

(No Model.)

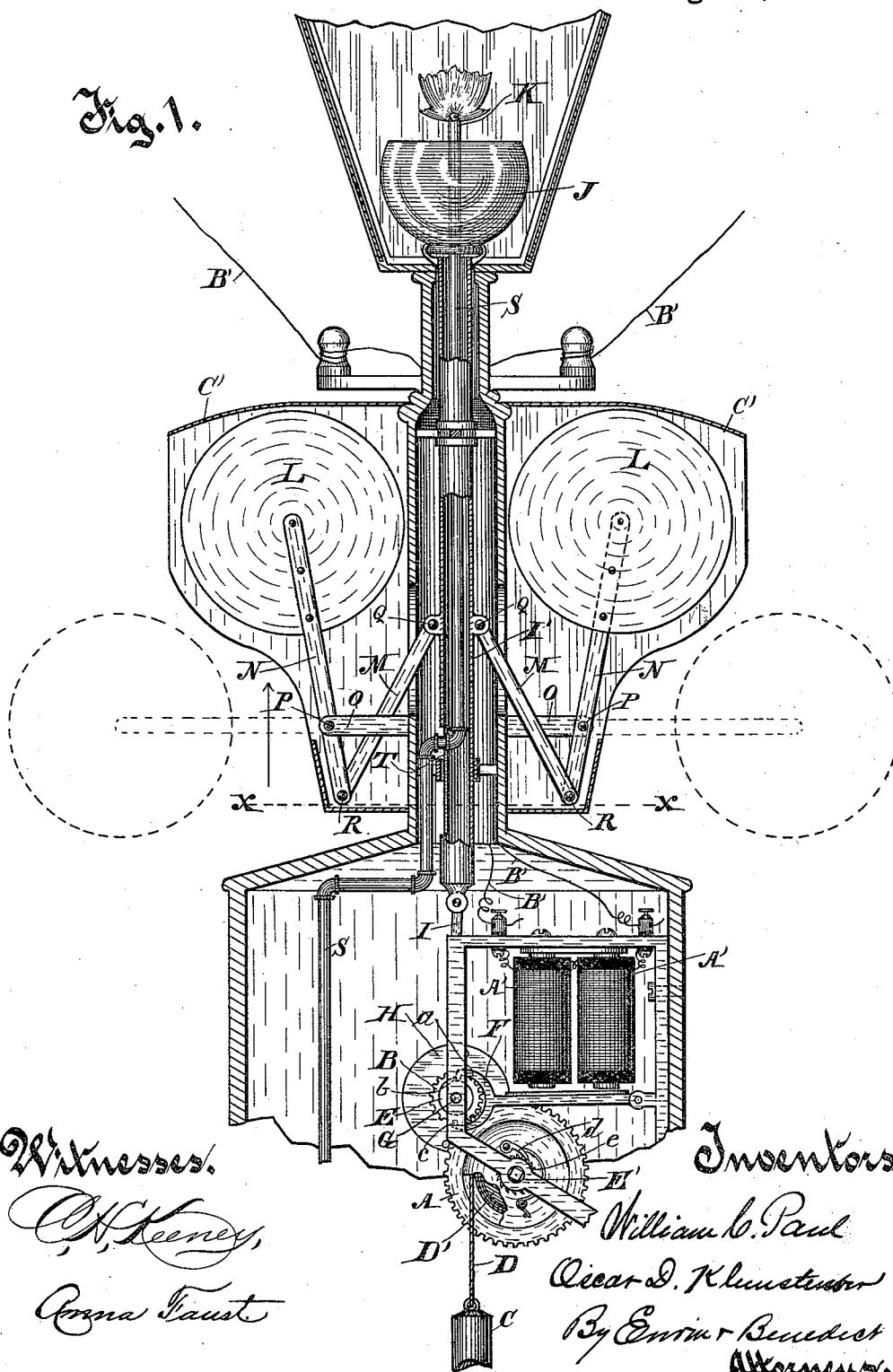
2 Sheets—Sheet 1.

