

(No Model.)

2 Sheets—Sheet 1.

E. S. ELY.
ELECTRICAL STATION INDICATOR.

No. 445,773.

Patented Feb. 3, 1891.

Fig. 1.

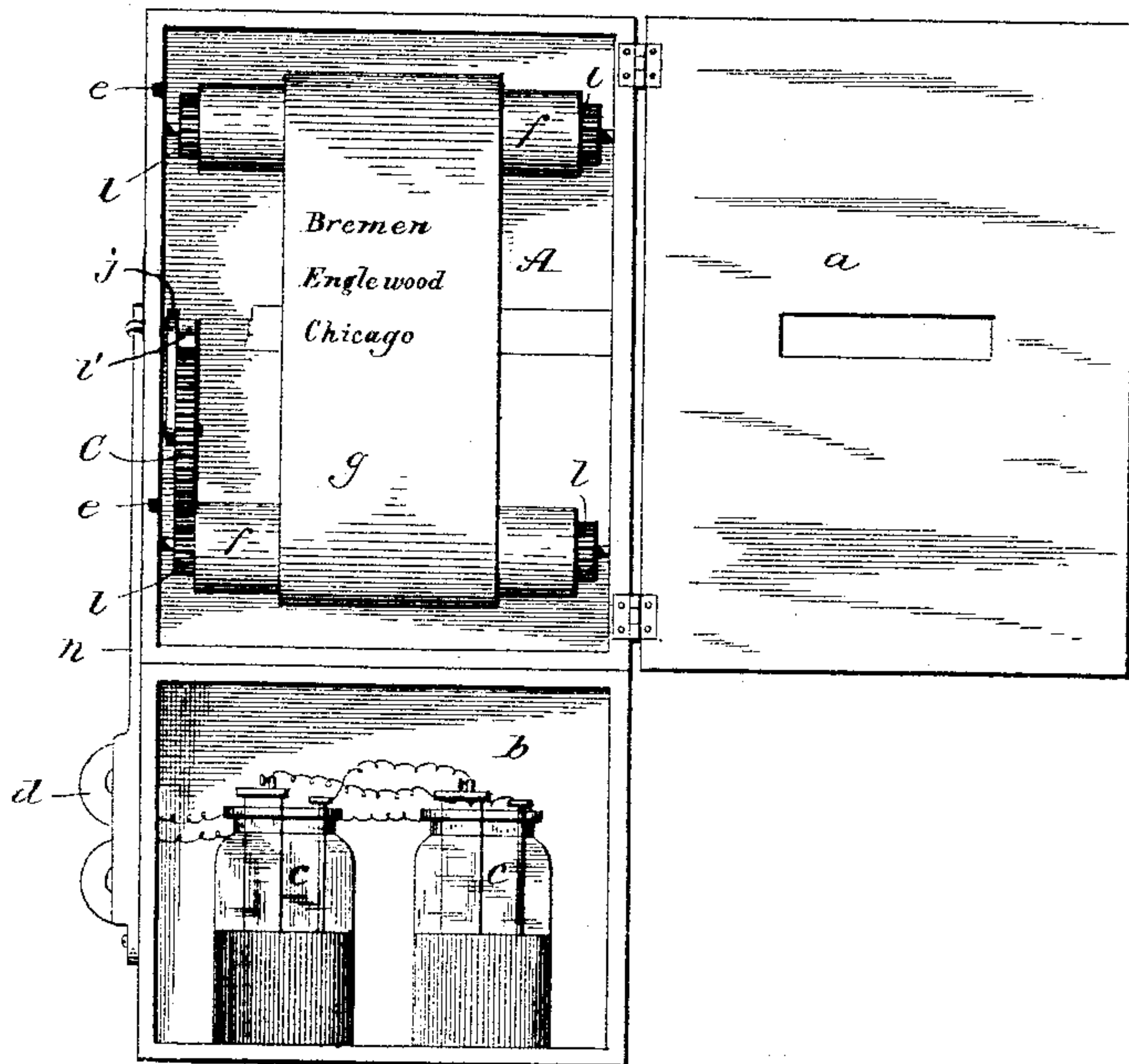


Fig. 2.

