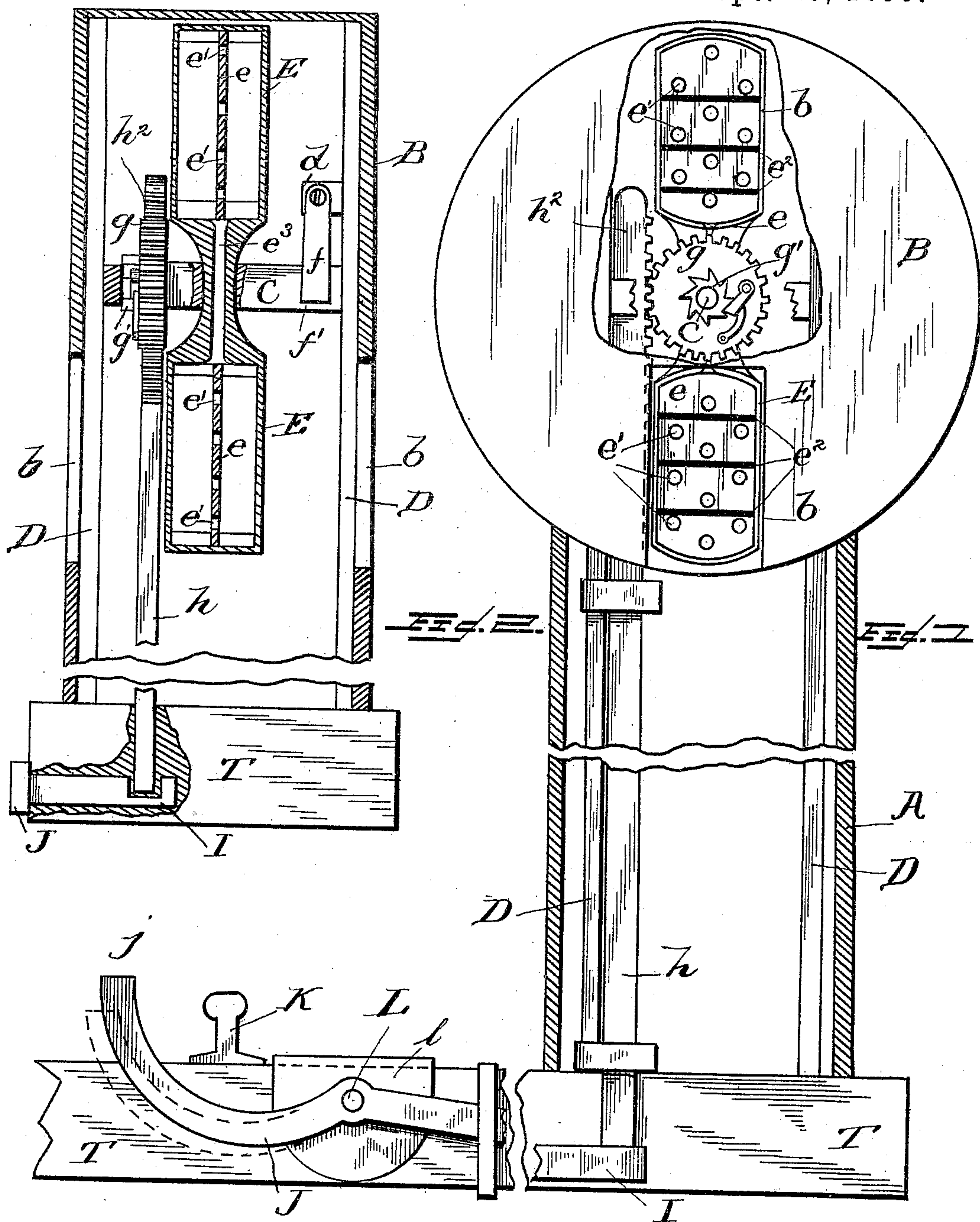


(No Model.)

B. R. DAVIDSON.
RAILWAY TIME SIGNAL.

No. 436,913.

Patented Sept. 23, 1890.



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BENJAMIN R. DAVIDSON, OF FAYETTEVILLE, ARKANSAS.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 436,913, dated September 23, 1890.

Application filed August 27, 1889. Serial No. 322,165. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN R. DAVIDSON, of the city of Fayetteville, county of Washington, State of Arkansas, have invented a new and useful Railway Automatic Time-Signal, which consists of a time-glass, the empty end of which is turned down when a train passes, and the glass is intersected by graduated lines, so that as the fluid or other substance runs down into the lower end of said glass it will show just how long since a train has passed.

In the accompanying drawings, Figure 1 is a front elevation of my invention, part of the front face of the drum B being cut away, in order to show a part of the operating machinery. Fig. 2 is an edge view of Fig. 1, the drum and time-glass being in section.

My invention is described as follows: I lay the cross-tie T to conform with the other ties, but longer than the ordinary tie, so that one of its ends will project farther than the other ties on one side of the track. It is so long that the signal attached to it does not interfere with the operation of the trains nor is interfered with by them.

