

No. 776,146.

PATENTED NOV. 29, 1904.

B. C. ROWELL.

SAFETY STOP FOR RAILWAYS.

APPLICATION FILED AUG. 6, 1903. RENEWED APR. 11, 1904.

NO MODEL.

4 SHEETS—SHEET 1.

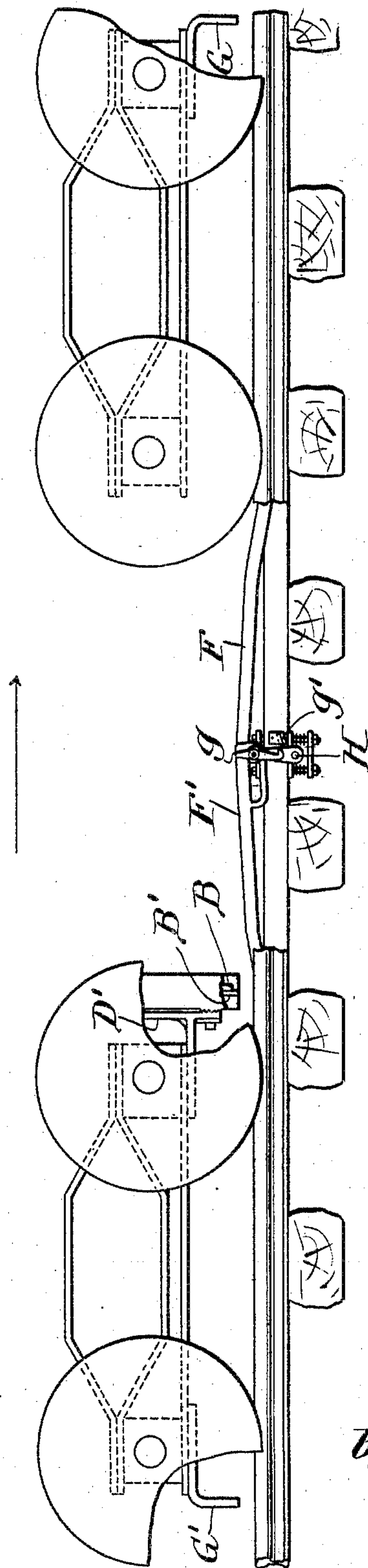


Fig. 1.

