

G. S. LADD & S. D. FIELD.
DISTRICT TELEGRAPH BOX.

No. 185,445.

Patented Dec. 19, 1876.

Fig. 1.

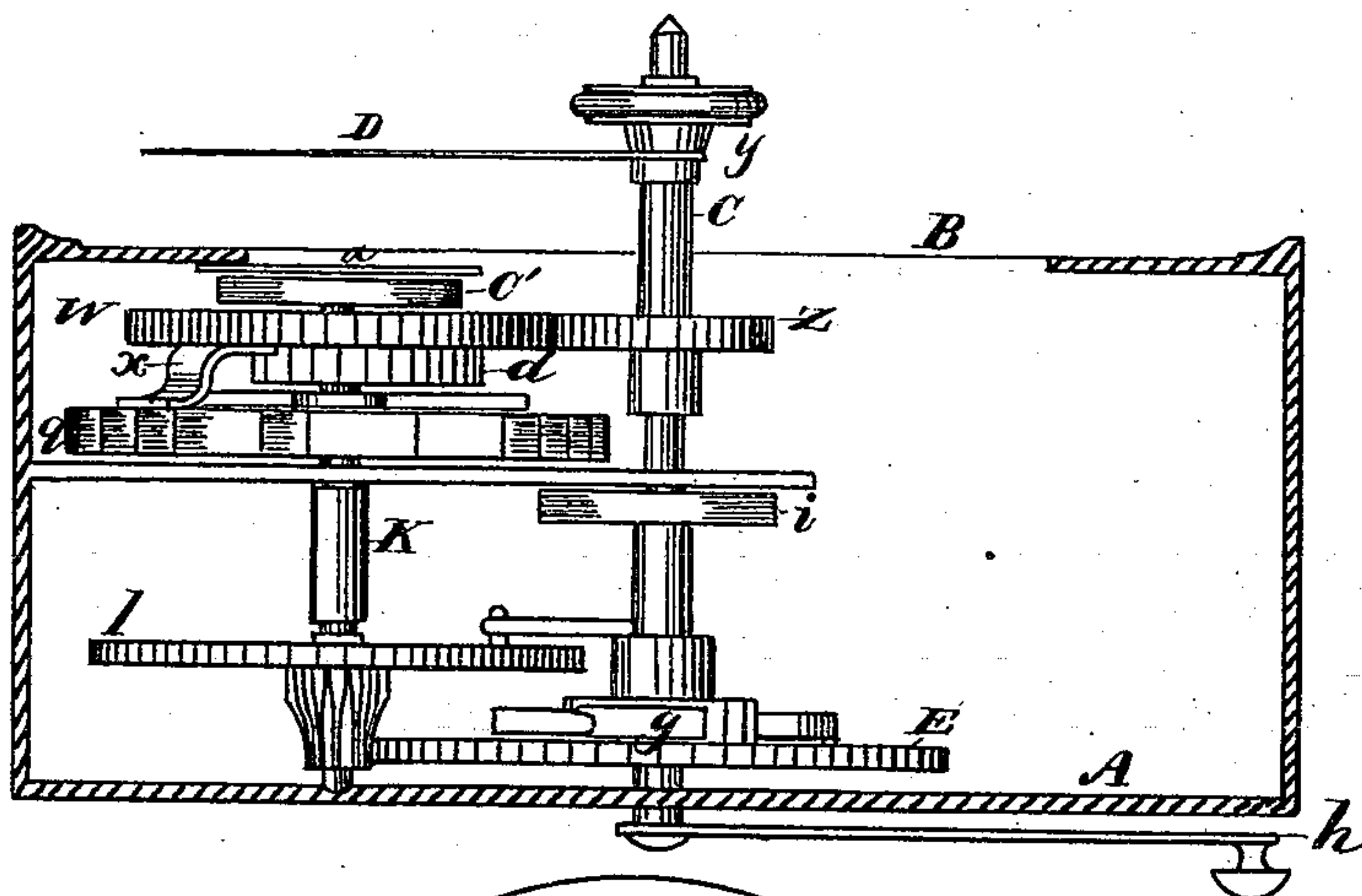


Fig. 2.

