

923,287.

C. MESSICK.
PASSENGER RECORDER.
APPLICATION FILED AUG. 10, 1908.

Patented June 1, 1909.

6 SHEETS—SHEET 1.

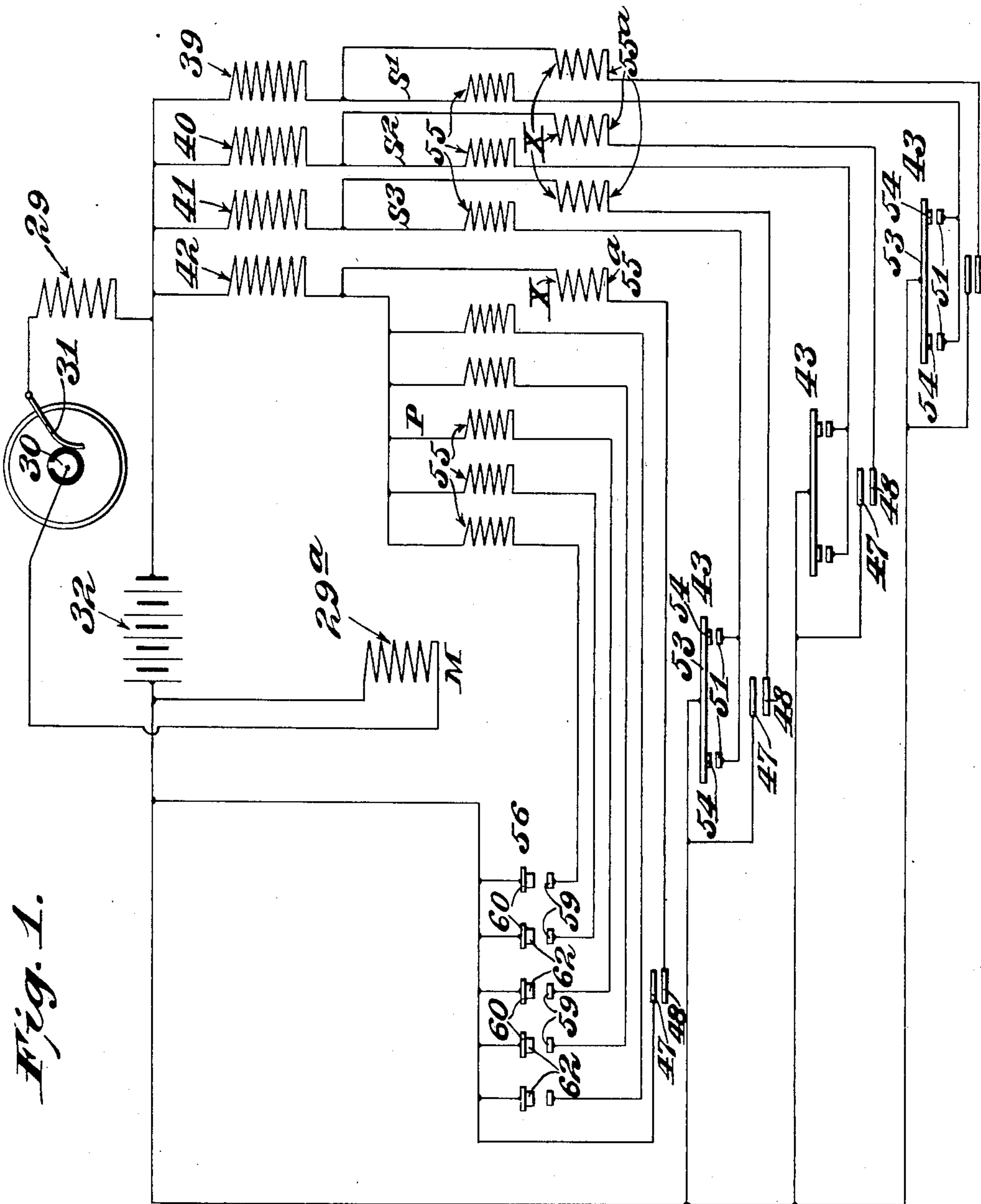


Fig. 1.

