

No. 664,807.

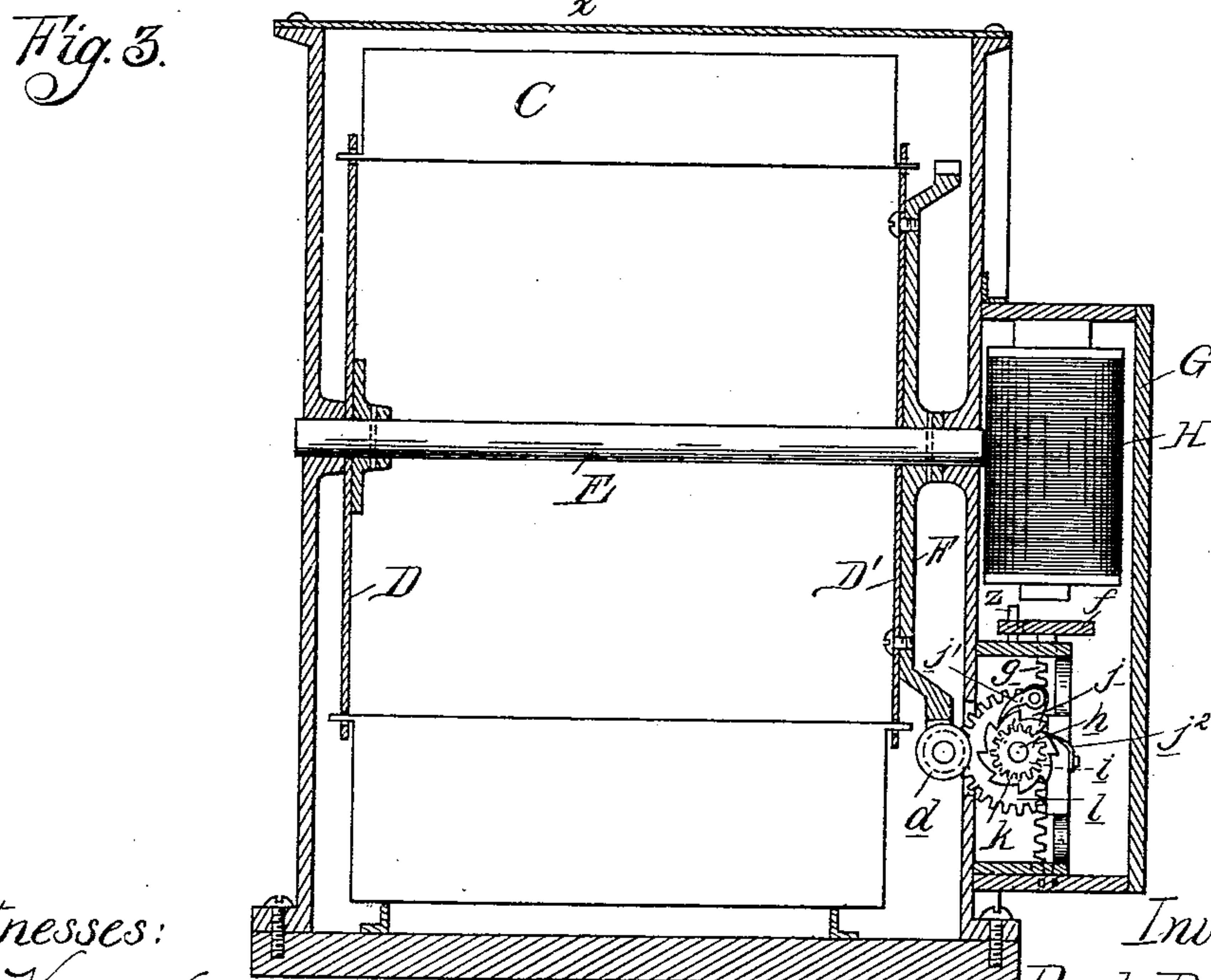