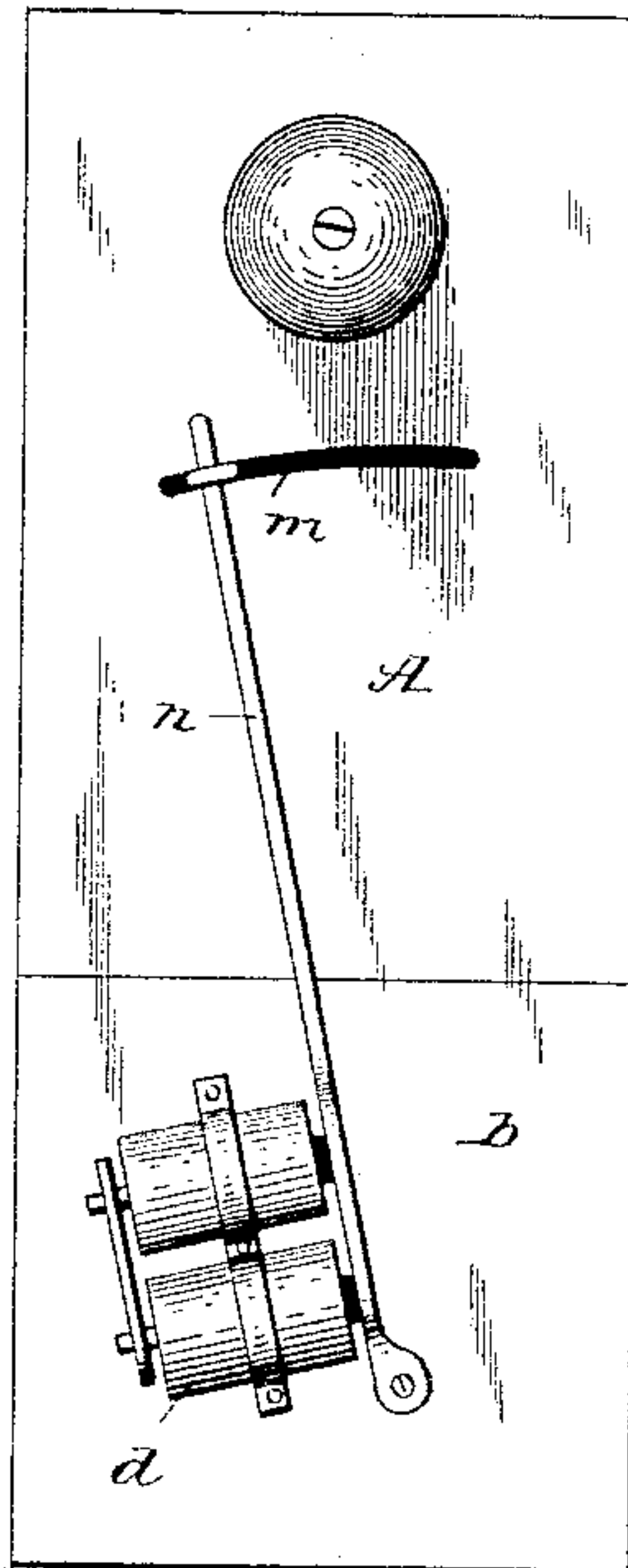
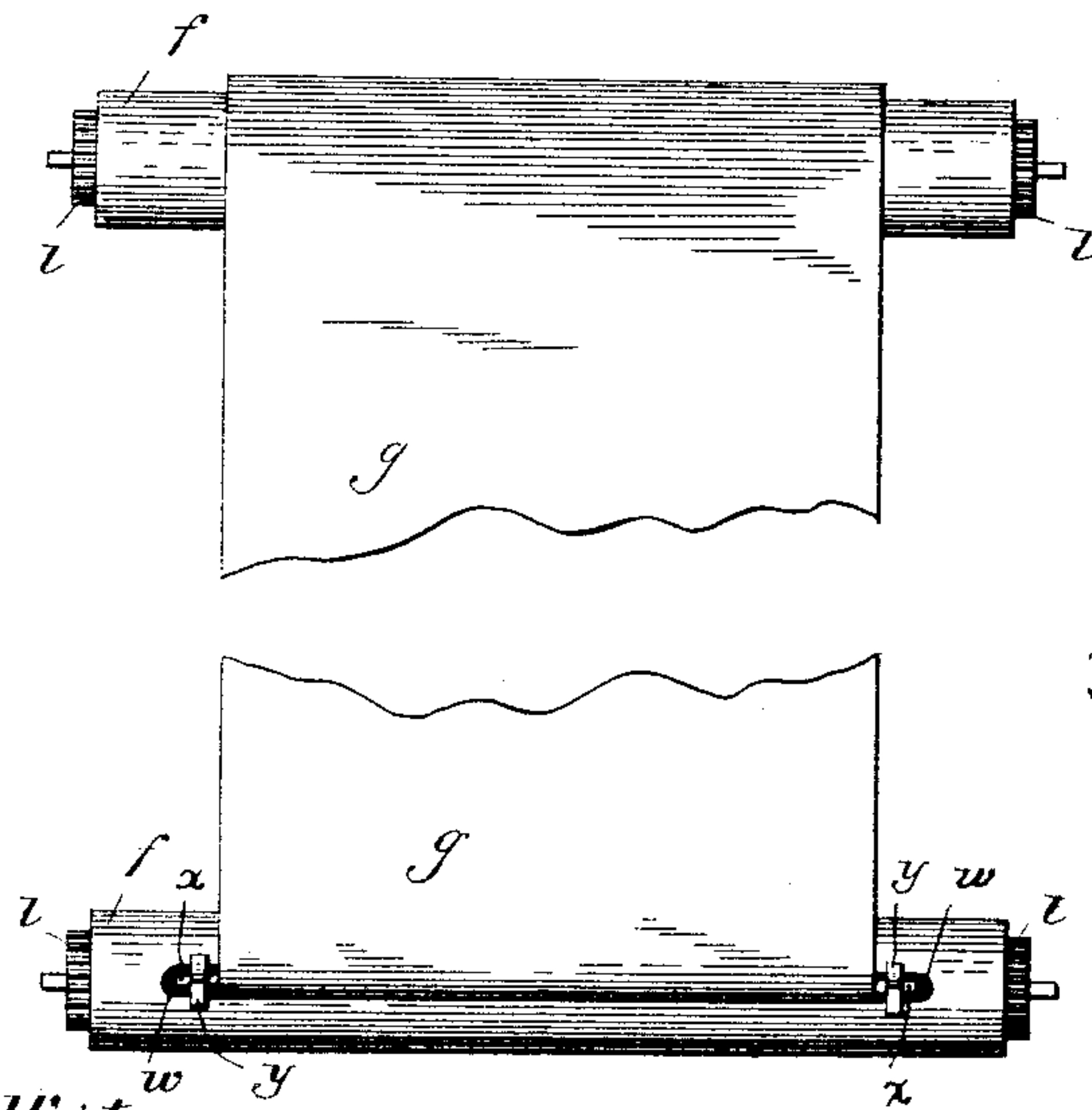


