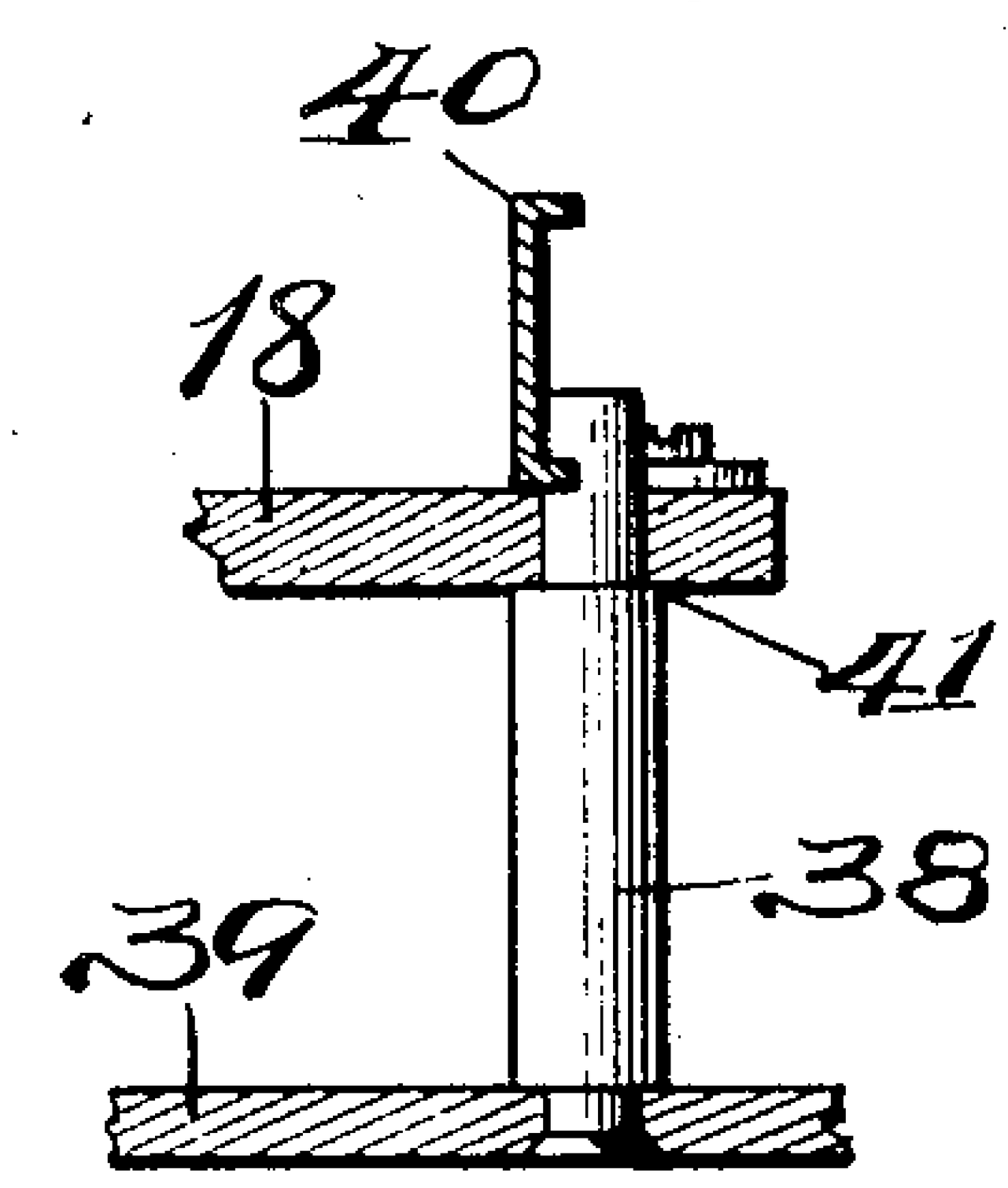


Fig. 11

