Dec. 30, 1924.

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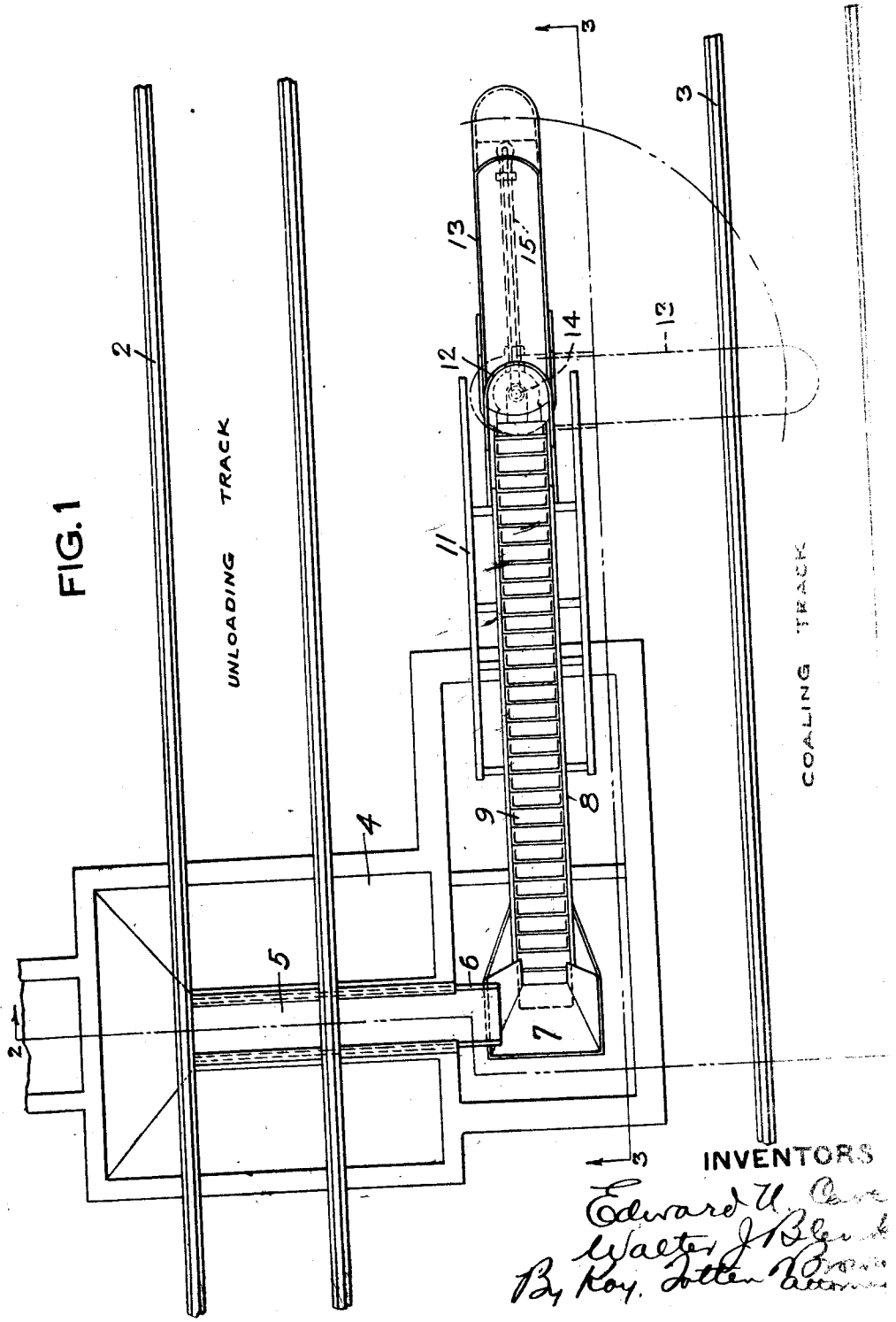
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APPARATUS FOR COALING LOCOMOTIVES

