

G. M. BENNETT.

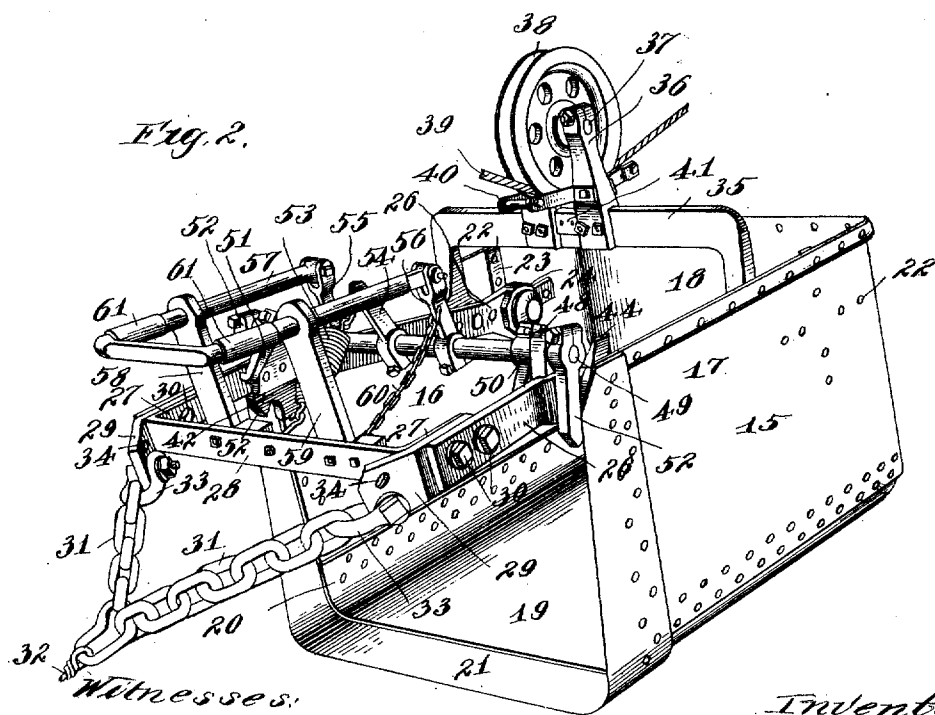
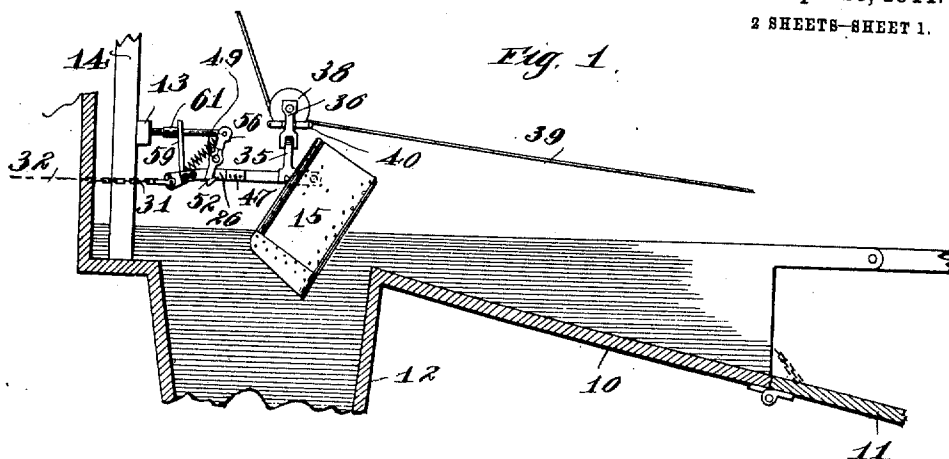
BUCKET.

APPLICATION FILED MAR. 16, 1909.

