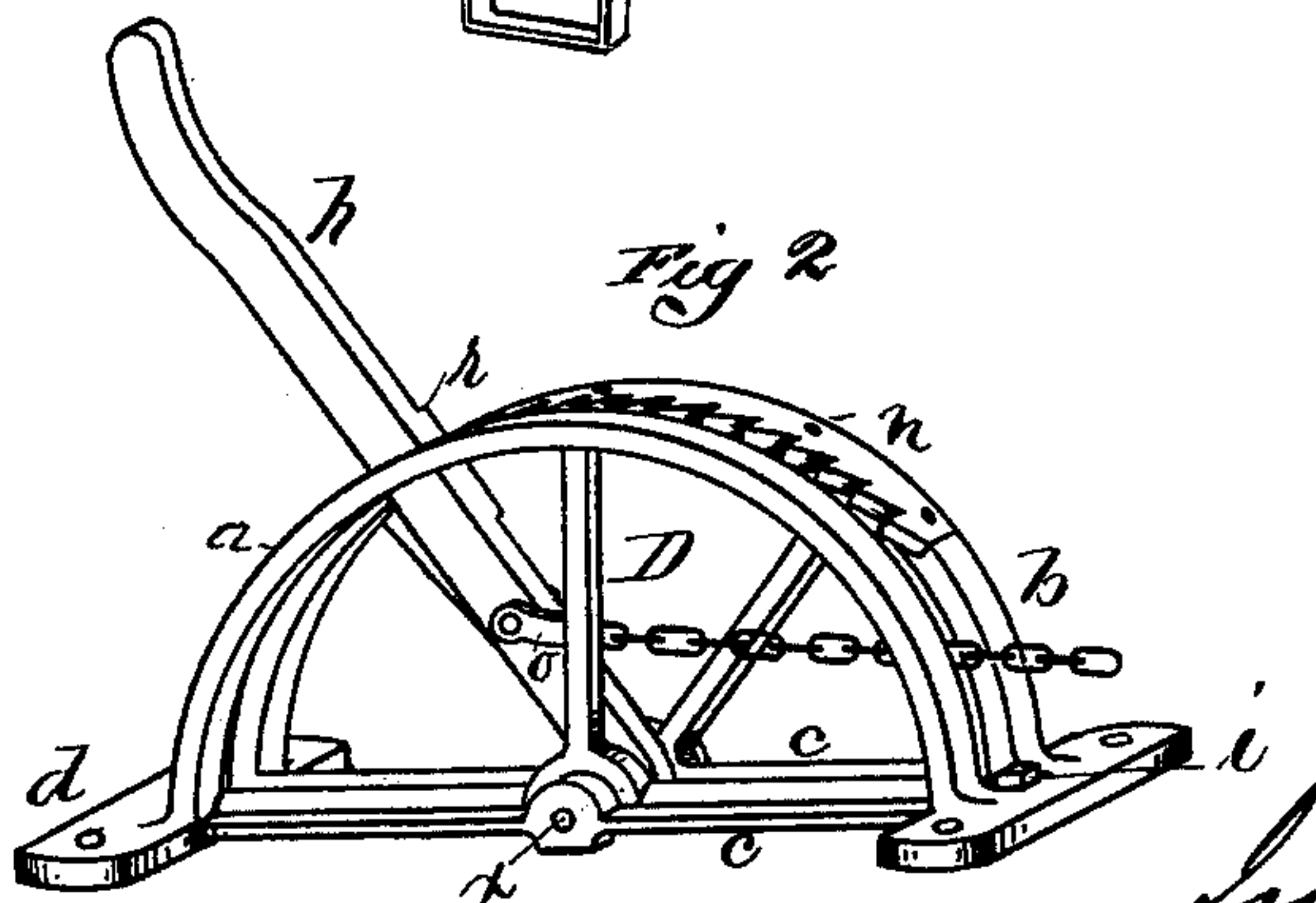
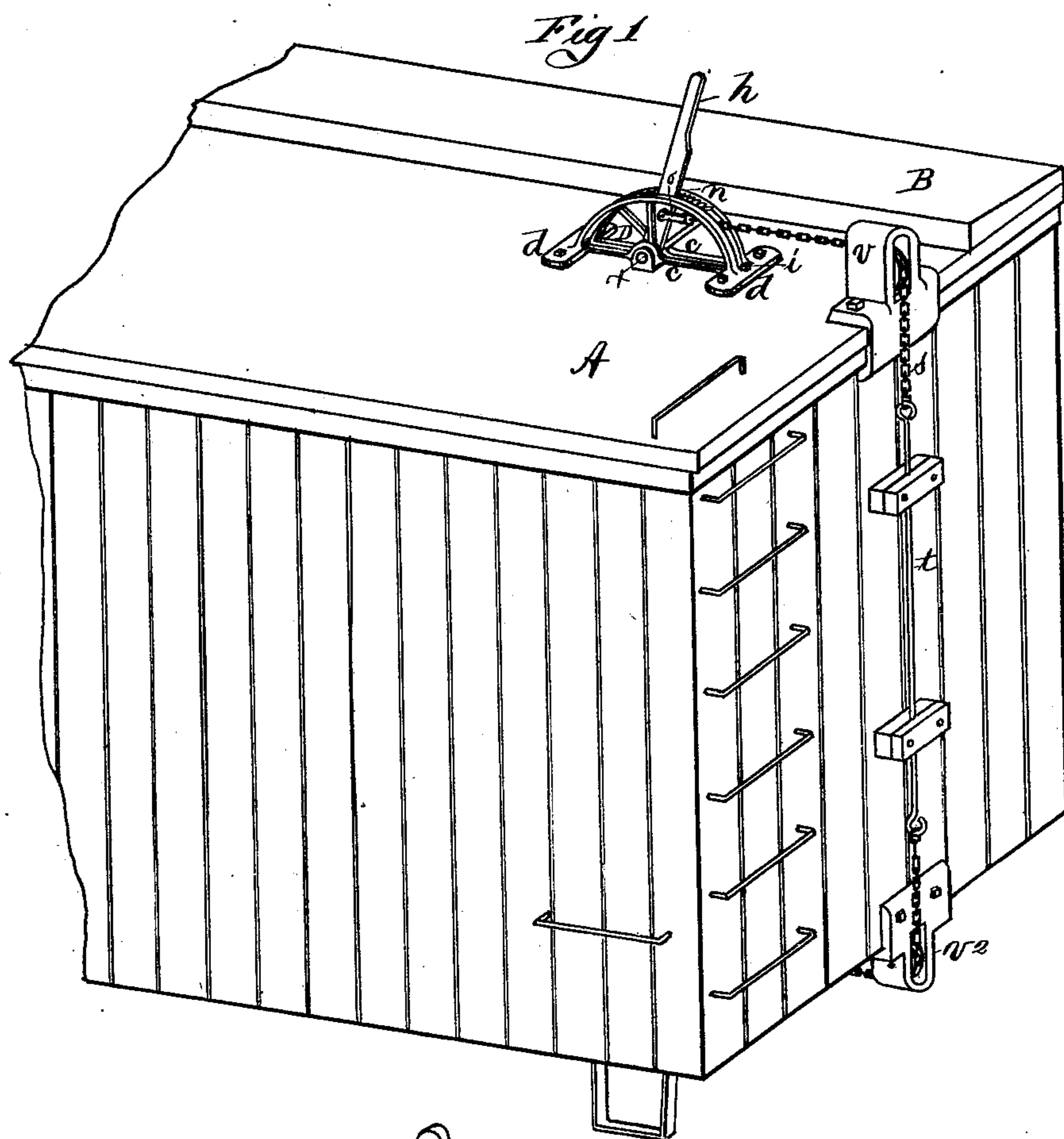


