

(No Model.)

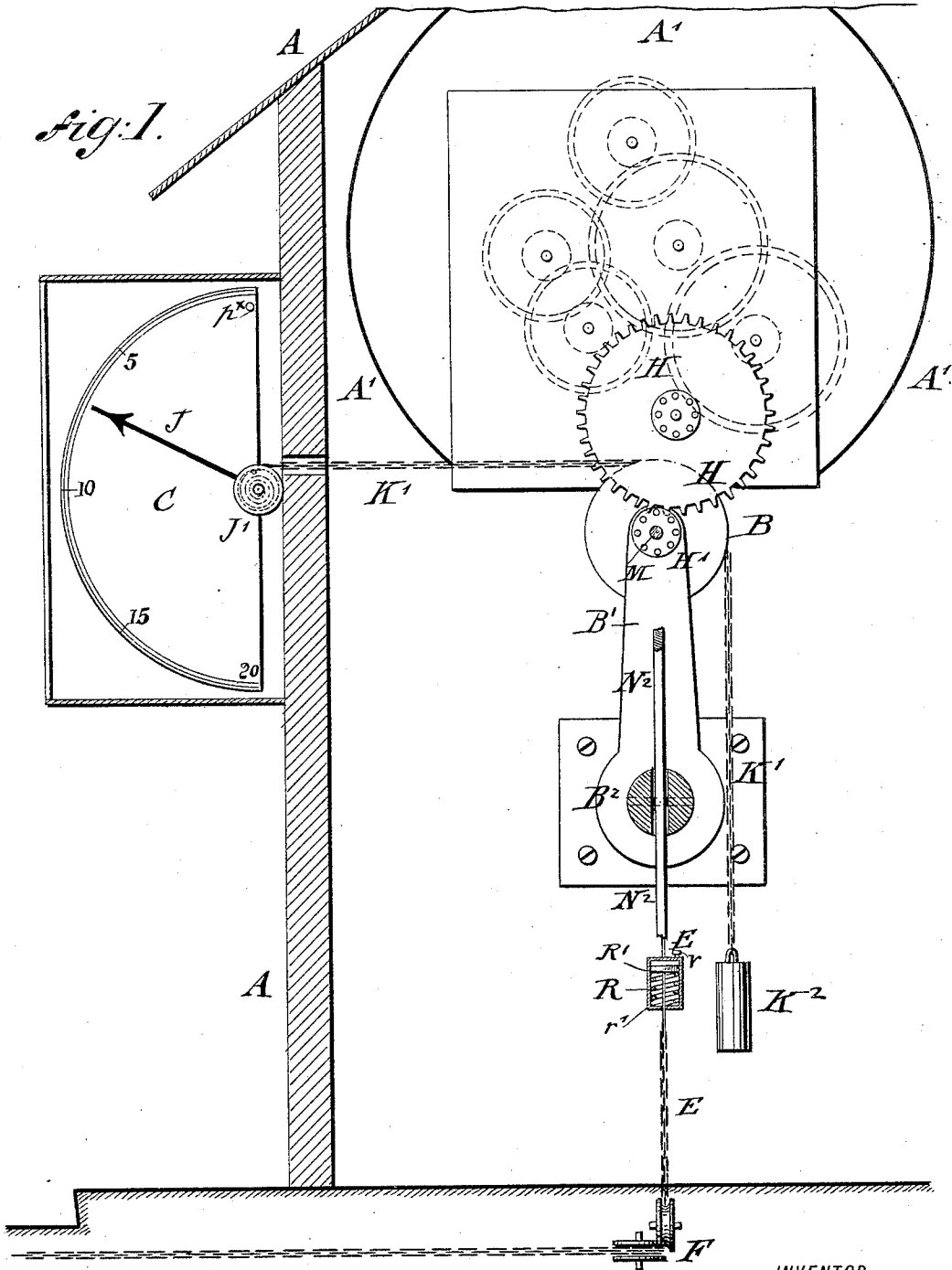
2 Sheets—Sheet 1.

H. GOSMAN.
RAILWAY TIME SIGNAL.

No. 460,128.

Patented Sept. 29, 1891.

