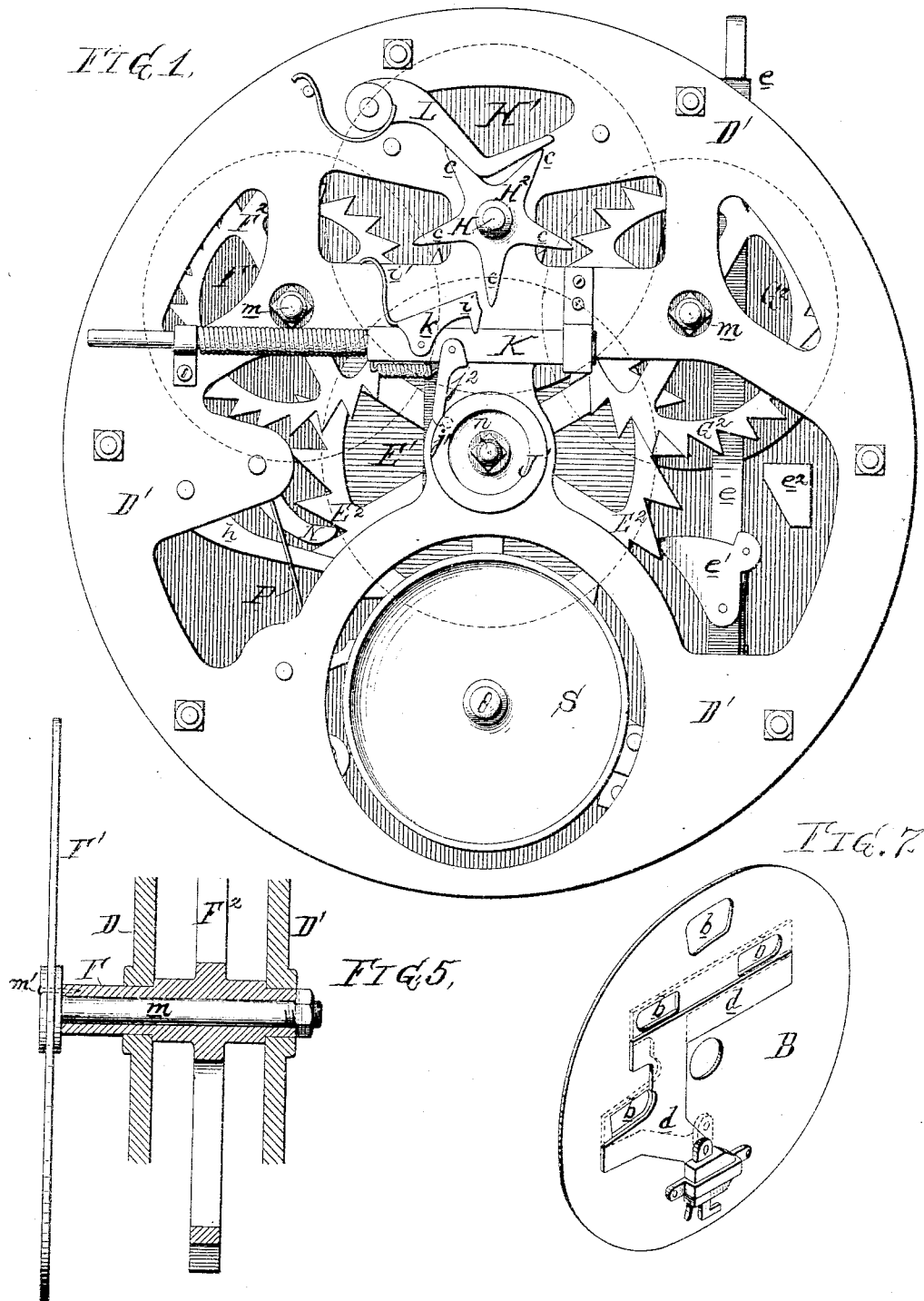


F. O. DESCHAMPS.
 Passenger-Fare Register.
 No. 215,105. Patented May 6, 1879.



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 Henry Howson Jr.
 Harry A. Crawford.