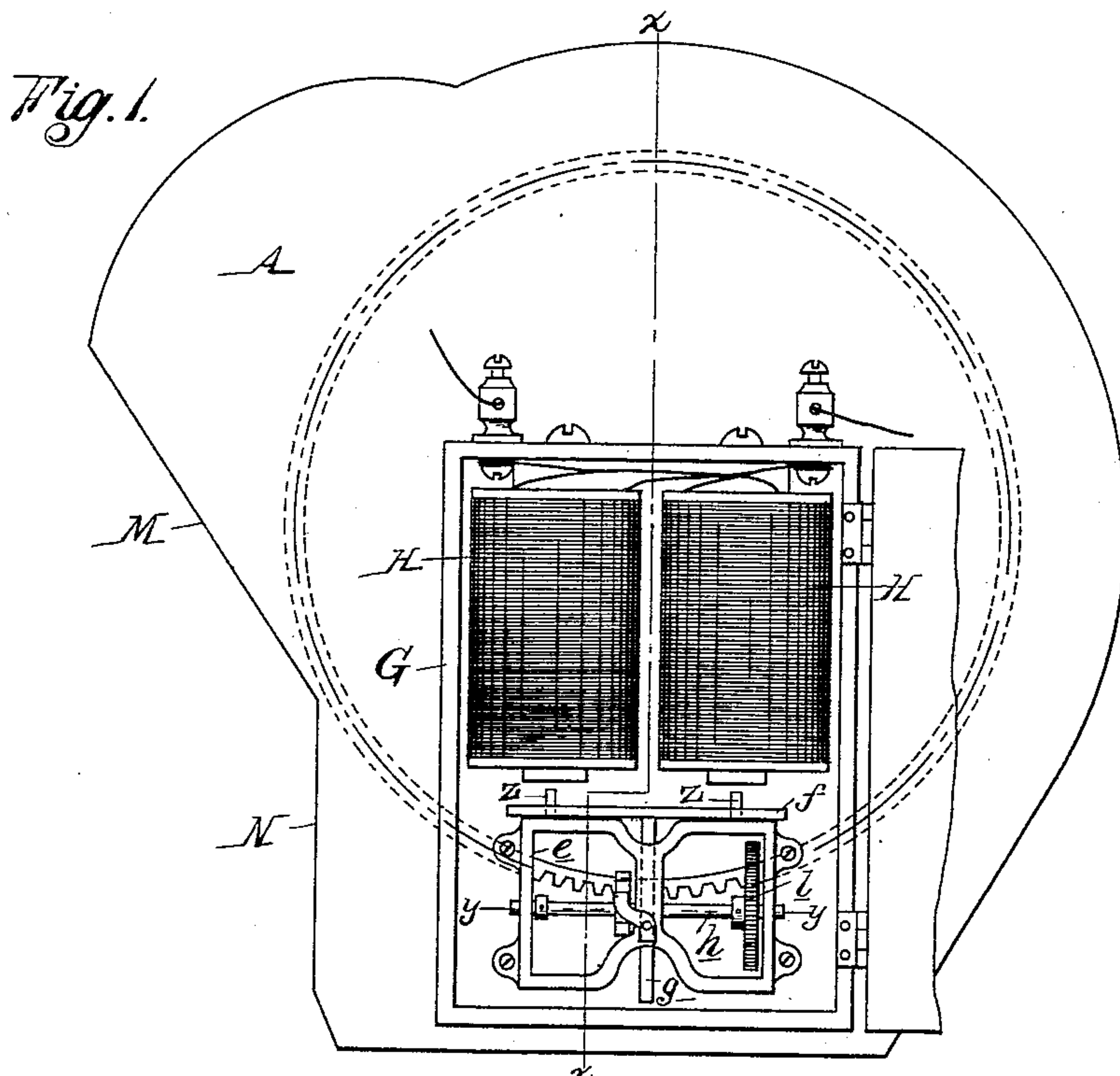
Patented Dec. 25, 1900.

