C. BENTHAM.

APPARATUS FOR UNLOADING GRAIN.

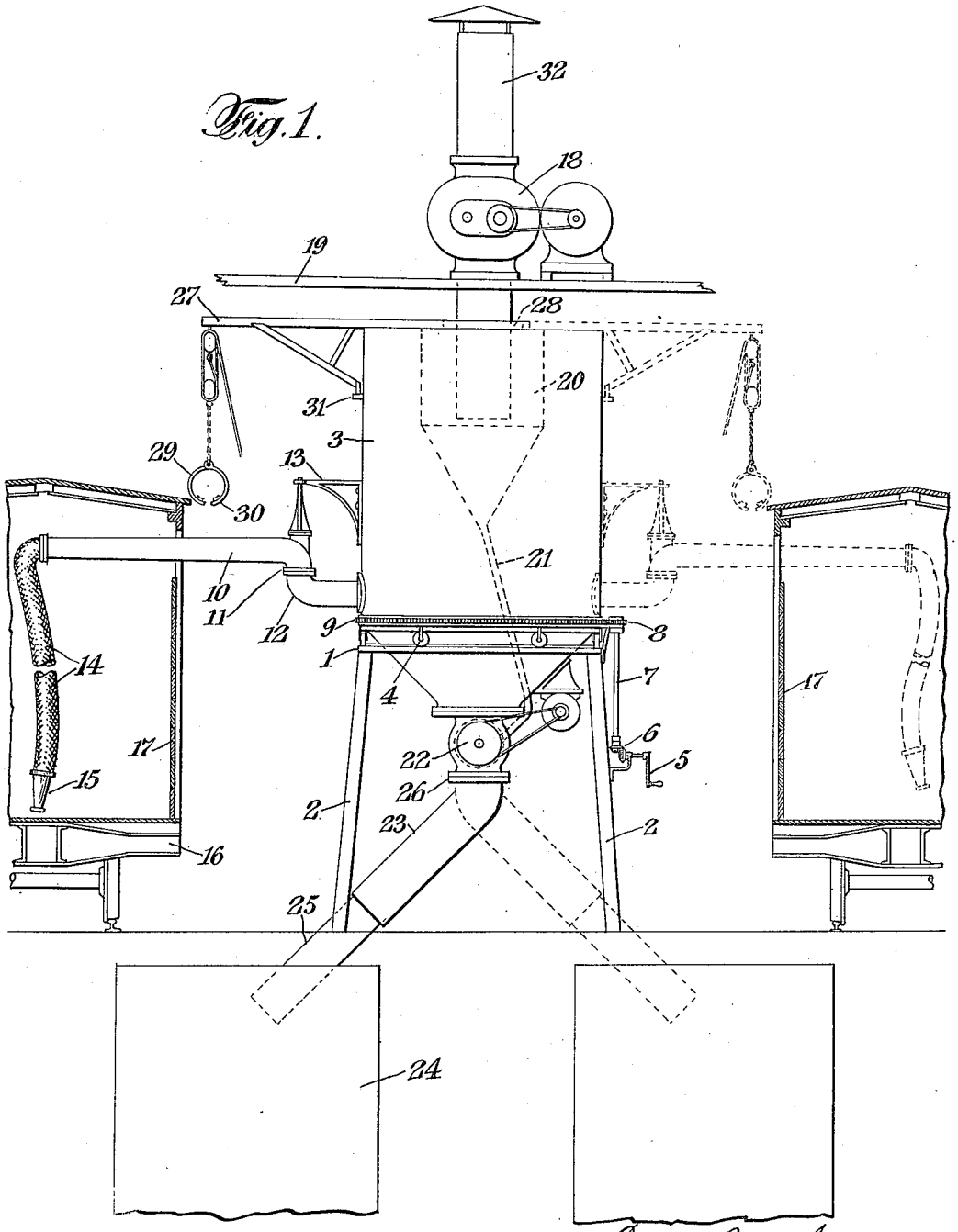
APPLICATION FILED JUNE 11, 1920.

1,407,510.

Patented Feb. 21, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



INVENTOR

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Fig. 3.

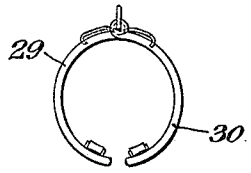


Fig. 2.

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UNITED STATES PATENT OFFICE.

CECIL BENTHAM, OF MANCHESTER, ENGLAND, ASSIGNOR TO HENRY SIMON LIMITED, OF MANCHESTER, ENGLAND, A CORPORATION OF GREAT BRITAIN.

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1,407,510. Specification of Letters Patent. Patented Feb. 21, 1922.

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To all whom it may concern:

Be it known that I, CECIL BENTHAM, a subject of the King of England, residing at Manchester, England, have invented certain new and useful Improvements in Apparatus for Unloading Grain, of which the following is a specification.

My invention relates to devices for handling granular material and has particular reference to that class of devices known as grain unloading or conveying apparatus.

The primary object of my invention is to provide a device of the above mentioned character so constructed that it may be conveniently placed between railway cars positioned at opposite sides thereof, and so operated as to enable the conduit leading from one car into the receiver to be readily removed therefrom and projected or extended into the other railway car located at the opposite side of the apparatus.

A further object of the invention is to provide in a device of the above mentioned character a means whereby the conduit leading into the receiver thereof may be effectively supported or braced in any of the various positions adapted to be assumed thereby.

Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings.

Referring to the drawings:

Figure 1 is an elevation showing the construction of my device. The dotted lines indicate the position of the apparatus when not in use. The method in which the apparatus may be used to unload cars on the opposite track is also indicated by dotted lines.