Inventor,
 Francis O. Deschamps
 by his attorneys
 Howson and Co

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FIG. 2,

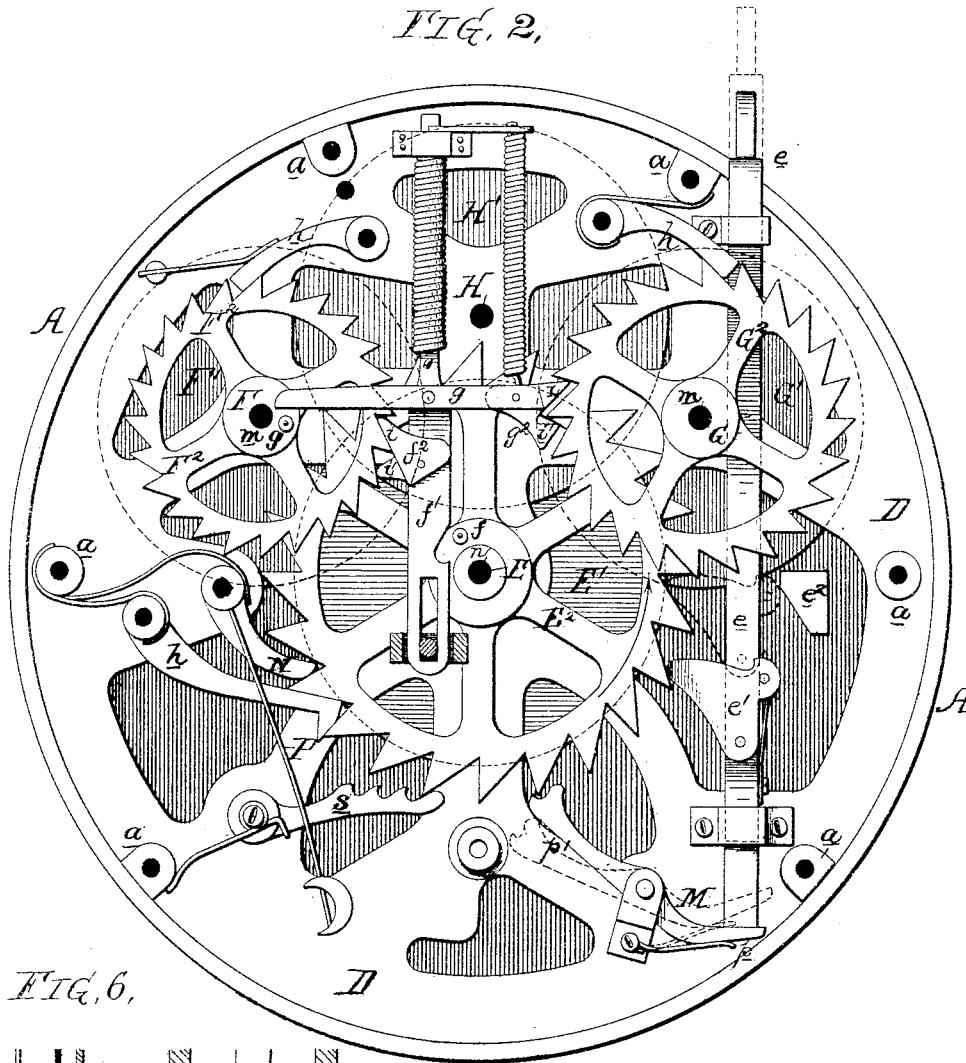
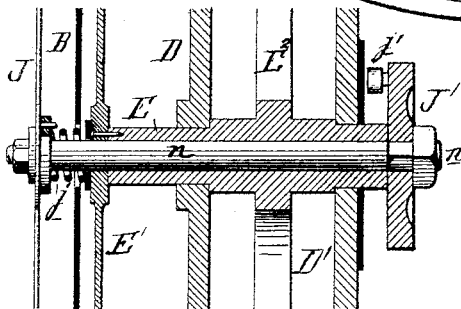


