(No Model.)

F. H. TREACY.

COMBINED VISUAL AND AUDIBLE SIGNAL FOR RAILROADS.

No. 369,895. Patented Sept. 13, 1887.

FIG. 2.

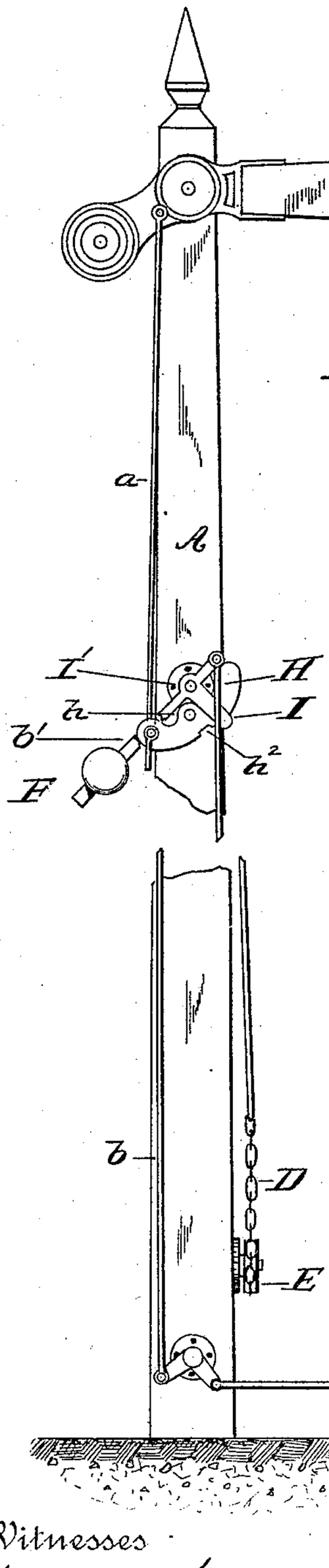


FIG. 1.

