

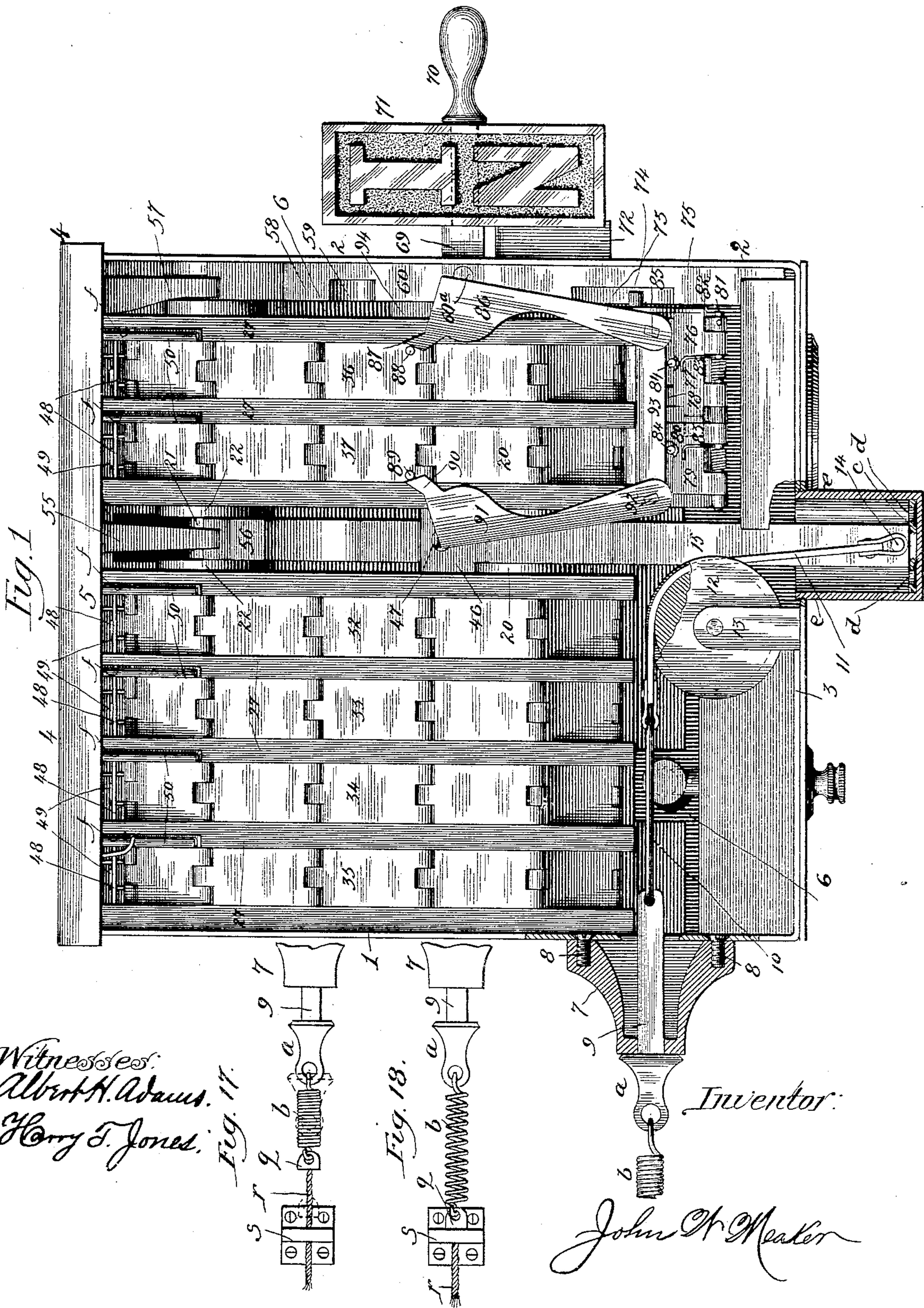
(No Model.)

4 Sheets—Sheet 1.

J. W. MEAKER.
FARE REGISTER.

No. 397,602.

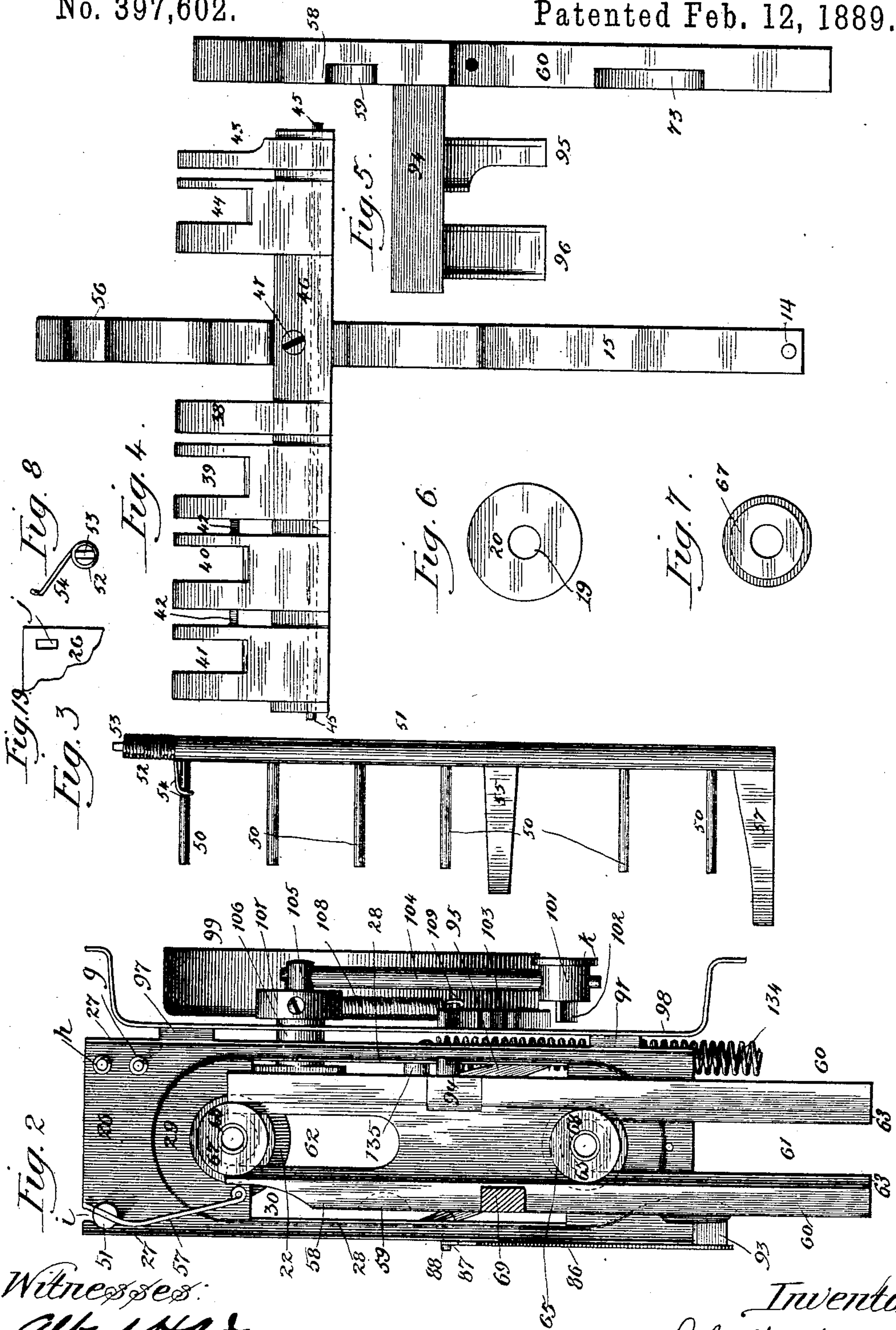
Patented Feb. 12, 1889.



J. W. MEAKER.
FARE REGISTER.

No. 397,602.

Patented Feb. 12, 1889.



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(No Model.)

4 Sheets—Sheet 3.

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Fig. 9.