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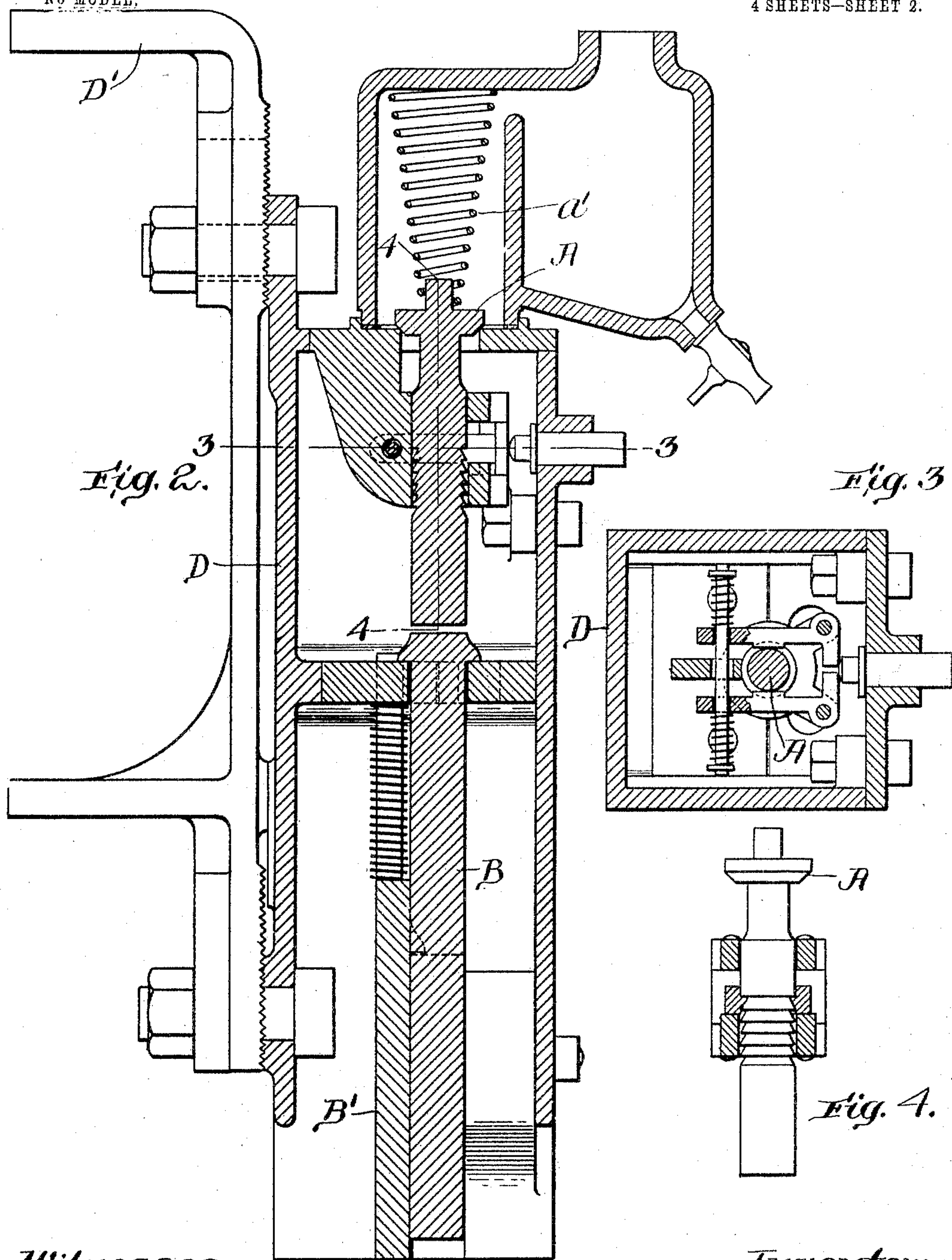
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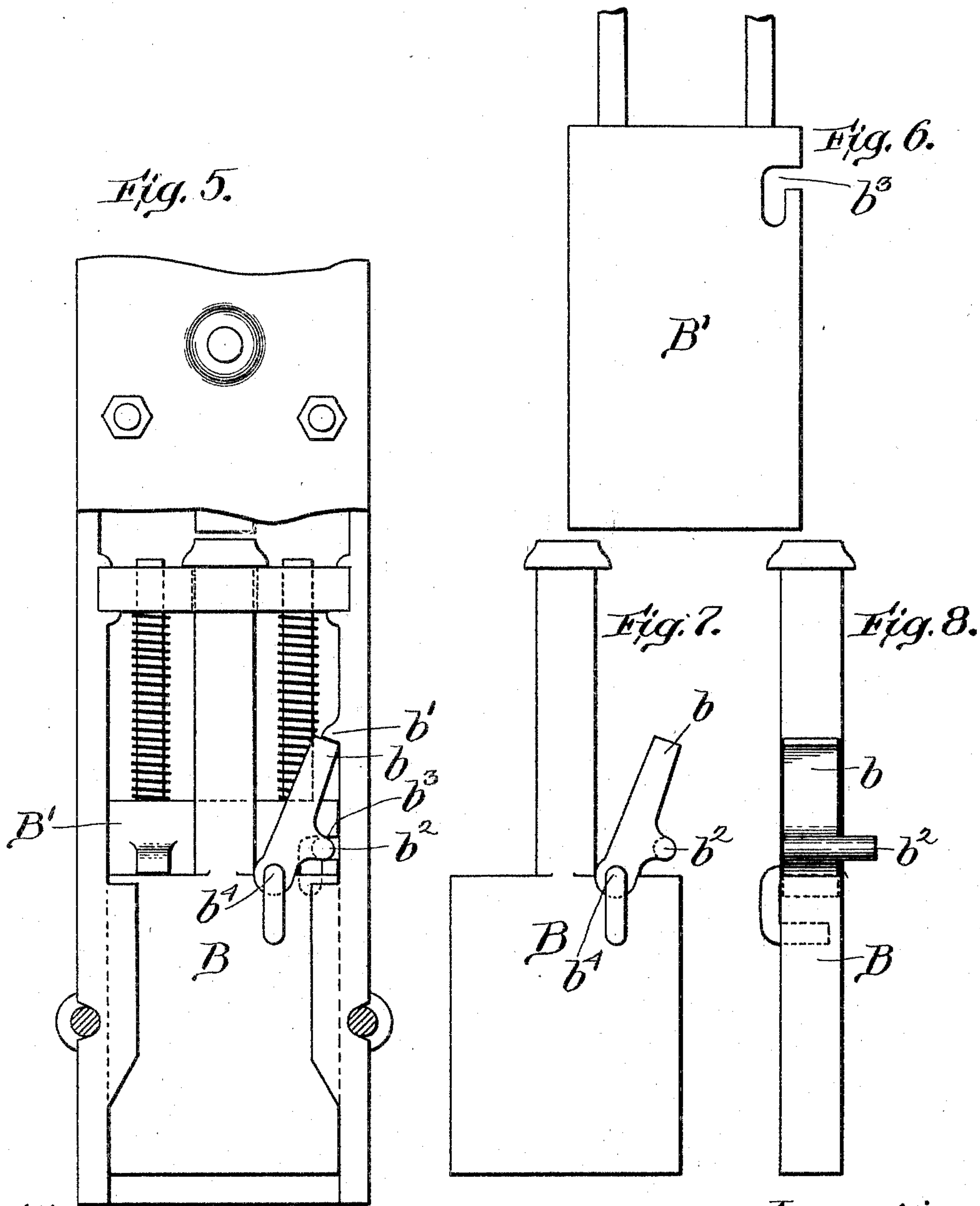
