

No. 842,005.

C. R. ORD.

PATENTED JAN. 22, 1907.

ASH HANDLING CRANE.

APPLICATION FILED MAR. 13, 1906.

2 SHEETS—SHEET 1.

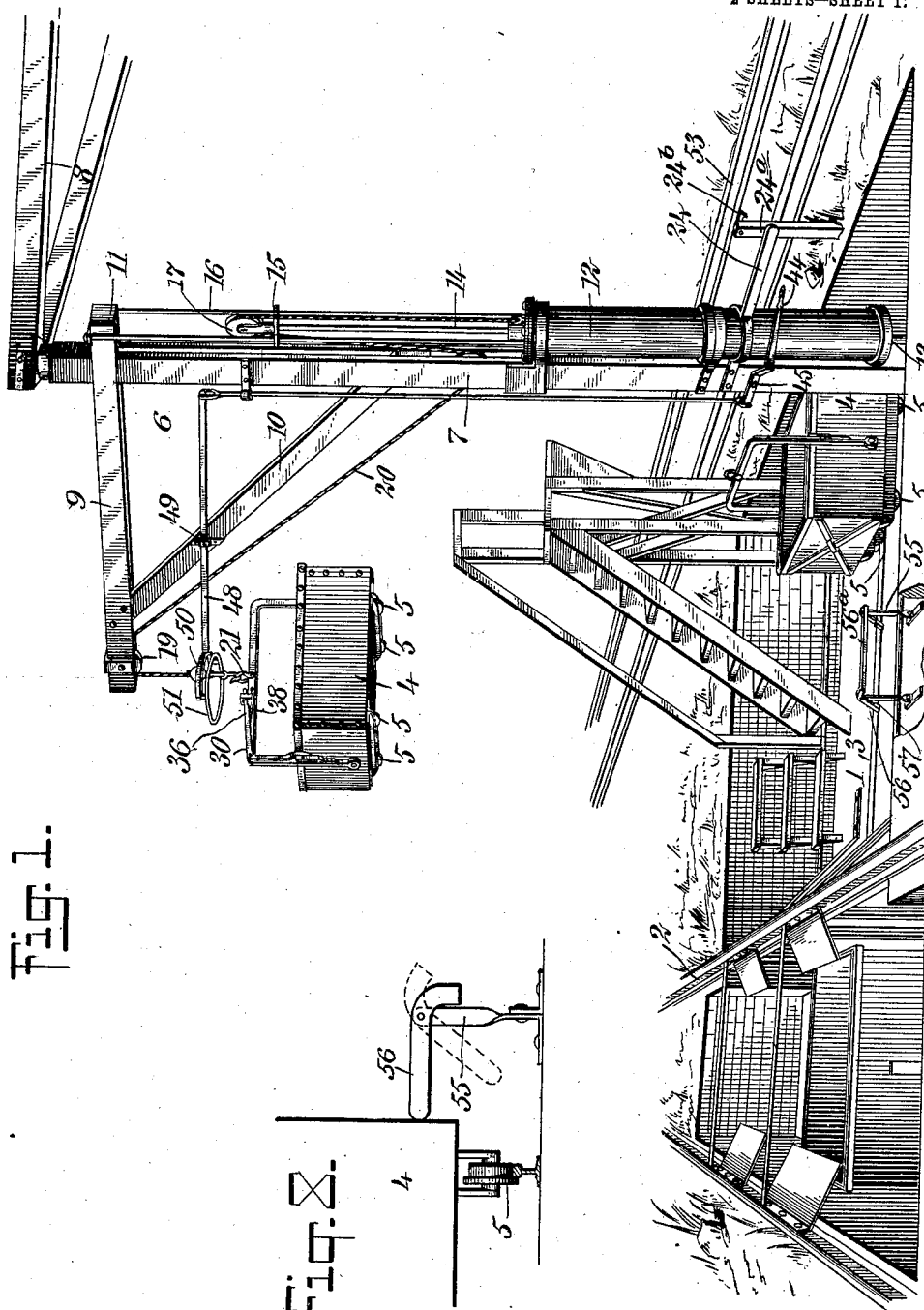


Fig. 1.