Fig. 1.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

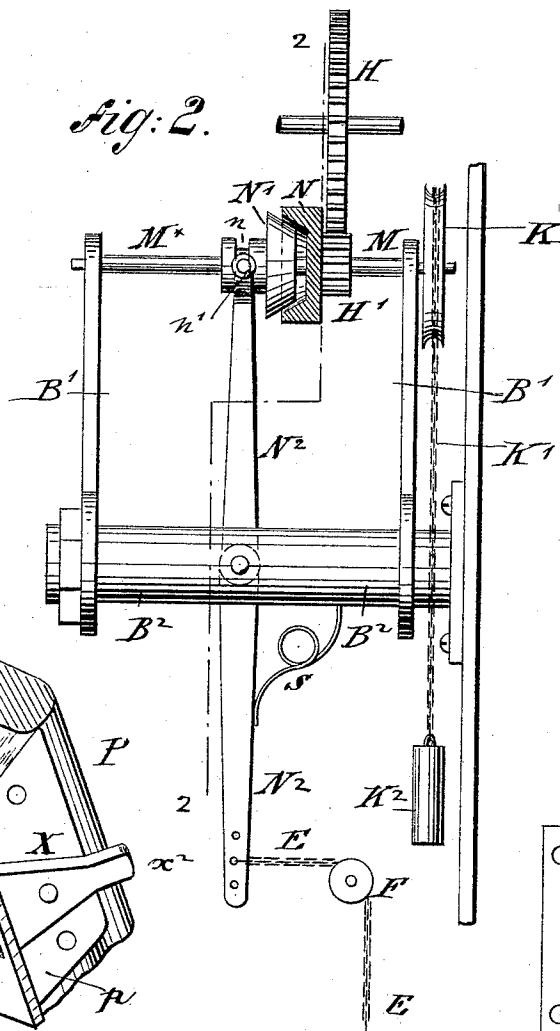


Fig. 3.

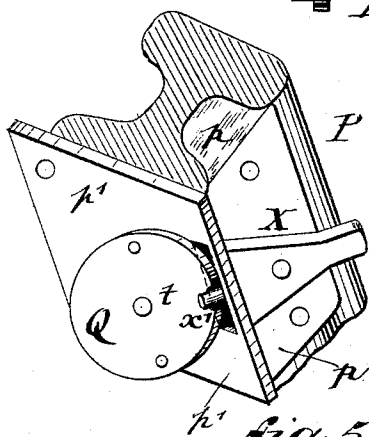
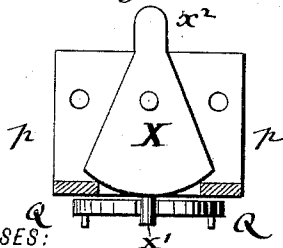


Fig. 5.



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Fig. 4.

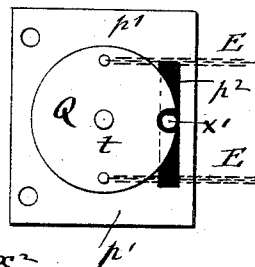
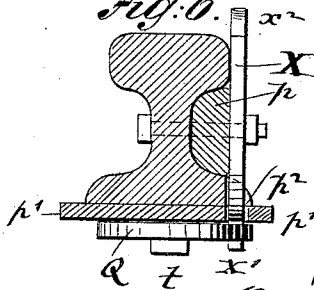


Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRY GOSMAN, OF WATERTOWN, NEW YORK.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 460,128, dated September 29, 1891.

Application filed July 21, 1890. Serial No. 359,363. (No model.)

To all whom it may concern:

Be it known that I, HARRY GOSMAN, a citizen of the United States, residing at Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Railway Time-Signals, of which the following is a specification.

This invention relates to certain improvements in time-signals of that class which are designed to indicate the length of time since the last train has passed the signal, so that the engineer in charge of the next following train is enabled to know when he arrives at the station at what distance the preceding train is ahead of him, whereby he can keep the proper distance between the trains and avoid any possible collision that may arise from trains that follow each other too closely.

My invention consists of a railway time-signal which comprises a minute-dial and index-hand at the station or other point on the track, said dial being so arranged as to be plainly visible to the engineer of an approaching train, a clock in the station, an intermediate hand-setting device between the clock and the minute-dial, so that the time that elapses between the passage of one train and the approach of the next train is indicated on the minute-dial, a tilting device applied to the rail and actuated by the locomotive, and chains or rods connecting the tilting device on the rail with the hand-setting device operated by the clock, said tilting device returning the hand-setting device and index-hand to zero by the action of the passing train. An air-cushioning device is introduced in the chains or rods which connect the tilting with the hand-setting device, said air-cushion serving to retard the return motion of the hand-setting device and index-hand, so as to prevent injury to the hand-setting device and actuating clock mechanism.

