No. 869,929. PATENTED NOV. 5, 1907.

J. M. McCLELLON.

COAL HANDLING APPARATUS.

APPLICATION FILED JUNE 10, 1907.

6 SHEETS—SHEET 1.

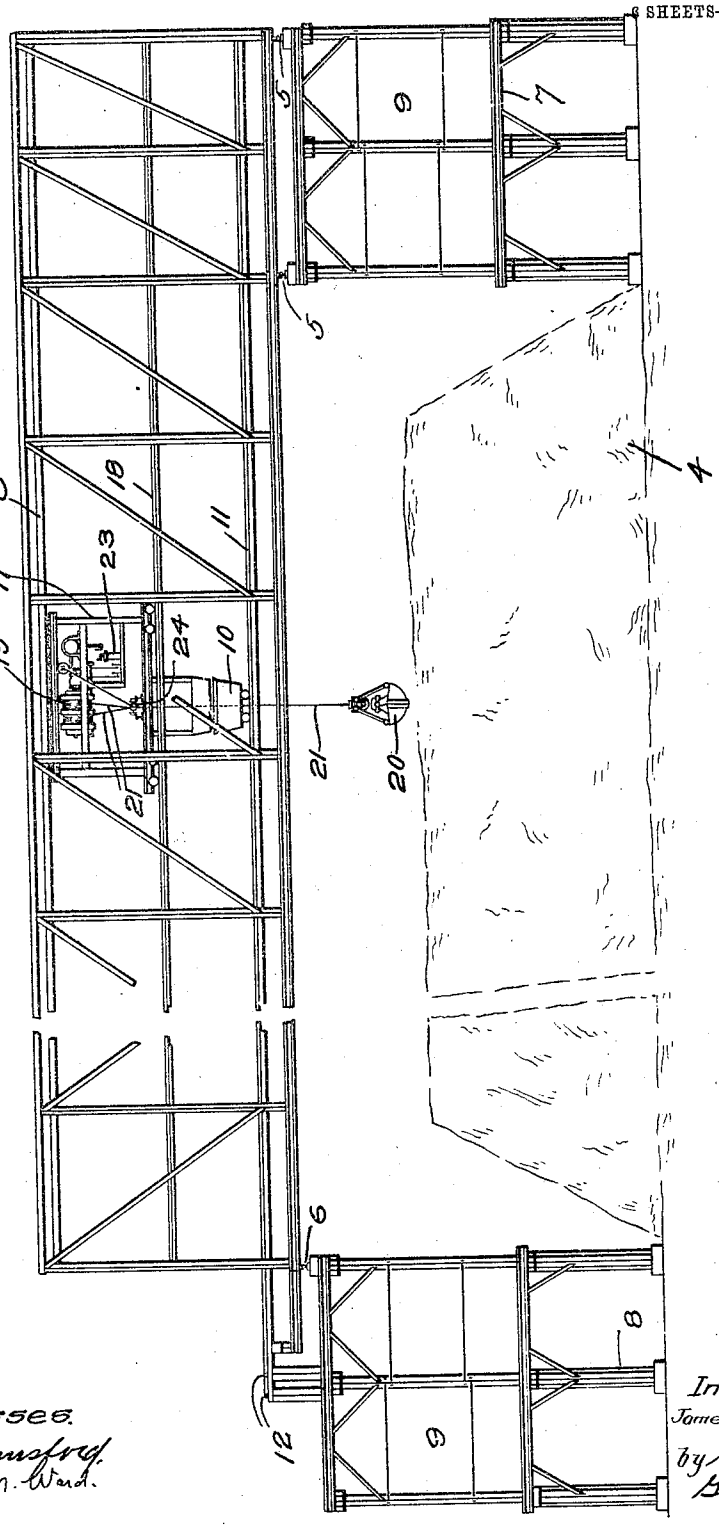


Fig. 1.

Witnesses.
W. C. Lunsford.
Joseph M. Ward.

Inventor.
James M. McClellon,
by Cassoly & Gregory Atty's

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6 SHEETS—SHEET 2.