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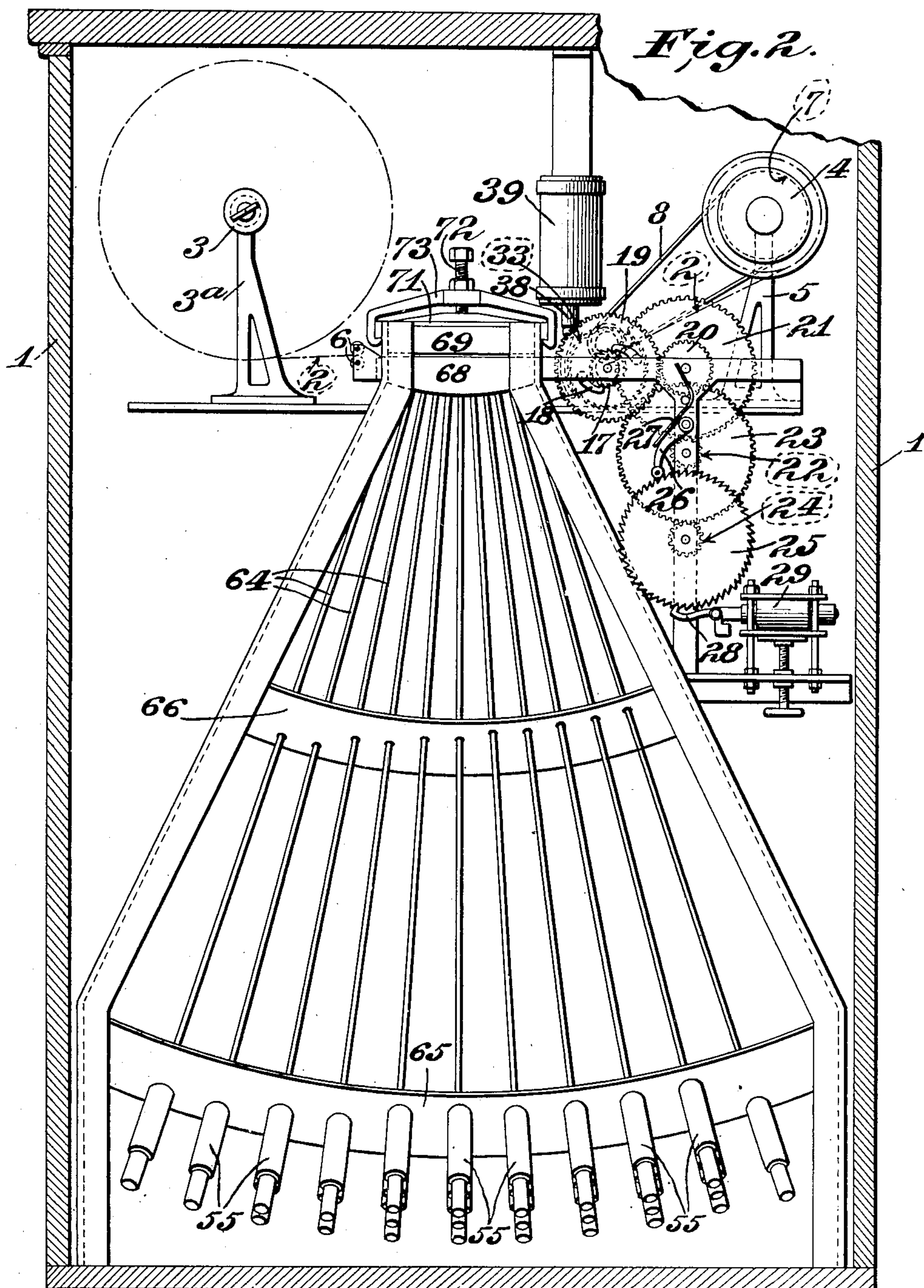
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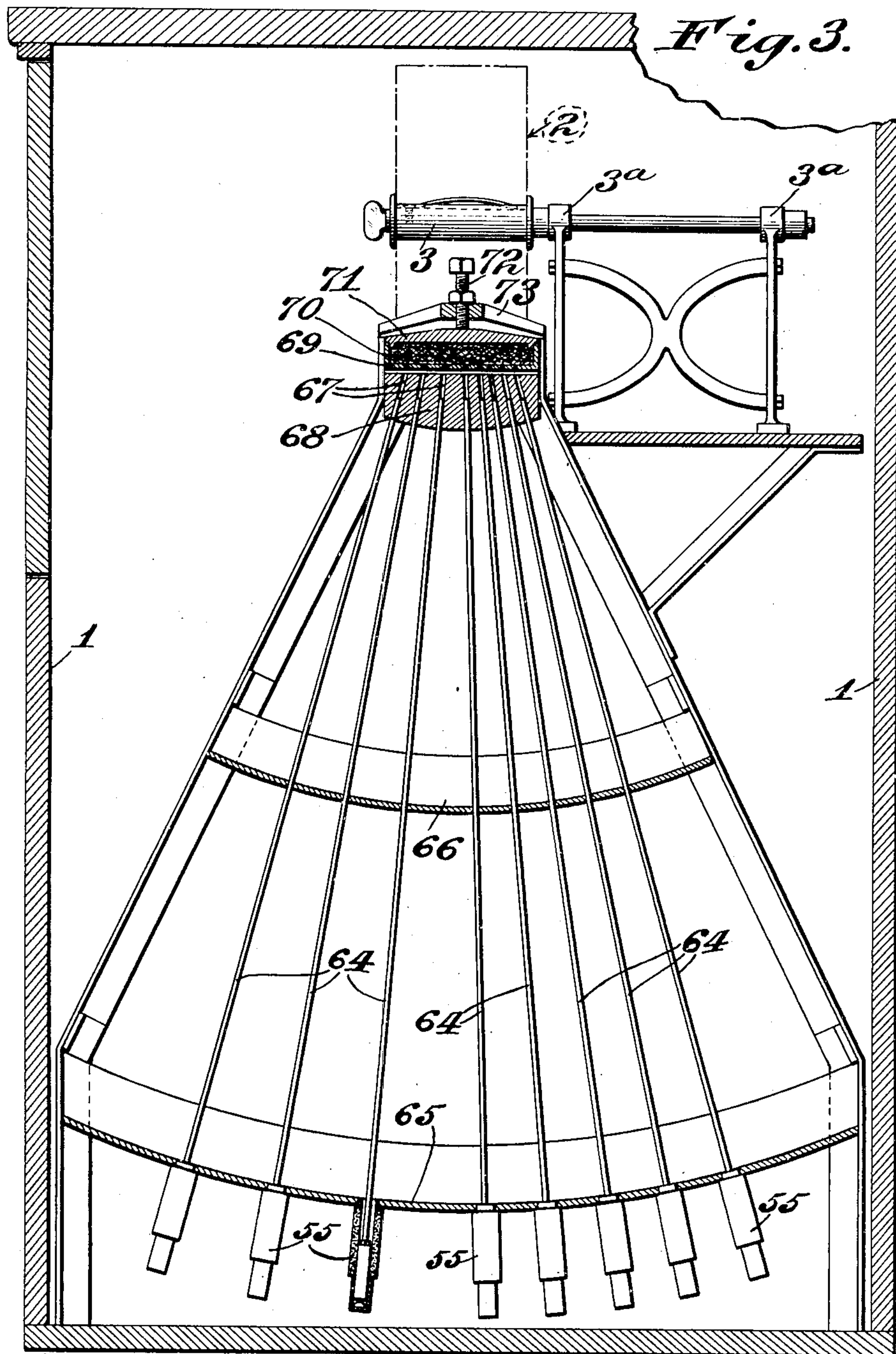
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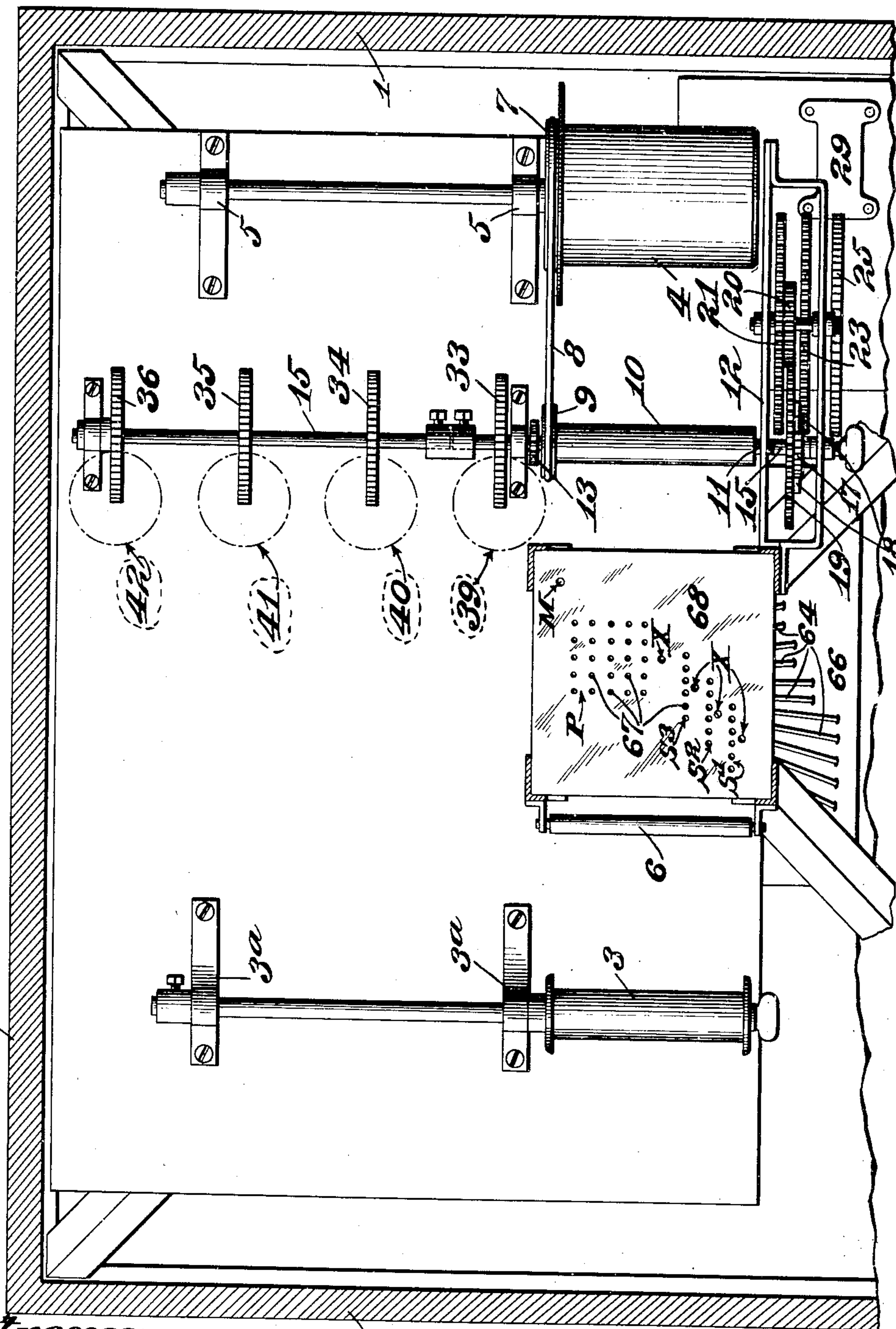
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6 SHEETS—SHEET 4.

Fig. 4.



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6 SHEETS—SHEET 5.

Fig. 5.