FIG. 6,

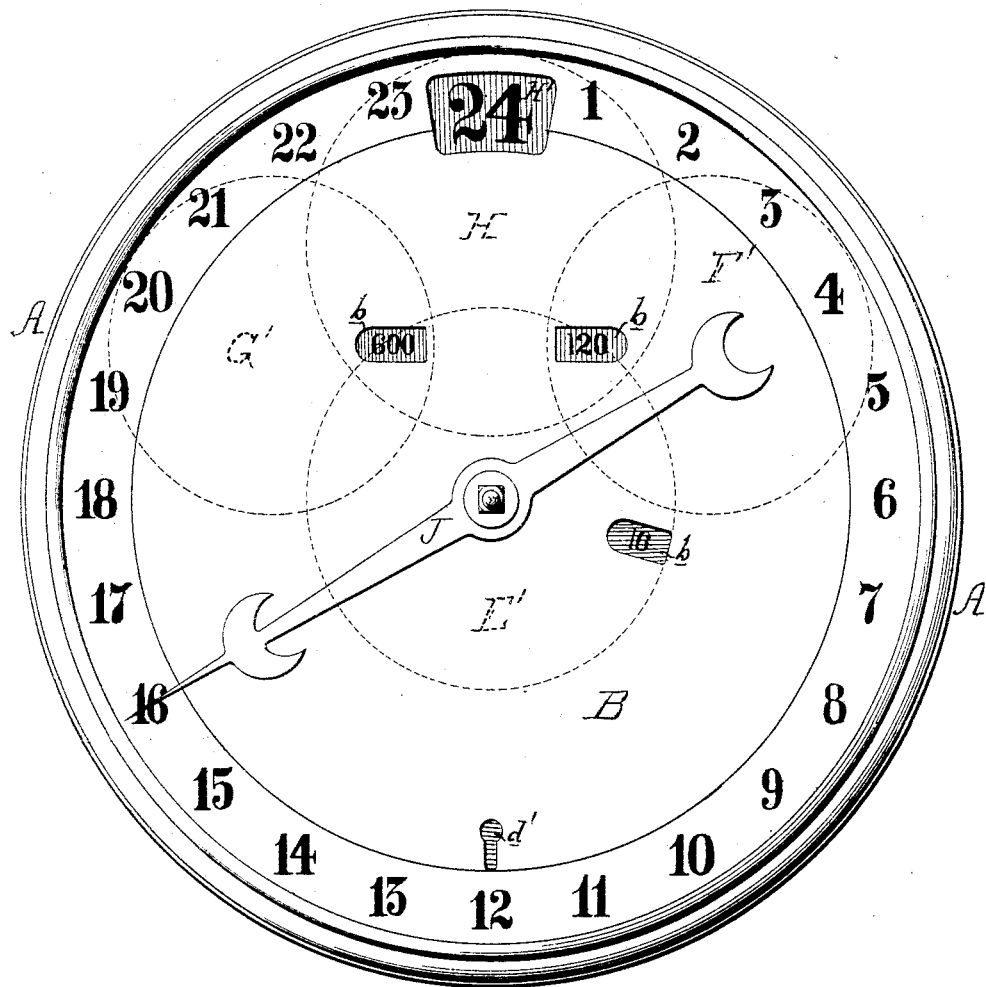


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FIG. 3.



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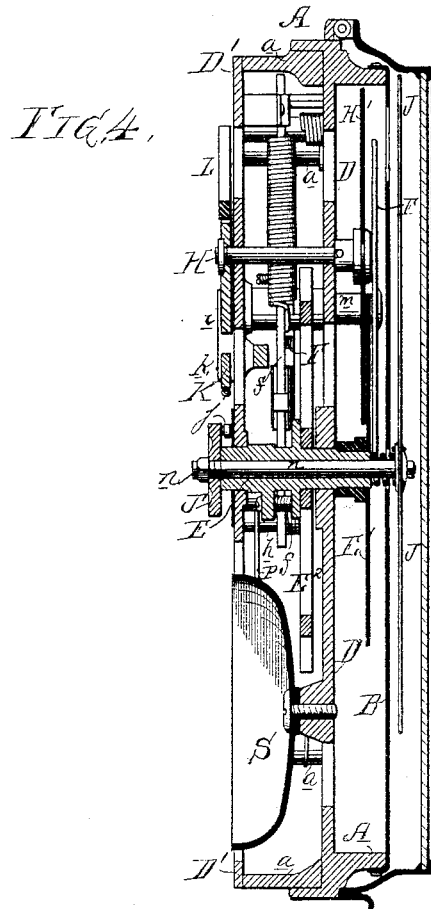
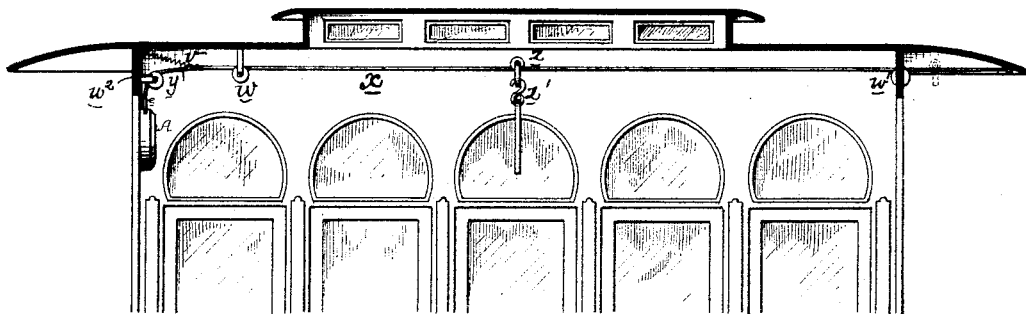


