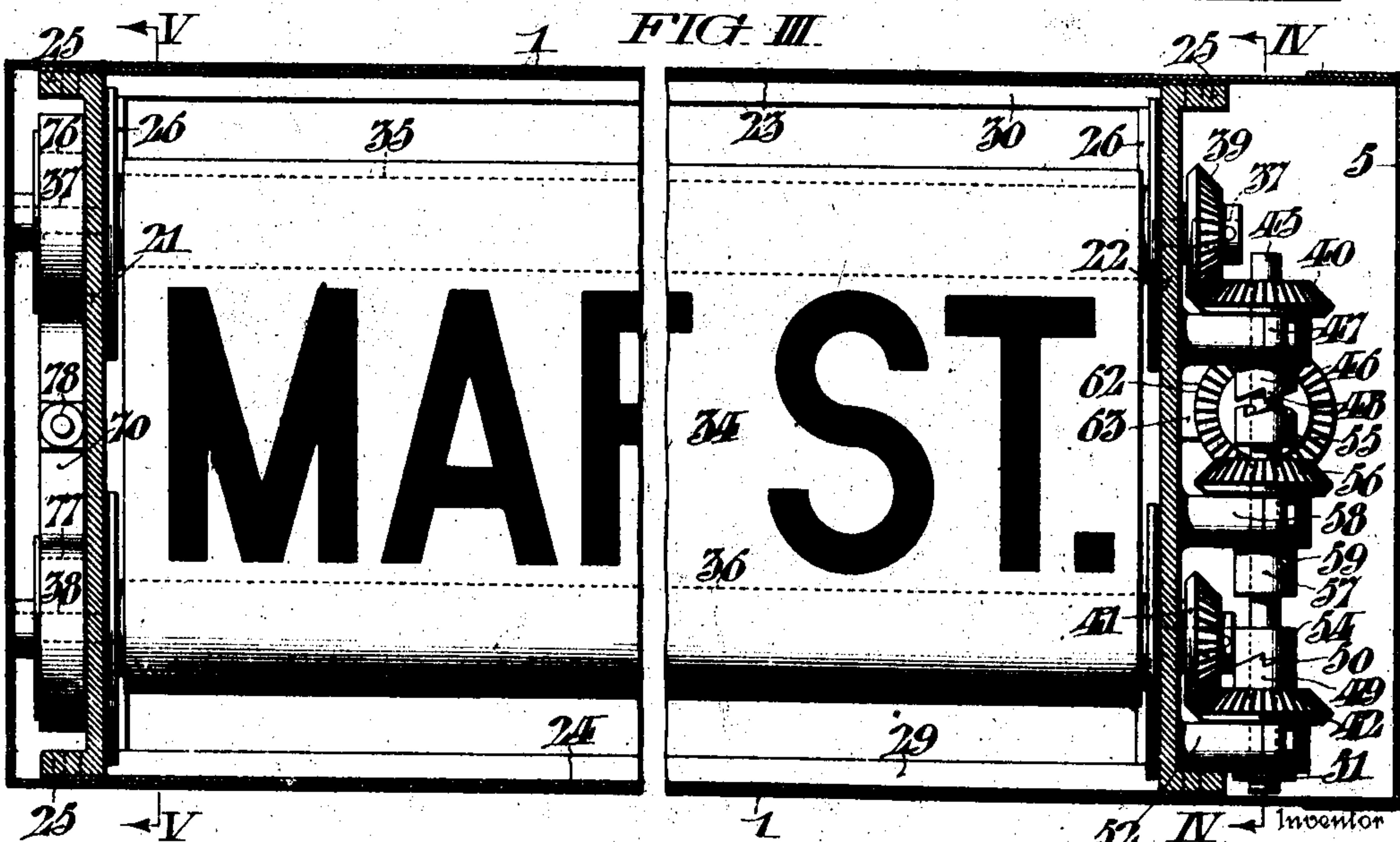
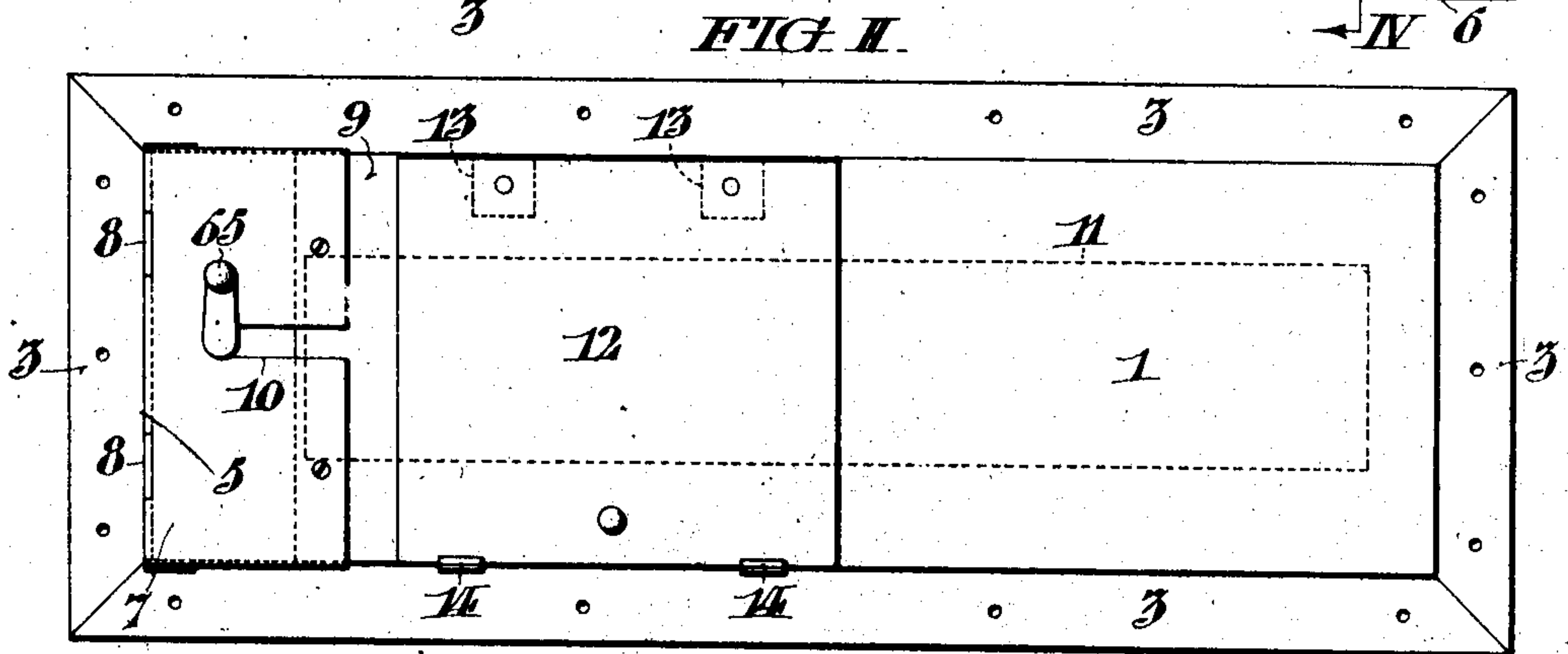
