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L. HOPKINS.
SIGN EXHIBITING APPARATUS.
APPLICATION FILED MAR. 9, 1909.

Patented Dec. 13, 1910.

3 SHEETS—SHEET 1.

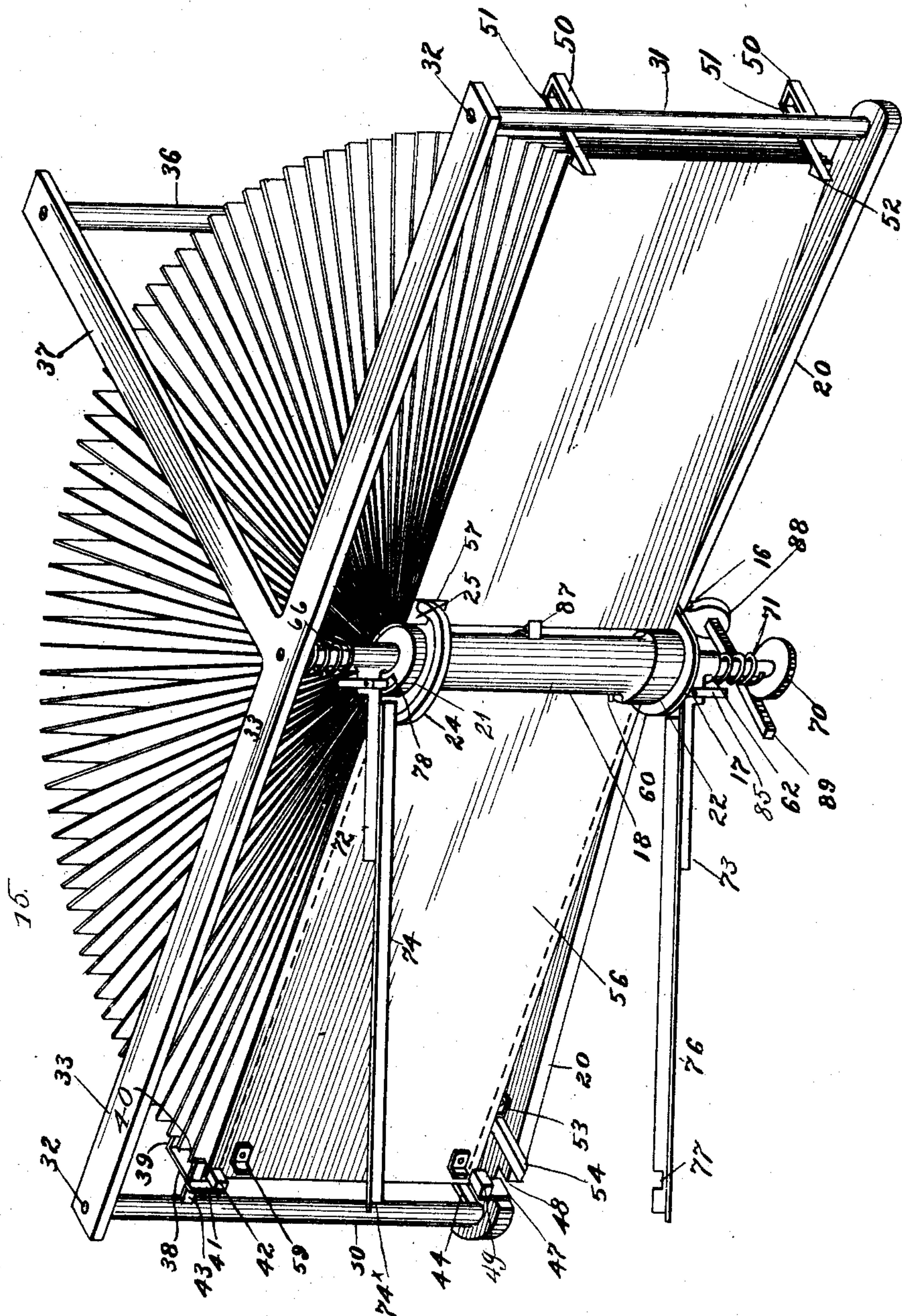


Fig. 1.