W. C. PAUL & O. D. KLEINSTEUBER.
SIGNAL.

No. 433,959.

Patented Aug. 12, 1890.

Fig. 1.



Witnesses.

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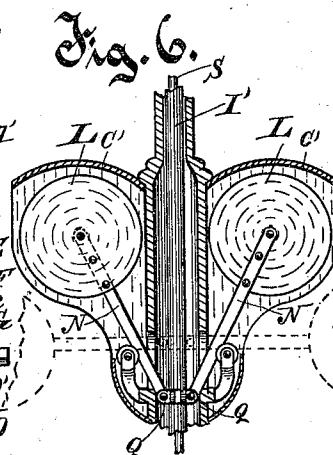
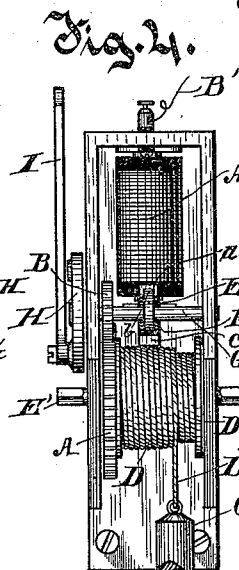
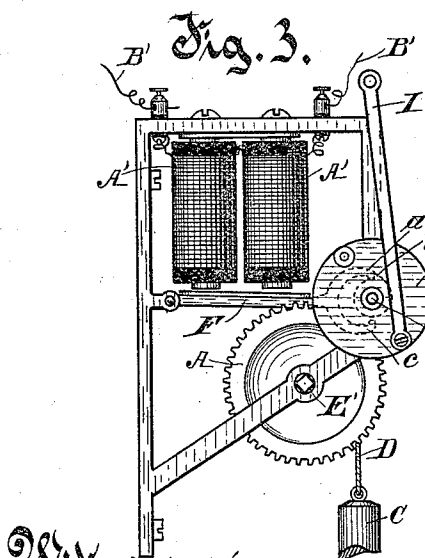
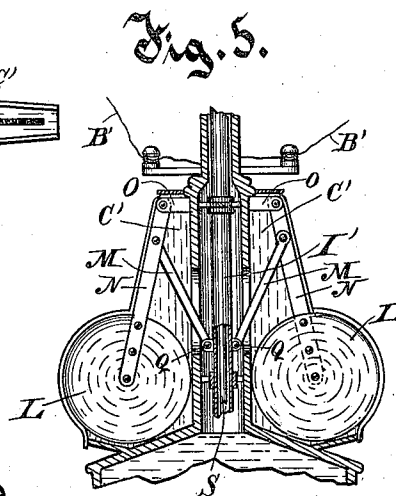
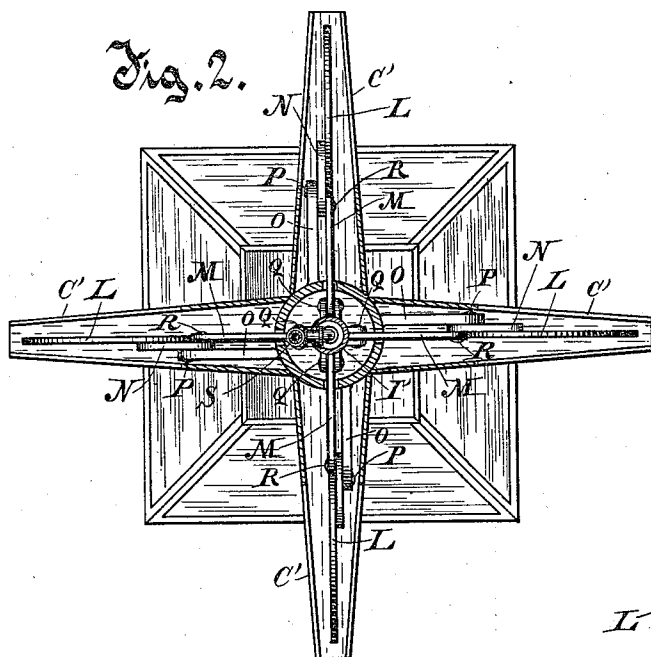
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