P. DAWSON.
ELECTRIC ADVERTISING DEVICE.

(Application filed May 24, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

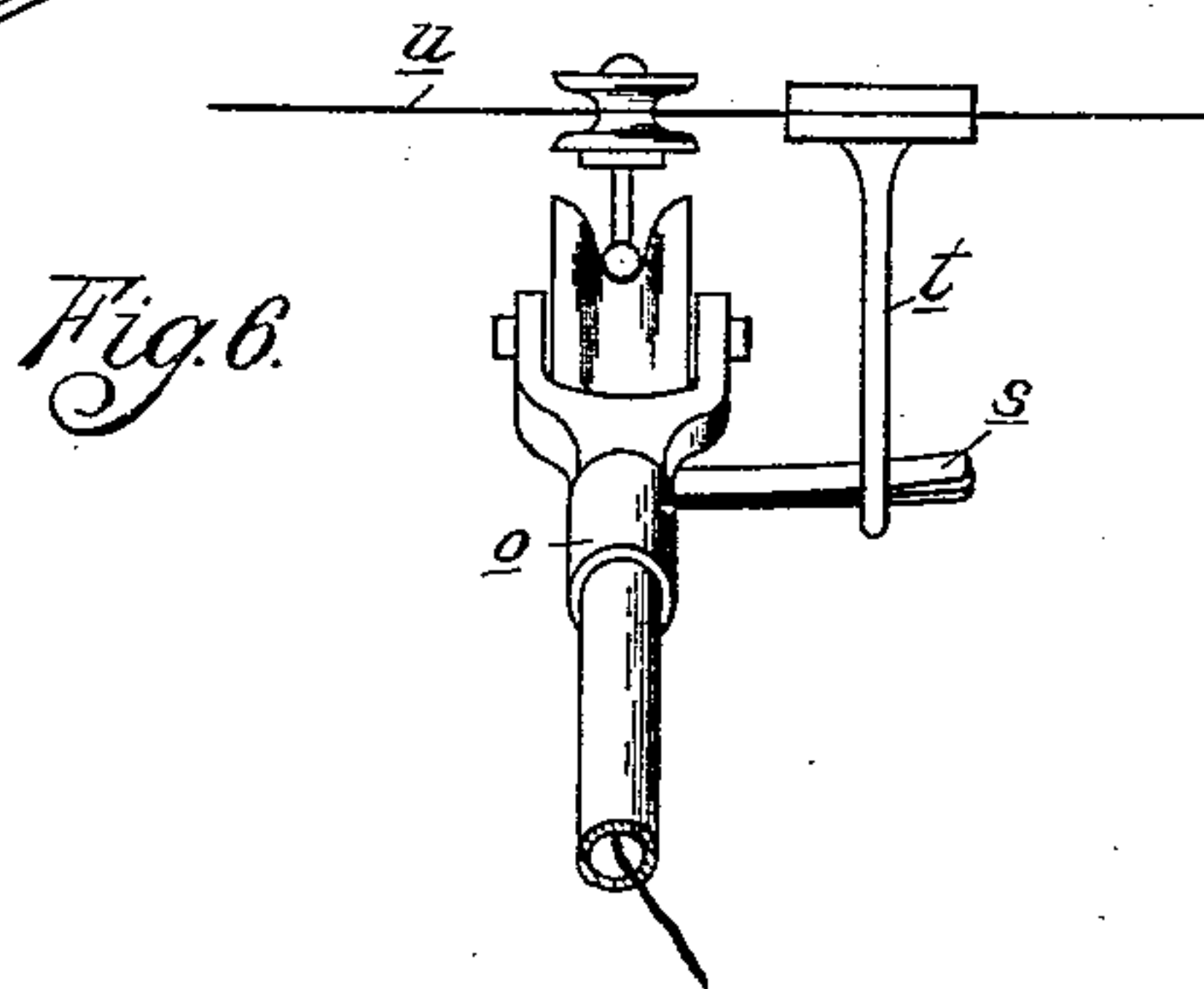