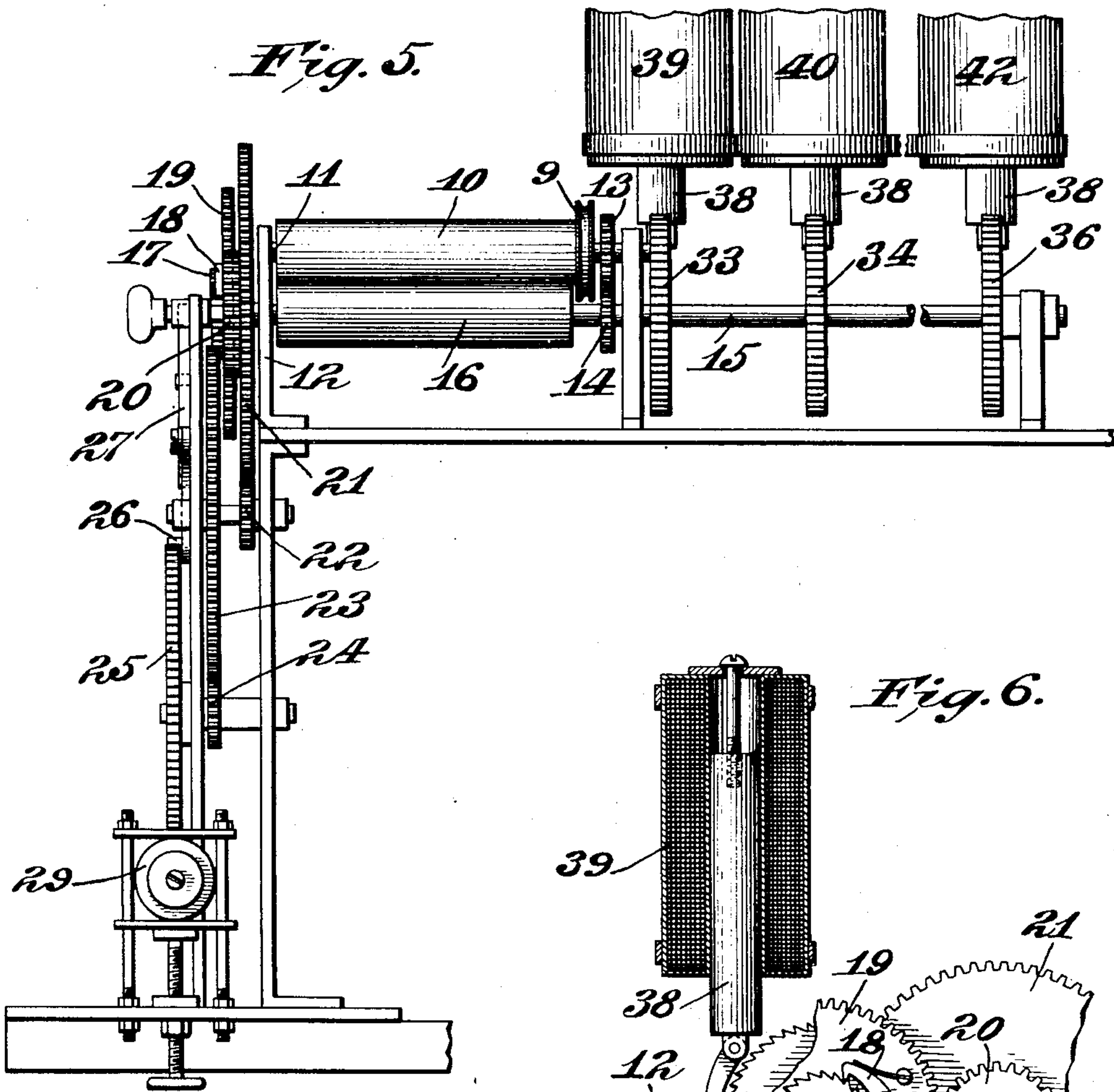


Fig. 6.

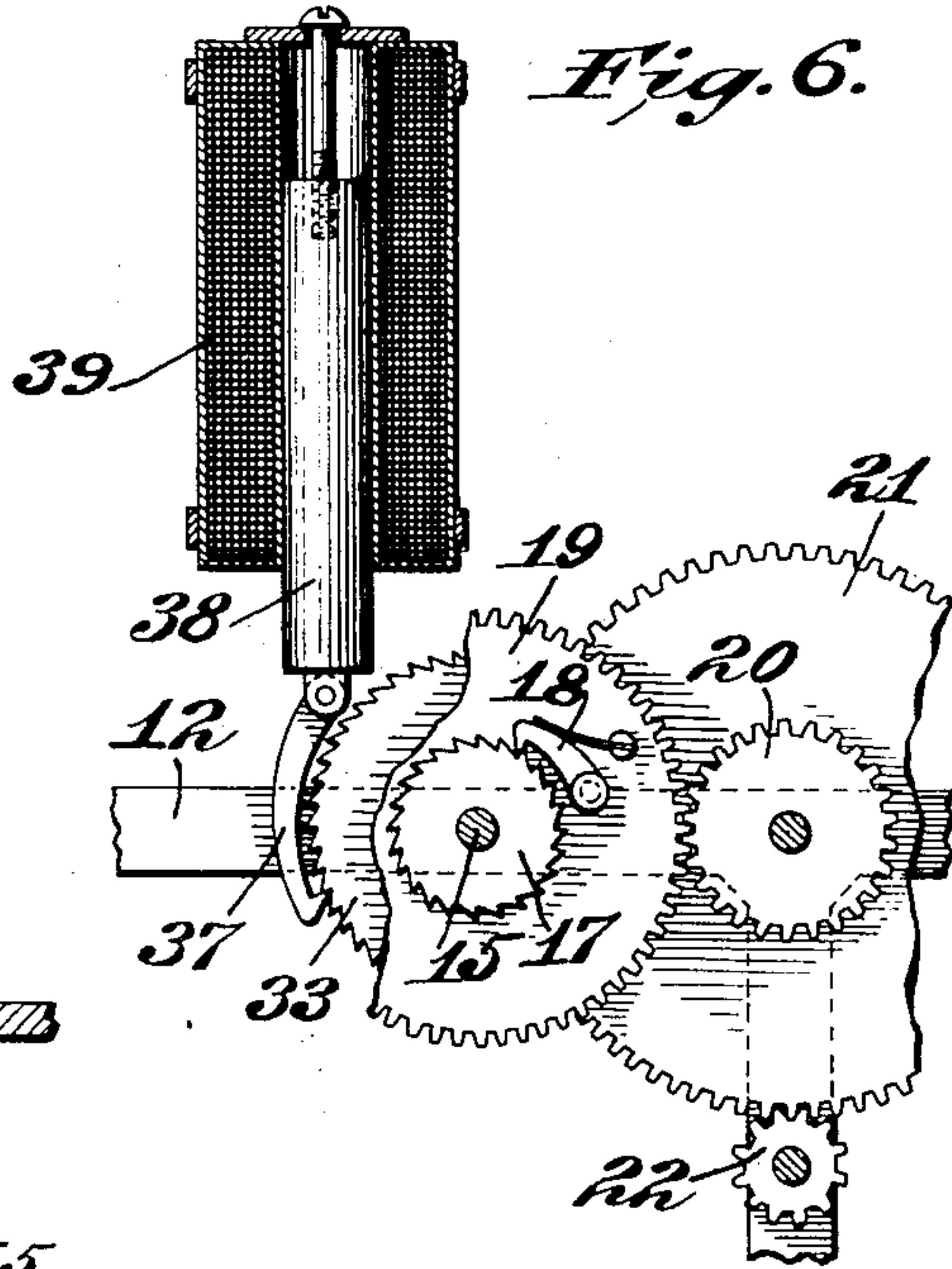
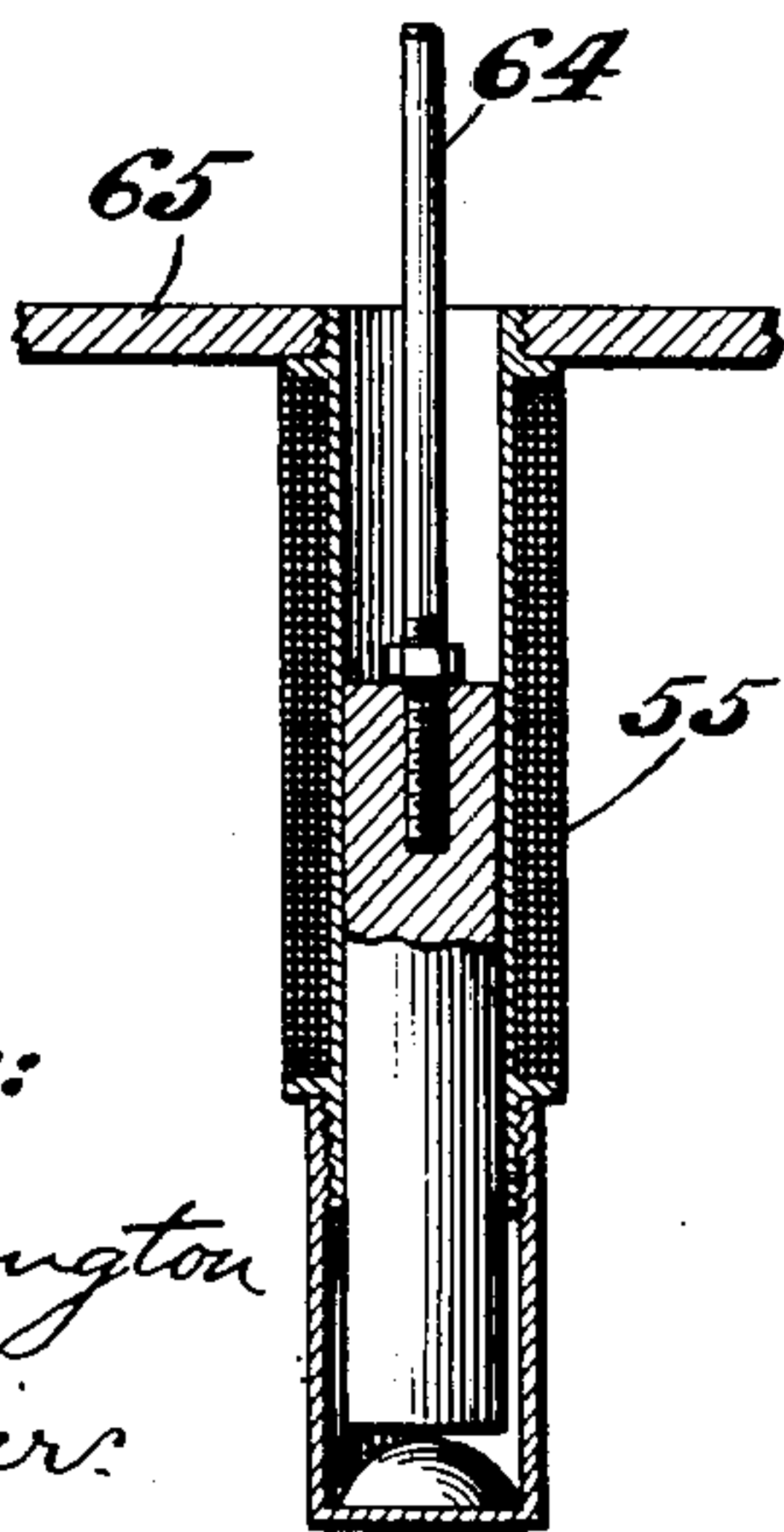