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FIG. 1



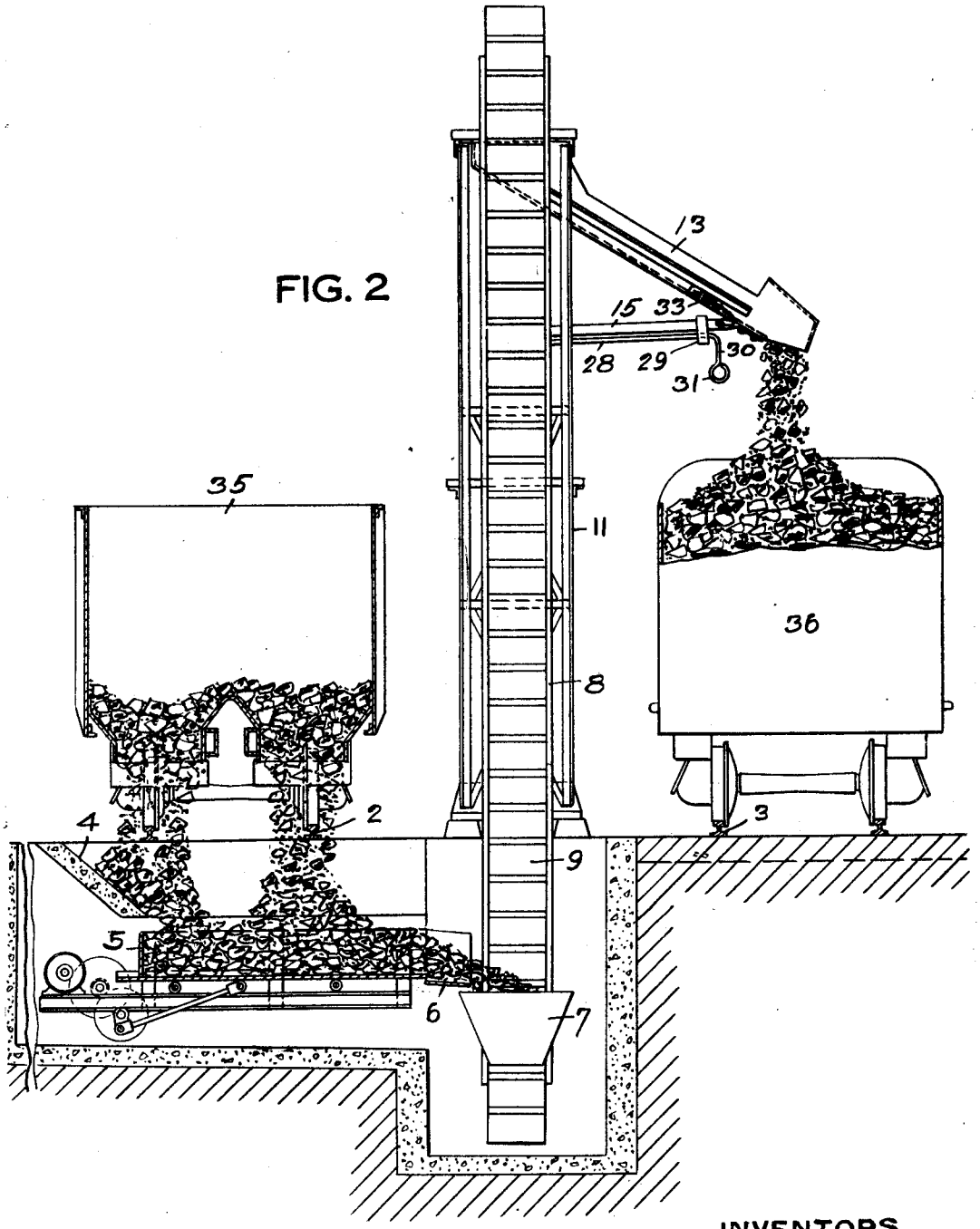
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APPARATUS FOR COALING LOCOMOTIVES

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FIG. 2



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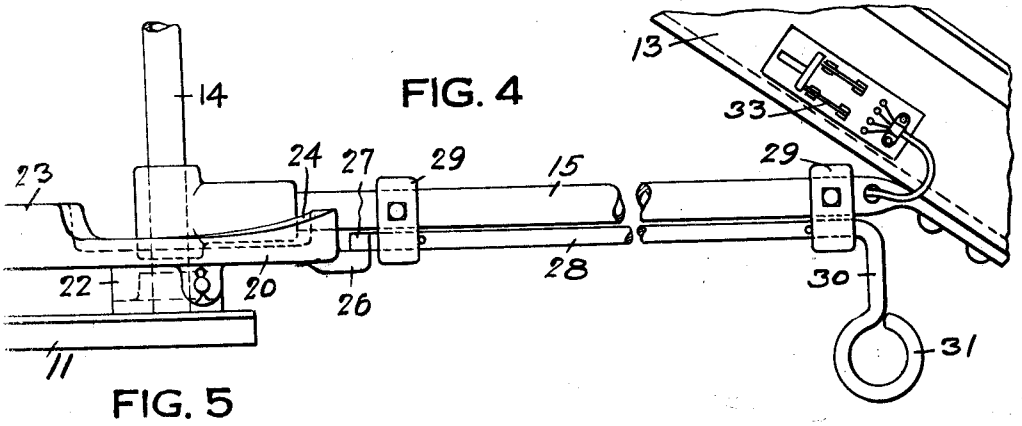


