

No. 658,509.

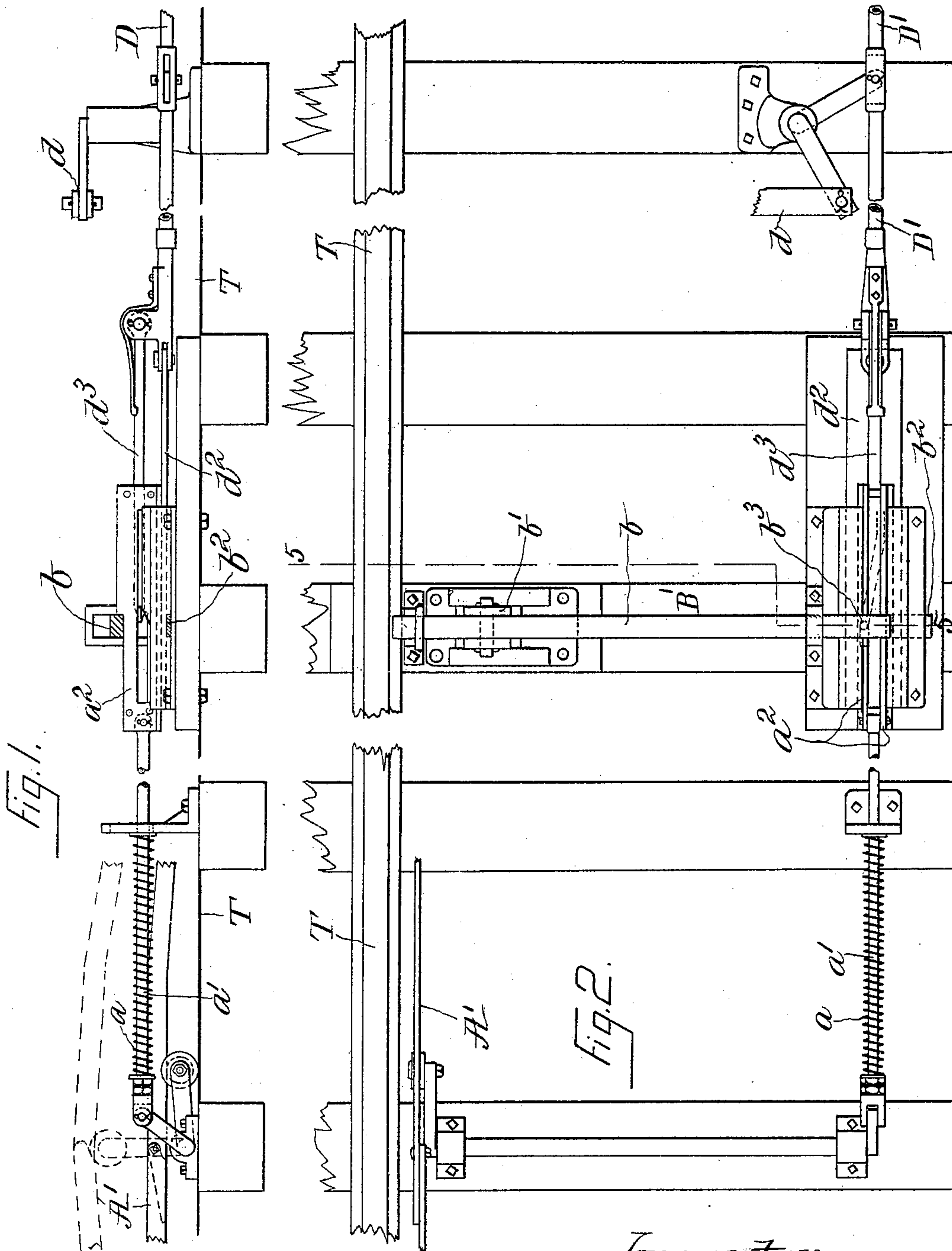
Patented Sept. 25, 1900.

B. C. ROWELL.
BLOCK SYSTEM FOR RAILWAYS.

(Application filed Feb. 13, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:
H. P. Guillo.
W. M. Maynard.