Fig. 7.



Witnesses:

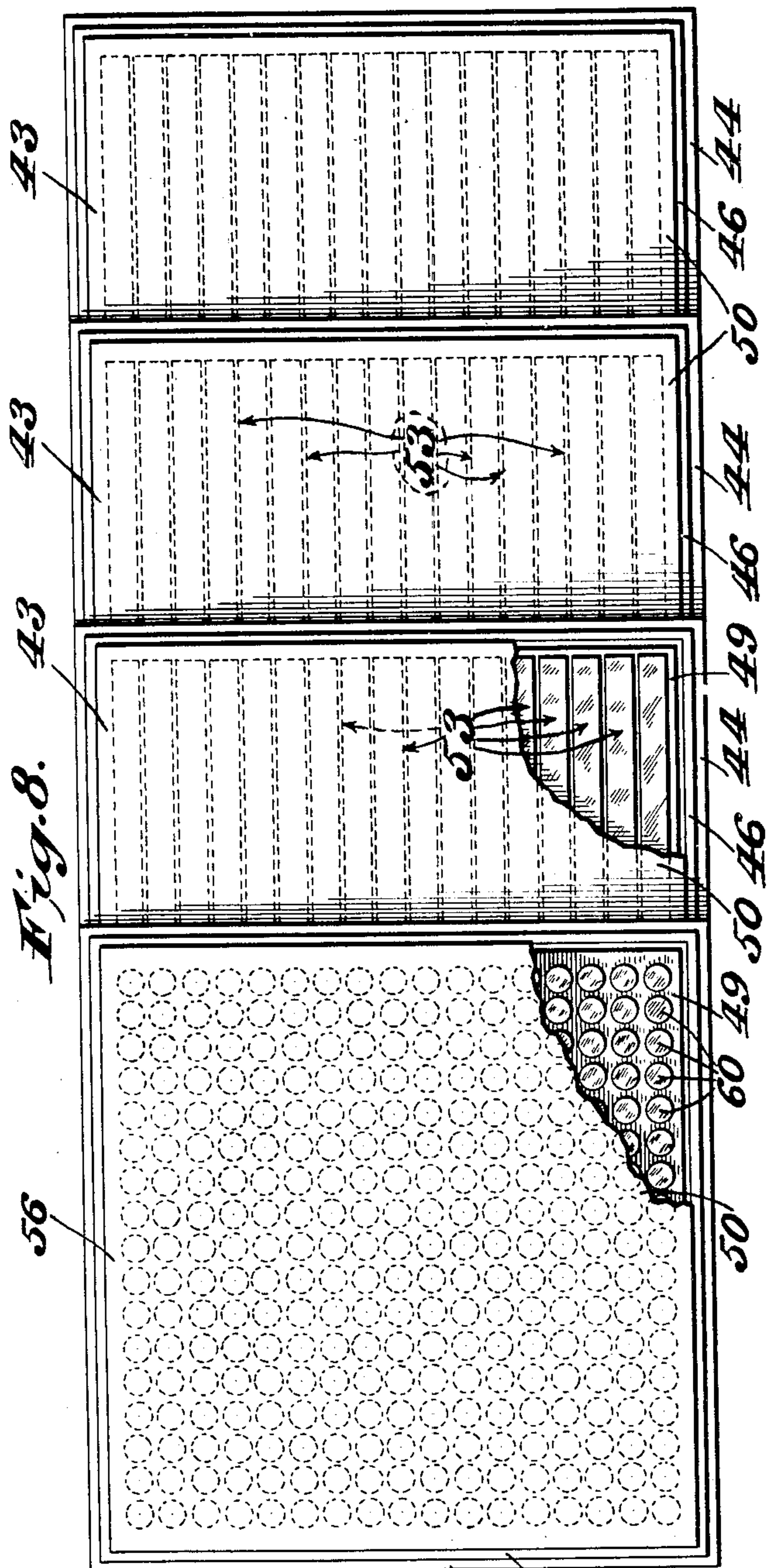
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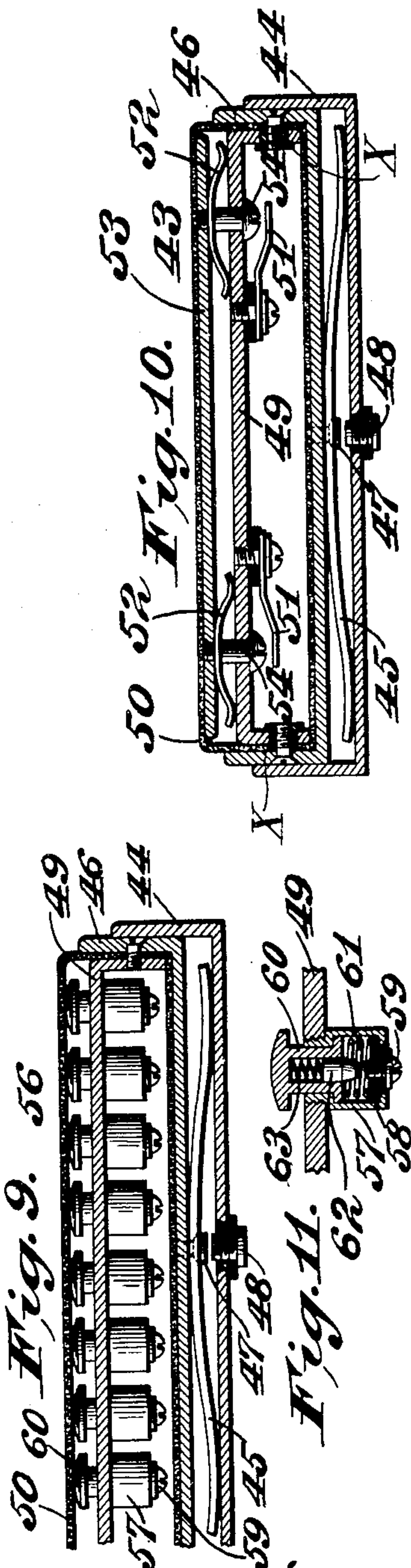
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

CHARLTON MESSICK, OF ST. LOUIS, MISSOURI.

PASSENGER-RECORDER.

No. 923,287.

Specification of Letters Patent.

