

4 Sheets—Sheet 1.

No. 552,073.

Patented Dec. 24, 1895.



Inventör

Witnesses  
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(No Model.)

4 Sheets—Sheet 2.

J. C. REUTER.  
STORE SERVICE APPARATUS.

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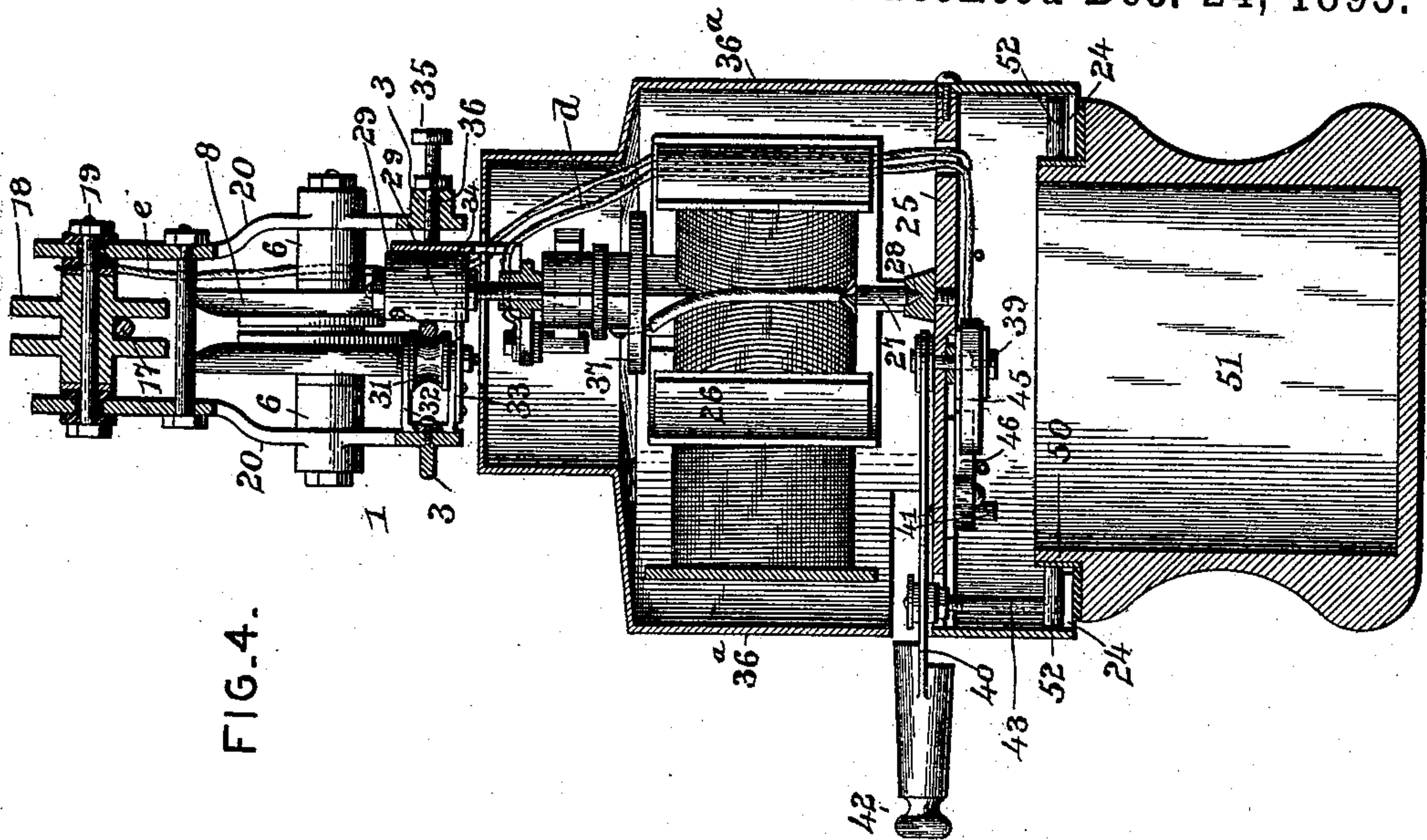


FIG. 4.