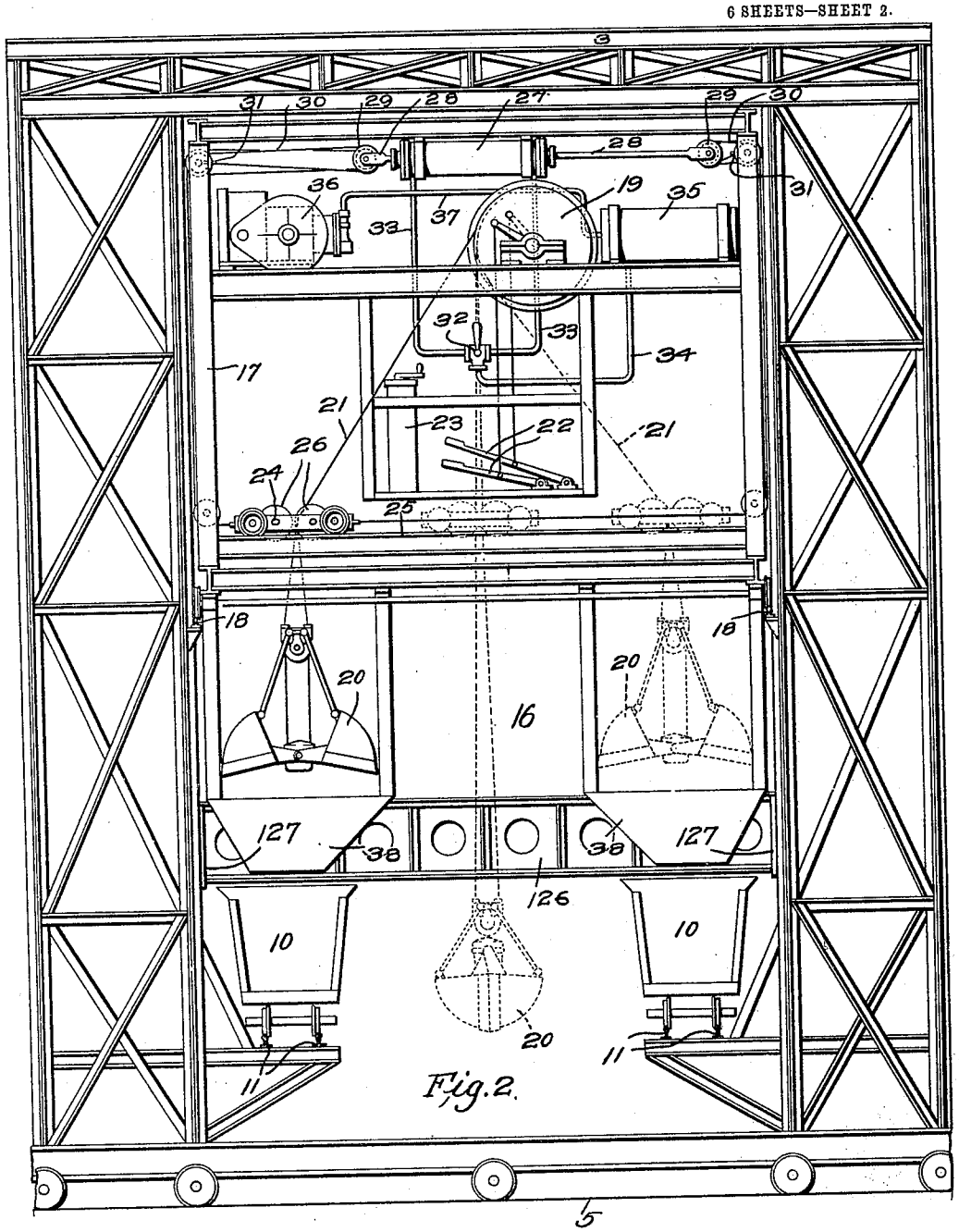


Fig. 2.

5

Witnesses.
W. C. Lunsford.
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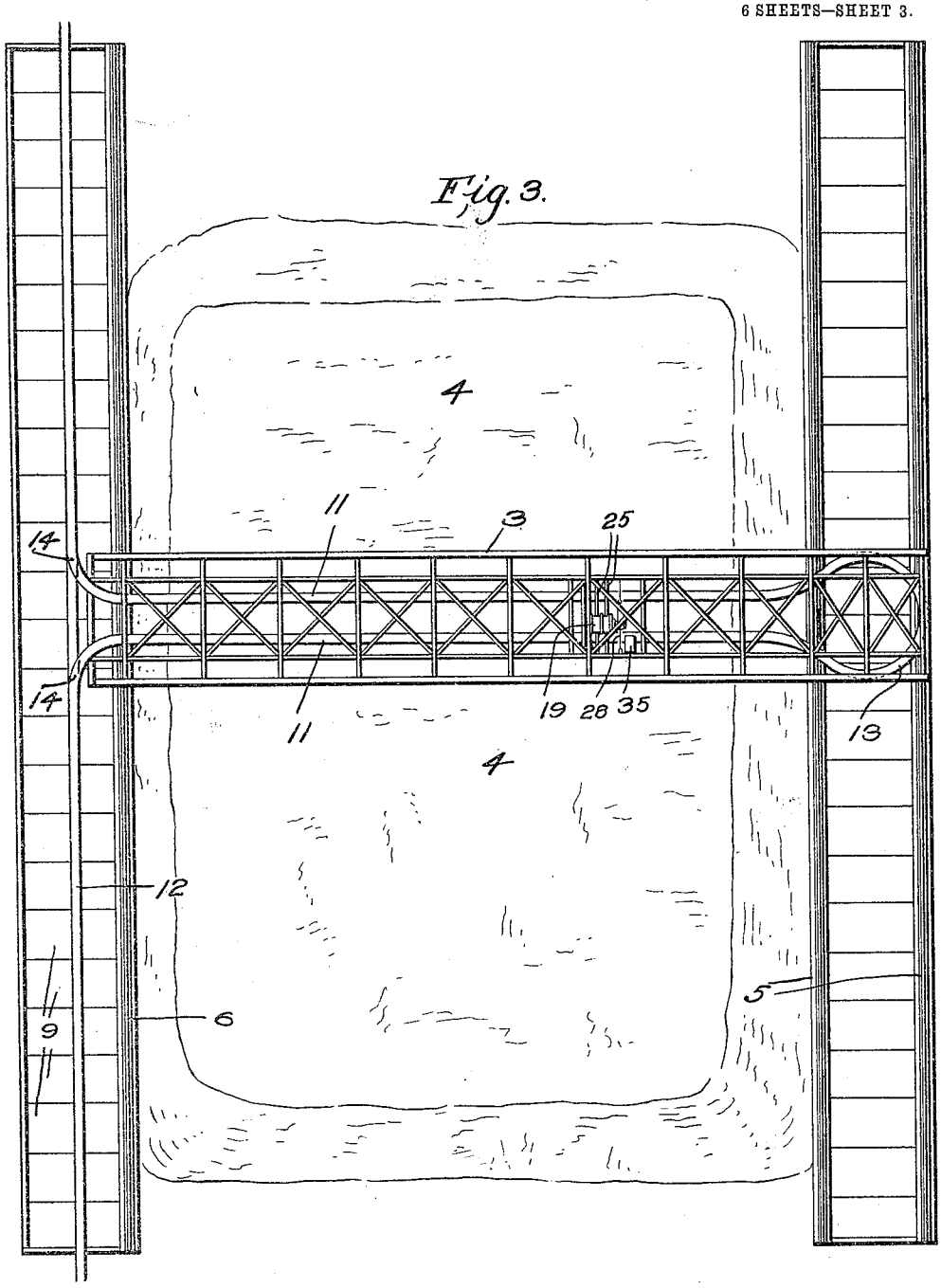
J. M. McCLELLON.