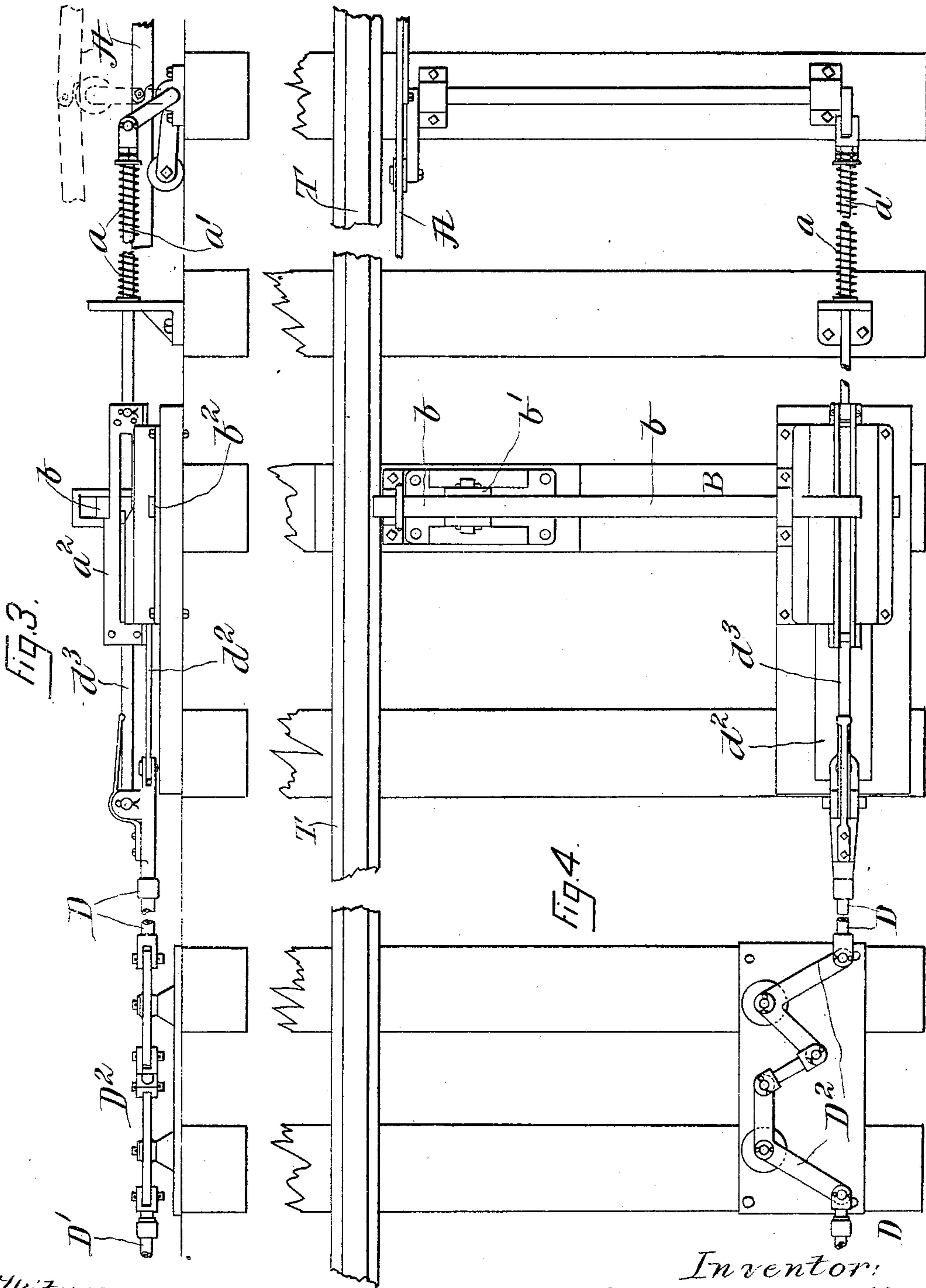
Inventor:
Benton C. Rowell
By J. E. Maynard
Attorney

B. C. ROWELL.
BLOCK SYSTEM FOR RAILWAYS.

(Application filed Feb. 13, 1899.)

