

No. 790,030.

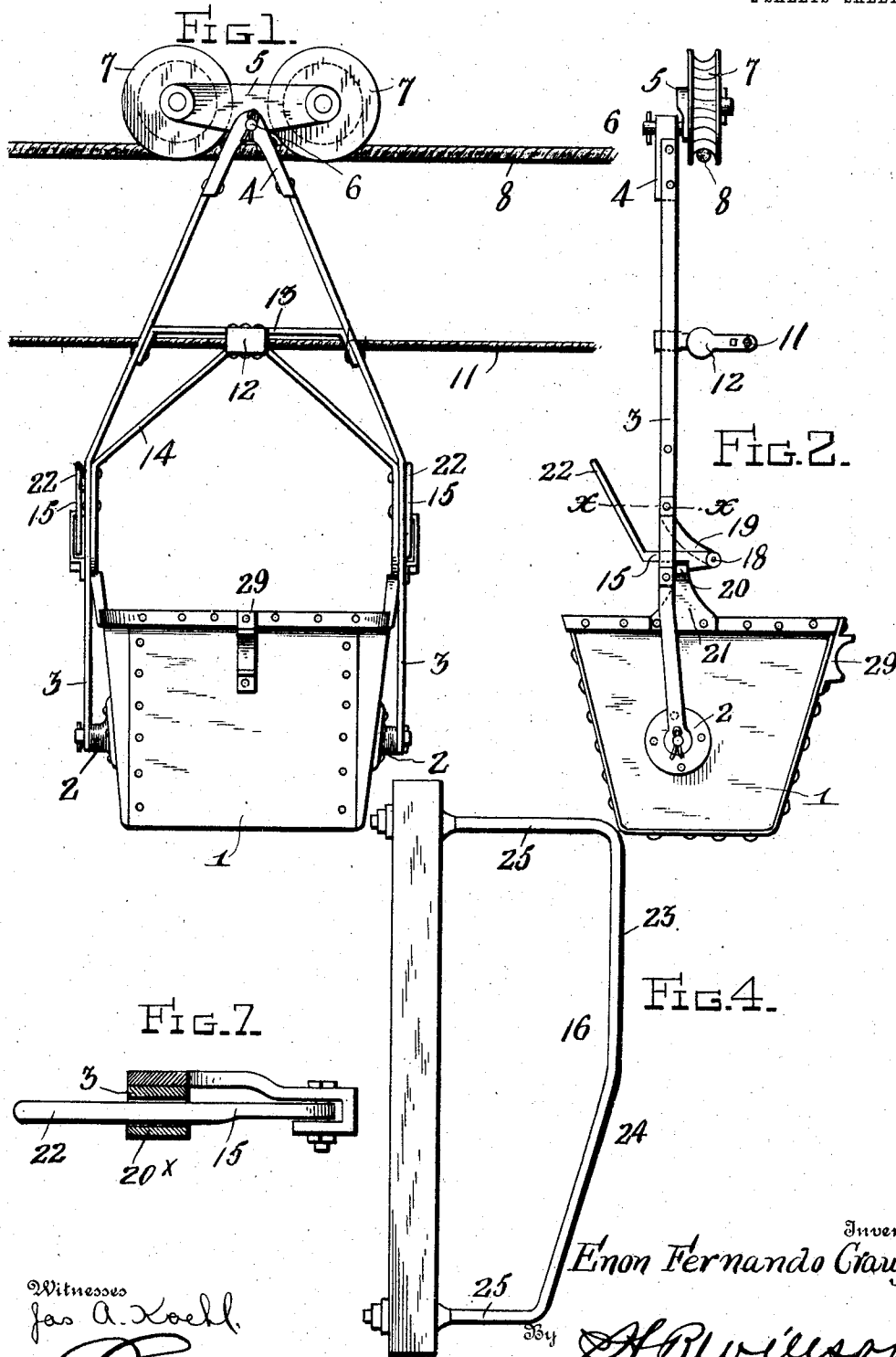
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E. F. CRAWFORD.

AUTOMATIC DUMPING AND CLOSING BUCKET FOR AERIAL TRAMWAYS.

APPLICATION FILED MAR. 28, 1904.