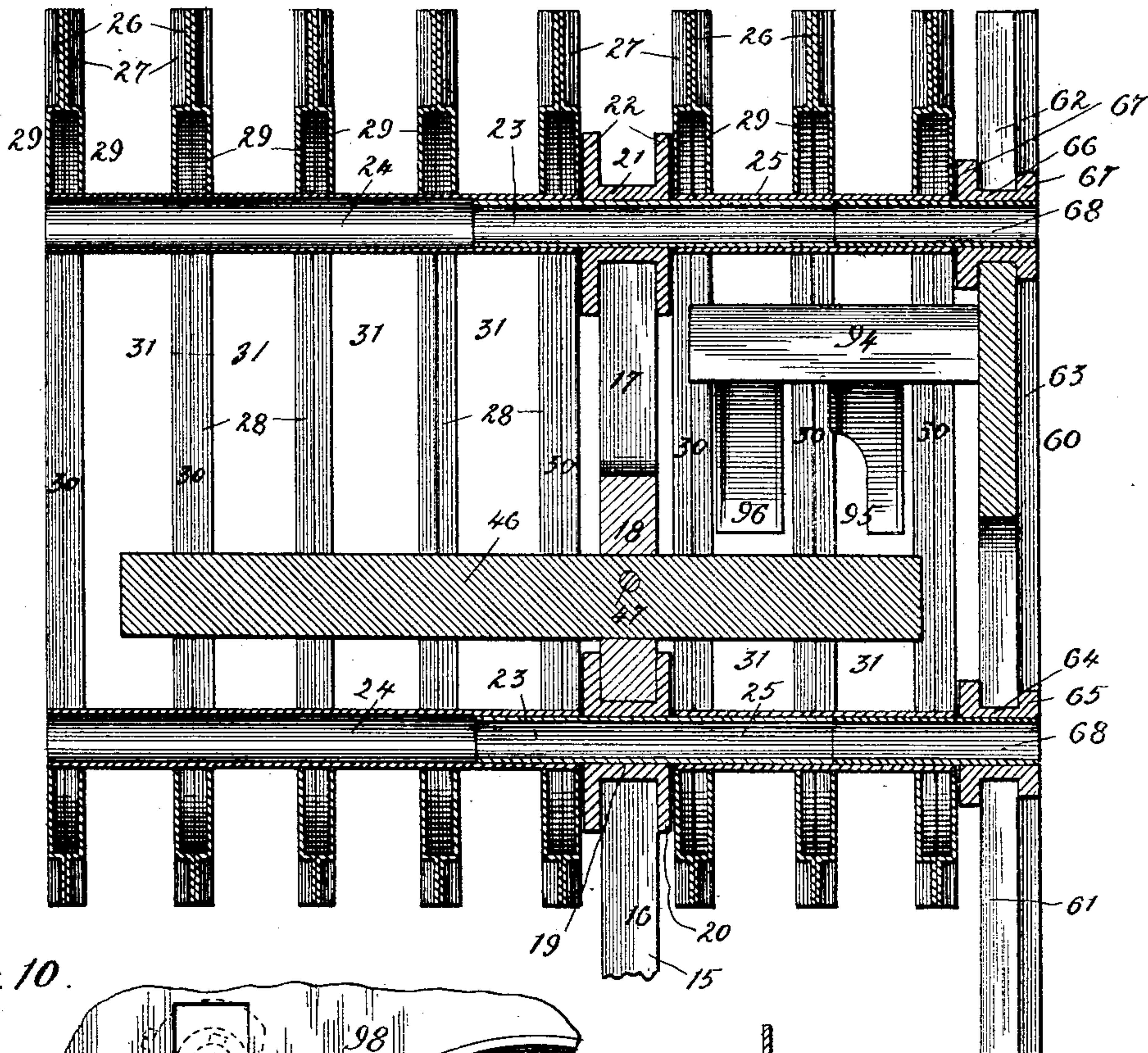


Fig. 10.

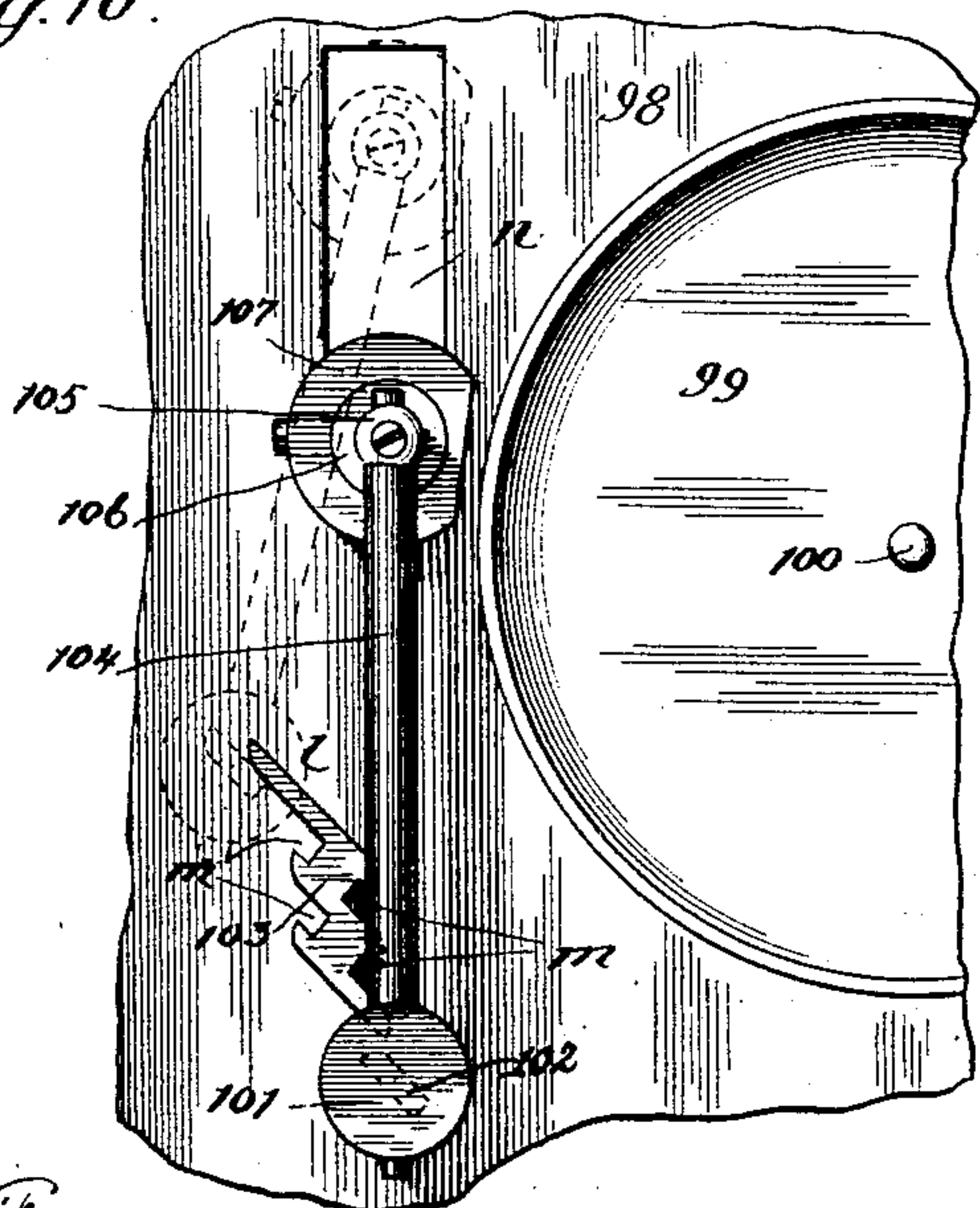


Fig. 11.