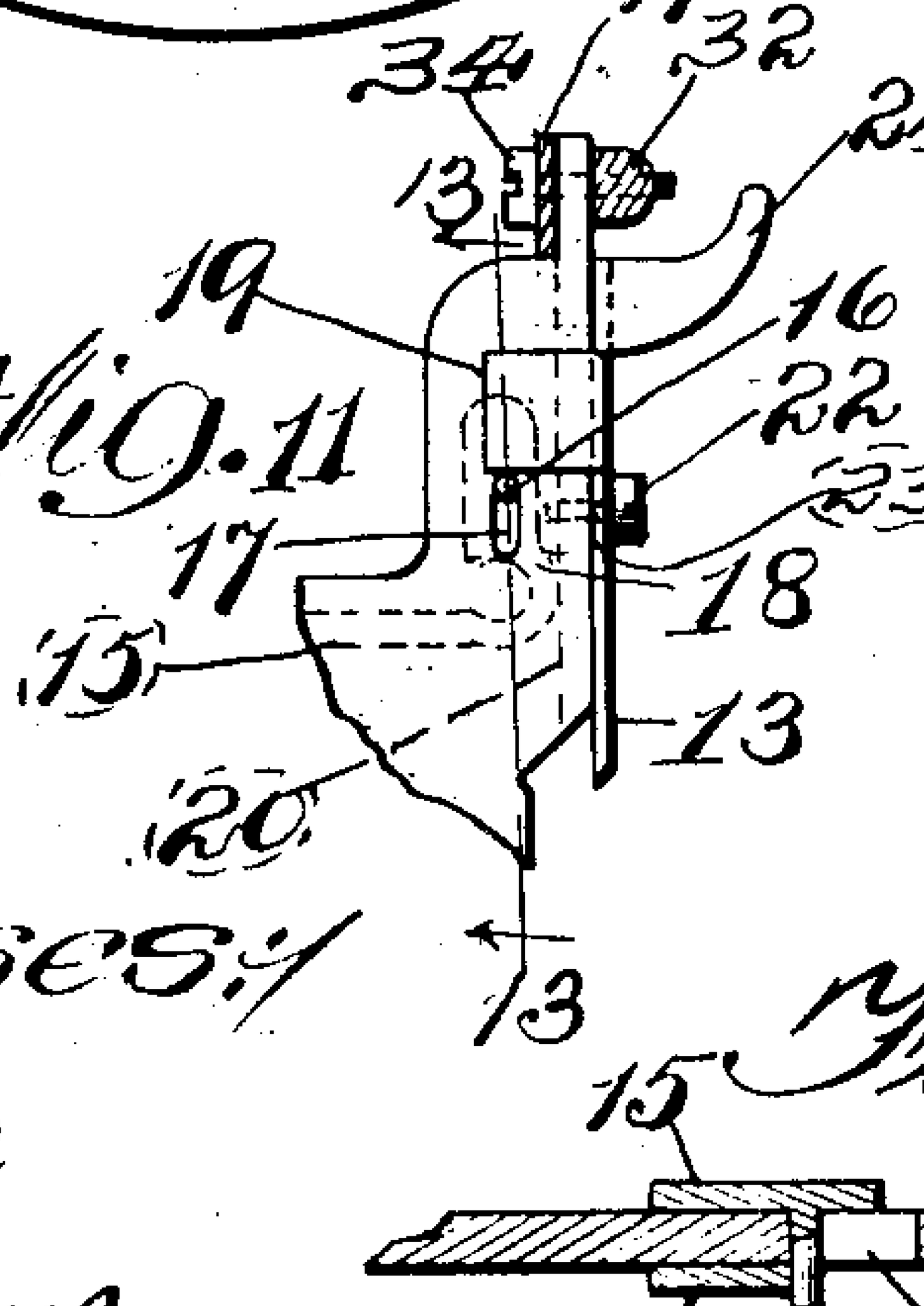


Fig. 12.

