No. 740,969. PATENTED OCT. 6, 1903.

C. YINGLING.

RAILWAY TRAIN ARREST.

APPLICATION FILED FEB. 11, 1903.

NO MODEL.

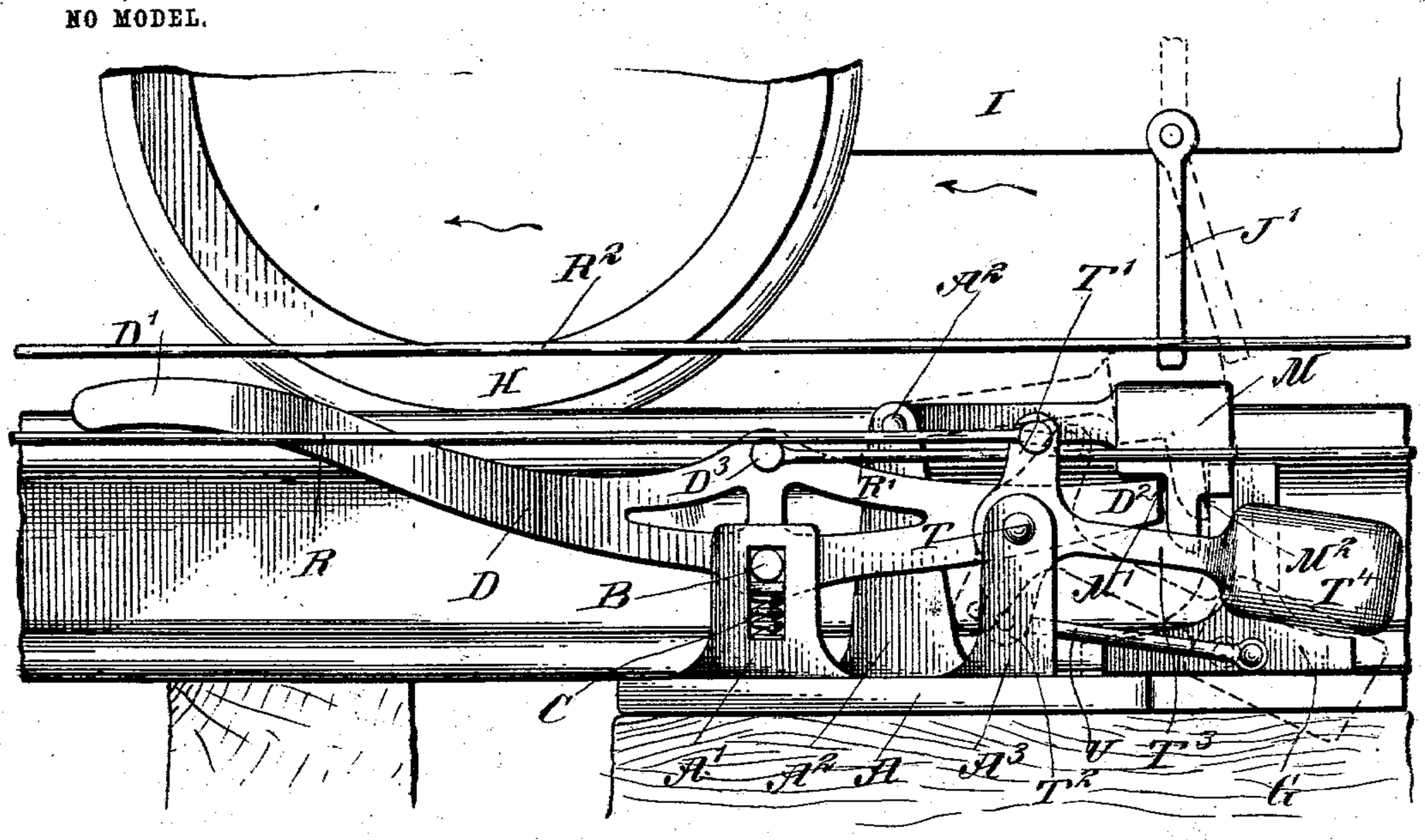

Fig. 1.