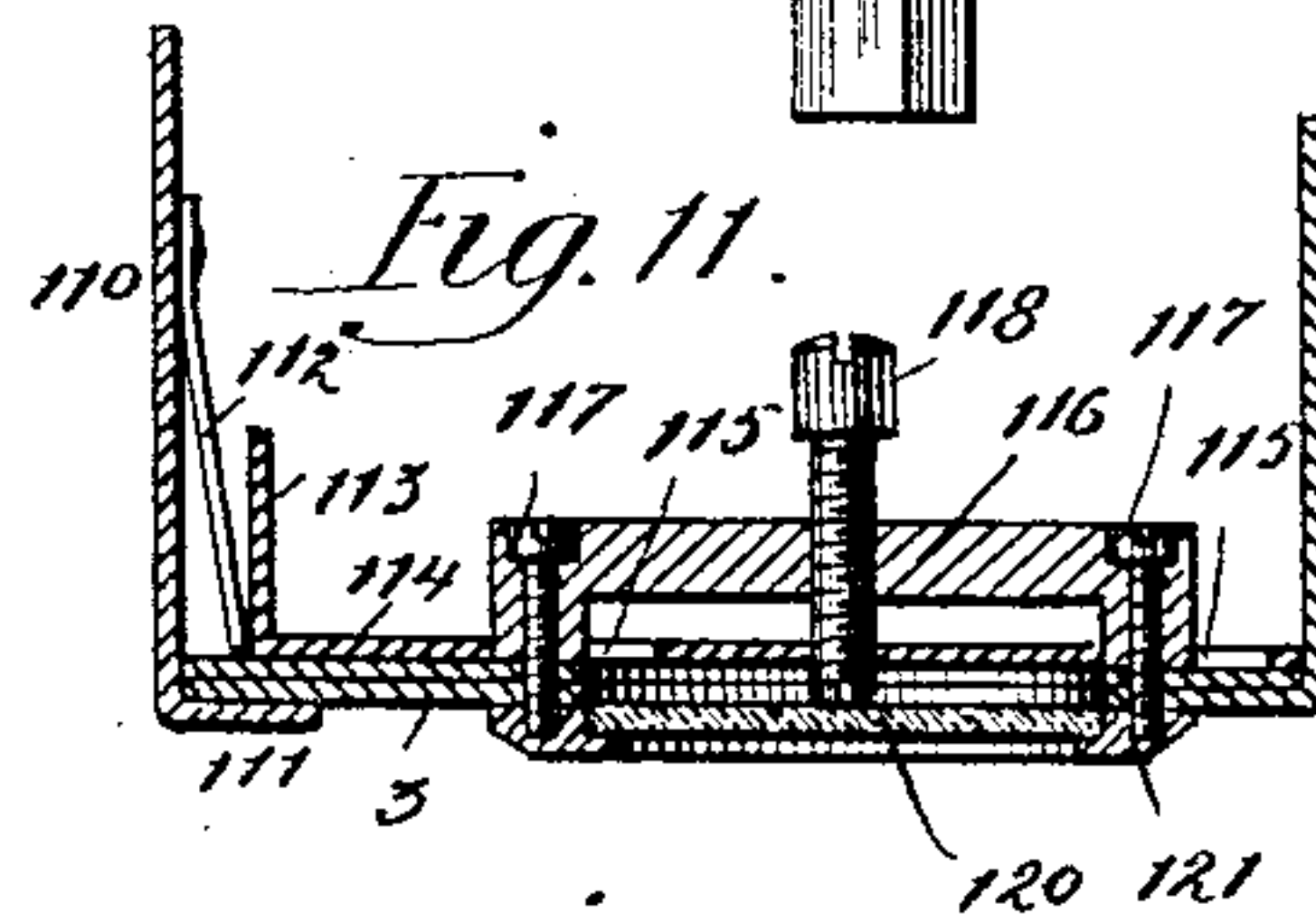
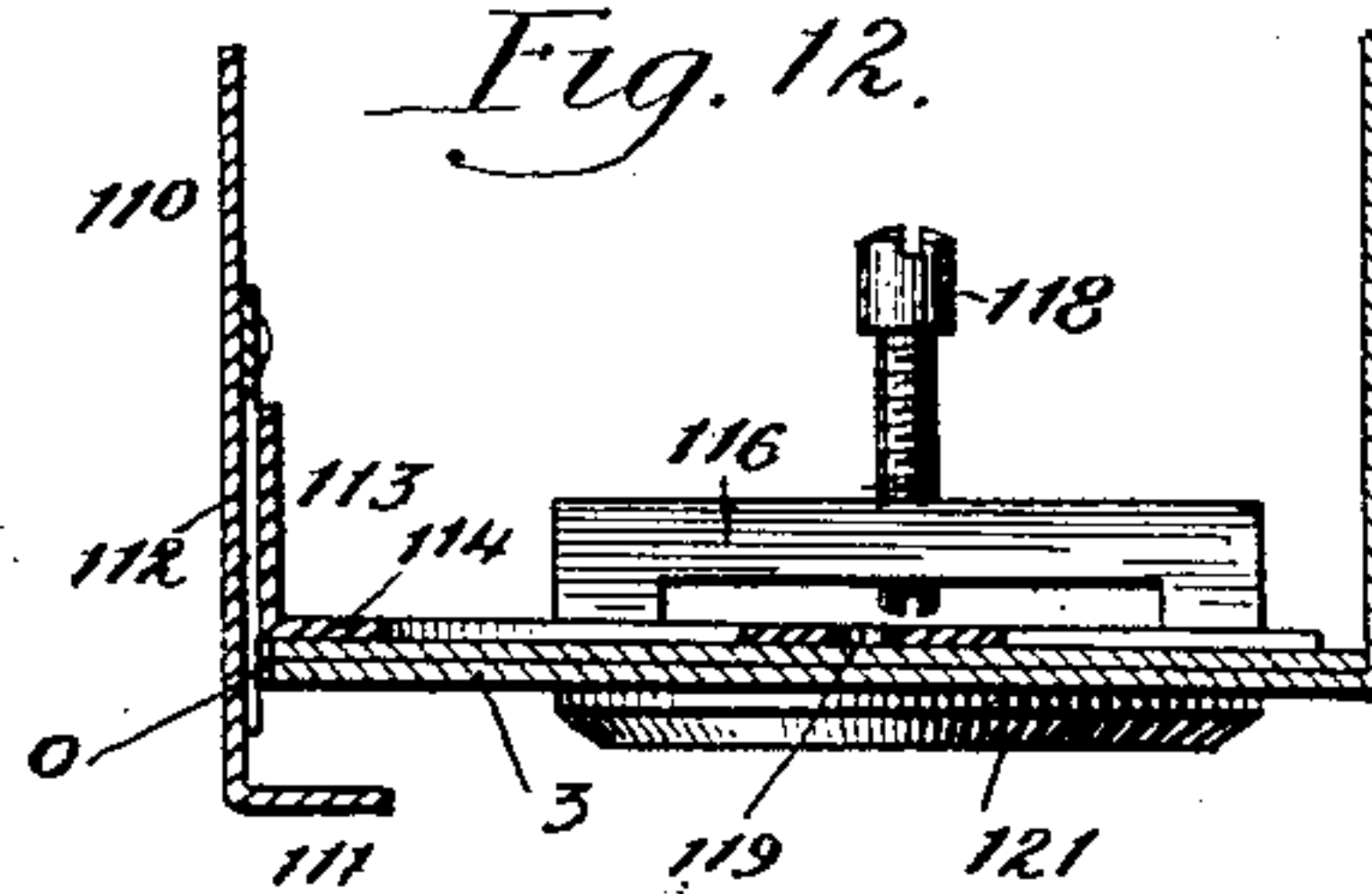


Fig. 12.



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Fig. 13.

Fig. 15.