Fig. 2.

WITNESSES:

W. H. Smith
J. R. Brown

INVENTOR

Craven R. Ord

BY

Munn & Co

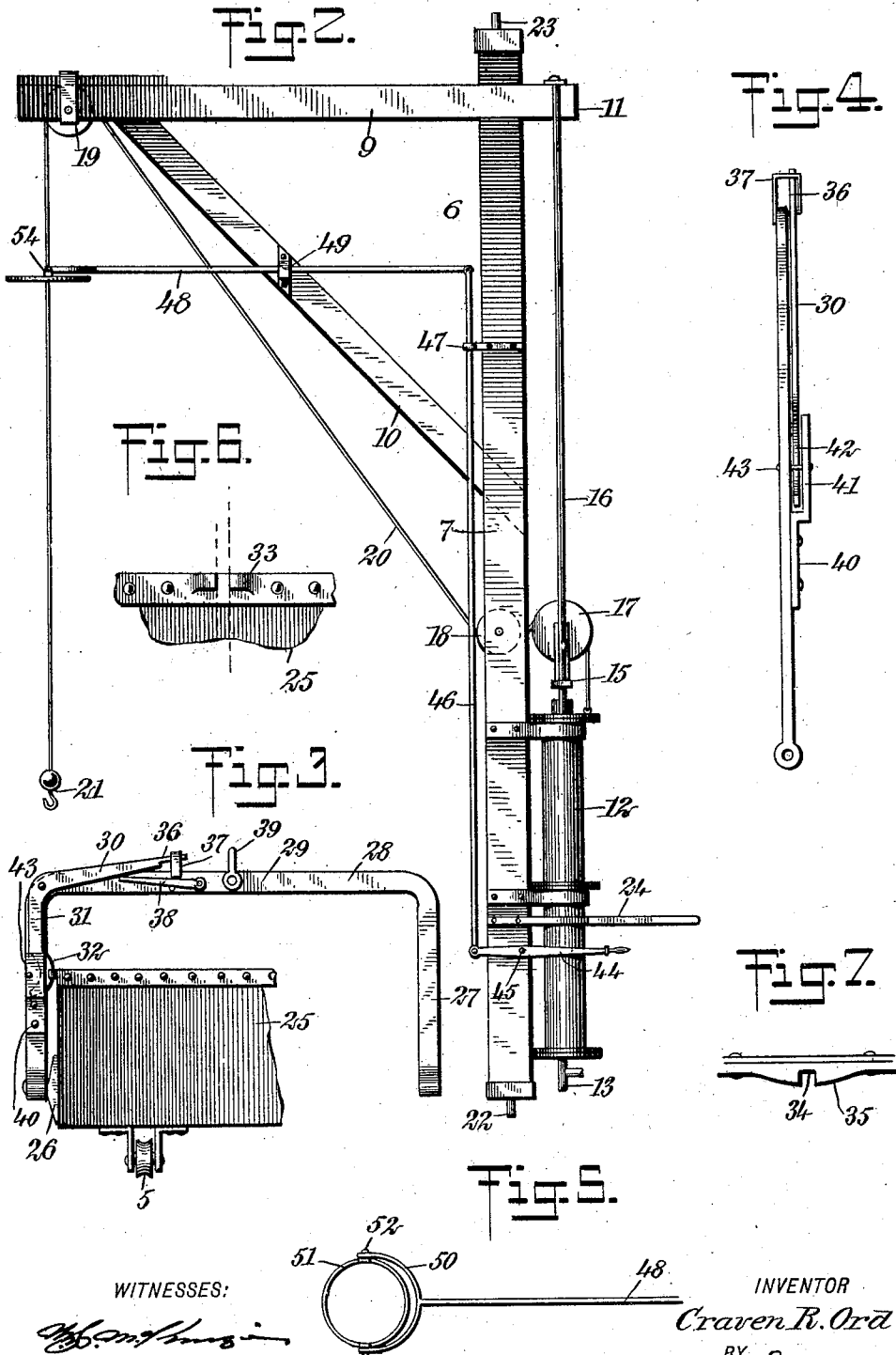
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W. B. Smith
J. R. Munn