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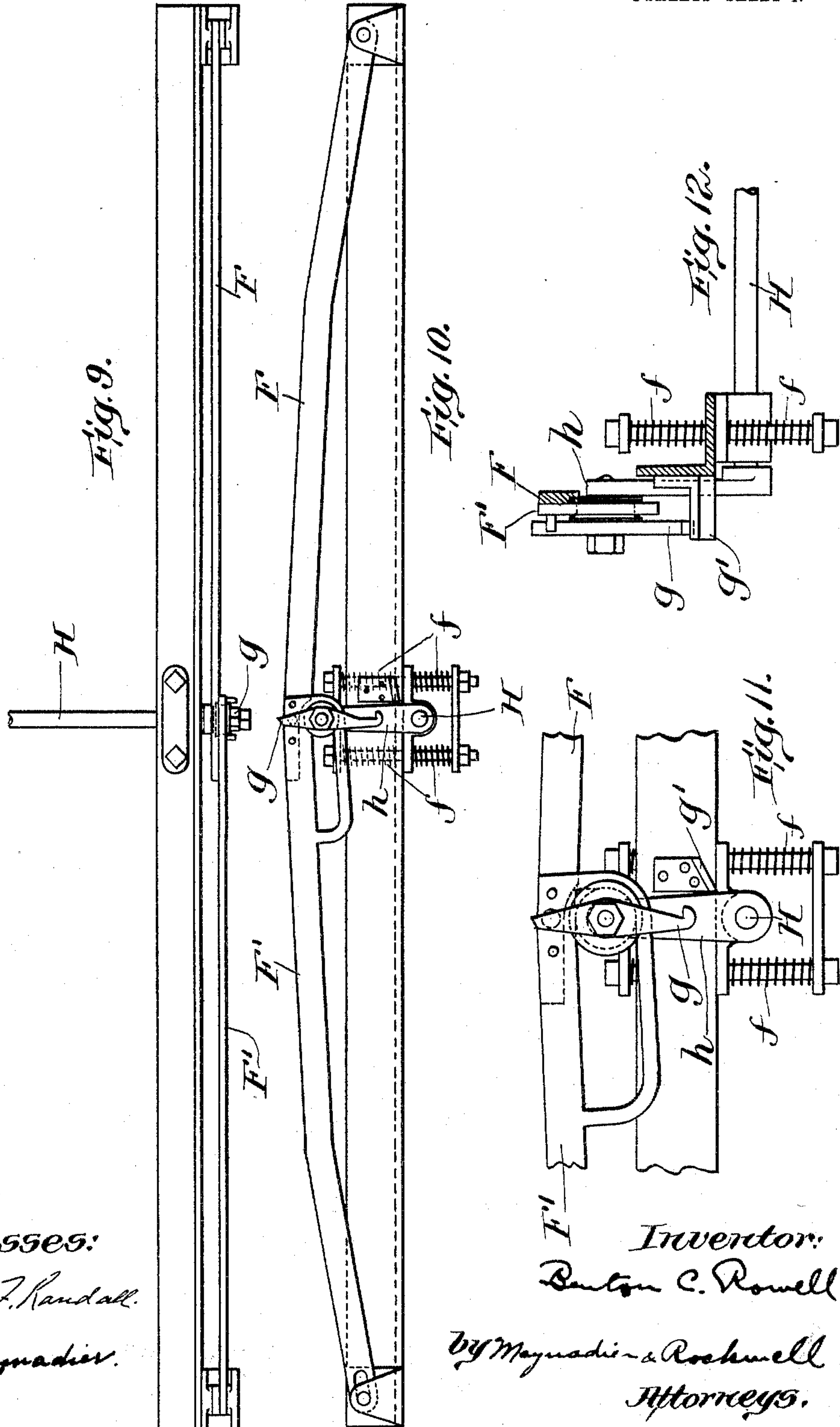
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