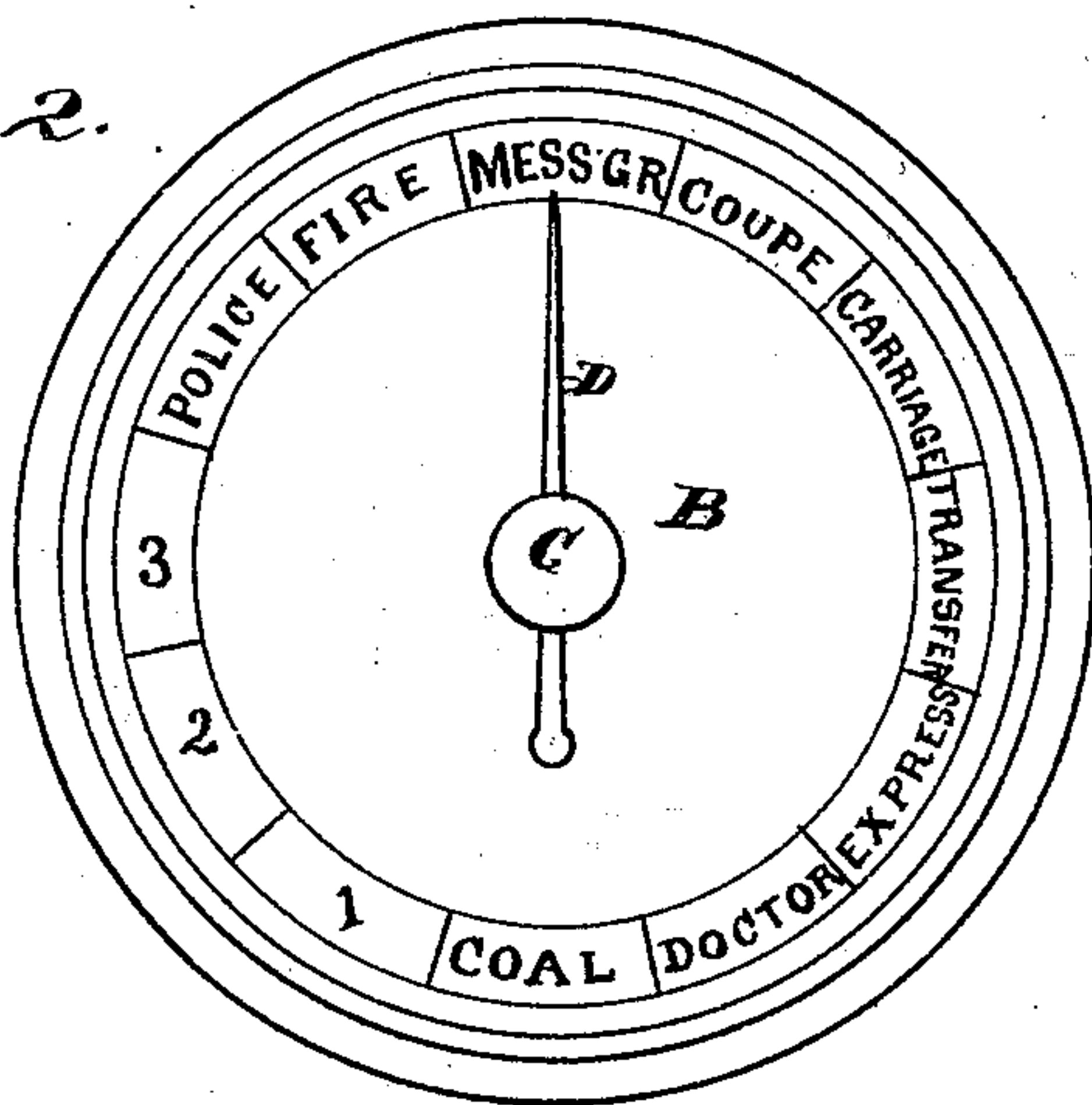


Fig. 3.

