

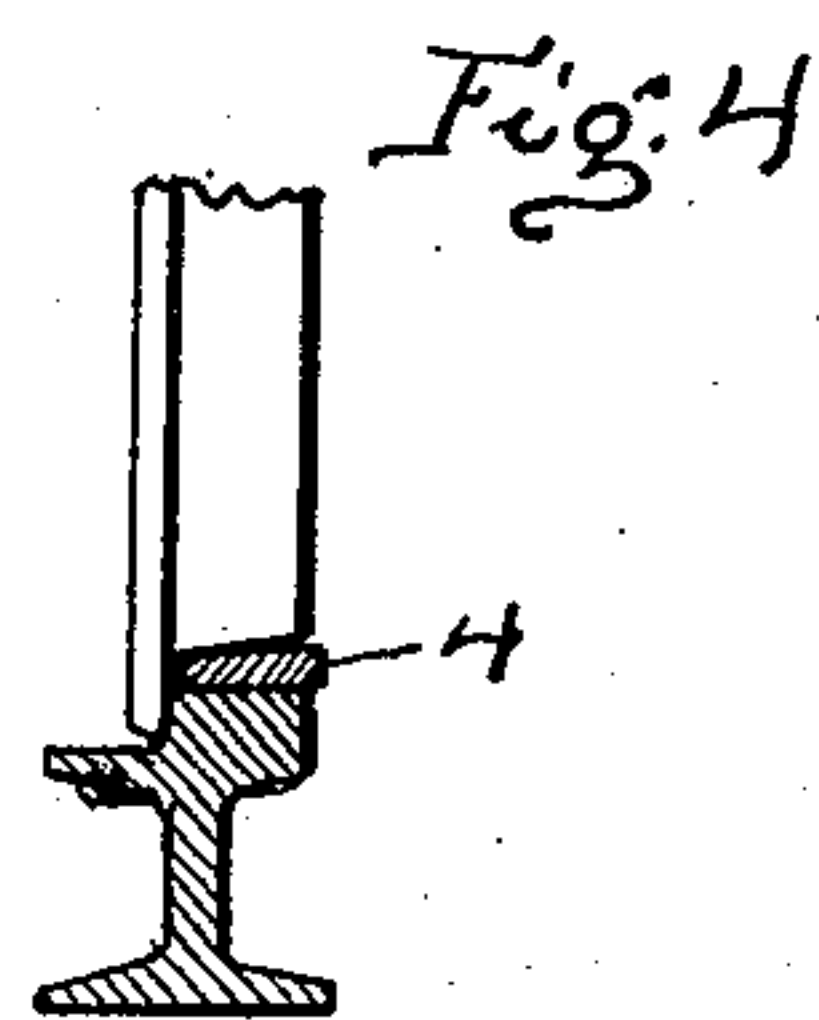
