

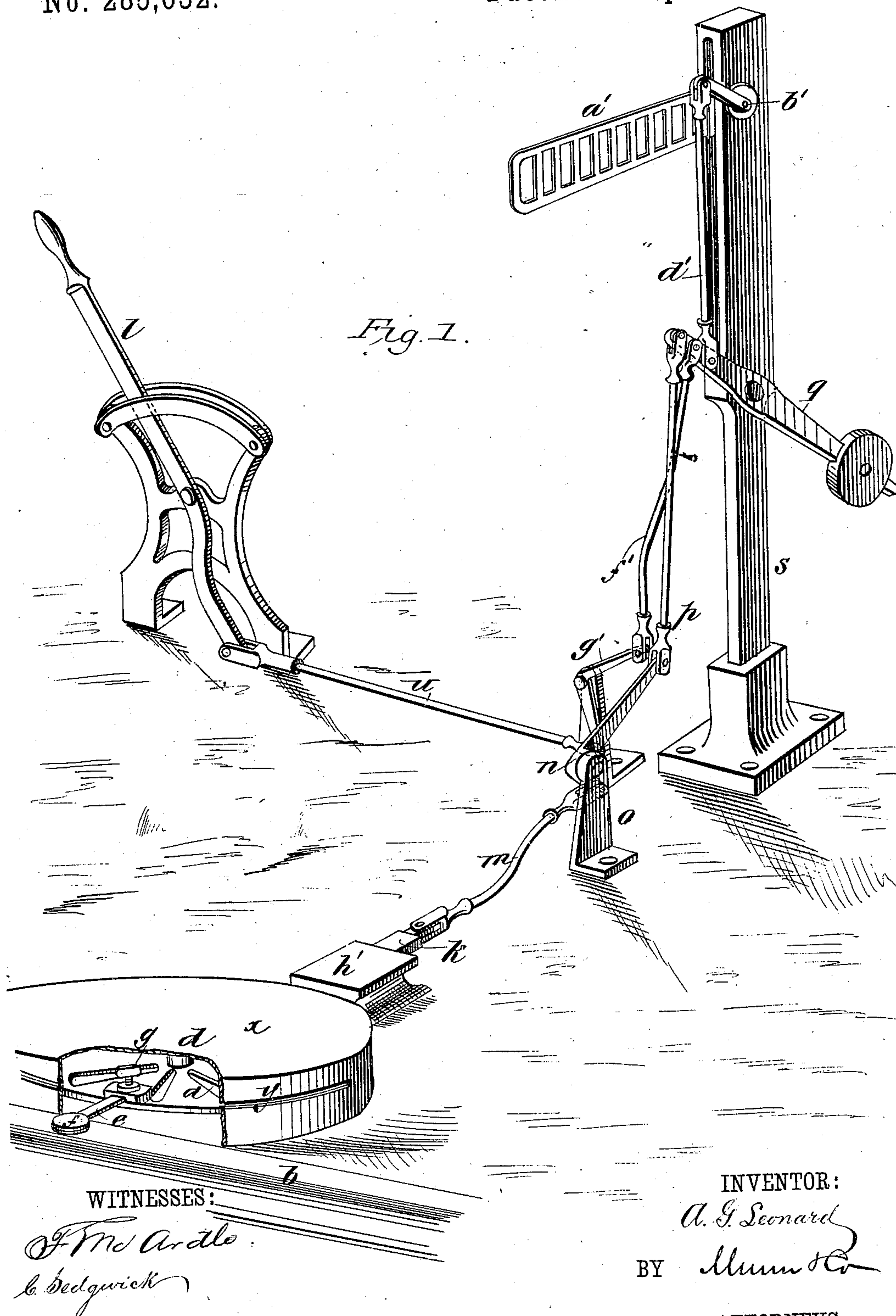
(No Model.)

2 Sheets—Sheet 1.

A. G. LEONARD.  
RAILROAD SIGNAL.

No. 285,632.

Patented Sept. 25, 1883.