The invention consists, further, of certain details in the construction of the hand-setting device and of the tilting mechanism applied to the rail, as will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a vertical transverse section through a station-building, showing my improved railway time-signal in position on the

same and in connection with the station-clock and the actuating-chains leading to the tilting device on the rail, the hand-setting device of the time-signal being drawn in section on the line 2 2, Fig. 2. Fig. 2 is a sectional side elevation of the hand-setting device introduced between the station-clock and the minute-dial, drawn on a larger scale; and Figs. 3, 4, 5, and 6 are details of the tilting device applied to the rail for returning the time-signal to zero.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a railway-station or other building near the track, A' a clock in the same, and C a minute-dial which is placed outside of the station-building and either attached to the station-building or to a post or other support that may be readily and conveniently seen by the engineers of passing trains. Between the minute-dial C and the station-clock A is introduced a hand-setting device B, which is supported on a frame B', attached to the wall back of the casing of the clock, as shown in Fig. 2. The hand-setting device B is made independently of the clock, so as to be readily applied to the same. It consists of a friction-clutch N N', the member N of which is placed loosely on an arbor M, that is supported in bearings of the frame B'. To the loose member N of the friction-clutch is attached a pinion H', which is in mesh with a transmitting gear-wheel H of the clock-train A'. The second member N' of the friction-clutch is keyed to the shaft M, but adapted to slide thereon, and provided with an annular groove n, that is engaged by the forked end n' of a lever N², which is fulcrumed to the main post B² of the hand-setting device B. A spring s presses on the lower end of the fulcrumed lever N² and throws the fast member N' of the friction-clutch into engagement with the loose member N. On the arbor M is mounted a drum-wheel or pulley K, the grooved circumference of which serves to guide a chain K', that is connected to the spring-barrel J' of an index-hand J, which moves over the minute-dial by the action of the clock-train and the intermediate hand-setting device. A weight K² at the opposite end of the chain K' serves to return the in-

dex-hand to zero when the friction-clutch is disconnected. The minute-dial C is formed of a segment of a circle and graduated in a plain and legible manner from five minutes up to twenty minutes. A spiral spring in the spring-barrel J' is set to tension in a direction opposite to the weight K², so that the index-hand is moved over the dial when the friction-clutch is in mesh and the hand-setting device operated by the clock-movement. At the upper end of the dial C is a stop-pin p^x, that stops the index-hand, so as to prevent it from moving beyond its zero-point, said stop-pin also stopping the downward motion of the weight K². The lower end of the fulcrumed lever N² is connected by chains, wires, or rods E, which are guided over grooved pulleys F, with a tilting device P, that is located alongside of the rail and actuated by the passing locomotive. The connecting chains or wires E are preferably inclosed by small tubes that are arranged in the wall of the station-building A' and laid in the ground, so as not to be interfered with in their movements. The tilting device P consists of a plate or casting p, that is fitted to the web of the rail and attached thereto, as clearly shown in Figs. 3 and 6. A plate p' is rigidly applied to the base of the rail and provided with a slot p², that is located parallel with and outside of the plate p. Through the slot p² extends the projection x' at the lower end of a sector-shaped plate X, which is pivoted to the plate p and provided at the upper end with a rounded-off lug w², that projects above the head of the rail D. The arc-shaped lower end of the plate X serves to close the slot p² and prevent thereby any stones, cinders, or other obstructions to pass into the same. The projection x' engages the recess of a crank-disk Q, which is fulcrumed to the under side of the bottom plate p' by a central bolt t and connected at each side of the projection x' with an actuating-chain E, one chain being operated by trains going in one direction, and the other chain by trains going in the opposite direction over the track. The second train actuates a second separate time-signal that is preferably located at the opposite end of the station. When the locomotive passes over the track, the wheels of the same press down the projecting lug x², so that the projection x' at the lower end of the plate X engages the crank-disk Q, and pulls thereby one of the chains or rods E. A cylindrical air-chamber R, having an interior piston R', is interposed at a suitable point of the connecting-chain E near the hand-setting device B and provided with a vent r. A strong spring r' is arranged in the air-cylinder R, which serves to keep the chains or rods E taut and to return the crank-disk Q back to the original position after the passing of the locomotive. By partially closing the air-vent r the spring will do its work slowly, so as to retard the motion of the crank-disk when returned to its normal position. The spiral spring r' in the intermediate air-