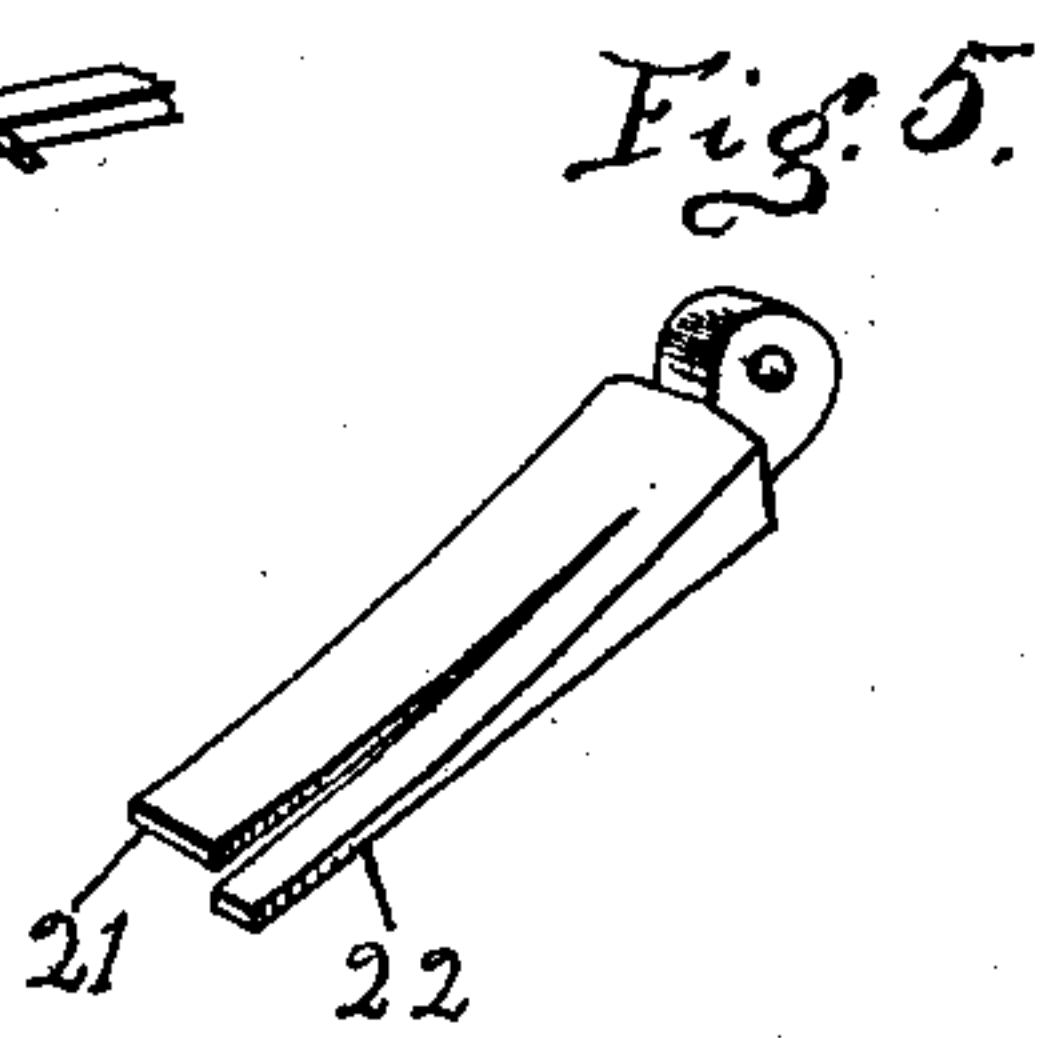
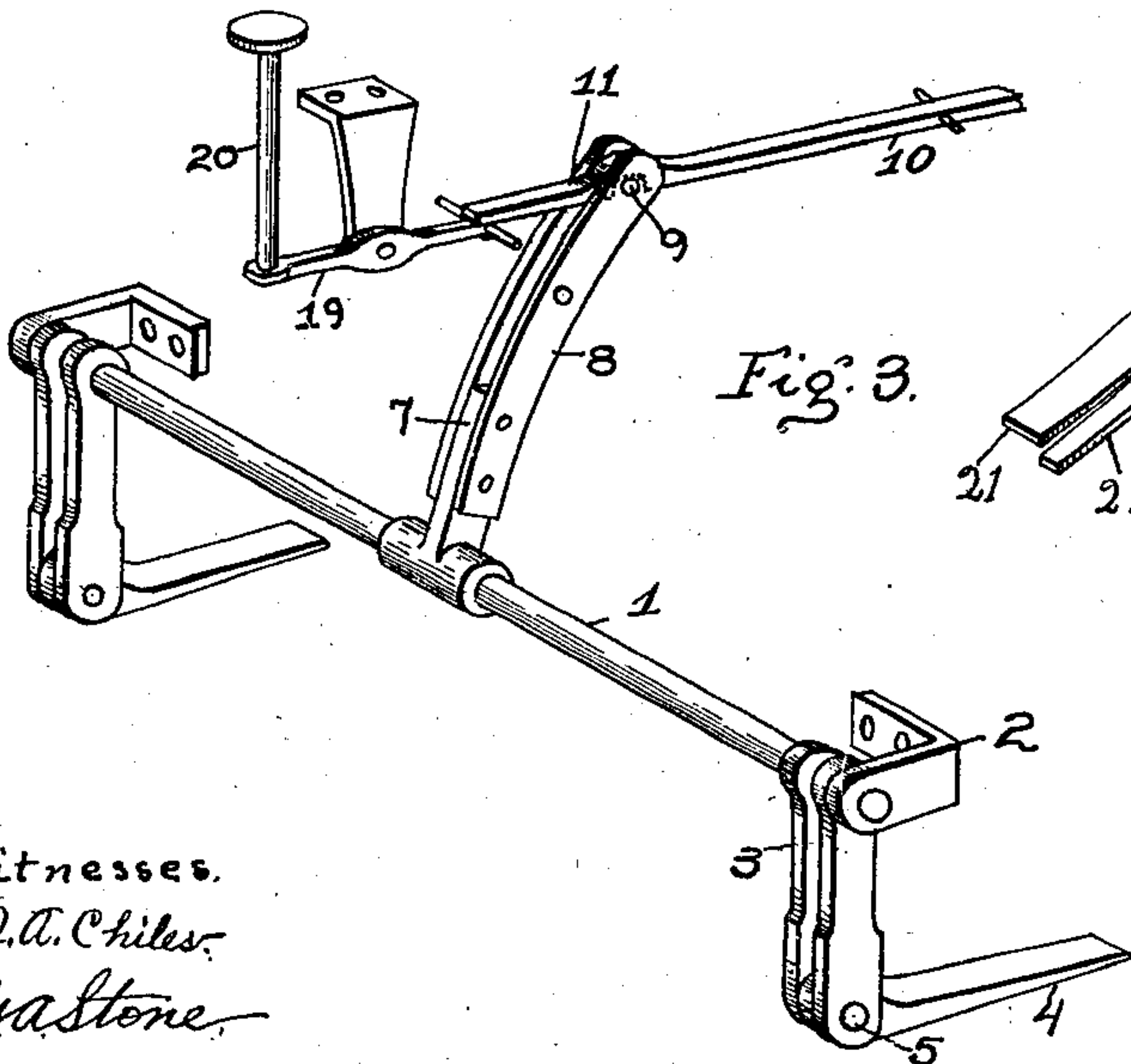