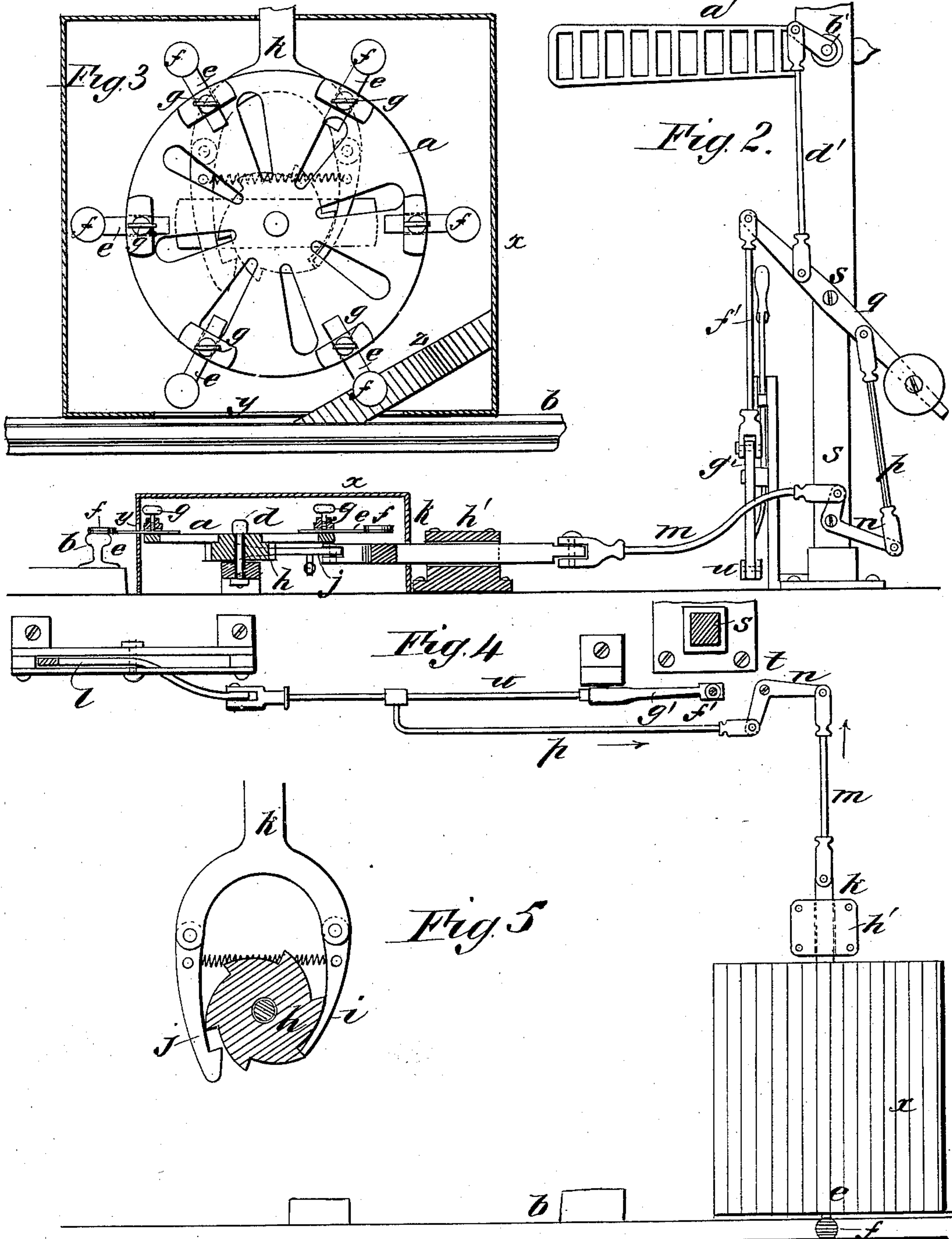
(No Model.)

2 Sheets—Sheet 2.

A. G. LEONARD.  
RAILROAD SIGNAL.

No. 285,632.

Patented Sept. 25, 1883.



WITNESSES:

*F. M. Ardle,*  
*C. Sedgwick*

INVENTOR:

*A. G. Leonard*  
BY *Munn Co*

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

ARTHUR G. LEONARD, OF NEW YORK, N. Y.

## RAILROAD-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 285,632, dated September 25, 1883.

Application filed May 8, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR GEORGE LEONARD, of the city, county, and State of New York, have invented a new and Improved Railroad-Signal, of which the following is a full, clear, and exact description.

This invention pertains to improvements in railroad-signals; and it consists of the combination and arrangement of parts, substantially as hereinafter fully set forth and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a semaphore and its operating mechanism, together with apparatus that may be employed in carrying out my invention. Fig. 2 is an elevation of the semaphore and its operating-gear and a sectional elevation of the torpedo apparatus, the working-gear for the latter being somewhat modified. Fig. 3 is a horizontal section of the inclosing-case of the torpedo apparatus and plan view of said apparatus. Fig. 4 is a horizontal section of the semaphore and its working-gear and plan of the torpedo apparatus, showing another modification of the operating-gear for the latter. Fig. 5 is a detail of the torpedo apparatus in horizontal section.

I propose to combine any approved or practicable apparatus or mechanism by which torpedoes may be placed on the rails with the semaphore connecting the working-gear of the said apparatus or mechanism with that of the semaphore, so that whenever the semaphore-lever is shifted to set the semaphore for "danger" a torpedo, or two or more, if desired, will be placed on the rail, to sound an alarm for attracting the attention of the engineer by that means, for a safeguard against failure of attracting him by sight of the semaphore, as may happen by various causes—for example, any disorder to the machinery of the locomotive that may so suddenly occur as to excite such attention to it as to cause him to forget to look out for the semaphore.