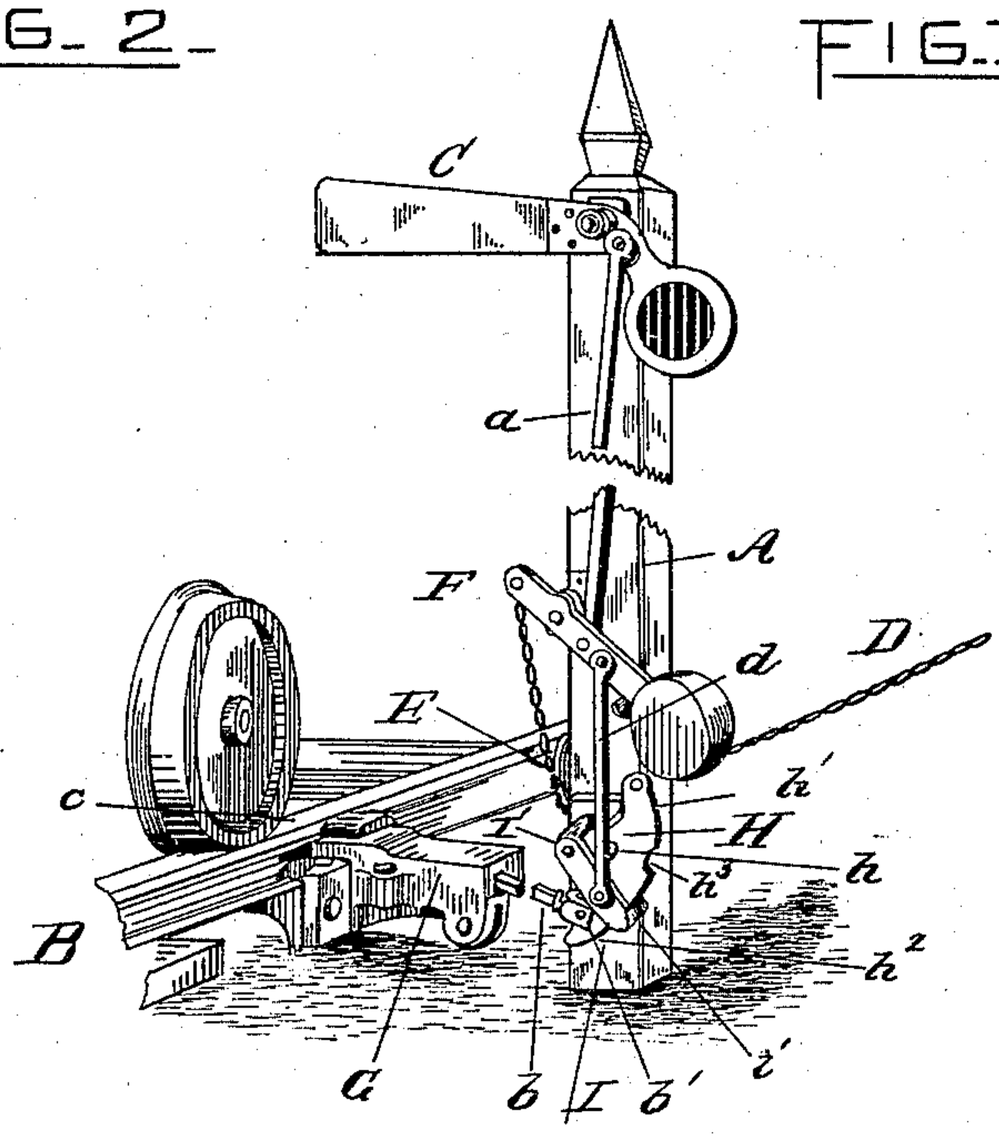


FIG. 3ª.

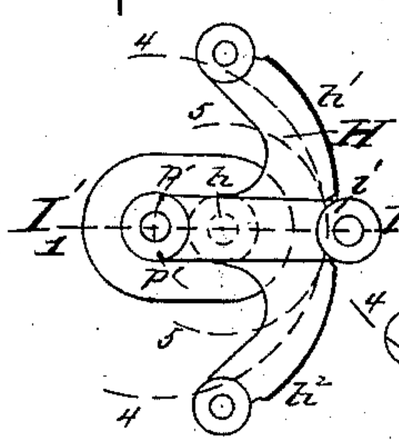
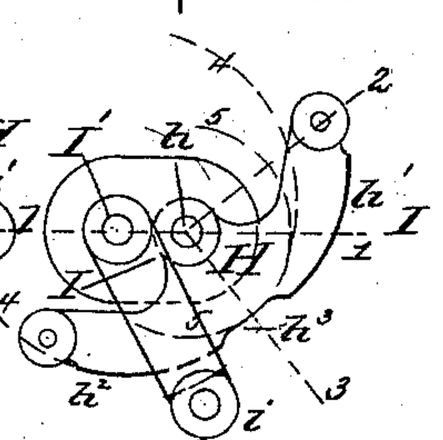


FIG. 3.



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COMBINED VISUAL AND AUDIBLE SIGNAL FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 369,895, dated September 13, 1887.

Application filed December 10, 1886. Serial No. 221,217. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. TREACY, of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Combined Visual and Audible Signals for Railroads; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 the letters of reference marked thereon, which form part of this specification.

My invention relates to signals, and especially to semaphore and torpedo signals to be used in connection with railways.

The object of my invention is to provide an improved compensating device acting on a connection between the working parts of the semaphore and the devices which either operate the semaphore or are operated by the semaphore itself.

My invention consists in certain combinations and arrangements of parts, as hereinafter set forth, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a perspective view of a semaphore-signal of well-known construction, combined with a torpedo-machine, the connections between them being made by means of my improved compensating device; Fig. 2, shown in elevation, a semaphore-signal, the connection between the blade and a torpedo-machine being made by means of my improvement. Figs. 3 and 3ª are plan views of the cam and arm.

Similar letters refer to like parts in all the views.

The post A is firmly planted near the railway-track B, and to its upper end is pivoted the blade C, of any desired construction. The blade may be operated by the chain D, which passes under a pulley, E, and is attached to one end of a weighted lever, F. In Fig. 1 the lever F is connected with the blade C by a rod, *a*, so that when the lever is operated its motion will be communicated to the blade C. As shown in Fig. 1, the blade stands at "danger;" but by pulling upon the chain D the weighted lever will be raised and the blade dropped to "safety."

Contiguous to the track B is shown a torpedo-machine, G—such, for instance, as that shown and described in Patent No. 310,717 to Timothy G. Palmer. From the rear end of this machine projects a rod, *b*, which operates the mechanism so as to place a torpedo in position to be fired by the exploder *c* when the latter is depressed by the wheel of a passing locomotive.