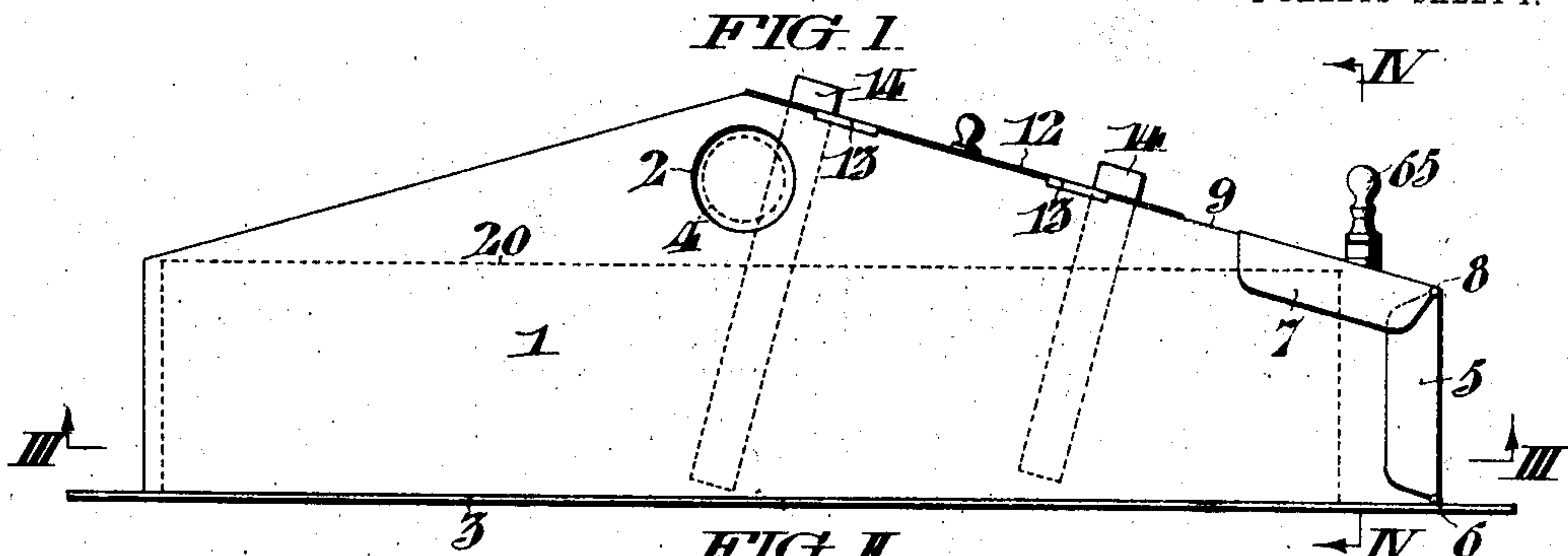