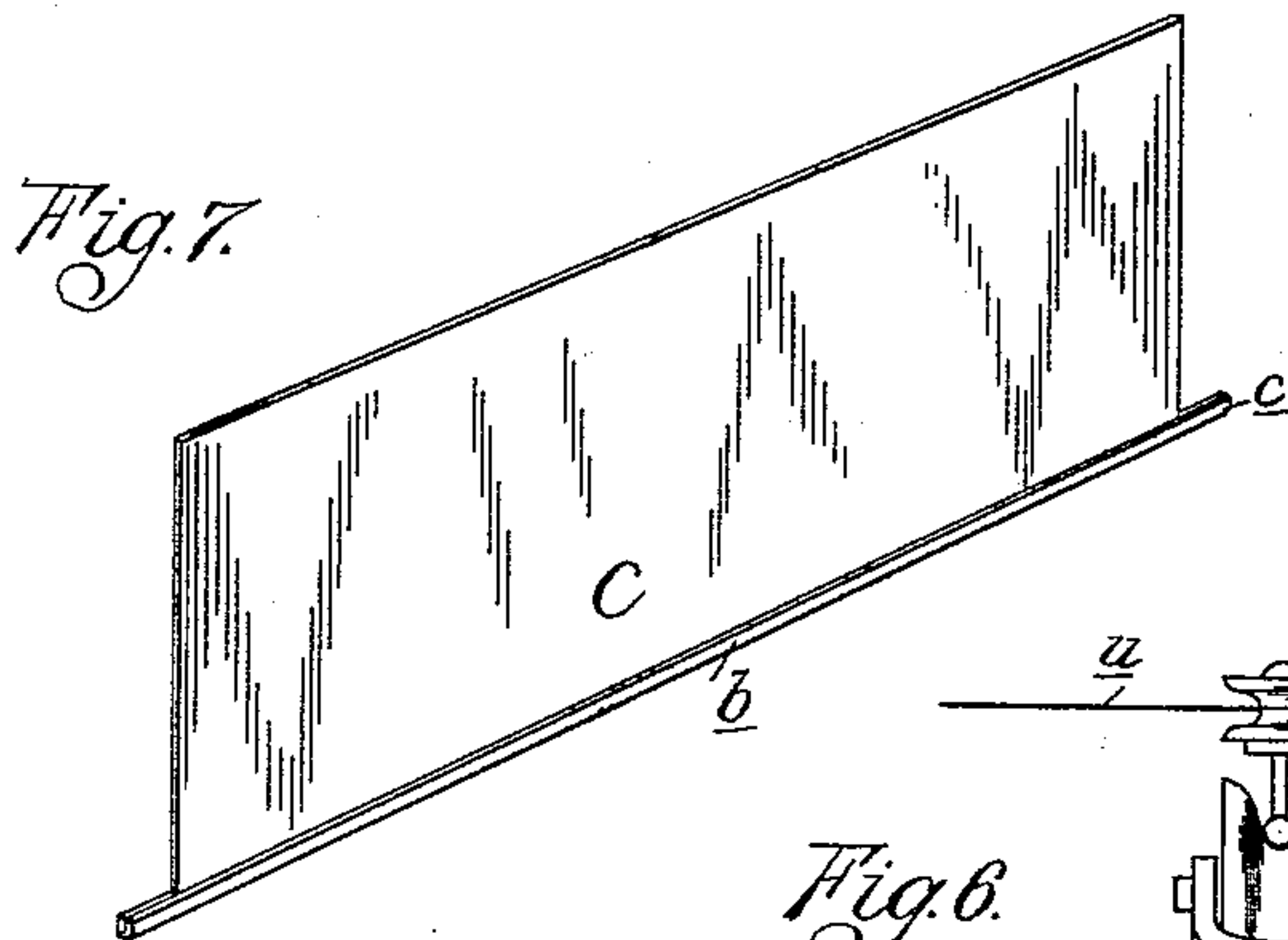
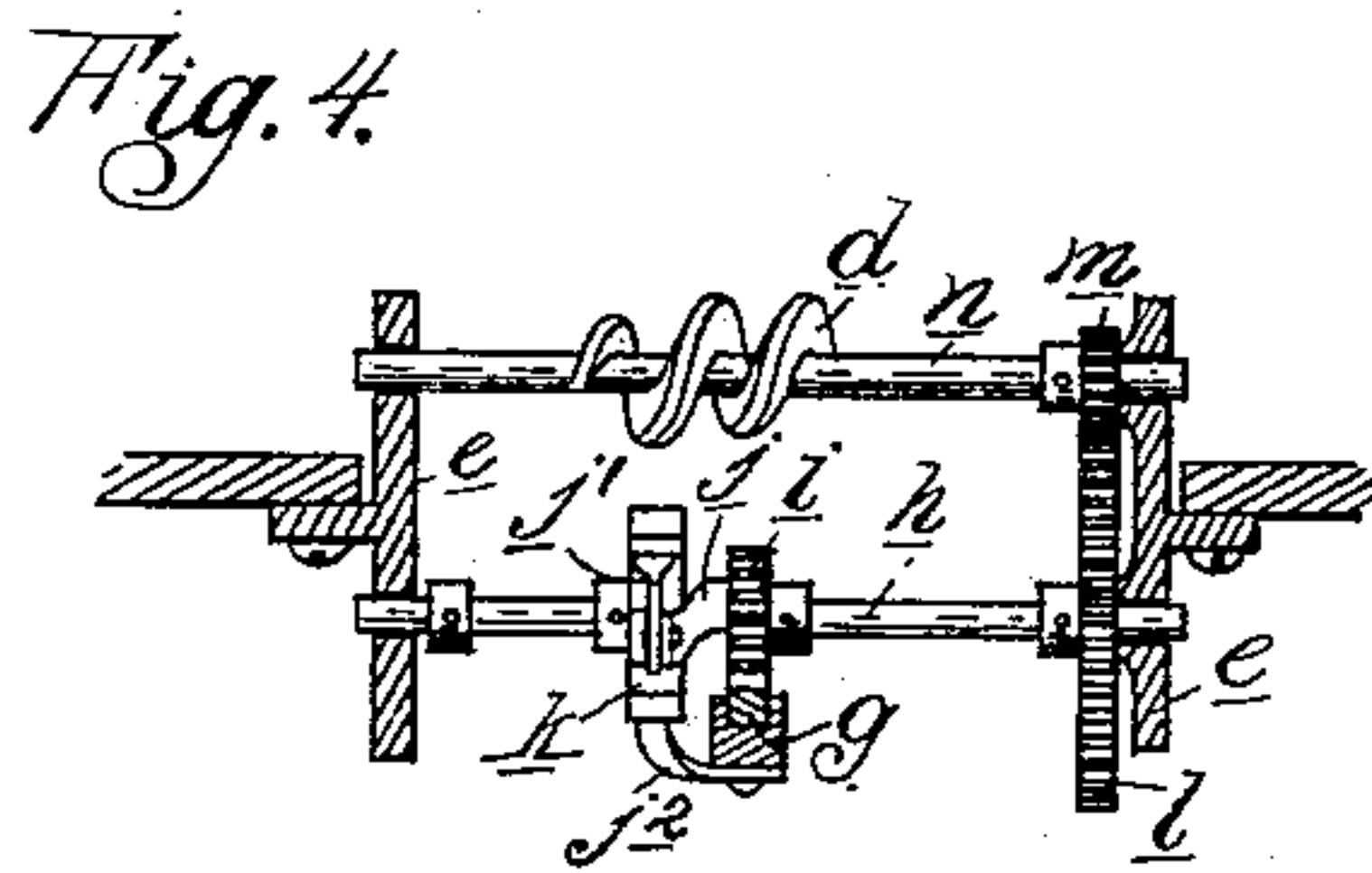