Patented June 1, 1909.

Application filed August 10, 1908. Serial No. 447,711.

To all whom it may concern:

Be it known that I, CHARLTON MESSICK, a citizen of the United States, and a resident of the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Passenger-Recorders, of which the following is a specification.

My invention relates to passenger recorders and the like, and has for its principal object to automatically record the entrance and exit of all persons to and from a car or other place, and also to record the mileage traveled by such car and the mileage positions where such persons enter or leave it.

Another object is to automatically indicate whether the person is entering or leaving the car or other place.

The invention consists in electric circuit closers located in position to be operated by persons entering or leaving the car, said circuit closers being in circuit with electrically-operable devices arranged to mark upon a strip of paper whereon the mileage traveled by the car is also automatically recorded.

It also consists in means whereby the closing of the circuit of the passenger-actuated marking devices also closes the circuit of devices arranged to automatically feed the strip for each marking action independently of the train-operated strip-feeding mechanism.

It also consists in the arrangement whereby the strip-feeding devices are relieved from interference by the marking devices.

It also consists in the construction and arrangements of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a diagrammatic view of a system embodying my invention; Fig. 2 is a side elevation of the impression mechanism and of the record strip-feeding mechanism; Fig. 3 is a central vertical cross section of the impression mechanism; Fig. 4 is plan view of the strip-feeding mechanism with the strip-feeding solenoids indicated in dotted lines and showing the impression mechanism in horizontal section on a plane flush with the upper surface of its die plate; Fig. 5 is an enlarged detail view of portions of the strip-feeding mechanism; Fig. 6 is an enlarged detail view of one of the strip-feeding solenoids and of the train of gears connected thereto; Fig. 7 is a cross-sectional detail view of a

printing solenoid; Fig. 8 is a plan view of the platform and steps of a car equipped with my device; Fig. 9 is a cross-sectional detail of a portion of the car platform; Fig. 10 is a cross-sectional detail of a step; and, Fig. 11 is a cross-sectional detail of one of the platform circuit closers.

My recorder comprises two independent sets of marking devices and two independent mechanisms for feeding the record strip in operative relation to said marking devices. One of the strip-feeding mechanisms is arranged to feed the strip proportionately to the distance traveled by the car, and one of the marking devices is operatively connected to this feeding mechanism to record such distance on the strip. The other strip-feeding mechanism and the other marking devices are designed to be brought into action automatically by a person entering or leaving the car.

The marking devices and the strip-feeding devices are mounted in a cabinet 1 located in any suitable position in the car. The record strip 2 extends from a supply roll 3 mounted on suitable supports 3^a provided therefor, to a winding drum 4 journaled in brackets 5 provided therefor in the cabinet. The intermediate portion of said record strip extends across the marking devices, being guided in position by suitable guide rollers 6 provided for the purpose. The winding drum 4 is provided with a grooved pulley 7 on which is a belt 8 which extends over a grooved pulley 9 provided therefor on a roller 10 whose shaft 11 is journaled in the supporting frame 12. This last mentioned shaft 11 has a pinion 13 fixed thereto which meshes with a pinion 14 fixed on the shaft 15 of the second roller 16 which is the mate of the roller 10, the two rollers being arranged close enough together to frictionally feed the record strip between them. The shaft 15 of the roller 16 constitutes the main feed shaft, and the two feeding mechanisms are connected to said shaft to actuate the same independently. On one end of said main feed shaft 15 is fixed a ratchet wheel 17 which is arranged to cooperate with spring-actuated pawls 18 provided therefor on a gear wheel 19 which is loosely journaled on said shaft 15. This gear wheel is the last of a train of reducing gears 20, 21, 22, 23, 24, whose motion is effected from the rotation of the car wheel. The shaft of the first pinion 24 of this train has a ratchet wheel 25 fixed thereto, whose position is

steadied by a centering member 26 consisting of a round-headed pawl pressed against the periphery thereof by a spring 27 provided for the purpose. Coöperating with the teeth of the ratchet wheel and preferably on the lower side thereof is a counterweighted pawl 28 which is pivotally mounted on the end of the core of a solenoid or electromagnet 29. One terminal of the windings of this solenoid or electromagnet is electrically connected to a contact piece 30 that is movable with the car wheel or its axle, and the other terminal is electrically connected to the stationary contact piece 31 located in the path of said first mentioned piece so as to come in contact therewith for each revolution of the car wheel or axle (see Fig. 1). By this arrangement, the circuit of the solenoid 29 is closed through a battery 32 or other source of electrical energy once for every revolution of the car wheel, thereby energizing said solenoid and causing it to pull the ratchet wheel one tooth forward, where it is held by the steadying device above mentioned. The movement of the ratchet wheel 25 is transmitted through the train of reducing gears and the pawls 18 on the gear 19 to the ratchet wheel 17 on the main feed shaft. This main feed shaft is thus rotated at a very slow rate, which, however, is proportionate to the distance traveled by the car. Just prior to the actuation of the solenoid 29, a solenoid 29^a in the same circuit actuates a stylus which marks a dot or indicating line upon the record strip for each rotation of the car wheel. This stylus may be similar to those hereinafter described or it may be of any other desirable form and actuation. The other end of the main feed shaft has one or more ratchet wheels 33, 34, 35, 36, fixed thereon, each of which is adapted to be actuated by means of a pawl 37 pivotally mounted on the end of the core 38 of the solenoids 39, 40, 41, 42 (see Figs. 5 and 6). Each of said solenoids is in a normally open circuit containing a source of energy, and adapted to be closed by a circuit closer located at a suitable point in the gangway leading into the car. By this arrangement, the closing of the circuit of either solenoid causes it to retract its core and thereby, acting through its pawl and ratchet wheel, rotate the feed shaft. By this arrangement, the closing of the circuit of either of the solenoids causes the feed shaft to be rotated a single step; and as all of the connections to the feed shaft are made by pawl and ratchet, the operative relation of either connection does not interfere with and is not affected by the actuation of any other connection.

The circuit closers that control the passenger-actuated marking devices are located at any suitable point in the gangway leading to the car. In the case of a railway coach, it is preferable to locate these circuit closers on

the platform and on the steps leading thereto. In the construction illustrated in Figs. 8 and 10, each of the steps 43 is provided with a series of circuit closers extending the full length thereof. For this purpose, preferably, each of the steps has an oblong open top casing 44 fixed thereon. Slidably fitting in this casing or housing and supported in its uppermost position by suitable springs 45 is a frame 46 which has contact points 47 in its bottom arranged opposite and in position to coöperate with contact points 48 provided therefor in the bottom of the housing for purposes hereinafter appearing.

The outer member 46 of the movable frame is preferably a box-shaped member open at the top. Inside of said outer member is an inverted box-like member or plate 49 having downturned flanges which are insulated from the outer member by a sheet of rubber 50 or other suitable insulating device that completely covers or incloses said inner member. Mounted on the under side of said inner member but insulated therefrom are two rows of contact plates 51, one row being near the front and the other near the back of the step. Above said inner member and supported thereon by means of springs 52 are a series of strips 53 arranged transversely of the step. Each strip has two contact screws or pieces 54 extending from its under side through holes provided therefor in the inner member 49 of the frame in position to coöperate with the respective contact plates 51 mounted on the under side of said inner member. Each of said strips when depressed is thus adapted to make electrical connection with either the forward or the backward contact piece or with both simultaneously. The contact plates 51 are respectively electrically connected to printing solenoids 55, which solenoids are electrically connected to the insulated inner member 49 of the frame. In consequence of this arrangement, the circuit or circuits of one or more printing solenoids is closed whenever a person steps upon one or more of the strips mounted on the inner member of the circuit closer frame, and a record is thereby made on the record strip.

The springs 52 which support the plates 53 are light in comparison with the heavy springs 45 that support the movable member of the frame. In consequence of this arrangement, the springs 52 yield quickly under weight so as to allow the circuit of the printing solenoids to be closed through the contact screws 54 and the plates 51, whereas the stiffness of the spring 45 prevents the closing of the circuit through the contacts 47, 48, unless a weight in excess of a predetermined amount is placed upon this step.