To the end of the tie T is securely fixed a square, octagonal, or cylindrical upright or column A about six inches in diameter and three or four feet high. The exact size and length are not material. This column A is made of wood or metal, and fixed to the said cross-tie T by heavy nails, bolts, or screws. On the top of this column is securely fixed a cylindrical drum B some four or six inches deep and twenty or thirty inches in diameter. This drum is placed upon its edge at right angles to the railroad-track. It is made of metal or wood, and is made as a part of the column A, or as a separate piece and connected thereto. The said column A is only a support for the drum B and time-glass E and to inclose the mechanism hereinafter described. The dimensions of the drum and column may be varied, as desired. From near the center of said drum B to the lower edge of it in front and back are cut windows *b* large enough to show one end of the time-glass E. These windows *b* should be covered with transparent glass. An axle *c* extends through said drum B in its center. The time-glass E is securely fixed to

this axle *c*, said glass corresponding in size with the cylindrical drum—that is, it is made as long as possible to turn freely within said drum, and the center of said glass is to be securely fixed to said axle *c*. Said glass is made in the shape of an ordinary “hour-glass,” with the exception that the ends are to be flat, and these flat ends are to correspond in size to the windows *b* in the said cylindrical drum. Said time-glass contains at each end a center piece or partition *e*, preferably white, with a sufficient number of perforations *e'* to allow sand or liquid to flow freely from one side to the other, so that the glass on each side of said partition will fill equally. Said center pieces *e* are crossed by a sufficient number of graduation-lines *e''* on both sides of said partition to indicate the number of minutes required to fill it. One end of said time-glass is filled with black sand or some colored substance that flows freely, or with a colored liquid that does not freeze, and said glass is made so that when it is reversed the sand or other substance will fall on both sides of the center piece *e* in the then lower end of the glass. Said glass is so constructed that the sand or other substance will flow when said glass is reversed to the then lower end in any given number of minutes required. This glass need not necessarily be made of one piece, but may be made of two or more pieces and connected by a small metallic tube *e'''*. Said glass revolves freely with the axle *c*, and when turned, the lower end of the said time-glass is seen through the windows *b* in the cylindrical drum B, and the lower partition *e* with said graduation lines *e''*, thus exposed, are seen through said windows on both sides. When said glass is first reversed, the surface of the partition *e* exposed is as large as the windows *b*; but as the substance flows down, this surface is thus gradually diminished until covered and obscured. Said drum B is painted the same color as the sand or liquid, so that when the same has all flowed into the lower end of the glass the said drum and sand or liquid present a uniform appearance. To hold said glass E in an upright position, there extends from the supporting-frame an arm *d*, to which is secured a spring *f*, which presses upon a flat surface *f'* on the

axle *c*. To revolve the said axle *c*, on which the said time-glass is fixed, a gear-wheel *g* is provided, which turns freely on the said axle. Said wheel is provided with a spring and pawl
 5 that fits into the ratchet-wheel *g'*, which latter wheel *g'* is fixed securely to said axle *c*. Said pawl slides over the ratchets in one direction without turning said ratchet-wheel, but turns it when turned in the opposite direction. To
 10 turn the said gear-wheel *g*, a rod *h*, having a rack *h²* to work in said gear-wheel *g*, is provided. This rod *h* passes down through the cylindrical drum B and the column A, that supports it, and the lower end rests in the seat
 15 I on the end of the lever J. The inner end *j* of the said lever passes under the rail K and is turned up in such manner that said end is about even with the top of said rail and is about six inches from the inner face
 20 of the same. Said lever is securely pivoted to the side of the cross-tie T by a bolt L and casting *l*. The inner end *j* of said lever is so adjusted that a wheel of extra width or a flange to a wheel, or an extra wheel attached
 25 to the trucks, or a runner attached, will come in contact with it when a train passes, pressing it down, thereby raising the rod *h*, seated in the seat I, on the other end of said lever, which causes the time-glass to make a half-
 30 revolution, turning the lower end up and the then upper end, which is empty, down, and the spring *f* holds the time-glass in such position until the next train passes. The weight

of the rod *h* depresses the outer end of the said lever J and consequently elevates the 35 inner end of the same, and it thus stands ready to give said time-glass another half-revolution when the next train passes.

Having thus described my invention, what I claim as new, and desire to secure by Letters 40 Patent, is—

An automatic time-signal consisting of an upright column A, erected on the extended end of the cross-tie T, the lever J, pivoted to said cross-tie, its inner end *j*, adapted to be 45 operated by a passing train, its outer end having the seat I, drum B, mounted on the column A and having in its front and rear faces windows *b*, rod *h*, its lower end seated in seat I and its upper end terminating in 50 rack *h²* and meshing with the cog-wheel *g*, working on the shaft *c* and provided with a spring, dogs, and ratchet-wheel *g'*, time-glass E, having the partition *e*, perforations *e'*, and graduation-lines *e²*, said time-glass and gear- 55 ing adapted to revolve in said drum, and spring *f*, adapted to impinge against a flat part *f'* of the axle *c* and hold said time-glass in an upright position, substantially as shown and described, and for the purposes set forth. 60

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

B. R. DAVIDSON.

Attest:

P. F. DAVIDSON,
 W. S. POLLARD.