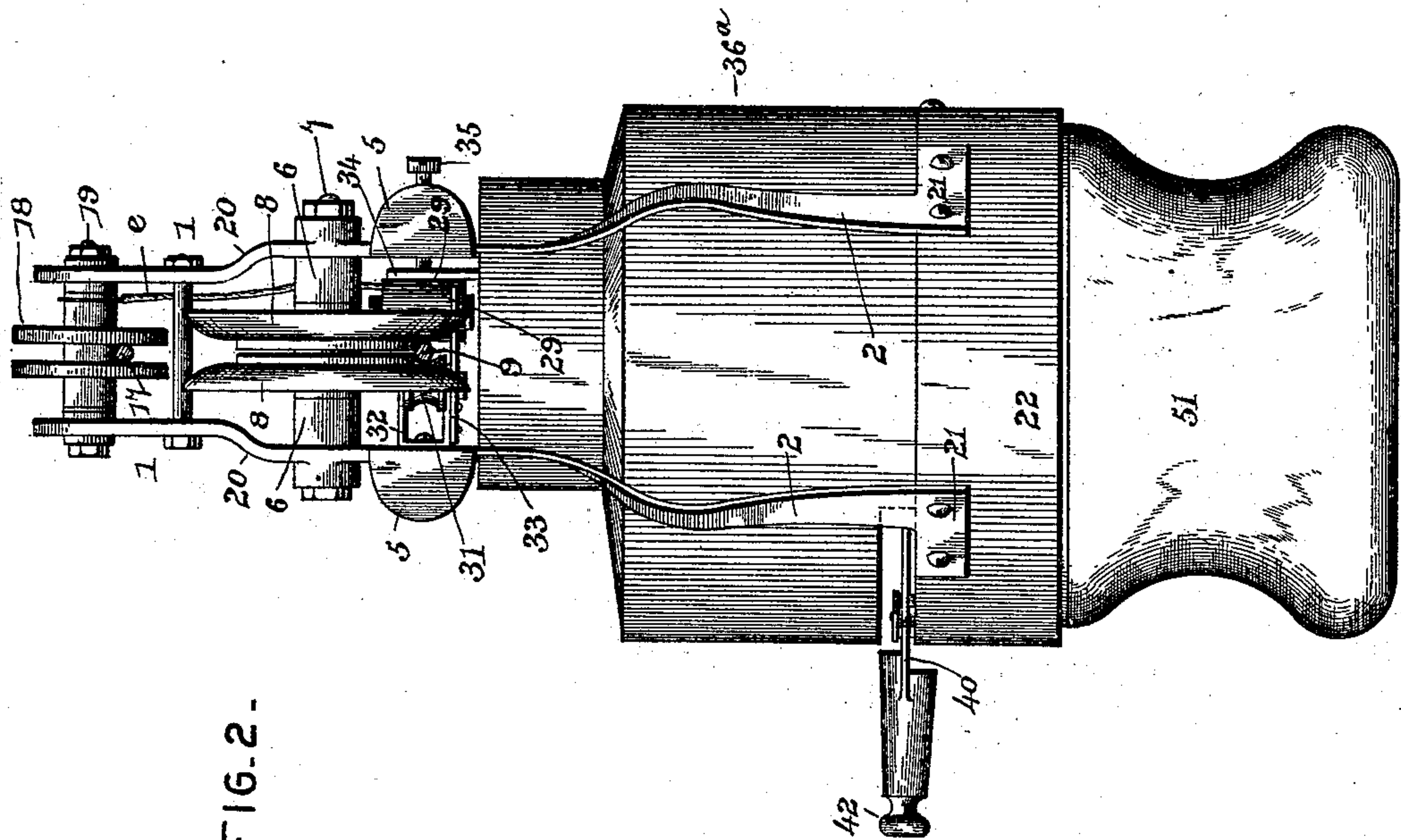


FIG. 2.

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(No Model.)

