

J. HUGHES.
Time-Signals for Railroads.

No. 156,289.

Patented Oct. 27, 1874.

Fig 1

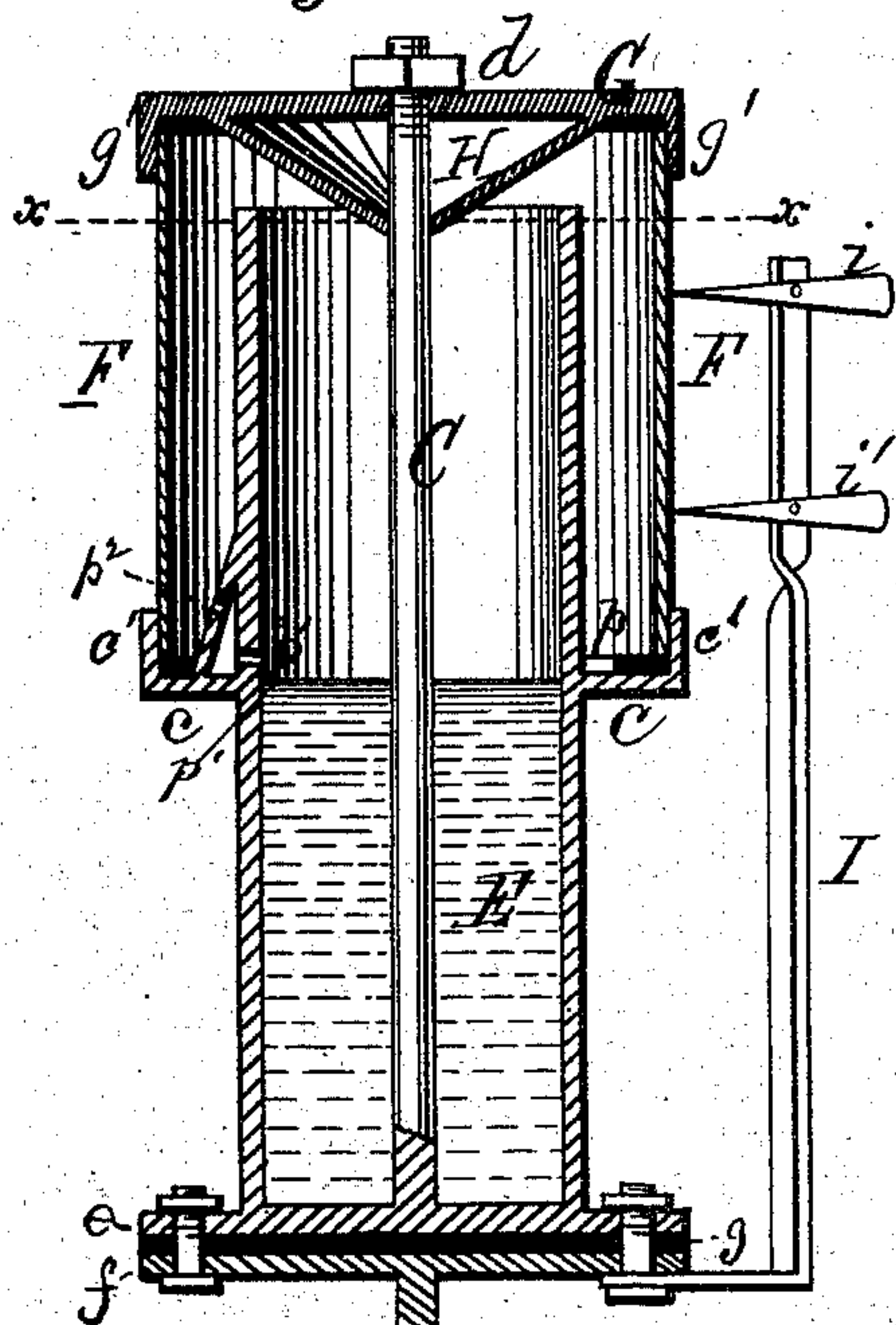