FIG. 4

FIG. 5

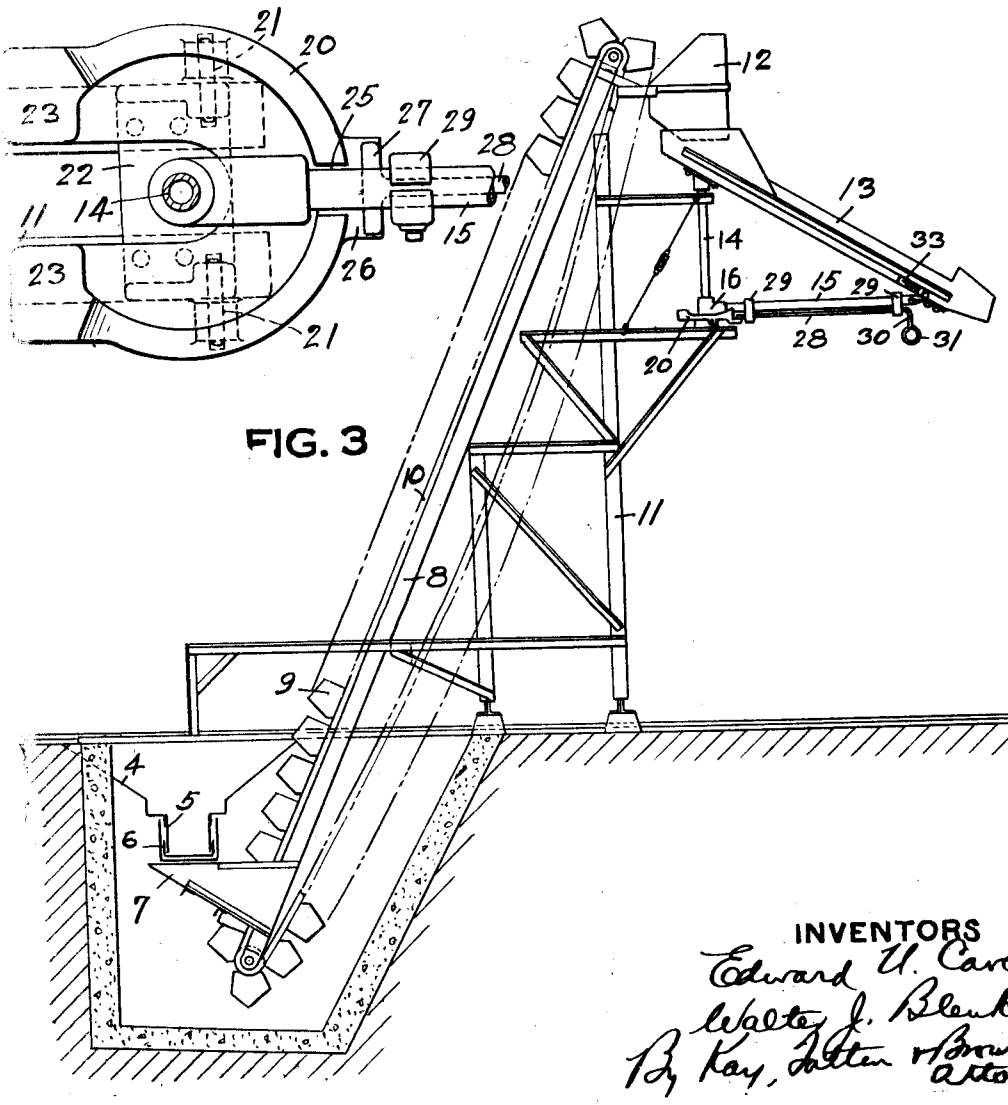


FIG. 3

INVENTORS
Edward U. Cave
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Patented Dec. 30, 1924. 1,521,276

UNITED STATES PATENT OFFICE.

EDWARD U. CAVE, OF LANCASTER, OHIO, AND WALTER J. BLENKO, OF PITTSBURGH, PENNSYLVANIA, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE FAIRFIELD ENGINEERING CO., OF MARION, OHIO, A CORPORATION OF OHIO.