Witnesses:

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By

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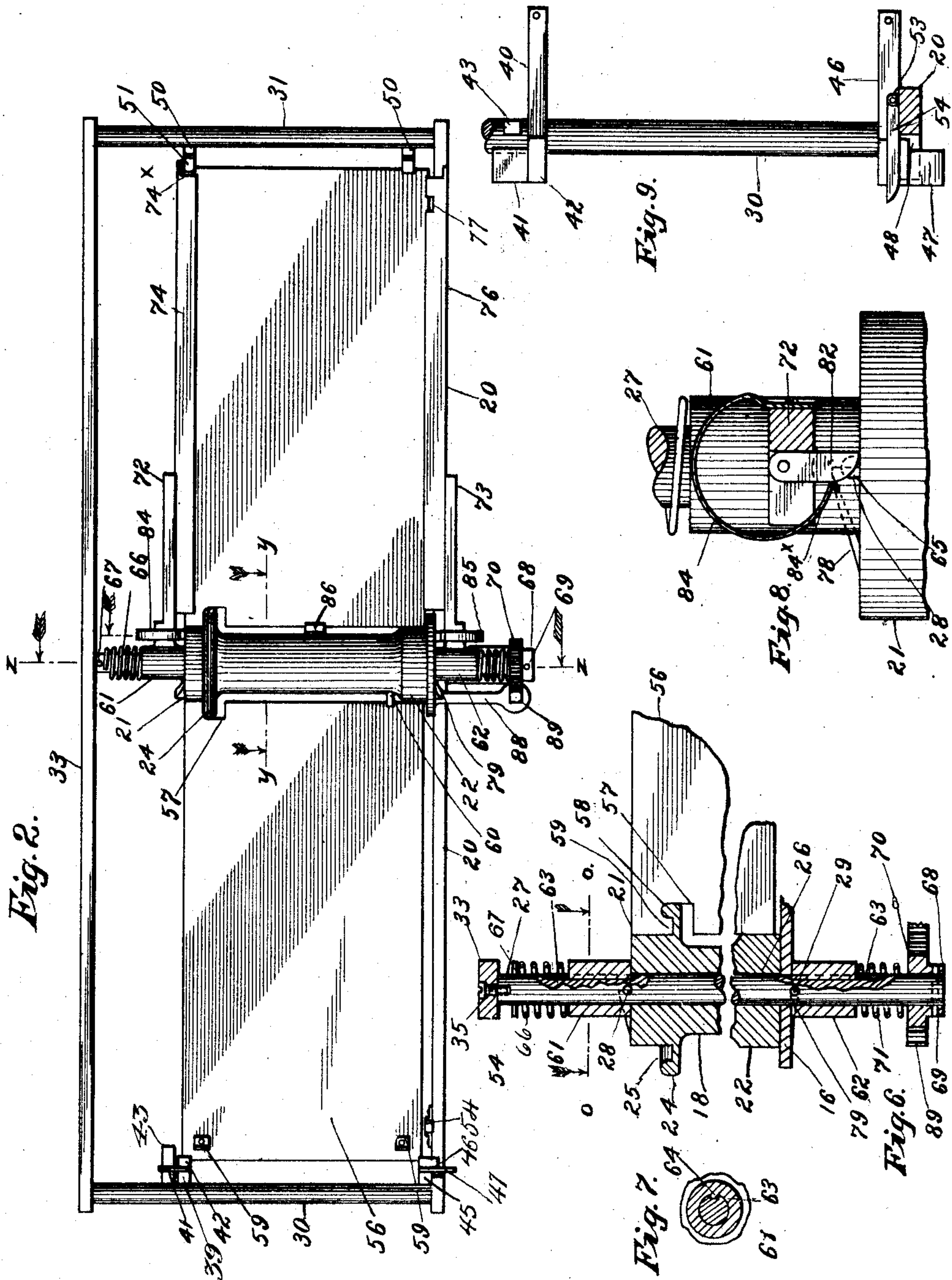
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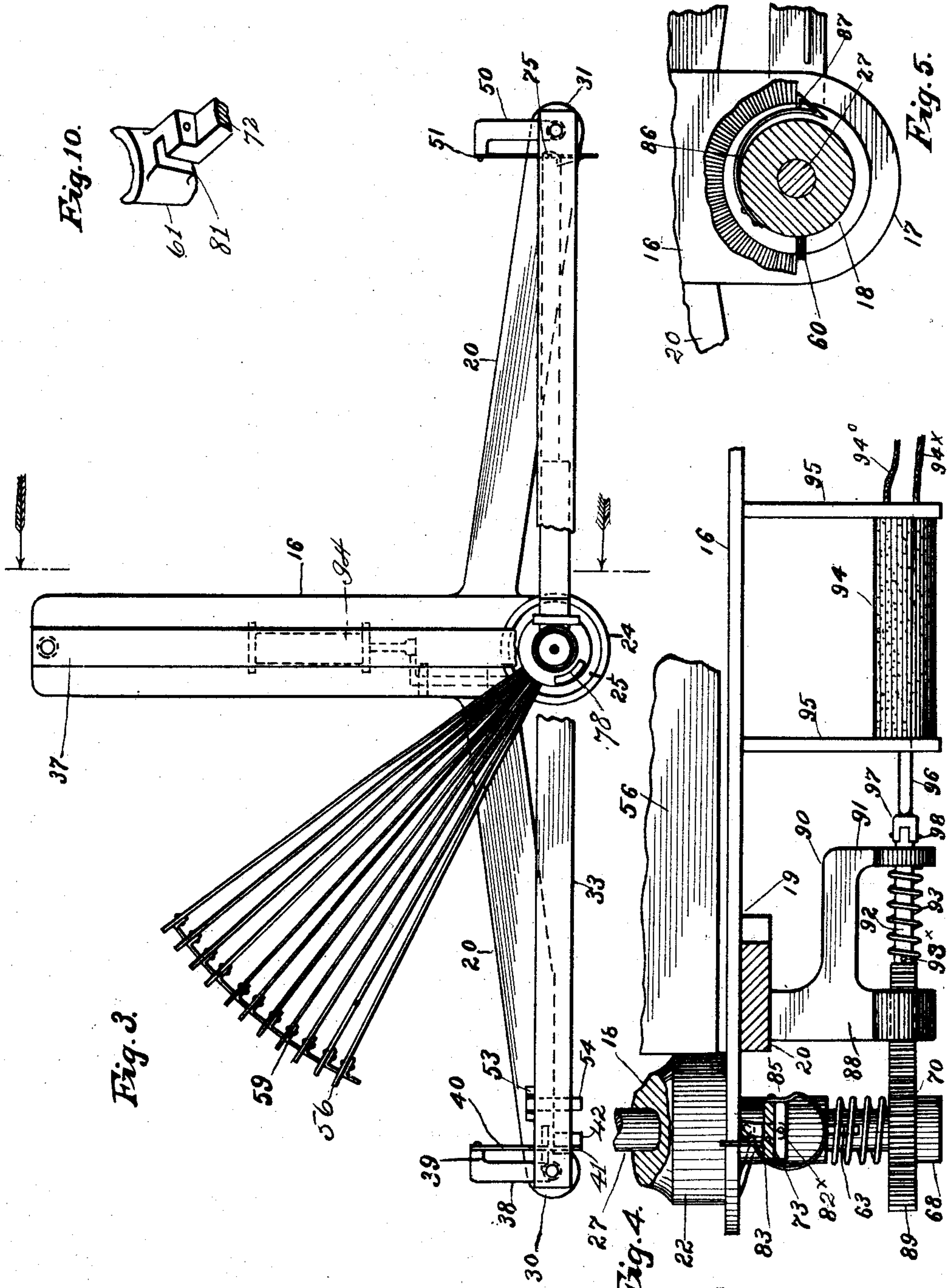
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3 SHEETS-SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