(No Model.)

4 Sheets—Sheet 2.



Witnesses:
H. P. Guillo.
W. M. Mays.

Inventor:
Benton C. Rowell
By J. H. Mays
Attorney

No. 658,509.

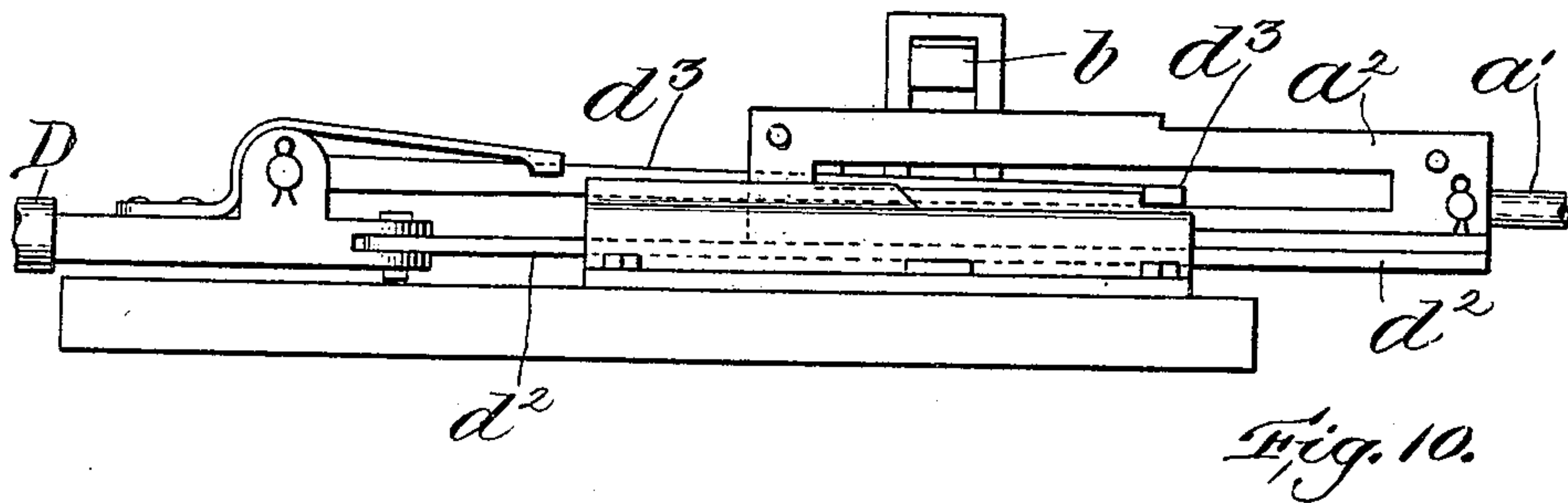
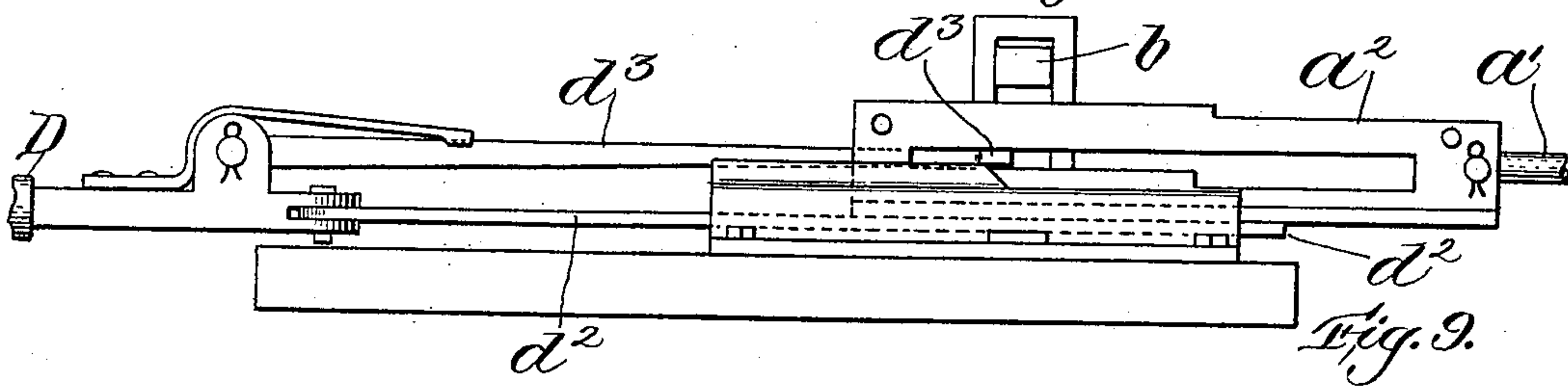
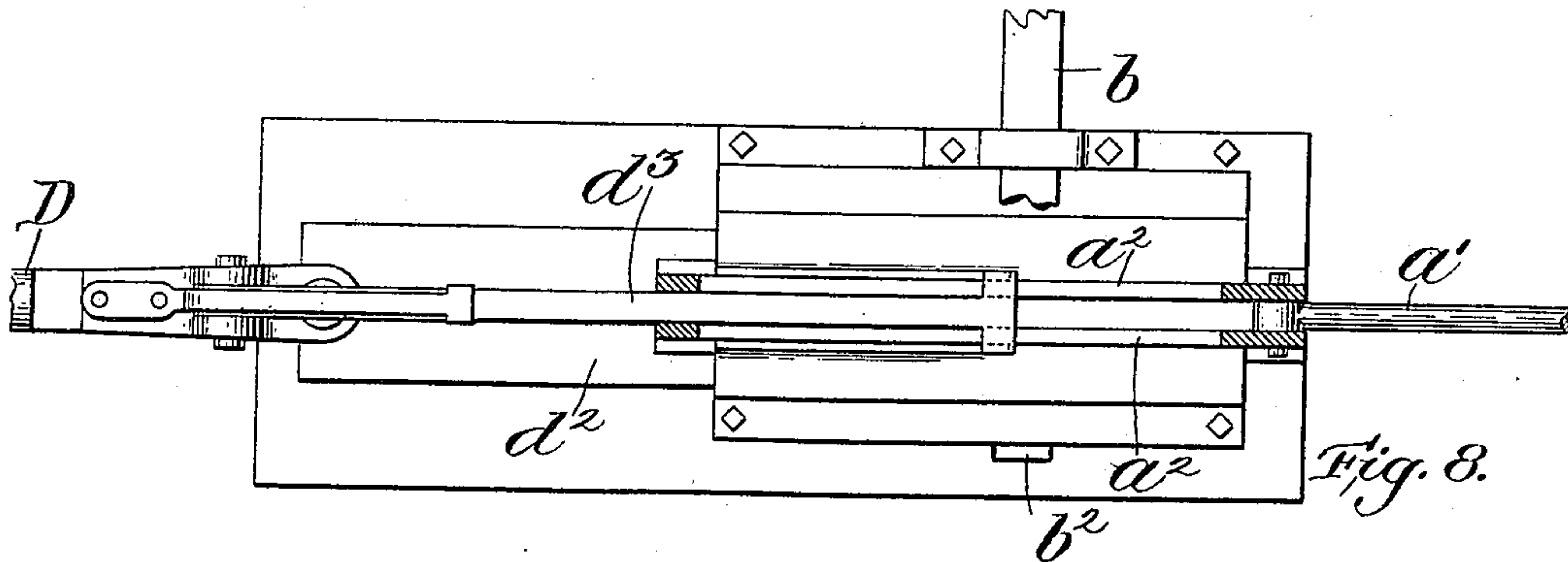
Patented Sept. 25, 1900.

