(No Model.)

T. A. CASEY.

SIGNALING APPARATUS FOR DISTRICT AND FIRE ALARM TELEGRAPHS.

No. 272,645. Patented Feb. 20, 1883.

Fig: 1.

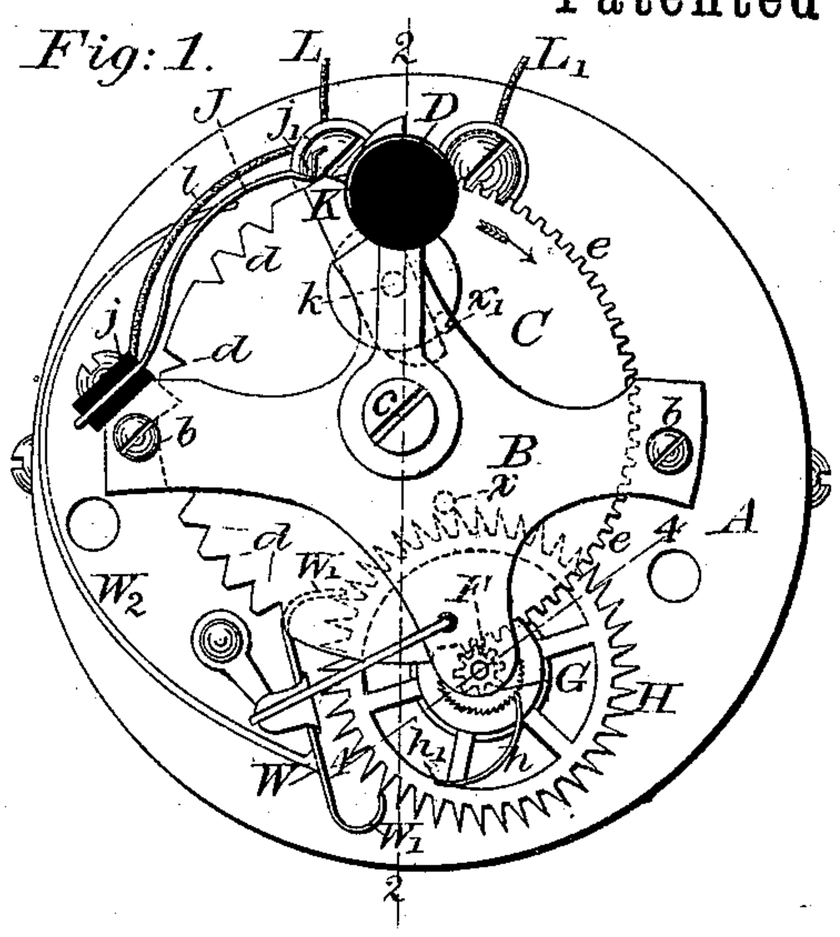


Fig: 2.

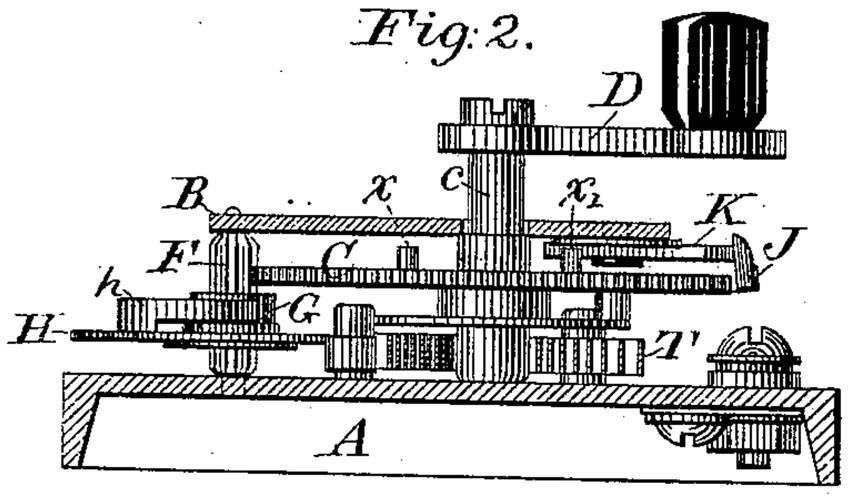


Fig: 3.