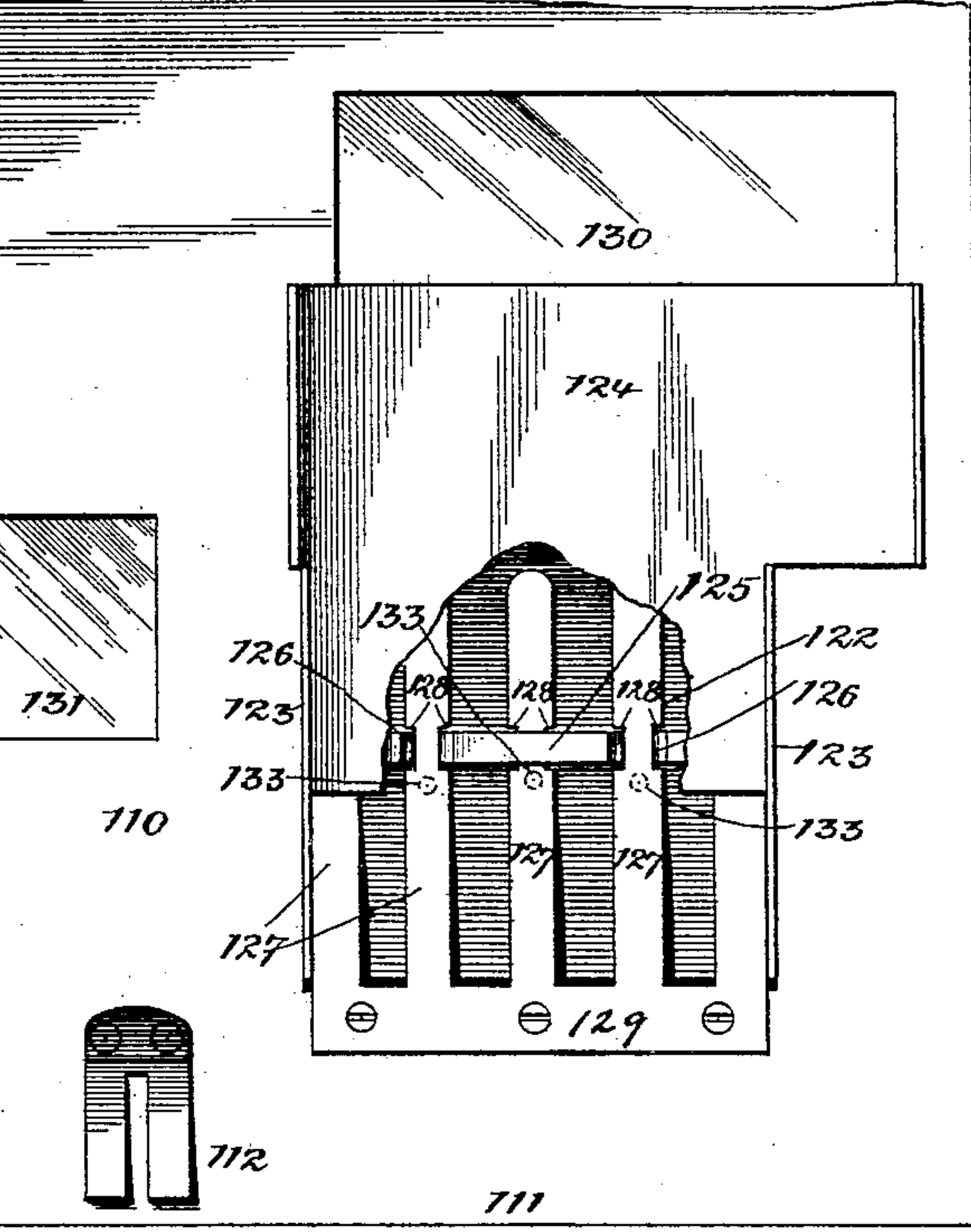
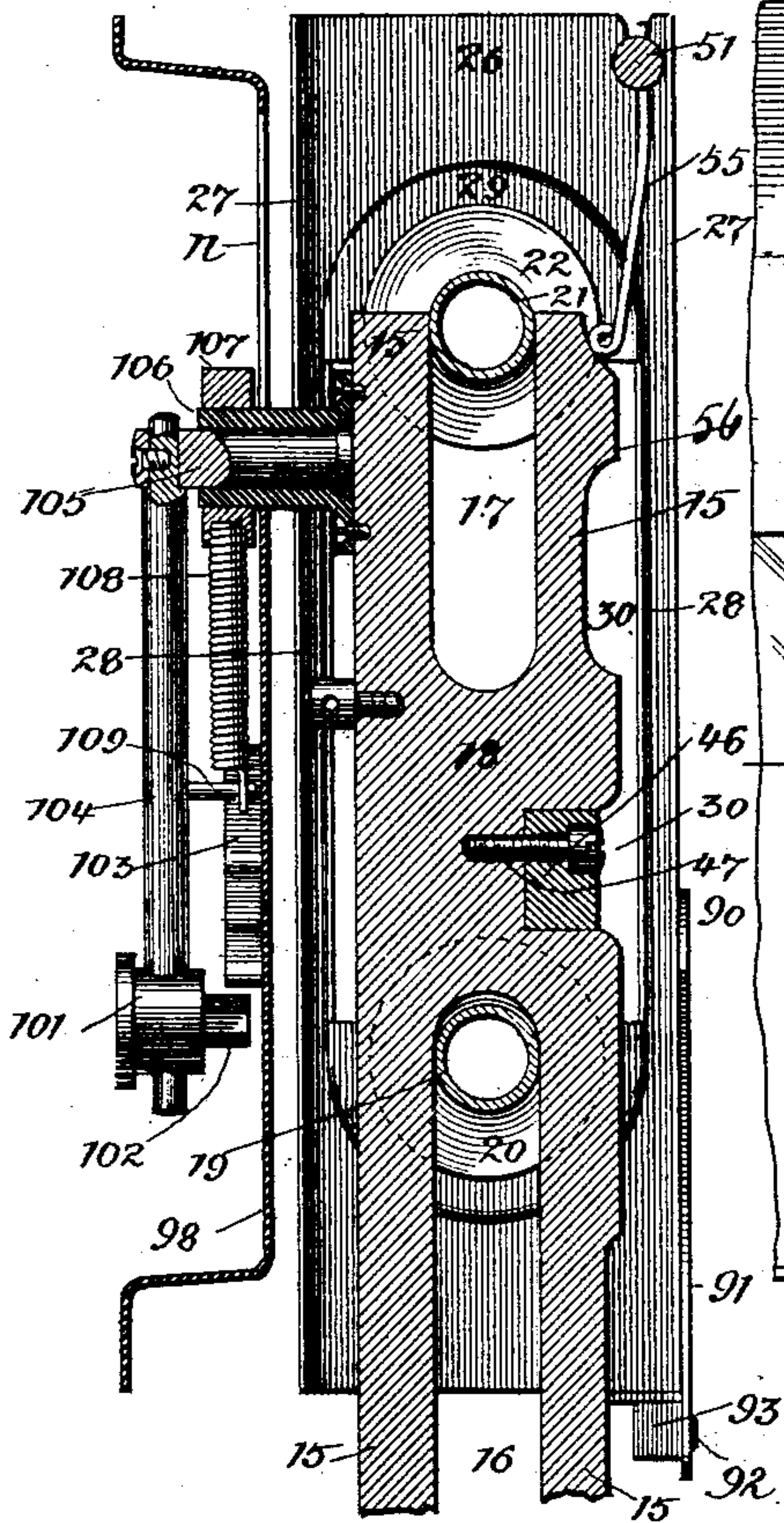
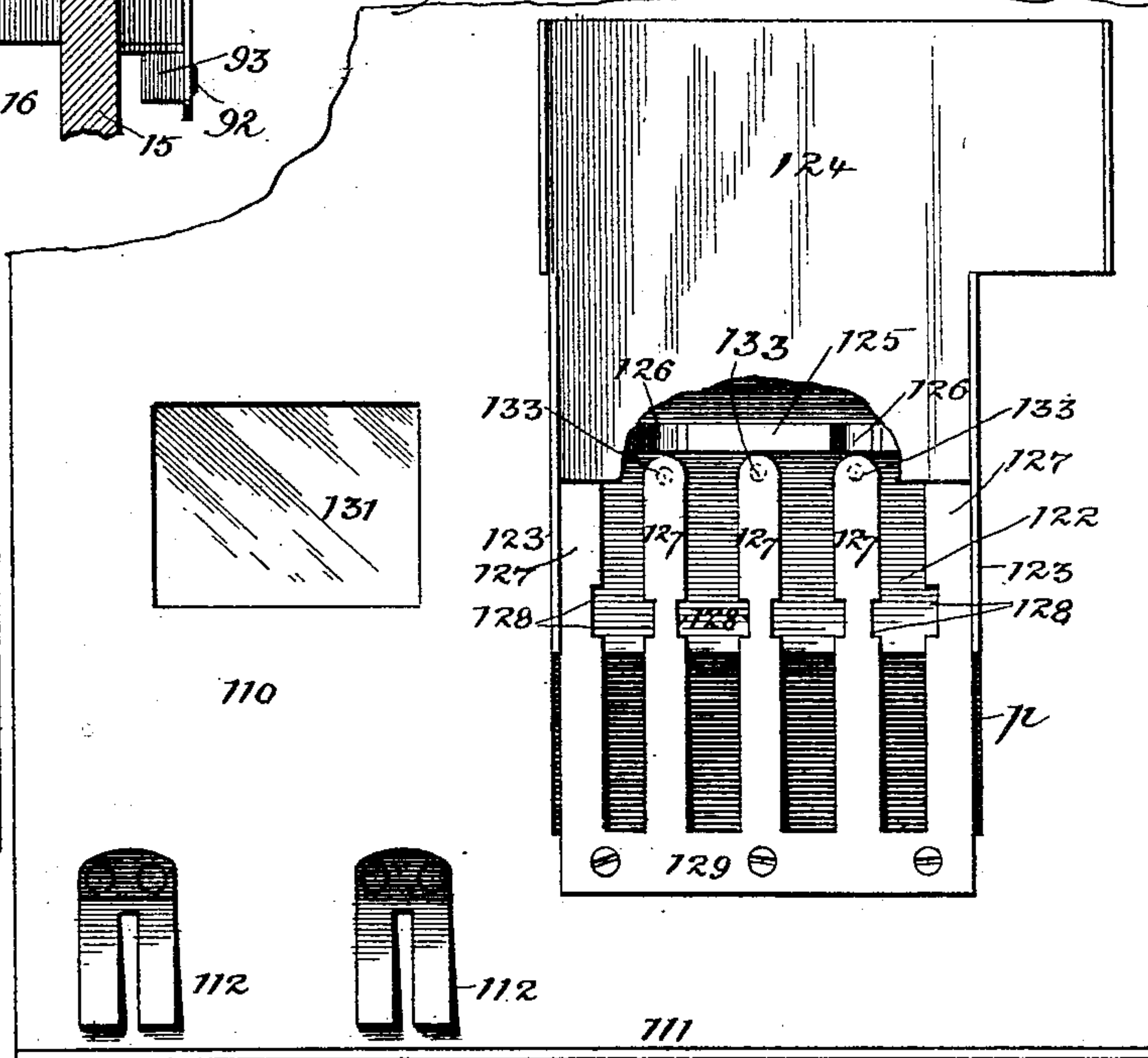
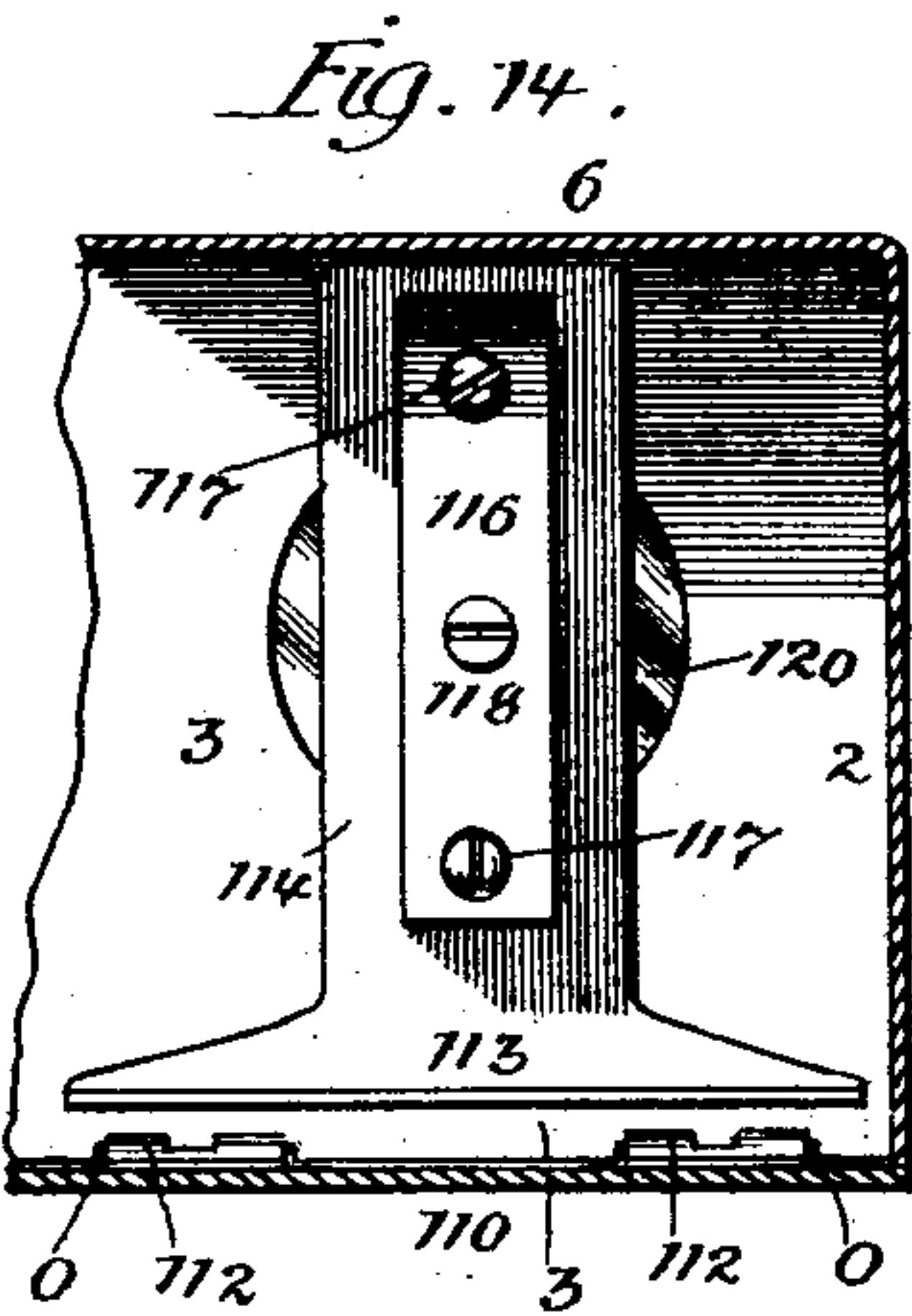