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6 SHEETS—SHEET 3.

Fig. 3.



Witnesses.
W. C. Crawford.
Joseph M. Ward.

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James M. McClellon,
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No. 869,929. PATENTED NOV. 5, 1907.

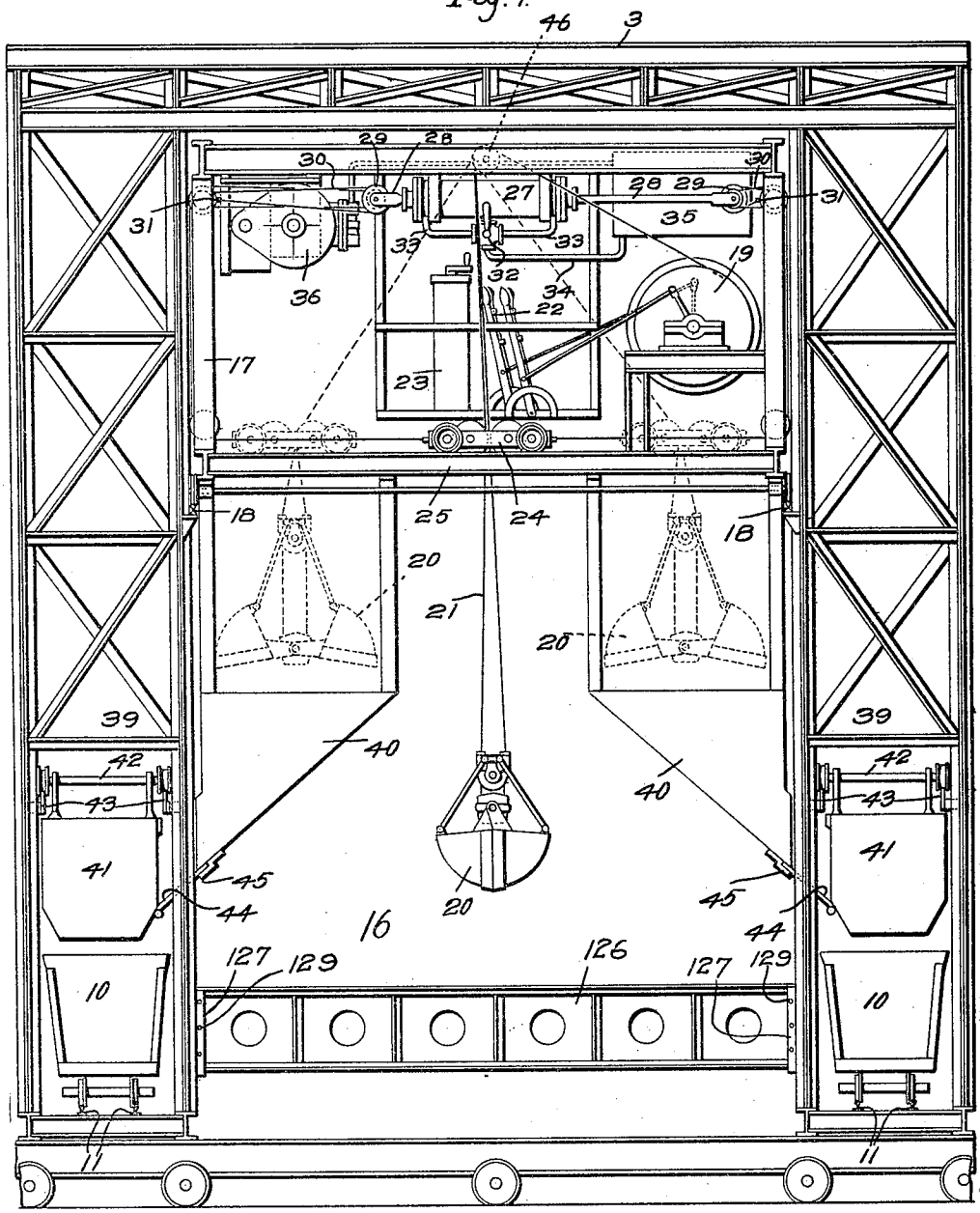
J. M. McCLELLON.