F. P. MAIZE.
SIGN FOR RAILWAY CARS, &c.
APPLICATION FILED MAR. 22, 1910.

991,521.

Patented May 9, 1911

2 SHEETS—SHEET 1.



Witnesses
John C. Berger.
James H. Bell.

Frank P. Maize,
By Kelly & Paul.

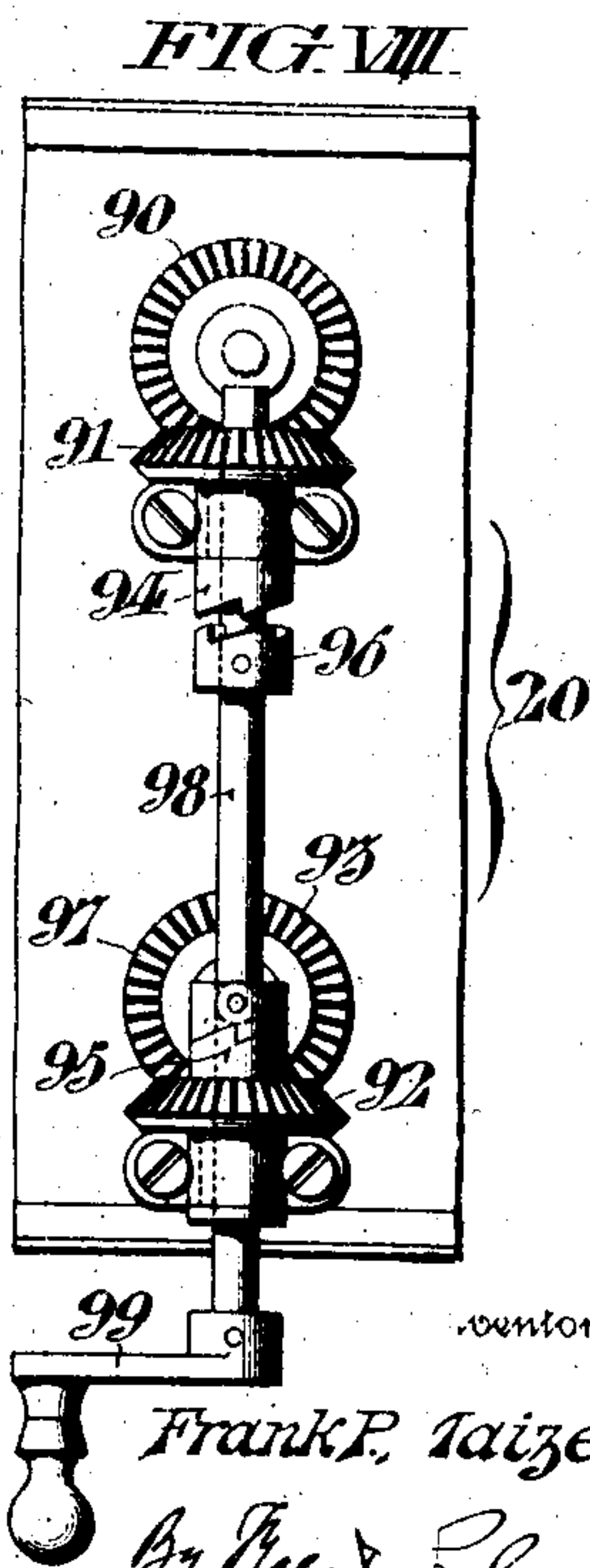
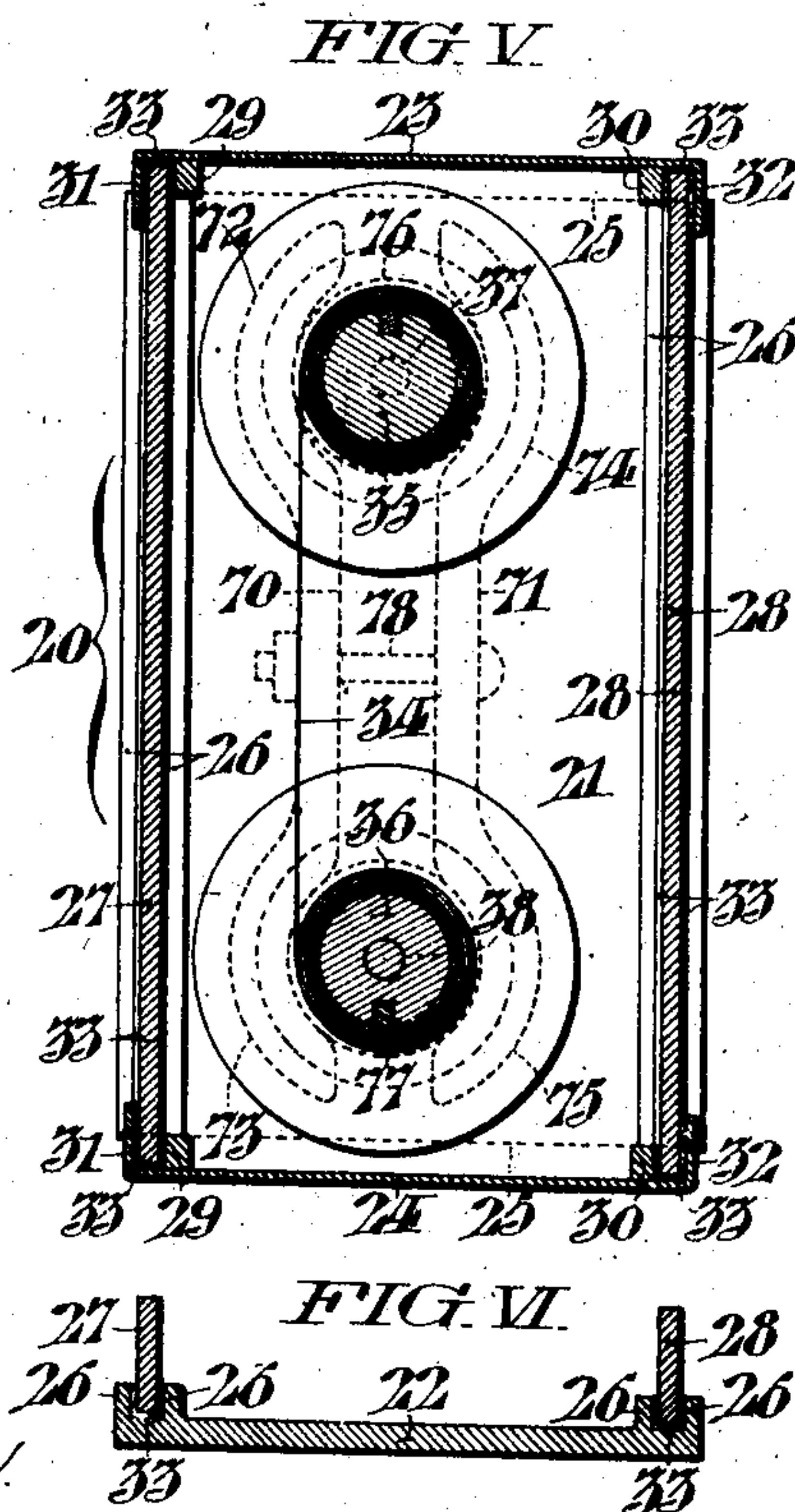
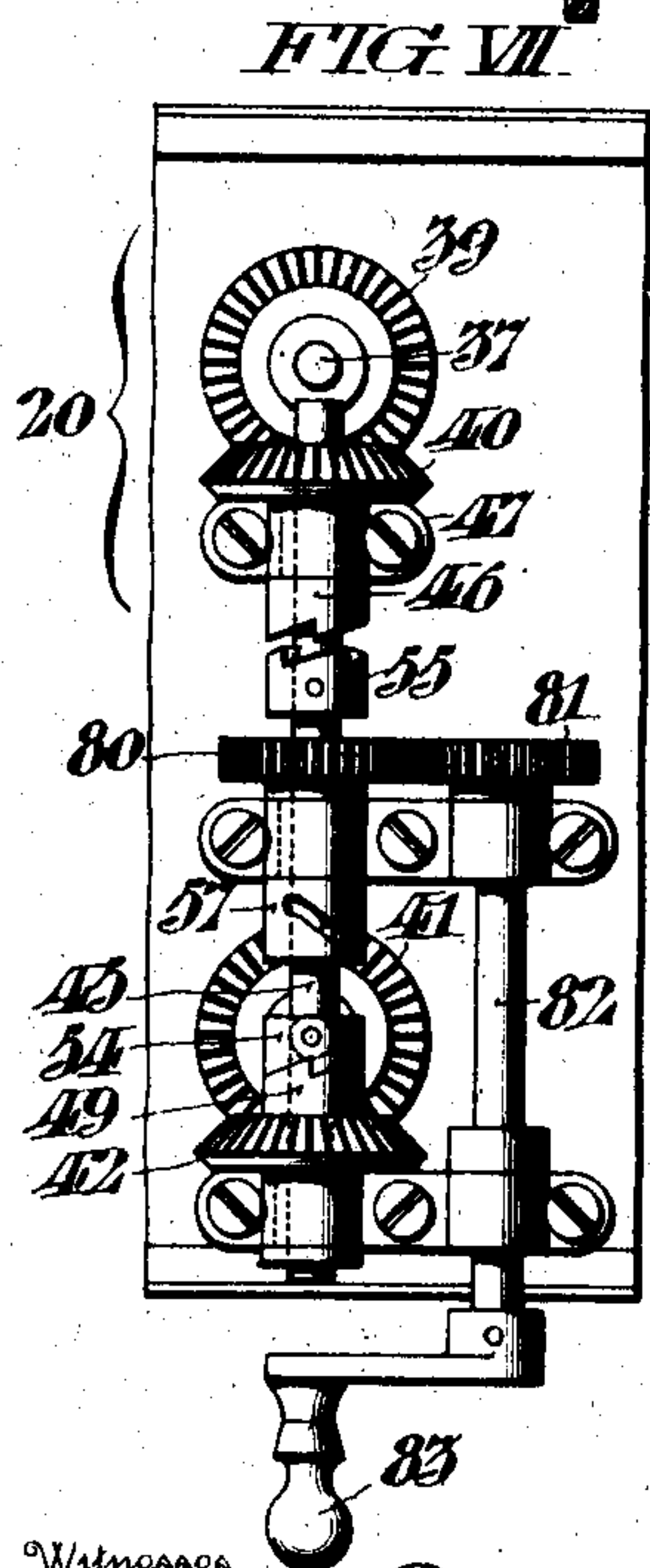
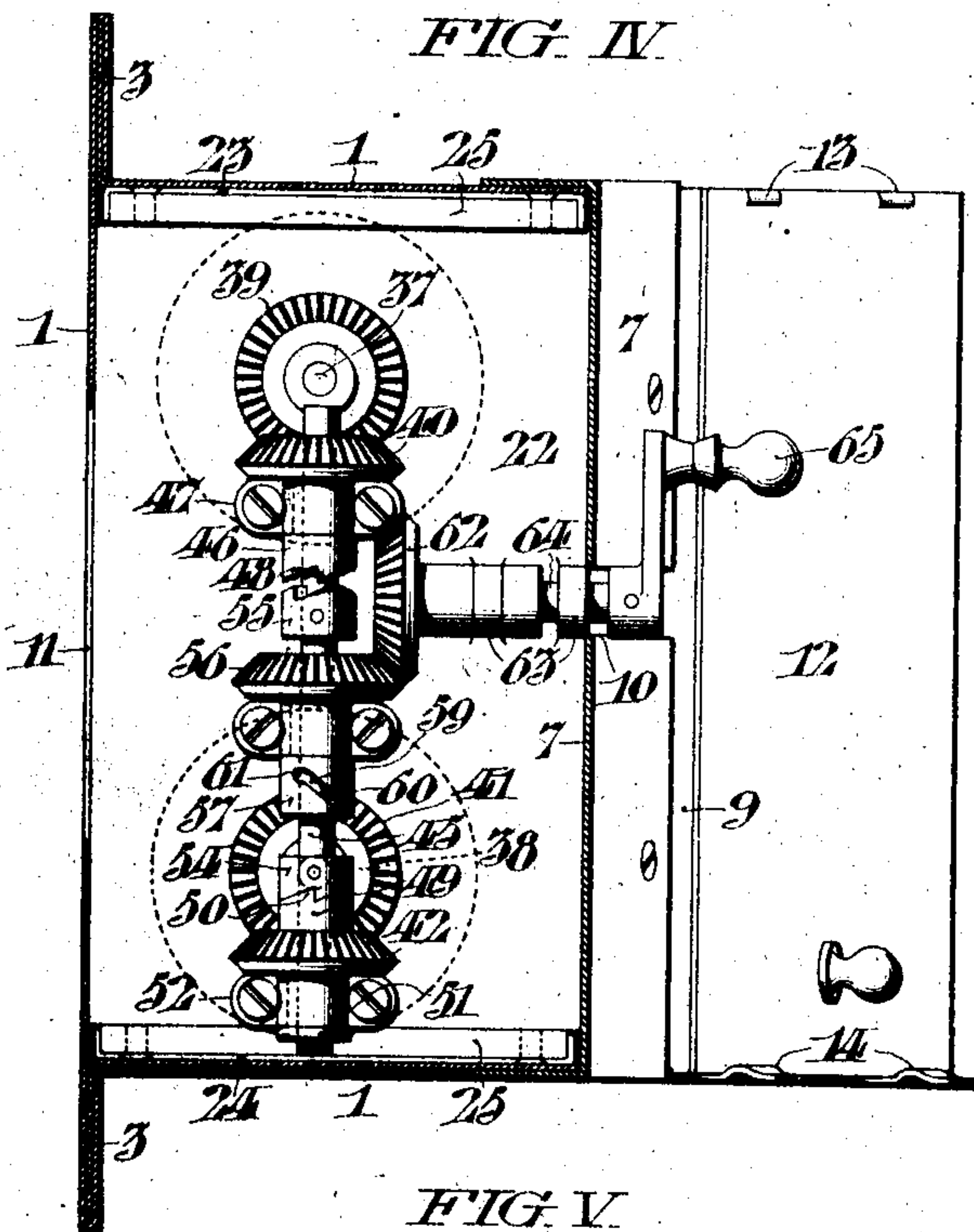
Attorneys.