989,688.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

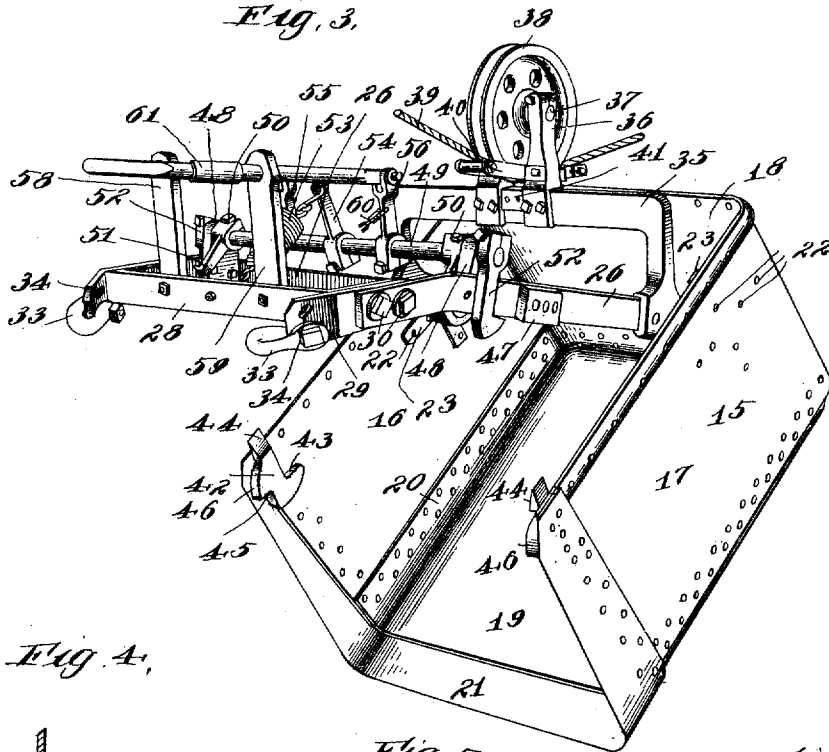


Fig. 4.

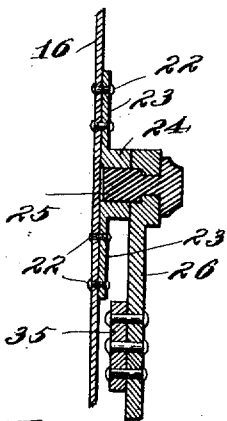


Fig. 5.

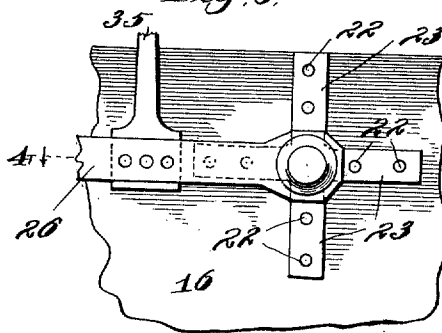
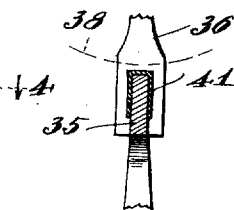


Fig. 6.



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BUCKET.

989,688.

Specification of Letters Patent.

Patented Apr. 18, 1911.

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To all whom it may concern:

Be it known that I, GEORGE M. BENNETT, a subject of the King of Great Britain, residing at Kenosha, county of Kenosha, and State of Wisconsin, have invented certain new and useful Improvements in Buckets, of which the following is a specification.

My invention pertains to improvements in buckets in general, but relates more particularly to devices of this class which are used for the unloading and elevation of fuel, coal or the like as from an ordinary railway car. Such a bucket is frequently supported by a suitable cable and is brought into the loaded car, from which it picks up its load as it is drawn along, carrying the same to the proper dumping or discharge point. Railway gondola cars are now being built to a considerable extent with inside instead of outside stakes, and the provision of a bucket of this kind suitable for use with the new style of cars is one aim and object of this invention. Obviously, a bucket or shovel of this character should present as smooth an exterior as possible so that it will not damage or be injured by the internal upright stakes or posts of the car, and accordingly in my novel and improved form of bucket the supporting, bail, and catch devices are disposed within the bucket proper. Since in an appliance of this character there is considerable wear and friction on the bottom plate, I propose to construct my improved bucket of only two metal plates, one comparatively thin forming the sides and end or back of the appliance, while the other, constituting the bottom and being readily replaced, forms only the bottom, having upturned flanges for attachment to the side and end walls.