Fig. 16.



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UNITED STATES PATENT OFFICE.

JOHN W. MEAKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE RAILWAY REGISTER COMPANY, OF SAME PLACE.

FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 397,602, dated February 12, 1889.

Application filed January 19, 1888. Serial No. 261,230. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. MEAKER, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented certain new and useful Improvements in Fare-Registers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation, partly in section, with the face-plate removed. Fig. 2 is an end elevation of the mechanism from the resetting end. Fig. 3 is a plan view of the stop-fingers. Fig. 4 is a plan view of the main pull-bar and the pawls for advancing the registering-chains. Fig. 5 is a plan view of the resetting pull-bar and the resetting-pawls. Fig. 6 is a side view of one of the guide-rollers for the main pull-bar. Fig. 7 is a side view of one of the guide-rollers for the resetting pull-bar. Fig. 8 is an end view of the spring for throwing down the stop-fingers. Fig. 9 is a sectional elevation of the frame or support for the registering-chains, showing the pull-bars and their guide-rollers. Fig. 10 is a detail, being a plan view of the bell and its hammer and cam-stop. Fig. 11 is a sectional elevation showing the devices for locking and unlocking the face-plate, the parts showing the face-plate locked. Fig. 12 is a sectional elevation of the parts of Fig. 11, showing the face-plate unlocked. Fig. 13 is a sectional elevation showing the main pull-bar and the devices for operating the bell-hammer. Fig. 14 is an elevation of the locking devices of Fig. 11. Fig. 15 is a detail showing a portion of the face-plate with a lock-slide for covering the sight-opening for the total-register chains, the plate being open. Fig. 16 is a similar view to Fig. 15, showing the covering-plate closed. Figs. 17 and 18 are details showing the action of the spring-stop; Fig. 19, a detail view showing the square hole in one of the track-frame pieces for the plug at the end of the rock-shaft carrying the stop-fingers.

This invention relates to that class of fare-registers in which the series of numeral chains for a total register and numeral chains for a trip-register are combined in one mechanism to have all of the chains of both registers advanced by the movement of a main pull-bar

to register the fares, and in which the trip-chains can be reset without changing the registration of the total-register; and the object of this invention is to simplify the construction and operation of the pull devices both for registering and resetting, to improve the construction and operation of the alarm mechanism, and to improve generally the construction and operation of the register as a whole. Its nature consists in the several parts and combinations of parts hereinafter described, and claimed as new.

In the drawings the case for the registering mechanism is formed of side walls, 1 and 2, end walls, 3 and 4, the wall 4 having an overhanging lip, 5, beneath the end of the face-plate slides, and the case has a back, 6.