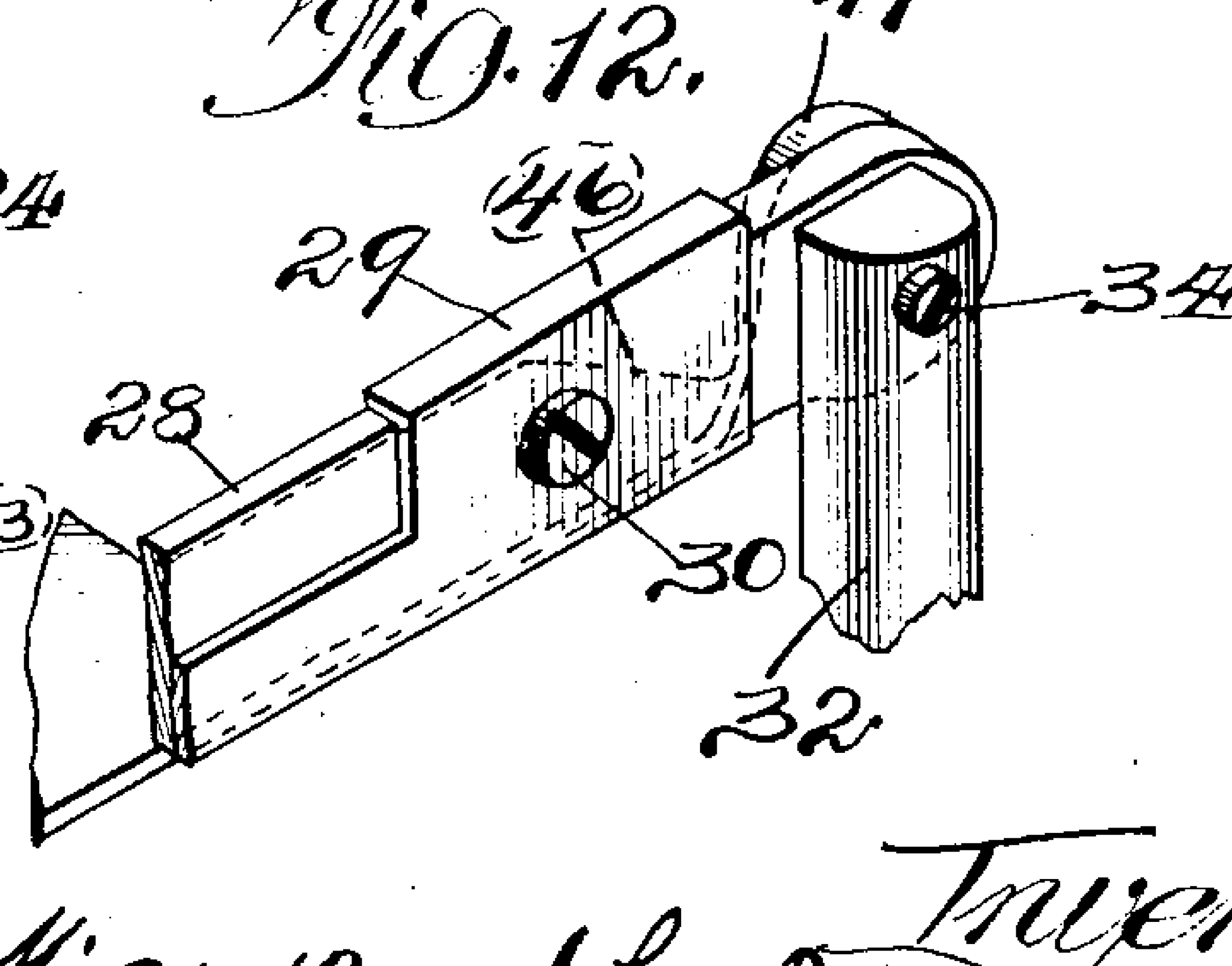
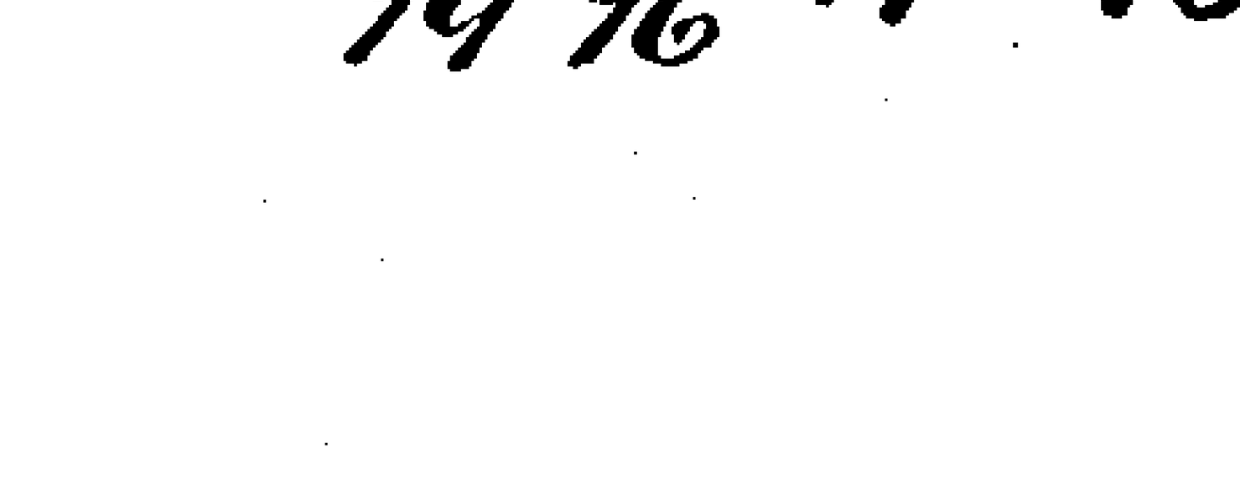