INVENTOR

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BY *Munn & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

CRAVEN ROBERT ORD, OF McADAM, NEW BRUNSWICK, CANADA.

ASH-HANDLING CRANE.

No. 842,005.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed March 13, 1906. Serial No. 305,846.

To all whom it may concern:

Be it known that I, CRAVEN ROBERT ORD, a subject of the King of Great Britain, and a resident of McAdam, in the Province of New Brunswick and Dominion of Canada, have invented a new and Improved Ash-Handling Crane, of which the following is a full, clear, and exact description.

This invention relates to mechanism for handling loads.

The object of the invention is to produce an apparatus of this class which is simple in construction and which is especially adapted for handling ashes or cinders, facilitating the unloading and dumping operation.

More specifically, the invention relates to the means for dumping the bucket in which the ashes or cinders are carried, and, further, in providing an arrangement which tends to decrease the amount of leakage at the operating-cylinder.

The invention constitutes an improvement upon the devices patented to me under date of May 2, 1905, for the same general purpose.

The invention consists of the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective showing the complete apparatus, a portion of the view being broken away. Fig. 2 is a side elevation showing a crane to which the invention is attached. Fig. 3 is a side elevation of a portion of the bucket used for receiving and dumping the ashes or cinders. This view is to illustrate especially the construction of the latch, which is released when the bucket is to be dumped. Fig. 4 is an edge or end view of the bail of the bucket shown in Fig. 3. This view is upon an enlarged scale. Fig. 5 is a plan of a releasing-lever which cooperates with the latch of the bucket for the purpose of dumping the bucket. Fig. 6 is a side elevation of the edge of the bucket at the point where it is engaged by the latch. Fig. 7 is a plan of the edge of the bucket shown in Fig. 6, and Fig. 8 is a front elevation of a portion of a bucket and illustrating the means for guiding the same onto the track.

In the specification following a construc-

tion is described which is intended especially for the purpose of facilitating the removal of ashes or cinders dumped from a locomotive fire-box, arrangement being made for dumping these ashes into suitable cars standing near the apparatus.

Referring more particularly to the drawings, 1 represents a pit over which a track 2 runs. Upon the track 2 the locomotive will stand which is to dump the ashes or cinders. In a suitable position in the bottom of the pit 1 a track 3 is laid, upon which a bucket 4 is adapted to run, said bucket for this purpose being provided on its under side with wheels 5, as shown. At a suitable point in the pit 1 a crane 6 is mounted, the same comprising a vertical post 7, which is secured at its upper extremity by braces 8, which may conveniently constitute a part of a gallows construction of any suitable form. This crane 6 comprises a boom 9, which extends horizontally from the post 7, as indicated. This boom is preferably a diagonal brace 10, which is also rigidly attached to the post. The boom 9 preferably extends beyond the post 7, so as to form a butt 11. Against the face of the post 7, beneath this butt 11, an operating-cylinder 12 is provided. The piston within this cylinder may be operated by any suitable fluid—such as compressed air, water, or steam—the said fluid being admitted to the under side of the piston through a suitable pipe 13, passing through the lower head of the cylinder. Through the upper head of the cylinder a piston-rod 14 extends upwardly, to the upper extremity whereof there is attached a cross-head 15. This cross-head is guided upon guide-rods 16, the upper extremities whereof are attached to the butt 11 and the lower extremities whereof are attached to the upper head of the cylinder 12, as indicated. Upon this cross-head 15 there is mounted a sheave 17, and in the post 7 a recess is formed in which there is mounted a guide-sheave 18. Another sheave 19 is mounted near the extremity of the boom 9. Over the sheaves 17, 18, and 19 a hoisting-cable 20 passes, the same supporting a suitable hook 21. From the hook 21 the cable passes upwardly around the sheave 19, whence it passes downwardly under the sheave 18, thence over the sheave 17, and the lower extremity of the cable being attached rigidly to the upper cylinder-head, as shown. From this arrangement it will be understood that when the operating