COAL HANDLING APPARATUS.

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6 SHEETS—SHEET 4.

Fig. 4.



Witnesses.
W. C. Lumsford.
Joseph M. Ward.

Inventor.
James M. McClellon,
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No. 869,929. PATENTED NOV. 5, 1907.

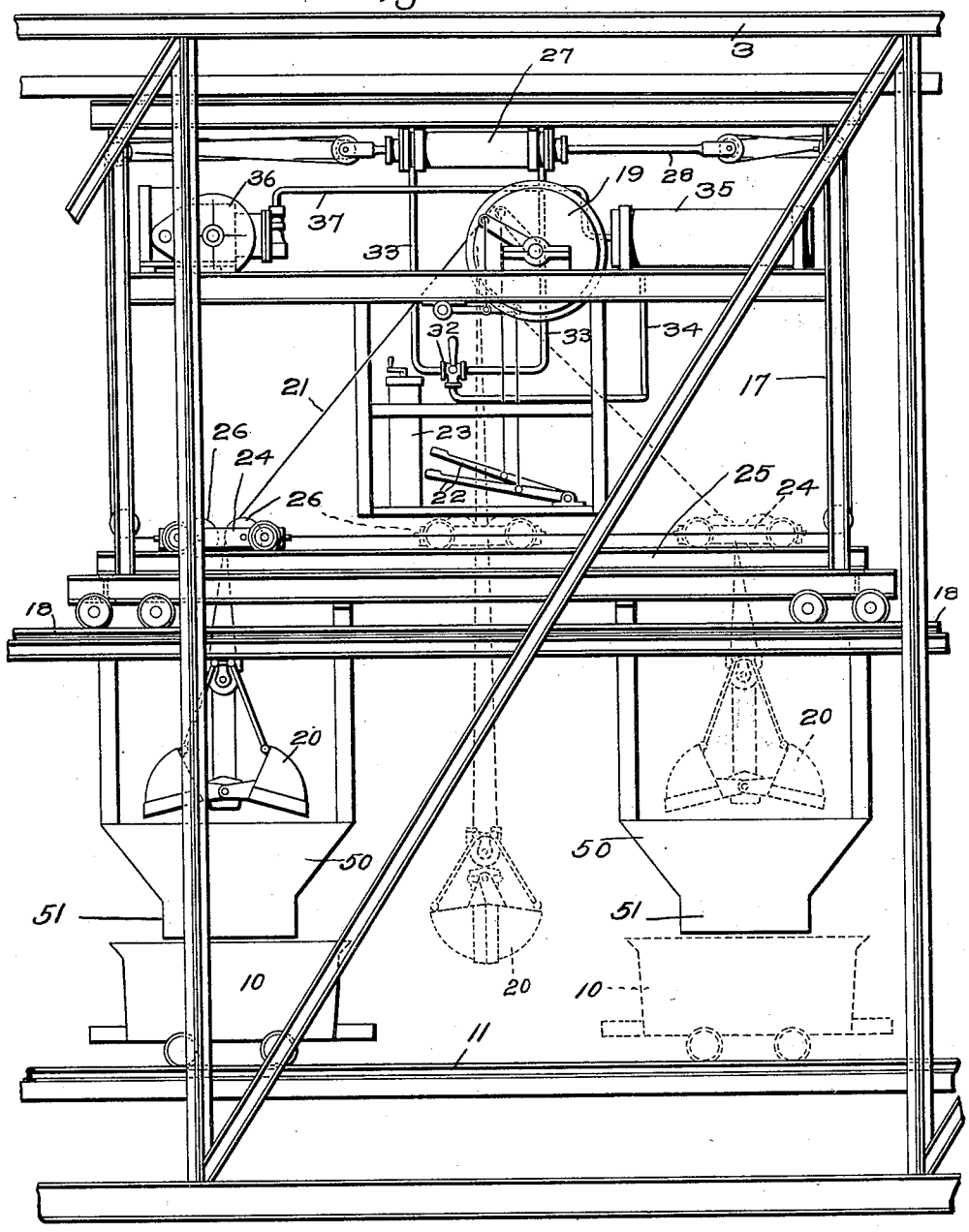
J. M. McCLELLON.

COAL HANDLING APPARATUS.

APPLICATION FILED JUNE 10, 1907.

6 SHEETS—SHEET 5.

Fig. 5.



Witnesses,
W. C. Lunsford.
Joseph M. Wood.

Inventor.
James M. McClellon.
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No. 869,929. PATENTED NOV. 5, 1907.

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COAL HANDLING APPARATUS.

APPLICATION FILED JUNE 10, 1907.

6 SHEETS—SHEET 6.

Fig. 6.

