

J. DOWNS,
FOG SIGNAL.

APPLICATION FILED NOV. 9, 1908.

1,047,180.

Patented Dec. 17, 1912.

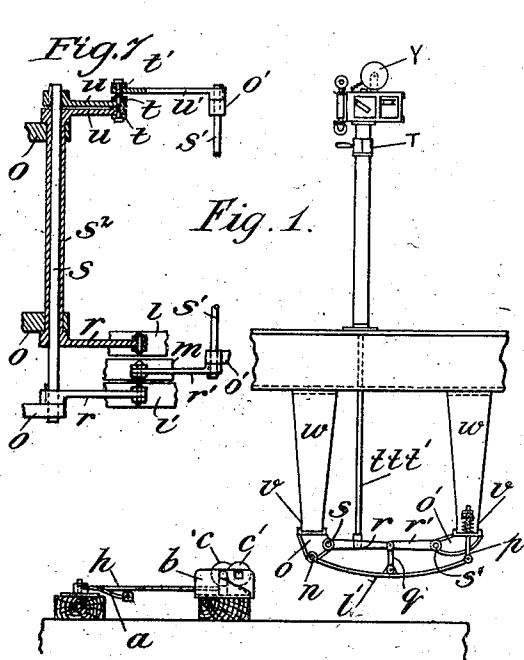


Fig. 1.

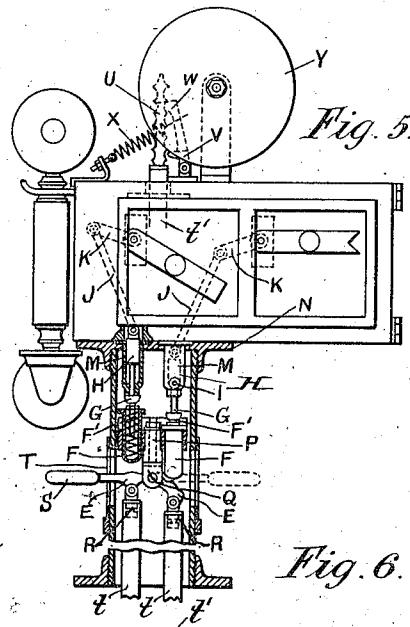


Fig. 5.

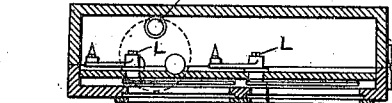


Fig. 3.

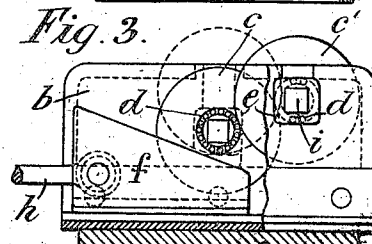


Fig. 4.

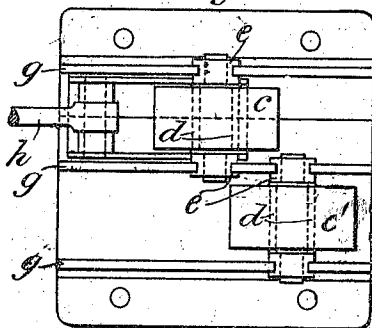


Fig. 6.

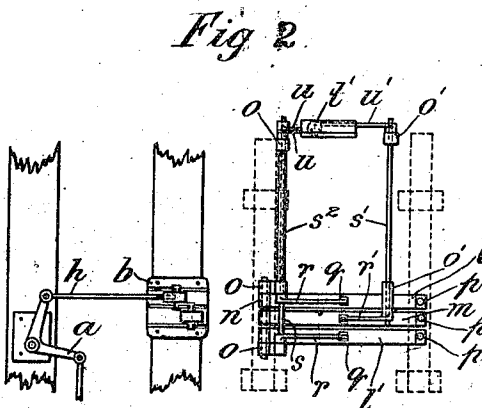


Fig. 2.

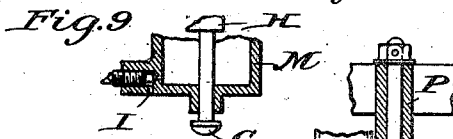


Fig. 9.



Fig. 8.

Witnesses:
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JOHN DOWNS, OF LONDON, ENGLAND.

FOG-SIGNAL.

1,047,180.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed November 9, 1908. Serial No. 461,772.