On each of the steps, as above described, the circuit closers are arranged in two rows, one located near the front and one near the

back of the step, respectively, and actuated by means of short plates or strips extending transversely across the step. In the case of the platform 56, however, it is preferable to have it studded thickly and more numerously with the circuit closers, as illustrated in Figs. 8 and 9. A suitable type of circuit closer for the platform is illustrated in Fig. 11. As here illustrated, the inner member 49 of the frame is electrically connected to the circuits of the several printing solenoids 55 whose circuits are controlled by the circuit closers mounted on said member. The top of this inner member of the frame has numerous threaded holes therein, in which are screwed hollow shells 57. In the lower end of the shell is an insulating plug 58 in which is mounted a contact screw 59 which is electrically connected to one of the printing solenoids 55. Slidably mounted in the upper portion of said shell and projecting through the upper end thereof is a member 60 which is normally held in its uppermost position by means of a coil spring 61 provided therefor in the shell, in position to bear against the widened lower end of said member. Said upper member has a vertical bore or chamber in which is slidably mounted a plug 62 which is normally held in its lowermost position a short distance above the contact screw by means of a coil spring 63. This inner member extends upwardly and terminates in a headed or flange portion which overlaps the margin of the hole in the supporting plate. By this arrangement, the weight of a person on the platform depresses the upper or inner member of the circuit closer so as to force its plug 62 against its contact screw 59 and thereby complete the circuit of the printing solenoid; but said contact screw is relieved of the weight of the passenger by the spring 63 which yields and allows the head of the inner member to bear against the top supporting plate. This arrangement of closely arranged circuit closers or buttons may be applied to the steps if desired, in lieu of the contact devices hereinbefore described.

By reason of the small space occupied by a circuit closer, it is practicable to locate them so closely together that many of them will be covered and depressed by a passenger's foot. This fact is utilized in the recording mechanism by arranging the corresponding impression devices in the same pattern as the circuit closers of the platform, in consequence of which a print is made corresponding to the shape, size and location of the foot of the passenger. In order to accomplish this result, the several printing solenoids have their cores provided with axially extending styluses 64 which are directed to a common point; that is to say, the several solenoids are mounted on a spherical plate or base 65 and their several styluses are disposed radially with respect to the center thereof. Said sty-

luses extend through an intermediate guide plate 66 and their upper ends normally lie in guide holes 67 which extend through the die block or pattern block 68 of the impression mechanism. Above this die block or pattern block far enough to permit the record strip to pass between them, is a platen of any suitable type. As illustrated, for instance, it consists of a plate having a series of holes or depressions opposite the respective styluses 64. As illustrated, these holes extend entirely through the platen. By this arrangement, the edges of the holes pierced in or impressions made by the stylus or styluses upon the strip will be inked from an absorbent pad 70 placed on top of said perforated platen 69. The inking pad receptacle is provided with a top or cover 71 and may be held in place by any suitable device, as for instance, by means of a screw 72 extending vertically down through a threaded hole provided therefor in the yoke 73 of the frame. The printing solenoids may be held in place by any suitable means. As illustrated, in Fig. 7, the upper end of the solenoid is reduced and screw threaded to fit into a threaded hole provided therefor in the spherical supporting plate 65.

All of the printing solenoids are preferably of a quick acting type and are so designed that the initial movement of the core will carry it some distance beyond the position in which it will finally come to rest when the solenoid is energized. By reason of the character of the printing solenoid, its stylus is carried upwardly against the record strip by the momentum of the core, and the stylus is immediately disengaged and pulled away from the record strip by the force of the solenoid aided by gravity. By reason of this fact, the marking devices do not interfere with the feeding of the record strip. As the several printing solenoids are independent or separate from each other, any number of them may operate simultaneously, and thereby reproduce on the record strip the pattern of the foot resting on the platform, as above set forth.

In order to indicate whether a passenger is entering or leaving a car, the following arrangement is adopted. The stylus guiding holes of the die block or pattern block are divided into separate groups S^1 , S^2 , S^3 , and P , corresponding to the respective groups of circuit closers on the steps and on the platform. The guide holes of each group have the same arrangement or pattern as the circuit closers to which they correspond. Instead, however, of the several patterns in the die block conforming to the relation of the several groups of circuit closers, each pattern or group is displaced longitudinally with respect to the others. That is, the pattern corresponding to the circuit closers of the top step S^3 of the car is alongside of but displaced placed rearwardly with respect to the pattern

or group P corresponding to the platform of the car, the direction toward which the record strip feeds being regarded as forward. In like manner, the pattern S^2 corresponding to the second step is along side of but displaced rearwardly with respect to the pattern S^1 of the top step; and the pattern S^3 corresponding to the lowermost step is displaced rearwardly with respect to the pattern S^2 corresponding to the middle step. The amount of displacement of one pattern with respect to the next adjacent pattern is preferably equal to a single feed movement of the record strip. Consequently, when a passenger is entering a car, he first sets his foot on the lowermost step, whereupon an impression is made on the record strip by some of the styluses in the pattern S^1 , and the strip is immediately fed forward. This impression, as well as all other impressions brought about by the circuit closers of the first step, are made in longitudinal alignment near the right hand margin of the record strip. Then he places his foot on the middle step, whereupon the styluses of the second group or pattern S^2 are actuated to make an impression on the record strip somewhat farther from the right hand margin than those corresponding to the first step, and the strip is again fed forward. The same action is repeated with respect to the top step and again with respect to the platform. It is noted that the impressions corresponding to the respective patterns are arranged in parallel lines extending longitudinally of the record strip. Therefore, a person entering or leaving the car will cause an impression to be made in each of such parallel lines consecutively. As the pattern of each step is displaced rearwardly to the pattern of the next adjacent step above and the strip is fed forward to a space substantially equal to the displacement of such pattern for each impression, the several impressions made by a person entering a car will be in a substantially straight line extending transversely of the record strip.

On the other hand, it is noted that when a person is leaving a car, the first impression on the record strip corresponds to his stepping on the platform, then the strip is fed forward, and then a second impression corresponding to the topmost step is made on the record strip but displaced rearwardly by reason of the peculiar arrangement of the patterns. Thus, whereas the impressions corresponding to a person entering a car are substantially in a straight line arranged transversely of the strip, the impressions caused by a person leaving the car are displaced longitudinally by an amount substantially double the displacement of the respective patterns in the die plate. The record strip thus distinguishes between the entering and departure of passengers.

Normally, a person going up the steps, in stepping upon the platform will set the ball of his foot flatwise thereon first and let the toe of the foot come down later, as by a rocking movement, when he steps forward with the other foot. By reason of this fact, the impression of the foot on the record strip is made with two impressions instead of one, and the feeding movement of the strip is effected between the two impressions. Consequently, the two portions of the impression are displaced with reference to each other. When the passenger is walking in the opposite direction, the impression due to the heel and ball of the foot is fed away from the point where the toe portion of the imprint is to be made. Thus, the direction in which the passenger is moving is also indicated by the relative location and character of the imprints due to the heel and ball and to the toe of the foot respectively.

It is noted that the circuit closers that control the feed movement of the platform remain closed so long as the weight of the passenger remains on the platform, and consequently, the strip feeding solenoid controlled by the platform circuit closers will remain irresponsive until the passenger leaves the platform. Therefore, each imprint after the first will show the heel, ball and toe patterns in their true relation and thus again indicate the direction in which the passenger is moving.

Obviously, as the device for marking the distance traveled by the car is entirely independent of the devices for marking the movements of the passengers, it is a simple matter to determine the station at which the passenger entered or left the car. So, too, the fact that a passenger remains on the platform or elsewhere in the gangway, does not render the device inoperative. For instance, if a person remains on the platform while passengers are entering or leaving the car, this fact will not interfere with the action of any of the printing solenoids because such solenoids are in separate circuits. Nor will the fact of such person remaining on the platform prevent the feeding of the record strip as the stylus which is brought into operation by the movement of the platform drops below the record strip immediately after impacting against it, so as to lie clear of the record strip until its circuit is broken and again closed. On account of the cores of all of the strip feeding solenoids having a pawl and ratchet connection with the feeding shaft, each is capable of acting independently of the others; and, consequently, the mileage feed mechanism is free to act without regard to the condition of the circuits in the gangway. So, too, the strip feeding solenoids connected to the steps are free to act, although the particular strip feeding solenoid that is in circuit with the platform

remains inoperative as long as the passenger remains on the platform. The presence of such passenger on the platform is itself indicated by the failure of the next passenger thereon to effect such feed movement, which fact is indicated by the undistorted imprint of his foot.