LESLIE HOPKINS, OF KANSAS CITY, MISSOURI.

SIGN-EXHIBITING APPARATUS.

978,162.

Specification of Letters Patent.

Patented Dec. 13, 1910.

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To all whom it may concern:

Be it known that I, LESLIE HOPKINS, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Sign-Exhibiting Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of the invention is: first, to exhibit in rotation signs for advertising, and like commercial purposes, such as displaying in order the names of streets in passenger street cars, or for displaying a series of illustrative views in consecutive order, and to enable the assemblage of a large number of signs or views, with economy in space; secondly, to automatically grasp and impart rotation to the individual signs in a series; and third, to overcome automatically the weight of the individual plate in the series.

The invention consists in the novel construction and combination of parts, such as will be first fully described and then specifically pointed out in the claims.

In the drawings: Figure 1. is a view, in perspective, of the invention. Fig. 2. is a front elevation of the same. Fig. 3. is a plan view of the invention, with the hinged leaves removed to show the base plates, the position of the motor being shown in dotted lines. Fig. 4. is an enlarged, detail view of the central portion of the base plate, looking in the direction of the center post, the lower end portion of the post being broken away the base plate being in section and, to show the rotary shaft. Fig. 5. is a transverse, sectional view of the center post, taken upon the line *y, y*, of Fig. 2, looking downwardly. Fig. 6. is a vertical, sectional view of the center post and base plate, taken upon the line *z, z*, on Fig. 2. Fig. 7. is a transverse, sectional view, of the hub of the carrying arm and shaft, taken on the line *o, o*, on Fig. 2. Fig. 8. is a side view of the upper end portion of the center post and a portion of the shaft and spring, also showing the hub of the carrying arm, and the dog and spring, the latter and the carrying arm being in section. Fig. 9. is an enlarged, detail inner side view of the outer

