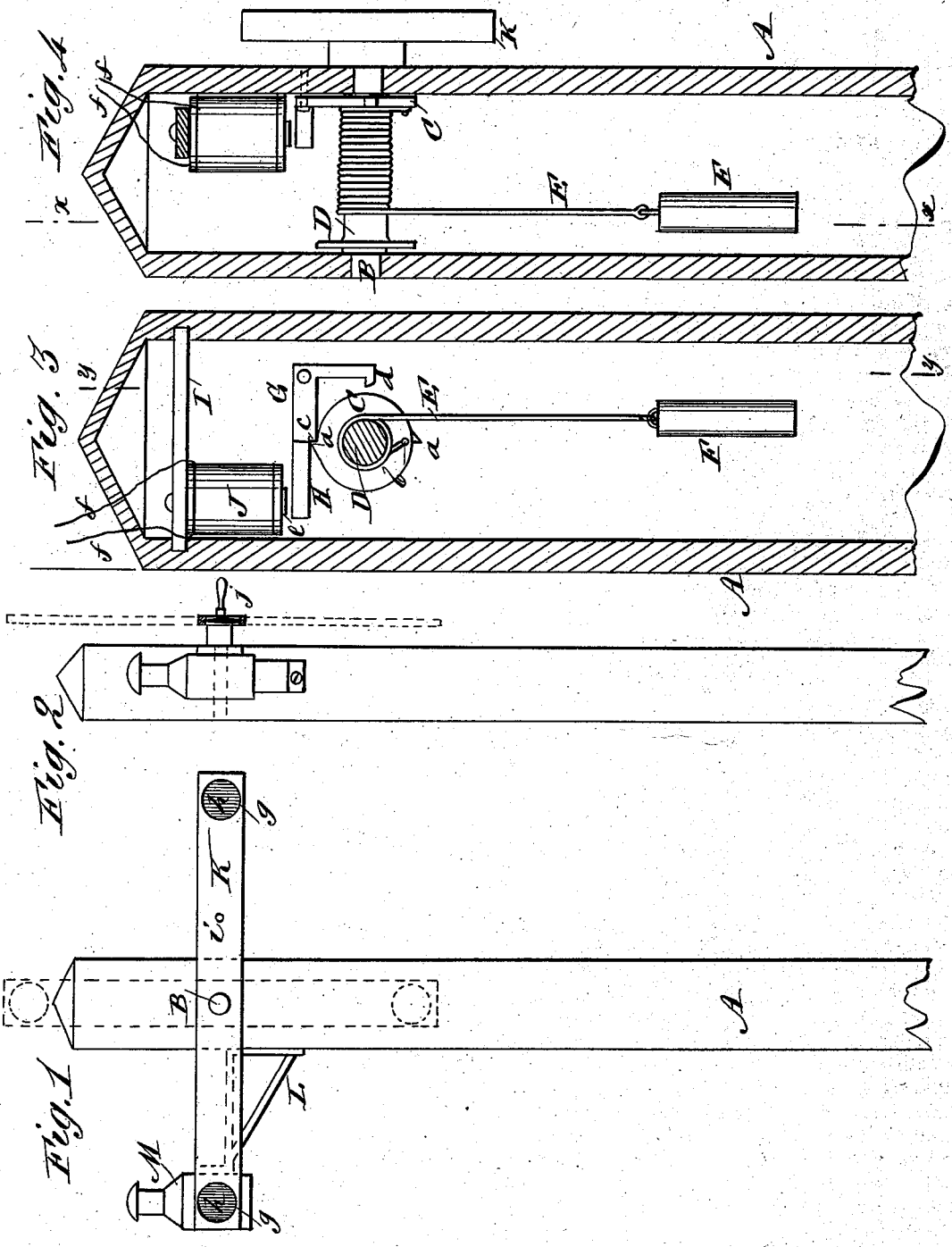
(No Model.)

C. D. TISDALE.

RAILWAY SIGNAL.

No. 382,741. Patented May 15, 1888.



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RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 382,741, dated May 15, 1888.

Application filed May 27, 1887. Serial No. 239,531. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. TISDALE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Railway-Signal, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a front elevation of my improved semaphore. Fig. 2 is a side elevation. Fig. 3 is a vertical transverse section taken on line *x x* in Fig. 4, and Fig. 4 is a vertical section taken on line *y y* in Fig. 3.

Similar letters of reference indicate corresponding parts in all the figures.

The object of my invention is to construct a simple and effective railway-semaphore to be operated by a weight under control of an electro-magnet.

My invention consists in the combination, with a hollow post adapted to contain the operating mechanism of the semaphore, of a shaft journaled in the post and provided with a scape-wheel and barrel, a cord wound upon the barrel and provided with a weight for turning the shaft, a lever provided with an armature and with pallets adapted to engage the teeth of the scape-wheel, an electro-magnet supported in the hollow post and adapted to operate the escapement, a semaphore-arm attached to the end of the shaft projecting through the hollow post and provided with colored windows in opposite ends thereof, a lantern supported by the hollow post in position to throw light through the windows of the semaphore-arm, and a removable handle for turning the shaft and winding the weight-cord, all as hereinafter more fully described.