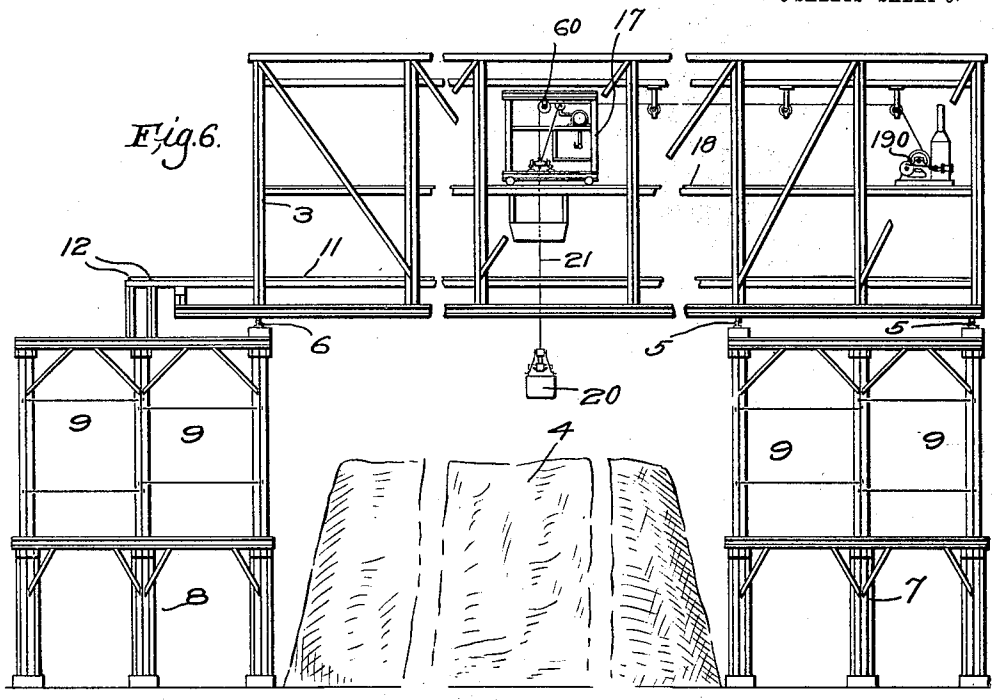


Fig. 7.

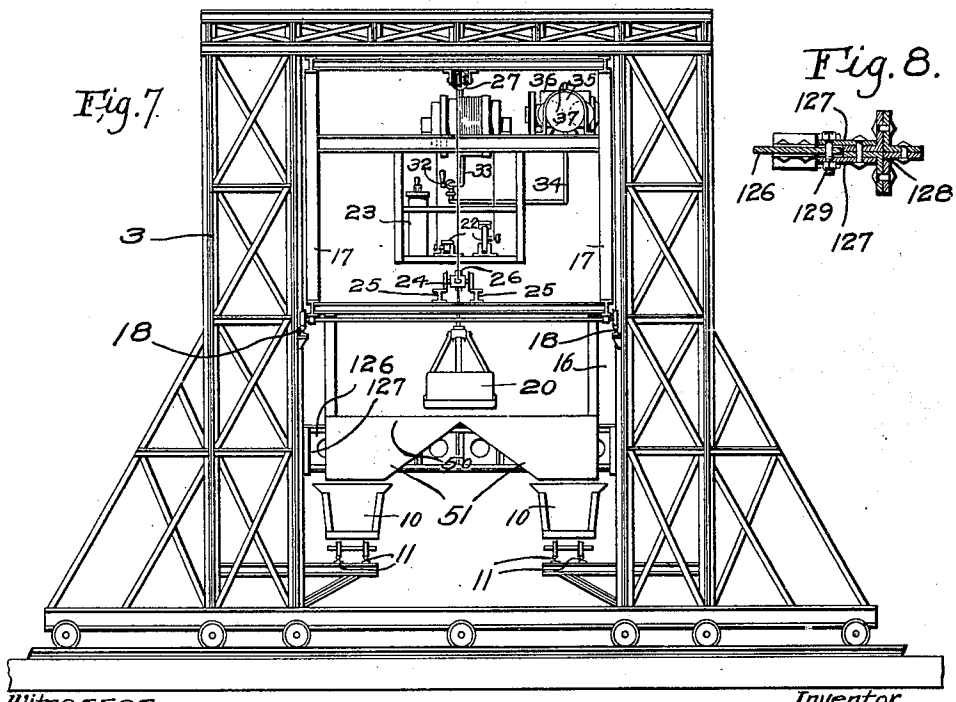


Fig. 8.

Witnesses.
W. C. Lunsford,
Joseph M. Ward.

Inventor.
James M. McClellon,
by Carroll & Gwyn Attys.

UNITED STATES PATENT OFFICE.

JAMES M. McCLELLON, OF EVERETT, MASSACHUSETTS.

COAL-HANDLING APPARATUS.

No. 869,929. Specification of Letters Patent. Patented Nov. 5, 1907.

Application filed June 10, 1907. Serial No. 378,155.

To all whom it may concern:

Be it known that I, JAMES M. McCLELLON, a citizen of the United States, residing at Everett, county of Suffolk, and State of Massachusetts, have invented an Improvement in Coal-Handling Apparatus, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates to coal-handling apparatus of the type which comprises a movable bridge spanning an open storage space for the coal and having thereon one or more conveyers which are adapted to convey the coal or other material to tracks at the ends of the bridge and which bridge also has thereon a suitable hoisting device for elevating the coal from the storage space to the conveyers.