The side 1 of the case has secured thereto by screws 8 a bushing, 7, and this bushing supports a sliding bar, 9, the outer end of which is provided with a head, *a*, to which is attached one end of a coil-spring, *b*. This sliding bar 9 passes through an opening therefor in the wall 1, and to its inner end is attached a rod or link, 10, to which rod is secured a strap or band, 11, which passes over a grooved wheel, 12, secured in arms or brackets 13, projecting out from the end 3 of the case. The strap 11 is attached to a pin, 14, on a sliding bar, 15, which bar constitutes the main pull-bar of the machine, and the end of this bar 15, to which the strap 11 is connected by the pin 14, has thereon a disk, *c*, in which, as shown, are holes *d*, and this disk is fitted closely within a cylinder, *e*, secured to the end wall, 3, of the case, and by means of this disk and cylinder an air-cushion is provided for the pull-bar 15, which prevents a quick return after each advance, so that the registering mechanism and the alarm cannot be operated in quick succession, but each operation must be distinct and clear.

The bar 15 is formed to have a slot, 16, at one end and a slot, 17, at the other end, with a web or solid portion, 18, between, and the slot 16 receives the hub or center 19 of a grooved wheel, 20, in the groove of which the arms of the bar on each side of the slot 16 lie, and the slot 17 receives the hub or center 21 of a grooved wheel, 22, in the groove of which

the arms of the bar 15 on each side of the slot 17 lie, and these wheels 20 and 22 form a guide for the movement of the sliding bar 15, and also furnish a rolling contact for such bar in use, by which a free movement is had for the bar.

The wheel 20 is mounted upon a tube, 23, one end of which enters a tube, 24, and the other a tube, 25, and the wheel 22 is likewise mounted on a tube, 23, entering other tubes, 24 and 25, and these tubes 24 and 25 have secured thereto the frame-pieces 26 for the registering-chains, and in putting the parts together the grooved wheels 20 and 22 are slipped upon their respective tubes 23, and the ends of these tubes 23 are slipped into their respective tubes 24 and 25, so that the wheels 20 and 22 will lie between two of the frame-pieces 26, as shown in Fig. 9, and the arrangement shown is one which divides the total-register from the trip-register, although when the parts are together they form only one frame. Each frame-piece 26 is formed with an outer flange, 27, on both edges, and an inner flange, 28, on each side, of a center opening, 30, and at the end of the center opening, coinciding with the flanges 28, is a curved portion, 29, and the frame-pieces are joined together back to back and secured to the tubes 24 and 25, so as to leave between them spaces 31 for the registering-chains.

The chains for the total-register, as shown in Fig. 1, consist of a units-chain, 32, a tens-chain, 33, a hundreds-chain, 34, and a thousands-chain, 35, and the trip-register is formed of a units-chain, 36, and a tens-chain, 37, and each chain has the links thereof pivoted one to the other by pins whose ends project to enter the groove between the flanges 27 and 28 and guide the chain in its travel.

The chain 32 is advanced by a pawl, 38, the chain 33 by a pawl, 39, the chain 34 by a pawl, 40, the chain 35 by a pawl, 41, and the pawls 39 and 40 have each an ear, 42, by which the pawls 40 and 41 are held out of engagement a portion of the time. The chain 36 is advanced by a pawl, 43, and the chain 37 by a pawl, 44. These pawls 38 39 40 41 43 44 are pivoted to a wire, 45, and are all supported by a bar, 46, firmly secured to the pull-bar 15 and locked in place by a screw, 47, so that with the movement of the pull-bar the several pawls are operated to advance their respective chains at the proper times. Each chain is provided with a stop, 48, which stop has a notch to engage with the end of the chain-pivot and lock the chain against a return. The stops are held down by springs 49, Fig. 1. In Fig. 2 is shown the pivot-wire *g*, for carrying the stops, and the wire *h*, which will serve as a bearing for one end of the springs 49.

Each chain has to coact therewith a stop-finger, 50, which finger when down prevents the advance of the chain, and in order to allow the fingers 50 to work a portion of the flange 27 of the frame-pieces is cut away to

leave an opening, *f*, as shown in Fig. 1. The stop-fingers 50 are secured to a common rock-shaft, 51, one end of which is seated in one end of a coil-spring, 52, having an arm, 54, to engage with the first finger, 50, and, as shown in Fig. 3, this spring 52 is supported at its outer end by a screw-plug, 53, inserted into the spring, and having an end with flat faces to enter a hole, *j*, in the end frame-piece, 26, (see Fig. 19,) and the rock-shaft 51 is inserted by passing it through holes formed in the ends of the frame-pieces 26, with an opening, *i*, Fig. 2, for the passage of the fingers 50, and when in place the end of the plug 53 enters the hole *j* therefor in the plate.

As regards applying the rock-shaft through the opening *i* and the provision of fingers 50, the construction is substantially like that in my application for Letters Patent filed January 19, 1888, Serial No. 261,229.

The shaft 51 has extending out therefrom an arm, 55, the end of which is engaged by a lug or cam, 56, on the pull-bar 15, Figs. 1, 4, and 13, so that as the end of the arm 55 rides over the lug or cam 56 the shaft 51 will be rocked to raise the fingers 50 from engagement with the pins of the chains to allow the chain to be advanced, and this will occur as the pull 15 commences an advance to advance the bar 46 and cause the pawls to advance the chains. Another arm, 57, also extends out from the shaft 51 to have its end engage with and ride over a lug or cam, 58, (see Fig. 2,) on the resetting pull-bar 60, Fig. 2, the end of the arm after passing over the lug or cam 58 dropping into the recess 59 in the pull-bar in the construction shown, and this arm 57 as it rides over the lug or cam 58 will rock the shaft 51 to raise the fingers 50 from engagement with the pins connecting the links of the chains and allow the trip-chains to be advanced for resetting, the release of the fingers 50 occurring as the pull-bar commences its advance to move the trip-chains for resetting them.

The bar 60 at one end has a slot, 61, and at the other end a slot, 62, and its outer face is provided with a groove, 63, Figs. 2 and 9. The slot 61 receives a center or hub, 64, of a grooved wheel, 65, the outer flange of which is of a less diameter than the inner to lie within the groove 63, and the arms of the bar 60 on each side of the slot 61 lie within the groove of the wheel 65. The slot 62 receives the center or hub 66 of a grooved wheel, 67, corresponding to the grooved wheel 65, and having its outer flange of a diameter to lie within the groove 63, and the arms of the bar 60 on each side of the slot 62 lie within the groove of the wheel 67. The wheels 65 and 67 furnish a guide and moving support for the bar 60, by which it is held and given a free movement in use. The wheel 65 is mounted on the end of a tube, 68, inserted in the tube 25, and the wheel 67 is likewise mounted on a tube, 68, inserted in the other tube 25, so that the frame for the chain, the

support for the pull-bar 15, and the support for the pull-bar 60 are all carried by the tubes 24 and 25, and when in the case the frame at one end lies against the side wall, 1, of the case, and the pull-bar 60 lies against the opposite side wall, 2, making a fit within the case, by which the mechanism is held against end movement, and at the same time the pull 60 is free to be moved back and forth to reset the trip-chains.

The pull-bar 60 has secured thereto by a screw, 60^a, a bar, 69, Fig. 1, which projects through a slot in the wall 2 of the case, and this bar is rounded at one point, and its outer end has secured thereto a handle, 70, and the rounded portion (shown by dotted lines, Fig. 1) has journaled thereon a plate, 71, the faces of which are provided with indicating-words, as "In" and "Out," to show the direction the car is moving. The inner edge of the plate 71 is slotted at each end to receive the end of a guide, 72, projecting out from the plate or wall 2 of the case, and when engaged with the guide 72 the plate 71 cannot be turned, and when the plate is moved sufficiently to disengage it from the guide 72 to be turned such movement will advance the pull-bar 60 a distance sufficient to actuate the tripping devices of the canceler to throw them across the trip-chains and indicate that the resetting devices have been partially actuated, by which means the plate 71 cannot be changed for a direction of travel without disclosing such fact by the cancelers of the trip-chains, and to remove the cancelers the resetting pull must be operated until the cancelers are moved back.

The bar 60 has therein a recess, 73, for a pin, 74, on an arm, 75, of a plate, 76, having a stop, 77, and an extension, 78, to lie behind a plate, 79, having a stop, 80, and each plate 76 and 79 is provided with ears for pivoting the plate to a wire, 81, mounted in ears on a plate, 82, and each plate 76 and 79 is thrown down by the arm of a coil-spring, 83, on the pivot-wire 81.