B. C. ROWELL.
BLOCK SYSTEM FOR RAILWAYS.

(Application filed Feb. 13, 1899.)

(No Model.)

4 Sheets—Sheet 4.



Witnesses:

Arthur D. Rudall,
Ernest B. Maynard.

Inventor:

Benton C. Rowell,
by J. E. Maynard
Attorney.

UNITED STATES PATENT OFFICE.

BENTON C. ROWELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ROWELL
POTTER SAFETY STOP COMPANY, OF PORTLAND, MAINE.

BLOCK SYSTEM FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 658,509, dated September 25, 1900.

Application filed February 13, 1899. Serial No. 705,433. (No model.)

To all whom it may concern:

Be it known that I, BENTON C. ROWELL, of Chicago, Cook county, in the State of Illinois, have invented an Improved Block System for
5 Railways, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation, and Fig. 2 a plan, of a portion of my system. Fig. 3 is an elevation, and Fig. 4 a plan, of the other portion of my system. Fig. 5 is a section on line
10 5 5 of Fig. 2. Fig. 6 is a detail, and Fig. 7 is a diagram, of my system. Fig. 8 is an enlarged detail illustrating the spring-catch
15 connection shown in elevation and plan in Figs. 3 and 4. Fig. 9 is an enlarged detail showing the spring-catch out of engagement with the slide. Fig. 10 is a like detail showing
20 the spring-catch in engagement with the slide.

Where a plurality of trains are to travel over a single track, it is highly desirable that the track shall be regarded as if it were cut
25 up into lengths or sections and that suitable means be used to prevent one train (taking a single locomotive or motor-car as a train for all the purposes of a block system) from traveling on any section when another train is on that section, or, in other words, to block
30 any section occupied by a train against access by any other train, the best result being that as soon as a train enters upon a section that section is blocked and remains blocked until that train has left that section.

35 My invention is an improved system for effecting this result; and it consists of two blocking appliances, each with an automatic trip for shifting it to "danger," combined with a mechanism for controlling both blocking
40 appliances which is operated by a passage of a train after it passes one of the two blocking appliances and before it passes the other of the two and which prevents the second of the two appliances from going to "danger,"
45 as I will now more fully describe by reference to the drawings.

The safety-stops A A' are so well known by all skilled in this art as to require no detailed description other than that when at
50 "danger" they automatically stop a train, preferably by applying the brakes; but, as

will be obvious, I include under the term "safety-stops" other blocking appliances, such as visible or audible signals, which will when set to "danger" practically lead to the
55 stopping of the train, for, strictly speaking, the springs *a a* or equivalent motor mechanism which when released shifts the stops A A' from their position of safety, as shown in full lines, to their position of danger, as
60 shown in dotted lines, are the essential elements of my new combination, for these springs *a a* may act through any suitable means when released from control of their
65 trips *b* to stop the train or cause the train to be stopped. Each spring *a* exerts its power through rod *a'* on a slide composed of the plates *a²*, and slide *a²* is held from moving under
70 force of spring *a* by trip-lever *b*; but when trip-lever *b* is lifted clear of the notch in slide *a²* rod *a'* is moved endwise by spring *a*, carrying with it slide *a²* and setting stop A (or
75 A') to "danger," as will be clear from Figs. 8 to 10. When stop A is at "safety," a train can pass it and enter on the section; but as the train passes over trip B it depresses that end
80 of lever *b* near the track T, and thereby lifts the other end of lever *b* clear of the notch in slide *a²*, thereby shifting stop A to "danger," so that the section is blocked against all
85 following trains. After the train has passed trip B it actuates the controlling mechanism D D' by moving rod *d* endwise, (in any suitable way, as will be fully understood by all skilled in the art without description,) and
90 that endwise motion of the rod *d* causes rods D D' to move endwise each in a direction opposite to the other, these rods D D' being connected by the compensator D². This motion of rods D D' away from each other causes
95 each rod to move its plate *d²* endwise, and the cam-slot in plate *d²* acts to move trip-lever *b* endwise by means of link *b²*, which is fast at one end to the sliding fulcrum-plate *b'* of lever *b* and has a stub *b³* projecting from
100 its other end and entering the cam-slot in plate *d²*, so that the trip-levers *b* of both stops A and A' are moved clear of track T and out of the way of the wheels of the train when
rod *d* is moved endwise in one direction by any suitable mechanism set in operation by
the passage of the train from stop A toward