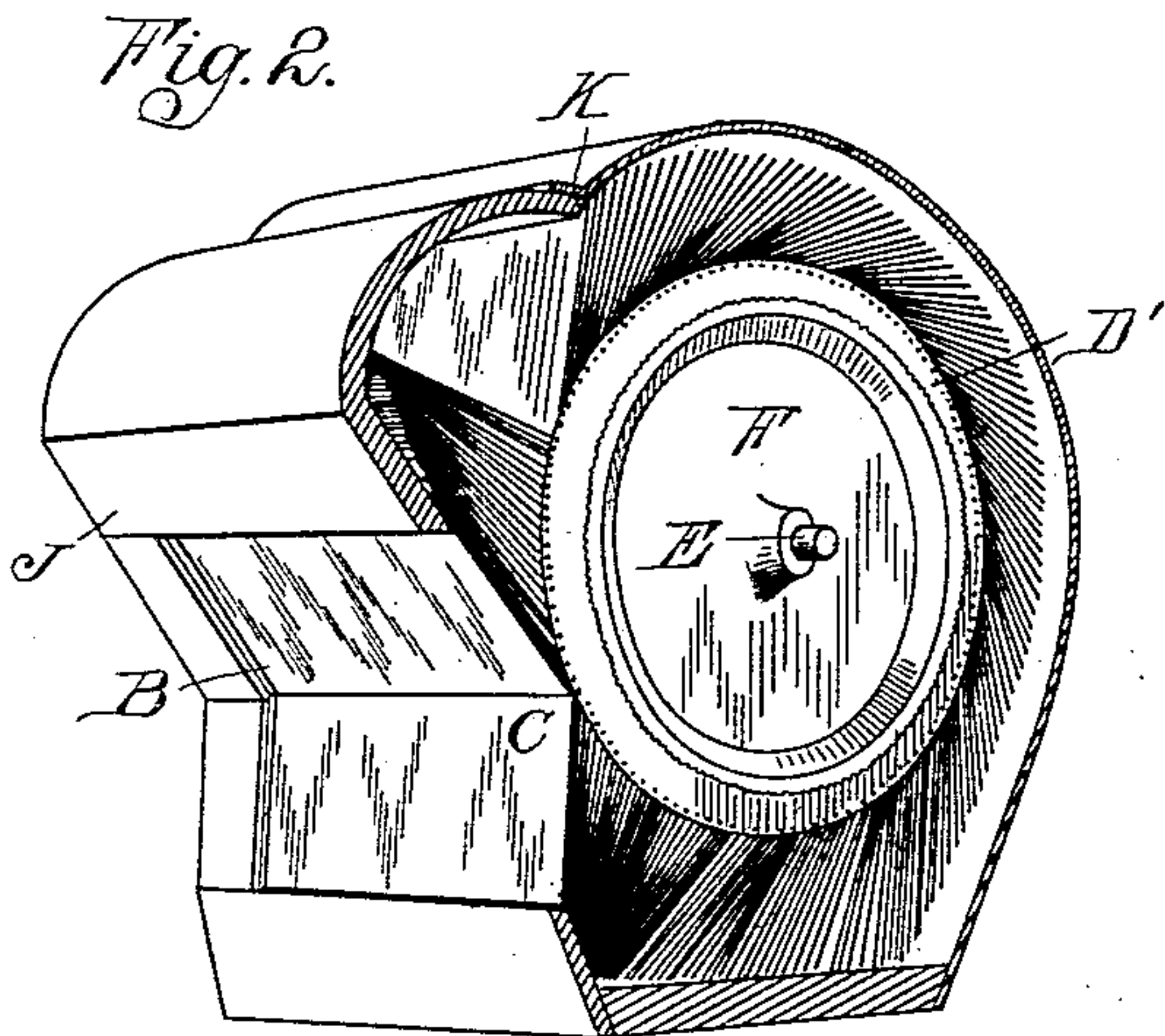
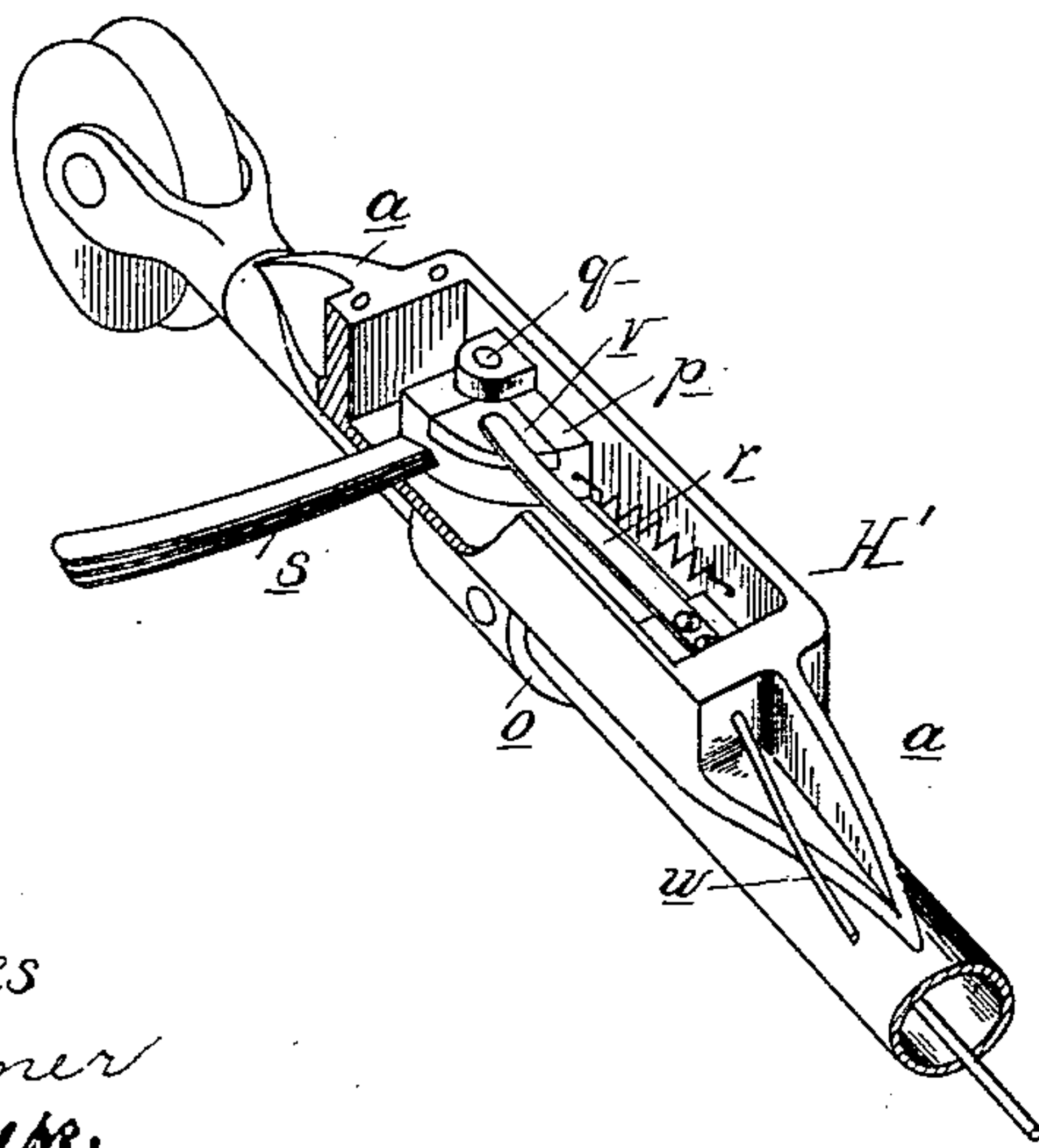