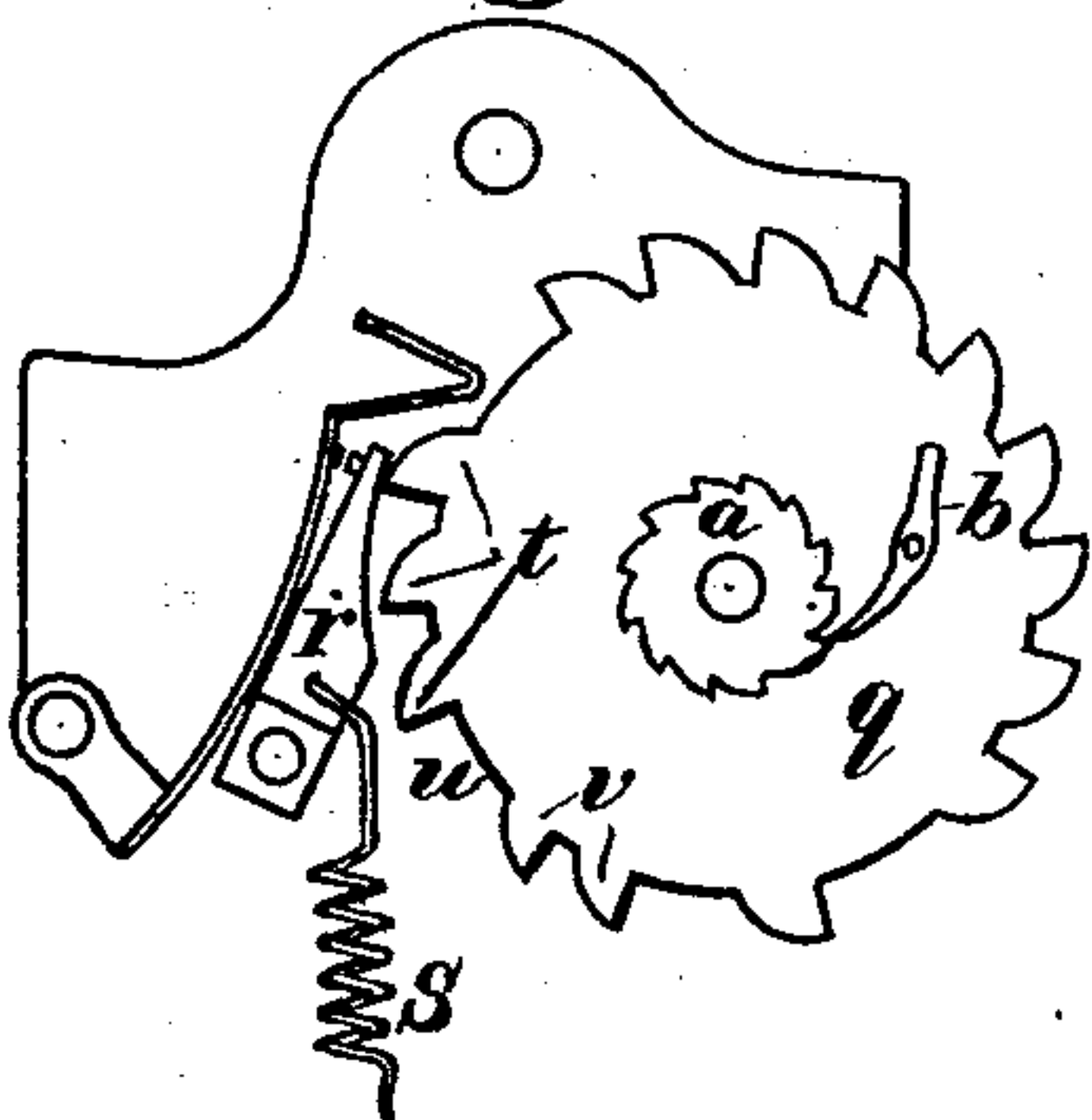
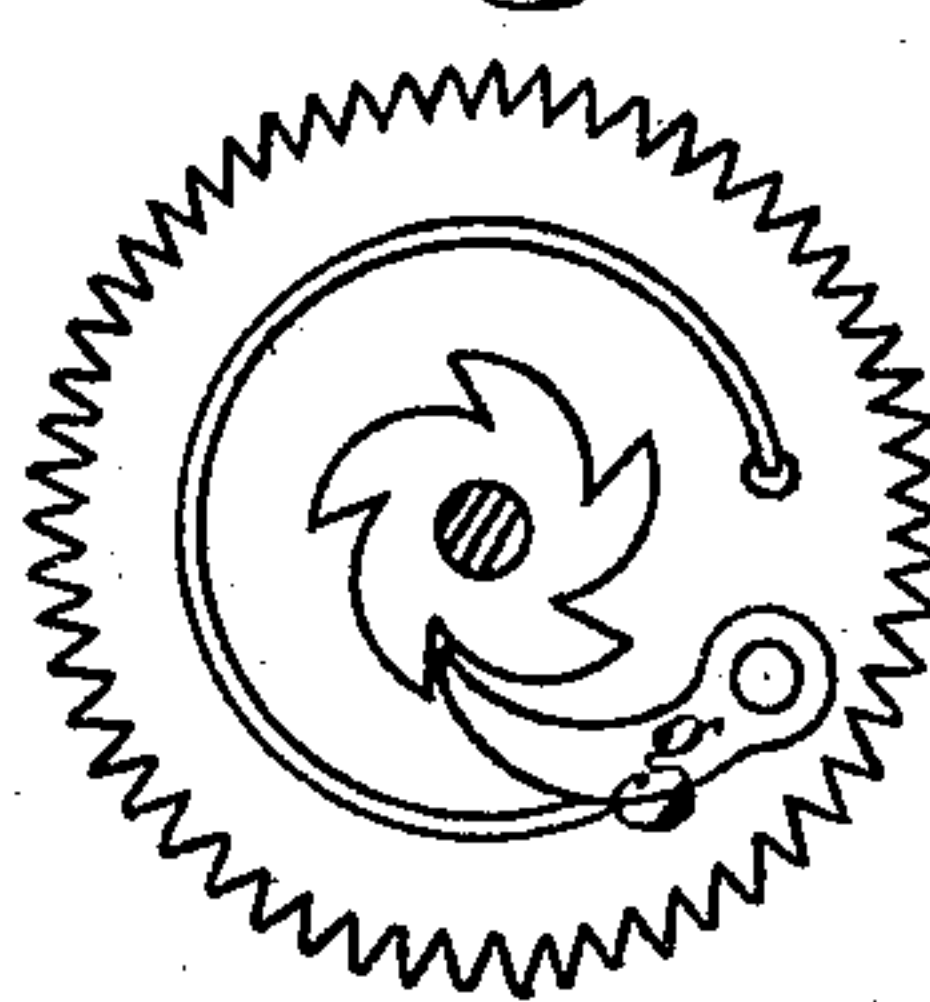