(No Model.)

F. W. CHAFFEE.  
Car Brake Mechanism.

No. 231,271.

Patented Aug. 17, 1880.



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# UNITED STATES PATENT OFFICE.

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## CAR-BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 231,271, dated August 17, 1880.

Application filed May 15, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK W. CHAFFEE, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Car-Brake-Operating Mechanism, of which the following is a specification.

My invention relates principally to that class of brake-operating devices used on freight-cars, and the object thereof is to provide an improved brake-lever frame to support and cooperate with a brake-lever to a railway-car, located on the roof of the car and adapted to operate a chain connected with the brakes beneath said car.

I attain the above-named objects by the construction and devices illustrated in the accompanying drawings, in which—

Figure 1 is a portion of one end of a freight-car upon which are shown my improved brake-operating devices. Fig. 2 is a perspective view of said devices detached from the car.

Like letters refer to like parts in the several figures.

A is the end portion of a longitudinal half-section of a car, and B is the usual foot-board running from end to end thereof. D is the brake-lever frame, constructed preferably of metal, and consisting of two semicircular portions, *a b*, provided with a suitable base, substantially as shown, consisting of two horizontal bars, *c c*, and two end flanges, *d d*, and in one of flanges *d* is located an elastic cushion, *i*. The semicircular portions *a b* and the horizontal bars *c c* are separated from each other sufficiently to permit of operating a brake-lever, *h*, between them. Said brake-lever is pivoted between the horizontal bars *c c*, centrally between the end flanges, *d d*, as shown, by its lower end, and is provided with a chain-strap, *o*, pivoted to it, as shown, just above its fulcrum-point *x*.