Figure 2 is a plan view of my device with parts of two cars. The cars are shown in staggered relation indicating that it is not necessary that they be exactly located over the discharging bin.

Figure 3 shows the split clip for supporting the flexible suction pipe when not in use.

In the embodiment of the invention shown in the drawings, a circular track 1 is supported by four up-rights 2, which may be made of angle iron or any suitable material. A receiving tank or cylinder 3 is adapted to rotate on the track 1 by means of roller bearings 4. The receiver 3 is rotated by means of a crank 5, gears 6, shaft 7, gear 8 and rack 9 to enable a suction pipe 10 to be pushed into a car 16 over the grain door 17 after the car has been brought into a position near a receiving bin 24. The suction pipe 10, which is of metal, is connected to the cylindrical receiver 3 through an air-tight swivel joint 11 and elbow 12. In order to afford a rigid construction, the pipe 10 is supported by a bracket 13 secured to the receiver 3. A flexible suction pipe 14 is attached to the metal pipe 10, and is provided with a nozzle 15. An exhauster 18, which may be driven by a motor, as shown, or any other convenient means, is supported on the floor 19 just above the cylinder 3 and is connected thereto by means of an air-tight swivel joint not shown. A dust separator 20 removes the dust from the exhaust air and returns it to the grain through a pipe 21 so that there will be no loss in original weight. A rotary valve 22, which is motor driven and rotates with the receiver allows the grain to escape from the receiving cylinder 3 through a chute 23 into the receiving bin 24. The chute 23 is provided with a telescopic section 25 to enable it to be withdrawn from the bin 24 when the cylindrical receiver 3 is turned. The chute 23 is secured to the body of the valve 22 by means of a joint 26 which may be swiveled if desired. A jib 27, which is secured to the receiver 3 by a swivel connection 28, supports the flexible pipe 14 by means of a split spring pressed clip 29 when the pipe 10 and the flexible pipe 14 are removed from the car and out of operative position. The split clip 29 is provided with rollers 30. The jib 27 is provided with a roller 31 which rotates about the tank 3 when the jib is moved. It is obvious by this arrangement that the jib 27 may be rotated with the receiving cylinder 3, or may be rotated in a direction opposite to that of the receiving cylinder 3, in order to support the pipe 14 about the circumference of the tank 3 when the device is not in use.

The operation of my device is as follows:

A car is brought to a position approximately over the receiving bin 24 since my invention makes it unnecessary to spot the cars as in the present practice. At that time the pipe 10 is in the retracted position shown by the dotted lines in Figure 2. The receiver 3 is then rotated by means of the rack 9, gear 8, shaft 7, gears 6 and crank 5 so as to enable the pipe 10 to be inserted in the car over the grain door 17. This also brings the discharge chute

23 over the receiving bin 24. The connection between the pipe and the bin is effected by the telescoping member 25. The exhauster 18 is then started; the grain is drawn through the nozzle 15, flexible pipe 14, metal pipe 10, elbow 12, and falls into the hopper of the cylinder 3, and is discharged through the valve 22, which may be a rotary valve driven by a motor as indicated, through the chute 23 with the telescopic section 25 into the receiving bin 24. The dust, which is drawn in with the grain through the pipe 10, is separated from the exhaust air by means of the separator 20; falls through the pipe 21 and is returned to the grain through the rotary valve 22. The exhausted air escapes through the pipe 32 at the top of the device.

By means of my invention cars can be emptied quickly and economically. All necessity of spotting cars is removed. The apparatus can be utilized for unloading cars on both sides as indicated by the dotted lines. It is not necessary that the exhauster should be supported on a floor above the cylinder 3. The exhauster and motor may be secured to the top of the receiving cylinder 3, in which event, the electrical connections would be flexible. It is also apparent that my device could be mounted upon wheels adapted to be moved on a third set of tracks between the cars so that the unloading device could be moved from car to car and bin to bin without the necessity of moving the cars.

It is obvious that various modifications may be made in the construction shown in the drawings and above particularly described within the principle and scope of my invention.

I claim:

1. A device for handling granular material, comprising a rotatable receiver, means for rotating said receiver about a vertical axis, a tubular member rigidly connected to the side of said receiver and communicating therewith, a conduit pivotally connected to said tubular member and adapted to be swung about its pivotal connection to and from an extended position with respect to said tubular member, and means for relieving pressure within said receiver whereby the material to be handled is drawn into said receiver through said conduit and tubular member.

2. A device for handling granular material, comprising a rotatable receiver, means for rotating said receiver about a vertical axis, a tubular member rigidly connected to the side of said receiver and communicating therewith, a conduit pivotally connected to said tubular member and adapted to be swung about its pivotal connection to and from an extended position with respect to said tubular member, means associated with said receiver but adapted to be moved with respect thereto for supporting said conduit in various positions adapted to be assumed thereby with respect to said tubular member, and means for relieving pressure within said receiver whereby the material to be handled is drawn into said receiver through said conduit and tubular member.

3. A device for handling granular material, comprising a rotatable receiver having a vertical axis, means for rotating said receiver, a tubular member rigidly connected to the side of said receiver and communicating therewith, a conduit pivotally connected to said tubular member and adapted to be swung about its pivotal connection to and from an extended position with respect to said tubular member, a track secured to said receiver, a jib supported by said track and adapted to traverse the same, means connecting said conduit with said jib for supporting the conduit in the various positions adapted to be assumed by it with respect to said tubular member, and means for relieving pressure within said receiver whereby the material to be handled is drawn into said receiver through said conduit and tubular member.

In testimony whereof, I have affixed my signature to this specification.

CECIL BENTHAM.