BENTON C. ROWELL, OF CHICAGO, ILLINOIS.

## SAFETY-STOP FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 776,146, dated November 29, 1904.

Application filed August 6, 1903. Renewed April 11, 1904. Serial No. 202,672. (No model.)

*To all whom it may concern:*

Be it known that I, BENTON C. ROWELL, of Chicago, Cook county, and State of Illinois, have invented an Improved Safety-Stop for  
5 Railways, of which the following is a specification.

Safety-stops have long been well known, and consist, essentially, of an instrument upon the track and another instrument upon the  
10 train which coöperate so that when the track instrument is set at "danger" it will operate the train instrument, and thereby apply the brakes of a passing train; but when the track instrument is set at "safety" it will not oper-  
15 ate the train instrument. My invention relates to apparatus of this sort. Its object is to do away with a well-known practical objection to this apparatus arising from the fact that at times an accidental obstruction on the track  
20 was equivalent to the track instrument at "danger" and, operating the train instrument, stopped the train when the track was clear.

To this end my invention is an apparatus consisting of a specialized train instrument  
25 which will operate only when in conjunction with a specialized track instrument at "danger," my new principle being that the train instrument consists, essentially, of an automatic lock which holds it in an inoperative  
30 position except when that lock is unlocked by a peculiar action of the track instrument, which action is impossible with any accidental obstruction on the track, as will now be more fully described by reference to the accompa-  
35 nying drawings, making part hereof, and in which I have shown the best form in which I have contemplated applying the principle.

In the drawings, Figure 1 is a side elevation illustrating a portion of track and train  
40 equipped with my improved apparatus consisting of my specialized track and train instruments. Fig. 2 is a sectional elevation of my specialized train instrument fast to one of the trucks. Figs. 3, 4, 5, 6, 7, and 8 are  
45 details of the train instrument explained below. Figs. 9 and 10 are a plan and side elevation of my specialized track instrument. Figs. 11 and 12 are details of this track instrument, explained below.

50 My improved train instrument is not sub-

stantially unlike train instruments long well known in that valve A when lifted from its seat *a* against the force of spring *a'* is held open by a catch, (shown in Figs. 2, 3, and 4,) and thereby vents the train-pipe and applies  
55 the brakes in the well-known manner, nor in that valve A is lifted from its seat by the action of a slide B when that slide is carried over a track instrument set to "danger," and my improved track instrument (shown in  
60 Figs. 9 and 10) is not substantially different from that long well known in that when set to "danger" it automatically lifts a slide in the train instrument, and thereby opens a  
65 vent-valve, venting the train-pipe and applying the brakes; but my improved train instrument is radically unlike any heretofore known in that the valve-operating means is locked, so that the valve will not be opened except by  
70 a specialized track instrument, and my improved track instrument is also radically unlike any heretofore known in that it embodies means for unlocking its train instrument in order to open the vent-valve.

The casing D of the train instrument is ad-  
75 justably attached to bracket D', as shown, for example, in Fig. 2, and that bracket D' is such that it can be made fast to one of the trucks, as indicated in Fig. 1. This is in order that the lower edge of slide B can be held at a sub-  
80 stantially fixed distance from the track until it is raised by the track instrument. Slide B is locked by bolt *b* acting against shoulder *b'* and cannot be lifted to open valve A until bolt *b* is cleared from the shoulder, and this clear-  
85 ance is effected by the slide B', whose lower edge projects a little below the lower edge of slide B, so that a slight lifting of slide B' will cause slide B' to act on bolt *b* through pin *b*<sup>2</sup> and swing bolt *b* clear of shoulder *b'*, the slot  
90 *b*<sup>3</sup> in slide B' first swinging bolt *b* on its axis *b*<sup>4</sup> and next holding bolt *b* clear of shoulder *b'*. It will now be clear that a train instrument thus specialized requires a track instru-  
95 ment which will raise slide B' far enough to unlock slide B and then raise slide B far enough to open valve A. The slant of the bars F F' of the track instrument when in the position shown in Fig. 10 may be made just sufficient  
100 to lift slide B' to cause it to unlock slide B,



