

(No Model.)

2 Sheets—Sheet 1.

E. BEALS.

AUTOMATIC CAR BRAKE.

No. 366,448.

Patented July 12, 1887.

Fig. 1.

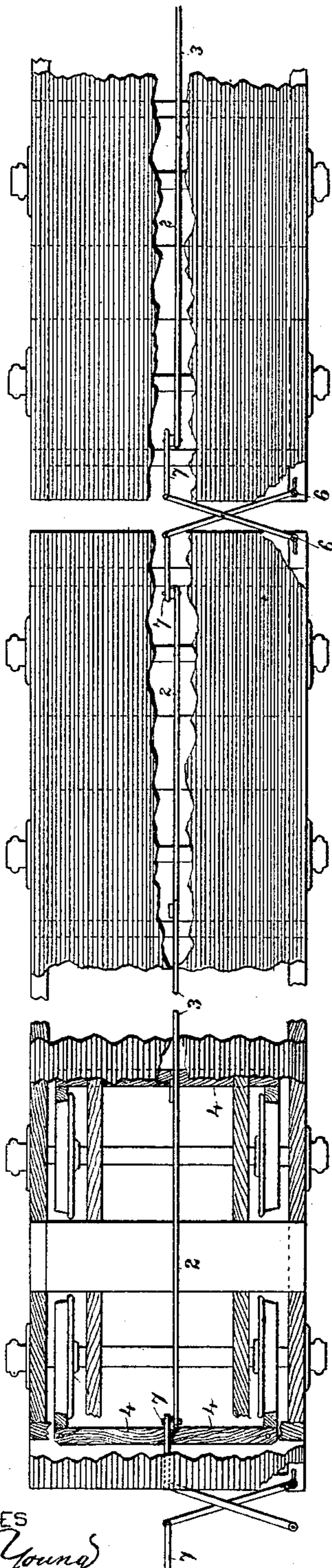
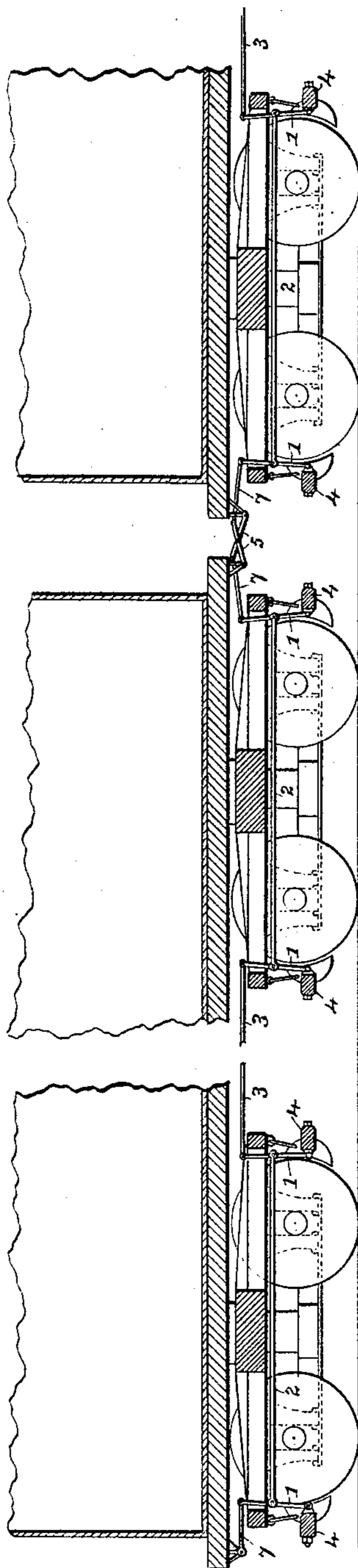


Fig. 2.



WITNESSES

*H. H. Young*  
*Geo. L. Wheelock*

INVENTOR

*Ebenezer Beals*  
By *Knight*  
attorneys

(No Model.)

