

No. 665,712.

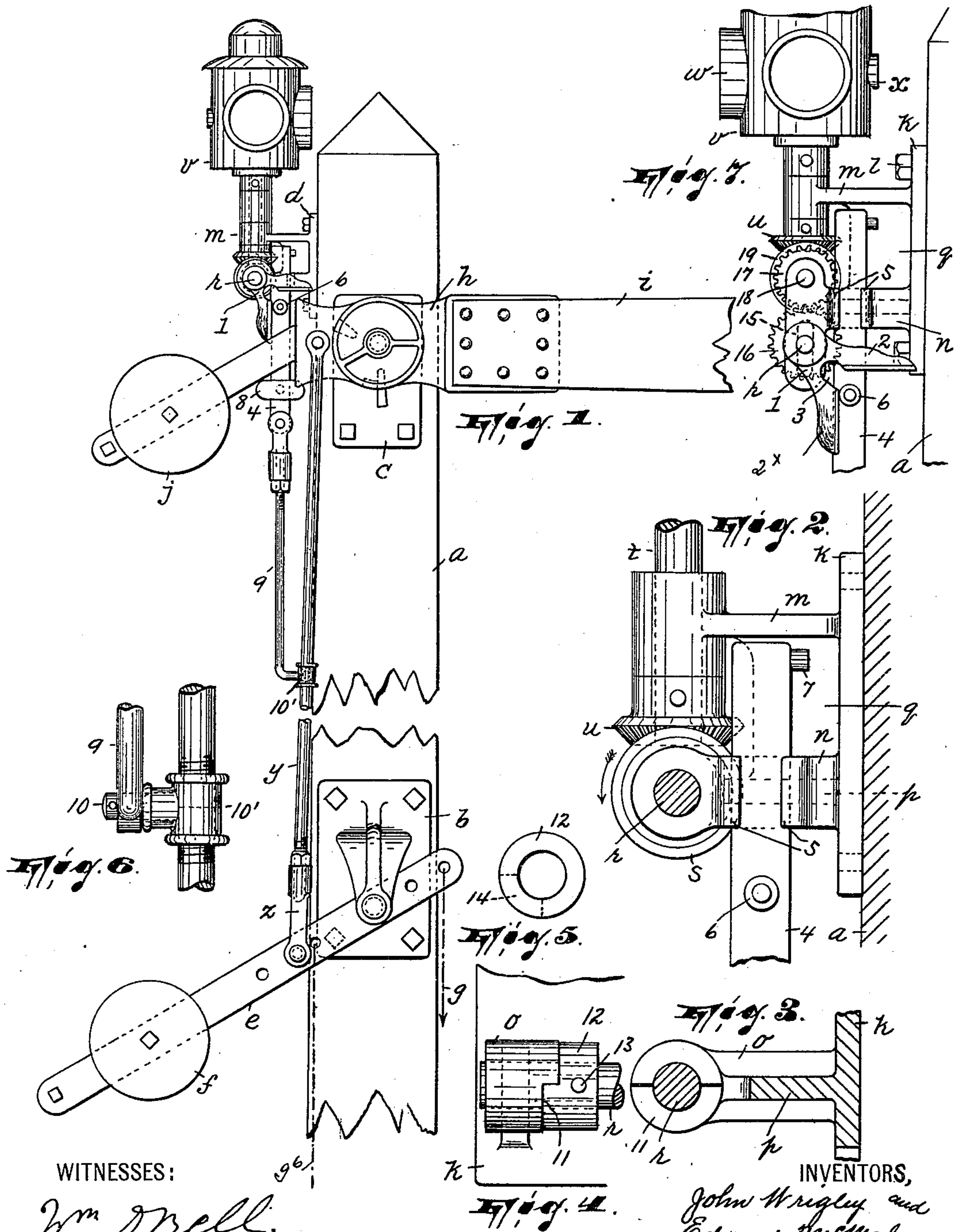
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J. WRIGLEY & E. McMAHON.

RAILWAY SIGNAL.

(Application filed Apr. 19, 1900.)

(No Model.)



WITNESSES:

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RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 665,712, dated January 8, 1901.

Application filed April 19, 1900. Serial No. 13,420. (No model.)

To all whom it may concern:

Be it known that we, JOHN WRIGLEY and EDWARD McMAHON, citizens of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Railway-Signals; and we 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, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

Our invention relates to semaphore apparatus employed for railroad signaling; and it consists in a certain improved construction of the apparatus of this nature referred to in United States Letters Patent No. 496,080, dated April 25, 1893, granted to John Wrigley.