In this case I have represented a disk or wheel, *a*, located in a suitable position by the side of the rail *b*, and arranged to turn horizontally on the vertical pivot *d*, said disk having means for connecting a series of torpedo-carriers, *e*, so as to project radially from its up-

per surface at suitable distances apart, and so that each carrier will swing over the top of the rail and hold thereon a torpedo, *f*, when the disk is stopped in the proper place and the carrier has a torpedo on it.

The torpedoes may be temporarily attached to the carrier with sufficient adhesion for being properly held by any sticky substance, as gum, varnish, and the like.

The carrier may be attached to the disk by binding-posts and screws *g*, and the disk may be turned by a ratchet, *h*, and pawls *i j*, said pawls being connected by any approved arrangement of rods, cranks, and other devices common to such contrivances with any part of the semaphore mechanism adapted to impart the requisite movement to the disk when operated in the usual manner for shifting the semaphore, the arrangement being such that when the semaphore shifts to "danger" the torpedo will rest on the rail, as in Figs. 1 and 2, and when the semaphore shifts to "safety" the disk will assume the position in Fig. 3, in which the torpedoes are clear of the rail, allowing the train to pass without giving the signal. For this purpose I have applied the push-pawl *i* to the forked slide-bar *k* to shift the torpedoes forward onto the rail when the semaphore is set to "danger," and the pull-pawl *j* to shift the carrier from the rail after its torpedo has been exploded and when the semaphore shifts to "safety," and I have contrived various ways for causing the slide-bar to be shifted by the semaphore-lever *l*. For instance, in Fig. 1 it is connected by rod *m* with a bell-crank, *n*, pivoted on a stand, *o*, and connected by rod *p* with the counterbalanced lever *q* of the semaphore.

In Fig. 2 the bell-crank *n* is pivoted to the post *s* of the semaphore for a stand, and is connected to lever *q* back of its pivot *s*, instead of at the front, as in Fig. 1, for the reason that bell-crank *n* is reversed or inverted in Fig. 2.

In Fig. 4 the bell-crank *n* is arranged on a separate stand, *t*, and also horizontally, so that it may be connected with the semaphore-rod *u* by its rod *p*.

It will be seen that so far as the working of the disk by the semaphore-lever is concerned the mechanism may be arranged to suit the will of the constructor or any conditions affecting the same, and while the disk for plac-



ing the torpedoes on the rail is probably the best and simplest, other forms of apparatus may be used, as a sliding pusher having a carrier attached and being arranged to push out the lowermost torpedo of a column, which will drop into the carrier when drawn back under the column, the carrier being contrived to hold the torpedo without the gun.

I propose to inclose the disk by a case, *x*, for protection, making a slit, *y*, where the torpedoes are to swing out over the rail, and will have an inclined guideway, *z*, to guide the carriers up to the level of the slit and the rail and prevent them from striking the case.

The carriers consist of thin plates of sheet metal of the simplest character, and have a short shank for connecting to the disk by the binding-screws, so that they may be readily replaced at any time in case they are damaged by the wheels of the cars.

The semaphore *a'* will be arranged in the common or any approved form with a cranked axis, *b'*, which is connected to the lever *q* by rod *d'*, and the lever *q* will be connected to the hand-lever *l* by rod *f'*, bell-crank *g'*, and the connecting-rod *u*.

The inclosing-case *x* may be square or round, as preferred.

The slide-bar *k* is arranged in a guide-stand, *h'*, for its support and control in being shifted to work the disk *a*.

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

1. The combination of an intermittingly-rotating disk *a*, torpedo-carrier *e* thereon, and the inclined guide *z*, substantially as described.

2. The disk *a*, having torpedo-carriers *e*, radial to and projecting from it, in combination with the semaphore mechanism by the ratchet *h*, push-pawl *i*, pull-pawl *j*, sliding bar *k*, connecting-rods *m* and *p*, and bell-crank *n*, substantially as described.

3. In a railroad-signal, the combination, with the disk *a*, having the radially-projecting torpedo-carriers *e*, of the ratchet *h*, push and pull pawls *i j*, sliding bar *k*, connecting-rods *m* and *p*, bell-crank *n*, counter-balance *q*, rod *d'*, the semaphore *a'*, crank-shaft *b'*, lever *l*, and the mechanism connecting it to the counter-balance, substantially as and for the purpose set forth.

ARTHUR G. LEONARD.

Witnesses:

W. J. VANARSDALE,  
P. G. FENNING.