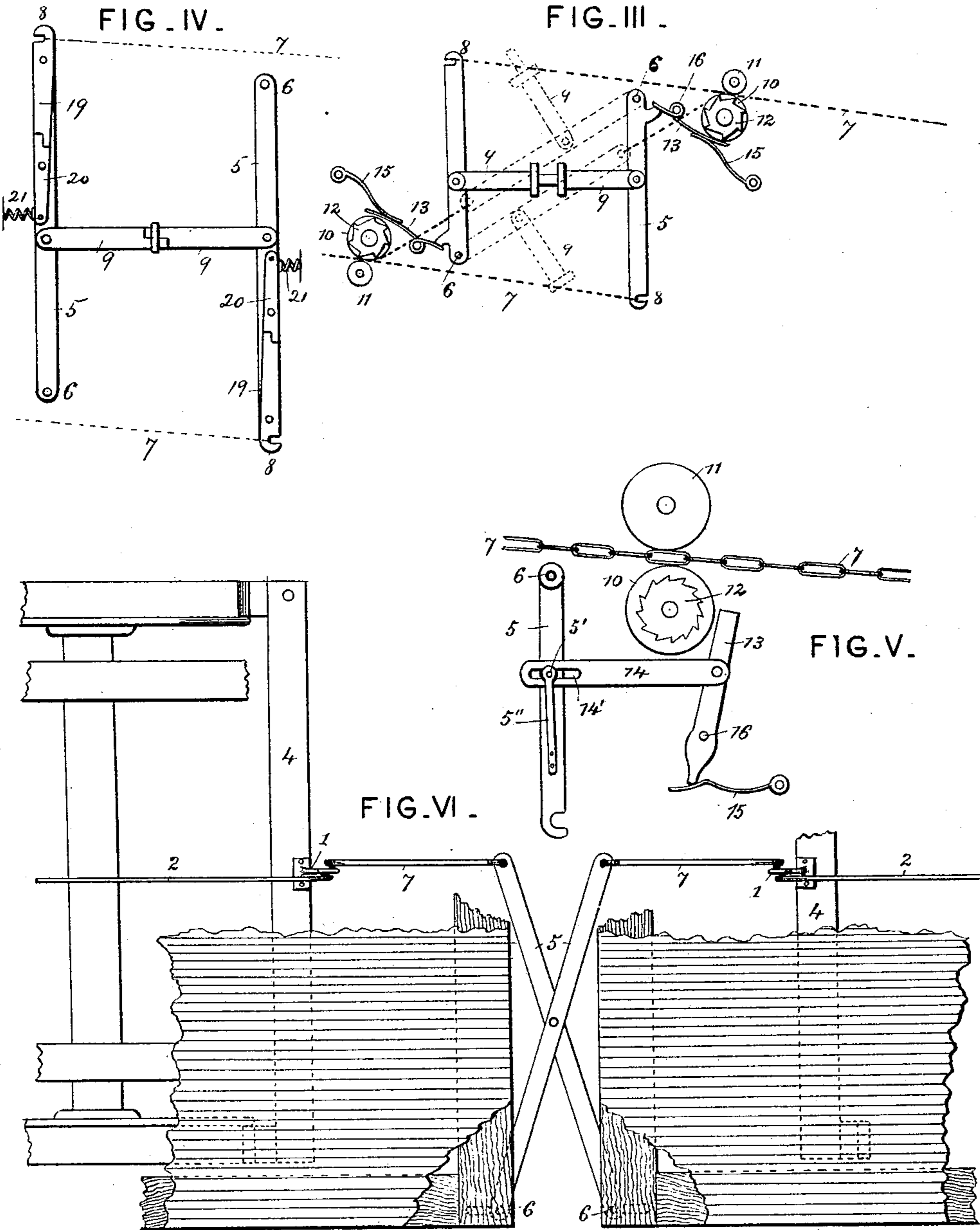
2 Sheets—Sheet 2.

E. BEALS.

AUTOMATIC CAR BRAKE.

No. 366,448.

Patented July 12, 1887.