The support 82 is provided with pin 84, lying in front of the plates 76 and 79, and one pin forms a stop for an arm on a spring-controlled shaft, 85, to which is attached the canceler 86 for the units-chain 36 of the trip-register, which canceler has a stop end, 87, to engage with a pin, 88, on the trip-chain, when such chain shows the cipher at the sight-opening, and the tens-chain 37 of the trip-register has a pin, 89, to engage a stop end, 90, of a canceler, 91, when the tens-chain shows the cipher at the sight-opening. The canceler 91 is secured to the end of a spring-controlled shaft, 92, having an arm to engage with the other stop-pin, 84, and the pin 84 limits the throw of the cancelers 86 and 91 across the chains 36 and 37.

The shafts 85 and 92 are mounted or supported in the plate 82 and the bar 93, the plate and bar being secured to the end of the chain-frame. The pin 74 when lying in the recess

73, at which time the pull-bar 60 is at rest, has no action on the stop-plates 76 and 79, and these plates, by their stop ends 77 and 80, act to hold the cancelers 86 and 91 out of use by the engagement of the stop ends of the stop-arms of the shafts 85 and 92; but with the movement of the bar 60 to reset the trip-chains the pin 74 rides up the face of the recess 73 and moves the arm 75, swinging the plate 76, and through the ear 78 swinging the plate 79, releasing the stop ends 77 and 80 from the stop-arms of the shafts 85 and 92 for the cancelers to be thrown across the trip-register chains, where they will remain until the pins 88 and 89 engage with the respective cancelers to move them back.

The cancelers and the means set forth for operating the same are shown and claimed in my aforesaid application, and therefore are not herein more fully illustrated.

The bar 60 has secured thereto a bar, 94, extending within the chain-frame, and carrying pawls 95 and 96, to engage with the trip-chains 36 and 37 and advance such chains for the purpose of resetting them, and, as the pull-bar 60 is independent of the main pull-bar in its operation, the advance of the trip-chains to reset them has no effect on the chains of the total-register.

The frame for the register-chains has secured thereto on its back side lugs 97, Fig. 2, to which is secured a bell-chamber, 98, inclosing a bell, 99, attached to the chamber by a pin or rivet, 100. This bell is struck by a hammer, 101, having a rim or flange, *k*, Fig. 2, which strikes the bell, and this hammer 101 has a rib projection or cam, 102, which engages with a stepped cam, 103, one step, *l*, of which is of greater length than the remaining steps, and between the steps are notches *m*, as shown in Fig. 10. The hammer 101 is carried by a stem, 104, secured in the end of a pivot or pin, 105, mounted in a bushing or bearing, 106, secured to the pull-bar 15, and this bushing or bearing 106, Fig. 10, has secured thereto by a set-screw or otherwise a ring, 107, to which is attached one end of a coil-spring, 108, the other end of which is attached to a pin, 109, Fig. 13, on the stem 104, which spring acts to allow the stem to move for the hammer to pass around the stepped cam and to throw the hammer against the bell when the cam has been passed. The bushing or bearing 106 moves in a slot, *n*, in the chamber 98, (see Fig. 10,) and this bushing is moved with the movement of the pull-bar 15, the advance of the bar moving the bushing toward the end of the chamber, carrying with it the stem 104 and hammer 101, the cam of the hammer passing down the outer steps of the cam 103, and as the pull-bar 15 reaches the limit of its advance approximately to complete the register of the chain, the cam 101 passes the end of the step *l*, so that the spring 108 will act and throw the hammer 101 against the bell, sounding the alarm, and on the return of the pull-bar the cam 101 will pass back of the stepped

cam to its normal position, as shown by the full lines in Fig. 10, the dotted lines in Fig. 10 showing the hammer in position just before leaving the step *l*. The cam 102 will pass
 5 over the front steps of the cam with a straight advance of the pull-bar; but in case the pull-bar is only partially advanced and then sought to be returned the cam 102 will enter
 10 a notch, *m*, and prevent the return of the pull-bar 15 to its normal position, so that the cam 102 and the stepped cam 103 form a stop against a return of the pull-bar 15 until the limit of advance to complete the registration is had, and in case of an attempt to advance
 15 the pull-bar 15 after a partial return the cam 102 will engage a notch, *m*, on the back of the stepped cam, preventing any advance of the bar 15 on a partial return and until the limit of the return movement has been reached,
 20 and on the return movement the cam 102 rides over the steps of the cam freely, unless it is sought to advance the bar before the return is completed. It will thus be seen that the cam 102, in connection with the stepped cam 103,
 25 forms an effectual stop against the return of the bar after a partial advance, or an advance of the bar after a partial return, necessitating the full movement of the bar in either direction, in order to perform the work required, and in
 30 use the coil-spring is double-acting, in that it throws the hammer 101, after the step *l* is passed, to sound the alarm, and returns the hammer after the alarm to a position to pass back of the stepped cam on the return of the
 35 pull-bar, and in both movements the spring yields to allow the cam 102 to pass the steps, and yet its tension in both directions is such as to cause the cam 102 to engage a notch, *m*, as before stated.
 40 A face-plate, 110, is provided for the case, the plate at one end entering the groove beneath the lip 5 and at the other end having a flange, 111, to lie against the end 3 of the case when the face-plate is closed. The under
 45 side of the face-plate near the flange 111 has secured thereto spring-catches 112 to engage with the inner face of the wall 3 and lock the face-plate against withdrawal when closed until the spring-catches are released
 50 from engagement. A plate, 113, is arranged in line with the catches 112, which plate is carried by a plate, 114, having slots 115, through which pass lugs of a bar, 116, which bar is secured to the end plate or wall, 3, of
 55 the case by screws 117 or in any other suitable manner, and this bar 116 receives a screw, 118, which, when the lifting-plate 113 is down, as shown in Fig. 11, passes through a hole, 119, in such plate to engage and hold
 60 in place a seal, 120, located in a rim, 121, on the end wall, 3, of the case, which seal is to be identified in any suitable manner by the parties using the register. The spring-catches 112 pass through notches *o* cut therefor in the
 65 end wall, 3, of the case, and when the cover is closed these springs lie against the end wall, as shown in Fig. 11; but before placing

the cover 110 on, the plate 113 is dropped down, the seal inserted, and the plate and seal secured by the screw 118, as shown in Fig. 70 11, and to remove the face-plate 110 the seal 120 has to be broken, when the screw 118 can be turned back, releasing the plate 113, which can be pushed up, as shown in Fig. 12, lifting
 75 the end of the catches 112, so that they can be withdrawn through the recesses *o*, as shown in Fig. 12, permitting the withdrawal of the face-plate.

The face-plates can only be withdrawn by breaking the seal to turn back the locking-
 80 screw 118, and such breakage of the seal will at once disclose the fact that the register has been tampered with.

The face-plate is to be provided with sight-openings for the total-register and the trip-
 85 register, and, if it is desired to close the sight-opening for the total-register against observation or have it remain open for observation it can be done by a covering-plate, which can be locked either closed or open. The
 90 covering-plate for the sight-opening with its locking devices is shown in Figs. 15 and 16, and this plate is formed of a plate, 122, having side flanges, 123, to which is secured a plate, 124, of the dimensions to cover the
 95 sight. The plate 122 fits in a recess, *p*, formed in the face-plate 110, in which recess the plate 122 can slide back and forth, and this plate 122 carries a lock-bar, 125, having a series of notches, 126, and each notch or slot 126 is
 100 formed of a wide and a narrow part. These slots 126 coact with spring-fingers 127, the center ones of which have a notch, 128, on each edge, and the outer ones a notch, 128, on the inner edge only, and these fingers extend
 105 out from a common support, 129, which support is attached by screws or otherwise to the under face of the cover. The sight-opening 130 for the total-register chains is of the proper size to disclose a row of numerals on
 110 the chains and is covered by a glass, as usual, and the sight-opening 131 for the trip-register is of a size to disclose the numerals on the chains, and is also covered by a glass.

The spring-fingers 127 are operated by a
 115 key having pins to pass through slots in the face-plate and holes 133 (shown by dotted lines in Figs. 15 and 16) in the plate 122, a hole, 133, being located in line with each
 120 spring-finger. The covering-plate 124 is locked closed, as shown in Fig. 16, by the engagement of the spring-fingers 127 with the lock-bar 125, and is locked open, as shown in Fig. 15, by the engagement of the notches 128
 125 of the spring-fingers 127 with the lock-bar 125 in the notches or slots 126, and is released from engagement by the use of the proper key to throw the spring-fingers up to pass through the wide portion of the notches or slots 126. The covering-plate with its
 130 locking devices and keys for unlocking the same are shown in detail and fully described and claimed in my aforesaid application.

