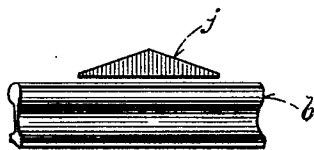
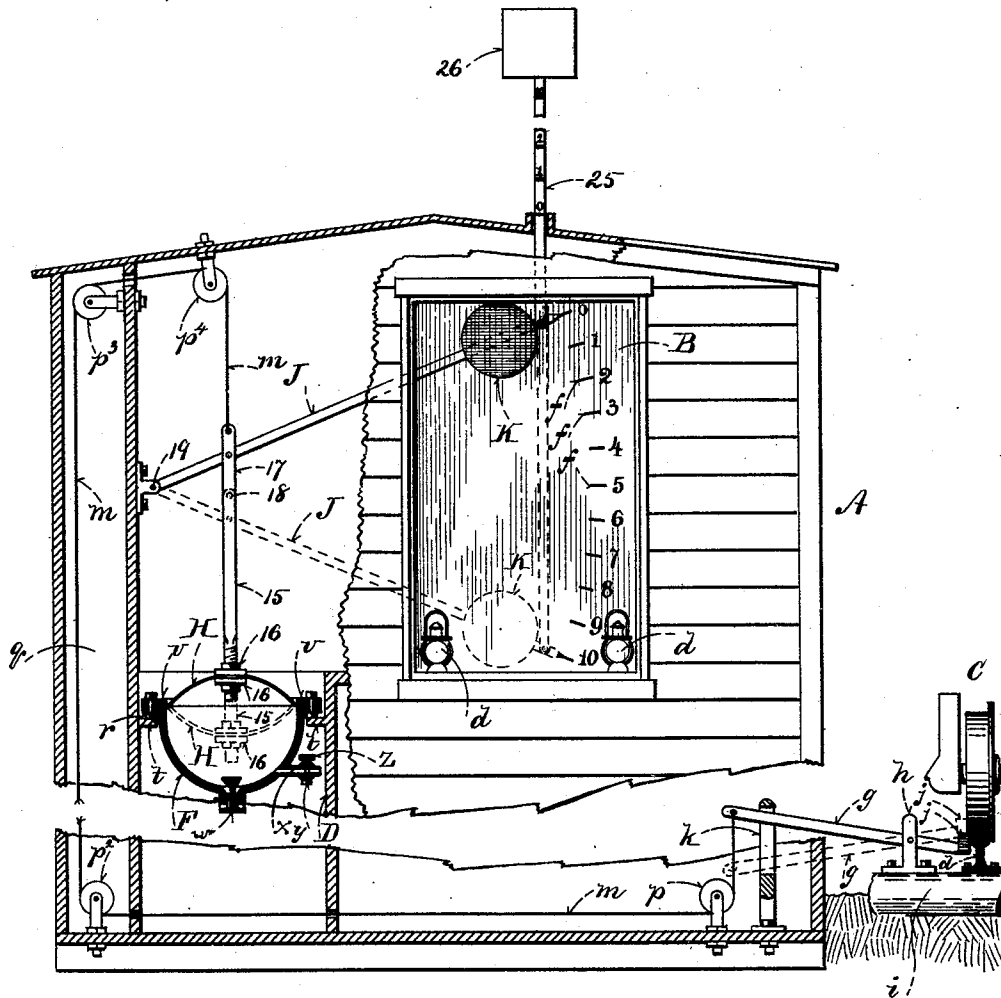


S. SMITH.
RAILWAY TIME SIGNAL.

Patented Aug. 23, 1892.



WITNESSES:
St. Surfer
J. D. Matthews.

INVENTOR:
Samuel Smith,
BY C. A. Shaw & Co.,
ATTYS.

UNITED STATES PATENT OFFICE.

SAMUEL SMITH, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO JOHN T. MCKONE AND CHARLES E. HILL, OF SAME PLACE.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 481,533, dated August 23, 1892.

Application filed March 14, 1892. Serial No. 424,765. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL SMITH, of Lawrence, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Time-Signals for Railways, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation showing a portion of a tower or signal-house, partly in section, illustrating the operation of my improved signal; Fig. 2, an elevation of a portion of the track, showing details.

Like letters and figures of reference indicate corresponding parts in both figures of the drawings.