One of the principal objects of the invention is to provide a novel arrangement in an apparatus of this class by which the coal or other material which is elevated from the storage space may be discharged into conveyers situated at either side of the bridge, and another object is to improve generally apparatus of this class so that coal or other material may be handled more expeditiously thereby.

In the drawings I have shown some of the selected embodiments of my invention merely for the purpose of illustrating the principle thereof without however attempting to confine myself to the construction shown herein.

Referring now to the drawings, Figure 1 is a side elevation of an apparatus embodying my invention; Fig. 2 is an end view of the bridge shown in Fig. 1 with the hoisting apparatus thereon; Fig. 3 is a top plan view of the bridge and storage space; Fig. 4 is a view similar to Fig. 2 showing a different arrangement of the conveyers on the bridge; Fig. 5 is a portion of a side view of a bridge showing a different arrangement of the hoisting apparatus from that shown in Fig. 2; Fig. 6 shows another way of arranging the hoisting apparatus; Fig. 7 is a view showing an end view of the bridge and conveyer arrangement shown in Fig. 5; Fig. 8 is a detail of one way of securing the strong-backs in place.

3 is a bridge of any suitable or usual construction which spans the storage space 4 for coal or other material. The bridge is mounted at its ends on tracks or ways 5, 6 which extend longitudinally of the storage space on either side thereof so that the bridge may move from one end to the other of the storage space in a direction transversely to the length of the bridge. As herein shown, the tracks 5 and 6 are supported on suitable trestle-work 7, 8, and I have herein shown two tracks 5 for supporting one end of the bridge and a single track 6 for supporting the other end thereof. Each of these trestle-works may support suitable storage bins 9 and the bridge is provided with a conveyer or conveyers running longitudinally thereof by means of which coal or other material elevated from the storage space 4 by a suitable hoisting device may be conveyed to and discharged into the storage bins 9.

The conveyer or conveyers employed on the bridge may be of any suitable or usual construction, such as endless conveyers or cars, and it is the latter form of conveyer which I have herein illustrated. These cars are designated 10 and they are arranged to travel on tracks 11 carried by the bridge and extending longitudinally thereof. The tracks 11 are arranged to communicate with a permanent track 12 which is supported by the trestle-work 8 above the storage bins 9 thereon.

I have shown two tracks 11 carried by the bridge and these tracks are connected together at one end of the bridge by a loop 13 and at the other end of the bridge they communicate with the track 12 by suitable switches 14. The bridge will preferably be formed with a well 16 extending longitudinally thereof within which the hoisting apparatus presently to be described may be located, this construction being preferable because when the hoisting apparatus is located within the bridge a greater clearance is afforded beneath the bridge for the storage of coal or other material. The two tracks 11 are arranged either side of the well, and the coal or other material is deposited in the storage space 4 by loading the cars 10 at some suitable point, running them along the track 12 and onto the tracks 11 in the bridge and dumping said cars while on the tracks 11 either by hand or automatically.

The parts thus far described are or may be such as are usually found in coal-handling apparatus of this general type and form no part of my present invention, one feature of which relates to a novel arrangement of hoisting device and its controlling mechanism whereby the coal or other material which may be elevated from the storage space 4 may be discharged into cars 10 on either side of the well at the will of the operator.

In the forms of the invention shown in Figs. 1, 2, 4 and 5, the hoisting apparatus is mounted on a carriage 17 which travels longitudinally of the bridge within the well on suitable tracks 18, said carriage being propelled on said tracks by any suitable mechanism not shown. The hoisting device may have any suitable or usual construction, and in Figs. 1 to 5 I have shown more or less conventionally an electric hoist 19 which is arranged to operate a bucket, scoop, grab or other elevating device 20 by which the coal or other material may be elevated from the storage space, said elevating device having the usual fall ropes 21 which lead to the drums of the hoisting apparatus 19 and by which said elevating device is raised or lowered and is opened for the discharge of the material and closed to receive material. Although it is within my invention to use any type of elevating device, I will for convenience herein refer to said elevating device as a hoisting bucket, it be-

ing understood that I am not limited to any particular type of bucket in so doing.

The friction clutches for operating the hoisting drums of the hoist 19 are controlled by suitable levers 22 and the electric hoist may be controlled by a controller 23 of any suitable pattern, said controller and levers both being preferably mounted on the carriage 17.