Fig. 13.



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UNITED STATES PATENT OFFICE.

ADOLPH G. CARLSON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO FRED H. FITCH, OF PITTSBURG, KANSAS.

CASH-REGISTER.

959,840. Specification of Letters Patent. Patented May 31, 1910.

Application filed August 25, 1905. Serial No. 275,701.

To all whom it may concern:

Be it known that I, ADOLPH G. CARLSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Cash-Registers, of which the following is a specification.

This invention relates to improvements in cash registers, and it has for its primary object to provide an improved form of cash register which will be susceptible of being produced on a scale sufficiently small to be conveniently carried in the pocket of the user, like a watch.

Other objects of the invention will appear hereinafter from the following description.

The invention consists in the features of novelty which will now be described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a face view of a cash register embodying this invention. Fig. 2 is a back view thereof. Fig. 3 is a face view of one of the records. Fig. 4 is a transverse section on the line 4, 4, Fig. 1. Fig. 5 is a section taken on the line 5, 5, Fig. 4. Fig. 6 is a detail section on the line 6, 6, Fig. 5. Fig. 7 is a detail view of a means for holding the hammer-operating pin in position. Fig. 8 is a detail back view of one of the type or printing disks, partially broken away, showing the edge of the companion disk also. Fig. 9 is a face view of the type disks. Fig. 10 is an enlarged transverse section of the latch and associated parts for securing the record-holding plate in position. Fig. 11 is a detail back view of the dog and slide which operates the spacing wheel. Fig. 12 is an enlarged perspective view of one of the hinges which support one end of the record-holding plate, and Fig. 13 is an enlarged detail section on the line 13, 13, Fig. 11.