In our present construction of the apparatus instead of connecting the revolving signal-lamp with the pivoted paddle and so making its proper operation dependent upon the operation of said paddle, as in said patented construction, we connect them, independently of each other, with a common actuating means, and provide, furthermore, for automatically throwing each of them to its danger position should its connection with said actuating means get out of order. Besides the advantage here involved our present construction possesses the important qualities of being more positive in its action and more easily operated than is said patented construction.

We have fully illustrated our invention in the accompanying drawings, wherein corresponding letters of reference indicate like parts, and wherein—

Figure 1 is a view of our improved semaphore apparatus. Fig. 2 is an enlarged view showing in detail a certain bracket and a portion of the mechanism for transmitting actuation to the lamp. Figs. 3 and 4 are, respectively, a sectional view and a view in front elevation of a certain arm constituting a portion of said bracket. Fig. 5 is a plan view of a collar that is shown in Fig. 4 and that is carried by a certain horizontal shaft which has bearings in said bracket. Fig. 6 is a detail view of a portion of the connecting means be-

tween said lamp and the actuating means, and Fig. 7 is a view in side elevation of a modified form of the mechanism for transmitting actuation to the lamp.

The reference character *a* in the drawings designates the mast or pole upon which the semaphore apparatus is mounted. To this mast are secured three brackets *b*, *c*, and *d*. Upon the bracket *b* is fulcrumed a balance-lever *e*, one end of which carries an adjustable weight *f* and to the other end of which is adapted to be connected a wire or other flexible connection *g*, which extends to the operating-tower. A second wire *g*⁶ is secured to the balance-lever *e* between its fulcrum and the weight and extends likewise to the tower, from where it is operated, and is assisted in its pulling by said counterweights *f*, as will be manifest. Upon the bracket *c* is fulcrumed a lever *h*, said lever carrying the signal-paddle *i* at one of its ends and at the other of its ends an adjustable counterpoise *j*. The bracket *d* consists of a base-plate *k*, whereby said bracket is secured to the mast by bolts *l*, and carries arms *m*, *n*, and *o*, said arms forming integral projections of the plate. The arms *n* and *o* project in a horizontal plane from the plate and are connected by a strengthening-web *p*, while the arm *m* is disposed above said arms *n* and *o*, another integral strengthening-web *q* connecting said arm and the web *p* and being disposed at right angles to the latter.

In the arms *n* and *o* is journaled a horizontal shaft *r*, carrying between said arms a bevel-gear *s*, while in the end of the arm *m* is journaled a vertical spindle or shaft *t*, the lower end of which carries another bevel-gear *u*, which is in mesh with and rests upon the bevel-gear *s*. Upon the upper end of the spindle or shaft *t* is detachably mounted a lamp *v*, so secured in place as to revolve with said spindle. This lamp is provided with the usual red and green or other colored lenses *w* for signaling purposes, which are disposed at right angles to each other, and with the small bull's-eyes *x*, whereby the operator can see that the lamp is burning.

The lever *h*, carrying the paddle *i*, is connected with the balance-lever *e* by a connecting-rod *y*, pivotally connected to said lever *h* at one of its ends and adjustably connected

at the other of its ends with a pivoted arm z on the balance-lever.

One end of the shaft r carries a bifurcated lever 1, (see Figs. 1 and 7,) having fingers 2 and 2^x, the latter of which is preferably weighted, projecting at right angles from each other and at whose junction there is formed a curved recess 3. 4 is a vertically-movable slide-rod that works between a pair of integral guides 5, projecting from the arm n , and that is provided with a roller 6, adapted to impinge against the fingers of said lever 1, so as to shift the lever and rock the shaft r . The downward movement of the slide-rod is limited by a stop 7, that is adapted to impinge against the top of the arm n . It should be remarked, furthermore, that the slide-rod is normally held down by a weight 8, which it carries, and that said slide-rod is operatively connected with the balance-lever e , which, it will be observed, is the common actuating means for the lamp and the paddle through the medium of a pitman 9, pivotally connected at one of its ends to the lower end of the slide-rod and at the other of its ends to a stud 10, projecting from a T-joint 10', which the connecting-rod y carries.

In order to positively limit the rotation of the shaft r , the semicircular portion of the arm o , which is immediate the shaft, is cut away to form a recess, as at 11 in Figs. 4 and 5, said shaft carrying a collar 12, rigidly secured thereto by a pin 13, which has a quadrant-shaped projection 14 working in said recess.

In the modification shown in Fig. 7 we secure the shaft r adjustably in vertical slots 15 in the arms n and o , and in lieu of the bevel-gear s we secure on said shaft a plain pinion 16, which is adapted to mesh with another pinion 17 on an auxiliary shaft 18, also journaled in said arms and carrying a bevel-pinion 19, which meshes with the bevel-pinion u . This construction has especial value from the fact that it permits of changing the shaft r , carrying the pinion 16, for a shaft carrying a pinion of a different size in case it is necessary to vary the relative degrees of movement of the lamp and paddle.

