

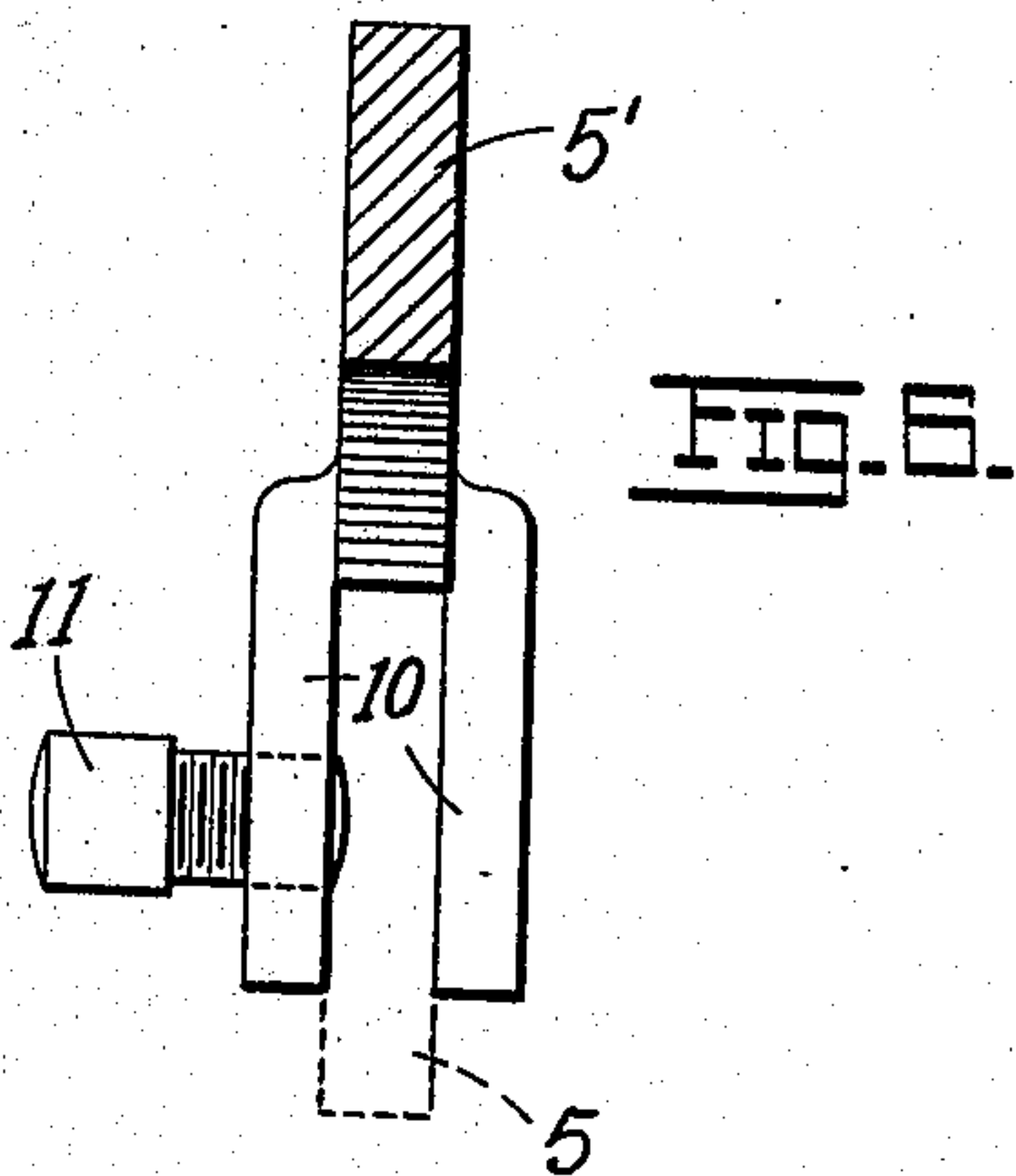