Various other features of novelty and improvement will become apparent from a consideration of the following description of a preferred embodiment of the invention, taken in connection with the accompanying drawings, forming a part of this specification, in the various views of which like reference characters refer to the same parts.

In the drawings—Figure 1 is a sectional view showing the inclined track or platform up which the bucket is adapted to travel, a hopper into which the load of the bucket is dropped, and the bucket itself suspended on a supporting cable; Fig. 2 is a perspective view of the bucket with the internal frame and shovel proper locked together; Fig. 3 is

a similar view with the parts unlocked; Fig. 4 is a horizontal section on line 4—4 of Fig. 5; Fig. 5 is a fragmentary elevation on the inside of the bucket, illustrating the pivotal or hinge attachment of one of the frame side bars to the side plate; and Fig. 6 is a section through the bail or supporting cross-bar of the frame, illustrating the hardened steel protection clip adapted to shield the bail or cross-bar from the wear of the supporting cable.

Referring to Fig. 1, it will be noticed that the inclined platform 10 has hinged at its lower end an extension apron 11 adapted to project down into the car to be unloaded, a hopper 12 being disposed at the top end of the platform, as is clearly indicated, with a suitably-supported abutment block 13 mounted on upright beams 14 at the side of the hopper remote from the platform.

The bucket proper is made of only two plates, one characterized 15 on the drawings being of U-shape and forming the two sides 16 and 17 and the back 18 of the open-mouthed shovel. This plate may be comparatively thin, but, owing to the wear which occurs on the plate constituting the bottom of the bucket, I make such plate 19 somewhat thicker and provide the same on three edges with an upturned marginal flange 20 united to the bottom portions of the side and end walls by suitable fastening means such as rivets. The front open mouth of this bucket is equipped with a finishing strip or plate 21, suitably connected to the other plates as illustrated. On the inner face of each side wall near the back of the bucket and rearward of the center of gravity of the device I fasten, by means of rivets 22, the radiating arms 23 of a cylindrical bearing 24 adapted to accommodate the stub shaft 25 suitably secured to and projecting outwardly from the rear end of one of the side arms 26, these connections with the sides of the bucket forming pivots for the entire frame, the parts of which are described hereinafter. At their front laterally-offset ends the two side arms 26 are bolted to the inturned ends 27 of an end cross-bar 28, suitable lugs 29 being interposed between the parts, as illustrated, the securing bolts 30 passing through all three parts. As is clearly illustrated, the front protruding portions of these lugs 29 are bent somewhat inwardly toward one another to conform to

the line of draft applied thereto by the diverging chains 31 connected at their front ends to a suitable cable 32. As is indicated, these chains are attached by means of clevises 5 33 to the ears, each of the latter being provided with a plurality of apertures 34 at different heights for the accommodation of the clevis pin, or bolt, whereby the line of draft on the ears may be varied as to its height. In an appliance of this kind there is considerable wear and tear on this part of the device, and by making these ears detachable they may be readily replaced when worn out, it being merely necessary to detach the chains and temporarily take out the fastening bolts 30, a pair of which are used in the present instance to maintain each ear in position.

Near their rear ends, but in front of their pivotal or hinge connections with the bucket side walls, the side-bars 26 are cross-connected by a U-shaped yoke, bail, or supporting cross-bar 35 equipped with upstanding bearings 36 for the supporting shaft 37 of a sheave 38 adapted to travel on a supporting cable 39. In order to prevent such cable from leaving the sheave, any suitable style or form of retaining device 40 may be employed, and to prevent such cable from wearing or damaging the bail or cross-bar 35 I supply the same between the standards or bearings 36 with a U-shaped hardened protecting clip 41, which may be readily held in place by any suitable means such as rivets 35 or the like.

As will be readily understood by those skilled in the art, by proper manipulation of the forward end of the cable 39 the bucket may be caused to travel down into the car to obtain its next load, being pulled up the apron and platform in its loaded condition by the cable 32 and attached chains. During such forward travel the bucket is ordinarily supported by the apron and platform rather than by the top cable 39, the function of which is to carry the bucket free from the platform during its descent or backward movement.