WITNESSES

*H. R. Young,*  
*Geo. L. Wheelock.*

INVENTOR

*Ebenezer Beals*  
*By Knight Bros*  
*Attorneys*

# UNITED STATES PATENT OFFICE.

EBENEZER BEALS, OF NORWICH, NEW YORK.

## AUTOMATIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 366,448, dated July 12, 1887.

Application filed December 27, 1884. Serial No. 151,313. (No model.)

*To all whom it may concern:*

Be it known that I, EBENEZER BEALS, a citizen of the United States, residing at Norwich, in the county of Chenango and State of New York, have invented certain new and useful Improvements in Automatic Train-Brakes, of which the following is a specification.

The invention may be divided into two parts—to wit, first, a method of connecting the several brake levers of each car; and second, a method of connecting together the brake systems of the several cars.

The objects of the invention are, first, to place the entire brake system under control of the engineer through the medium of a single motor located at the head of the train or at any other convenient point, the engineer being able to apply all the brakes simultaneously by a direct pull and gather in the slack of the entire train at the motor end; second, to apply equalized pressure to all the wheels of the various cars throughout a train by a system of connections adapted to act promptly and uniformly and to be unaffected by the varying distances between the several cars of the train.

The brakes may be so adjusted that the amount of movement need not exceed more than half an inch per car, and hence there is no difficulty in controlling the slack or movement throughout a long train, if the variation in the amounts of slack between the different cars can be eliminated from the problem. This is accomplished by employing such devices for uniting the several brake systems of the different cars as will allow them to approach or recede from each other through limited distances without affecting the brakes; but when desired the adjustment can be made so that the closing together of the cars shall tend to take up the slack and apply the brakes, or vice versa.

In the accompanying drawings, Figure I is a plan of parts of the running-gear of two freight-cars with the invention applied. Fig. II is a vertical longitudinal section of the same. Fig. III is a plan illustrating a modification in the mode of connecting the brake-levers between the several cars. Fig. IV represents in detail the construction of the equalizing connecting-levers and the mechanism for releasing the connection of the brake-chains therewith

after the brakes have been drawn on with a certain predetermined pressure by the severance of the train. Fig. V is a detail view, on a larger scale, of a device employed for locking the brakes in one or more cars which may become uncoupled from the train. Fig. VI is a detail view, on a larger scale, of the equalizing-levers.

1 represents brake-levers connected together by tension-ties 2, between the levers of each particular truck, and by ties 3, between the inside opposed levers of the different trucks.

The ordinary brake-beam levers, 1, are fulcrumed at their lower ends to the respective brake-beams 4. The tops of the outside levers are connected with the hand-brake staffs at the respective ends of the cars, and also with the corresponding systems on the adjoining cars. These levers 1 may stand perpendicularly, so that the line of connection will be central, as illustrated in Figs. I and V, or they may be inclined at any preferred angle, so that the line of connection shall be diagonal or oblique, as illustrated in Fig. III.

5 represents equalizing-levers fulcrumed at 6 in the body-frames of the respective cars, or in links connected therewith.

7 represents the ties or tension rods or chains connected to the free ends of the equalizing-levers 5 and to the outer brake-levers, 1, of each car.

Fig. III shows a modification, enabling the connections to be made more readily by simply hooking up the ties 7 at the points 8.

9 represents tongues or stems attached to each of the equalizing-levers 5, the said tongues being formed with guides, each for the other, their mutual engagement converting them, when the cars are properly connected, into what is virtually a single compression member.