Fig. 3.



Witnesses

Edwin L. Bradford
E. Everett Ellis

Fig. 4.

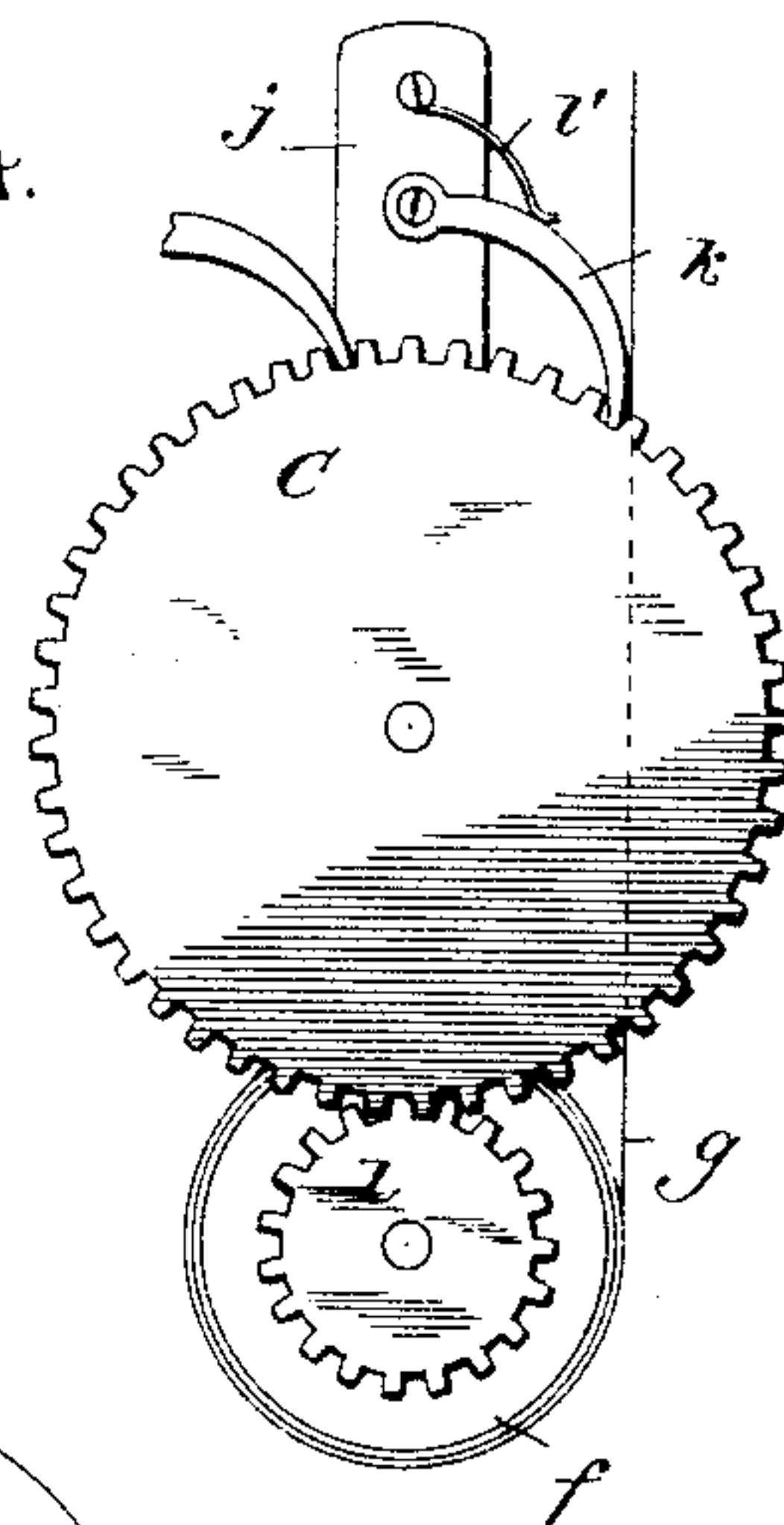
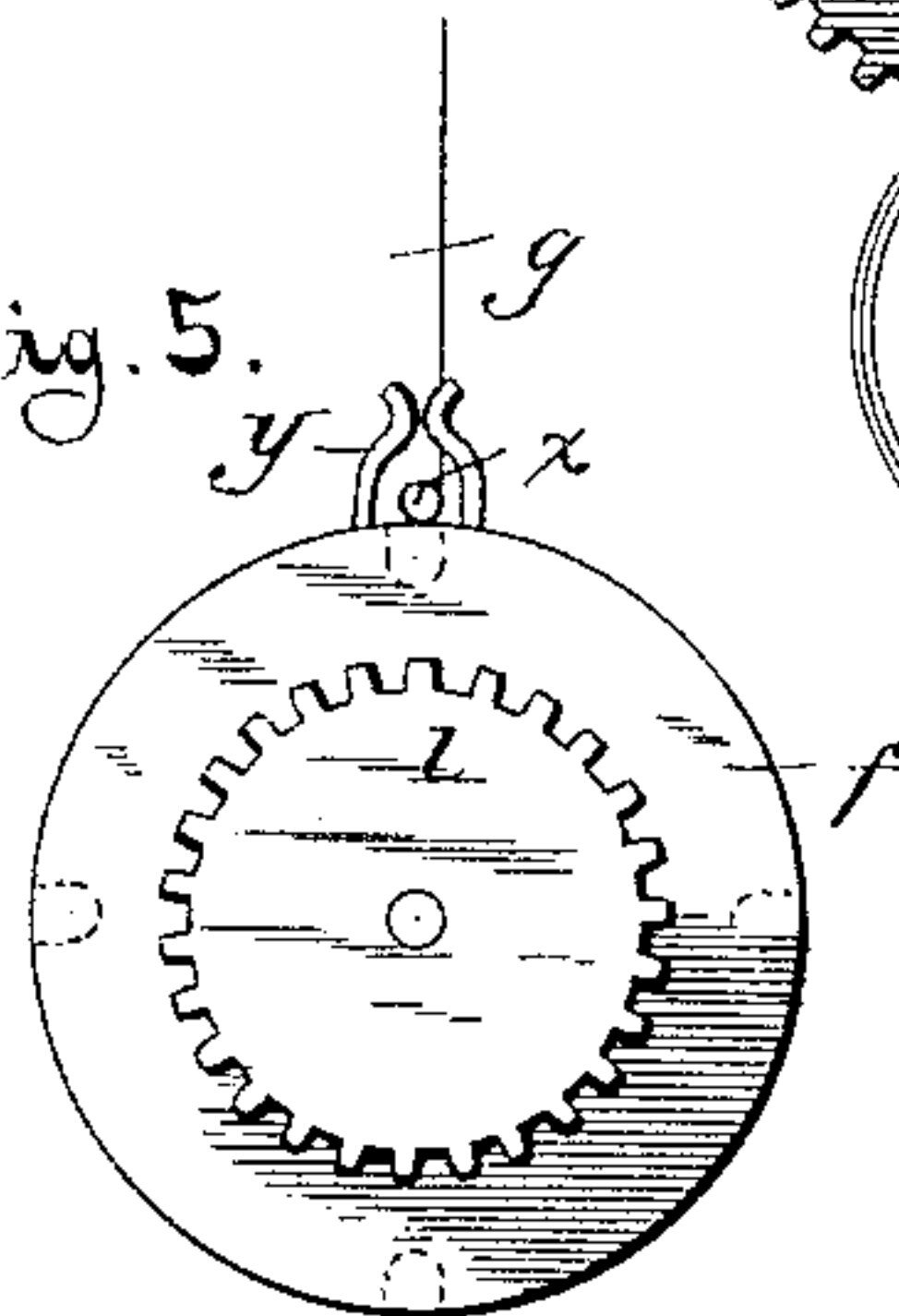


Fig. 5.