The pull-bar 15 actuates the registering-

pawls for all of the chains, and this bar 15 is advanced by the strap 11, rod or link 10, and stem 9, and is returned after each advance by the spring 134, one end of which is attached to a stud 135 on the pull-bar, (shown in Fig. 2,) and the other attached to the end wall of the case, and where the register is set vertical the pull-bar 60 is returned by gravity after each advance, and is advanced by pushing on the handle 70. The strap 11 with each advance of the pull-bar runs over the carrying-wheel 12, and in the movement of the pull-bar to the limit of its advance the force of the ordinary pull required will have no effect on the spring *b*, and such spring will be inactive, as shown in dotted lines in Fig. 17; but in case the pull-bar has been advanced and a partial return is made and an advance attempted before a full return, such advance will be prevented by the engagement of the cam 102 on the hammer with a notch, *m*, on the cam 103, and then if an effort is made to complete the advance by a pull that would injure the parts the spring *b* comes into use, and the force of any extra pull over and above the ordinary pull required to move the devices will be taken by the spring, and the pull-bar, strap, carrying-wheel, rod or link, stem, bell-hammer, and its holding-cams will not be affected by such overpull to an extent to cause injurious effects or allow the advance to be made, and when the limit of the outward pull has been reached, as shown in Fig. 18, the eye *q* on the pull-cord *r*, to which eye *q* the spring *b* is attached, or a stop on the cord *r* will strike a stop, *s*, attached to the car or other support and relieve the spring of any extra pull. This arrangement prevents any overpull that would break or injure the parts.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a casing, the traveling chains therein, a pull-bar, 15, having a direct reciprocating movement, and actuating-pawls carried by said pull-bar to advance the chains, and a side pull-bar, 9, sliding lengthwise in the casing and connected with the pull-bar carrying the pawls, substantially as described.

2. The combination, with a casing, traveling register-chains therein, a pull-bar, 15, having a direct reciprocating movement, and pawls carried by said pull-bar to advance the chains, of a wheel, 12, mounted in bearings located inside the casing, a side pull-bar, 9, sliding lengthwise through the casing, and a strap, 11, passing over the wheel and connecting the two pull-bars, substantially as described.

3. The combination, with registering devices and a casing inclosing the same, of a lengthwise reciprocating rigid pull-bar arranged and guided in the casing and carrying actuating-pawls, and a rigid side pull-bar sliding lengthwise through the side of the

casing, a flexible connection, 11, between the pull-bars, and a support for the flexible connection inside the casing, substantially as described.

4. The combination, with the casing and the traveling chains of a register, of a reciprocating pull-bar, 15, having longitudinal slots, grooved wheels having the hubs between the flanges arranged, respectively, in the slots of the pull-bar for carrying and guiding the latter, pawls for advancing the chains, a side pull-bar, and a connection between the pull-bars, substantially as described.

5. The combination, with registering devices of a register, of a lengthwise-reciprocating pull-bar having slotted ends, and grooved carrying-wheels having the hubs between their flanges extending through the slots in the bar, substantially as described.

6. The combination, with the register-chains, of a lengthwise-reciprocating pull-bar having a slot at each end, grooved wheels having hubs respectively extending through the slots of the bar, and pawls for advancing the chains, substantially as described.

7. The combination, with the registering-chains, of a reciprocating pull-bar having a solid portion, 18, and a slot in each end, grooved wheels having the hubs between their flanges respectively extending through the slots, bearings for the wheels, a pawl-carrying bar secured to the solid part of the pull-bar, and the pawls on the said carrying-bar, substantially as described.

8. The combination, with the registering devices of a register, of a longitudinally-slotted pull-bar, carrying and guide wheels, each comprising two flanges embracing the bar and connected by a hub extending through the slot, bearings passing through the hubs, and pawls operated by the pull-bar, substantially as described.

9. The pull-bar 15 having a slot at each end, and grooved wheels 20 and 22, in combination with the tubes 23, 24, and 25, for supporting the grooved wheels, substantially as set forth.

10. The tubes 23, 24, and 25, in combination with the frame-plates 26, grooved wheels 20 and 22, and pull-bar 15, substantially as and for the purposes specified.

11. The combination, with the chains of a register, of the rock-shaft 51, having stop-fingers 50 and arms 55 and 57, the pull-bar 15, having a cam, 56, and the pull-bar 60, having a cam, 58, for releasing the stop-fingers by the movement of either bar, substantially as described.

12. The combination, with the trip-chains of a register, of the resetting-bar 60, having the lateral bar 69, provided with a handle, 70, the guide-plate 72, and the plate 71, journaled on the lateral bar, substantially as described.

13. The bar 60, having a slot at each end, and a groove, 63, in its side face, in combination with the grooved wheels having one flange of a diameter to fit within the groove

63, for guiding and supporting the pull-bar 60, substantially as and for the purpose specified.

14. The combination of the register-chains, the pawls, the pull-bar 60, having a slot at 5 each end, the grooved wheels carrying and guiding the bar, the tubes 68, and the tubes 25, substantially as described.

15. The tubes 23, 24, 25, and 68, in combination with the frame-pieces 26, pull-bars 15 and 10 60, and grooved guiding and carrying wheels for the pull-bars for securing the several parts together, substantially as described.

16. The combination, with the pull-bar and bell of a register, of a bell-hammer having an 15 engaging projection and a cam having steps coacting with the projection to prevent the return of the pull-bar until the limit of the pull is reached, substantially as described.

17. The bell-hammer 101, having a cam, 102, 20 and stepped cam 103, in combination with a bell, a pull-bar, 15, the stem 104, and spring 108, substantially as and for the purposes specified.

18. The combination, with the pull-bar of a 25 register and a bell, of a bell-hammer having an engaging projection, and a fixed stepped cam, 103, having engaging-notches *m*, coacting with the projection to prevent the return of the pull-bar in either direction until the 30 limit of the pull is reached, substantially as described.

19. The pull-bar 15, bushing 106, ring 107, spring 108, and pin 109, in combination with the stem 104, stepped cam 103, cam 102, bell- 35 hammer 101, and bell 99, substantially as and for the purposes specified.

20. The combination, with the bell and pull-bar of a register, of a swinging stem connected with the pull and having a hammer provided 40 with a projection, a stepped cam coacting with the projection, and a coiled spring connected at one end with the pull-bar and at the other end with the swinging stem to throw the hammer and sound the alarm and to restore the

hammer to its normal position after the alarm 45 has been sounded, substantially as described.

21. A fare-register consisting of a casing having edge notches, *o*, and containing numeral-bearing devices and means for operating the same to register the fares, and provided with 50 a frangible seal, 120, a sliding face-plate, 110, having spring-catches 112, a slotted slide-plate behind the seal for releasing the catches, and a set-screw, 118, to secure the sliding plate in a fixed position behind the seal and hold the 55 latter in place, substantially as described.

22. The combination, with the pull-bar 15 and a bell of a register, of a stem, 104, having a bell-hammer, 101, provided with a projection, 102, a stepped cam having notches *m*, a 60 lengthwise-sliding side pull-bar, 9, a connection, 11, between the two pull-bars, the pull-cord *r*, and the spring *b*, connecting the cord and side pull-bar to relieve strain when the bell-hammer engages the notches of the 65 stepped cam, substantially as described.

23. A fare-register comprising a casing having a notched edge, *o*, and a frangible seal, 120, and provided with numeral-bearing devices, means for operating the same to regis- 70 ter the fare, the sliding face-plate having spring-catches 112, the support 116 behind the seal, the slotted sliding plate 114, and the set-screw 118 in said support passing through the sliding plate and bearing upon the seal, 75 substantially as described.

24. The combination, with the casing and the registering-chains of a register, of an air-cushion cylinder secured on and carried by the casing, and a pull-bar carrying chain-actuat- 80 ing pawls and having a disk entering the cylinder to prevent a quick return of the pull-bar after its advance to move the chains, substantially as described.

JOHN W. MEAKER.

Witnesses:

ALBERT H. ADAMS,
HARRY T. JONES.