APPARATUS FOR COALING LOCOMOTIVES.

Application filed July 19, 1921. Serial No. 485,873.

To all whom it may concern:

Be it known that we, EDWARD U. CAVE and WALTER J. BLENKO, citizens of the United States, residents of Lancaster and Pittsburgh, respectively, in the counties of Fairfield and Allegheny, respectively, and States of Ohio and Pennsylvania, respectively, have invented a new and useful Improvement in Apparatus for Coaling Locomotives; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to methods and apparatus for transferring material from one railway car to another, and has special reference to coaling locomotive tenders and unloading bad-order cars.

One object of our invention is to provide an improved and simple method of transferring material from one railway vehicle to another without the use of storage bins or manual labor.

Another object of our invention is to provide novel and effective means for carrying the above-indicated method into effect, such apparatus comprising, in general, two railway tracks, a pit located under one of the tracks, a mechanical feeder located in the pit and operating in a direction transverse to the tracks, and a mechanical elevator disposed between the tracks and operating to receive the material from the feeder, to convey it upwardly and in a direction more or less parallel to the tracks, and finally to discharge the material directly into the tender or other vehicle to be loaded.

A further object of our invention is to provide improved means for controlling and operating the delivery chutes of loading apparatus and for similar purposes.

Every railway yard equipment must include arrangements for coaling locomotive tenders, and the universal practice has heretofore been to provide large storage bins which are kept filled with coal and to which the tenders are brought for coaling. These installations are very expensive and therefore are located far apart, so that it is usually necessary to run each locomotive a considerable distance each time that it is coaled. The cost of coaling a locomotive by this means is as great as the cost of loading the tenders by hand-shoveling, and, although there is a considerable saving in time as compared with hand loading, very busy railway yards must keep more locomotives in service than are actually required, on account of the delays incident to recoaling.

According to our present invention we dispense with the storage bins entirely, and we deliver coal into the locomotive tenders directly from the cars in which the coal is received at the yards. For this purpose we provide a mechanical unloader, the construction of which may be such as is commonly used in other kinds of unloading operations, the novelty of our present method and apparatus residing in the application of such a loader to the transfer of material from one railway car directly to another. Since our new installations is relatively very inexpensive, several coaling stations may be established in every railway yard, so that no locomotive will have to run any great distance to a coaling point when it is necessary to replenish the tender.

The accompanying drawing shows the general arrangement of a loading station constructed in accordance with our invention. Fig. 1 is a plan view of the entire installation; Fig. 2 is a vertical sectional view, the section being taken on the line 2—2, Fig. 1; Fig. 3 is a side elevational view of the conveyor, showing the relation of the chute to the elevator, the transfer pit being shown in section on the line 3—3, Fig. 1; Fig. 4 is a fragmentary side elevational view showing the chute locking device; and Fig. 5 is a plan view of the locking device shown in Fig. 4.

Fig. 1 shows two parallel and adjacent railway tracks, the numeral 2 indicating the unloading track, and the numeral 3 indicating the coaling track. A pit 4, having downwardly converging side and end walls, is located beneath the unloading track 2, and a mechanical feeder 5 is located in the pit 4, this feeder being shown conventionally since its details of construction form no part of my present invention. The feeder 5 discharges through a short stationary chute 6 into a hopper 7 carried by the frame 8 of an inclined endless conveyor consisting of a series of buckets 9 carried on suitable endless chains 10 and supported on a framework 11. Our present invention is not concerned with the details of construction of

the elevating portion of this conveyor and further description of this elevator is therefore omitted.

At the upper end of the elevator is a guide hopper 12 which delivers the coal or other material into an inclined chute 13 which is rotatably supported on a standard 14 and is braced by means of a horizontal bar 15, the outer end of which is attached to the chute 13 while the inner end is provided with a fitting 16 that loosely surrounds the standard 14.

In order to normally hold the chute 13 in line with the elevator frame 8, we provide a novel form of locking device, the details of which are best shown in Figs. 3, 4 and 5. This locking device consists of a U-shaped lock member 20 having trunnions 21 by means of which the lock member 20 is pivotally supported in a bearing member 22 at the foot of the standard 14. Counterweights 23 are attached to or made integral with the free ends of the U-shaped lock member 20 and these counterweights tend to lift the intermediate portion or bight of the lock member. The upper surfaces of both arms of the lock member 20 are inclined upwardly, as shown at 24, and are cut away, providing a central recess 25 which, when the chute is in the full-line position shown in Fig. 1, receives the bar 15 and thus locks the chute in this position.