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Attorney

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2 Sheets—Sheet 2.

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Fig. 8.

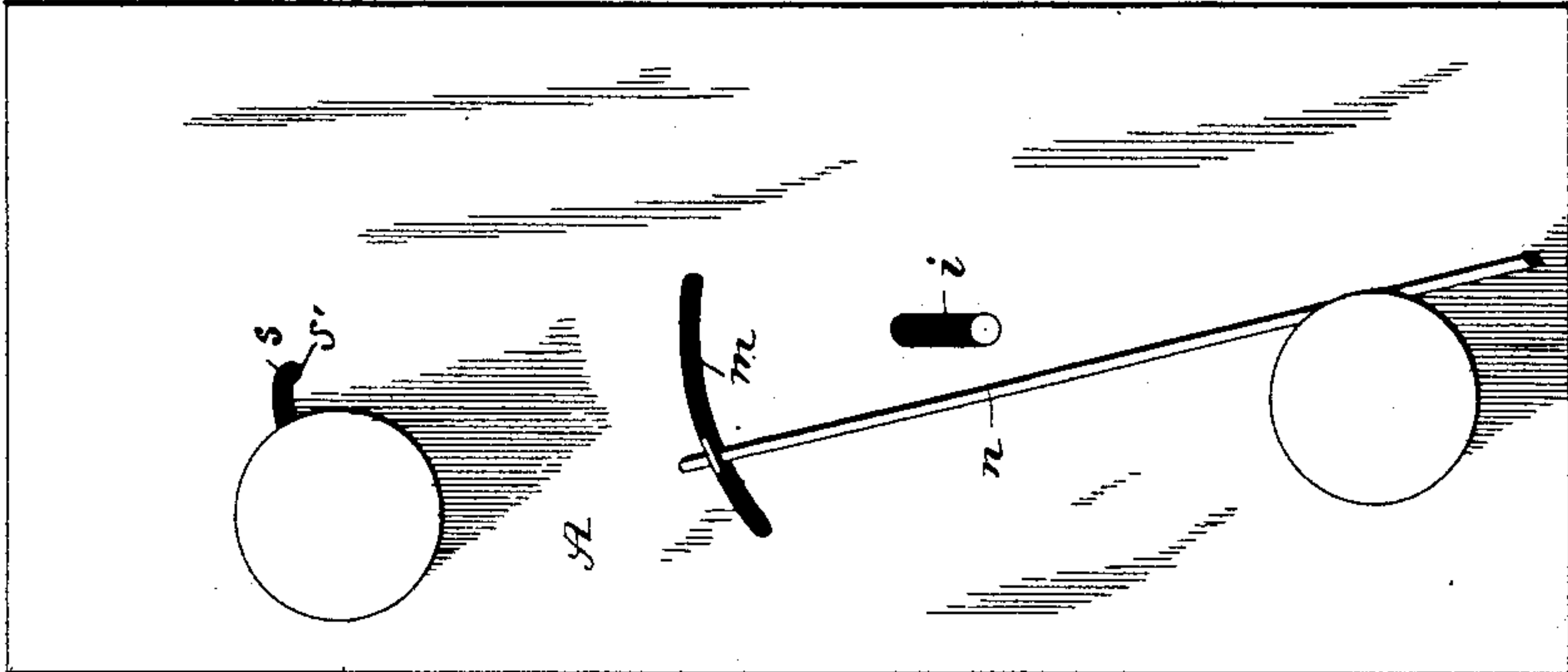


Fig. 7.