post, at the right hand side of the main frame, showing the plate controlling springs, and the individual plate elevator, a portion of the base plate being shown in section. Fig. 10 is a broken detail view of one of the hubs and a portion of the plate carrying arm on the center post.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, 15 indicates the sign supporting and display apparatus, the frame of which consists of a narrow base plate 16, the inner end of which plate is curved in the arc of a circle, as at 17. Upon said inner end of plate 16, a slight distance inwardly from the said curved end 17, is fixedly connected the lower end of a center post 18, of the requisite height, and circular in cross-section. With the lower portion of the plate 16, at a point inwardly from the vertical lines of the post 18, extended through plate 16, is connected transversely and rigidly at 19, the inner ends of the narrow base plate 20, the outer oppositely-extended ends of which plates are bent at an angle to the plate 16, and extended forwardly into a position in direct alinement with each other and a line coincident with the vertical axis of the post 18. The outer ends of the plate 20 and the plate 16, extend outwardly a corresponding distance and from the vertical axial line of the center post 18 as a center, are within the circumferential area of a half-circle.

The surface of the post 18 from points a short distance inwardly from its respective ends, is reduced in circumference, forming upper and lower shouldered enlargements 21 and 22, respectively. At the upper end of the post 18, and extending outwardly from the line of the lower portion of the upper enlargement 21, is an outwardly-extended flange 24, concentric with said enlargement in the upper surface of which is a groove 25. (See Fig. 6).

Extending through the post 18 and the base plate 16 in a vertical line, and in line with the vertical axis of the post, is an opening 26, within which opening is a rotary shaft 27, the respective upper and lower end portions of which shaft extend a considerable distance from the upper end of the post 18, and below the plate 16, for the purpose further explained. Through shaft 27, immediately above the upper end of post 18,

extends a pin 28, the ends of which bear on said post and permit the rotation of the shaft, and a like pin 29, extends through the shaft immediately below the lower surface of the base plate 16.

With the upper surface and outer end portions of the plates 20, are connected rigidly the lower ends of the vertical posts or standards 30 and 31, which are small in circumference, the post 30 being located relatively upon the right hand side, and the post 31 upon the left-hand side of the apparatus. These posts extend in height a considerable distance above the line of the horizontal surfaces of the post 18, and nearly to a line horizontal with the upper end of the shaft 27, and with said upper ends of posts 30 and 31, are connected horizontally by means of the screws 32 the respective ends of a narrow connecting bar 33. In the intermediate portion of bar 33, directly above the shaft 27 is an opening 34, through which extends the reduced upper end 35, of said shaft 27.

With the upper surface and outer end of the base plate 16, is rigidly connected the lower end portion of a vertical post or standard 36, which is the same in height as the posts or standards 30 and 31, and with the upper end of said post 36 is connected rigidly the outer end of a connecting bar 37, the inner end of which bar is rigidly connected with the bar 33, at a point intermediate the ends of said bar 33, and near the point of connection of the upper end of shaft 18, with bar 33.

With the rear surface of the post or standard 30, at a point directly upon a line extending horizontally with the upper surface of the post 18, is connected rigidly one end of a bar or bracket 38, the other end of which bar extends rearwardly a short distance, and has a portion 39 bent at right angles and extended inwardly, as seen in Fig. 3, and with said bent portion of the bar is connected the rear end of a spring plate 40, the forward end of which plate extends forwardly to a position a short distance from and of a line tangential to the forward surface of the post or standard 30, and positioned so as to be normally a short distance inwardly from the inner surface of said post.

With the outer surface and end of the spring plate 40, is connected rigidly the lower end portion of a thin plate 41, which extends upwardly a short distance, and rearwardly to a position in line transversely with the forward surface of post 30.

With the inner surface of the spring-plate 40 is connected rigidly the lug or stop 42, which extends from the outer end of the spring plate 40 rearwardly to a position at right angles to the vertical axis of the post 30. With the rear surface of the post

30, a short distance above the inner end of bar 38, for the purpose hereinafter explained, is connected rigidly one end of a narrow plate or stop 43, the inner end being extended inwardly and at right angles to the spring plate 40. With the rear surface of post 30, and at a point a short distance above the base plate 20, is connected a bar 44, which is similar to bar 38, and extends rearwardly the same distance and is bent at right angles at 45, and upon said bent end portion is a spring plate 46, which extends forwardly the same distance as the spring-plate 40. With the outer end of the spring plate 46 is connected a thin plate 47, similar to the plate 41, on the spring plate 40. In this construction the plate 47 extends downwardly within a wide notch 48, cut in the portion of the base plate 20, beneath said plate within which the plate is permitted a free, lateral movement.