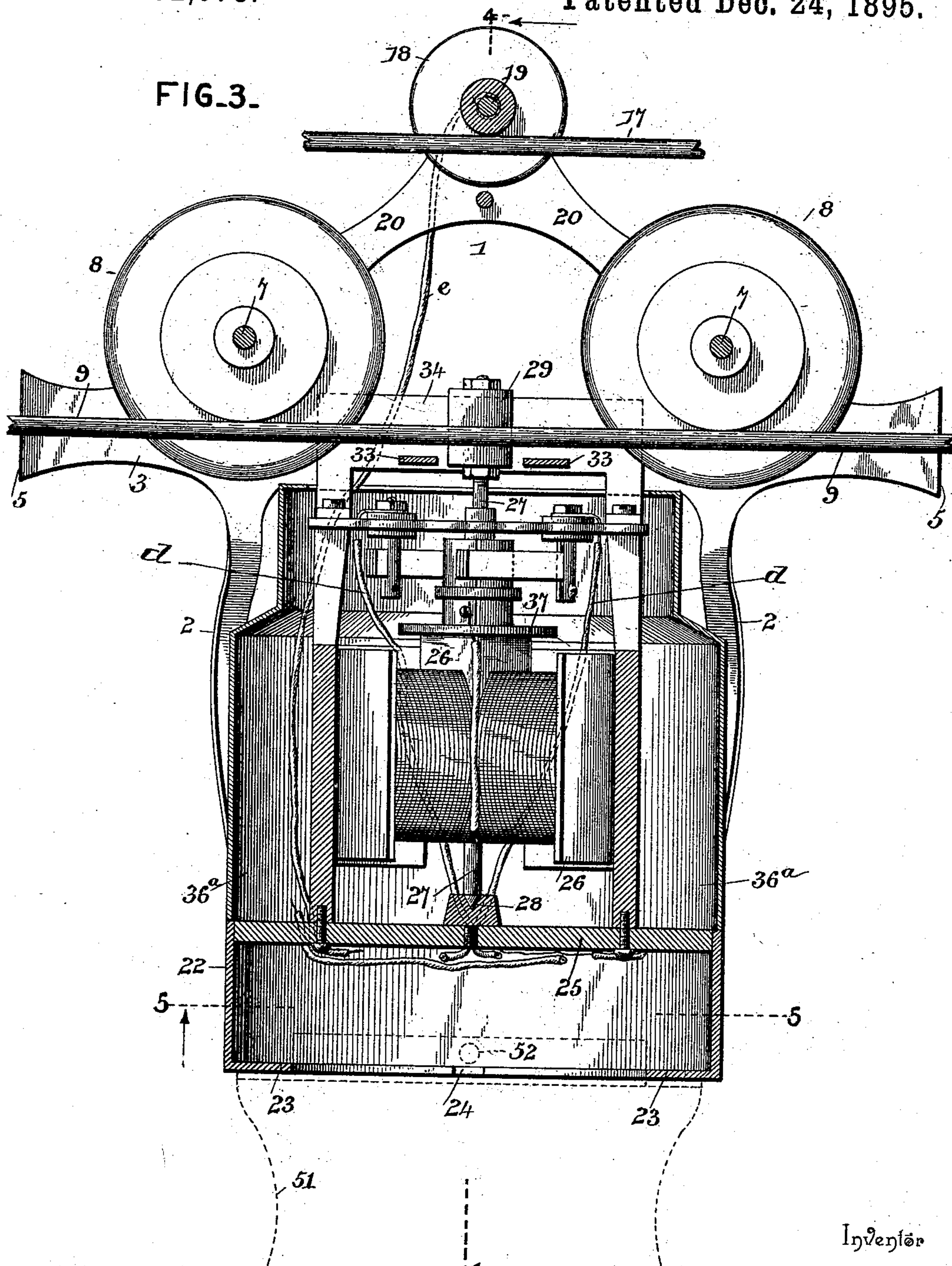
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J. C. REUTER.  
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FIG. 3.



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4 Sheets—Sheet 4.

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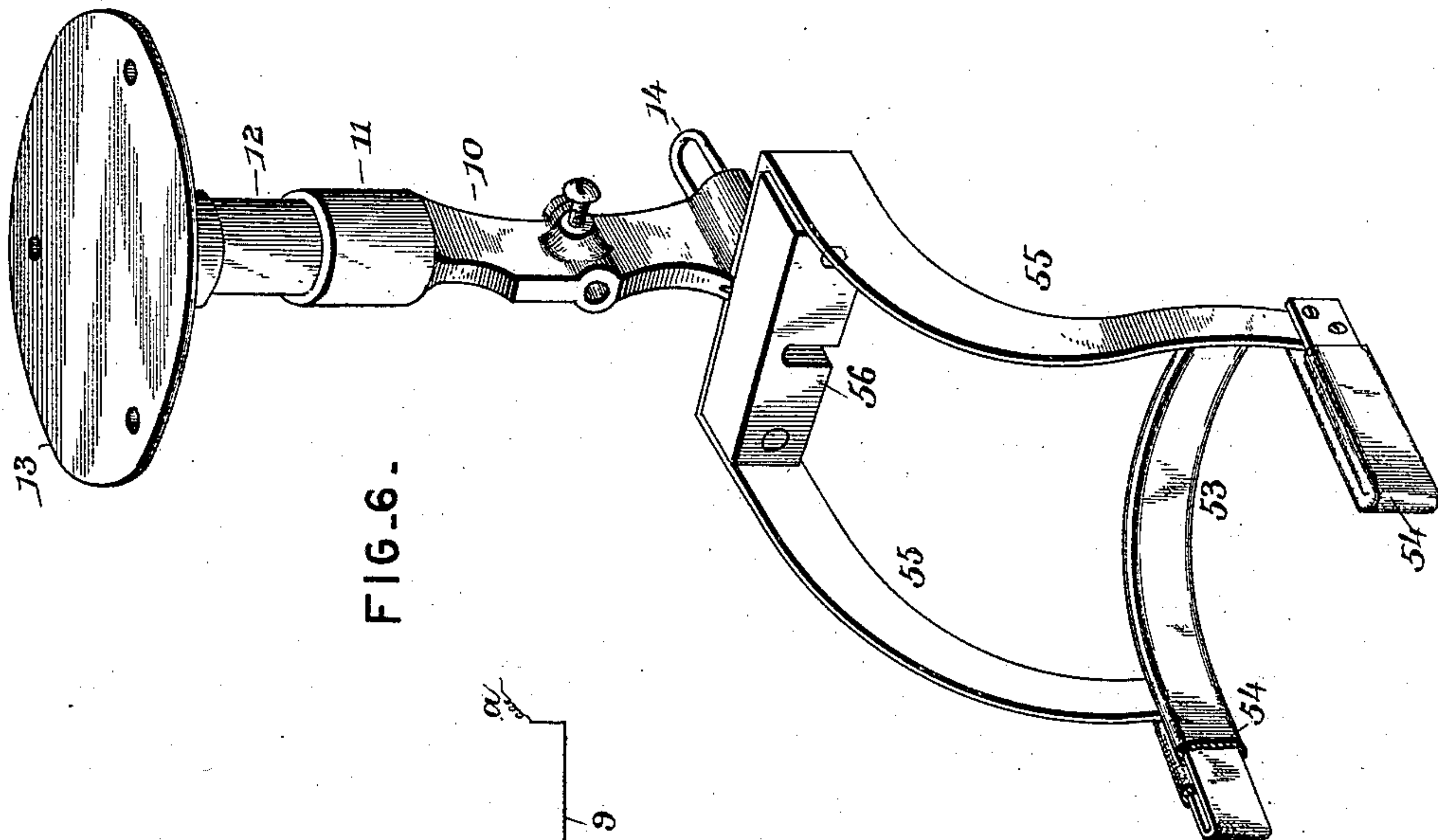