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2 SHEETS—SHEET 2.



Witnesses
John C. Berger
James H. Bell

Frank P. Maize,
by [Signature]

Attorneys

UNITED STATES PATENT OFFICE.

FRANK P. MAIZE, OF NEWARK, NEW JERSEY.

SIGN FOR RAILWAY-CARS, &c.

991,521.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed March 22, 1910. Serial No. 550,948.

To all whom it may concern:

Be it known that I, FRANK P. MAIZE, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Signs for Railway-Cars, &c., whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to that class of signs in which an elongated flexible curtain containing a series of names marked thereon, is mounted upon a pair of rollers, by whose rotation, in either direction, the curtain may be wound upon one roller, and unwound from the other, and the names may be successively displayed at a region intermediate between said rollers.

While the most obvious application thereof is for use upon railway cars, in order to give notice of the approach of the respective stations or streets, and while I am about to describe an embodiment of the invention especially adapted for that purpose, it will be understood that its use is not necessarily limited to such application.

Among the objects of my invention are the following: to provide means whereby the rollers may be rotated with readiness and certainty, so as to wind the flexible curtain in either direction, without requiring careful manipulation of the actuating mechanism; to protect the curtain itself from deterioration by dust, moisture and the like, while affording easy access to the actuating and controlling mechanism; and to provide means whereby the curtain, its casing and its actuating mechanism may be interchangeably mounted within a suitable inclosing receptacle, adapted to be readily applied to the required portion of a car structure.

In the accompanying drawings, Figure I, represents a top or plan view of the inclosing receptacle, and Fig. II, a rear view thereof, the scale of these figures being one-half that of the succeeding figures. Fig. III, represents a vertical longitudinal section through the device and its receptacle on the line III, III, of Fig. I. Fig. IV is a transverse vertical section on the line IV—IV of Figs. I and III, the direction of view being indicated by the arrow at the section line; Fig. V is a transverse vertical section on the line V—V of Fig. III, the direction of view being indicated by the arrow at the section line. Fig. VI, is a partial sectional view,

showing the upper edge of one of the end plates of the casing. Figs. VII, and VIII, relate to modified forms of the actuating mechanism, the same being represented in each instance in vertical section, and upon a line corresponding to that of the section IV, IV, in relation to the general structure.

I will first describe the external inclosing receptacle adapted to contain the casing proper, which latter it will be understood is of an elongated rectangular form, adapted as will be hereinafter stated, to slide longitudinally within said receptacle.