Fig. 4.



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Fig. 5.

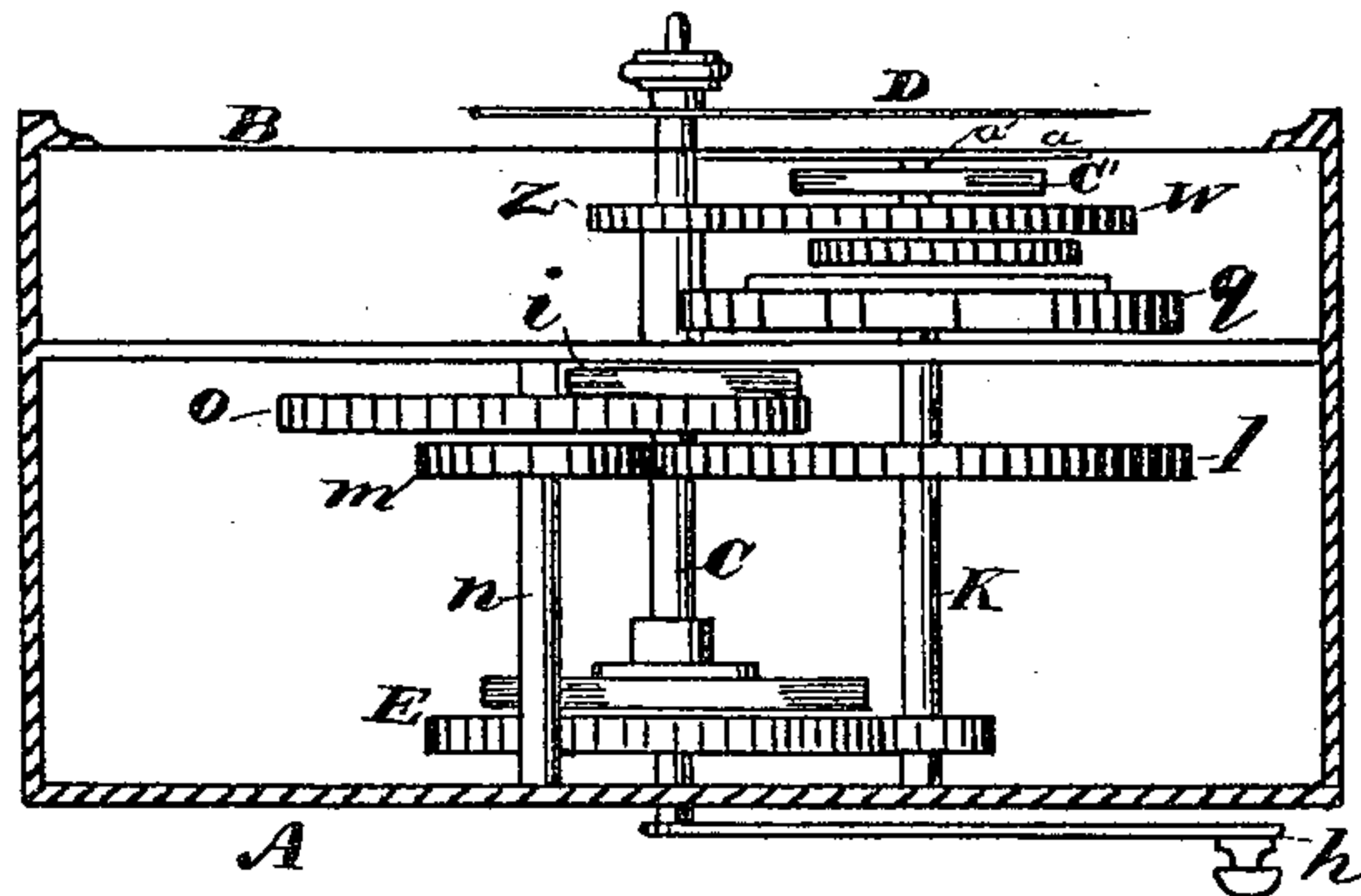
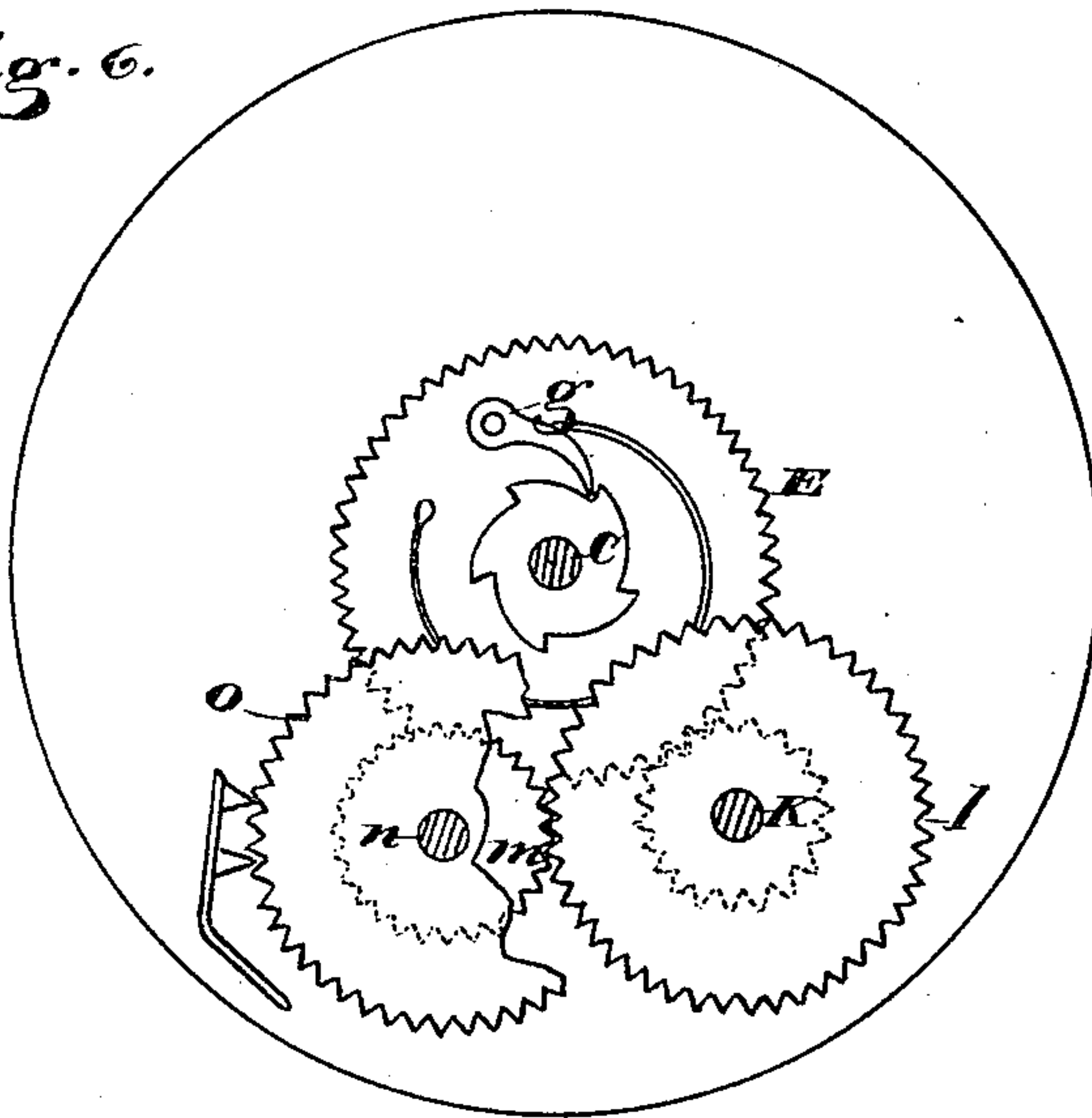