One of the semicircular portions, *b*, is provided with a ratchet-plate, *n*, secured flatly thereupon and having its ratchet-teeth formed in the edge thereof next to lever *h*, and projecting somewhat into the opening between the portions *a* and *b* and beyond the inner face of the part *b*. Instead of adapting the part *b* to have the ratchet-plate *n* secured to it as a separate piece, said part *b* may be made with

the ratchet-teeth formed upon it, as described; but the best practical ends are served by making said plate of steel and securing it to the brake-frame, as shown and described. 55

The ratchet-teeth on the edge of plate *n* are cut under somewhat, for purposes hereinafter described. That part of lever *h* which in swinging upon its pivot moves before the ratchet-teeth on plate *n* is provided with an outwardly-projecting lip, *r*, adapted to engage firmly and surely with the teeth on plate *n*. 60

Lever *h* is pivoted somewhat loosely between the bars *c c*, so as to allow of a certain degree of lateral play between the edge of the teeth on plate *n* and the inner face of the semicircular portion *a*, so that when lever *h* swings against the said face of the latter the edge of lip *r* swings clear of the ends of said teeth; but said lever may be so much inclined toward the inner face of the semicircular portion *b* as to cause lip *r* to firmly engage with said teeth. 70

The above-described brake-lever frame D and brake-lever, constructed and arranged as above described, I bolt firmly to the roof of car A, to one side of the foot-board B, as shown in Fig. 1, and I attach the brake-chain *s* to the pivoted strap *o* on lever *h*, running it from thence through a roller-block, *v*, at the end of the car, and thence downward, attaching a hooked rod, *t*, to the end of it, to the lower end of which is hooked a chain, as shown, which runs over a roller-block, *v*<sup>2</sup>, and thence to the brake-shoe frame under the car. 80

In case of excessive wear of the brake-shoes or other parts, whereby the connection between lever *h* and the brake-shoe frame would need to be shortened to cause the brake to operate properly, when lever *h* is about in the position seen in Fig. 2, chain *s*, or the lower chain, may be shortened link by link, by means of the hooks on either end of rod *t*. 85 90

The operation of my brake devices is as follows, viz: The brakeman, in applying the brakes, simply grasps the upper end of lever *h* and draws it from the end of the car, causing lip *r* on said lever to slide over the ends of the ratchet-teeth on plate *n*, bringing said lever over to about the position shown in Fig. 2, or far enough to cause the brakes to come to a firm bearing against the wheels operated by the chain-and-rod connection above described. 100



The most advantageous and the proper position for lever *h* to stand in when the brakes are free is about that shown in Fig. 1, as it can then be most quickly operated in case of emergency, although it may be left lying down, with its end toward the end of the car; but when its end is lifted up and the lever begins to draw the brakes against the car-wheels it should be so adjusted as to begin to draw on chain *s* when said lever passes a perpendicular position. It will be seen now that as lever *h* is moved in the direction seen in Fig. 2 its leverage is constantly increasing, by reason of the gradual approach of the point on lever *h*, where the chain *s* is attached to it by strap *o*, to the same plane of the lever-fulcrum at *r*, and thus the lever-power increases as the pressure of the brakes upon the wheels becomes greater, and a considerably greater brake-force can be effectively brought to bear from a like expenditure of power than can be obtained by the use of the ordinary wheel and shaft.

When lever *h* has been carried over, as above described, so as to bring the brakes sufficiently firm against the wheels, it is carried laterally against the teeth on plate *n*, causing lip *r* on lever *h* to engage with said teeth and hold the lever and the brakes in a set position.

When it becomes necessary to disengage the brakes lever *h* is suddenly driven sidewise toward the portion *a* of the frame, clearing lip *r* from said teeth and allowing the strain upon the brake-chain to draw said lever freely toward the end of the car, and in swinging over it strikes against the elastic cushion *i*, and comes to a position of rest, and from that position the brakeman may, at his leisure, set it up to about the position shown in Fig. 1, ready for quickly applying the brakes again. As before remarked, the teeth on plate *n* are some-

what cut under, and the shape of the edge of lip *r* is made to conform to such a formation of the teeth, so that when lever *h* is resting in the position shown in Fig. 1, the jar and tremble of the moving car will not disengage the lever from the teeth, and when the lever has the strain of the brake-chain upon it it will not accidentally become disengaged.

It will be seen that it is nearly if not quite impossible for any injury to result to the brakeman in case of the breakage of any of the brake-operating devices just described, whereas frequent and serious accidents result from the sudden breakage of either the brake-wheel, rod, or chain in common use, causing the operator to be precipitated between the cars or upon the ground. In operating my devices, the result of any breakage caused by the action of the brakeman upon lever *h* would be to cause him to be thrown away from the end of the car and upon the roof of it, and one single quick motion of the lever applies the brakes effectually.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, with the brakes and brake-chains of a railway-car, of the frame *D*, consisting of the semicircular portion *a*, the semicircular portion *b*, provided with the ratchet-plate *n*, the two base-bars *c c*, united at their ends by the flanges *d d*, one of which is provided with an elastic cushion, *i*, of the lever *h*, provided with the lip *r*, and the chain-strap *o*, pivoted between said bars *c c*, substantially as and for the purpose set forth.

FRANK W. CHAFFEE.

In presence of—

WM. H. CHAPIN,  
B. F. ADAMS.