chamber R has the additional advantage that any ordinary pressure on the tilting device will not operate the hand device, so that consequently the same is only operated by the action of the locomotive passing over the track. The air-cylinder and piston act also as a brake for the hand-setting device, so as to retard the motion of the same, of the weight K², and prevent injury to the hand-setting device and clock-movement.

The operation of my improved railway time-signal is as follows: When the locomotive passes over the track, it will actuate the tilting device by pressing on the projecting lug x² of the tilting plate. The projection x' at the lower end of the plate X actuates the crank-disk Q and pulls thereby the connecting chain, rope, or rod E, overcoming the resistance of the spiral spring in the air-chamber R. By the action of the chain or rod E on the fulcrumed lever N² the friction-clutch will be disconnected from the clock-movement, so that by the action of the weight K² and the loose member N the index-hand J is removed to zero. As soon as the pressure on the tilting device P is interrupted the crank-disk Q and the connecting chain or rod E are returned into normal position by the action of the spiral spring in the air-chamber R, while the members of the friction-clutch N N' are placed again in mesh with each other, whereby the hand-setting device is again actuated by the clock-train and the index-hand moved over the minute-dial by the action of the clock-movement that turns the pinion H' and pulley K and lifts the weight K². The speed of the index-hand may be regulated so as to go faster or slower by enlarging or diminishing the size of its spring-barrel, over which the connecting-chain K runs. By the position of the index-hand on the minute-dial C the time which has elapsed since the last train has passed the signal is indicated in minutes, so that the engineer of the following train is thereby enabled to read the time which has passed since the preceding train has left the station, whereby he either slackens speed or stops for a sufficient length of time before moving on, so as to avoid any danger of collision with the preceding train.

My improved railway time-signal is comparatively simple and effective and is not liable to get out of order and has the advantage that the clock at the station or other building on the track can be utilized for working the time-signal for the engineers of the trains.

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

1. The combination, with a clock-train, a minute-dial supported near the track, an index-hand on said minute-dial, an intermediate hand-setting device actuated by the clock-train and connected to said index-hand, a fulcrumed and spring-actuated lever engaging the hand-setting device, a tilting device ar-

ranged alongside of the rail of the track and adapted to be actuated by the locomotive, and an intermediate chain, rope, or rod connecting the tilting device with the lever of the hand-setting device, so as to permit the disconnection of the hand-setting device with the clock-train and the returning of the index-hand to zero by the action of the passing of the train, substantially as set forth.

2. The combination of a station-clock, a minute-dial supported near the track, an intermediate hand-setting device actuated by the clock-train and connected to the index-hand passing over the dial, a tilting device applied to the rail and actuated by the locomotive, a chain, rope, or cord connecting the tilting device with the hand-setting device, and an air-brake introduced between said rope, chain, or rod and adapted to return the tilting and hand-setting devices to their normal positions, substantially as set forth.

3. The combination, with a station-clock, of a hand-setting device having a loose pinion meshing with a transmitting gear-wheel of the clock-train, a minute-dial, and an index-hand on said minute-dial, the spring-barrel of which is connected with the hand-setting device, substantially as set forth.

4. In a railway time-signal, a hand-setting

device between the clock-train and the minute-dial, said hand-setting device being composed of a friction-clutch, a pinion applied to the loose member of the clutch, a pulley on the shaft of the fast member of the friction-clutch, a weighted chain connected with the index-hand of the dial, and a fulcrumed and spring-actuated lever engaging the fast member of the friction-clutch, substantially as set forth.

5. In a railway time-signal, a tilting device applied to the rail and composed of a plate attached to the web of the rail, the pivoted lever-plate having a lug projecting above the rail and a projection at the lower end, a crank-disk fulcrumed to a bottom plate below the rail and actuated by said lever-plate, and chains or ropes attached at opposite points of the disk and connected to the hand-setting device of the time-signal, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HARRY GOSMAN.

Witnesses:

D. G. GRIFFIN,
J. MULLIN.