The receptacle is constructed of sheet metal, and comprises an elongated box 1, whose front face and ends are of substantially rectangular form, its top, bottom and back being extended rearwardly in a double incline, as shown in the plan view of Fig. I, so as to leave a clear space or chamber in the rear of the casing proper, which is indicated by the dotted lines at 20, in Fig. I. The front face of the receptacle is extended in a flange 3, projecting beyond the top and bottom and ends, and affording a convenient means for securing the receptacle within an opening in a panel or wall of the car. A rectangular opening 11, (see dotted lines in Fig. II), is formed in the front of the receptacle, opposite to that portion of the curtain which is between the rollers, in order to display the name upon said curtain. An aperture 2, in the top of the receptacle above the rearwardly extending chamber permits the insertion of an electric light bulb, or the employment of a lamp with chimney (conventionally indicated by the dotted circle at 4), whereby the sign may be illuminated from the rear.

One end of the casing is formed by means of a door 5, hinged to the front at 6, a second door 7, being hinged to the door 5, at 8, and closing against the strip 9, to which it may be detachably secured by screws or otherwise. A slot 10, is formed in the door 7, to receive the shaft of the actuating crank 65, which will be hereafter described. A portion of the rear wall adjacent to said door 7, is also formed by means of a door 12, hinged to the top at 13, and having spring retaining clips 14, mounted upon the bottom of the receptacle, whereby the door 12, is retained in closed position.

The casing proper 20, which comprises the housing for the actuating and control-

ling mechanism, and the means of protection against dust or moisture, is rectangular and is arranged to slide longitudinally into the receptacle 1, through the opening which is provided with the folding doors 5, and 7. Said casing fits snugly in position therein, the arrangement of course being such that the name intended to be displayed shall be opposite to the opening 11, which is in the front of the receptacle.

The housing consists of the two end plates 21, and 22, which are of relatively heavy metal, intended to support the actuating and controlling mechanism. The top and bottom plates 23, and 24, respectively, are of lighter metal and are secured to horizontal flanges 25, upon said plates. A pair of inwardly extending vertical flanges or ribs 26, (see Figs. V, and VI), are provided near each vertical edge of the end plates 21, and 22, and form grooves to hold in position the glass plates 27, and 28, which constitute respectively the front and back of the casing 20. Inwardly extending ribs 29, and 30, are arranged near to each longitudinal edge of the top and bottom plates 22, and 23, and a portion of the edges beyond said ribs is bent at right angles to the main surface of the plate, so as to form inwardly extending flanges 31, and 32, at a short distance from said ribs 29, and 30, thus providing grooves which receive the upper and lower edges of the glass plates 27, and 28. Packing strips 33, of felt are inserted in the several grooves so as to embrace all the edges of the glass plates, thus rendering the casing practically dust-proof and weather tight.

The flexible curtain 34, is mounted upon a pair of horizontal rollers 35, and 36, whose journals 37, and 38, respectively protrude through the plates 21, and 22, at each end. The shaft 37, of the upper roller 35, carries at one end a bevel gear 39, rigidly secured thereto, said gear engaging with a corresponding bevel gear 40. The shaft 38, of the lower roller 36, is similarly provided with a bevel gear 41, engaging with the corresponding bevel gear 42. The upper bevel gear 40, is provided with a rigidly attached and downwardly projecting sleeve, or hub 46, whose lower end is formed into a series of teeth 48, having inclined backs, so as to constitute one member of a clutch. Said clutch-hub is journaled in a bracket 47, extending laterally from the plate 22, the portion of the clutch-hub below being of somewhat larger diameter than the journal portion, so as to resist upward thrust. The lower bevel gear 42, is provided with a rigidly attached and upwardly extending sleeve or hub 49, whose upper end is formed into a series of teeth 50, with inclined backs, said teeth facing in a direction opposite to those of the other clutch-hub. The gear

42, is also provided with a downwardly extending hub 51, which is journaled in the bracket 52.

A vertical shaft 45, extends freely through the hubs of the gears 40, and 42, so as to be capable both of rotative and longitudinal movement, with relation to said hubs, and their respective gears. Said shaft carries a pair of rigidly attached clutch members 54, and 55, provided with teeth having inclined backs, and facing in a direction opposite to one another and also opposite to the teeth upon the clutch-hubs, to which they are respectively adjacent, and with which they are intended to respectively engage when in proper position.

By reason of the inclined backs of the teeth upon the clutch elements, rotative movement of one, in a direction opposite to that of positive engagement with its fellow, will compel longitudinal movement of the shaft 45, as the inclined backs ride upon one another, and hence, if continued, will cause disengagement of the teeth from those of its fellow. As, however, the teeth upon the clutch-hubs face in opposite directions, the rotative movement adapted to cause disengagement of one clutch member from its correlative clutch-hub, will tend to cause engagement between the teeth of the other clutch-member and its clutch-hub. The clutch members 54, and 55, are so spaced upon the shaft 45, that when rotative movement takes place in either direction and is attended by the disengagement of one of the clutch-members from its clutch-hub, the accompanying longitudinal movement of the shaft 45, will have shifted the teeth of the other clutch member into a position adapted to partially engage with the teeth of its correlative clutch-hub before complete disengagement of the first mentioned clutch-member has been effected. The shaft 45, carries a bevel gear 56, which is secured thereto, so as to permit longitudinal movement of the shaft, and said gear is provided with a downwardly extending sleeve or hub 57, journaled in the bracket 58. Said gear 56, engages with a gear 62, having a horizontal counter-shaft 64, which is mounted in the brackets 63, said shaft being provided with a crank and handle 65. The lower portion of the hub 57, of the gear 56, extends below the bracket and is of larger diameter than the journal portion, so as to resist upward thrust. Said lower portion is provided with an inclined radial slot 59, which receives a pin 60, rigidly mounted in the shaft 45, and extending therefrom in a radial direction. The upper extremity of said slot is formed with a slight depression or pocket as shown, so that when the pin 60, is at said upper extremity, it may rest in the pocket and be detained there as against slight jars or accidental move-

ment, while it is readily removable therefrom in the operative movements which will hereafter be described.