fluid is admitted under the piston the cross-head 15 and the sheave 17 will be forced upwardly, which will take up a quantity of the cable, so as to raise the hook 21 and the load which may be carried thereby. In the lower extremity of the post 7 a pin 22 is rigidly attached, which is stepped in a suitable manner. A similar pin 23 is provided at the upper extremity, which is suitably secured by the brace 8. Near the lower extremity of the post 7 a rigid arm 24 is attached, which projects laterally, as shown, and in a substantially horizontal plane. By means of this arm the operator of the crane may swing the boom thereof upon the post 7 as an axis.

Referring again to the bucket 4, and especially to Fig. 3, this bucket comprises a body 25, having a rectangular or box form, as shown. To the opposite side of this body, at a point near the bottom thereof, trunnions 26 are rigidly attached, to which the vertical arms 27 of a bail 28 are attached. The bail 28 preferably is formed with a substantially horizontal cross-bar or body 29, which is formed integrally with the arms 27, as indicated. At one side and preferably at the angle where one of the arms 27 meets the body 29 of the bail I attach a latch 30, which is of the form of a bell-crank lever, having a vertical arm 31, which lies substantially over the adjacent arm of the bail and is formed with a projecting fin or ear 32, which extends toward the body of the bucket. This fin is preferably formed by a rounded edge, as indicated most clearly in Fig. 3. Near the position of the fin 32 upon the edge of the bucket-body 25 a catch 33 is formed. The form of this catch is most clearly illustrated in Figs. 6 and 7. It presents a notch or recess 34, which is adapted to receive an edge of the fin 32, so as to lock the bucket in an upright position, as will be readily understood. Furthermore, it is formed with inclined side faces 35 for a purpose which will appear more fully hereinafter. The horizontal arm of the latch 30 is preferably formed with a reduced extremity 36, which projects through a yoke 37, attached near the middle of the body 29 of the bail, and at a suitable point adjacent to this yoke a leaf-spring 38 is attached, the extremity whereof presses against the under edge of the arm of the latch at this point, operating to maintain the fin 32 in engagement with the catch 33, as will be readily understood. At the middle point of the body 29 of the bail a suitable shackle 39 is attached, which is adapted to be engaged with the hook 21 aforesaid when the bucket is to be raised. On the side of the arm 27 of the bail to which the latch 30 is attached I attach a bracket 40, the upper extremity whereof is formed with an offset 41, whereby a space 42 is formed, in which the fin 32 moves. Across the space a stop-pin 43 extends, the same being rigidly attached to the

arm of the bail and the bracket, as shown most clearly in Fig. 4. It should be understood that in order to release the latch the horizontal arm of the latch will be pressed downwardly, so as to move the fin 32 away from the bucket. When this movement of the latch takes place, the pin 43 operates to stop the rearward movement of the fin 32.

I provide an arrangement for enabling the bucket to be released by the operator occupying a position near the arm 24. For this purpose I provide a releasing-lever 44, which is mounted rotatably at 45 upon the side of the post 7. The extremity of this lever is attached to a link 46, which extends vertically upwardly and is guided through a suitable bracket 47 in the side of the post. The upper extremity of this link 46 is attached pivotally to a lever 48, which is disposed in a substantially horizontal position, passing freely through a bracket 49, which is attached to the aforesaid diagonal brace 10. The extremity of this lever 48 is formed with oppositely-disposed forks 50, between which there is mounted a ring 51, the same being secured on pivot-bolts 52, disposed oppositely within the ends of the forks, as shown. Through this ring 51 the cable passes downwardly, suspending the hook 21, as described above.