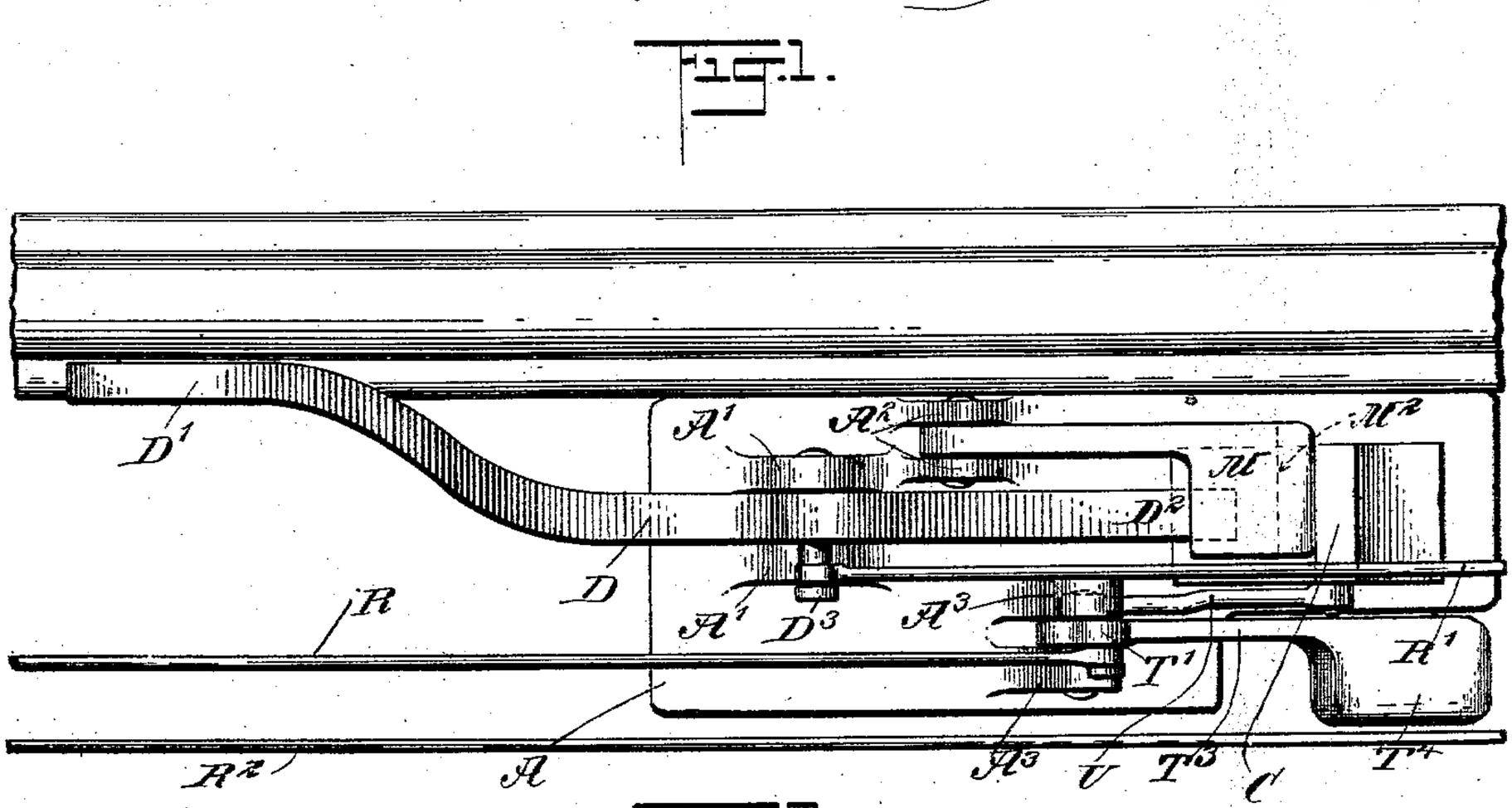

Fig. 2.