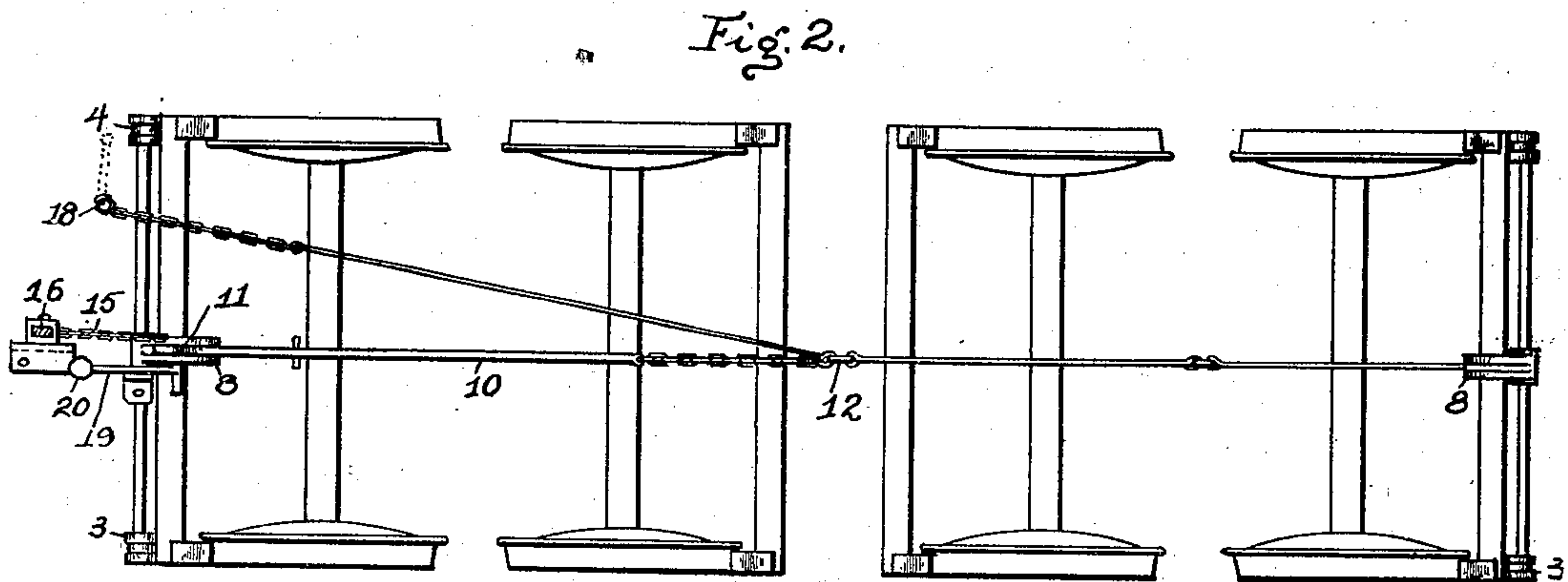