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE S. LADD AND STEPHEN D. FIELD, OF SAN FRANCISCO, CAL.

IMPROVEMENT IN DISTRICT-TELEGRAPH BOXES.

Specification forming part of Letters Patent No. **185,445**, dated December 19, 1876; application filed July 25, 1876.

To all whom it may concern:

Be it known that we, GEORGE S. LADD and STEPHEN D. FIELD, both of the city and county of San Francisco, State of California, have invented an Improved District-Telegraph Box and Signal System; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates, first, to a novel telegraphic system for transmitting any one out of a given number of stated signals from one place to another through an electric wire; and, secondly, to an improved dial and apparatus to be used in connection with said telegraphic system, and by means of which either of the signals above mentioned can be automatically and mechanically sent through the electric wire.

Our improved telegraphic system and apparatus are especially useful in connection with what is known as the "district-telegraph," in which any number of houses or stations are connected, by an electric wire, with a central station, and mechanical signal-boxes connected with said wire at the different houses or stations enable any person to transmit signals to the central station.

The signal-boxes heretofore in use for this purpose were defective in several particulars: first, their construction would only admit of their making a limited number of calls; secondly, a single character or series of characters was used, and the number of times that this character was duplicated indicated the particular message or signal to be transmitted. This rendered the system unreliable, because the receiver was liable to mistake the number of duplications, and consequently perform the wrong service; thirdly, no means were provided for connecting the set of the instrument in case the person who attempted to send a signal carelessly indicated the wrong signal.

Our new system of signaling, and the improved apparatus for mechanically writing the signals, entirely obviate these difficulties, and render the district-telegraph capable of a more extended use, easier operated, and positive in its action, all as hereinafter more fully

described, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section. Fig. 2 is a plan view, showing dial. Figs. 3, 4, 5, and 6 are detail views.

Let A represent the back of a box or base, upon which the set of gearing which operates the mechanism is secured; and B, the face or dial, which forms the opposite side or front of the box. This dial or face we divide off into as many divisions or compartments as there are signals to be transmitted by the mechanism, and in each division or compartment we print the name of the service it is to represent; for instance, in the present drawings we have represented twelve compartments, and in each of the compartments we have printed one of the following words, to wit: Messenger, coupé, carriage, coal-yard, grocer, butcher, express, transfer, physician, special police, fire, thus distinctly expressing the twelve different kinds of service that may be demanded from the central station.

C is the center post, upon which the pointer or index-hand D is secured. This post has a gear-wheel, E, secured to it near its lower end, and above this wheel is a ratchet-wheel, with one of the teeth of which a pawl, *g*, engages, when the post is partially rotated, by means of the lever *h*. A coiled spring, *i*, has one end secured to the permanent frame of the gearing, while its opposite end is coiled around and secured to the post, so that the partial rotation of the post, by means of the lever *h*, winds up this spring, and causes the post to rotate back again to its original position.

The gear-wheel E engages with a small toothed wheel on the lower end of a secondary post or shaft, K, which is paralld with the shaft or post C. This post has also a gear-wheel, *l*, which engages with a pinion, *m*, on the parallel shaft *n*, and the shaft *n* has an escapement wheel, O, which is operated upon by a detent, so that backward motion of the post C, after the spring *i* has been wound up, is retarded.