To all whom it may concern:

Be it known that I, JOHN DOWNS, a subject of the King of Great Britain and Ireland, residing at London, in the county of Middlesex, England, have invented a certain new and useful Improvement in Fog-Signals, of which the following is a specification.

This invention relates to apparatus for operating signals on engines on railways and the like by the coacting of devices on the engine and on the track and has for its object to provide an improved construction of, and arrangement of parts comprising, such means.

Signaling apparatus constructed in accordance with this invention comprises curved levers pivoted at one end to a fixed shaft carried in brackets on the engine and having their other ends free to move up and down and adapted to co-act with a device in the track and to operate indicating means in the cab of the engine through suitable rods and levers. The device in the track for causing the indication preferably comprises a roller adapted to be respectively raised or lowered by the action of lowering or raising the signal.

Referring now to the drawings Figure 1 is a side elevation of one arrangement of signaling means constructed in accordance with this invention. Fig. 2 is a plan thereof. Fig. 3 is a side elevation of the device on the track drawn to an enlarged scale. Fig. 4 is a plan thereof. Fig. 5 is a sectional elevation of the indicating mechanism. Fig. 6 is a sectional plan thereof. Fig. 7 is a fragmental view, partly in horizontal section and partly in plan, of the skating levers and the mechanism connecting them with the signal operating rods; Fig. 8 is a detail of the revolving pin with a fragment of one of the tubes and its actuating rod in normal position; and Fig. 9 is a sectional detail of a fragment of one of the dashpots and its screw regulated air passages.

a is a bell crank lever adapted to be operated by the action of lowering or raising the signal.

b is a bracket fixed to a sleeper and provided with two rollers *c*, *c*¹ mounted in

roller bearings *d*, the spindles being fixed and carried in flanged bushings *e* which are free to move in slots in the bracket *b*.

f is a wedge-shaped member adapted to slide between frames *g* on the bracket *b*, so that its inclined edges coast with the inside flanges of the bushings *e* and cause same to rise or fall as said wedge-shaped member is moved forward or backward.

h is a rod connecting the member *f* with the bell crank lever *a*.

l, *l*¹ and *m* are three curved levers (hereinafter called "skating levers") pivoted at one end on a fixed shaft *n* carried in brackets *o*, and having their other ends free to move up and down.

p are eye-bolts on which the free ends of the skating levers are hung, said bolts resting on spiral springs and provided with adjusting means.

q are links attached at or about the centers of the skating levers and connecting same to levers *r*, *r*¹, *r*². The levers *r*, *r*¹ are mounted on cross shafts *s*, *s*², one of which, namely the lever *s*², is tubular in order that the other may pass therethrough and the lever *r*¹ is mounted on a cross shaft *s*¹. On the cross shafts *s*, *s*² are mounted levers *u*, *u*¹ and on the cross shaft *s*¹ is mounted a lever *u*² connected to the rods *t*, *t*¹ and *t*² respectively. The rods *t*, *t*¹ operate semaphore arms and the rod *t*² operates a bell as will be hereinafter more fully described. The cross shafts *s*, *s*² and *s*¹ are carried in brackets *o*, *o*, *o*¹ which are fixed to channel bars *v* carried on suspension brackets *w* which are fixed to the locomotive.

E, *E* (Fig. 5) are tappet levers pivoted on a pin *Q* free to revolve in a boss on a bracket *P* fixed in a stand pipe, and said levers, *E*, *E* are pivotally attached to the rods *t*, *t*¹.

F, *F* are cylinders in which are disposed spring-pressed tappets *F*¹, *F*². The cylinders *F*, *F* are adapted to be moved through bosses in the bracket *P* and the tappets *F*¹, *F*² are adapted to strike the piston rods *G*, *G* of dash-pots *M*, *M* fixed to the top flange *N* of the stand-pipe and having pistons *H*, *H* and screw regulated air passages *I*, *I*.

J, *J* are rods connecting the pistons *H*, *H*

with levers K, K mounted on the pivots L, L of semaphore arms.