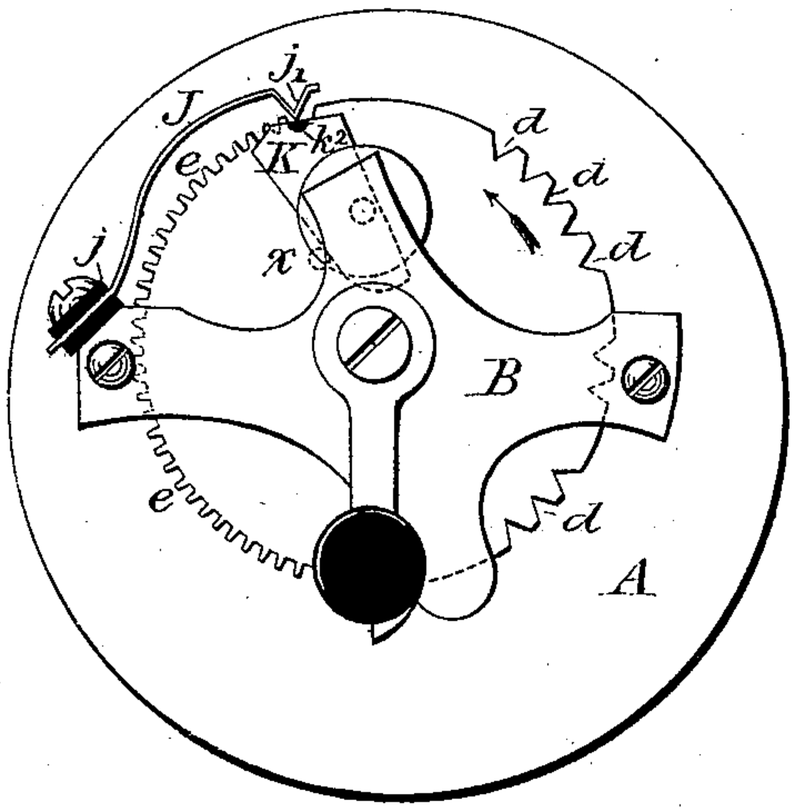
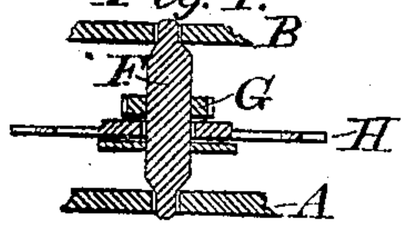


Fig: 4.



WITNESSES

Wm A. Skinkle

C. E. Ashley.

INVENTOR

Thomas A. Casey,

By his Attorneys,

Pope Edgecomb & Butler.

UNITED STATES PATENT OFFICE.

THOMAS A. CASEY, OF NEW YORK, N. Y., ASSIGNOR TO JESSE H. BUNNELL & CO., OF SAME PLACE.

SIGNALING APPARATUS FOR DISTRICT AND FIRE-ALARM TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 272,645, dated February 20, 1883.

Application filed October 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. CASEY, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Signaling Apparatus for District and Fire-Alarm Telegraphs, of which the following is a specification.

My invention relates to a certain class of electric signaling systems employed in district, fire-alarm, and other municipal telegraphic organizations, which systems ordinarily comprise a principal or central station and two or more auxiliary or sub stations located at different points within the geographical district which the principal station is designed to serve. At each sub-station it is necessary to provide means whereby a determinate arbitrary signal may be transmitted by any person, however unskilled in telegraphy, through an electric circuit to the principal station. This may be effected by setting in action an automatic circuit breaker or transmitter, which, while in motion, sends a predetermined specific signal, appropriated to and designating the particular sub-station from whence it proceeds. The signal thus transmitted is received by an attendant at the principal or central station by means of suitable apparatus, usually actuated by an electro-magnet responding to the electrical impulses from the sub-station.

The object of my invention is to provide mechanism for the automatic transmission of the necessary signals from a sub-station, which is more simple in construction and efficient in operation than that hitherto employed for the purpose.

In the accompanying drawings, illustrating my invention, Figure 1 is a front elevation of the signal-transmitting mechanism. Fig. 2 is a transverse section of the same, taken in the plane of the dotted line 2 2. Fig. 3 is a detached view of a portion of the same apparatus shown in Fig. 1, but placed in a different position; and Fig. 4 is a section of a portion of the mechanism, taken in the plane of the dotted line 4 4 in Fig. 1.

Referring to the figures, A represents the base upon which the apparatus is mounted, which is preferably of metal and of a circular form, and B is a plate secured at a suitable distance from the base A by means of screws *b b*.

C is a metallic wheel, which may be termed the "transmitting-wheel," mounted upon an axis, *c*, to which is rigidly affixed a crank, D, whereby the wheel C may be turned. Upon one segmental portion of the periphery of the wheel C a number of indentations, *d d d d*, are formed by cutting away portions of said periphery. These indentations are arranged in groups representing the predetermined signal designed to be transmitted, as hereinafter explained in detail. Another segmental portion of the periphery of the wheel C, preferably one-half of its circumference, has teeth *e e* formed upon it, which teeth engage with those of a small pinion, F. A ratchet-wheel, G, is rigidly fixed to the pinion F or upon its arbor, and a second wheel, H, is also mounted loosely, so as to turn freely, upon the axis of the pinion F. A dog or click, *h*, is rigidly fixed at *h'* to the wheel H and engages with the teeth of the ratchet G. The click *h* serves to couple the pinion F and ratchet-wheel G to the wheel H when the transmitting-wheel C is turned in one direction, and to detach them therefrom when turned in the opposite direction. The wheel H is provided with a speed-governor, whereby its too rapid rotation is prevented. I have preferred to employ for this purpose a device known as a "recoil-escapement," which consists of an anchor, W, having pallets W' W' and a vibrating pendulum-rod, W^2.