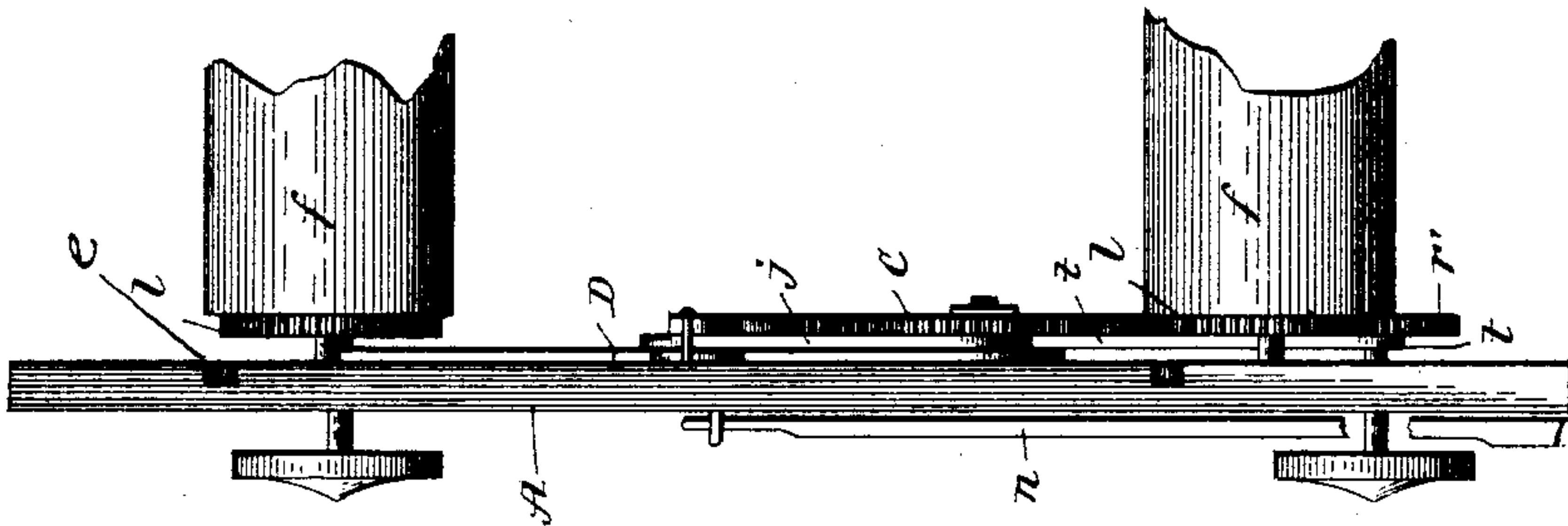
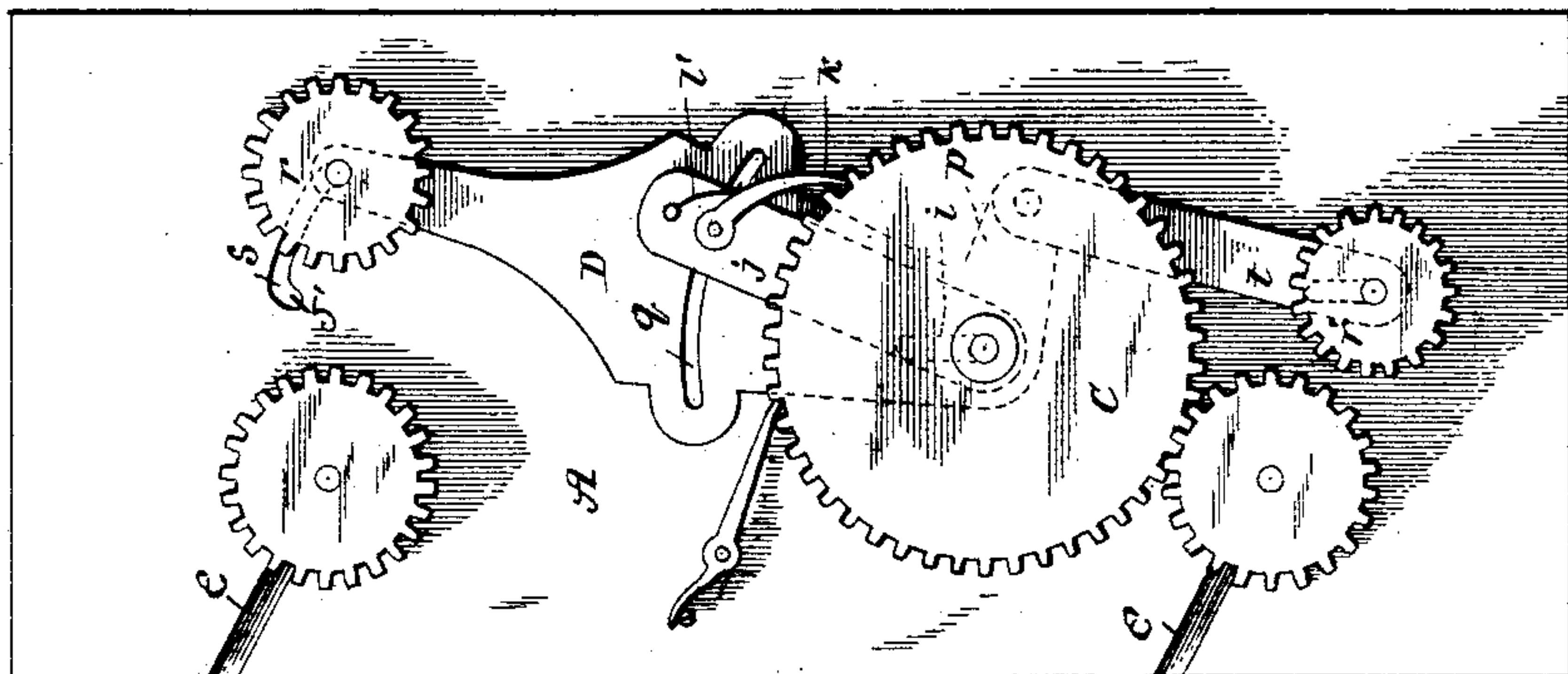