stop A' or from stop A' toward stop A, for one feature of novelty of my apparatus is that it is adapted for trains moving in either direction, the stop A being the main stop and
 5 A' the auxiliary stop when a train moves from right to left as shown in the drawings and vice versa when a train moves from left to right. This automatic removal of trip-lever *b* of stop A' allows the train to pass over
 10 trip B' without releasing spring *a* of stop A', which is at "safety" only when spring *a* is under control of trip *b* and trip *b* is moved out of the way of the passing train and all other times at "danger," for although when
 15 the tread-bars of a safety-stop are down the stop itself is at "safety," yet the stop as a whole is at "danger" when a trip is in position to be released by the passage of a train before reaching the stop, much as a loaded
 20 firearm is at "danger" when at full-cock unless its trigger be locked in some way. After passing stop A and automatically moving trip B' of stop A' out of the way the train continues its travel over the section; but that
 25 section is blocked by stop A standing at "danger," and also by the semaphore or like signal A², which is set to "danger" by the endwise motion of one of the rods D or D', as shown on the drawings. The endwise motion of rod D away from rod D' causes the
 30 lug on spring-rod *d*³ to engage the notch in plate *a*² when plate *a*² has been moved by spring *a*, and when rod D is moved toward D' by rod *d* or otherwise the slide *a*² is moved, thereby compressing spring *a* and setting
 35 signal A to "safety," the lug on spring-rod *d*³ being disengaged from the notch on plate *a*² when near the end of its stroke by riding up the inclined plane, thereby leaving plate
 40 *a*² free to move independently of rod D and under control of lever *b* and spring *a*. The lug on spring-rod *d*³ is moved in a like manner by rod D' to set or compress spring *a* and set signal A' to "safety." All this takes
 45 place when the mechanism actuating rod *d* moves rod *d* back by means too well known to all skilled in this art to require description.

Of course when my apparatus is to be used
 50 on a section over which trains travel always in the same direction the connections for moving trip-lever *b* of trip B may be dispensed with; but it is desirable that my apparatus be double-acting. To make it double-
 55 acting it is of course essential that either one of the trips B or B' may be the main trip, just as either one of the stops A or A' may be the main stop.

One convenient apparatus for moving rod

d endwise, and thereby moving the rods D 60 and D', is shown in my Patent No. 599,456, dated February 22, 1898.

The main feature of my invention is the combination of two blocking appliances, each adapted to be automatically shifted to "dan- 65 ger" by a train entering upon a section to be blocked, with a controlling mechanism operated by the train which will prevent one of the blocking appliances being shifted to "danger" by the passage of the train, my 70 purpose being to produce a block system which will block the section whenever it should be blocked if the apparatus is in order and will also block the section whether it should be blocked or not when the appa- 75 ratus is out of order, and while I have shown the best mode I have contemplated applying my new principle it will be obvious that the details of construction may be widely varied. 80

What I claim as my invention is—

1. In a block system the combination of two blocking appliances, as A A'; two automatic trips, as B B'; and a controlling mechanism as D D', to prevent the passing train 85 from tripping one of the blocking appliances; substantially as described.

2. In combination two blocking appliances, as A A'; two automatic trips, as B B'; two pipe-lines as D D'; and connections between 90 the pipe-lines and the blocking appliances; and between the pipe-lines and the trips, by means of which the blocking appliances and the trips are controlled by the pipe-lines; all substantially as described. 95

3. In combination two blocking appliances each provided with a power-storing device put under tension when its blocking apparatus is set to "safety," and which when released gives out its power to shift its block- 100 ing appliance from "safety" to "danger;" two detents, one for one power-storing device, the other for the other power-storing device; means actuated by the passage of a train for releasing the detents; and means 105 also actuated by the passage of the train for inhibiting the release of one of the detents; all so arranged that a train which passes one of the blocking appliances will release its detent, thereby shifting the blocking appli- 110 ance which it has passed to "danger," will then actuate the inhibiting means and thereby pass the other blocking appliance without releasing its detent.

BENTON C. ROWELL.

Witnesses:

DORR E. FELT,
 LOUIS A. DE BERARD.