The apparatus thus far described is very similar to that employed in the ordinary district-telegraph boxes heretofore in use, with the exception that the pointer or index-hand in the ordinary apparatus forms a permanent

part of the post C, and serves both as a lever and pointer, so that the same motion that indicates the service to be signaled also winds up the spring *i*, and the mechanism starts into operation the instant the lever or pointer is released.

By our arrangement it will be noticed from the following that the index-finger or pointer can be moved to any position around the circle entirely independent of the lever that winds up the spring *i*, but that, instead of being operated by the spring *i*, it winds up another spring, to be hereinafter described, whose office is to return it to its original or zero position after the signal has been sent.

Upon the upper end of the secondary shaft or post K we secure what we call a "transmitting-wheel," *q*, which, in connection with the spring platinum point *r* and the telegraph-wire *s*, which connects the apparatus with the central station, embodies our improved system for signaling. This wheel, it will be observed, has a series of notches or teeth formed on its rim in the following manner: First, we arrange a series of teeth to represent the number of the station from which the signal is sent. In the present instance this number is represented in the following manner, as 321. Three teeth, *t*, are placed at equal distances apart, so that as they successively come in contact with the platinum point of the spring, three dots will be recorded, representing the figure 3. A space, *u*, is then left, and two more teeth, *v*, are made, which record the figure 2. Another space, and then a single tooth records the last figure, 1. We thus record the number of the station by means of teeth corresponding to the separate figures contained in that number.

After making a short space, we then complete the rim of the wheel by forming it into teeth, which are placed at regular intervals apart, so that they will make a series of dots, amounting altogether to one more than the number of signals or calls printed upon the face of the dial.

Directly above this transmitting-wheel we place loosely upon the post K a toothed wheel, W, which has a plate, X, extending downward from it, so that its extremity is directly above and even with the outer edges of the said teeth. This plate is just wide enough to cover two teeth, and thus combine them, so as to form a dash instead of two dots, when these teeth pass the platinum point.

The index-hand or pointer D is secured to a sleeve, *y*, which fits down upon the upper end of the post C, and rests upon a collar on the post. On the lower end of this sleeve is a pinion, *z*, which engages with the toothed

wheel, W, so that when the index-hand is turned to any compartment on the face of the dial, the wheel W will be rotated in an opposite direction, and carry with it the dash-plate X, thus shifting the position of the dash-plate to correspond reversely with the movement of the index-hand.

The wheel W has a ratchet-wheel, *d*, secured to its under side, and a pawl, *b*, serves to retain it at any position to which it may be turned by the movement of the pointer.

A coiled spring, *C'*, has one end secured to the wheel W, while its opposite end is secured to a hub, *a'*, fixed to a plate, *a*, above the wheel, so that when the wheel W is rotated by means of the pointer, the spring will be wound up and allow the spring *c'* to return the pointer to its zero position.

This arrangement is very simple and convenient. It obviates any liability of sending an incorrect message, as it is in the power of the person who sends the signal to correct an error of adjustment before starting the writing mechanism into operation.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a telegraph signal-box, provided with a dial, B, for indicating the various services to be signaled, the index-hand or pointer D, with its sleeve *y* and pinion *z* placed loosely upon the center post C, said pinion engaging with a setting device, which is retained in the set position by a ratchet-wheel, *d*, and pawl *b*, and which is returned to its original position by a spring, *c'*, when the transmission of the signal is completed, substantially as and for the purpose described.

2. The combination of an automatic and mechanical writing-wheel, *q*, provided with teeth, which indicate the number of the station, and with a series of regularly-spaced teeth, at least corresponding in number with the number of services indicated on the dial, and an adjustable dash-plate, X, with a train of gears for setting said wheel in motion, and a spring platinum point, *r*, and electric wire *s*, substantially as and for the purposes described.

3. The combination, with a series of circuit-closing teeth, of a circuit-closing plate, adjustable with relation to the teeth of the series, so as to change at pleasure the succession of dots and dashes in an electric signal.

In witness whereof we have hereunto set our hands and seals.

GEORGE SOLON LADD. [L. S.]

STEPHEN DUDLEY FIELD. [L. S.]

Witnesses:

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