In the hollow post A, near the top thereof, is journaled a shaft, B, one end of which projects from the side of the post. Upon the said shaft B, within the post, is secured a scape-wheel, C, having two teeth, *a*, and upon the said shaft, adjoining the scape-wheel, is secured a drum, D. In the inner side of the scape-wheel, near the periphery thereof, is inserted a pin, *b*, to which is secured one end of a cord, E, which is wound around the drum and attached at the other end to the weight F.

Above the scape-wheel a right-angled lever, G, is pivoted to the side of the hollow post A, above the shaft B and at one side thereof. The right-angled lever G carries pallets *c d*, adapted to engage the teeth *a* of the scape-wheel in alternation, and to the horizontal arm of the said lever G is attached an armature, H. Above the armature H, and from a bar, I, extending across the hollow post A, is suspended an electro-magnet, J, whose polar extremity *e* is supported near the armature H, so that the said armature is always within the field of the electro-magnet. The terminals *f f'* of the magnet are connected with the line-wire, battery, and the key of a distant point.

To the end of the shaft B, projecting through the side of the hollow post A, is secured a semaphore-arm, K, having transverse apertures *g* near opposite ends, to which are fitted the colored windows *h*. To the side of the post A is secured a bracket, L, which supports a lantern, M, in position to throw a light through one of the windows *h* when the semaphore-arm K is in a horizontal position. In the semaphore-arm K is formed an aperture, *i*, for receiving a handle, *j*, by which the cord E is wound.

The operation of my improved semaphore is as follows: When no current passes through the magnet J, the pallet *c* engages one of the escapement-teeth, *a*, which retains the shaft B in such a position as to hold the semaphore-arm K horizontally, indicating "danger" by its position in the daytime, and indicating "danger" at night by causing the colored light to be emitted from the lantern by virtue of the covering of the lantern by the window *h*, carried by the semaphore-arm. When it is desired to display a safety-signal, the circuit of the electro-magnet J is closed, thereby causing the said magnet to lift the armature H and disengage the pallet *c* from the escapement-tooth *a*, and at the same time to bring the pallet *d* into the path of the said tooth, when the weight F turns the shaft B through a quarter of a revolution through the medium of the cord E, bringing the semaphore-arm K into a vertical position, thereby indicating "safety" in the daytime by its position and at night by displaying a white light in the lantern. So long as the circuit remains closed the safety-signal is displayed; but as soon as it is opened the armature is released, and by its own gravity turns

the lever G, releasing the pallet *d* from the tooth *a* of the scape-wheel, allowing the succeeding tooth to engage the pallet *c* as the shaft B is turned under the influence of the weight F, thereby holding the semaphore-arm again in a horizontal position, indicating "danger." It will thus be seen that whenever the armature H is released from the magnet J, either by the signal-man or by accident, the danger-signal is displayed. The pin *b*, to which the cord E is attached, is arranged in such a position relative to the semaphore-arm K as to cause the said semaphore-arm to assume a horizontal position when the weight runs down, thereby indicating "danger" until the semaphore is rewound. The rewinding is accomplished by inserting the handle *j* in the opening *i* of the semaphore-arm and turning the said semaphore-arm in a reverse direction, the pallet *c* acting as a pawl for engaging the scape-wheel teeth *a* and preventing the shaft B from turning until the lever G is again actuated by the electro-magnet.

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

1. In a semaphore signal device, the combination, with a shaft and means for turning the same, of a semaphore-arm projecting equally in opposite directions from the said shaft, and an escapement connected directly with the semaphore-shaft and arranged to limit the rotary movements of the shaft to a quarter of a revolution, substantially as described.

2. In a semaphore signal device, the combination of a hollow post, a weight-operated shaft journaled therein, a scape-wheel carried by the shaft, electro-magnetically-operated pallets arranged to engage and release the scape-wheel, a semaphore-arm attached to the shaft projecting equally in opposite directions from the shaft, and provided with windows in opposite ends thereof, and a lantern supported opposite the path of the windows of the semaphore-arm, substantially as described.

3. In a semaphore signal device, the combination, with the hollow post A, of the shaft B, provided with the drum D and two toothed scape-wheel C, the cord E and weight F, the angled lever G, provided with the pallets *c d*, the armature H, attached to the said lever G, the electro-magnet J, adapted to operate the armature H, the semaphore-arm K, attached to the shaft B and provided with the colored windows *h*, and the lantern M, supported opposite the path of the windows *h*, substantially as described.

4. In a semaphore signal device, the combination, with the shaft B, scape-wheel C, drum D, cord E, and weight F, of the pin *b*, placed at an angle of ninety degrees with the semaphore-arm K, substantially as described.

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