Fig. 6.



Witnesses

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Edwin S. Ely Inventor
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UNITED STATES PATENT OFFICE.

EDWIN S. ELY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JOHN H. S. QUICK, OF SAME PLACE.

ELECTRICAL STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 445,773, dated February 3, 1891.

Application filed May 28, 1890. Serial No. 353,490. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. ELY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electrical Station-Indicators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in electrical station-indicators; and it consists substantially in such features thereof as will be more particularly described hereinafter, and pointed out in the claims.

The invention has for its object to provide an electrical station-indicator for railway cars or coaches which shall enable the names of streets or stations to be successively brought to the view of passengers so as to notify them when the stations or streets for which they may be destined are reached, all as will more fully hereinafter appear when taken in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of a station-indicator embodying my improvements, the casing or box therefor being thrown open to expose interior arrangement of parts. Fig. 2 is a side view of Fig. 1, showing arrangement of the electrical magnet and the armature which it attracts when the electric circuit is closed. Fig. 3 is an enlarged view in detail of the ribbon-carrying rolls, showing how the ribbon is fastened thereto so as to be held from disconnection. Fig. 4 is an enlarged side view representing the connection of the lower roller with the main operating gear-wheel. Fig. 5 is an enlarged view in detail of one of the rollers, and illustrating clearly the manner of fastening the ribbon thereto. Fig. 6 is an interior side view of the operative mechanism of the machine, from the construction and arrangement of which a thorough understanding of the operation will be had. Fig. 7 is a view at right angles to Fig. 6, and

showing the rollers partly broken off. Fig. 8 is a side view of Fig. 7.

In carrying my invention into effect I provide a suitable box or casing for containing the operative mechanism of my invention, the said box or casing being designed to be located or arranged at one end of the car or coach in which the same may be used. Between the two sides of this box or casing are supported two rollers which serve between them to pay out and wind up the ribbon having thereon the names of the streets or stations occurring between the termini of the route passed over by the car in its travel, said rollers being grooved longitudinally so as to adapt them to receive wires attached to the ends of the ribbon, and also provided with spring-holders for said wires, by which means the ribbon is prevented from becoming detached. The rollers have their bearings in angular slots formed in the two sides of the casing, and each roller is provided at each end with a small gear-wheel. One of the gear-wheels of the lower roller meshes with a large intermediate gear-wheel which is actuated to rotate through the medium of an electro-magnet, an armature, and a suitable pawl. In connection with the rollers I employ suitable mechanism for disconnecting with the main gear-wheel and forming a connection with the gears of the rollers for the purpose of enabling the ribbon to be wound back upon the roller from which it was paid out, in this way providing for a retracing of the several streets or stations without having to reverse the rollers.

Reference being had to the several parts of the drawings by the letters marked thereon, A represents a suitable box or casing for receiving or containing the several operative devices, said box or casing being provided with a suitable door *a* for closing the same and enabling access to the devices, and also provided with a lower part *b* for holding the electric battery *c*, said battery having suitable wire-connectors, as shown, with the coils of an electro-magnet *d*, secured to one side of the casing without. The sides of said box or