FIG. 6 -

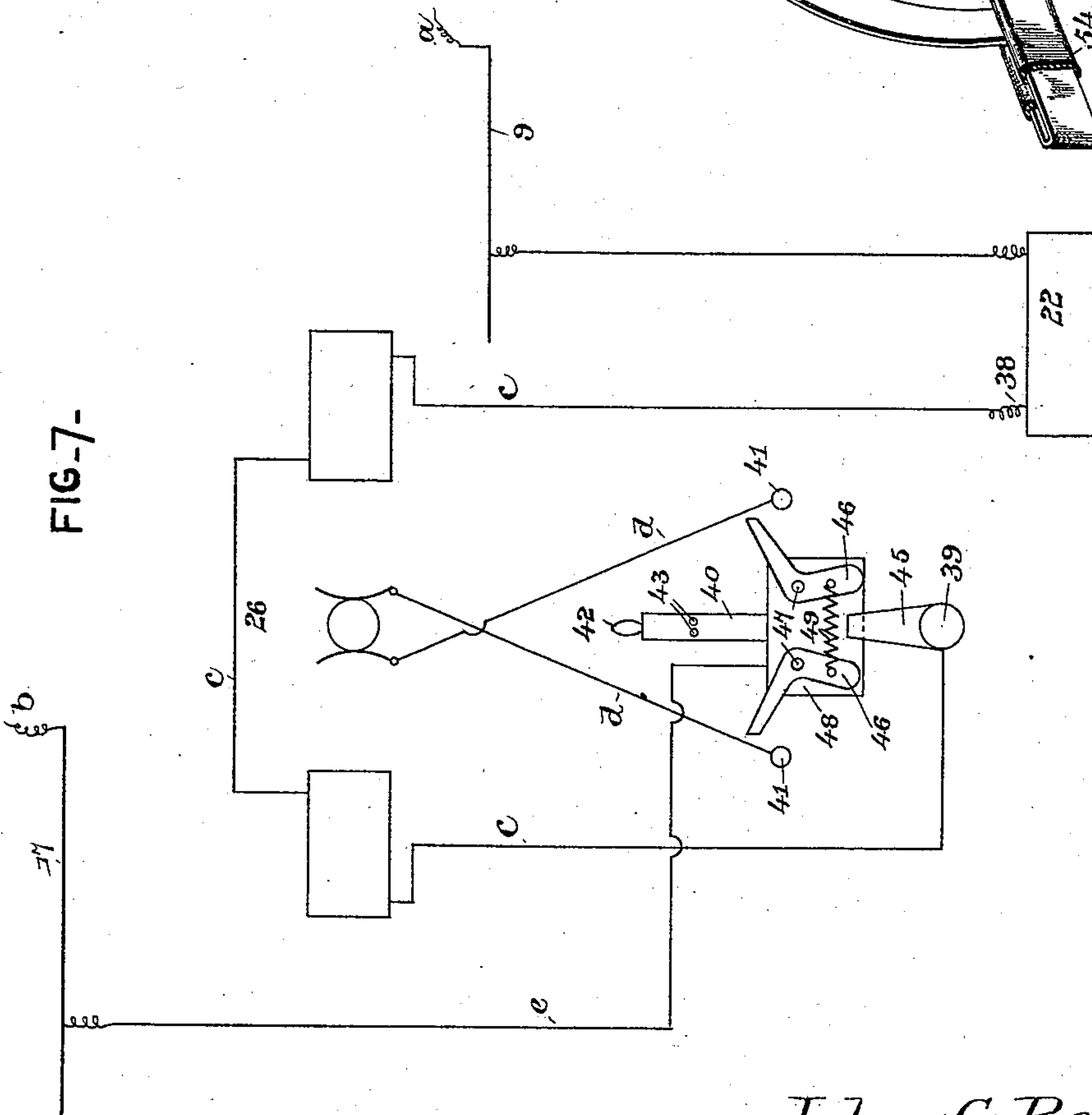


FIG. 7 -

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# UNITED STATES PATENT OFFICE.