Fig. 5.



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UNITED STATES PATENT OFFICE.

PAUL DAWSON, OF DETROIT, MICHIGAN.

ELECTRIC ADVERTISING DEVICE.

SPECIFICATION forming part of Letters Patent No. 664,807, dated December 25, 1900.

Application filed May 24, 1899. Serial No. 717,991. (No model.)

To all whom it may concern:

Be it known that I, PAUL DAWSON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Advertising Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention relates to an advertising device for electric-railway cars in which a system of movable tablets within the car are operated by means of an electric current derived from the trolley-wire through the trolley-pole; and
15 the invention consists in the specific construction and arrangement of different parts, whereby I provide a practical, cheap, simple, accurate, and convenient mechanism for the purpose, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of my device with the actuating mechanism exposed to view. Fig. 2 is a sectional perspective with
25 one side of the casing broken away. Fig. 3 is a vertical cross-section on line *xx* in Fig. 1. Fig. 4 is a horizontal cross-section on line *yy* in Fig. 1. Fig. 5 is a perspective view of the upper end of a trolley-pole, showing the circuit-closing device secured thereto on its
30 under side, the pole being reversed to bring the device on top. Fig. 6 is a front view of Fig. 5 in its proper position. Fig. 7 is a detached perspective view of one of the movable signs.

A is the cabinet inclosing the device.

B is an opening in front of the cabinet through which the tablets or signs are displayed.

40 C represents the tablets, preferably made of thin sheet-aluminium, formed with a strengthening-rib *b* at the back by doubling over the metal, said rib projecting at the ends to form the flat-pivots *c* integrally with the body.

45 D D' are two circular metal disks fastened upon a shaft E and forming a revolving drum to which the tablets are pivotally mounted by means of a series of peripheral perforations in the disks D D', into which
50 the pivots of the signs engage. The drum is journaled in bearings in the sides of the cabinet, and to one end of it is secured a worm

gear-wheel F, to which intermittent motion is imparted by means of a worm *d* in the following manner:

55 Inclosed within a suitable housing G, secured to one side of the cabinet, are two electromagnets H, which are intermittently energized through a circuit-closer operated by the movement of the car, as will be more
60 fully hereinafter described. Below these magnets is supported upon a suitable frame *e* an armature *f*, to which is secured a downwardly-extending rack-bar *g*, held in vertical guide-bearings. In front of this rack-bar is jour-
65 naled a shaft *h*, upon which is loosely sleeved the pinion *i*, engaging with the rack-bar. The pinion has an arm *j*, which carries a dog *j'*, engaging with the ratchet-wheel *k*, which is fast upon the shaft *h* and has a spring back-
70 stop *j''*. The shaft *h* carries at one end a larger gear-wheel *l*, which meshes with a small pinion *m* upon a shaft *n*, upon which the worm *d* is secured.

Upon the upper end of the trolley-pole on
75 its under side is mounted a housing H', which is provided with a clamping-collar *o*, by means of which it is fastened upon the trolley-pole. Within this housing (which has a removable cover omitted in Fig. 5) is a circuit-closing
80 device composed of a movable contact-piece *p*, pivotally mounted upon the pin *q*, and a fixed spring-contact *r*. The movable contact *p* has secured to it a flexible striker-arm *s*, formed of a series of thin superimposed
85 spring-leaves and projecting angularly out to one side of the trolley-pole adapted to be struck successively in the movement of the car by a series of fixed arms *t*, which are ad-
90 justably secured upon the usual cross-wires *u*, which support the trolley-wire I in position over the track in the usual manner. The movable contact *p* is in permanent elec-
95 trical contact with the trolley-wire through the trolley-pole and carries an insulating face-piece *v*, upon which the spring-contact *r* normally bears. The spring-contact *r* is normally insulated from the housing and forms one terminal of an electric circuit *w*,
100 which extends to one of the binding-posts of the magnets H H and through said magnets to the other binding-post and thence to the rail in the usual manner through the metallic parts of the car.

In practice whenever the arm *s* of the circuit-closer strikes one of the fixed arms *t* it moves the contact *p* a sufficient distance to bring it in metallic connection with the spring-contact *r*, and thus closes the electric circuit through the magnets *H H*, which by being energized attract the armature *f*. This movement of the armature is transmitted through the parts described to the worm *d*, and thereby imparts a step-by-step motion to the drum each time the magnets are energized. The motion of the drum revolves the tablets, and with each motion a new tablet is displayed in the sight-opening. To this end the upper portion of the cabinet has a hood-like projection with an inwardly-inclined lower face *M*. The upper portion of this face *M* is closed by a ledge *J*, which arrests the tablets in an upturned position after they have passed over the top of the drum and releases them only one by one at each step in the motion of the drum. The sight-opening is formed partly in the face *M* and partly in the face *N* below and is large enough to take in two tablets, and as the tablets turn in the opening both sides of each tablet are successively exposed at such angles of sight that both sides may be utilized for advertising purposes.

To prevent the tablets from crowding and jarring each other on the ledge *J* after they pass over the top of the drum, there is another ledge *K* farther up near the top of the casing which acts in a similar way to release one tablet at a time.

Having described the construction and operation, I will now point out more particularly the parts to which my invention has special reference.