It will be understood, of course, that the operation of the entire mechanism depends upon the balance-lever e , which when it moves effects the movement of the paddle i through the medium of the connecting-rod y and the turning of the lamp v through the medium of said connecting-rod, the pitman 9, the slide-rod 4, the coacting pin 6, and bifurcated lever 1, and the gearing.

Should the connection between the paddle and the lamp and the actuating-lever e be broken at any time while said paddle and lamp are at safety, it will be seen that the weight, which we term a "compensator," will automatically throw these parts to the danger position, thus warning the railroad-men.

From the foregoing it can be seen that the lamp after having been rotated ninety de-

grees comes to a standstill and is locked in said position, while the paddle i will continue to move upward (or downward) to its highest (or lowest) position, which is of great value in signaling and will be well understood by those familiar with the art.

We do not wish to be limited to the use of the specific form of lever 1 shown in the drawings, for by increasing the number of and properly disposing the fingers and also providing the recess 3 between them instead of the lamp being thrown to but two positions and showing two colors it can be made to be movable to several positions, showing several different colors.

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

1. In a signaling apparatus, the combination, with a support, of an actuating mechanism, a paddle-carrying lever fulcrumed on said support, a revolving lamp journaled on said support, a slide-rod carried by said support, operative connection between said lamp and the slide-rod, and power-transmitting mechanism connecting said actuating mechanism with said lever and slide-rod, substantially as described.

2. In a signaling apparatus, the combination, with a support, of an actuating mechanism, a paddle-carrying lever fulcrumed on said support, a revolving lamp journaled on said support, a gravity-actuated slide-rod carried by said support, operative connection between said lamp and the slide-rod, a rod connecting said lever and the actuating mechanism, and operative connecting means between said rod and the slide-rod, substantially as described.

3. In a signaling apparatus, the combination, with a suitable support, of an actuating mechanism, a paddle-carrying lever fulcrumed on said support, a revolving lamp journaled on said support, and power-transmitting mechanism connecting said actuating mechanism with said lever and the lamp, said operative connection comprising a slide-rod having a projection and a bifurcated lever receiving said projection, substantially as described.

4. In a signaling apparatus, the combination, with a suitable support, of an actuating mechanism, a paddle-carrying lever fulcrumed on said support, a revolving lamp journaled on said support, a slide-rod carried by said support, operative connection between said lamp and the slide-rod, a rod operatively connecting said lever and the actuating mechanism, and operative connection between said rod and the slide-rod, said rod and the slide-rod being movable in substantially the same direction, substantially as described.

5. In a signaling apparatus, the combination, with a suitable support, of an actuating mechanism, a paddle-carrying lever fulcrumed on said support, a revolving lamp journaled on said support, a shaft also jour-

naled on said support and operatively connected to said lamp, a lever fixed to said shaft, a slide-rod carried by said support and operatively engaging said last-named lever, a rod 5 operatively connecting said first-named lever and the actuating mechanism, and operative connection between said rod and the slide-rod, said rod and the slide-rod being movable in substantially the same direction, substantially as described. 10

6. In a signaling apparatus, the combination, with a suitable support, of an actuating mechanism, a paddle-carrying lever fulcrumed on said support, a revolving lamp 15 journaled on said support, a shaft also journaled on said support and operatively connected to said lamp, a bifurcated lever fixed on said shaft, a slide-rod carried by said support and provided with a projection working 20 in the bifurcated portion of said lever, and operative connecting means between said actuating mechanism and said paddle-carrying lever and the slide-rod, substantially as described.

25 7. In a signaling apparatus, the combination, with a suitable support, of an actuating-lever fulcrumed on said support, a weighted paddle-carrying lever also fulcrumed on said

support, a revolving lamp journaled on said support, a shaft operatively connected to said 30 lamp, a bifurcated lever fixed on said shaft, a weighted slide-rod guided in said support and carrying a projection working in the bifurcated portion of said lever, a rod connecting the paddle-carrying lever and the actuating-lever, and a pitman connecting said rod 35 and the slide-rod, substantially as described.

8. In a signaling apparatus, the combination, with a suitable support, of a lamp journaled in said support, a shaft also journaled 40 in said support, a bifurcated lever carried by said shaft, a slide-rod guided in said support and having a projection, said projection being adapted to work in the bifurcated portion of said lever, operative connection between said lamp and the shaft, and means 45 for actuating said slide-rod, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 16th day 50 of April, 1900.

JOHN WRIGLEY.

EDWARD McMAHON.

Witnesses:

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WM. F. SQUIRE.