JOHN C. REUTER, OF ENGLEWOOD, ILLINOIS.

## STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 552,073, dated December 24, 1895.

Application filed March 5, 1895. Serial No. 540,655. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. REUTER, a citizen of the United States, residing at Englewood, in the county of Cook and State of Illinois, have invented a new and useful Store-Service Apparatus, of which the following is a specification.

This invention relates to store-service apparatus; and it has for its object to provide in an apparatus of this character a new and useful electrically-propelled cash-carrier.

To this end, therefore, the main and primary object of the present invention is to construct an electrically-propelled cash-carrier with novel and efficient means whereby the same may be started on its travel in either direction by the act of attaching the cash-holding cup in position to the hanger part of the carrier and also whereby when the carrier is at rest the motor-wires will be entirely free of any current.

The invention also contemplates a positively-operated switch device controlled by the attachment and detachment of the cash-holding cup and also a novel construction of holder for the carrier at the station ends of the track.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a side elevation of an electrical store-service apparatus constructed in accordance with this invention, showing the carrier locked within the holder at one end of the track. Fig. 2 is an end view of the carrier. Fig. 3 is a central vertical longitudinal sectional view thereof. Fig. 4 is a transverse sectional view on the line 4 4 of Fig. 3. Fig. 5 is a horizontal sectional view on the line 5 5 of Fig. 3. Fig. 6 is a detail in perspective of the carrier-holder and the pendent bracket-arm suspending the same. Fig. 7 is a diagrammatic view showing the circuit connections of the carrier.

Referring to the accompanying drawings, 1 designates a skeleton hanger-frame consisting of spaced duplicate castings, each essentially comprising spaced upright hanger-arms 2 and upper horizontal portions 3, connecting

the upper ends of the hanger-arms and projected at their extremities beyond such arms to form flanged buffer-feet 5, the function of which will be hereinafter referred to, and by reason of the double construction of the hanger-frame there is a pair of the buffer-feet 5 located at each end thereof. The skeleton hanger-frame 1 above the upper end of the hanger-arms 2 thereof is provided with oppositely-located shaft-collars 6, in which are fitted the ends of the short stationary wheel-shafts 7, on which are loosely mounted the peripherally-grooved combined trolley and supporting wheels 8.

The peripherally-grooved combined trolley and supporting wheels 8, that are mounted within the top part of the hanger-frame 1 in the manner described, are adapted to travel directly on top of the main trolley-wire 9, that also forms a track for the carrier, and by reason of the contact of the wheels 8 with the wire 9 means are provided for transmitting the electrical current from the said wire to the metallic frame 1, which forms a part of the electrical circuit, as will be presently referred to.

The main trolley-wire 9 leads from the store-counter to the cashier's desk or other terminal points in the usual way, and at its terminals the said wire is suitably secured in the lower end of a pendent bracket-arm 10, which is provided at its upper end with an interiorly-threaded socket 11 that is adapted to engage the lower threaded end of a hanger-post 12, secured to a ceiling or attachment plate 13 that is adapted to be fastened to the ceiling or other convenient part of a room to provide for the proper support of the pendent bracket-arm.

The pendent bracket-arm 10 is provided at one side and its lower end with an engaging eye or loop 14, with which is adapted to be connected one end of suitable guy wires or lines 15, and at a point intermediate of its ends the said bracket-arm 10 has removably fitted therein an insulator-collar 16, in which is secured one end of the return-wire 17 that is located above and runs parallel with the main trolley-wire 9. The latter wire has connected to one terminal a circuit-wire *a*, leading from a suitable source of electrical energy and included in the same circuit with



the return-circuit wire *b* that is connected to one terminal of the return-wire 17, on which latter wire runs an intermediate supplemental trolley-wheel 18.

5 The intermediate supplemental trolley-wheel 18 is located between and above the opposite combined trolley and supporting wheels 8, and is also peripherally grooved so as to secure a firm purchase on and contact  
10 with the wire 17. The supplemental trolley-wheel 18 is loosely mounted on a short wheel-shaft 19, the opposite ends of which shaft are fastened to and insulated from the upper ends of the side triangular frame extensions 20,  
15 projected integrally from the opposite upper horizontal portions 3 of the skeleton hanger-frame 1, and at this point it will be noted that the wheel 18 is only in circuit with the wire 17, while the frame 1 of the carrier is in cir-  
20 cuit with the other main trolley-wire 9.