The constant jar on a car in motion, which jar is especially severe on going around curves, makes it very difficult to make a device of this kind that will stand the practical test, and my improvement especially aims to accomplish this. To this end I carry the tablets directly by a revolving drum which has not a particle of lost motion, no matter how severe the jar is, as it is directly driven by a worm, which locks it in position. The tablets are very light and thin, and the seam at the back is flattened down, and the pivot-pin is flattened also. This permits of spacing them almost as closely as the leaves in a book, so that a large number may be carried on the drum without making it too bulky or heavy or hard to turn, while at the same time the two tablets which are in the sight-opening appear to be continuous, and thus the two faces can be utilized for a continuous advertisement, giving thus double the space of one. The construction of the tablets allows their easy removal or insertion, as they will bend like a spring and can be sprung into place or removed at the sight-opening without dismounting anything. The flat pivots also make them turn more freely.

By forming the cabinet with a face inwardly inclined from two directions toward the

drum—that is, in planes which coincide with the two tablets displayed in the sight-opening—the light can fall directly upon the tablets and passengers from their seats can plainly read any advertisements thereon.

The drive mechanism is very simple and reliable. The distance between the teeth of the ratchet is made less than the distance which the dog travels. There will therefore be a lost motion before the dog engages a tooth on the ratchet, which permits the armature to start freely when attracted by the magnet, and it does its work after it has acquired some momentum. To assist the operation of the magnet still further, I secure two short iron guide-pins *z* to the frame, which project into close proximity to the poles of the magnet and pass through holes in the armature, so as to guide it in its movement. Whenever the magnets are energized, these guide-pins form a short path for the magnetic lines of force from the poles to the armature, and thereby materially increase the magnetic force of attraction between the poles and the armature when they are separated. I also cover the armature with a thin film of copper beneath the poles of the magnet to prevent the armature from sticking.

The circuit-closer is well protected from any injury, and the housing hugs the pole closely and has inclines *a* at both ends, so that it cannot catch on the cross-wires if the trolley should fly off. The striker-arm is so elastic that it cannot take injury from striking against the hangers *t* or the trolley-wire.

In practice while I have described my device as for advertising purposes it may be used as a street-indicator—that is to say, I propose to carry tablets which in proper sequence follow between the advertising-tablets and indicate the name of the street which the car approaches, while the other tablets may advertise the merchants doing business along the line the car travels.

What I claim as my invention is—

1. In an electric advertising device, the combination of a revolving drum, a series of tablets pivotally secured to the drum at its outer periphery, an inclosing outer casing formed with the inwardly-inclined faces *M*, *N*, the sight-opening *B* in said faces, the ledge *J* above said sight-opening, the ledge *K* in the rear of the aforesaid ledge, an actuating device for imparting a step-by-step motion to the drum, comprising a pair of magnets *H* carrying a rack-bar *g*, the shaft *h*, and pinion *i* thereon engaging with said rack-bar, the gear-wheel *l*, and ratchet *k* on the shaft *h*, the dog *j'* carried by the pinion *i*, the shaft *n*, the pinion *m* on said shaft engaging with the gear-wheel *l*, the worm *d* on the shaft *n* and the worm-gear *F* on one end of the drum engaging with the worm *d*.

2. In an electric advertising device, the combination of a revolving drum composed of two heads or disks, formed with perforations near their periphery and fastened upon a shaft,

and a series of flexible tablets pivotally secured in the perforations in the heads of said drum, said tablets being struck up from a blank of thin sheet metal and having one of
5 its edges reinforced by doubling the metal back upon itself, said reinforced portion projecting beyond the opposite ends of said blank and forming flattened pivots therefor where-
10 by any one of said tablets may be mounted or dismounted from the drum by slightly flexing them.

3. In an advertising device, the combination of a revolving drum, composed of two heads or disks, formed with perforations near their
15 periphery and fastened upon a shaft, a series of flexible tablets pivotally secured in the perforations in the heads of said drum, and an outer inclosing casing formed with a sight-opening in front of the drum and exposing a
20 portion thereof, through which the tablets may be independently removed or inserted in the drum, said tablets being made of thin

sheet metal with the pivots integrally formed therewith by doubling the metal back upon itself to form flattened pivots. 25

4. In an electric advertising device, the combination with the revolving drum carrying the tablets, of the magnets *H*, means for intermittently energizing the same, the armature *f* supported below the magnets, the rack-
30 bar *g* attached to said armature, the shaft *h* and loose pinion *i* thereon engaging with the rack-bar, the gear-wheel *l* and ratchet *k* on the shaft *h*, the dog *j'* carried by the pinion *i* the shaft *n*, the pinion *m* on said shaft en-
35 gaging with the gear-wheel *l*, the worm *d* on the shaft *n* and the worm-gear *F* at one end of the drum engaging with the worm *d*.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL DAWSON.

Witnesses:

OTTO F. BARTHEL,
V. D. KINNER.