FIG. 8.



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UNITED STATES PATENT OFFICE

FRANCIS O. DESCHAMPS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PASSENGER-FARE REGISTERS.

Specification forming part of Letters Patent No. **215,105**, dated May 6, 1879; application filed August 19, 1878.

To all whom it may concern:

Be it known that I, FRANCIS O. DESCHAMPS, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Registering Devices for Street-Cars, &c., of which the following is a specification.

The object of my invention is to construct an accurate registering-instrument which cannot be tampered with; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1, Sheet 1, is a rear view of the instrument; Fig. 2, Sheet 2, the same with the back plate and gong removed; Fig. 3, Sheet 3, a face view; Fig. 4, Sheet 4, a vertical section; Figs. 5 and 6, enlarged views of parts of the apparatus; Fig. 7, a perspective diagram, illustrating one of the features of the invention; and Fig. 8, a view illustrating the method of operating the device when applied to a street-car.

A is the circular casing of the instrument, to the front of which is secured a dial, B, a glazed cover, C, protecting and preventing access to said dial. To the casing A, in the rear of the dial, is secured a circular plate, D, and at a distance from the rear of the latter is a similar plate, D', separated from the plate D to the required extent by spacing-blocks *a*, interposed between the two plates near their edges, Figs. 2 and 4. In these plates D D' are formed bearings for four shafts, E, F, G, and H, which carry, respectively, disks E¹, F¹, G¹, and H¹, these disks being arranged in the rear of the dial, and between the same and the frame D, Fig. 4.

The disks are provided, near the edges, with numbers, which, as the disks are revolved, pass in succession across openings *b*, cut in the dial B, and can be seen through said openings when the latter are not closed by a sliding plate, *d*, Fig. 7, which is arranged close to the rear face of the dial B, and can be raised and lowered by means of a key introduced through an opening, *d'*, near the bottom of said dial, Fig. 3.

The shafts E, F, and G carry, respectively, ratchet-wheels E², F², and G², which are arranged between the two plates D D', and the shaft H carries a plate, H², having arms *c*, this plate being arranged at the rear of the plate D'. (See Fig. 1.)

To bearings on the rear of the plate D is adapted a rod, *e*, which projects beyond the casing A, so as to be operated from outside the same; and this rod carries a pivoted pawl, *e'*, which, as the rod is reciprocated vertically, engages with the teeth of the ratchet-wheel E², and turns said wheel, and consequently the shaft E and parts connected therewith, in the direction of the arrow, Fig. 2, the extent of movement being one tooth for each complete up-and-down movement of the rod, the pawl yielding laterally on the downward movement.

The hub of the wheel E² carries a pin, *f*, which, as the wheel revolves in the direction of the arrow, engages with a slot in a spring-rod, *f'*, and depresses the said rod to a certain extent prior to releasing it and allowing it to be drawn upward by the action of the spring, Fig. 2.

The rod *f'* is guided at or near each end, and carries a pawl, *f''*, which engages with the teeth of the ratchet-wheel F², and imparts to the same and to the parts connected therewith a movement to the extent of one tooth for each up-and-down movement of the rod *f'*.