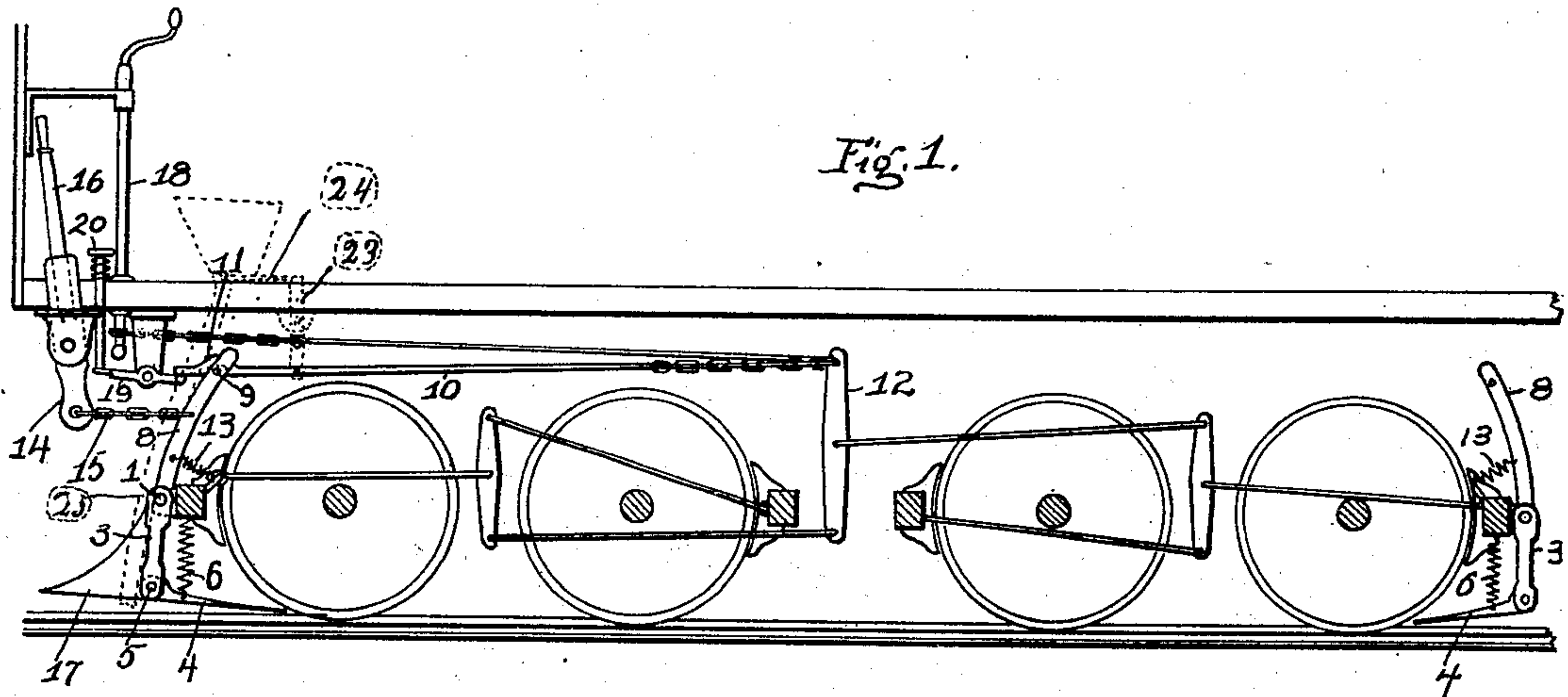
No. 708,885.