1 is a disk, composed of paper or any other suitable material, and preferably of circular form, upon which the record is printed, and 2 is an operating knob, whereby a hammer or platen 3 is caused to produce the impression or record upon the disk 1 when the knob 2 is rotated. The knob is provided with a stem or shaft 4, which carries at its inner end a crank 5, provided with a pin or lug 6 adapted to engage one end of the hammer 3 and deflect it or move it in an outward direction against the resistance of a spring 7, to which the hammer is secured, and by which the hammer is supported. The record sheet 1 lies adjacent to the hammer 3 directly under a ratchet wheel 8, which is provided with two spurs 9 and a center pin 10 adapted to enter correspondingly arranged perforations 11, 12, respectively, in the record sheet, thereby causing the record sheet to remain in place and revolve with the ratchet 8, should the latter be rotated. This rotation of the ratchet 8 is caused, at the will of the operator, by a dog or pawl 13, which is secured to a slide 14, and held normally withdrawn from the teeth of the ratchet 8 by a spring 15. The spring is provided with a pin or lug 16 (see Fig. 13), which projects through a slot 17 in a plate 18, and engages against the under side of a flange 19 formed on the slide 14 and projecting under the plate 18, as shown in dotted lines in Fig. 2, and in full lines in Figs. 11 and 13, thus pressing the slide 14 to the outer end of its stroke.

The slide 14 is arranged against the side of a flange 20 on the plate 18, and has a flange 21 lapping over the edge of the flange 20 to form a guide for the slide, and which is held against the side of the flange 20 by a screw 22 passing through a slot 23 in the slide 14. One end of the slide 14 is provided with an arm 24, which is arranged in a position accessible to the inner end of a stem 25 capable of being depressed from the exterior, and thereby rotating the ratchet wheel 8 the distance of one tooth, and consequently causing the record sheet 1 to make a movement equal to one space, or equal to the distance between the radial lines of printing shown in Fig. 3. The ratchet wheel 8 is centered and held against accidental rotation by a centering dog 26 engaging with the teeth thereof, and secured by a screw 27 to a flange 28 formed on the edge of the plate 18 opposite that carrying the flange 20. For the sake of uniformity, the dog 26 is formed in one piece with a plate 29, which is capped or flanged over the flange 28, as better shown in Fig. 12, and held in place against flange 28 by a screw 30. The spring 7 is also secured at one end to the face of the plate 18 by means of screws 31, or other suitable agency, and the plate 18 is hinged at one end to a pair of pillars 32. For this

purpose, the flanges 28 are continued outwardly toward the rim of the casing 33, and secured to the pillars 32 by pivots 34, so that the plate 18, together with the ratchet wheel 8 (which is journaled on the inner side of the plate by means of the journal-bearing 35) may be turned outwardly on the hinges 34 for the purpose of removing or replacing the record disk 1.

The end of the plate 18 opposite its hinged end is provided with one or more latches, shown in the form of flat springs 36, secured to plate 18 by the screws 37, which engage with notches in two pillars 38 mounted in a movement-plate 39, or other suitable support, the springs 36 being provided with thumb-pieces 40, whereby they may be squeezed together for releasing the springs from the notches of the pillars 38, the plate 18 being held against downward movement on the pillars 38 by shoulders 41, or other means. Against the inner face of the record sheet 1, and also penetrated by the spurs 9 and center-pin 10, is a sheet of manifold paper 42, or any other suitable impression-producing medium, and inwardly from this manifold sheet 42—that is to say, on the side opposite that on which the record sheet 1 is arranged—is located a record-supporting plate 43, provided with an aperture 44 through which the spurs 9 and center-pin 10 project and move. One end of this plate 43 is supported by a pillar 45 situated between the pillars 38, but being shorter than the latter, so as to constitute a support for holding plate 43 against inward movement, while outward movement is prevented by the proximity of the ratchet 8, which is of greater diameter than the aperture 44 and over-laps plate 43. The opposite end of plate 43 is hinged to the pillars 32 by means of arms 46 and the hinge-screws or pivots 34 passing through outwardly-turned lugs 47 on the arms 46 (see Fig. 12), both of the plates 18 and 43 being cut away at a position between the arms 46 to constitute an aperture for the hammer 3 to operate through, as shown in Figs. 2 and 4, whereby the hammer may press the record sheet 1 against the manifold sheet 42, and the manifold sheet, in turn, against the type faces 48, 49, formed on two concentric rings 50, 51, respectively. The inner one of these rings, 51, is formed on or secured to a disk 52, which is attached to a hub 53 journaled by pin 54 in the movement-plate 39, and formed on or secured to this hub is a pinion 55, which meshes with a gear 56, secured by journal 57 to the movement-plate 39 and meshing with a pinion or star-wheel 58 on the inner end of a hollow stem 59 surrounding the stem 4, and being provided with an operating knob 60 at its outer end, so that when the knob 60 is turned, the hub 53 will be rotated, and a corresponding movement will be imparted to the disk 52 carrying the type ring 51, thereby presenting any of the types 49 on said ring to the action of the hammer 3, which, as before explained, when raised or deflected by the pin 6 and allowed to spring back under the influence of the spring 7, knocks the record sheet 1 against the back of the manifold sheet 2, and the manifold sheet 2, in turn, against the type surfaces 51, thereby resulting in the impression on the record of any type or types that happen to be under the hammer.