In order to secure the proper operation of the torpedo-machine G, the rod *b* must be drawn out only a certain distance—no more and no less. Some difficulty has been experienced in attempting to operate these machines when placed at some distance from a station, by reason of the impossibility of always keeping the connections in the same condition. Expansion and contraction under the influence of changing temperature, wear of parts, and other causes all combine to render the chain D or the rod, or whatever connection is made between the station and the torpedo-machine, very unreliable. In order to overcome this difficulty, I interpose between the chain D and the rod *b* a device for insuring the proper movement of the rod *b*, irrespective of any excess of movement of the chain or rod D. This device consists of a cam, H, pivoted to the post A at *h*, and provided with two curved faces, *h' h''*, extending each way from a central notch, *h'''*. In the rear of the cam H a swinging arm, I, is pivoted to the post A at I'. The free end of this arm is provided with a lug, *i*, projecting at right angles therefrom, the distance from the pivot I' to the lug *i* being equal to the distance from said pivot to the bottom of the notch *h'''* when the said notch is in line 1 1 with the pivots I' *h*. The circle 4 4 described by the lug *i* is therefore larger than that of 5 5, described by the lower side of the notch *h'''*, and the two circles touch each other only at a point lying in a line, 1 1, drawn through the pivots *h* and I'. Each of the faces *h' h''* is an arc of a circle with a radius equal to I' *i'*, the face *h'* being struck from the point *p* at one side of the pivot I' and the face *h''* from the point *p'*, Fig. 3ª. This cam and arm operate as follows: When the

arm I is raised from the position in which it is shown in Figs. 1 and 3, the lug *i* strikes the upper side of the notch *h'''*, and the continued movement of the arm turns the cam H on its pivot *h* until the curved face *h'* coincides with the circle 4 4, with the notch *h'''* lying in the line h^2. At this point the lug *i* leaves the notch *h'''* and slides along the curved face *h'*. The lug may therefore move to any point along the curved face *h'* without turning the cam H any farther, while the lug *i* at the same time locks the cam to prevent it from turning back again. It will thus be seen that if the arm is moved up to or beyond a certain point, 2 3, either side of a central position, 1 1, it will turn the cam through only a certain arc, 2 3, and no more. The rod *b* is pivoted to the cam H at *b'*, and the arm I is connected by a rod, *d*, with the lever F.

When the lever F is moved by pulling on the chain D to drop the blade C to "safety," the arm I is raised and turns the cam H in the above-described manner, thus drawing out the rod *b* a certain distance and no more, irrespective of of the range of movement of the lever F. The attendant is thus relieved from any necessity of great care in operating the chain. So, too, when the parts contract or expand from cold or heat, the movement does not disarrange the cam H or interfere with its proper actuation, when desired.

Fig. 2 shows my improved compensating device interposed between the actuating-chain D and the blade C, to insure an accurate and unvarying movement thereof, irrespective of the play of the parts, their ordinary expansion or contraction, &c. In this figure the arm I is made a part of the lever F, being cast integral therewith or rigidly bolted to it. The rod *a*, for raising and lowering the blade C, and the rod *b*, for operating the torpedo-machine, are both pivoted to the cam H at *b'*. Upon actuating the lever F, by means of the chain D, both rods will be moved a certain unvarying distance by the cam H.

I do not herein make any claim to the cam nor to the specific features or combination shown in Fig. 2, as they have been made a part of the subject-matter of other applications filed herewith, Serial No. 221,218 and Serial No. 221,220, respectively.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, with a post, of an arm pivoted thereto and provided with a lug at its outer end, means for actuating this arm, a cam pivoted to the post between the pivot of the arm and lug thereon and adapted to be engaged by said lug, a signaling device, and connecting devices between said cam and said signaling device, substantially as described.

2. The combination, with a signal-post, A, of a blade, C, pivoted thereto, means for actuating said blade, an arm, I, pivoted to the post and connected with the blade C so as to move in company therewith, a cam, H, pivoted to the post A and adapted to be engaged by the arm I, and means for transmitting the movement of the cam to a signaling device.

3. The combination, with post A, of blade C, lever F, arm I, and cam H, all pivoted to said post, rods *a*, *b*, and *d*, and a torpedo-machine, G, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FRANK H. TREACY.

Witnesses:
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