2 SHEETS—SHEET 1.



Witnesses
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[Signature]

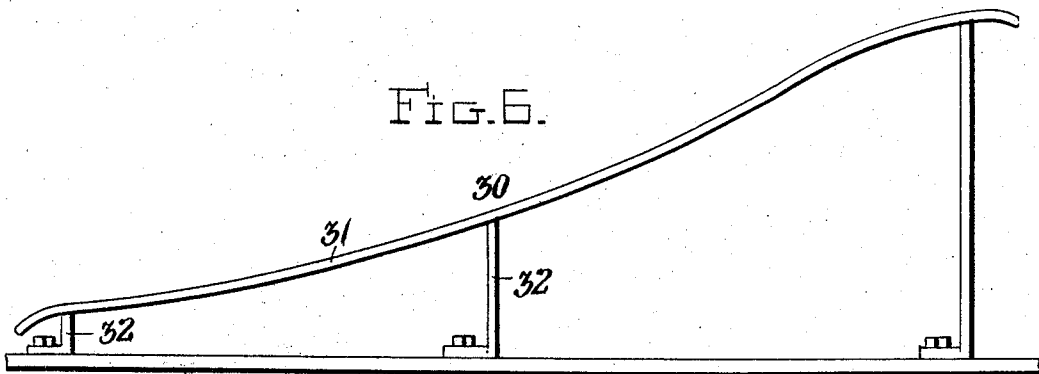
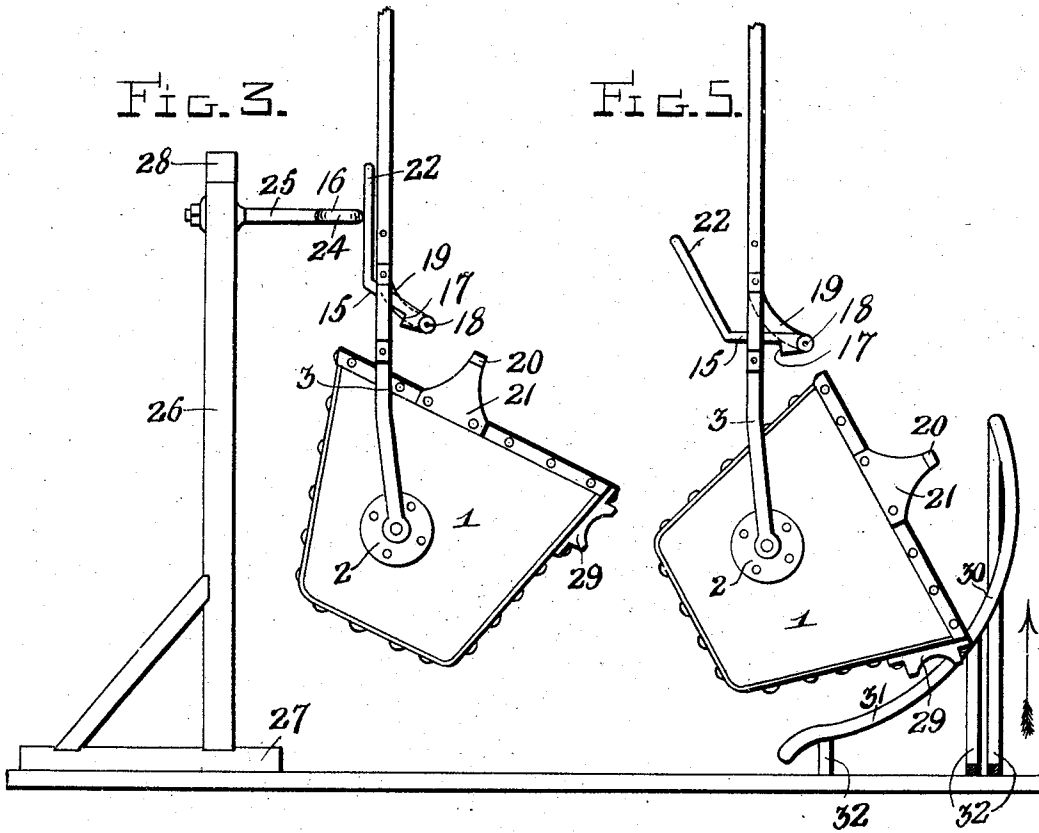
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ENON FERNANDO CRAWFORD, OF NELSON, CANADA.

AUTOMATIC DUMPING AND CLOSING BUCKET FOR AERIAL TRAMWAYS.