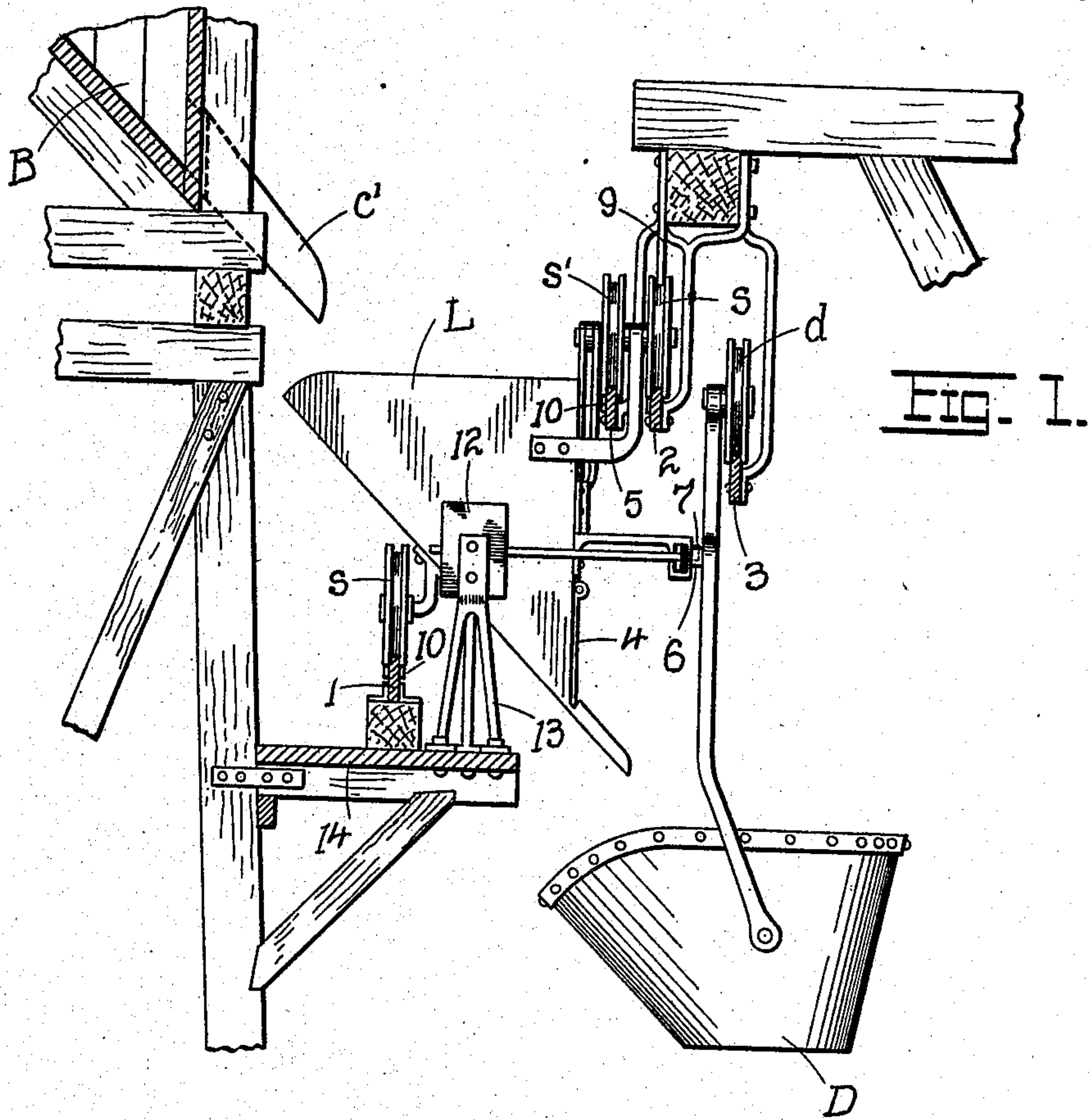
No. 885,117.