The upright hanger-arms 2 of the frame 1 are provided at their lower ends with the curved attaching flanges or plates 21 that are fastened exteriorly to a base-ring 22. The  
25 base-ring 22 is provided at its lower edge with an inturned horizontal circular flange 23, having entrance-notches 24 cut therein at diametrically-opposite points. The said base-ring 22 has securely fitted therein a switch-  
30 board or base 25 that is disposed above the plane of the lower flange 23 of the ring, and supports thereon an electric motor 26 having a vertically-disposed armature-shaft 27. The vertically-disposed armature-shaft 27 of the  
35 electric motor 26 is stepped at its lower end in a bearing-step 28, fitted on the switchboard or base 25, and the upper end of said armature-shaft is extended between the opposite horizontal portions 3 of the frame 1, and has  
40 securely fitted thereon a vertically-disposed friction drive-pulley 29. The vertically-disposed friction drive-pulley 29 is preferably made of rubber or other suitable insulator material and frictionally engages with one  
45 side of the main trolley-wire 9. The friction drive-pulley 29, mounted on the upper end of the armature-shaft 27, is arranged directly adjacent and opposite to a horizontally-disposed grooved bearing-pulley 31. The hori-  
50 zontally-disposed bearing-pulley 31 is mounted within a bracket-plate 32, secured to the inner side of one of the horizontal portions 3 of the frame 1, and provided below the plane of the pulley 31 with a horizontally-disposed  
55 bifurcated flange 33, that assists in maintaining the trolley-wire 9 properly disposed between the pulleys 29 and 31, and the bifurcation of said flange 33 receives the pulley 29, so that the same can be arranged sufficiently  
60 close to the pulley 31 to provide for a firm gripping of the wire 9.

The frame of the electric motor 26 has rigidly secured on the top part thereof a vertically-disposed adjusting-plate 34, that is dis-  
65 posed adjacent to the inner side of one of the horizontal frame portions 3 opposite the bracket-plate 32, and said plate 34 is adapted

to receive the contact of an adjusting-screw 35, mounted in the threaded opening 36 at one side of the frame 1. The adjustment of  
70 the screw 35 against the plate 34 will provide for the necessary adjustment of the motor, so that the friction drive-pulley 29 will be held tightly clamped against the trolley-wire 9, so  
75 that when the motor is in operation the said pulley 29, by its rotation, will provide for the propulsion of the carrier on the wires 9 and 17. The electric motor 26 is preferably in-  
80 cased within a cylindrical casing or housing 36<sup>a</sup>, and in order to protect the armature of the motor from the dropping of metallic dust and wearing parts a fender disk or plate 37  
is fitted on the armature-shaft directly above the armature, and said fender disk or plate  
85 is made of fiber or other suitable insulation material.

The field-magnets of the electric motor 26 are connected in series by the magnet-wires *c*. One of the terminals of the magnet-wires *c* is  
90 mechanically connected, as at 38, to the base-ring 22 to complete the circuit with the metallic frame of the carrier, whereby the electric current will be conducted from the main  
trolley-wire 9 directly to the field-magnets of the motor. The other terminal of the magnet-  
95 wire *c* is connected to the lower end of the switch pivot-post 39. The switch pivot-post 39 is mounted to turn in the switchboard or base 25, and has attached to its upper end the  
horizontally-swinging switch-lever 40, that  
100 works on top of the switchboard or base between and above the upper ends of the spaced contact-posts 41. The spaced contact-posts 41 are suitably fitted in the switchboard or  
105 base 25 and project above and below the same, and said contact-posts have connected to the lower ends thereof one terminal of the armature circuit-wires *d*, the other terminals  
110 of which are connected respectively with the separate brushes of the commutator of the armature, thereby completing the wiring of the motor.

The horizontally-swinging switch-lever 40 is adapted to contact with either of the posts  
115 or buttons 41, to provide for reversing the direction of the current through the armature of the motor in order to reverse the same, to provide for the travel of the carrier in both  
directions over the wires which form a track therefor. The switch-lever 40 is provided at  
120 its free outer end with a finger-knob 42, that projects beyond the ring 22, so that the switch can be manipulated by hand when desired, and near its outer end the said switch-lever  
has attached thereto a pair of depending  
125 spaced shifting-pins 43, that work in a segmental slot 44, formed in the switchboard or base 25 adjacent to the ring 22, and said switch-lever is attached fast at its inner end  
130 to the post 39, in order to turn the said post.