SPECIFICATION forming part of Letters Patent No. 790,030, dated May 16, 1905.

Application filed March 28, 1904. Serial No. 200,402.

To all whom it may concern:

Be it known that I, ENON FERNANDO CRAWFORD, a subject of the King of Great Britain, residing at Nelson, in the Province of British Columbia and Dominion of Canada, have invented certain new and useful Improvements in Automatic Dumping and Closing Buckets for Aerial Tramways; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in aerial-tramway buckets of the swinging or tilting type and in the means for automatically inverting the same to dump their contents and then righting them after their contents have been discharged.

The object of my invention is to improve and simplify the construction and operation of devices of this character, and thereby render them more durable and efficient in use and less expensive to manufacture.

With this and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved aerial-tramway bucket. Fig. 2 is an end elevation of the same. Fig. 3 is an end elevation of the tripping device and a portion of the bucket, showing how the former releases the latter in order to discharge its contents. Fig. 4 is a top plan of the tripping device shown in Fig. 3. Fig. 5 is an end elevation of the righting device and a portion of the bucket, showing how the former restores the latter to its normal or upright position. Fig. 6 is a side elevation of the righting device shown in Fig. 5. Fig. 7 is a detail horizontal section taken on the line *x x* of Fig. 2.

Referring to the drawings by numeral, 1 denotes a bucket or container, preferably of rectangular form and tapered, as shown, from its top to its bottom to provide a large open top,

which will permit the contents of the bucket to readily discharge when the latter is tilted or inverted. Said bucket is provided at each of its ends with trunnions 2, which are riveted or otherwise secured at points to one side of and below the center of said ends and which project into bearing-openings formed in the lower ends of pendants or hangers 3, whereby said bucket will be mounted to swing or tilt transversely and when released will swing to an inverted position to dump its contents. Said pendants or hangers 3, by means of which the bucket is suspended, consist of strips of metal bent inwardly toward each other adjacent to their centers and having the upper ends of these converging portions riveted or otherwise secured to an inverted-V-shaped yoke 4. Said yoke 4 is pivotally connected to a carriage 5 by means of a pin or stud 6 projecting therefrom and through an opening in said yoke. Upon said carriage are journaled two grooved pulleys or wheels 7, which are adapted to engage and run upon a stationary track-cable 8, as shown. The bucket is thus suspended from the track-cable 8, and in order to move said bucket I provide a moving traction rope or cable 11 and connect it, by means of a ball-and-socket joint-clip 12, to brace or draw bars 13 and 14, which connect said pendants or hangers 3. Said brace-bar 13 is secured to the upper side of one end of clip 12 and is disposed horizontally with its bent ends riveted to the hangers 3, and the said brace-bar 14 is secured at its center to the under side of the said clip and is bent downwardly at each side of said clip, having its lower bent ends riveted to the lower portions of the hangers.

In order to hold the bucket in its normal position with its open top uppermost and to release the same to permit it to reverse its position, I provide a swinging latch 15, preferably at each end of the bucket, and a coacting trip 16, located adjacent to the point at which it is desired to dump the contents of the bucket. Each of the said latches 15 is in the form of an angular lever, provided with a stop-shoulder 17 and pivoted at one of its ends, as at 18, to the extreme lower end of

one of the braces 14, which end is bent or curved outwardly, as shown at 19 in Figs. 2 and 7. Each of said latches 15 is guided in its swinging movement by a keeper or guide 20^x, secured upon the hanger, as shown. The latches thus extend transversely across the pendants or hangers and are adapted to swing vertically. When in their lower position, (shown in Fig. 2,) their shoulders 17 are adapted to engage projecting ends or lugs 20 on castings or brackets 21, secured on the ends of the bucket. It will be seen that as soon as said latches are swung up the shoulders 17 will disengage the lugs 20, and owing to preponderance of weight on one side of the pivots 2 of the bucket the latter will swing over to an inverted position. The outer or free ends 22 of the latches 15 project outwardly and upwardly at an angle of about sixty degrees when the latter are in their lower position and are adapted to be engaged and elevated by the said trip 16. The latter is in the form of a metal frame, consisting of a single piece of metal rod bent, as clearly seen in Fig. 4, to form a straight longitudinally-extending portion 23 and an angularly-disposed portion 24, and having its ends 25 secured in vertical posts or uprights 26, projecting from a suitable base 27 and connected at their upper ends by a cross-bar 28, as shown. The said trip 16 is disposed in a horizontal plane and in the path of the ends 22 of the latches 15, so that when the bucket is moving toward the extended portion 23 of the trip 16 the angular-disposed portion 24 of the trip will engage said latches first and elevate them, as shown in Fig. 3.