Patented Sept. 9, 1902.

W. W. HOPKINS.
EMERGENCY BRAKE.

(Application filed Nov. 27, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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EMERGENCY-BRAKE.

SPECIFICATION forming part of Letters Patent No. 708,885, dated September 9, 1902.

Application filed November 27, 1901. Serial No. 83,843. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WALLACE HOPKINS, a citizen of the United States, residing at St. Louis, Missouri, have invented a new and
5 useful Improvement in Emergency-Brakes, of which the following is a specification.

This invention relates to emergency-brakes; and it consists of the novel construction, combination, and arrangement of parts herein-
10 after shown, described, and claimed.

One object of this invention is to provide an improved emergency-brake in which the ordinary spindle-brake can be utilized in any case of emergency, the emergency devices
15 being connected with the said spindle-brake in such a way that they will not interfere with the use of the latter under ordinary conditions.

Another object of this invention is to provide
20 an emergency-brake that can be instantly and effectually applied by the motor-man when suddenly confronted with danger in order to stop the car in the shortest possible time and distance.

Another object is to provide an emergency-brake of the class mentioned, in combination with a suitable fender, which will be lowered automatically to the track whenever the emergency devices are brought into use.

30 A further object is to provide means for releasing the pressure of the emergency devices from the brakes after the car has been stopped, so that the parts may be restored to their normal positions without needless delay
35 or difficulty.

Other objects and advantages will appear from the following detailed description, reference being had to the accompanying drawings, in which—

40 Figure 1 is a sectional view of the car-trucks, showing the application of my invention. Fig. 2 is a plan view; Fig. 3, a perspective view of the rock-shaft which supports the runners. Fig. 4 shows the tread-plate under the wheel. Fig. 5 shows a different form of tread-plate.

In Fig. 1 I omit the various parts of the car-trucks and show the operating devices of the brakes, consisting of the levers, rods, and
50 other connections, not as they are arranged in use, but in the manner which best serves

to illustrate the operation of my invention. I base no claim on the arrangement of the brake-levers, rods, and the other parts usually found in all brakes, and hence do not wish
55 to be understood as limiting my invention to a brake having the connections arranged as shown. Neither does my invention displace the brakes now used; but, on the contrary, it is auxiliary thereto and can be used in
60 combination with any known or standard type of brake at present in use on street-cars. Therefore I will not describe in detail those parts which are known or which I do not
65 claim, but will only describe those parts which come within the scope of my invention.

My invention consists of the rock-shaft 1, which is supported in bearings, such as 2, secured either to the brake-beam, as shown, or to some part of the truck-frame. It is of
70 course immaterial where these bearings are mounted so long as the rock-shaft 1 is supported in front of the wheels, so that the runners or tread-plates can be brought onto the rails in front of the wheels at the required
75 time. The said rock-shaft extends transversely of the track, and near each end thereof are fixed one or more arms 3, and the distance between these arms at the two ends
80 of the rock-shaft is equal to the distance between the rails of the track. The said arms are preferably substantially vertical, as may be seen in Fig. 1, and their lower ends are only a short distance above the rails. As
85 shown, there are two of the said arms at each end of the rock-shaft; but, if found desirable, one may be omitted.