In order to provide for the applying of the brakes automatically to each resulting section, in the event of a breaking of the train, I employ a locking device, such as represented in Figs. III or V. This may consist of a pair of pulleys between which the brake chain or rod 7 passes. These pulleys 10 11 are adapted to turn freely in the ordinary operation of the brakes, and when either of them is locked against rotation to securely hold the chain or

rod 7. The locking of the pulleys is effected by a ratchet-wheel, 12, attached to one of them and adapted to be engaged by a pawl, 13, which is thrown into the ratchet-wheel whenever the accidental breaking in two of the train shall compel the lever 5 to assume the position shown by dotted lines. This engagement may be effected by means of a link, 14, connected to the lever 5, and in the normal position of the apparatus held out of contact with the ratchet-wheel by a spring-detent, 15, Fig. 5. The link 14 is provided with a slot, 14', in which is placed a pin, 5', of a spring, 5'', attached to the lever 5. By this means the distance of the pawl 13 may be regulated and also relieved of undue pressure when acted upon. Fig. 3 shows a modification of this device for locking the brakes upon the severance of the train. In this device the pawl 13 is pivoted at 16, and is engaged by a spring, 15, which forces it into engagement with the ratchet 12 when permitted by the severance of the connections between the cars.

18 is a short arm, which projects from the lever 4 and engages with the heel of the pawl 13 while the parts are in the position shown in full lines; but when the arm 18 is removed from contact with the heel of said pawl by the swinging of the parts into the position shown in dotted lines, the spring 15 will force the nose of said pawl into engagement with the ratchet-wheel 12, and thereby prevent its turning.

It will be seen that the pulling apart of the cars will instantly draw the equalizing-levers 5 out of their normal transverse position (shown in full lines in Fig. III) to the position shown in dotted lines, and will apply tension to the tie rod or chain 7, drawing the same through the pulleys 10 11. At the same time the pawl 13 is permitted to be thrown into engagement with the ratchet-wheel 12 and is held in this position by the detent 15, so as to prevent any retrograde movement of the pulley 11, to which the ratchet-wheel is connected. The tie rod or chain 7 being thus locked, the brakes will be securely set and held upon all cars of all the resulting sections.

In order to regulate the extent of the pressure with which the brakes shall be applied in the result of the breaking of the train, the levers 5 are constructed as represented in Fig. IV. Near the extremity of each lever 5 is pivoted a lever, 19, which is formed at its outer or shorter end with the hook 8, for engagement by the brake-chain 7. The longer end or heel of this lever bears against the shorter end of

a second and similar lever, 20, pivoted to the lever 5, the longer end of which lever 20 is connected to a spring, 21, secured to a fixed part of the frame of the car. The strength of this spring determines amount of pressure with which the brakes are applied. It will thus be seen that the spring 21 will hold the levers 5, 19, and 20 parallel until the limit or desired maximum strain is reached, after which the end of lever 19 will pass the end of lever 20, and, swinging around into the position shown in dotted lines, permit the chain 7 to escape from the hook 8 without injuring any of the parts.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of the brake-levers 1, ties 2 3 7, and equalizing-levers 5 with brake-beams, substantially as and for the purposes set forth.

2. The combination, with the brake system 1 2 3 4 7, of the locking-pulleys 10 11, substantially as and for the purposes set forth.

3. The combination of the tie rod or chain 7, locking-pulleys 10 11, ratchet-wheel 12, and pawl 13, substantially as and for the purposes set forth.

4. The combination of the tie rod or chain 7, locking-pulleys 10 11, ratchet-wheel 12, pawl 13, and connecting rod or link 14 with the equalizing-levers 5, substantially as set forth, to apply the brakes automatically to a detached car.

5. In combination with the tie rods or chains 7, the levers 5, pivoted at one extremity to the frame of the car, compression connection 9 between said levers and the levers 20, pivoted to the free extremities of the levers 5 and controlled by a spring, substantially as and for the purposes set forth.

6. In combination with the tie rods or chains 7, the levers 5, having the hook-levers 19 pivoted thereto, as described, and a spring for controlling the relative movement of said levers 5 and 19, substantially as and for the purpose set forth.

7. In combination with the tie rods or chains 7, the pivoted levers 5, hook-levers 19, and levers 20, pivoted to said levers 5 and engaging with each other, as described, and the spring 21, connected to said levers 20 and to the frame of the car, as described.

EBENEZER BEALS.

Witnesses:

ROBERT HAWLEY,  
W. C. DEDRICK.