In order to restore the bucket to its normal position after it has been inverted, as previously described, I provide a lug 29 upon the center of the heavier side of the bucket and a righting or closing device 30, which may be located at any convenient place along the line of the tramway or terminals. The said lug is recessed or forked to permit it to engage and slide upon the device 30, which is in the form of a curved or spiral-shaped track 31, secured to and supported by legs or uprights 32, as shown. It will be seen upon reference to Figs. 5 and 6 that when the bucket is moving toward the extended portion 23 of the trip 16 the forked lug 29 will engage the lower end of the curved rod or track 31 and in the continued movement of the bucket will ride up said track, and thus swing the bucket to an upright position, permitting the lug 20 to elevate the latches 15 and slip under the shoulders 17, as seen in Fig. 2, to lock the bucket in its normal position.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion,

and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. The combination of a hanger or pendant, a swinging bucket or container mounted eccentrically in said hanger, a lug carried by said bucket, a swinging latch mounted upon said hanger and provided with a shoulder adapted to engage said lug to lock the bucket in its upright position, and a trip disposed in the path of said latch and having a longitudinally-extended portion, substantially as described.

2. The combination of a wheeled carriage, a hanger or pendant pivotally suspended from said carriage, brace-bars upon said hanger having outwardly-projecting ends, a bucket or container provided with trunnions disposed to one side of its center and journaled in the said hangers to permit said bucket to swing or tilt, a lug upon said bucket, and a latch pivoted at one of its ends to one of the outwardly-projecting ends of said brace-bars, and formed with a shoulder adapted to engage said lug upon the bucket, substantially as described.

3. The combination with a stationary track or track-cable and a moving traction rope or cable, of a carriage, grooved wheels journaled upon said carriage and adapted to run upon said track, a yoke pivotally connected to said carriage, hangers or pendants secured to said yoke and depending from the same, a horizontally-disposed brace-bar connecting said hangers, an angularly-disposed brace-bar connecting said hangers and having its lower ends bent outwardly, a clip connecting said brace-bars and said traction rope or cable, a latch or lever pivoted at one of its ends to the said outwardly-bent end of said angular brace and provided with a shoulder, a guide for said latch, a bucket or container provided with trunnions disposed to one side of its center and journaled in the lower ends of said hangers, and a lug upon said bucket adapted to be engaged by the shoulder of said latch, substantially as described.

4. The combination of a hanger, a swinging bucket or container, a swinging latch for holding said bucket in its upright position, and a trip device disposed in the path of said latch and comprising uprights and a horizontally-disposed frame secured to said uprights and consisting of a metal rod bent to form a longitudinal portion and an angular portion, said longitudinal and angular portions being in the path of said latch, substantially as described.

5. The combination with an aerial-tramway bucket or container adapted to swing to an inverted position to discharge its contents, of means for restoring said bucket to its up-

right position, said means comprising a forked lug and a curved track, substantially as described.

5 6. The combination of a hanger, a swinging bucket mounted off of its center in said hanger whereby it is adapted to swing to an inverted position, and a lug and curved track for automatically restoring said bucket to its upright position, substantially as described.

10 7. The combination of a hanger, a swinging bucket mounted off of its center in said hanger whereby it is adapted to swing to an inverted position, and a curved track adapted to be engaged by said bucket to restore the latter to its upright position, substantially as described.

15 8. The combination of a hanger, a swinging bucket mounted off of its center in said hanger whereby it is adapted to swing to an inverted position, a forked lug upon said bucket, and

a spiral-shaped track disposed in the path of said lug and adapted to swing said bucket to its upright position, substantially as described.

9. The combination of a hanger, a swinging bucket or container mounted off of its center in said hanger, means for holding said bucket in its upright position, means for automatically releasing said bucket to permit it to swing to an inverted position to discharge its contents, and a forked lug and curved track for automatically restoring said bucket to its upright position, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ENON FERNANDO CRAWFORD.

Witnesses:

T. A. CREASE,

W. R. JARVIS.