4 indicates the tread plates or runners carried by the arms 3 and extending in a substantially horizontal plane over the rails and
90 having their free ends under the wheels near the rails. (See Fig. 1.) These plates are of thin metal, very strong, and yet somewhat flexible, so that when they are placed upon the rails to form treads or runners for the wheels
95 they will bend more or less and conform partially to the round tread-surfaces of the wheels. The ends of the said plates are hinged to the arms 3 by means of the strong hinge-pins 5. The said plates may be upheld from
100 the rails by the springs 6, having their lower ends attached to the said plates and their

opposite ends connected to some part of the truck-frame or to the car.

7 indicates an arm which is rigidly connected to the rock-shaft 1, and attached to the said arm are two members 8, between the upper ends of which is a pin or cross-piece 9. A rod or other suitable connection 10 is provided with some form of hook 11, adapted to engage over the pin or cross-piece 9, and the opposite end of said connection is attached to one of the levers which controls the brakes of both trucks. I have shown the brakes as being controlled by a central lever 12; but it makes no difference whether this or some other form of operating-lever be used, so long as all the brakes can be applied by the movement of the connection 10. The front end of the connection 10 is located between the members 8 and is thereby prevented from becoming accidentally displaced.

A spring 13 connects the arm 7 and to some part of the truck-frame to hold the rock-shaft 1 stationary and prevent it from being accidentally turned to permit the tread-plates 4 to become caught under the wheels when such operation is not desired. However, I provide means for operating said rock-shaft in opposition to said spring, and the operating means referred to consists, preferably, of a socket 14, pivotally supported within an opening in the bottom of the car and having its lower end connected to the arm 7 or to the members 8 by means of a chain 15. A lever 16 fits within the socket, so that it can be operated to move the tread-plates onto the rails under the wheels in order to apply the brakes.

A fender 17 may be connected to the rock-shaft 1 in any desirable manner, and whenever the rock-shaft is turned to bring the tread-plates onto the rails the front end of the fender will be lowered to the track and will be held in such position as long as the tread-plates are under the wheels. Thus it is seen that the fender will serve as a guard to prevent objects from passing under the wheels, while at the same time the tread-plates sliding upon the rails and supporting the weight of the car will bring the latter to a quick stop. Both trucks are to be provided with the parts herein described, so that the car can be quickly stopped irrespective of the direction in which it is moving.

Whenever it is necessary or desirable from any cause to bring the car to a quick or sudden stop the motorman engages the lever 16 and operates the same, drawing the chain 15 and the upper end of the arm 7 and the members 8 forwardly, as is manifest from the above description. This operation will turn the rock-shaft 1 and move the tread-plates against the wheels, so that the latter will roll upon the said tread-plates. This results in the rod or connection 10 being drawn forward, which instantly applies the brakes to the wheels by means of the usual connections and with sufficient force to absolutely stop

their rotation. The results of the above operation are the locking of the wheels in both trucks and the conversion of the tread-plates at the front of the car and of all the wheels in the trucks into runners, which slide along the rails, and the car will thereby be quickly stopped. From the time of the application of the brakes until it stops it will travel only a few feet. The fender 17 will positively hold all bodies of any appreciable size from under the wheels until the car stops.

To release the brakes after they have been applied by the emergency devices described, the motorman operates the brake-spindle 18 to draw taut the connections between it and the lever 12 in order to remove the pressure or strain from the connection 10. A T-shaped lever 19 has one end under the front end of the connection 10, and a pin 20 extends through an opening in the bottom of the car and rests on the opposite end of the said lever. After the pressure has been transferred to the spindle 18 and its connections the pin 20 can be pressed down to operate the lever 19 and raise the hook 11 from over the pin or cross-piece 9. The spindle 18 can then be released in the usual way, after which the brakes are free, and the car can be backed off of the tread-plates 4, and the emergency devices are automatically restored to their normal positions.