In the embodiment shown in Figs. 1 and 2, means are provided whereby the bucket 20 may be brought into the position over either of the tracks 11 thereby to discharge material into cars on either of said tracks. One convenient way of thus positioning the bucket is to provide a trolley device 24 which is adapted to operate on a track 25 on the carriage 17 and arranged to extend transversely of the well 16. This trolley is provided with oppositely-disposed sheaves 26 between which the falls 21 pass and by moving said trolley on the track 25, it will be obvious that the bucket 20 may be brought into any desired position transversely of the well. While the trolley may be operated and controlled as to its position by any suitable means, I have herein shown for this purpose a cylinder 27 having a piston therein provided with a piston rod 28 extending from each end, each piston rod carrying a pulley 29 about which passes a flexible connection 30, one end of which leads to the trolley 24, and the other end of which is connected to the carriage, as at 31. The piston may be operated by any suitable motive fluid such, for instance, as compressed air, and means are arranged to admit the motive fluid to either end of the cylinder, thereby to move the piston in either direction. For this purpose I have shown a pipe 33 connected to each end of the cylinder and leading to a three-way valve 32, said valve having connected thereto a pipe 34 leading to a storage reservoir 35 containing compressed air or other motive fluid under pressure. By operating the valve 32 the motive fluid may be admitted to either end of the cylinder as will be obvious. 36 is an automatic pump of any suitable construction connected to the reservoir 35 by a pipe 37 and by means of which the pressure in the reservoir is maintained. This arrangement has the advantage that the trolley 24 may be readily moved into any position on the track and held there without the use of brakes or friction devices while the bucket is operated. In operating this device the coal or other material in the storage space 4 can be elevated by the bucket 20 and when the bucket is in its elevated position the trolley 24 may be operated to bring the filled bucket over either track 11, as shown in full and dotted lines in Fig. 2, whereby the material in the bucket can be discharged into cars on either track. If desired I may employ suitable hoppers 38 which may be secured directly to the carriage 17 or may be supported from a separate carriage traveling on the tracks 18, said hoppers being for the purpose of directing the material into the cars 10 as it is discharged from the buckets 20. These hoppers are not essential, however, as the material can be delivered directly from the bucket into the cars.

In using this apparatus it is possible to keep a continuous string of cars moving slowly on the tracks 12 and 11, said train of cars passing into the bridge at one end, around the loop 13 and out of the bridge again on to the tracks 12, and while said cars are slowly passing through the bridge the hoisting apparatus herein shown can be operated to elevate bucketfuls and discharge them into the cars 10, the successive buckets being discharged alternately into cars on the two tracks 11. In this way a material saving in the time of handling the coal or material can be effected.

In Fig. 2 I have shown the tracks 11 as situated within the well. In Fig. 4 which shows a similar arrangement of hoisting apparatus, said tracks 11 are situated outside of the well 16 and within the legs 39 of the bridge. Where the tracks are thus located the hoppers or chutes will be shaped so as to convey the material from the bucket through the open-work of the bridge into the cars 10. For this purpose I have shown said chutes as made in two parts, the part 40 being suspended from the carriage 17 and the part 41 being situated over the cars 10 and supported on carriages 42 running on tracks 43 extending longitudinally of the bridge. The hopper portions 41 have open inner sides and are provided with pivoted aprons 44 which direct the material from the chute 40 into said hopper portions, said hopper portions having open bottoms through which the material is discharged into the cars 10. The aprons 44 are supported in their operative position by ledges 45 formed on the chutes 40 or in any other suitable way. By pivoting these aprons to the hopper portions 41, said aprons may be swung up into a vertical position to permit the hopper portions to be moved longitudinally of the bridge.

The arrangement of hoisting apparatus shown in Fig. 4 is slightly different from that shown in Fig. 2 in that the falls 21 for the hoisting bucket after passing through the trolley 24 extend over a direction pulley 46 mounted on the carriage and from thence lead to the drums of the hoist 19.

In Figs. 5 and 7 I have shown a different arrangement wherein the trolley 24 is arranged to move in the direction of the length of the bridge rather than transversely thereto. Where this arrangement is employed the bucket 20 will always be placed centrally of the well, and in order to permit the material to be discharged from cars on either track 11, a special form of hopper and chute is used. As shown in Figs. 5 and 7, the track 25 on which the trolley 24 runs extends longitudinally of the bridge and suspended from each end of the carriage is a hopper or chute 50 which is provided with the two branches 51 which extend over the two tracks 11 so that material dumped into the hopper 50 will be carried into cars situated on both tracks. I propose to have such a hopper 50 suspended from each end of the carriage 17 so that the bucket 20 may be discharged first into one hopper and then into the other. The object of employing two hoppers is the same as that for which I make provision in the embodiment shown in Figs. 1 and 2 for discharging the material alternately into cars on the two tracks 11, that is, to make it possible to handle coal or other material with much greater rapidity than would be possible if the material were discharged into cars on one track only. It is not practical to move the train of cars on the tracks 11 intermittently, the only feasible way being to keep said cars slowly but continuously moving on said track. The cars, however, should be moving slowly enough so that each car will remain under each hopper long enough to receive a bucketful of material when the bucket is discharged. By arranging to discharge the buckets into cars on both tracks, as herein shown, the

cars may be moved at the requisite speed and yet the bucket 20 will be kept practically in constant motion.

In the forms of the invention thus far shown the hoist is supported on the carriage 17 which travels longitudinally of the bridge. Under some conditions it may be desirable to mount the hoist at some fixed place in the bridge such an embodiment being shown in Fg. 6 wherein the hoist designated 190 is situated at one end of the bridge. In this case the falls 21 will extend over a direction pulley 60 on the carriage 17 and thence to the drums of the hoist 190.

In order to stiffen the bridge against stress due to wind pressure, I propose to use strong-backs 126 which extend across the well and are connected to the two legs 39 of the bridge. These strong-backs may have any suitable construction and are in the nature of tie-members for tying together the two legs of the bridge. In Fig. 4 they are placed near the bottom of the bridge and thus serve not only to tie together the two sides of the bridge, but also to stiffen that portion of the legs in which the bracing is omitted to make room for the cars 10.