The turning pivot-post 39 has fastened to the inner end thereof, under the switchboard or base 25, an insulator cam-arm 45, that is adapted to work between and against either



of the movable bell-crank switch-plates 46. The movable bell-crank switch-plates 46 are substantially L-shaped, and are pivotally secured, as at 47, to the under side of a stationary metallic circuit-plate 48, that is suitably fastened to the under side of the switch-board or base 25, and has connected thereto one terminal of the return-circuit wire *e*, the other terminal of which is suitably connected with the wheel-shaft 19 of the supplemental trolley-wheel 18, so that the circuit will be completed through the main return-wire 17, forming one of the track-supports for the carrier.

The movable bell-crank switch-plates 46 are arranged between the spaced contact-posts 41, and one arm of said plates is adapted to respectively contact with the adjacent contact-post, while the other arms of the said plates, between which the cam-arm 45 is arranged, are connected by an intermediate retractile spring 49, that provides for drawing one of the bell-crank plates in contact with one of the contact-posts 41 when the other of said bell-crank switch-plates is held adjusted out of contact with the adjacent contact-post by the cam-arm 45.

From the above it will be understood that when the switch-lever 40 is in a position which holds the cam-arm 45 centrally between the movable switch-plates 46 neither of said plates will be in contact with one of the contact-posts 41, and the circuit will be entirely open, so that the current will not traverse the wires or coils of the motor at all, and therefore when the carrier is at rest on the track the electric motor is entirely relieved from the electric current. On the other hand, when the switch-lever is moved onto the upper end of either of the contact-posts 41, the cam 45 will operate to move one of the movable switch-plates away from and out of contact with the post 41 touched by the switch-lever. In this position the other switch-plate will contact with the other contact-post, thereby closing the circuit through the armature and fields of the motor to provide for the rotation of the armature in one direction. By shifting the switch-lever from one contact-post to the other a reversal of the direction of travel of the current through the armature-coils is secured to provide for the reversing of the direction of travel of the carrier.

The base-ring 22 is adapted to detachably receive the upper flanged end 50 of the cash-cup 51. The upper flanged end 50 of the cash-cup 51 fits snugly in the bottom of the ring 22 and is provided at diametrically-opposite points with the catch-pins 52, that are adapted to be passed through the entrance-notches 24 of the flange 23 in attaching and detaching the cup, it being understood that the pins 52 are turned over the flange 23 out of alignment with the notches 24 to provide for the support of the cup. One of the catch-pins 52 is adapted to engage between the spaced shifting-pins 43 of the switch-lever,

so that by simply turning the cup in either direction, after placing the same within the ring 22, the switch-lever 40 may be turned onto either of the contact-posts 41 to provide for starting up the electric motor in either direction. When the cup is turned to bring the pins 52 in alignment with the notches 24, the switch-lever 40 will be brought to a position in which the circuit is opened in the manner already referred to.

When the carrier reaches the end of the wires forming the track therefor, the base-ring 22 of the carrier passes into a U-shaped spring-holder clip 53, that is preferably provided with rubber or other suitable cushion-covering 54 to properly protect the contacting parts and is made of a single strip of spring metal. The spring-holder clip 53 serves to clip the carrier and hold the same perfectly stationary at the end of the track, and the said clip is provided with folded ends which are fastened to the lower extremities of a depending substantially U-shaped holder-bracket 55, that is suitably secured at one side and the lower end of the pendent bracket-arm 10. Fitted in the upper end of the holder-bracket 55 is a rubber or similar cushion-block 56, against which is adapted to contact the end buffer-feet 5 of the carrier, to provide means for easing up the sudden stoppage of the carrier.

From the above it is thought that the construction, operation and many advantages of the herein-described store-service apparatus will be readily apparent to those skilled in the art, and it will be understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In an electrical store service apparatus, the combination of separate parallel wires, a carrier having a hanger frame carrying separate trolley wheels traveling respectively on the separate wires, an electric motor mounted within the hanger frame and geared with one of the wires to provide for the propulsion of the carrier, a reversing switch mounted within and carried by the carrier and circuited with the electric motor and said separate wires, said reversing switch having a swinging switch lever, and a cash cup adapted to detachably connect with the hanger frame and to engage with the switch lever to control the switch, substantially as set forth.

2. In an electrical cash carrier, a wheeled hanger frame, an electric propulsion motor mounted within the frame, a reversing-switch circuited with the motor, and a cash cup adapted to detachably connect with the hanger frame and to engage with said switch to operate the same, substantially as set forth.

3. In an electrical cash carrier, a skeleton hanger frame consisting of spaced duplicate



castings provided with upper triangular frame extensions, combined trolley and supporting wheels mounted within opposite upper ends of the hanger frame and adapted to travel on a trolley wire, a supplemental trolley wheel loosely mounted between the upper frame extensions above the combined trolley and supporting wheels and adapted to travel on a separate return wire, and an electric motor mounted within the hanger frame and suitably geared with said trolley wire, said electrical motor being circuited with the separate trolley and return wires, substantially as set forth.