The pawl *f''* has two arms, *i* and *i'*, so that as the arm *i* of the pawl acts upon one of the teeth of the wheel the arm *i'* follows up the succeeding tooth, and the inclined face of a third tooth comes into contact with the end of said arm, thus effectually locking the wheel in position when the pawl has reached the limit of its upward movement, and preventing the momentum imparted to the wheel by the sudden upward movement of the pawl from carrying said wheel around too far.

To the rod *f'* is pivoted a spring-lever, *g*, one end of which is acted on by a pin, *g'*, on the hub of the wheel F², while its opposite end carries a two-armed pawl, *g''*, which acts upon the teeth of the wheel G² in the same manner as the pawl *f''* acts upon the teeth of the wheel F², one complete revolution of the latter imparting a single vibration to the lever *g*, and one vibration of said lever imparting a movement to the extent of one tooth to the wheel G² and parts connected therewith, Fig. 2.

Each of the shafts E, F, and G is tubular, and to each of the shafts F and G is adapted a spindle, *m*, which projects from the disk F¹ or G¹, and has a threaded rear end, to which

is adapted a nut, bearing upon the rear end of the tubular shaft, the disk being prevented from turning by means of a pin, m' , driven through the hub of the disk and into the front end of the shaft. (See Fig. 5.)

By this means facilities are afforded for properly adjusting the dials in respect to the shafts and ratchet-wheels after the parts have been fitted together, but before the disks have been pinned to the shafts; for, by allowing the nuts on the spindles m to remain comparatively loose, the disks may be turned independently of the wheels until their numbers are properly exhibited through the openings in the dial, the nuts on the spindles m being then tightened, so as to hold the disks in position until the dial can be removed and the disk pinned fast to the shafts.

The spindle n , which is adapted to the shaft E , is not connected to the disk E' , but carries at the front end a pointer, J , and at the rear end a disk, J' , the latter having a hub, which is caused, by a nut on the end of the stem, to bear against the rear end of the shaft E , while between the hub of the pointer J and the face of the disk E' intervenes a spiral spring, j , the frictional contact of the ends of which against the disk E' and pointer J is such that while the said pointer J , the spindle n , and disk J' do not fail to turn when the shaft E turns, the spindle n and its pointer and disk may be rotated by hand independently of the shaft E , when such independent rotation is necessary, Fig. 6.

The disk J' carries a pin, j' , which acts on an arm, j'' , on a spring-rod, K , (see Fig. 1,) the latter having a two-armed pawl, k , for acting on the arms c of the plate H^2 , so that the latter will be turned to the extent of one arm at each revolution of the disk J' . The plate H^2 is retained in the position to which it is adjusted by a bent spring-arm, L .

Each of the wheels E^2 , F^2 , and G^2 is prevented from moving backward by a spring-pawl, h , and the wheel E^2 is prevented from moving forward, when the rod e is down, by means of a spring-lever, M , one arm, p , of which is acted upon by the lower end of said rod e , while the end of its opposite arm, p' , is recessed, and adapted to the point of one of the teeth of the wheel E^2 . As soon as the rod e is elevated, however, so as to release the arm p , the end of the arm p' is withdrawn from the tooth and the wheel is free to turn.

The wheel is again locked, however, when the pawl reaches the limit of its upward movement, owing to the presence of a block, e^2 , against which the projecting rear end of the pawl abuts, as shown by dotted lines in Fig. 2.

The teeth of the wheel E^2 act upon a spring-arm, N , the hub of which carries the spring striking-arm P of a gong, S , secured to the frame D , so that upon each movement of the wheel E^2 to the extent of one tooth the gong is sounded. Premature sounding of the gong, owing to the recoil of the wheel after it has been moved to an extent less than that of one

tooth, is prevented by a spring-bar, s , hung to the plate D , and having notches which adapt themselves to the teeth of the wheel as the latter is turned by the action of the rod e , and prevent such a backward movement of said wheel as will permit the spring-arm P to move forward far enough to strike the gong. By this means the sounding of the gong without an accompanying operation of the registering devices is effectually prevented.