Adjacent to the notch 25 the lock member 20 is provided with a flat projection 26 upon which rests the T-shaped head 27 of a rod 28 which is loosely separated from the bar 15 by means of straps 29. The outer end of the rod 28 is bent, as shown at 30, and is provided with a ring 31 for convenient operation. When the rod 28 is rotated on its axis in either direction its head 27 depresses the projection 26 and so brings the locking member 20 below the bar 15, thus releasing the chute and permitting it to be swung in either direction. When the chute is returned to the full line position shown in Fig. 1 the bar 15 slides along one of the curved upper surfaces 24 of the locking member 20 and when the bar 15 reaches the notch 25 the counterweights 23 raise the locking member and cause it to engage and hold the bar 15 in the notch 25.

The elevator is preferably driven by electric power where current is available. In that case the main control switches are located in a box on the frame of the elevator in a position convenient to the operator on the ground. An auxiliary push button control is mounted on the swinging chute, as indicated at 33 on the drawing, where it can easily be reached by the man on the tender or car, enabling him to start or stop the machine at will without descending to the ground.

When the installation described above is operated to coal a locomotive tender, a hopper-bottom car is run upon a track 2 and is placed over the pit 4, such a car being shown at 35 on Fig. 2, and the tender 36 to be coaled is run upon the coaling track 3 and is stopped in such a position that the chute 13 can be swung over the tender. The fireman seizes the ring 31 with his bar and pulls it toward him, thereby rocking the rod 28 and releasing the locking device in the manner described above. With the same movement, he swings the chute over the tender and the coal is dumped from the car 35 into the pit 4, is transferred by the feeder 5 into the hopper 6, and thence is raised by the elevator and discharged through the chute 13 into the tender. When sufficient coal has been loaded into the tender the feeder and elevator are stopped by means of the push-button control at 33, and the fireman swings the chute back into its normal position where it is caught and held by the locking device. This whole operation consumes only a few minutes and, as stated above, coaling stations of this kind may be located at any convenient intervals so that any locomotive can be coaled without loss of time.

The hopper beneath the coal car permits the accumulation there of sufficient coal to fill a locomotive tender without attention during the loading process. One type of installation now in practical use has a capacity of one ton per minute, the operation being practically automatic and depending only on free running of coal from the car.

It is to be particularly observed that very little space is required for this equipment, the maximum width of space required for the elevator when placed parallel to the tracks being 3½ feet. Where wider track spacing makes it desirable, however, the elevator can be set at an angle to the feeder from 90° to 180° and in either direction.

We have described our method and apparatus in connection with the coaling of locomotive tenders because this is the application of our invention where the most striking economies are effected and where the departure from the previous practice is most marked. However, our invention is not confined to this particular use, but may also be employed for transferring any kind of loose material from one railway car to another. Such transfers of material are often necessary when a car containing gravel, coal, ore, or any other loose material becomes damaged and it is desired to transfer the load from the "bad-order" car to a good car. In such cases it has heretofore been the practice to change the material from one car to another by hand shoveling, sometimes assisted by pivoted chutes or the like set up between the cars. Such a method of transfer consumes at least a

working day for one car, and in the case of material that is difficult to handle, may even consume two days, thus involving both delay and expense.

By our present invention the load is transferred from a bad-order car to a good car in a few minutes, the bad-order car being placed above the feeder, like the car 35 shown in Fig. 2, and the good car being placed in proper position, like the tender 36 on Fig. 2.

By this means manual labor is almost entirely eliminated and with one man to clean the cars our present system is capable of transferring from 35 to 50 tons per hour, and in many cases more, depending on the kind of material being handled. Congestion of bad-order cars in yards and along sidings is thus immediately relieved when our system is installed.

The chute 13 may be swung in either direction from its intermediate position shown in Fig. 1, so that the tender or other car to be loaded may be placed upon the track 2 instead of upon the track 3. This makes it possible not only to install our invention where only one coaling track is available, but also makes it possible to coal two locomotives or load two railway cars in rapid succession, the two tenders or cars to be loaded being set opposite to each other on the tracks 2 and 3 and the chute 13 being swung first into position to load one car and then swung around into position to load the other car.

The economies which we have effected both in the cost of initial installation and the time and expense of operation will be evident from the foregoing description. It will be understood that our invention is not restricted to the use of any particular type or construction of feeding or elevating apparatus, the scope of our invention being limited only by the appended claims.