PATENTED APR. 21, 1908.

F. B. WHITMORE.
BUCKET LOADER FOR WIRE ROPE TRAMWAYS.

APPLICATION FILED JULY 15, 1907.

2 SHEETS—SHEET 1.



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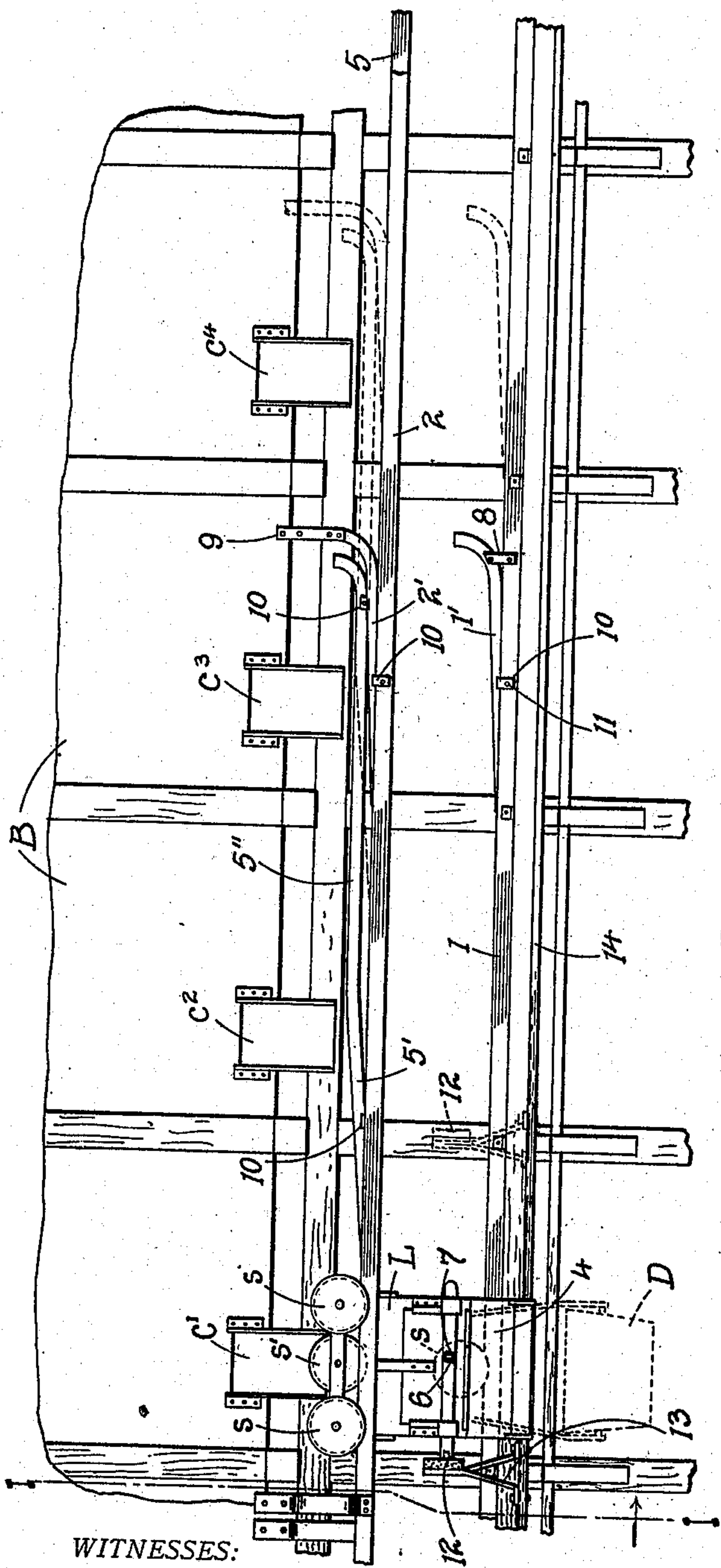
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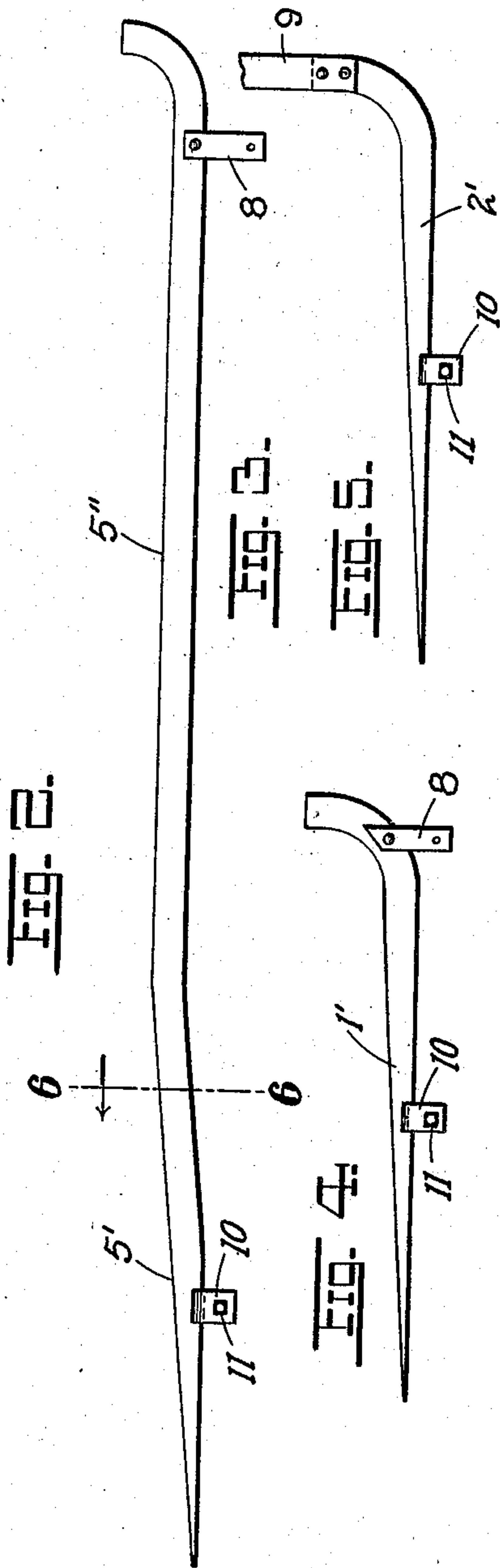
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2 SHEETS—SHEET 2.