At the tops of the front ends of the side walls 16 and 17 and on their inner faces are fastened a pair of lock members 42, each having an abutment or stop shoulder 43, a top bevel surface 44, and a lock or catch portion 45 with a beveled or inclined surface 46 leading thereto. Coöperating with the stop or abutment portions 43 of these lock members I provide on the outer face of each side arm 26 a stop-block 47 which, as will be readily understood, by coöperation with the shoulder 43 limits the descent of the frame with relation to the bucket. The inclined or beveled faces 44 of such members operate by co-action with the outer faces of the side arms 26 to direct the hinged frame into proper relation with respect to these lock

members, preventing displacement and improper coöperation between the parts of the device.

The frame composed of the side and end bars 26 and 28 has mounted thereon a pair of bearings 48 accommodating a transversely-disposed catch shaft 49, supplied just inside of the bearings with a pair of limiting or stop arms 50, each having a transversely-disposed end 51 co-acting with the bearing to limit and restrict turning of the catch shaft in one direction. At its two ends this shaft has rigidly fastened thereto the pair of catches 52 adapted to coöperate with the locks 45 to lock the frame and bucket together, the catch shaft and catches carried thereby being normally rocked into operative position, that is with the stops 51 against the bearings, by a coil contractile spring 53 connected at one end to the cross-bar or end strip 28 and at its other end to an arm 54 substantially centrally-disposed of and rigidly fastened to the catch shaft.

In order to release the catches from the locking lugs when the bucket reaches proper dumping or discharging position, I fix to the catch shaft 49 a pair of upwardly-extended arms 55 and 56, the top ends of which are bifurcated and have pivoted thereto the ends of the parallel legs of a U-shaped releasing member or bar 57 slidable in a pair of bearings 58 and 59 secured to the front or end cross-bar 28. In order to limit the turning of this catch shaft and the catches during their release from the locking lugs or members 42, I connect a limiting or stop chain 60 to the arm 56, the other end of such chain being fastened to the cross-bar 28. To assist this chain in performing its function, I mount on the legs 57 of the U-shaped release bar between the bearings 58 and 59 and the cross or connecting portion of the release bar a pair of stop sleeves 61 which limit the inward sliding of the release member by striking against the bearings.

Owing to the arrangement and association of the parts described, it will be obvious that when the frame is unlocked from the bucket the latter, whether loaded or not, is free to tip to a substantial extent, as indicated in Fig. 3, and if loaded will dump. The points of suspension and pivotal connection of the frame with the bucket are such that when the parts are locked together, as indicated in Fig. 2, the bucket tips downwardly with its open mouth lowermost to facilitate the reception of its load, especially when the bucket is removing that portion of the fuel or coal from the part of the car most remote from the discharge hopper 12.

The operation of this mechanism is substantially as follows: Assuming that the bucket has been lowered into the gondola car containing coal or the like, has picked up its load, and is being pulled up the in-

cline 11—10 by the advancing cable 32, it will continue in its upward course until the release bar 57 strikes the stationary abutment 13, which engagement slides the release member rearwardly, causing the rocking of the catch shaft and catches, freeing the latter from the lock lugs or members 42, which permits the bucket to tip or drop into the position indicated in Figs. 1 and 3, delivering or discharging its load into the hopper 12, the bucket and frame at this time being supported by the cable 39. As has been indicated above, the chain 60 and the sleeves 61 limit the rearward sliding of the release member, and consequently the turning of the shaft and catches, some mechanism of this form or character being required owing to the more or less severe shock imposed upon the mechanism by the engagement with the stationary bar or abutment 13. To cause the descent of the bucket, the cable 32 is paid out and the bucket allowed to engage the platform 10, whereupon by loosening the cable 39 the frame is permitted to again become locked to the members 42, it being understood that the catches 52 swing to operative position again as soon as the release member 57 backs away from the abutment 15. As the catches descend they first strike the beveled or inclined surfaces 56, which turns the shaft 49 somewhat, the catches immediately engaging the portions or shoulders 45 as soon as they come opposite the same, the catches being swung into this position automatically by the contraction of coil spring 53, which acts on the shaft and catches through its connecting arm 54. By proper manipulation of the supporting cable 39 its front portion may be elevated sufficiently to cause the bucket to travel down its incline to the car ready to receive another load, which can be picked up with facility owing to the slight forward tilting which it possesses under normal conditions. Owing to the fact that the ears 29 are bent as indicated so as to be in the line of draft applied thereto, a most efficient and effective connection at this point is secured, and, furthermore, since such ears are detachably fastened to the frame they can be readily replaced when damaged or worn out. The line of draft may be modified by applying the clevises 33 to the upper holes 34 rather than to the lower ones, as is illustrated.