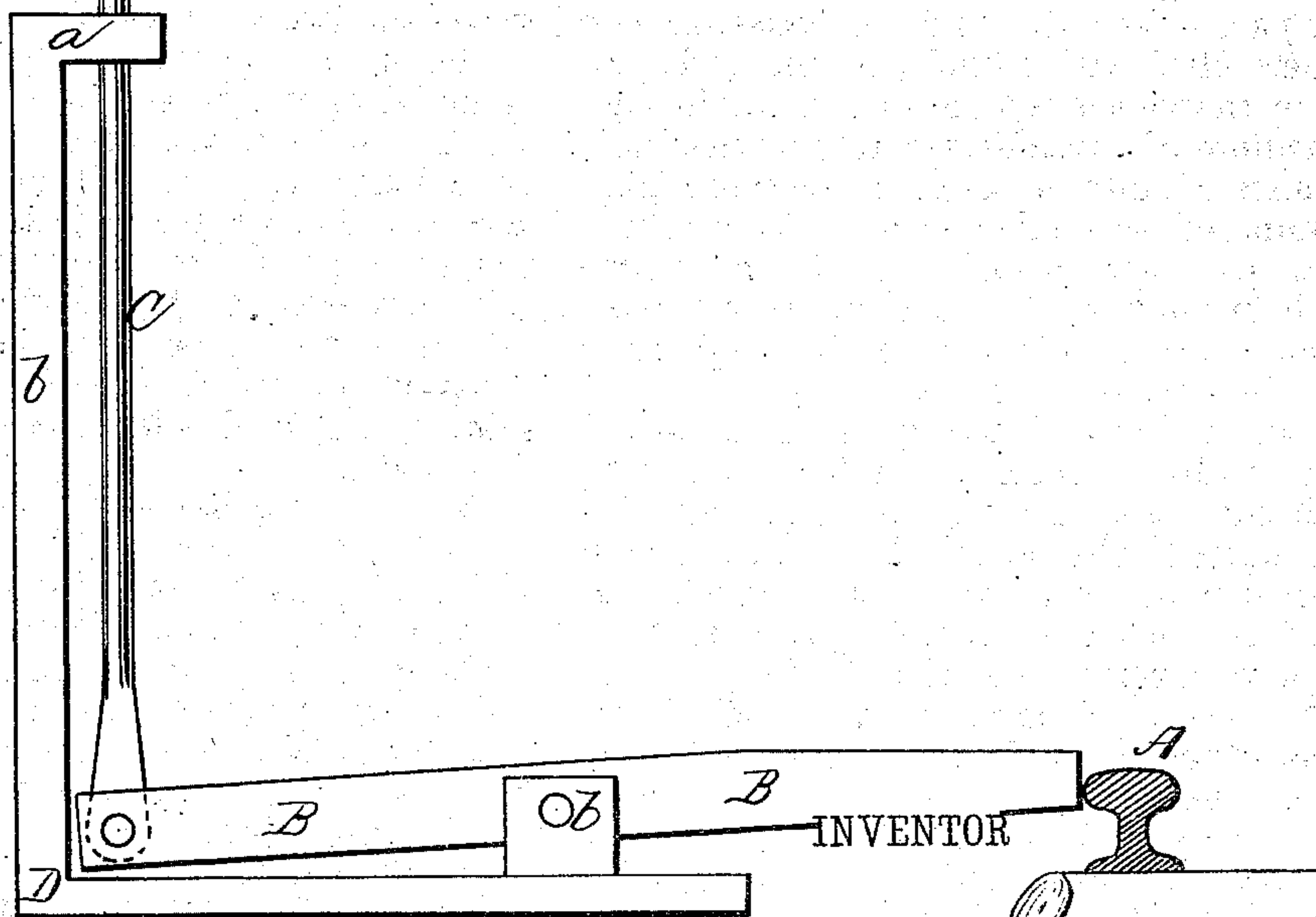
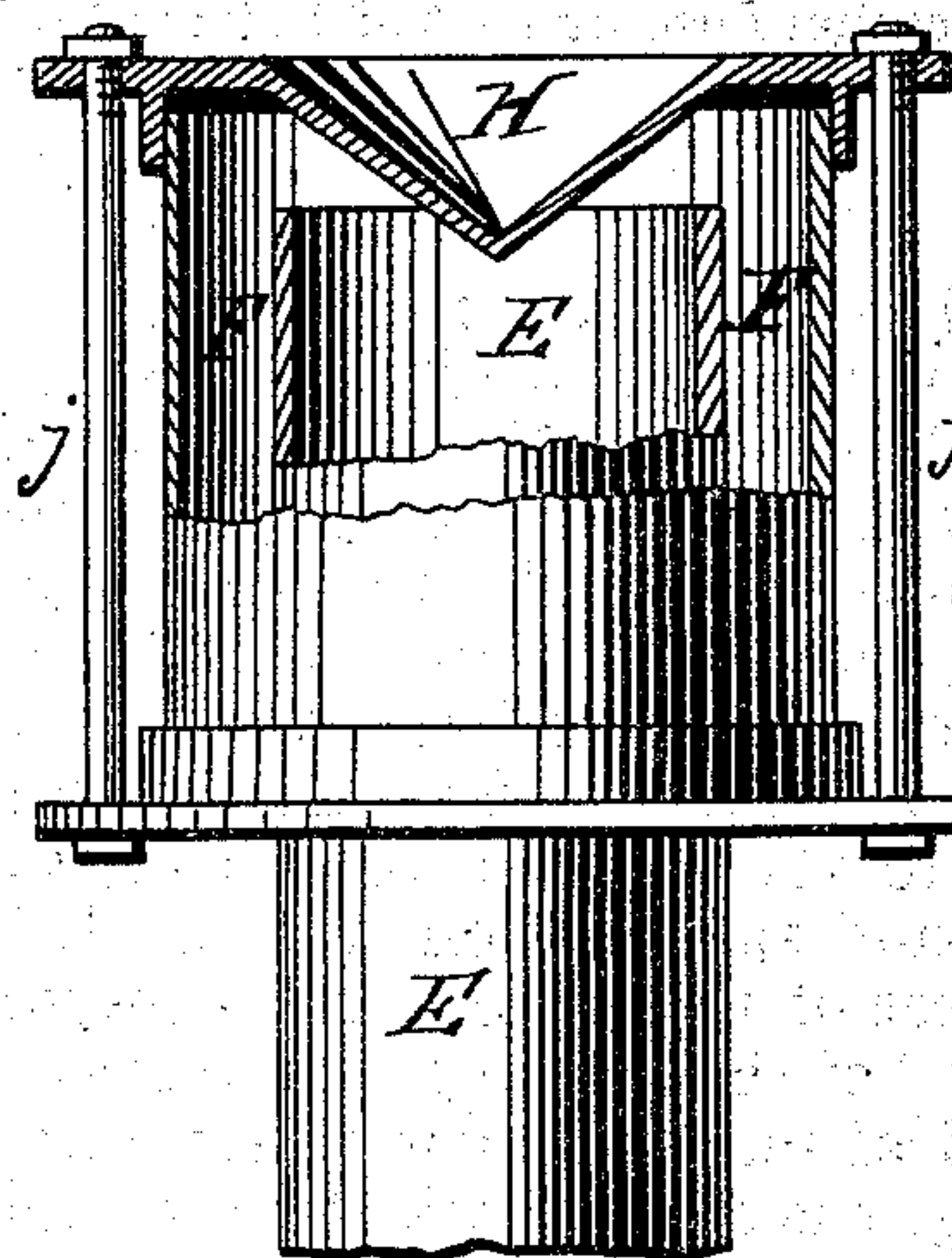