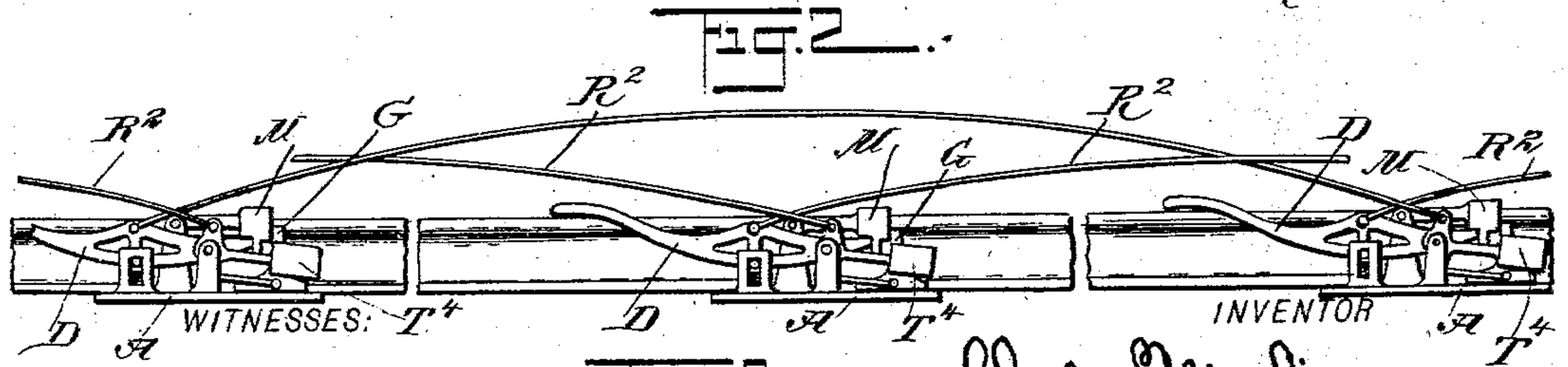

Fig. 3.

WITNESSES:

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No. 740,969. Patented October 6, 1903.

UNITED STATES PATENT OFFICE.

CHARLES YINGLING, OF METUCHEN, NEW JERSEY.

RAILWAY-TRAIN ARREST.

SPECIFICATION forming part of Letters Patent No. 740,969, dated October 6, 1903.

Application filed February 11, 1903. Serial No. 142,853. (No model.)

To all whom it may concern:

Be it known that I, CHARLES YINGLING, a citizen of the United States, residing at Metuchen, in the county of Middlesex and State of New Jersey, have invented a certain new and useful Improvement in Railway-Train Arrests, of which the following is a specification.

My improvement applies to the class in which the air-brakes or other automatic brakes are put on by contacts of a device carried on the train with movable stops supported on the track at convenient distances. Mechanism is provided for raising the stop by the passage of each train and for lowering it again when the train has moved onward sufficiently. It is absolutely automatic. There may be signals and other means of operating through the intelligence of the engineer in addition; but my invention will perform its duties even if the engineer be absent or incapacitated.

I provide a stop which is elevated by the passage of a train and is held in the elevated position until the train has passed the next station. The stations may be arranged at any required intervals. It is not necessary that they be uniform in length. The passage of the wheels past a station in every case lifts the stop at this station and liberates the stop and allows it to sink at the station to which connection is made in the rear, preferably the one before the last passed.

I have devised important improvements in the details, which will be fully described below and set forth in the claims.

The following is a description of what I consider the best means for carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation, and Fig. 2 a plan view. These figures show a single station, with connecting-wires leading to and from other stations, and also a wire extending past without affecting this station. Fig. 3 is on a smaller scale and shows three stations with their connecting-wires. The wires are shown in this figure as elevated to make them easily distinguishable. In practice they should be level and straight, as indicated in Figs. 1 and 2. They should, of course, be supported at proper intervals.

The drawings show the novel parts, with so much of the ordinary parts as is necessary to show their relation thereto.

Similar letters of reference indicate corresponding parts in all the figures.

A is the bed-plate, firmly supported and provided with three uprights A' A^2 A^3, which constitute bearings for levers. The bearing A' supports a short shaft B on stiff springs C, adapted to allow a considerable yielding vertically when a great depressing force is suddenly applied, while the shaft is firmly held in other directions. On this shaft is mounted a lever D, which performs the important function of presenting a pedal D' close to the tread of the rail, which receives the action of the wheel H in passing and by rocking the lever lifts the opposite end D^2, which engages under the offset M' and lifts the stop M. This stop is guided by an arm cast integral therewith, by which it is pivoted to the bearing A^2. When the pedal D' is violently depressed by the front wheels of a swift-moving train, the sudden motion of the connected parts is resisted by their considerable inertia. The motion is permitted by the depression of the springs C, thus allowing the center of the lever to be momentarily depressed. The action results in gently but certainly lifting the stop M. The action is adapted to lift the stop M a little above the required extent.