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BUCKET-LOADER FOR WIRE-ROPE TRAMWAYS.

No. 885,117.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed July 15, 1907. Serial No. 383,914.

To all whom it may concern:

Be it known that I, FREDERICK B. WHITMORE, citizen of the United States, residing at Alta, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Bucket-Loaders for Wire-Rope Tramways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in bucket-loaders for wire-rope tramways; and it consists in the novel features of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is an end elevation of the loader with parts in section; Fig. 2 is a front elevation, with bucket shown dotted; Fig. 3 is a side elevation of the trip-rail detached; Fig. 4 is a side elevation of the lower releasing rail detached; Fig. 5 is a side elevation of the upper releasing rail detached; and Fig. 6 is a cross section on the line 6—6 of Fig. 3.

The present invention is a specific improvement on the bucket-loader forming the subject matter of U. S. Letters Patent 685,387, dated October 29, 1901, and while contemplating the several objects of the patented device, the present improvement provides means for permitting a single loader to receive the material from any one of a series of chutes as circumstances may require.

In the patented device it will be observed, the loading-hopper can not load from more than one chute at a bin, because when once loaded it is discharged into the traveling bucket at a fixed distance from such chute, such an arrangement necessitating a loader for each chute. As well understood, the contents of the loader are discharged into the bucket upon release of the loader door actuated by an inclined trip-rail imparting a vertical movement to a roller attached to the door, the release being effected within a given distance of the conjoint travel of the loader and bucket; and it is after such discharge has taken place that the loader is released from the bucket by an inclined section of rail known as the loader-rail or releasing rail, which loader or releasing rail elevates the loader sufficiently above the bucket to permit the latter to travel independently to any predetermined point to which the bucketful of material shall be hauled, the loader in the meantime returning to its original posi-

tion in front of the chute from which it is to receive its next load. This load is in turn discharged into the bucket on its next trip, and so on indefinitely.

As stated above, the points at which the trip-rail releases the loader-door, and at which the loader is released from the bucket, occupy a fixed relation to the position of the feed-chute, so that a given loader is identified with a corresponding chute, and the same loader could not receive the material of any succeeding chute, since by the time such chute was reached, the loader would no longer be available to receive a charge unless the releasing devices were shifted to correspond to the positions which they must occupy relatively to such chute to permit the loader to fill for purposes of a subsequent discharge.

Under my invention one loader can operate upon any chute, the only requirement being that the trip-rail and loader-rails be shifted to proper position to permit the loader to fill from any given chute, and subsequently discharge into the bucket with which it coöperates. Since my improvement is limited to this feature, no attempt will herein be made to enter into a description of details already fully shown and described in the patent referred to, and which have no bearing on the specific features to which the present invention is directed.

The invention may be described as follows:

Referring to the drawings, B, represents a bin and c' , c^2 , c^3 , c^4 , a series of chutes adapted to deliver the ore or other material into the hopper or loader L. As fully described in the patent aforesaid the loader or hopper L travels in front of the bin on tracks 1, 2, being provided with proper sheaves s for the purpose. The tracks 1, 2, which may be denominated the loader-rails are provided with raised or inclined sections 1', 2' respectively, to effect a release of the hopper from the traveling bucket D after the contents of the hopper have been dumped into the said bucket. These raised or inclined rail-sections 1', 2' are herein termed releasing-rails, and while their purpose is identical with the corresponding releasing rail-sections of the patent, those here shown are adjustable along the main loader-rails for a purpose already indicated in the statement of the general objects of the present invention. Like in the patented construction the sheaves d of the bucket D pass over the stationary track

3. The sheave or trip-wheel s' secured to the upper section of the hinged door 4 runs on the track or rail 5 provided with an adjustable trip-rail $5'$, $5''$ inclined to and raised above the rail 5, the inclined and raised portions of $5'$, $5''$ being of a length sufficient to insure the discharge of the contents of the loader while the wheel s' is passing over them.