Upon the inner surface of the spring-plate 46 is a lug 49, which extends from the outer end of the said spring-plate inwardly a corresponding distance to the lug 42, on the spring-plate 38.

With the rear surface of the post or standard 31 are connected rigidly the inner ends of bars or brackets 50, which are the same in construction as the bar or bracket 38, on post 30. The upper bar or bracket is connected with post 31, upon a line horizontal with the said bar or bracket 38, on post 30, and the lower bar or bracket is connected with post 31, at a point a slight distance above a line extending horizontally through posts 30 and 31, and the bar or bracket 44, on the post 30.

With the inner, bent portions of the bars or brackets 50 are connected fixedly the rear ends of spring-catches or plates 51, the forward ends of which plates extend forwardly to a position transverse to the vertical axis of the post 31, as seen in Fig. 3, and upon the inner surface of the plates 51 are the barbs or hooks 52.

Upon the upper surface of the base plate 20, at a point a short distance inwardly from the notch 48, and near the inner portion of plate 20, are secured the lugs 53, to which lugs is pivoted the rear end of a plate-lifting bar 54, the forward end of which bar extends a short distance forward of the base plate 20. The lower surface of the outer end of the plate 54 is curved downwardly and inwardly for the purpose further described.

Within the frame of the apparatus is suspended, as further described, the series of advertising signs or plates 56, in such relationship that one sign or plate will impart propulsion to a contiguous sign or plate, in rotation. The individual sign or plate 56, of the series, is rectangular in shape, and may be made from any suitable material.

For advertising purposes thin sheets of aluminum may be placed, upon which the illustrative matter may be employed, either by stamping out the letters, or affixing the printed matter to the plate. In other cases, for illustration, photographic plates may be employed.

In the upper portion and inner end of the individual plate 56 is a notch 57, of the proper length and depth to receive the flange 24, on the post 18, in the inner upper side portion of which notch is an upward extension 58, of the notch, (see Fig. 6), to receive the outer portion of the grooved flange 24, and permit the inner end of the plate 56, to come nearly into contact with the enlargement 21, of the post 18, and also the entry of a portion 59 of the plate between the notch and the end of the plate within the groove 25, in which position the plate 56 is suspended from the center post 18, the upper, longitudinal portion of the plate being in line horizontally with the upper end of said center post. The lower portion of the plate 56 extends downwardly to a position a slight distance above the upper surface of the base plate 16, and the outer end of each one of said plates 56 extends outwardly to a position in rotation, that when opposite the post 31 they will come quite close to the inner surface of the spring-plates 40 and 46 and in contact with the inner surfaces of the lugs 42 and 49, the lower portion of the plate 56, in the above described position, being a slight distance above the plate-lifting bar 54, when in its normal position.

Upon the forward surfaces and outer ends of the plate 56, and each plate in the series, are the angle plates 59, of the required size, one angle portion of the plate 59 being secured to the plate 56, by rivet or screws, the other angular portion of the plate coming into contact with the rear surface of the plate immediately forward in the series, and maintaining the plates a relative distance apart. Upon the lower, reduced portion of the post 18, directly above the enlargement 22, is a pin 60, which extends outwardly a short distance and against which the forward surface and inner end of the forward plate in the series comes into contact, and which pin maintains the plate in a vertical position.

Upon the upper and lower end portions of the shaft 27, are the respective hubs 61 and 62. In the surfaces of the ends of the shaft are key-ways 63, extending the greater length of said end portions of the shaft, and on the inner portions of the hubs are keys 64, fitting within the key-ways, so as to permit the sliding movement of the hubs on the ends of the shaft in opposite directions, and at the same time move in rotation with the shaft as seen in section in Fig. 7.

In order to permit the inner portions of

the hubs to come into position upon the top post 18, and the lower surface of plate 16, notches 65 are made in the said inner portions of the hubs, so as to extend over the pins 28 and 29, upon said shaft, as seen in Fig. 8.

Extending around the upper end of shaft 27 is a spiral spring 66, one end of which spring bears upon the upper end of hub 61, and the other end bears upon the pin 67, extending through said shaft. Upon the lower end portion of shaft 27 is a cap 68, secured thereto by the pin 69, extending through said cap and shaft. Upon said end of shaft 27 and bearing upon cap 68 is a pinion 70, fixed to said shaft. Extending around said end portion of the shaft is a spiral spring 71, one end of which bears upon the upper surface of the pinion 70, and the other end against the lower portion of the hub 62.