The hammer is equipped with a rubber or other resilient surface 61 to prevent injury to the type surfaces. This is held in place on the hammer in any suitable way, as, for example, by using a strip of the resilient material passed around the under or inner side of the hammer with its extremities clamped between the outer side of the hammer and the inner side of the spring 7 by means of screws 62, which are screwed into a rib 63 elevated from the back of the hammer into a corresponding opening in the spring 7, whereby the screw-heads 63 which over-lap the edges of said opening may serve to bind the spring and hammer firmly together.

The type ring 50 has its type faces 48 arranged in the same plane as the type faces 49, and the operating face of the hammer 3 is of sufficient length to project across both type rings simultaneously, so as to print from either or both rings, as may be necessary. The type ring 50 is formed on or secured to a disk 64 lying contiguous to the disk 52 and being secured to a gear ring 65, which is journaled on the hub 53 in a position contiguous to the pinion 55 but is free from the hub 53 so that the latter may rotate independently thereof, and meshing with this gear ring 65 is an idler 66 secured to a short shaft 67 in movement-plate 39, and to this shaft is also secured a pinion 68 on the outer face of plate 39, and which pinion meshes with a pinion 69 secured to a collar 70 journaled upon a hollow boss 71 formed on the movement-plate 39 around the journal 54, and carrying one of the hands 72, while the other hand 73 is carried by the journal 54.

Arranged contiguous to the pinion 55 and the gear ring 65 is a back gear or idler 74 mounted upon a slide 75, and adapted, when forced inwardly, to connect the gears 55 and 65 together as one, whereby the rotation of the gear 55 by the knob 60 will also effect the rotation of the gear ring 65 and the consequent rotation of the type ring 50 and the hand 72, which indicates the position of the type ring 50 with respect to the hammer 3, while the hand 73, which revolves in unison with the type ring 51, indicates the position of the latter, or the type surfaces on the latter, with respect to the hammer 3. The hands 72, 73, revolve at the center of a dial

which is stationary with relation thereto, and comprises two annular rings 76, 77, bearing characters or matter corresponding to the type surfaces or matter on the type rings 50, 51, and these various items of matter on the dial rings 76, 77, are so spaced and arranged that when the outer hand, which corresponds to the outer type ring 50 points to any item thereon, the corresponding item of the outer type ring 50 will be directly under the hammer 3 in position to be printed from; and the same is true with reference to the inner dial ring and matter thereon, that is to say, when the hand 73 points to any one of the numerals or characters thereon, the corresponding numeral or character of the inner type ring 51 will be in position opposite the hammer 3 to be printed from.