When the apparatus is being operated, the bucket is run on the track 3 under the locomotive standing on track 2, and after the ashes or cinders are dumped the bucket is drawn outwardly and raised by means of the hook 21 and cable 20. With the bucket raised, as indicated in Fig. 1, the arm 24 affords means for swinging the boom 9 into position over a track 53, upon which the cinder-car may stand. When it is desired to release the latch 30 to dump the bucket, the operator presses downwardly on the lever 44. This movement of the lever depresses the ring 51, so that it engages the extremity 36 of the horizontal arm of the latch 30. In this way the fin 32 is thrown out of engagement with the catch 33 by reason of the fact that the trunnions 26 of the bucket are below the center of gravity thereof and the bucket immediately dumps itself, turning completely over and coming back to its normal position. As it does so the edge of the fin 32 rides up on either of the inclined faces 35, so that it drops back into the notch 34, as will be readily understood. In this way the bucket latches itself automatically after dumping.

By reason of the fact that the operating fluid is admitted only to the under side of the piston it will be observed that the chamber in which the fluid is received has no stuffing-box through which the fluid may escape. In this way the tendency to leakage is greatly reduced and there will be practically no leakage if the piston is suitably packed.

Attention is called to the fact that by rea-

son of the ring 51 the releasing mechanism will operate to undo the latch, whatever be the position of the bucket—that is, the bucket may assume any angular position over the cinder-car when it is dumped. Furthermore, the ring 51 always maintains itself in a horizontal position by reason of the fact that the pivot-pins 52, attached to lugs 54, project upwardly from the body of the ring, as indicated. Although the ring 51 is supported upon pivots, it will always operate to move the latch 30, because the point of the ring opposite to the latch will engage the upper edge of the bail and operate as a fulcrum as the ring is depressed.

The boom 9 after dumping the bucket may be swung into position over the track 3 by lever 24 being pushed against post 24^a and held there by a catch 24^b, so as to enable the bucket to be lowered thereupon to take the load of ash or cinders from beneath the locomotive. In order to facilitate the proper alinement of the bucket as it descends in this way upon the track, I provide a guide-bracket 55 of any suitable construction, preferably consisting of light framework of bar-iron presenting inclined arms 56, having counterweights 57 at their ends, which are pivotally supported in a substantially vertical plane at right angles to the direction of the track and connected by a cross-bar 56^a, as indicated in Fig. 8.

In lowering the bucket an assistant depresses the cross-bar 56^a with his foot, which extends the arms 56 until they come against the side of the bucket, as indicated in Fig. 8. In this way the bucket may be brought into position directly over the track and then lowered. The counterweights operate to hold the arms 56 normally, as shown in dotted lines.

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

1. In apparatus of the class described, in combination, a boom, a bucket, a spring-pressed latch maintaining the same in an upright position, a cable supporting said bucket from said boom, a ring surrounding said cable, a lever pivotally attached to said ring and pivotally attached to said boom, and means for actuating said lever to force said ring against said latch.

2. In apparatus of the class described, in combination, a bucket having a bail, a latch attached to said bail, a catch on said bucket engaging said latch, a cable attached to said bail and supporting said bucket, a lever, a ring surrounding said cable and pivotally attached to said lever at diametrically opposite points, and means for moving said ring to engage said latch whereby said bucket may be dumped.

3. In apparatus of the class described, in combination, a boom, a bucket, a spring-pressed latch maintaining the same in an upright position, a cable supporting said bucket from said boom, a ring surrounding said cable, a lever pivotally attached to said ring and pivotally attached to said boom, a post carrying said boom, and a link attached to said post and connected to said lever for actuating the same.

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

CRAVEN ROBERT ORD.

Witnesses:

LOUIS W. LEHRLE,
S. A. ORD.