In Figs. 2 and 7 the strong-backs are shown situated above the tracks 11 at a sufficient height so as to permit the cars 10 to pass beneath them. Where the strong-backs are thus situated they would be in the way of the chutes 38 and 50 if said strong-backs were permanently secured in place, and for this reason I propose to make them capable of removal so that any individual strong-back may be removed to permit the carriage 17 with the depending chutes 38 and 50 to pass along the track. For thus detachably securing the strong-backs in place I have shown the ends thereof as received between two plates 127, see Fig. 8, which plates are riveted or otherwise secured to the post or upright 128 forming part of the bridge, said strong-back being bolted between the plates 127 by means of bolts 129. By removing the bolts any individual strong-back may be removed to permit the carriage 17 with its depending chutes or hoppers to be shifted along the track 18. Any number of these strong-backs may be used that are necessary to properly stiffen the bridge.

I have not attempted to illustrate herein all forms of my invention, but have selected merely the preferred embodiments thereof.

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

1. In a coal-handling apparatus, the combination with a movable bridge sustained at its ends and extending over an open storage space, of two conveyers thereon extending longitudinally thereof, a hoisting bucket, means to operate the same, and means to position said hoisting bucket over either conveyer whereby said bucket may be discharged into either conveyer.

2. In a coal-handling apparatus, the combination with a bridge, of two tracks carried thereby, an elevating device to elevate material, and means to discharge the material into cars on either track.

3. In a coal-handling apparatus, the combination with a bridge sustained at its ends and having a well extending longitudinally thereof, of a carriage supported on said bridge within said well and arranged to traverse said bridge longitudinally, a hoisting device supported by the carriage, and means to position said hoisting device at either side of the well for discharging its load.

4. In a coal-handling apparatus, the combination with a bridge having a well extending longitudinally thereof, of a carriage supported on said bridge within the well and movable longitudinally of the bridge, a track supported by the bridge either side of the well, a hoisting bucket depending from said carriage, means to operate said hoisting bucket, and means to discharge the contents thereof into cars on either track.

5. In a coal-handling apparatus, the combination with a bridge having a well extending longitudinally thereof, of a carriage supported on said bridge within said well and movable longitudinally thereof, tracks within the well on either side of the bridge, a hoisting bucket suspended from said carriage, means to operate said bucket, and means to discharge the contents thereof into cars on either track.

6. In a coal-handling apparatus, the combination with a movable bridge, of a hoisting device carried thereby, means to move the hoisting device longitudinally of the bridge a hoisting bucket operated by the hoisting device and movable means co-acting with the falls of the hoisting bucket to control the position thereof horizontally in a direction transversely to the length of the bridge.

7. In a coal-handling apparatus, the combination with a movable bridge having a well, of a hoisting device carried thereby within the well, a hoisting bucket operated by the hoisting device and movable means co-acting with the falls of the hoisting bucket to control the position thereof transversely of the bridge.

8. In a coal-handling apparatus, the combination with a bridge, of a carriage movably mounted thereon, a track on said carriage, a trolley on the track, a hoisting device including a hoisting bucket suspended from said carriage by fall ropes which have operative engagement with the trolley, and means to operate the trolley to shift the position horizontally of the hoisting bucket.

9. In a coal handling apparatus, the combination with a bridge, of a carriage movably mounted thereon, a track on said carriage extending transversely of the bridge, a trolley on said track, a hoisting device including a hoisting bucket suspended from the carriage by fall ropes which have operative engagement with the trolley, and means to shift the position of the trolley on the track thereby to shift the position horizontally of the hoisting bucket.

10. In a coal handling apparatus, the combination with a bridge having a well, of a carriage movable longitudinally of the bridge within the well, a hoisting bucket suspended from the carriage, means for operating the hoisting bucket, and means to move said hoisting bucket horizontally with relation to the carriage.

11. In a coal handling apparatus, the combination with a bridge having a well, of a carriage movable longitudinally of the bridge within the well, a hoisting bucket suspended from the carriage, means for operating the hoisting bucket, and means to move said hoisting bucket horizontally with relation to the carriage, and to hold said bucket in any desired horizontal position.

12. In a coal handling apparatus, the combination with a movable bridge having a well, of a carriage mounted thereon for movement longitudinally thereof within the well, a hoisting bucket suspended from the carriage, means for operating the hoisting bucket, and other means independent from the means for operating the hoisting bucket for moving said hoisting bucket horizontally with relation to the carriage.

13. In a coal-handling apparatus, the combination with a bridge having a well extending longitudinally thereof, of a carriage within the well arranged to move longitudinally of the bridge, a track on each side of the bridge within the well, a hoisting bucket suspended from the carriage, and means to operate the bucket to elevate material and discharge it into a car on one of the tracks.

14. In a coal-handling apparatus, the combination with a bridge having a longitudinal extending well, of a track on each side of the bridge within the well and conveyers on said tracks.

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

JAMES M. McCLELLON.

Witnesses:

MARGARET A. DUNN,

BERTHA F. HEUSER.