We claim as our invention:

1. Apparatus for transferring material from a railway car to a locomotive tender or other car comprising two adjacent railway tracks, a pit beneath one of said tracks, a second pit disposed between said tracks, means for transferring the material from said first pit into said second pit, a conveyor between the adjacent tracks communicating with said second pit and arranged at right angles to the direction of feed of said transferring means for elevating the material, and means for discharging the said material into the receiving car.

2. Apparatus for transferring material from a railway car to a locomotive tender or other car, comprising two adjacent railway tracks, a pit beneath one of said tracks, a feeder in said pit reciprocating in a direction transverse to said tracks, an endless elevator disposed between the said tracks and adapted to receive material from the said feeder, and a chute adapted to receive material from the said elevator and to deliver the said material into a car on the adjacent track.

3. Apparatus for transferring material from a railway car to a locomotive tender or other car, comprising two adjacent and substantially parallel railway tracks, a pit beneath one of said tracks, an inclined endless conveyor disposed between the said tracks and extending in the same general direction as said tracks, a feeder in said pit reciprocating transversely to said tracks and adapted to transfer material from said pit to said elevator, and a chute for delivering the material from said elevator into a car on the adjacent track.

4. Apparatus for transferring material from a railway car to a locomotive tender or other car, comprising two adjacent railway tracks, a pit beneath one of said tracks, an inclined endless conveyer disposed between the said tracks, a feeder in said pit reciprocating transversely to said tracks and adapted to transfer material from said pit to said elevator, and a chute for delivering the material from said elevator into a car on the adjacent track, the said chute being pivotally attached to the upper end of the said elevator.

5. Apparatus for transferring material from a railway car to a locomotive tender or other car, comprising two adjacent railway tracks, a pit beneath one of said tracks, an inclined endless conveyer disposed between the said tracks and extending in the same general direction as said tracks, a feeder in said pit reciprocating transversely to said tracks and adapted to transfer material from said pit to said elevator, a chute for delivering the material from said elevator into a car on the adjacent track, the said chute being pivotally attached to the upper end of the said elevator, and means for locking the said chute in a position parallel with said tracks.

6. Loading and unloading apparatus comprising a horizontally swinging conveyer and means for locking the said conveyer in a given position, the said locking means comprising a lock member pivoted on a horizontal axis adjacent to the vertical axis of said swinging member, a counterweight normally holding the said lock member in locking engagement with a portion of said swinging member, and means for simultaneously depressing said lock member and swinging said swinging member.

7. Loading and unloading apparatus comprising a horizontally swinging chute and means for locking the said chute in a given position, the said locking means comprising a U-shaped lock member pivoted on a horizontal axis adjacent to the vertical axis of

said chute, and having a locking recess, counterweights attached to the free ends of said U-shaped lock member and normally holding the said locking recess in engagement with a portion of the said chute, a projection carried by said lock member adjacent to said notch, a rod carried by said chute and having a T-shaped head resting on said projection, and means for turning the said rod and for thereby depressing the said lock member and releasing said chute.

8. Apparatus for transferring material from a railway car to a locomotive tender or other car comprising two adjacent railway tracks, a conveyer disposed between said tracks, means for receiving material from a car on one of said tracks and for feeding said material to said conveyor, and a chute disposed to receive material from the said conveyer and to discharge said material into a car upon either of said tracks.

9. Apparatus for transferring material from a railway car to a locomotive tender or other car comprising two adjacent railway tracks, an inclined conveyer disposed wholly between said tracks and extending generally parallel thereto, means for receiving material from a car on one of said tracks and for feeding said material to said conveyer, and a chute disposed to receive material from the said conveyer and to discharge said material into a car upon either of said tracks.

10. Apparatus for transferring material from a railway car to a locomotive tender or other car comprising two adjacent railway tracks at substantially the same level, a pit beneath one of said tracks, a second pit beneath and between said tracks, means for transferring material from the said first pit into the said second pit, a conveyer disposed at right angles to the feed of said transferring means and wholly between said tracks for elevating the material from second pit, and means for discharging the said material into a car on the adjacent track.

In testimony whereof, I the said EDWARD U. CAVE, have hereunto set my hand.

EDWARD U. CAVE.

Witnesses:

TRECY H. SHERWOOD,

WM. H. BLENKO.

In testimony whereof, I the said WALTER J. BLENKO, have hereunto set my hand.

WALTER J. BLENKO.

Witnesses:

JOHN F. WILL,

EDITH K. FREESE.