4. In an electrical cash carrier, a wheeled hanger frame, an electric motor mounted within the hanger frame and having a vertically disposed armature shaft, a bracket plate secured fast within the hanger frame and provided with an inwardly extending horizontal bifurcated flange, a horizontally disposed bearing pulley mounted for a fixed rotation within the bracket plate above the bifurcated flange, a vertically disposed friction drive pulley fitted on the extreme upper end of the armature shaft in the bifurcation of said flange and disposed directly at one side of said bearing pulley, an adjusting plate secured fast on the frame of the motor and disposed at one side of the drive pulley, and an adjusting screw mounted within one side of the hanger frame and working against said plate, substantially as set forth.

5. In an electrical cash carrier, a wheeled hanger-frame, an electric motor mounted within the hanger-frame and having a vertically disposed armature shaft, a bracket plate secured within the hanger frame and provided with a horizontally disposed flange, a horizontally disposed fixed bearing pulley mounted within said bracket plate above its flange, a vertically disposed friction drive pulley fitted on the upper end of the armature shaft directly opposite said bearing pulley, and an adjusting device for binding said friction drive pulley against the supporting wire for the carrier, substantially as described.

6. In an electrical cash carrier, a wheeled hanger frame, a motor mounted within the hanger frame and having a vertically disposed armature shaft, a fixed horizontally disposed bearing pulley mounted within the hanger frame, a vertically disposed friction drive pulley fitted on the armature shaft opposite the bearing pulley and adapted to rotate against the supporting wire for the carrier, a vertically disposed adjusting plate secured fast on the frame of the electric motor within the hanger frame, an adjusting screw mounted within one side of the hanger frame and working against said adjusting plate, and suitable circuit connections, substantially as set forth.

7. In an electrical cash carrier, a wheeled hanger frame carrying a switch board, an electric motor mounted on said switch board and suitably geared with the supporting wire

for the carrier, a reversing switch mounted on the switch board and circuited with the electric motor, and a cash cup having fastening means to connect with the hanger frame and also to engage with the switch to provide for operating the latter by turning the cup, substantially as set forth.

8. In an electrical cash carrier, a wheeled hanger frame carrying a base ring, a switch board mounted within the base ring, an electric motor mounted on the switch board and suitably geared with the supporting wire for the carrier, a reversing switch mounted on the switch board and circuited with the electric motor, and a cash cup adapted to be detachably fitted within the ring and to engage with the switch to operate the latter, substantially as set forth.

9. In an electrical cash carrier, a wheeled hanger frame carrying a switch board, an electric motor mounted on the switch board and suitably geared with the track wire for the carrier, a reversing switch mounted on the switch board and circuited with the electric motor, said switch having a horizontally swinging switch lever provided with depending spaced shifting pins, and a cash cup having fastening means connected with the hanger frame and engaged with the pins of the switch lever to operate the latter, substantially as set forth.

10. In an electrical cash carrier, a wheeled hanger frame carrying a base ring provided at its lower edge with an inturned horizontal flange having diametrically opposite entrance notches, a switch board mounted within the base ring, an electric motor mounted on the switch board and suitably geared with the track wire of the carrier, a reversing switch mounted on the switch board and circuited with the electric motor, said switch having a horizontally swinging switch lever provided with depending spaced shifting pins working in a slot in the switch board, and a cash cup provided with diametrically opposite catch pins for engagement on the flange of the base ring and with the shifting pins of the switch lever, substantially as set forth.

11. In an electrical cash carrier, a wheeled hanger frame carrying a switch board, an electric motor mounted on the switch board and suitably geared with the track wire for the carrier, the field magnets of said motor having a circuit connection with a trolley wire, a pair of spaced contact posts fitted within the switch board and respectively having circuit connections with the commutator brushes of the motor, a stationary metallic circuit plate having a circuit connection with a main return wire included in the same circuit as the trolley wire, a pair of movable bell crank switch plates mounted on said circuit plate and adapted to respectively contact with said contact posts, a spring connecting said switch plates, a turningswitch pivot post fitted in the switch board, an insulator cam arm mounted on the lower end of the pivot post and work-



ing between and against said movable switch plates, a switch lever attached to the upper end of said pivot post and adapted to contact with either of the contact posts, and the cash cup, substantially as set forth.

12. In a store service apparatus, the combination with the track wires; of the carrier having end buffer feet, a pendent bracket arm, a U-shaped holder bracket attached to the pendent arm, a cushion block fitted within the upper end of the holder bracket, and a U-shaped spring holder clip made of a single

strip of spring metal and provided with a cushion covering, said spring holder clip being further provided with folded ends which are fastened to the lower extremities of said holder bracket, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

J. C. REUTER.

Witnesses:

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