Since the structural features and elements of this contrivance are susceptible of a considerable variation without departure from the heart and essence of this invention, it is to be understood that the latter is not limited and restricted to the precise construction shown.

I claim:

1. In a device of the character described, the combination of a bucket, a suspending frame comprising side members, an end

member and an arched cross-bar, to which said bucket is pivoted, a rock shaft mounted on said frame, a catch rigidly secured upon each end of the rock shaft, locking lugs secured to the inner sides of the bucket in position to be engaged by said catches to lock the bucket to the frame, means for yieldingly maintaining said catches in engagement with said locking lugs, lock releasing mechanism comprising arms secured on said rock shaft and a forwardly projecting yoke member secured at either end to said arms, and means for limiting the rocking movement of said shaft against the force of said yielding means, substantially as described.

2. In a device of the character described, the combination of a bucket having a front open mouth, side bars pivoted to and inside of said bucket, an end bar connecting said side bars, means to lock said side bars to said bucket, lugs fastened to the frame composed of said side bars and end bar, means attached to said lugs whereby the bucket may be pulled forwardly, said lugs being bent laterally into the line of draft of said means, means to elevate said bucket, and means to actuate said locking means to unlock said bucket, whereby the load may be dumped out of said open mouth while the bucket is in elevated position, substantially as described.

3. In a device of the character described, the combination of a bucket having a front open mouth, a pair of side bars inside of and pivoted to said bucket, an end bar with laterally-bent ends connecting said side bars together, a pair of lugs disposed between said side bars and the ends of said end bar and detachably fastened thereto, means connected to said lugs whereby the bucket may be drawn forwardly, means to lock said bars to the bucket, means to elevate said bucket, and means to actuate said locking means to unlock said bucket, whereby the load may be dumped out of said open mouth while the bucket is in elevated position, substantially as described.

4. In a device of the character described, the combination of an open-mouthed bucket, a frame pivoted to and inside of said bucket, catches on said frame, lock-lugs secured to the inner sides of said bucket and having stop or abutment portions to limit the descent of the frame and bevel surfaces to guide the frame whereby the catches will properly engage the lock-lugs, and means secured to said frame whereby the bucket may be pulled forwardly, substantially as described.

5. In a device of the character described, the combination of an open-mouthed bucket, a frame pivoted to and inside of said bucket, means fastened to said frame to pull the bucket forwardly, lock-members secured to

said bucket, a catch-shaft journaled on said frame, catches on said shaft cooperating with said lock-members to maintain the bucket and frame in locked relation, a spring acting on said shaft tending to turn the same in one direction, an arm fastened to said shaft, a sliding release bar on said frame and secured to said arm, a bearing on said frame in which said release-bar is adapted to reciprocate, and means to limit the turning of said shaft in one direction, substantially as described.

6. In a device of the character described, the combination of a bucket, a frame pivoted to and inside of said bucket, means fastened to said frame whereby the bucket may be pulled forwardly, lock-members on the inner side of said bucket, a catch-shaft journaled on said frame, catches on said shaft adapted to cooperate with said lock-members to maintain the bucket and frame in locked relation, a spring acting on said shaft tending to turn the same in one direction, means to limit the turning of said shaft, a pair of arms fastened to said shaft, a U-shaped release-bar having its legs fastened to said arms, and a pair of bearings on said frame in which said release bar is adapted to reciprocate, whereby when said release-bar strikes a stationary abutment during travel of the bucket the catches are turned so as to unlock the bucket and frame, substantially as described.