Fig 2



WITNESSES

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JOHN HUGHES, OF RENOVO, PENNSYLVANIA.

IMPROVEMENT IN TIME-SIGNALS FOR RAILROADS.

Specification forming part of Letters Patent No. **156,289**, dated October 27, 1874; application filed September 12, 1874.

To all whom it may concern:

Be it known that I, JOHN HUGHES, of Renovo, in the county of Clinton and State of Pennsylvania, have invented a new and valuable Improvement in Railroad-Signals; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical sectional view of my railroad-signal. Fig. 2 is a detail view of the same.

This invention has relation to railroad-signals which are especially designed to indicate how long a time has elapsed since the passing of a train, at any given point, to the conductor of a following train. The nature of the invention consists in a cylinder mounted upon a vertically-movable shaft, and bearing upon its upper part a second cylinder of glass, the two cylinders filled with a fluid, and violently agitated by the wheels of a passing train, through the medium of a treadle, whereby an insoluble substance of suitable color will be thoroughly disseminated through the fluid, thus telling that a train has passed, the length of time since being indicated by the lowering surface of such coloring substance in the cup, all as will be hereinafter more fully explained.

In the annexed drawings, A designates a rail of a railway, and B a treadle-lever having its fulcrum at *b*, and situated, preferably, at right angles to the track. The power end of this lever is in close contact with one of the rails of the track, and when it is raised is above the upper surface thereof, so that each successive wheel of a passing train shall cause the said end to be violently depressed, for a purpose hereinafter to be explained. C designates a metal shaft, its lower end pivoted to the treadle B, and guided in a lug, *a*, upon the upright *b* of the signal-frame D, upon which the signal apparatus is mounted. This signal consists of a lower metallic cylinder, E, having, at or near the center of its length, an annular flange, *c*, with a rim, *c'*, upon which is seated a second cylinder, F, made of transparent glass, the two being rigidly clamped together through the medium of the shaft C, which

passes centrally through both, and a nut, *d*, as shown in Fig. 1. The bottom of the cylinder E has a flange, *e*, by means of which a plate, *f*, is securely bolted thereto, between which and the bottom of the said cylinder I have caused to be placed an elastic substance, *g*, for the purpose of softening the jar caused by the actuation of the treadle B. The upper end of the glass cylinder F is, in like manner, closed by a plate, G, having a peripheral flange, *g'*, into which is received the upper edge of the said cylinder, and by means of which leakage is prevented, and the lower surface of the said plate is provided with a conical projection, H, the apex of which is received within the hollow cylinder E, as shown in Figs. 1 and 2. *p p¹ p²* designate a number of suitable perforations or ducts situated at or near the lower part of the glass cup F, but through the vertical walls of the cylinder E, by means of which an intercommunication between the two is provided.

The signal apparatus E F being rigidly mounted upon the shaft C, the actuation of the treadle by a passing train will cause it to be violently agitated. If, now, the two cylinders are nearly filled with a fluid, and with a proper proportion of a coloring substance insoluble therein, such agitation will cause the colored matter to be thoroughly disseminated through every part of the fluid, and, being insoluble, will gradually precipitate from above downward.

When a train has just passed, the coloring will be evenly mixed in every part of the glass cylinder F, but, as time elapses, the upper part of the fluid will become clear, owing to the precipitation or settling of the colorer, leaving a distinct line of demarcation between the colored and uncolored parts of the fluid, the said line descending lower and lower, until all is at length again clear.

It will be seen that the lowering of the line of coloring in the fluid is more or less marked according to the length of time since the passing of a train; and hence I have arranged a number of pointers, *i i'*, one above the other, upon a vertical arm, I, attached to the cylinder E, by means of which I am enabled to determine the time that has elapsed since the passage of a train. The upper pointer being ad-

justed to indicate five minutes, when the coloring has descended to the level thereof, that length of time will have elapsed. By this means the conductors of a number of following trains will be enabled to keep at a proper distance apart to avoid collision with the preceding trains.

That portion of the cylinder E which is within the glass cup F it is my purpose to paint of such a color as to be in striking contrast with the coloring matter in the fluid, and with the pointers—that is to say, the coloring matter being of an insoluble white substance, the cylinders will be black, and the pointers red. I do not, however, confine myself to these particular colors, as any others strongly contrasting, the one with the other, will be equally efficient in discharging their purpose, namely, to enable the conductor to tell at a glance the degree of lowering the coloring has undergone.

Instead of extending the shaft C entirely through both cylinders, I may cause it to end at some point within the cylinder E, in which case I shall clamp the two cylinders E F together by long bolts *j j*, as shown in Fig. 2. I shall also be then enabled to dispense with a covering for the conical projection on the under side of the top of the glass cylinder.

The fluid is preferably in sufficient quantity to reach a point at or near the dotted line *x x* shown in Fig. 1; but, by giving a greater de-

gree of vertical play to the shaft C, I may have the cylinder E only filled, as this increased play will cause the fluid to be dashed against the inverted cone H, falling thence into the space below the upper portion of the cylinder E and the glass cylinder F. The length of time consumed in the escape of the fluid thence downward into the cylinder E will determine the length of time since the passage of a train. When this latter principle is used, I may use a coloring matter in solution.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the actuating-lever B and the vertically-movable shaft C, of the cylinders E F, substantially as specified.

2. The combination, with the indicators *i i'* and the cylinders E F, of a fluid and a coloring substance insoluble therein, for the purpose of determining, by the lowering of the coloring substance, the lapse of time since the passage, at a given point, of a preceding train to the conductor of one following, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN HUGHES.

Witnesses:

JOHN REILLEY,
FRANCIS HARVEY.