WILLIAM C. PAUL AND OSCAR D. KLEINSTEUBER, OF MILWAUKEE, WISCONSIN, ASSIGNORS, BY MESNE ASSIGNMENTS, OF ONE-THIRD TO CHARLES E. PAUL.

SIGNAL.

SPECIFICATION forming part of Letters Patent No. 433,959, dated August 12, 1890.

Application filed January 28, 1889. Serial No. 297,780. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM C. PAUL and OSCAR D. KLEINSTEUBER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Signals; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in a certain signal for which Letters Patent of the United States, No. 396,365, were granted to us on the 15th day of January, 1889, in which device the several signals are actuated by the gravity of a descending weight acting through a train of gears, which train of gears is controlled by an electric current from a central station at a distance from the signals. The signal device shown in said patent is especially adapted to be used in connection with a railway service, while the device herein shown is more especially adapted to be used in connection with the police service of a city, it being intended to locate signals at the numerous sub-stations throughout a city and communicate therewith from the central station, whereby a police officer in any part of the city may be called from the central station, either at night or day, as occasion may require. In said patented device motion is communicated from the train of gears to a so-called "night-signal" through a bell-crank lever, and from said bell-crank lever through a link and lever to a so-called "day-signal," said bell-crank lever being an essential element in the construction of said prior device; also, by said prior device two cam-wheels arranged one above the other facing in opposite directions are employed, between which cam-wheels a single armature-pawl is located, which is adapted to engage alternately with notches formed in the respective cam-wheels, which cam-wheels and pawl are also essential elements in the form of construction shown in said patent. By our improvements motion is communicated from the train of gears to the day-signal direct through a single link and a vertically-moving standard, while mo-

tion is communicated to the day-signals direct from the standard which actuates the night-signal; also, by our improvements we use but one cam-wheel instead of two, having dispensed with one cam-wheel, and a bifurcated pawl is substituted for the single pawl shown in said patent, the respective arms of which bifurcated pawl are adapted to engage alternately upon the opposing sides of said cam-wheel as said train of gears are released and stopped by the action of the electro-magnet.

The construction of our improvements is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a vertical section of the device as it is used in connection with an ordinary street-lamp and signal-station. Fig. 2 is a horizontal section drawn on line X X of Fig. 1. Fig. 3 is a detail showing the opposite side of the electro-magnet and gear-train to that shown in Fig. 1. Fig. 4 is a side view of the device shown in Fig. 3. Figs. 5 and 6 are modified forms of the devices for operating the day-signal.

Like parts are represented by the same reference-letters throughout the several views.

A and B constitute the gear-train, through which motion is communicated from the descending weight C and cord D to the cam-wheel E, when said cam-wheel is released from the locking-pawl F. Motion is communicated from the gear B, through its supporting-shaft G, wrist-wheel H, link I, and vertically-moving standard I', to the signal J. The signal J is preferably a colored-glass globe, which is located beneath an ordinary gas-burner K when not in use. When, however, it is desired to produce a signal, said globe J is thrown upward, so as to inclose the gas-light, whereby the bright color of the light radiated through the globe at night is adapted to at once attract attention to the signal. Motion is communicated to the several day-signals L from the vertically-moving standard I' through the links M and levers N. The levers N are supported from the brackets O upon pivots P, and the links M are connected at one end with the standard I' by the pivots Q and at their other ends to the levers N by

the pivots R. It is obvious that by this arrangement the weight of the signals L, L is adapted to counterbalance that of the signal J and its connecting-link, whereby said signals are easily moved in either direction. The standard I' is tubular in form, thus providing a hollow space within it for the admission of the gas-tube S, a slot T being formed in the side of said standard I', through which said gas-tube S is inserted, which slot permits of the free upward and downward movement of the standard without interfering with or moving the gas-tube.