In Fig. 5 I show a different form of tread-plate, comprising the part 21, which rests upon the head of the rail when the parts are in operative position, and the part 22, which rests upon the flange of the rail and which also forms a guard to prevent the lateral movement of the tread-plates when under the wheels. The said part 22 will also increase the frictional surface and will obtain full benefit of the grit, &c., which is invariably upon the rail-flange, and therefore serves a double function. If desirable, the part 22 may be made of sufficient thickness to receive the flanges of the wheel, and thereby support the front end of the car on the flanges of the rails where the rails have flanges, and if the rails are not provided with flanges then the part 22 will be pushed down and the car-wheels will rest directly upon the parts 21, which bear upon the heads of the rails. In either instance the parts 22 serve as guards to prevent lateral movement or displacement of the tread-plates.

As an adjunct to my improved brake I provide means for sanding the rails, which means may consist of a lever or other suitable connection 23, having one end connected to the connection 10 and the opposite end connected to the valve 24, which controls the outlets of the sand-box. When the brakes are applied by the emergency devices, the valve 24 will be opened and the sand will pass from the sand-box through the passages 25 onto the rails in front of the tread-plates.

My improved emergency-brake is applicable for use with any form of brake at pres-

ent in use and does not necessitate the operation or removal of any of the essential parts of the brake. The brake can be used in the usual way without disturbing the emergency devices comprising my invention.

I claim—

1. The combination with a brake, of tread-plates, means for moving them into contact with the rails, so that the wheels will move upon them, and connections between the tread-plates and the brake mechanism; whereby all the brakes on the car will be applied when the wheels move onto any of said plates, substantially as specified.

2. The combination with a brake, of tread-plates in each truck, means for moving the plates in the front truck onto the rails so that the wheels will travel upon them, and lever connections between said plates and the brake mechanism so that all the brakes on the car will be applied whenever the wheels pass onto any of said plates, substantially as specified.

3. The combination with a brake, of tread-plates, means whereby said plates can be placed upon the rails to form treads for the wheels, means for applying the brakes when the wheels pass onto said plates; and means for releasing the brakes while the wheels are yet upon the plates, substantially as specified.

4. The combination with a brake, of tread-plates, means for placing certain of said plates upon the rails so that the wheels will pass upon them, connections between the tread-plates and the brake mechanism, and means for operating said connections to set all the brakes when the wheels pass onto any of the tread-plates, substantially as specified.

5. The combination with a brake, of tread-plates in front of the forward truck, a rock-

shaft for supporting said tread-plates, means for operating the rock-shaft to move the tread-plates onto the rails to form treads for the wheels and connections between the rock-shaft, and the brake mechanism, whereby, all the brakes will be set whenever the wheels pass onto the said tread-plates, substantially as specified.

6. The combination with a brake, of thin metallic tread-plates, a rock-shaft supporting said tread-plates, means for operating the rock-shaft to move the tread-plates onto the rails to form treads for the wheels and connections leading from the rock-shaft to the brake mechanism, whereby, all the brakes will be set whenever the wheels pass onto the said tread-plates, substantially as specified.

7. The combination with a brake, of tread-plates means for holding them off of the rails and away from the wheels, means for placing certain of them upon the rails to form treads for the wheels, and means for setting all the brakes on the car when the wheels pass onto the tread-plates, substantially as specified.

8. In a car the combination with the usual brake, of a fender and tread-plates, means for placing the tread-plates upon the rails to form treads or runners for the wheels, means for setting all the brakes on the car when the wheels pass onto said plates and means for lowering the fender to the track and holding it there when the wheels pass onto the tread-plates, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM WALLACE HOPKINS.

Witnesses:

J. D. RIPPEY,

J. A. CHILES.