With the central portions of the respective hubs 61 and 62, at right angles to the line of the key way 63, are connected the inner ends of the upper and lower radial plate-carrying devices 72 and 73, respectively. With the lower surface of the arm 72, at a point in a vertical line with the flange 24, on post 18, is connected rigidly one end of an angle-plate 74, which forms an extension to the arm, the vertical portion of which plate is cut away at 74^x, at its outer end, and the outer end of the horizontal portion is curved in the arc of a circle as at 75, (see Fig. 3), the position of the vertical portion of the angle plate being outwardly in respect to the plate 56, on the left hand side of the apparatus. With the upper surface of the arm 72, at a point beyond the curved surface 17, of the base 16, is connected rigidly the inner end of the angle plate 76, which forms an extension of the arm, the portion of the angle plate extending upwardly having a notch 77, near its outer end, which extends beneath the plate-raising pivoted bar 54, when moved to the right hand side of the apparatus, the normal position of the arms 72 and 73 being on the left-hand side. The outer end of the vertical portion of the angle plate 76, which extends upwardly is also cut away, and the end of the horizontal portion of the angle plate is curved in the same manner as that of angle plate 73, both ends of the angle plate being adapted to extend to a position outwardly and to come into contact with the plates 40 and 46, on the respective spring-plates 41 and 47, when moved in the direction of said plates, as further described.

Upon the upper surface of the center post 18, and upon the portion of said surface toward the right-hand side of the apparatus is a cam 78, and upon the lower surface of the base plate 16 is a cam 79, in a corresponding

position. These cams 78 and 79 are curved concentrically, with the shaft 27, the cam surface being gradually increased in height above the surface of the top of the post 18, and from the plate 16, respectively, and extended rearwardly to a position a short distance in rear of a line extending through the vertical axis of the post 18, and parallel with the connecting bar 33, supporting said center post, at which point both cams terminate abruptly and in vertical planes, as seen in Figs 3 and 8.

In the respective inner end portions of the arms 72 and 73, are the notches 81 and 82. In the notched arms 72 and 73 are pivotally connected the upper ends of the dogs 82 and 83, respectively, the lower end surfaces of which come into contact with the cams 78 and 79. With the inner end portions of the notched arms 72 and 73 are connected the inner ends of the respective spring-plates 84 and 85, the forward ends of which spring-plates are bent in an arc of a circle, and extended past the notched ends of the respective arms 72 and 73, and are brought into contact with the outer surfaces of the respective dogs 82 and 83, directly above the curved portion of the ends of said dogs, the said ends of the spring-plates being bent outwardly in a slight degree as at 84*.

With the reduced portion of the center post 18, at a point intermediate the enlargements 21 and 22 and with the rear portion of said post, is connected fixedly one end of a spring-plate 86, the other end of which plate extends forwardly and eccentrically to a position on the side of the center post 18, in the direction of the left-hand side of the apparatus, and upon which end of the spring-plate is a barb or catch 87, the inner portion of the barb being upon a line extending through the vertical axis of the post 18 and the post 31.

With the inner portion of the base plate 20, at a point beneath the portion of the base plate 16, toward the right-hand side of the apparatus, is connected shaft hanger 88, in which is supported horizontally in the plane of the pinion 70, on shaft 27, a rack-bar 89, which bar engages with the pinion 70. With the rear portion of the hanger 88, is connected rigidly an arm 90, which extends rearwardly a short distance, and has a portion 91 bent downwardly to a position in line horizontally with the rack-bar 89, and is perforated to receive a circular reduced portion 92, of the rack-bar, around which reduced portion of the bar extends a spiral spring 93, one end of which spring bears against the inner surface of the downward extension 91, of arm 90, and the other end against the pin 93*, immediately in rear of the rack-teeth on the rack-bar 89, the power of the spring expansively con-

trolling the arms 72 and 73, and the movements of the series of plates 56.

94 indicates a solenoid, and 95 are supporting bars, connected with each end of the solenoid and with the under surface of the base plate 16, in rear of the support or arm 90, for the reduced portion of the rack-bar 89.

Within the solenoid is the usual plunger 96, which is horizontal in line with the reduced portion 92, of the rack-bar 89, and is forked at 97, said forked ends being secured to the reduced portion 92, of the rack-bar, the pin 98 extending through said forked portion and said reduced portion of the rack-bar. From the solenoid which illustrates one form of motor for actuating shaft 27, extends the conducting wires 94°, 94*, which are connected with the usual source of electrical energy in an open and closed circuit.