As above stated the circuit closers as grouped on the platform may also be applied to the steps, in which case an imprint or partial imprint of the foot will be reproduced on each or all of the steps, each step indicating of itself the direction in which the passenger is moving, in a manner similar to that described with reference to the platform. Thus, although the passenger may touch but one or two steps and the platform, or but one or two steps and not the platform in passing thereover, the direction in which he is moving may still be readily determined.

It is noted that circuit closers controlled by the foot of the passenger on the platform or steps remain closed so long as the weight of the passenger remains on the platform or step. Consequently the strip feeding solenoids, controlled by the platform circuit closers or step circuit closers, as the case may be, will remain irresponsive until the before mentioned passenger leaves the platform or step. Where a passenger remains on the platform and an additional passenger passes over the same, the imprint made by such additional passenger will show the heel, ball and toe patterns, or such portions of the foot as may close the circuits, in their true relation, thus indicating the direction in which such additional passenger is moving, and it is obvious that the first passenger remaining in a stationary position on the platform or steps will not interfere with additional passengers making a sufficient record. It is further obvious that the additional records may be readily distinguished from those of the first passenger by reason of the fact that while such first passenger, by moving about, may close additional circuits and thereby make additional impressions, the additional imprints on the record strip will be in such relation to his original imprint as to indicate conclusively that they were made by one and the same person. This is by reason of the fact that when one foot is made to operate certain circuit closers said circuit closers cannot be again operated until the first foot is removed therefrom, thus insuring separate and distinct impressions for each foot.

If desired, the mechanism may be provided with means for detecting efforts to falsify the record by having one person carry another through the gangway or otherwise making one record for more than one passenger. For this purpose, the platform may be supported upon springs 45 stiff enough to support a weight of 300 pounds, for instance, but arranged to yield and close against the spe-

cial contact 48 when the weight thereon is in excess thereof. A special printing solenoid 55^a is in circuit with such contact and arranged to make a record thereof upon the record strip adjacent to the respective step patterns or the platform patterns, as the case may be, and in which case the train conductor will be called upon to explain the unusual record. The styluses for these excess weight records are indicated at X in the pattern block or die block. The mileage marking stylus is indicated at M on the pattern block. However, these additional styluses may be otherwise located with relation to the step and platform patterns if desired.

Obviously, my device can be used for automatically recording the entrance and exit of persons to and from places of all kinds; in fact, it may be used for general purposes wherever it is desired to record the passage of a person over a gangway, or for even more general purposes. The mileage marking mechanism or the strip feeding mechanism therefor, or both, may be entirely omitted, or replaced with a mechanism of a different type. In fact, the record strips may have the mileage graduations printed thereon, corresponding to the mileage feeding movement; in which case, the deduction must be made from the record strip on account of the feed due to the movement of the passenger actuated devices.

Obviously, the gangway may be made tortuous if desired, and the respective groups of circuit closers or controlling devices may be so arranged therein that a person in passing therethrough will be compelled to pass over all of said groups successively without missing any group or groups.

What I claim is:

1. The combination of a gangway and a recorder, said recorder comprising means for feeding a strip and a multiplicity of marking devices for marking said strip, and a multiplicity of devices for controlling said marking devices, said controlling devices being located on the gangway so close together that a plurality of them may be covered by a passenger's foot and the marking devices being arranged in a pattern conforming to the arrangement of the controlling devices.

2. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon located so close together that several of them may be covered by a person's foot, electrically actuated marking devices in circuit with said circuit closers respectively, said circuit closers and said marking devices being arranged to conform to the same pattern, and means for feeding a recording strip in operative relation to said marking devices.

3. An admission recorder comprising a gangway, a multiplicity of independent circuit closers on said gangway, electrically actuated marking devices in circuit with the

respective circuit closers, and a plurality of means for feeding a record strip past said marking devices in operative relation thereto, said means comprising mechanism for feeding said strip independently of said circuit closers and mechanism controlled by said circuit closers for feeding said strip.

4. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, marking devices controlled by said circuit closers, and means for feeding a record strip in operative relation to said marking devices, said means comprising mechanically actuated devices for feeding said strip, and independent devices controlled by said circuit closers for feeding the strip independently of said mechanically actuated devices.

5. The combination with a car, of an admission recorder thereon comprising a multiplicity of independent circuit closers in a gangway of said car, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a record strip past said marking devices in operative relation thereto, said means comprising mechanism for feeding said strip proportionately to the distance traveled by said car, and independent mechanism controlled by said circuit closers for feeding said strip one step for each actuation of said marking devices, and means controlled by said proportional feed mechanism for recording on said strip the distance traveled by said car.

6. The combination with a car, of a multiplicity of circuit closers in the gangway thereof, means for feeding a record strip, two sets of marking devices in operative relation to said strip, said means comprising devices operatively connected to the car wheels for feeding said strip proportionately to the distance traveled by the car and operatively connected to one set of marking devices to record such distance on said strip, and independent devices controlled by said circuit closers for feeding the strip a step for each actuation of the second set of marking devices, said second set of marking devices being controlled by said circuit closers.

7. An admission recorder comprising a gangway, groups of circuit closers therein adapted to be actuated by the weight of a person passing over said gangway, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a record strip in operative relation to said marking devices, the several groups of marking devices being arranged in a row inclining across the strip whereby a record is made of the direction in which such person moved.

8. An admission recorder comprising a gangway, groups of circuit closers therein, electrically actuated impression devices in circuit with said circuit closers, and means for feeding a record strip in operative relation

to said impression devices, said impression devices being arranged in patterns conforming to the arrangement of the respective groups of circuit closers, but each pattern being displaced longitudinally with respect to the next adjacent pattern.

9. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, electrically actuated marking devices in circuit with the respective circuit closers and means for feeding a record strip in operative relation to said marking devices, said marking devices comprising a perforated pattern block and solenoids whose cores are provided with styluses adapted to pass through said perforations, the pattern block being made to conform to the arrangement of said circuit closers.

10. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a recording strip in operative relation to said marking devices, said marking devices comprising a frame, solenoids arranged conically thereon, styluses on the cores of said solenoids, and a platen opposite said styluses.

11. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a recording strip in operative relation to said marking devices, said marking devices comprising a frame, solenoids arranged conically therein, styluses on the cores of said solenoids, and a perforated block for said styluses.

12. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a recording strip in operative relation to said marking devices, said marking devices comprising a frame, solenoids arranged conically therein, styluses on the cores of said solenoids, a perforated block for said styluses, and a platen opposite said styluses.

13. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a recording strip in operative relation to said marking devices, said marking devices comprising a frame, solenoids arranged conically therein, styluses on the cores of said solenoids, a perforated guide block for said styluses, and a plate above said guide block and having perforations in register with said perforations in the guide block, and an inking pad on said plate.

14. An admission recorder comprising a gangway, a multiplicity of circuit closers

thereon arranged in separate groups, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a record strip in operative relation to said marking devices, said marking devices comprising a block having perforations grouped into patterns conforming to the patterns of the respective groups of circuit closers.

15. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon arranged in separate groups, electrically actuated marking devices in circuit with the respective circuit closers, and means for feeding a record strip in operative relation to said marking devices, said marking devices comprising a block having perforations grouped into patterns conforming to the patterns of the respective groups of circuit closers, and each pattern, successively, being displaced with respect to the next adjacent pattern, substantially as described.

16. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, marking devices controlled by said circuit closers, and means for feeding a record strip in operative relation to said marking devices, said means comprising a winding drum, an actuating shaft operatively connected to said drum, a plurality of ratchet wheels fixed on said shaft, pawls in operative relation to the respective ratchet wheels, and means for actuating the respective pawls independently.

17. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, marking devices controlled by said circuit closers, and means for feeding a record strip in operative relation to said marking devices, said means comprising a winding drum, an actuating shaft operatively connected to said drum, a plurality of ratchet wheels fixed on said shaft, pawls in operative relation to the respective ratchet wheels, and means for actuating the respective pawls independently, one of said pawl-actuating means being operatively connected to the car wheel to be controlled thereby, and the other pawl-actuating means being controlled by said circuit closers.

18. An admission recorder comprising a gangway, a multiplicity of circuit closers thereon, marking devices controlled by said circuit closers, and means for feeding a record strip in operative relation to said marking devices, said means comprising a winding drum, an actuating shaft operatively connected to said drum, a plurality of ratchet wheels fixed on said shaft, pawls in operative relation to the respective ratchet wheels, and means for actuating the respective pawls independently, one of said pawl-actuating means comprising a solenoid whose circuit is controlled by said circuit closers, and one of said pawls being mounted

upon a gear wheel loosely journaled on said shaft, said gear wheel being the last of a train of gears whose motion is controlled by the car wheel.