G is a sliding piece, which serves as a support to engage under an offset M^2 in the stop M and hold it reliably so long as the support is so engaged. The means for operating this piece G will be described farther on.

I is a portion of the locomotive.

J is a shaft of the mechanism which controls the air-brake. (Not shown.) This shaft extends across transversely of the track, and J' is an arm fixed thereon and extending downward in a position to be influenced by the stop M. When the stop is in its depressed position, the arm goes over it without touching. When, on the contrary, the stop is up, the arm J' strikes it and is turned. This turning operates the air-cock and lets on the brakes, (not shown,) and the train is rapidly arrested.

R is a slender rod, or it may be a wire leading from the second station down the track. The bearing A^3 supports a pin T, on which turns a three-armed lever $T' T^2 T^3$. The portion T' extends upward and is engaged with the rod R. The arm T^2 extends downward and engages by a link U with the movable support G. Another arm T^3 carries a heavy weight T^4, the gravity of which serves to keep the movable support pressing against the stop M. When the train passes this station and operates the pedal D' and throws up the stop M, the gravity of this loaded arm T^3 T^4, acting through the link U, pulls the movable support G under the offset M^3 and keeps it supported until a change is induced by the movement of the train past the next station down the track. Such movement pulls on the rod R and by its action on the arm T' overcomes the gravity of the weight T^4 and by turning the lever transmits the force through the link U and pushes the movable support G again to the right into its original position, allowing the stop M to sink. This sinking insures the turning of the lever D so as to again elevate the pedal D' into position to receive the action of the next train. The lever D may be made with that arm—the right arm in the figures—heavier than the pedal, so that its gravity also contributes to hold it always in the position to be actuated.

The drawings show a slender rod, (marked R',) connecting to a pivot D^3 on the lever D at this station and extending away to the right, which I call "up the track," to operate the next station but one. It will be understood that the rod R, which extends to the left in this figure, is correspondingly formed and correspondingly attached to the mechanism at a station down the road.

My mechanism involves no parts extending down deeply into the ground, thus avoiding difficulties from the accumulation of water and ice. The action is induced by gravity. The elastic support of the center B allows for the violent action due to a rapid train without involving any difficulty from inertia of the parts.

The lever J', which actuates the air-valve, may be carried at any required point; but it is important that it be set so far forward on the locomotive that the stop M can never be raised in front of it by the action of its own wheels.

It is necessary to extend each wire R past one station and cause it to operate not the station immediately adjacent, but the next beyond. If, on the contrary, each wire R should be connected to the slide of the nearest station, it would serve equally well in a majority of cases; but serious disaster would occur in the always possible case of a train being stopped by accident or design at a station or very near it after actuating its mechanism. In such cases the stop in the rear having been lowered the succeeding train would not be arrested and a collision might result. By extending each wire R past one station and engaging the slide of the second station safety is attained under all possible conditions.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. There may be further refinements, as provisions for raising and lowering the several centers and especially the center on the locomotive which carries the operating-lever J'. It is important to be certain that that lever shall touch the stop M when the latter is to arrest and that it shall go over it without touching when the stop is in its lowest position.

The location of the parts may be varied. They may be inside instead of outside of the rail. When they are inside, the pedal will of course be actuated by the flange instead of the tread of the wheel. Allowance should be made for that in proportioning and setting the other parts.

I claim as my invention—

1. The lever D on the railway-bed having a pedal D' working adjacent to the rail, and a movable piece J' carried on the train connected to and controlling the brake-operating mechanism, in combination with each other and with the stop M, sliding support G and means for actuating the latter, all arranged for joint operation substantially as herein specified.

2. The lever D on the railway-bed, having a pedal D' working adjacent to the rail, having its center B elastically supported as shown, and a movable piece J' carried on the train connected to and controlling the brake-operating mechanism, in combination with each other and with the stop M, sliding support G and means for actuating the latter, all arranged substantially as herein specified.

3. The lever D on the railway-bed having a pedal D' working adjacent to the rail and a movable piece J' carried on the train connected to and controlling the brake-operating mechanism in combination with each other and with the stop M, sliding support G, the rod R subject to tensional force arranged to be operated from a distance and the loaded lever $T' T^2 T^3 T^4$ and link U, all arranged for joint operation substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

CHARLES YINGLING.

Witnesses:
J. B. CLAUTICE,
M. F. BOYLE.