In the operation of the invention the plates or signs 65, which are suspended from the center post 18, are assembled in sufficient number within the apparatus to occupy the entire space of the half circle bounded by the corner posts 30, 31 and 36, and separated from each other by the lugs 59, consequently the outer plate in the series upon the right hand side of the apparatus is brought forcibly against the lugs 42 and 49, on the spring plates 40 and 44, which are sprung out normally from the corner post 30. Upon the left hand side of the apparatus the plate 56 outwardly in respect to the series is within the spring plates 51 and hooks 52, and the spring plate 86, the angle plates 74 and 76 under pressure of the spring 93 in the rack-bar 89, and communicated through the pinion 70 and shaft 87 when the angle plates are in their normal position, act to maintain an equal pressure upon the plates in the series.

Upon the transmission of a current of electricity through the wires 95°, 94*, the solenoid 94 is energized, and the plunger 96 is drawn within the solenoid, in which movement rotation is imparted to the shaft 27, through the rack-bar 89, and pinion 70, to the shaft 27, compressing the spring 93, and causing the plate-carrying arms 72 and 73, and the conjoint angle plates 74 and 76 to move from their normal position in the direction of the right-hand side of the apparatus. In the aforesaid movement the inner portions of the dogs 71 and 76 come directly in contact with the cams 78 and 79, and the arms are moved outwardly in opposite directions, the hubs 61 and 62 acting to compress the springs 66 and 71. The outer ends of said arms in approaching the port 30 contact with the plates 41 and 47, and force said spring plates outwardly and release the lugs 42 and 49 from the grasp on the forward or outermost plate 56. The

horizontal portion of the lower angle plate 76, now raises the bar 54 upwardly, and lifts the outer end of the plate 56 from contact with the pin 60, the angle plates pass over the upper and lower surfaces of the said plate 56, and their outer ends contact with the plates or stops 43. Upon the contact of said ends with stop 43 the dogs 82 and 83 pass from the highest point of the inclined surfaces of the post 18, and the under surface of the base plate 16, thereby releasing the tension on the springs 63 and 71, and the angle plates 74 and 76 are brought suddenly into position toward each other the vertical portions of the angle bars or plates moving into position in rear of the upper and lower portions of the said outward plate 56.

The current now being cut off from the solenoid, the spring 93 expands, forcing the rack-bar 89 outwardly and moving the angle plates 74 and 76 with the plate 56 past the lugs 42 and 49, on the spring plates 40 and 44 rapidly in the direction of the left-hand side of the apparatus, and outwardly in respect to the apparatus, completing a half-circle movement, and forcing the plate 56 past the spring catches 51 and 87, crowding the other plates forward under the pressure of the spring 93, and at the same time bringing into position upon the right-hand side of the apparatus a plate against the lugs 42 and 49, in readiness to be grasped in the next movement of the angle plates 74 and 76, and the operation continued. The offices of the pin 60 and spring 87 are similar, and both act to keep the plates 56 in a uniform, vertical position at all times. The angle plates of the carrying arms, as shown in the drawings, and which form part of the plate moving arms, afford a medium of strength, which is not necessary to the operation, the vertical portion only being required.

For purposes of advertising, the opposite faces of the plates are seen, so as to afford a line of advertising, as well as affording in street car advertising the street sign or nomenclature, which is equally conspicuous in the apparatus, the names or numbers of the streets being brought successively into view. In suspending the plates 56 from one corner, a very small portion of the plate is used for the purposes of attachment; but I do not confine myself to this manner of suspension, as this may be varied, and such changes in construction, form and arrangement employed as are within the scope of the invention and defined by the appended claims.

Having fully described my invention, what I now claim as new and desire to secure by Letters Patent is:

1. In an object exhibiting apparatus the combination with a vertical axial support, of a vertical swinging sign plate rotatively

mounted at its inner upper end portion upon said support, a stop on said support for the lower end portion of said plate, and an elevator for the outer end of said plate.

2. In an object exhibiting apparatus, the combination with a center post, of a suitable flanged support concentric therewith, and a swinging exhibiting plate having a notch in the upper portion and inner end rotatively and detachably connected with said flanged support.

3. In an object exhibiting apparatus, the combination with a base plate, a stationary post, a rotary shaft extending through and in line with the vertical axis of said post and also said base plate, swinging exhibiting devices rotatably mounted on said post, spring-controlled sliding hubs on the ends of said shaft, arms on said hubs means for imparting an outward movement to said hubs, and means for imparting motion to said shaft.

4. In an object exhibiting apparatus, the combination with a base plate, a stationary post, a rotary shaft extending through and in line with the vertical axis of said post and also through said base plate, swinging exhibiting devices rotatably mounted on said post, spring-controlled outwardly-sliding hubs on the ends of said shaft and movable in rotation therewith, plate carrying devices on said hubs, means controlling the movement outwardly of said hubs, and means for imparting motion to said shaft.