The length and inclination of the slot 59, 5 is so related to the depth of the clutch-teeth and the inclination of the backs thereof, as to act in correspondence with the disengaging movement of the teeth and to prolong the axial direction of said movement after 10 disengagement has taken place, and until complete engagement of the other set of teeth has been effected. Thus, assuming that the parts are in the position shown in Fig. III; that is to say, that the lower clutch 15 member 54, is in full engagement with the clutch-hub 49, while the upper clutch-member 55, is completely disengaged from the upper clutch-hub 46; if now the shaft 45, be rotated from left to right, the teeth of the 20 lower clutch-member will ride up on the backs of the teeth 50, of the lower clutch-hub, and simultaneously with this action the pin 60, will ride up the wall of the slot 59. The longitudinal movement of the shaft 25 45, thus occasioned, will bring the teeth upon the upper clutch-member 55, into contact with the teeth 48, upon the upper clutch-member 46, but said teeth would not, by this movement alone, be thrown entirely 30 home into the teeth of the upper clutch-hub, since the disengagement of the lower one occurs before they have reached such extreme position. The slot 59, however, is prolonged to such an extent that the continued 35 movement of the shaft 45, from left to right causes the pin 60, to ride upward to the full length of the slot, and the additional axial movement thus effected, throws the teeth of the upper clutch-member 55, home into 40 the teeth 48, of the upper clutch-hub. When the pin 60, has reached the upper extremity of the slot 59, it rests within the pocket at 61, and has no tendency of itself to run down the slot under the effect of gravity.

45 It will thus be seen that rotative movement of the hand crank 65, in one direction will transmit movement from one clutch-member to the operative gearing of one sign roller, and that rotation of said crank in 50 the opposite direction will first cause disengagement of the clutch-member, which has theretofore been operative, and will cause engagement of the other clutch member, so that the driving gearing of the other sign 55 roller will then be actuated. In either case, however, the roller which for the time being is idle, would, if not controlled, tend to run free, and hence might, by overrunning, bring about a loose condition of the flexible sign. 60 To prevent this, I employ a braking device, preferably arranged at the opposite end of the casing from the driving system, said braking device comprising a pair of elastic strips 70, and 71, having curved surfaces 65 72, 73, 74, and 75, at their respective ends,

which surfaces are adapted to embrace hubs 76, and 77, rigidly mounted upon the protruding ends of the roller shafts 37, and 38. Said strips 70, and 71, are preferably made 70 of oak wood, which has sufficient elasticity for the purpose, and affords the desired frictional contact. In order to adjust the pressure of said braking strips upon the hubs, I provide a screw bolt and nut 78, whereby they may be drawn together with 75 the desired degree of pressure.

It will be noted that the actuating system for the rollers, and also the braking devices therefor, are mounted externally to the casing proper, so that they are readily accessible 80 for purposes of adjustment, repair, oiling, etc. This feature I find to be very desirable in this class of devices, as there is no necessity for opening the inclosure of the sign, the life of which is greatly prolonged 8 by complete and efficient protection, especially as against dust.

In Fig. VII, I have shown a modification of the actuating mechanism, the only difference, however, consisting in the substitution of an ordinary spur gear 80, for the bevel gear 56, just described, and the actuation of said gear 80, by means of a corresponding spur gear 81, mounted upon the 9 vertical counter-shaft 82, and provided with a crank handle 83, which, in this instance it will be noted, extends vertically down below the casing, instead of horizontally to the rear thereof. As the other elements in 9 this modified form are identical with those previously specified, it is not necessary to repeat the description thereof, in detail, the only purpose of the modification being to adapt it for use in instances where the 1 panel or wall of the car does not afford sufficient space for conveniently applying the 1 actuating crank at the rear, or where it is preferred to turn the handle from below, by reason of the greater height at which the 1 sign is mounted.

In Fig. VIII, I have shown another modification of the device, in which the slotted hub 57, and pin intended to cooperate therewith, and the counter-shaft for driving the 1 sliding shaft 45, are omitted. In this instance, the arrangement of the bevel gears 91, 92, and 93, clutch-hubs 94, and 95, and clutch-members 96, and 97, is similar to that just described, but the vertical shaft 98, 1 (which corresponds to the shaft 45, before described), is directly attached to the crank handle 99, which is arranged at the lower end thereof. The normal position of the parts in this apparatus is that shown in Fig. VIII, where by reason of gravity, the shaft 98, and its handle 99, always tend to maintain the lower clutch-member 97, in contact with the clutch-hub 95, of the lower gear. Hence without the necessity for any longitudinal movement of the shaft 98, the lower