My invention relates to a time-signal mechanism actuated automatically by the passing of a train; and it is designed especially to indicate to the engineer of a succeeding train the time at which such first train passed the signal; and it consists in certain novel features hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents a tower or signal-house, in which a glazed opening or signal-window B is formed. Lanterns *d* are disposed in the window to illuminate the same at night, and on the glass arranged in an arc a series of numbered spaces *f* are imprinted. A horizontally-arranged lever *g* is mounted to swing vertically in a standard *h*, secured to a sleeper *i*, adjacent the track *b*. On the short arm of said lever a triangular plate *j* (see Fig. 2) is secured in position to be engaged by the car-wheel C as it passes and depress the corresponding end of the lever. The long arm of the lever projects within the signal-house and through a slotted guide-standard *k*. To the inner end of the lever a cord *m* is secured, said cord passing over pulleys

*p p*² and upward through a vertical chamber *q*, formed at the rear of the house, thence over pulleys *p*³ *p*⁴, supported at the top of the house.

Within a well or other suitable device D a hollow semi-spherical drum F is rigidly secured by laterally-projecting flanges *r*, bolted to lugs *t* on the well-walls. Across the mouth of the drum F a flexible diaphragm H is secured by a clamping-ring *v*, bolted to the drum-flange. In the bottom of said drum there is an air-valve *w* of any construction suitable to admit air into the drum when the diaphragm is elevated and to automatically close when said diaphragm is depressed. In the side wall of the drum there is a laterally-projecting air-port *x*, in which an air-valve *y* is disposed provided with a screw-stem *z*, whereby the escape of air may be regulated. A vertical rod 15 has its lower end threaded, and is secured centrally in the diaphragm by nuts 16. A short rod 17 is pivoted at 18 to the upper end of the rod 15, and the cord *m* is attached to the upper end of said rod 17. An index rod or finger J is pivoted by an end at 19 to a wall of the chamber *q* and projects behind the glazed window B. On its free end a colored disk K is mounted, and the end of said index is in position to register consecutively with the numbers *f* as it swings vertically.

Pivoted to the free end of the index J there is a vertical rod 25, which passes through the roof and has a signal-plate 26 at its upper end. The rod is spaced and numbered consecutively, as shown, the numbers corresponding to the numbers on the window B.

In the use of my improvement a train passing the signal-tower its wheels strike the block *j*, elevating the inner end of the lever *g* and drawing the cord *m* in a corresponding direction. This raises the diaphragm H in the drum F, creating a partial vacuum therein, opening the valve *w*, and drawing air into the drum. The elevation of the diaphragm by its rod 15 carries with it the index J, the disk K being located at the top of the window and the point of the index registering with the zero of the series of numbers *f*. As soon as the train has passed and the contact of the wheels stopped with the block *j*, releasing the lever *g*, the weight of the index and rod

15 causes the diaphragm to fall, gradually ejecting the air in the drum F through the port *x*, the valve *w* being simultaneously closed by the air-pressure. The valves *w* *y* 5 are arranged to operate in diametrically-opposite directions by the air-pressure, the valve *y* opening by pressure from within the drum and closing by outside air-pressure. The escape of the air through the port *x* can be 10 regulated at will by adjusting the valve *y*. As the air thus gradually escapes from the drum, the index J gradually falls, assuming, when the diaphragm is entirely collapsed, the position shown by dotted lines. The index now points 15 to the numeral "10." It is designed that the parts shall be so regulated as to require ten minutes to follow through its entire course, each space *f* indicating one minute. The position of the index will thus indicate to the 20 engineer of a succeeding train the length of time which shall have elapsed since the passing of the train preceding it.

The rod 25, numbered and spaced corresponding to the window B, serves as an additional means for indicating the time of the 25 train passing, as described, the lower number exposed as the index falls being taken in this case.

Having thus explained my invention, what 30 I claim is—

1. A time-signal for railways, comprising a pivoted index, a spaced rod attached near the end thereof, a drum provided with valves, a

diaphragm closing the mouth of said drum, a rod connected to said diaphragm and pivoted 35 index, a lever actuated by the car-wheels, and mechanism connecting said rod and lever.

2. A time-signal for railways, comprising a drum provided with valves, a diaphragm in said drum, a rod connected to said diaphragm, 40 provided with a pivoted extension, a lever actuated by the car-wheels, mechanism connecting said pivoted extension and lever, and a pivoted index connected to said pivoted extension. 45

3. A time-signal for railways, comprising a closed dial, a pivoted index, a spaced rod attached thereto, a drum provided with valves, a diaphragm in said drum, a rod provided with a pivoted extension, connected to said diaphragm and to said pivoted index, a lever 50 actuated by the car-wheels, and mechanism connecting said rod and pivoted extension.

4. In a time-signal for railways, the closed dial B and pivoted index J, in combination 55 with the drum F, provided with the valves *w* *y*, the diaphragm H, closing the mouth of said drum, the rod 15, connecting said diaphragm and index, the lever *g*, actuated by contact with the car-wheels, and a connection 60 between said rod and lever, all being arranged to operate substantially as described.

SAMUEL SMITH.

Witnesses:

C. A. SHAW,
K. DURFEE.