A resilient metallic circuit-spring, J, is rigidly secured to one end of an insulated support, *j*, upon the frame of the instrument. The free end *j'* of the circuit-spring normally rests upon the projecting portion of a cam, K, which is secured by slight friction to a pivot, *k*, in the frame of the instrument. When the spring J thus rests upon the projecting portion of the cam K, it is separated thereby from electrical contact with the transmitting-wheel C, the circuit being completed through the cam K; but when the latter is in the position shown in Fig. 3, the point of the spring J rests upon a small piece of insulating material, k^2, inserted into the inclined face of the cam. The electric circuit, which is shown as a normally

continuous or closed circuit, enters by the wire L, and passes thence by the wire *l* to the circuit-spring J, and thence, when the apparatus is at rest, to the cam K and the metallic frame of the apparatus, to which latter is attached the outgoing line-wire L′.

The operation of the apparatus is as follows: When a signal is to be transmitted, the signalizer takes hold of the crank D, and thereby turns the wheel C in the direction of the arrow until a pin, *x*, fixed thereupon comes into contact with the cam K, forcing the latter into the position shown in Fig. 3, at which moment the crank and the transmitting-wheel C will have moved through one-half of a complete revolution, as shown in that figure. During this movement the circuit-spring J is not permitted to come into electrical contact with the transmitting-wheel C, but is separated therefrom by the interposition of the cam K. When, however, the crank, transmitting-wheel, and cam have been brought into the position shown in Fig. 3, the circuit-spring rests upon the insulated portion k^2 of the cam. By this movement of the transmitting-wheel C a coiled spring, T, affixed to its axis (see Fig. 2) is wound up, but no motion is communicated from the ratchet-wheel G to the governing-wheel H, for the reason that during the direct motion of the wheel the teeth of the ratchet slip past the click without imparting motion thereto. The crank D and transmitting-wheel C, having, as hereinbefore stated, been brought into the position shown in Fig. 3, are immediately released by the signalizer, whereupon the apparatus returns to the normal position shown in Fig. 1 by virtue of the force imparted by the recoil of the spiral spring T. During this reverse movement of the transmitting-wheel C the ratchet-wheel G engages with the click *h*, which couples it with the governing-wheel H; hence it necessarily follows that the speed of movement of the entire apparatus in the reverse direction is controlled by the governor, consisting of the anchor W and vibrating rod W^2. During the reverse motion of the transmitting-wheel C the uncut portions of its periphery are successively brought into electrical contact with the point *j′* of the circuit-spring J; but when one of the notches or recesses *d d* passes beneath the point of the spring, the latter falls upon the insulated portion of the cam K, and the circuit between L and L′ is temporarily interrupted. These successive interruptions correspond to the several indentations upon the periphery of the transmitting-wheel, which are arranged in groups, as shown in the drawings, to form numerical signals in a well-known manner. For example, the apparatus in the figure exhibits three groups of indentations upon the transmitting-wheel, representing, respectively, the numerals 5, 2, and 3, and thereby designating station No. 523. When the predetermined signal has been thus transmitted and the reverse movement of the transmitting-wheel C nearly completed, a second pin, *x′*, upon the face of the wheel C impinges in the opposite direction upon the tail of the cam K and replaces it in the position shown in Fig. 1, thereby cutting the transmitting-wheel C out of circuit.

The apparatus shown in the drawings may be secured to any suitable support—as a wall or table—and may be protected by an external case, from which the crank D is permitted to project in the usual manner.

I am aware that the main toothed wheel of an automatic signaling apparatus has heretofore been fixed upon the same axis with a separate wheel or segment provided with circuit-breaking teeth or devices; but by placing the latter upon a portion of the periphery of the main toothed wheel in the manner hereinbefore described I am enabled to simplify the apparatus, to render it more compact, and to materially lessen the cost of its construction.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a speed-regulator, a pinion controlled thereby, and a rotating transmitting-wheel having arbitrarily-arranged indentations and projections formed upon one segmental portion of its periphery for breaking and closing an electric circuit, and teeth for engaging with said pinion formed upon another segmental portion of its periphery.

2. The combination, substantially as hereinbefore set forth, of a main toothed wheel, a circuit-breaking device upon said wheel, a crank or handle for causing the direct rotation of said wheel and circuit-breaker, an antagonistic force for causing the reverse rotation of said main wheel when the crank is released, a pinion engaging with the teeth of said main wheel, a second wheel loosely mounted upon the axis of said pinion, a speed governor for controlling the velocity of the last-named wheel, and a ratchet-wheel and click for mechanically connecting the said pinion with the governed wheel during the reverse movement of the main wheel, and disconnecting it therefrom during the direct movement of the same.

In testimony whereof I have hereunto subscribed my name this 24th day of October, A. D. 1882.

THOMAS A. CASEY.

Witnesses:
DANIEL W. EDGECOMB,
CHARLES A. TERRY.