The pinion 74, is impressed into engagement with the gears 55, 65, for producing simultaneous rotation of the type rings and hands by an exterior knob 78, or push-button, arranged to act upon the slide 75, which is returned automatically to its outer or disengaged position by a spring 79. There is no especial purpose or reason in rotating the hands 72, 73, and the type rings simultaneously, but for the sake of simplicity of mechanism, the means which rotate one of these members is utilized by the action of the idler 74 for connecting the rotating mechanism of the other member therewith. In operation, however, the knob 78 is first depressed and the knob 60 then turned to first set the hand 72 at the first item to be printed. If it is the date, it is set opposite that point indicated on the dial ring 76, and the date being indicated by the figures in this exemplification of the invention, the inner type ring will be actuated after the hammer 3 has been operated by means of the knob 2 to print the date, as shown on the example of a record in Fig. 3. The word "date" being printed, the knob 78 is then released, and the knob 60 turned until the small hand 73 points to the first figure of the date, after which the knob 2 is operated for snapping the hammer 3. The knob 60 is then turned again to bring the next figure of the date on the dial ring 77 into position, when the hammer 3 is again snapped by aid of the knob 2. The date being thus produced in a radial line on the record 1, and it being desired to print an amount and an item below the date, the spacing knob 25 is then depressed for causing the ratchet wheel 8 to rotate the record, as before described with reference to the point of action of the hammer 3. The type rings 50, 51, are then actuated (using the hands 72, 73, as guides) by the knobs 60 and 78, as before described, for setting the matter in the outer type ring opposite the hammer, which may then be printed from by turning the knob 2 and then setting the numerals in the inner type ring, corresponding to the amount to be printed, successively opposite the hammer, which may be printed from by the successive operation of the knob 2 as such numerals come into position. In order that the hammer 3, which projects across the entire type ring 51, may not print from two of the numerals at one time, such numerals are arranged in tangential lines instead of radial lines, as indicated in Fig. 9, so that it will be impossible to have more than one numeral or character in printing position at one time.

In order that the type rings 50, 51, may be centered or accurately placed by the knob 60, the periphery of the ring 50 is provided with spurs or teeth 80, with which engages a centering dog 81, pivoted to plate 39 and having its end engaging in a notch in the side of the slide 75, whereby the dog 81 may receive the benefit of the spring 79, and secured to the face of disk 64 is a spring 82, which has a dog 83 projecting through an aperture in a disk 64 and engaging with teeth 84 on the periphery of the disk 52, which carries the type ring 51.

When the record-holding plate 18 is turned upwardly on its hinge, the end of the hammer 3 is liable to engage with the trip-pin or lug 6, when in certain positions, and in order that it may be held out of the way of the hammer under this condition, the crank 5 has flattened sides 5^a, against one of which bears a spring 85 for holding the knob 2 against accidental rotation.

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

1. In a cash register, the combination of two members, one movable independently of the other, and each having printing means, an impression device therefor with respect to which said members are movable, means for indicating the position of either of said members with respect to said impression device, means for supporting and securing a record sheet between said impression device and said members and in a fixed position with respect to the said impression device and members, and means for moving said sheet at will after each impression.

2. In a cash register, the combination of two members, one movable independently of the other, and each having printing means, an impression device therefor with respect to which said members are movable, means for indicating the position of either of said members with respect to said impression device, a single means for moving said members in unison and one independently of the other, *ad libitum*, means for interposing a record sheet between said impression device and said members, and means for moving the sheet at will after each impression.

3. In a cash register, the combination of two movable members each bearing printing means, an impression device therefor with

respect to which said members are freely movable in a forward and backward direction, one independently of the other, and which is common to both of said members, a single means whereby one of said members may be moved a plurality of times while the other one is at rest, means for actuating said impression device *ad libitum* independently of the motion of said members, means for interposing a record sheet between said impression device and members, and means for moving the record sheet at will after each impression.

4. In a cash register, the combination of two movable, annular, concentric members, bearing printing means, an impression device therefor with respect to which said members are movable and which projects across said members, the printing devices on one of said members being arranged in lines tending toward the center, and each of said lines being at an angle to the longitude of said impression device when registering therewith, means whereby the latter one of said members may be moved a plurality of times while the other one is at rest, means for actuating said impression device *ad libitum* independently of the motion of said members, and means for interposing a record sheet between said impression device and members.