The numbers on the disk E' are the same as the numbers on the dial B , and the number displayed through the opening in the dial by the said disk E' is the same as that which the pointer J indicates, the disk thus acting as a check upon the pointer. The numbers carried by the disk F' are multiples of the highest number which the disk E' would indicate, and the numbers on the disk G' are multiples of the highest number on the disk F' , as in ordinary registering devices.

In the present instance the wheel E^2 has twenty-four teeth; but instead of the numbers on the dial being carried up to 24 they stop at 23, and the space which would be occupied by the number 24 is cut away, so as to expose the face of the dial H^1 , the numbers on which are 24 and multiples of that number, so that when the pointer has made one complete revolution the number 24 will be exhibited by the disk H^1 , and the pointer then commences to count again on the units until it has made a second revolution, when the disk H^1 will be turned so as to expose the number 48, and so on. Thus, if the number of passengers registered be forty, for instance, this would be indicated by the exposure of the number 24 by the disk H^1 , and the indication of the number 16 on the dial by the pointer.

By this means I am enabled, without making the device inconveniently large, to indicate in numbers large enough to be seen by passengers in all parts of the car the number of passengers carried by that car during its trip, it being understood that the pointer J and disk H^1 are set at zero at the commencement of each trip.

The means which I adopt for operating the rod e of the device are shown in the diagram, Fig. 8, Sheet 4, in which x represents a cord or wire extending throughout the length of the interior of the car, and by preference over the rear platform, as shown. This cord or wire is arranged close to the roof of the car, and is connected at one end to a spring, v , and at the other end to a fixed pin or projection at the end of the roof overhanging the rear platform, the cord or wire resting at the points shown upon pulleys $w w^1$, and being connected at or near the front end to a cord, y , which passes over a pulley, w^2 , and is attached to the upper end of the operating-rod e of the registering device. On the cord x is arranged to run a pulley, z , having a yoke, which hangs down below the cord, and has an eye for the reception of a hook, z' , which is provided with a pendent cord, by which it can be depressed

by the conductor, so as to cause the bending down of the cord x between the pulleys w w^1 , and a consequent longitudinal draw on the cord y , which thus effects the raising of the rod e and the operation of the registering device.

As the conductor passes along through the car the pulley slides along the cord, so as to be always in condition for properly acting on said cord.

When the conductor leaves the car he either detaches the hook z' or passes the cord attached thereto over a catch, so as to be out of the reach of the passengers. That portion of the cord above the rear platform may have a supplementary pulley, as shown by dotted lines, so that the conductor can register fares from the platform, if desired.

My improved registering device contains none of the accurately-fitting gear-wheels usual in devices of this class, the teeth of the ratchet-wheels which I employ requiring no fitting other than the usual cleaning which the castings receive. I am therefore enabled to make the device at a much cheaper rate than others of its class as now manufactured.

I claim as my invention—

1. The combination, in a registering apparatus, of a ratchet-wheel carried by the shaft of a pointer or disk, a reciprocating rod or bar, and a pawl loosely hung to said rod or bar, and having two arms, i and i' , as specified.

2. The combination, in a registering apparatus, of the following elements, namely: first, a pointer, J ; second, a disk, H^1 , having multiple numbers, as described, but independent

of the regular registering-disks, and arranged to be operated both by the regular registering-train and by the pointer independently thereof; and, third, a numbered dial having an opening through which a portion of the disk H^1 may be observed, as set forth.

3. The combination of the shaft E with the spindle n , its pointer J , and its disk J' , for operating the disk H^1 , the said spindle being arranged to be operated by said shaft E , but being capable of movement independent thereof, as described.

4. The combination of the wheel E^2 , the operating-rod e and its pawl e^1 , and the lever M , independent of the locking-pawl h , and arranged to be operated directly by the lower end of the rod e , so as to prevent the forward movement of the wheel E^2 when said rod is down, as set forth.

5. The combination of the shafts F G and their wheels F^2 G^2 with the disks F^1 G^1 , the spindles m , the nuts at the rear ends of the same, and the pins m' , as set forth.

6. The combination of the registering device, an operating cord or wire kept under tension, and a pulley arranged to run on said cord or wire, and having a frame adapted for the reception of an operating-hook, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANCIS O. DESCHAMPS.

Witnesses:

HARRY A. CRAWFORD,
HARRY SMITH.