The foregoing features, and other features not herein referred to, such, for example, as the mechanism by which the traveling bucket picks up the loader, how the loader returns to its original position in front of the chute delivering into the same, and the like are well known and fully described in the patent aforesaid, and a review of these features would be superfluous and is unnecessary. As fully understood from said patent, the door 4 is opened to effect discharge of the loader contents, by the wheel s' passing over the trip-rail $5'$, $5''$, and after the contents have been discharged into the bucket D, the loader is released from the bucket by effecting disengagement between the arm 6 of the bucket and the lug 7 of the loader, the lug passing off the arm as the loader traverses the releasing-rails $1'$ and $2'$, said rails lifting the lug 7 out of contact with the arm, as fully understood in the patented construction. It will thus be seen that the loader or hopper and the bucket travel conjointly for a given distance after the loader has been filled with ore from any chute, a portion of this distance being consumed in discharging the contents of the loader into the bucket (a portion represented by the traverse of the trip-wheel s' over the rail $5'$, $5''$), and another portion in disengaging the now empty loader from the bucket (represented by the traverse of the loader over the releasing rails $1'$, $2'$). To accomplish these results a certain interval of time is consumed, and therefore the rails $1'$, $2'$, and $5'$, $5''$, must bear a definite relation in point of position to any given chute. Once a loader is filled from a chute it almost immediately begins to discharge into the bucket; and were the trip-rails and releasing rails fixed or permanent in position relatively to any given chute, it at once becomes apparent that a special loader and a corresponding trip and releasing rails would have to be improvised to operate in conjunction with such chute. This is because (referring to Fig. 2) a loader filling for example from chute c' could not fill from chute c^2 because in the latter position its door 4 would be held open by the trip-rail $5'$, $5''$, and the ore would run out of the loader as fast as it would come in; and were the loader in front of chute c^3 , the chances are the loader would be released from its bucket and the latter would travel on perfectly empty. So that under the patent referred to, a single loader is not available to operate in conjunction with more than one chute at a bin.

My improvement contemplates the adjustment of the releasing rails along the loader rails relatively to any given chute, the trip-rail being subsequently moved to the same relative position, when the loader is ready to work on this particular chute. In practice the lower releasing rail rests on the lower loader rail, its upper end being supported on a strut 8; the upper end of the trip-rail may be provided with a similar strut 8. The upper releasing rail has its upper end suspended from a hanger 9 secured in any available position on the main timber frame. Each releasing rail and trip-rail is prevented against lateral displacement by flanged sides 10, and against upward displacement by set-screws 11, though the rails may be shifted longitudinally at any time and at a moment's notice along the rails by which they are supported. The trip rail $5'$, $5''$, may of course be secured in position when once shifted to its proper place, in any mechanical manner, such details being within the skill of an ordinary mechanic. So that by adjusting the releasing and trip-rails as indicated a single loader may operate in conjunction with any number of chutes at a bin. Obviously, the bumper 12 carried by the bracket 13 must be moved to proper position on the platform 14, to arrest the loader in front of the chute at which it is designed to stop.

Having described my invention what I claim is:

1. In combination with a series of chutes, a movable loader operating in conjunction therewith, a traveling bucket moving conjointly with the loader upon the filling of the latter, and suitable devices for effecting a discharge of the loader contents into the bucket, and a release of the loader from the bucket during such conjoint movement, said devices being adjustable relatively to the several chutes to permit the filling of the loader from any given chute, substantially as set forth.

2. In combination with a series of chutes, a movable loader operating in conjunction therewith, a discharge-door for the loader, a traveling bucket moving conjointly with the loader upon the filling of the latter, a trip-rail for releasing the door of the loader, releasing rails for releasing the loader from the bucket upon the completion of the discharge of the contents of the loader into the bucket, said releasing rails and trip-rail being adjustable relatively to the several chutes to permit the filling of the loader from any given chute, substantially as set forth.

3. In combination with a rail, a loader or hopper traveling back and forth on said rail, a traveling bucket operating in conjunction with the loader, means for coupling the bucket to the loader for a movement of the latter in one direction, a door for the loader, a trip-rail for releasing the door and allowing

the contents of the loader to discharge into the bucket, and releasing rails adjustable as to position for effecting a release of the loader from the bucket at any predetermined point of travel of said loader, substantially as set forth.

4. In combination with a rail, a loader traveling back and forth on said rail, a traveling bucket operating in conjunction with the loader, means for coupling the bucket to the loader for a movement of the latter in one direction, a door for the loader,

a trip-rail for releasing the door, the trip-rail being adjustable as to position whereby the point of release of said door may be varied at the will of the operator, substantially as set forth. 15

In testimony whereof I affix my signature, in presence of two witnesses.

FREDERICK B. WHITMORE.

Witnesses:

WM. P. MINOR,
M. A. GERMO.