The pin Q is free to be partially revolved around inside the stand-pipe. To effect this partial revolution one of the tappet levers E is provided with a handle S, and to allow of such partial revolution the rods t , t have swivel connection R, R, with the levers E, E and a suitable aperture is provided in the stand-pipe for the passage of the handle S. This aperture is covered by a sleeve T, which is vertically slotted to receive the handle, with which it moves. By this partial revolution the semaphore arms on which the rods t , t operate are reversed. One of said rods t , t is adapted to operate in conjunction with the "distant" signal and the other in conjunction with the "home" signal and the semaphore arms are arranged to indicate one for the "distant" and the other for the "home" signal. Consequently, when the locomotive is traveling backward, it is necessary to reverse the connection between the rods t , t and the semaphore arms.

Y is a warning bell adapted to be operated through the central skating lever m through the rod t' .

U is a series of grooves in the rod t' adapted to coact with a tappet V connected to or integral with a bell hammer W controlled by a spring X.

At both "home" and "distant" signals there is arranged in the track a bracket b having two rollers, namely a roller c^1 positioned in the center of the track in line with the skating lever m , and also a roller c . The roller c is arranged in one bracket b on one side of the center for the "distant" signal, and in another bracket b , on the other side for the "home" signal and in both cases in line with one of the skating levers l or l' . The center roller c^1 always remains in fixed position and is used for ringing the warning bell in the cab, while the other rollers are raised by the advance of a wedge shaped slide as hereinafter explained.

In use as the locomotive passes over a bracket b the skating lever m coacting with the roller c^1 will be moved on its pivot and operating through its link g lever r^1 , cross shaft s^1 and lever w^1 , will raise the rod t' . This raising of the rod t' will cause the bell to be struck by the hammer W with a series of blows due to the action of the tappet V and grooves U and the spring X, and these blows will be repeated as the rod t' descends after the skating lever leaves the roller c^1 .

The roller c is adapted to be raised by the wedge-shaped member f when the signal is lowered. One of the skating levers l , l' will coact with the roller c , if raised, according whether said roller corresponds to the "home" or "distant" signal. This skating lever will be moved on its pivot and operating through its link g , lever r , cross shaft s

or s^2 and lever u , will raise its rod t . The raising of the rod t will cause the tappet lever E to strike the cylinder F and raise the piston rod G and piston H in the dash-pot M, drawing in air through the screw regulated air passage I, and lowering the semaphore arm through the medium of the rod J and lever K. Similarly if the other skating lever coacts with a roller c the other semaphore arm will be lowered through the other rod t .

In use the attention of the engine driver is attracted by the striking of the bell and he will be able to ascertain from a glance at the semaphore arms the position of the signal to which his attention is called. By means of the dash-pot arrangement the semaphore arm, if moved, is held in its position for a short time, after which it returns to its normal or raised position as the piston H falls under the action of gravity against the slow escape of air from the dash-pot M.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. In signaling apparatus, the combination with an engine having an indicator and an alarm signal, of a pair of yielding tripping levers extending down to the track and operatively connected with the indicator and alarm signal, respectively, a fixed device in the track in position to be engaged by the lever connected with the alarm signal, and a movable device in the track in position, when raised, to be engaged by the lever connected with the indicator.

2. In signaling apparatus, the combination with an engine having an alarm signal and a pair of semaphore arms, of three skating levers extending down to the track, a vertical rod connected with each skating lever, two of said rods being arranged to operate said semaphore arms, respectively, and the third rod being arranged to operate said alarm signal, and devices arranged in the track in line with said skating levers, respectively, the device in line with the lever for operating the alarm signal being in fixed position, and the devices in line with the levers operating the semaphore arms being movable.

3. In signaling apparatus, the combination with an engine having a pair of semaphore arms and a pair of skating levers extending down to the track, of a pair of vertical rods connected with the skating levers, respectively, and adapted to operate the semaphore arms, and a pair of movable devices arranged in the track in line with said skating levers, respectively, the upper ends of said rods being adapted to be partially revolved, so as to bring either rod into operative relation with either semaphore arm.

4. In signaling apparatus, the combination with an engine having a pair of sema-

phore arms, of a pair of skating levers extending down to the track, a pair of vertical rods connected with said skating levers respectively, dash-pot mechanism arranged in position to be engaged by said rods, and means operatively connecting each dash-pot with one of the semaphore arms, the upper ends of said vertical rods being adapted to be partially revolved, so as to bring either rod into position to engage either dash-pot. 10

In testimony whereof I affix my signature in presence of two witnesses.

JOHN DOWNS.

Witnesses:

A. J. MADDEN,
S. LORD.