5. In an object exhibiting apparatus, the combination with a base plate, a stationary post, a rotary shaft extending through and in line with the vertical axis of said post and also through said base plate, swinging exhibiting devices rotatably mounted upon said post, spring-controlled outwardly-sliding hubs on the ends of said shaft and movable in rotation therewith, cams on said post and base plate, and spring-controlled dogs on said arms, adapted to move upon the cam surfaces of said cams, and means for imparting motion to said shaft.

6. A mechanism for object exhibiting apparatus comprising a power-actuated rotary shaft, and supporting means therefor, hubs on the ends of said shaft, a key-way and key connecting said hubs slidingly with said shaft, springs on the ends of said shaft bearing on said hubs, arms on said hubs and springs on said arms, dogs pivotally connected with said arms, said springs on said arms bearing on said dogs, and cams on the supporting means for said rotary shaft.

7. In an object exhibiting apparatus, the combination with a base plate, a stationary post, a rotary shaft extending through said post in a line with its vertical axis and also through said base plate, swinging exhibiting devices rotatively mounted on said post, hubs on the ends of said shaft, said shaft

and hubs having a key way and key extending longitudinally with the shaft, springs on the ends of said shaft bearing on said hubs, cams on the end of said post and on the under side of the base plate, arms having notches on said hubs, dogs pivoted to said arms within said notches, adapted to engage with the cam surfaces of said cams, and curved spring plates on said arms bearing on said dogs.

8. An object exhibiting apparatus comprising a base plate, a post supported thereby, and a rotary shaft extending through said post in the line of the vertical axis and also through said base plate, exhibiting plates rotatively mounted on said post arranged collectively at equal distances apart, and posts on the base plate at points outwardly from the circumscribed path of the outer ends of said plates, locking devices on one of said posts, self-acting engaging devices upon the other post, spring-controlled sliding hubs on the ends of said shaft, movable in rotation with said shaft, arms on said hubs, spring-controlled dogs on said arms, cams on said post and base plate adapted to move said arms in opposite outward positions, a pinion on said shaft, and a spring retracted rack-bar adapted to engage with said pinion and hold said arms normally in contact under pressure with the said exhibiting plates.

9. In an object exhibiting apparatus, the combination with a base plate, of a stationary post, a rotary shaft extending through said post in line with its vertical axis and also through said base, swinging exhibiting plates, rotatively mounted on said post, posts or standards on said base plate, at points outwardly from the path of the outer ends of said plates, locking means on said posts holding said plates collectively together, releasing means controlled by said shaft for releasing said plates individually, a pinion on said shaft, a rack-bar engaging with said pinion, a spring for imparting movement to said bar in one direction of movement, and means for imparting power to the bar in a reversed direction.

10. In an object exhibiting apparatus, the combination with a base plate, of a stationary post, a rotary shaft extending

through said post in line with its vertical axis, exhibiting plates rotatively mounted on said post, and posts on said base plate at points outwardly from the path of the outer ends of said plates, locking devices on one of said posts, and spring catch plates on the other post, hubs having a key-way and key extending longitudinally with the shaft, springs on the ends of said shafts bearing on said hubs, plate-engaging arms on said hubs, spring-controlled dogs on said arms, and cams on said post and base plate in the path of said dogs, a pinion on said shaft, a rack-bar engaging with said pinion, a spring acting expansively to impart movement to the rack-bar, and pressure to the said plates collectively, and means for imparting a reverse movement to said bar.

11. The combination with a base plate, of a stationary post thereon, a grooved flange upon the upper end of said post concentric therewith, a swinging plate having a notch in the upper portion and inner end of said plate engaging with and adapted to be moved rotatively in position upon said flange, a pivoted plate elevating device on the base plate beneath said swinging plate, and means on said post for imparting motion to said swinging plate, and engaging with the pivoted plate elevating device.

12. The combination with a base plate, of a stationary post, a grooved flange upon the upper end thereof and concentric with said post, a rotary shaft extending through said post in a line with its vertical axis, outwardly-movable spring-controlled hubs on the ends of said shaft, and arms on said hubs, one of said arms having a notch in its outer end, swinging plates having notches in the upper portion and inner end thereof, engaging with the flange on said post, and a stop in the path of the lower portion and inner ends of said swinging plates, means for imparting motion in said shaft, and a plate pivoted to the base plate beneath the outer ends of said swinging plates and adapted to be engaged by the notched portion of the arm on one of said hubs.

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