The locking-pawl F is pivoted at one end to a stationary bearing beneath the electro-magnets A' and serves as an armature to said magnets, and when the circuit is broken between said electro-magnets and the battery, with which they are connected in the ordinary manner through the wires B' B', said armature or pawl F drops of its own gravity when its upper arm *a* engages the notch *b* of said cam-wheel, and thus prevents said cam-wheel from being turned by the gravity of the weight C, in which position said signal device remains constant, except when desirous to produce a signal. When, however, it is desirous to call the attention of a person to either of the signals described, the electric circuit connected with the wires B' B' at the central station is closed in the ordinary way, when the armature or pawl F is instantaneously drawn upward by and in contact with the electro-magnets A', whereby the upper arm *a* of the pawl is disengaged from the catch *b*, when said cam-wheel is caused to rotate one-half a revolution by the action of the descending weight C, whereby the link I and standard I' are thrown upward, carrying with them the signal-globe J, and at the same time the signals L are thrown outward from their inclosing-cases C'. When said cam-wheel is rotated one-half of a revolution, as stated, said catch is brought in contact with the lower arm *c* of said pawl F, whereby the motion of said cam is stopped and said signals are retained in view, as stated, so long as the electric circuit remains closed. When, however, the signal has been answered or it is desirous at the central station to remove the same, the electric circuit is broken in the ordinary way, when said pawl F drops of its own gravity, thus permitting said cam-wheel E to rotate another half-revolution, whereby said connecting-standard I' is drawn downward, and said signals are thereby withdrawn from view, when with the downward movement of said pawl F its upper arm A engages, as before, in said catch *b* and stops the motion of said cam. Thus it is obvious that motion may be communicated from the descending weight C to said signals from time to time, as occasion may

require, by closing and breaking the electric current between the station and said electro-magnets until said weight C has descended to the lower extremity of its movement, when said weight may be wound up again in the ordinary manner upon the spool D' by applying a key to the shaft E'.

The spool D' and shaft E' are connected with the gear A by a spring-pawl *d* and ratchet-wheel *e* in the ordinary manner, which permits a cord to be wound upon said spool without moving the gears, while the motion of said spool as it is caused to rotate by the action of the descending weight is communicated to said gear A through said pawl and ratchet.

In the modified form of device for operating the day-signal shown in Fig. 5 the signals are suspended from the lever of the third kind instead of the first kind, as shown in Fig. 1, the operating-links being pivoted to the levers between their fulcrums and the signal instead of at the ends of the levers.

In the modified form shown in Fig. 6 the signal-supporting levers are pivoted to the vertically-moving shaft and the connecting-links are dispensed with.

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

1. In a signal, the combination, with a gear-train communicating with an electro-magnet through a single cam-wheel and a bifurcated armature-pawl, the respective arms of which pawl engage in a catch upon the respective sides of said cam-wheel, of a wrist-wheel, a link, a reciprocating standard, and a day and night signal connected with and operated by said reciprocating standard, substantially as and for the purpose specified.

2. The combination of a stationary gas-tube S, provided with burner K, inclosing signal-supporting tube or standard I', colored transparent shade J, supported upon the upper end of said signal-supporting-standard I', connecting-links M, levers N, said levers N being supported at a fixed point upon pivots P, and day-signals L, affixed to the free ends of said levers N, said standard I' being connected, as described, with a train-gear and electro-magnet, by which it is raised and lowered and said signals K and L simultaneously operated, all substantially as and for the purpose specified.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM C. PAUL.
OSCAR D. KLEINSTEUBER.

Witnesses:

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C. T. BENEDICT.