when the train instrument will be operated whenever it is carried over the bars F F' of the track instrument in the direction shown by the arrow in Fig. 1; but no surface not having a close approach to this particular slant can be relied upon to clear bolt *b* from its shoulder *b'* by first lifting slide B'. Hence it is not only highly desirable, but practically essential, to support the bars F F' when the track instrument is set to "danger," so that the bars F F' may yield to undue pressure, as now will be more fully explained.

It will be seen on reference to Figs. 1 and 10 that it is desirable as a practical matter to make the slant of bar F (or bar F' if the train be traveling forward in the opposite direction to that indicated in Fig. 1) slightly too steep, or so that slide B shall press upon the slanting surface of that bar before bolt *b* is cleared from its shoulders *b'*, and in that case the bars F F' will be depressed against the force of the springs *f*, which hold them yieldingly in this position at "danger," and as they are thus depressed the slant is varied until the right degree of slant is attained to lift slide B', and thus unlock slide B. Also this yielding support to bars F F' when at "danger" prevents all undue strain upon the track instrument, for that strain can never exceed the force of the springs *f*, and this is in itself a highly-desirable feature of my invention, and, thirdly, this yielding support of bars F F' permits the use of the brackets G G' in front and rear of the train instrument, so that when the train is run in the direction of the arrow in Fig. 1 bracket G will simply depress bars F F', and these bars will immediately swing back to "danger" and operate the train to a stop, but not until bracket G' has passed over bars F F', depressing them, as did bracket G, but allowing them to spring back to "danger," whereupon if the train be run back over the track instrument bracket G' will again depress bars F F', but it will also swing hook *g* into engagement with catch *g'*, and thus hold the bars F F' depressed, and the train instrument will pass over bars F F' without being operated, and bracket G will pass over bars F F' while they are held depressed by hook *g* and catch *g'*; but should a train travel over the track instrument in the direction of the arrow while its bars F F' are held depressed by the hook *g* and catch *g'* bracket G will swing hook *g* away from catch *g'* and the bars will spring into the danger position and operate the train instrument, as before. When the bars F F' are depressed and shifted to "safety" by the motion of rock-shaft H and its arm *h*, as usual, the springs *f* *f* are not affected, although the hook *g* is carried clear of catch *g'*—that is, bars F F' of this specialized track instru-

ment are controlled by rock-shaft H and its arm *h* in the manner long well known.

While the operation will be plain without further description, it may be added that when shaft H is revolved to shift the track instrument from "danger" to "safety," or vice versa, the axis of shaft H need not be moved; but when the bars F F' are raised at their inner ends and pressure is applied to depress the bars F F' against the force of springs *f* the axis of shaft H is depressed and the hook *g* carried toward its catch *g'* the bars F F' will be held depressed against the force of springs *f* in spite of the fact that the arm *h* of rock-shaft H is in its danger position, and yet when arm *h* is revolved to its safety position it will carry hook *g* away from its catch *g'* and depress bars F F' to their safety position, leaving those bars free to be shifted to danger by bringing arm *h* to that position and also leaving bars F F' free to be depressed against the force of springs *f*.

What I claim as my invention is—

1. An improved safety-stop apparatus comprising a train instrument; a track instrument; a locking device on the train instrument; and an unlocking device on the track instrument; each constructed and arranged to coöperate with the others substantially as specified.
2. In a safety-stop apparatus a train instrument comprising a slide for setting the train instrument into operation to stop the train; a locking device for locking that slide, and a second slide for automatically unlocking the locking device, all substantially as specified.
3. In a safety-stop apparatus a track instrument comprising bars each pivoted to a base; springs supporting the inner ends of those bars in an elevated position; and means for elevating and depressing the inner ends of those bars, coöperating with the springs when the inner ends of the bars are elevated, whereby undue pressure on the bars will depress them substantially as and for the purposes specified.
4. In a safety-stop apparatus a track instrument comprising bars, each pivoted to a base; springs supporting the inner ends of these bars in an elevated position; means for elevating and depressing the inner ends of these bars coöperating with the springs when the inner ends of the bars are elevated; and an automatic device to hold the bars in their depressed condition against the force of the springs.

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