casing are further formed with angular slots *ee* to receive the shafts of two rollers *ff*, around which is passed the ribbon or sheet *g*, having thereon the names of the streets or stations, and on each end of the shafts of said rollers is carried a small gear-wheel *l*, the lower roll being in geared connection with a large or intermediate gear-wheel *C*, having an axial bearing in one side of the box or casing, as shown. The large gear-wheel being caused to turn intermittently for a limited distance the lower roller will be caused to turn also, thereby unwinding the ribbon from the upper roller and disclosing in successive order the names of the several streets or stations through a suitable opening formed in the side of the box or casing. The said gear-wheel *C* has its bearing in a vertical slot *i*, formed in the side of the casing, and loosely working in connection with said wheel at its axis is a plate or arm *j*, having pivoted thereto at or near its upper end a pawl *k*, that is held into engagement with the teeth of large gear *C* by means of a spring *l'*. The said plate or arm *j* connects through an arc-shaped slot *m* in the casing with the upper end of an armature *n*, pivoted at its lower end on the outer side of the casing. (See Figs. 1, 2, and 7.) When the closing of the electric circuit is effected, (which may be by a push-button or other means,) the electro-magnet, becoming energized, will attract the armature *n*, and in drawing said armature over, the arm or plate *j* will be carried along and the large gear moved a corresponding extent, all of which will be clearly understood from the annexed drawings.

For the purpose of enabling the ribbon to be wound back again upon the feed or delivery roller without taking said rollers out of their bearings and reversing them, I employ a flat plate *D*, having an arm or branch *p*, and formed with an arc slot *q* corresponding to and registering with the arc slot in the side of the casing, so as to permit movement of said plate and not to interfere with the working of the other parts. The upper end of said plate is connected to the axis of a small gear-wheel *r*, having its bearing in a curved slot *s* in the side of the casing, and connected to the arm or branch *p* of said plate *D* is a connecting-strip *t*, which is connected to the axis of another small gear-wheel *r'*, having its bearing in a vertical slot formed in the side of the casing near the bottom, the axes or shafts of said gear-wheels *r* and *r'* each being provided with a button on the outer side of the casing so as to enable them to be turned with the hand. From this construction and arrangement it will be seen that by moving the upper gear-wheel *r* in the curved slot in which it is held until the notch *s* of said slot is reached both the large gear *C* and the smaller gear *r'* will be lifted in the vertical slots in which they have their bear-

ings, the said gear *C* being carried away from and out of gear with the gear-wheel of the lower roller, while the said gears *r* and *r'* will be brought into engagement with the gears in the rolls corresponding thereto. Now by turning either of the gears *r* or *r'* the ribbon may be wound from one roller to the other, according to which of the gears is operated and the direction in which the same is turned. By replacing the gears *r* *r'*, as before, the other devices for actuating the indicator will be permitted to operate in the manner hereinbefore explained.

As a means of fastening the ribbon to the roller, I form the roller with a longitudinal groove *w*, and in the end of the ribbon *E* a wire *x* is secured by stitching or otherwise, the said wire fitting in said groove, as best illustrated in Fig. 3. Secured to the roller at each end of the groove is a small spring-fastening *y*, adapted to close over the ends of the wire, and thus hold said wire in place. These fastenings are beyond the edges of the ribbon and therefore do not interfere with the winding of said ribbon.

In connection with the above-described devices I may employ a bell to sound a signal each time a station or street is indicated, in which case suitable wire-connections could be employed.

The names of the stations or streets are printed on both sides of the ribbon or sheet in reverse order, and in this way by simply reversing the position or arrangement of the rollers the ribbon may be brought in readiness for commencing at either end of the road or route without having to wind the ribbon from one roller to the other.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electrical station-indicator, the combination, with a suitable battery and wire connections, of a pair of operating-rolls provided with the gear-wheels, a large or main gear normally engaging one of the roller-gears, the arm *j*, loosely working in connection with said main gear at its axis, a spring-operated pawl engaging said main gear and attached to the arm, an armature connected with said arm, and an electro-magnet adjacent to the armature, substantially as described.

2. In an electrical station-indicator, the combination, with the casing having upper curved slot *s* in its side and the vertical slot at or near the bottom thereof, of the pair of operating-rolls provided with the gear-wheels, the intermediate gear *C*, normally engaging with one of the roller-gears, the movable plate *D*, having the arm or branch *p* at its lower end and connecting at its upper end with the axis of a gear *r*, which has its bearing in said curved slot *s* of the casing, and the strip *t*, connecting the branch *p* with the axis of a gear

7', having its bearing in said vertical slot of the casing, all designed to operate substantially as and for the purpose described.

3. In an electrical station-indicator, the
5 combination, with a pair of magnets and an armature pivoted adjacent thereto, of the casing having arc slot, the large gear-wheel, the arm for moving said wheel and attached to the upper end of the armature through the
10 slot, a pawl engaging the said gear, a pair of

rollers carrying an indicator-ribbon, and a suitable battery and wire connections, substantially as described.

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

EDWIN S. ELY.

Witnesses:

CURTIS LAMMOND,
GEORGE W. RODGERS.