5. In a cash register, the combination of two movable, annular, concentric members, bearing printing means, an impression device therefor, with respect to which said members are movable, and which projects across said members, the printing devices on one of said members being arranged in lines tending toward the center, and each of said lines being at an angle to the longitude of said impression device when registering therewith, means whereby the latter one of said members may be moved a plurality of times while the other one is at rest, means for actuating said impression device *ad libitum* independently of the motion of said members, means for interposing a record sheet between said impression device and members, and independent indicators for indicating, respectively, the positions of said members with respect to said impression device.

6. In a cash register, the combination of two members movable in unison, and one independently of the other, bearing printing means; an impression device therefor, with respect to which said members are movable, a single means for moving one of said members independently or both together *ad libitum*, two dials bearing matter corresponding, respectively, with the printing means on said members; and two pointers for said dials, respectively, connected with said members.

7. In a cash register, the combination of two concentric members movable in unison, and one independently of the other, bearing printing means; an impression device therefor, with respect to which said members are movable, means for rotatively moving one of said members independently or both together *ad libitum*, two concentric dials bearing matter corresponding, respectively, with the printing means on said members; and two concentrically pivoted pointers for said dials, respectively, connected with said members.

8. In a cash register, the combination of two concentric members, one having printing means arranged in lines and the other having printing means arranged in lines angularly disposed with respect to the first said lines; an impression device common to the printing means of both of said members, and with respect to which device said members are movable; said first lines being so disposed as to be lengthwise of said impression device as they register therewith; and means for rotating said members one independently of the other.

9. In a cash register, the combination of two members bearing printing means, both movable, and one movable independently of the other, an impression device with respect to which said members are movable, means for rotating one of said members independently of the other, comprising a gear wheel, means for operatively connecting the other of said members with said gear wheel, comprising two gears, one of which connects the other two together and is movable into and out of mesh with one of them at will.

10. In a cash register, the combination of two concentric rotary members having printing means and provided with centering teeth, a centering dog carried by one of said members and engaging the teeth of the other, a centering dog engaging the teeth of the latter, means for rotating one or both of said members, and an impression device for said members, and with respect to which said members are movable.

11. In a cash register, the combination of two concentric rotary members having printing means and provided with centering teeth, a centering dog carried by one of said members and engaging the teeth of the other, a centering dog engaging the teeth of the latter, means for rotating one or both of said members, means operatively connected with the last said means for releasing one of said dogs at will when the members are rotated together, and an impression device for said members, and with respect to which said members are movable.

12. In a cash register, the combination of a printing means, an impression hammer therefor, a spring for moving said hammer against said printing means, a hinged support for said hammer and spring, a tripping device for engaging and tripping said

hammer, and means for yieldingly holding said tripping device in a predetermined position with respect to the movement which the hammer receives from said hinged support.

13. In a cash register, the combination of two hinged plates independently movable, adapted to receive a record sheet between them, a spring-supported impression hammer carried by one of said plates, both of said plates having openings for the passage of said hammer, a printing means accessible to said hammer through said openings, a ratchet wheel, having record sheet engaging means, journaled on one of said plates, means for holding said plates immovable with respect to each other and to said printing means, and means for rotating said ratchet at will.

14. In a cash register, the combination of two plates arranged face to face and having branches at one end, two pillars to which said branches are hinged, a printing means arranged at one side of said plates and exposed between said branches, an impression hammer arranged at the opposite side of said plates and opposed to said printing means, means supporting said hammer upon one of said plates, means for securing said plates against relative movement, means supported on one of said plates, for rotatably holding a record sheet between them, means for rotating said record sheet, and means for actuating said hammer.

15. In a cash register, the combination of two members, one movable independently of the other and each having printing means, an impression device therefor with respect to which said members are movable, means for indicating the position of either of said members with respect to said impression device, a single means for moving said members in unison and one independently of the other in either direction, *ad libitum*, means for interposing and supporting a record sheet in a fixed position between said impression device and said members during the taking of an impression, and means for adjusting the record sheet at will after each impression.

In witness whereof, I have hereunto set my hand this 23d day of August, 1905, in the presence of the subscribing witnesses.

ADOLPH G. CARLSON.

Witnesses:
E. C. SEMPLE,
C. H. SEEM.