clutch-hub is practically always in a condition for engagement, when the shaft is rotated from right to left in said figure. When, however, it is desired to rotate the upper gear 91, the handle 99, is turned from left to right and the teeth of the lower clutch-member 97, riding upon the inclined backs of the teeth upon the lower-clutch-hub 95, will without conscious effort on the part of the operator, cause the shaft 98, to move longitudinally upward and throw the teeth of the upper clutch-member 96, into partial engagement with the teeth of the upper clutch-hub 94. Disengagement of the lower clutch-member having occurred, the natural tendency on the part of the operator, is to prolong the upward movement, and thus to occasion substantially complete engagement of the upper clutch-member. When, however, the shaft and handle are released in this upper position, they tend to move downward under the influence of gravity, and hence it is practically necessary to again repeat the disengaging action at the lower clutch-member, each time that the gear of the upper roller is to be actuated. As compared therefore, with the forms of device shown in the other figures, this arrangement lacks the capacity of remaining always in the position in which the parts have been left by the operator. Hence, I prefer the other and more complete embodiments first mentioned, but as the last mentioned one may be found efficient for general purposes, and as it comprises certain features which are peculiar to my invention, I desire to include it under certain of the claims hereinafter made.

It will be noted that in the preferred embodiment above described, what may be termed the cam action of the slotted hub and pin, is supplemental to that of the inclined backs of the teeth; that is to say, during a portion of the longitudinal movement of the shaft, the cam-action of both progresses in unison, while upon the cessation of cam-action of the teeth, that of the slot and pin continues. It must be understood, however, that my invention, comprises the use of such a slot and pin in the combination set forth, irrespective of the adjunctive feature of the inclined backs of the teeth and is therefore not necessarily restricted to such supplementary character.

I employ the term "clutch-hub" to conveniently designate that member of each clutch which is operatively connected with the driving gear, but do not thereby intend to limit said element to a hub, in the limited sense of that term.

Having thus described my invention, I claim:—

1. The combination with sign rollers and a flexible sign wound thereon, of gears mounted upon the shafts of said rollers;

driving gears adapted to respectively engage said first mentioned gears; clutch-hubs connected with said driving gears, said hubs having teeth facing in opposite directions, and provided with inclined backs; a rotatable shaft freely movable with relation to said hubs; and clutch-members carried by said shaft and provided with teeth adapted to engage respectively with the clutch-hubs of the driving gears, said clutch-members being so spaced upon said shaft that longitudinal movement of the shaft shall throw the teeth of one clutch-member within the range of those upon its correlative clutch-hub, before the teeth of the other clutch-member have cleared those upon its correlative clutch-hub; and means for actuating said shaft in either direction.

2. The combination, with sign rollers and a flexible sign wound thereon; of gears mounted upon the shafts of said rollers; driving gears adapted to respectively engage said first mentioned gears; clutch-hubs connected with said driving gears, said hubs having teeth facing in opposite directions and provided with inclined backs; a rotatable shaft freely movable with relation to said hubs; clutch-members carried by said shaft and provided with teeth adapted to engage respectively with the clutch-hubs of the driving gears; said clutch-members being so spaced upon said shaft that longitudinal movement of the shaft shall throw the teeth of one clutch-member within the range of those upon its correlative hub before the teeth of the other clutch-member have cleared those upon its correlative clutch-hub; a member mounted upon said shaft to rotate therewith but movable thereon in an axial direction, said member being provided with an inclined slot which extends through an arc of greater extent than the arc subtended by the inclined back of a tooth; a pin rigidly mounted upon said shaft and projecting into said slot; and means for rotating said slotted member in either direction.

3. The combination, with sign rollers and a flexible sign wound thereon; of gears mounted upon the shafts of said rollers; driving gears adapted to respectively engage said first mentioned gears; clutch-hubs connected with said driving gears, said hubs being adapted to engage rotatively in opposite directions; a rotatable shaft freely movable with relation to said hubs; clutch-members carried by said shaft and adapted to engage respectively with said clutch-hubs, said clutch-members being so spaced upon said shaft that one may be wholly disengaged from its correlative hub when the other is in operative engagement with its correlative hub; a pin rigidly mounted upon said shaft; a member mounted upon said shaft to rotate therewith but movable there-

on in an axial direction; said member being provided with an inclined slot adapted to receive said pin and having an extent and pitch of inclination sufficient to shift said shaft axially into positions of engagement and disengagement of the respective clutches; and means for rotating said slotted member.

4. The combination, with sign rollers and a flexible sign wound thereon; of bevel gears mounted upon the shafts of said rollers respectively; driving gears adapted to respectively engage said first mentioned gears; clutch-hubs connected with said driving gears, said hubs having teeth facing in opposite directions, and provided with inclined backs; a rotatable shaft freely movable with relation to said hubs; a pair of clutch-members carried by said shaft and provided with teeth adapted to engage respectively with the clutch-hubs of the driving gears, said clutch-members being so spaced upon said shaft that longitudinal movement of the shaft

shall throw the teeth of one clutch-member within the range of those upon its correlative hub before the teeth of the other clutch-member have cleared those of its correlative clutch-hub; a gear and hub secured upon said shaft to rotate therewith, but move freely thereon in an axial direction, said hub being provided with an inclined slot, which extends through an arc of greater extent than the arc subtended by the inclined back of a tooth; a pin mounted in said shaft and projecting into said slot; a counter-shaft; a gear mounted thereon and meshing with said gear attached to the hub; and means for rotating said counter-shaft.

In testimony whereof, I have hereunto signed my name at Newark, county of Essex New Jersey this fourth day of March 1910.

FRANK P. MAIZE.

Witnesses:

H. G. LEWIS,
HUGO BOEPPLE, Jr.