7. In a device of the character described, the combination of a bucket, a frame pivoted to said bucket, means fastened to said frame and adapted to pull the bucket forwardly, lock-members on the inside of said bucket, a catch-shaft journaled on said frame, a plurality of catches on said shaft adapted to cooperate with said lock-members to maintain said bucket and frame in locked relation, a spring acting on said shaft to turn the same in one direction, a stop to limit the turning of said shaft, a pair of arms fixed to said shaft, a U-shaped release-bar having its legs secured to said arms, a pair of bearings on said frame in which said release bar is adapted to reciprocate, and a pair of sleeves on the legs of said release-bar and disposed between said bearings and the cross-bar portion of the release-bar, said sleeves acting as stops or limiting means for said release-bar, shaft, and catches, said release-bar upon engagement with a stationary abutment during travel of the bucket being adapted to actuate said catches to unlock the bucket from the frame, substantially as described.

8. In a device of the character described, the combination of a bucket, a frame pivoted inside of said bucket, means secured to said frame whereby the bucket may be pulled forwardly, lock-means on said bucket, a catch-shaft journaled on said frame, catches fixed to said catch-shaft and adapted to co-

operate with said lock-members to maintain the bucket and frame in locked relation, a spring acting on said shaft tending to turn the same in one direction, an arm fastened to said shaft, a sliding release-bar fastened to said arm, a bearing in which said release-bar is adapted to reciprocate, and a limiting chain secured to said arm and frame to limit the turning of said shaft and catches, substantially as described.

9. In a device of the character described, the combination of a bucket having a front mouth, a frame inside of and pivoted to the side walls of said bucket rearwardly of the center of gravity of the device, a bail or cross-bar secured to the frame in front of the hinged connection of the latter with the bucket and frame rearwardly of the center of gravity of the device, a sheave on said bail or cross-bar adapted to travel on a supporting and elevating cable whereby the bucket normally tips somewhat downwardly, catches at the front of said frame, lock-members inside of said bucket with which the catches cooperate to maintain the bucket and frame in locked relation, means to unlock the bucket from said frame, and means secured to said frame whereby the bucket may be pulled forwardly, whereby the load may be discharged through said mouth in the elevated position of said bucket, substantially as described.

10. In a device of the character described, the combination of a skeleton bucket supporting frame, an open mouthed bucket pivotally connected near its closed end to said frame, locking lugs mounted on the inside of said bucket near its open end, a transversely extending rock shaft, locking catches carried thereby adapted to engage said lugs, and a horizontally extending forwardly projecting tripping bar operatively connected to said rock shaft.

11. In a device of the character described, the combination with an open-ended bucket, of a supporting frame pivotally connected to the inner sides of said bucket near the closed end of the latter, locking lugs upon the insides of said bucket near the open end thereof, a rock shaft extending across the open front end of the bucket, catches at either end of said rock shaft to engage said lugs, a horizontally extending forwardly projecting tripping arm operatively connected to said rock shaft, and means for positively limiting the movement of said tripping arm and rock shaft.

12. In a device of the character described, the combination of a bucket open at its front end, a skeleton supporting frame pivotally connected to the insides of the bucket near the rear closed end of the latter, a rock shaft extending across the open front end of the bucket, catches carried by said shaft, means upon the inner sides of the bucket cooperating

ing with said catches to lock the bucket to the frame, and a horizontally extending forwardly projecting tripping member mounted above the rock shaft and operatively connected thereto, and means for positively limiting the movement of the rock shaft and tripping member.

13. In a device of the character described, the combination with a bucket, of a skeleton supporting frame pivotally connected to the inner sides of the bucket near the rear closed end of the latter, pivotally mounted

locking means mounted on the skeleton frame near the front open end of the bucket, means upon the inner sides of the bucket coöperating with said locking means, and a forwardly projecting horizontally extending tripping member extending above the upper end of the bucket and operatively connected with said locking means.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