19. A recorder comprising a gangway, a multiplicity of independent circuit closers in said gangway, electrically actuated marking devices in circuit with said respective circuit closers, electrically actuated means for feeding a record strip past said marking devices in operative relation thereto, and a circuit closer for controlling said last mentioned means, said last mentioned circuit closer being arranged to be closed when either of said first mentioned circuit closers is depressed.

20. A recorder comprising a gangway, a multiplicity of independent circuit closers in said gangway whose upper members are lightly resiliently supported, a stiffly resiliently mounted support for said circuit closers, electrically actuated marking devices in circuit with the respective circuit closers, electrically actuated means for feeding a record strip past said marking devices in operative relation thereto, and a circuit closer for controlling said last mentioned means, said last mentioned circuit closer comprising a member mounted on said support, whereby the closing of the marking circuit precedes the closing of the strip feeding circuit.

21. A recorder comprising a gangway, mechanism for feeding a record strip, mechanism for marking on said strip, and a multiplicity of devices in said gangway for controlling said marking and said strip-feeding mechanisms and adapted to be actuated by the weight of a person passing over said gangway, and said marking device being arranged to record the presence of an additional person on said gangway before the preceding person has moved therefrom.

22. A recorder comprising a gangway, mechanism for feeding a record strip, mechanism for marking on said strip, and a multiplicity of devices in said gangway for controlling said marking and said strip-feeding mechanisms, said controlling devices being arranged in groups and adapted to be actuated successively by the weight of a person passing over said gangway and said marking mechanism being arranged to mark separate patterns on the record strip corresponding to the patterns of the respective groups of controlling devices.

23. A recorder comprising a gangway, mechanism for feeding a record strip, mechanism for marking on said strip, and a multiplicity of devices in said gangway for controlling said marking and said strip-feeding mechanisms, said controlling devices being arranged in groups wherein the individual devices are so close that several of them may be covered by a person's foot, whereby a

plurality of controlling devices in each group are actuated successively by the weight of a person passing over said gangway and said marking mechanism being arranged to mark
 5 separate patterns on the record strip corresponding to the patterns of the respective groups of controlling devices, and said controlling devices and said marking mechanism being also arranged to record on the record
 10 strip the presence of an additional person on any group of the controlling devices before the preceding person has moved therefrom.

24. A recorder comprising a gangway, a multiplicity of controlling devices in said
 15 gangway, said controlling devices being closely grouped and operatively associated with mechanism for feeding a record strip and also with mechanism for marking on said strip, the pattern arrangement of said
 20 controlling devices corresponding to the pattern arrangement of the marking mechanism, whereby the pattern or shape of any object pressed upon said controlling devices will be reproduced on said record strip, substantially as and for the purpose set forth.

25. A recorder comprising a gangway, a multiplicity of controlling devices in said
 gangway, said controlling devices being closely grouped and adapted to control
 30 mechanism for feeding a record strip and also control mechanism for marking on said strip, said marking mechanism having marking devices arranged in a pattern corresponding to the pattern of said controlling devices,
 35 whereby, the foot of a person passing over said gangway will be pressed upon said controlling devices and the imprint thereof will be reproduced on said record strip, substantially as and for the purpose set forth.

26. A recorder comprising a gangway, mechanism for feeding a record strip, mechanism for marking on said strip, and controlling devices for said mechanisms arranged in said gangway to be actuated by a
 45 person passing thereover, said marking mechanism being adapted to mark on said record strip the character of the impression made upon said controlling devices to indicate the direction in which said person is
 50 moving on said gangway.

27. A recorder comprising a gangway, mechanism for feeding a record strip, mechanism for marking on said strip, and controlling devices for said mechanisms arranged in said gangway to be actuated by a
 55 person passing thereover, said marking mechanism being adapted to mark on said record strip the character of the impressions made upon said controlling devices, and said
 60 strip-feeding mechanism being arranged to space the marking on said record strip so that the direction said person is moving on said gangway will be indicated by the relative position of two or more of such markings.
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28. A recorder comprising a gangway, mechanism for feeding a record strip, mechanism for marking on said strip, and controlling devices for said mechanisms arranged in said gangway to be actuated by a
 70 person passing thereover, said marking mechanism being adapted to mark on said record strip the character of the impressions made upon said controlling devices, and said strip-feeding mechanism being arranged to
 75 space the markings on said record strip so that the direction said person is moving on said gangway will be indicated by the relative, shape, size and position of two or more of such markings.

29. A recorder comprising mechanism for feeding a record strip, mechanism for marking on said strip, a multiplicity of controlling devices for said mechanisms, said controlling devices being arranged in groups in a restricted
 80 passageway which is arranged to guide a person over said groups of controlling devices successively, the controlling devices of each group being so close that several of them may be covered by a person's foot, said marking
 85 mechanism being adapted to mark on said record strip the character of the impression made upon said controlling devices by a person passing thereover, to indicate the direction in which said person is moving through
 90 said passageway.

30. A recorder comprising mechanism for feeding a record strip, mechanism for marking on said strip, a multiplicity of controlling devices for said mechanisms, said controlling
 100 devices being arranged in groups in a restricted passageway which is arranged to guide a person over said groups of controlling devices successively, said marking mechanism being arranged to mark separately on said record
 105 strip the character of the impression made upon each individual group of controlling devices by a person passing thereover.

31. A recorder comprising mechanism for feeding a record strip, mechanism for marking on said strip, a multiplicity of controlling devices for said mechanisms, said controlling devices being arranged in groups in a restricted
 110 passageway which is arranged to guide a person over said groups of controlling devices successively; said marking mechanism being arranged to mark separately on said record strip the character of the impression made upon each individual group of controlling devices by a person passing there-
 115 over, and said marking mechanism being also arranged and adapted in conjunction with said strip-feeding mechanism to space the marking on said record strip; whereby, the direction in which said person is moving
 120 through said restricted passageway is indicated by the relative shape, size and positions of such markings.

32. A recorder comprising mechanism for feeding a record strip, mechanism for mark-
 130

ing on said strip, and a multiplicity of controlling devices arranged in groups in a restricted passageway which is arranged to guide a person over said groups of controlling devices successively, the controlling devices of each group being so close that several of them may be covered by a person's foot said marking mechanism being arranged and adapted to mark separately on said record strip the character of the impression made upon each group of controlling devices by a person passing thereover and said marking mechanism being effective to simultaneously record the simultaneous passage of more than one person through said passageway.

33. A recorder comprising mechanism for feeding a record strip, mechanism for marking on said strip, and a multiplicity of controlling devices for said mechanisms arranged in groups in a restricted passageway which is arranged to guide a person over said groups of controlling devices successively, the controlling devices of each group being so close that several of them may be covered by a person's foot said marking mechanism being arranged and adapted to record on said record strip the presence of more than one person on any group at the same time.

34. A recorder comprising mechanism for feeding a record strip, mechanism for marking on said strip, and a multiplicity of controlling devices for said mechanisms arranged in groups in a restricted passageway, said marking mechanism being arranged and adapted to mark separately on said record strip the character of the impression made upon any of said groups of controlling de-

vices to indicate the direction a person is moving through said restricted passageway irrespective of any particular group of controlling devices.

35. A recorder comprising mechanism for feeding a record strip, mechanism for marking on said strip, and a multiplicity of controlling devices arranged in groups in a restricted passageway and adapted to actuate said mechanisms by a person passing thereover, said restricted passageway being arranged to compel said person to pass over all of said groups successively.

36. A recorder comprising a restricted passageway, mechanism for feeding a record strip, mechanism for marking on said strip, and a multiplicity of controlling devices for said mechanisms arranged in groups in said restricted passageway and adapted to be actuated by the weight of a person thereon, said marking mechanism being arranged and adapted to mark on said record strip the character of the impression made upon any group of controlling devices, and said marking mechanism being also arranged and adapted to mark on said record strip an additional record when a weight in excess of a predetermined amount is placed upon any of said controlling devices.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses this 5th day of August, 1908.

CHARLTON MESSICK.

Witnesses:

G. A. PENNINGTON,
EDGAR T. FARMER.