Dec. 9, 1924. 1,518,759

A. J. SAYERS

LOADING BOOM

Filed March 12, 1923 2 Sheets-Sheet 1

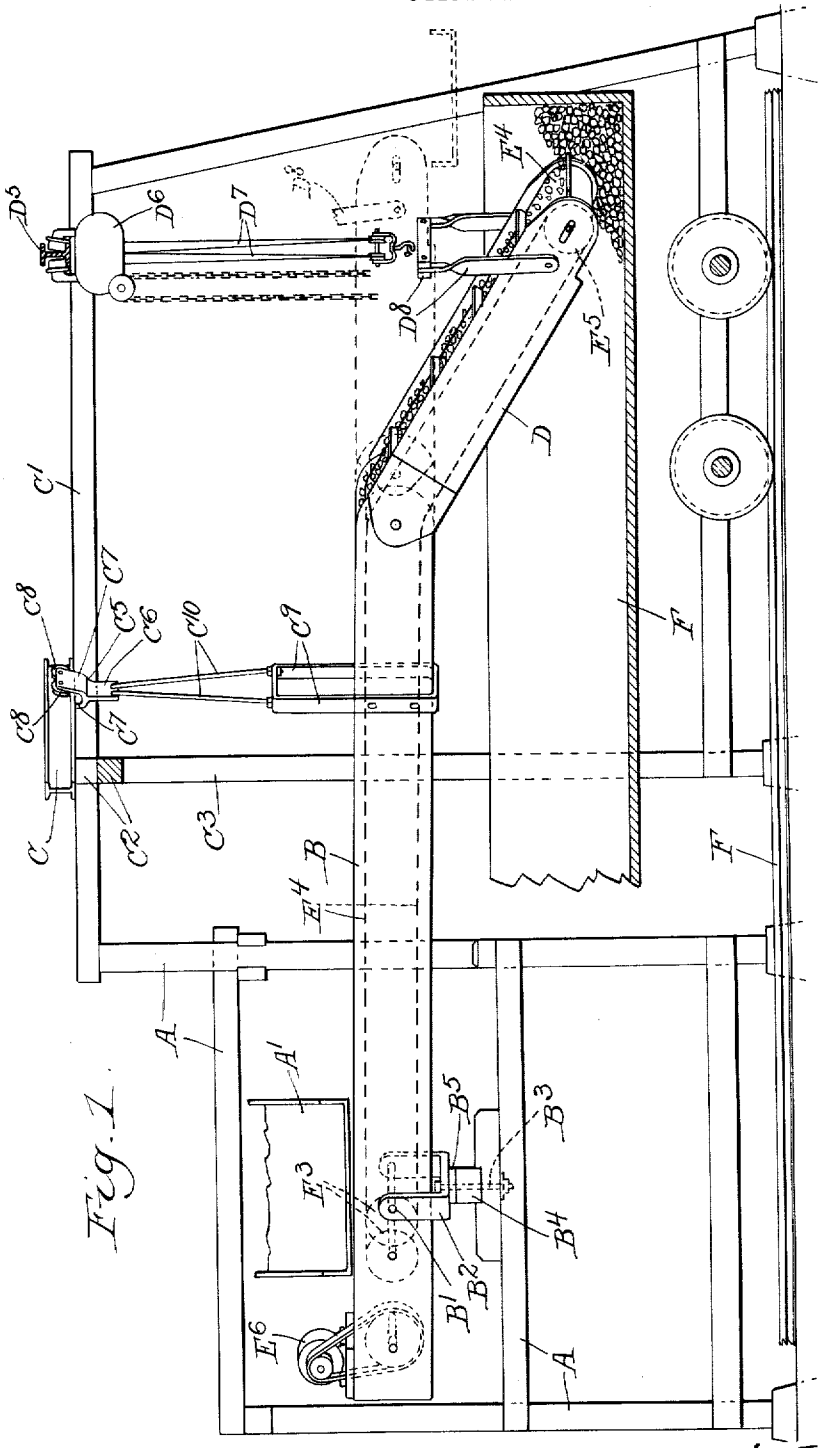


Fig. 1.

Inventor.
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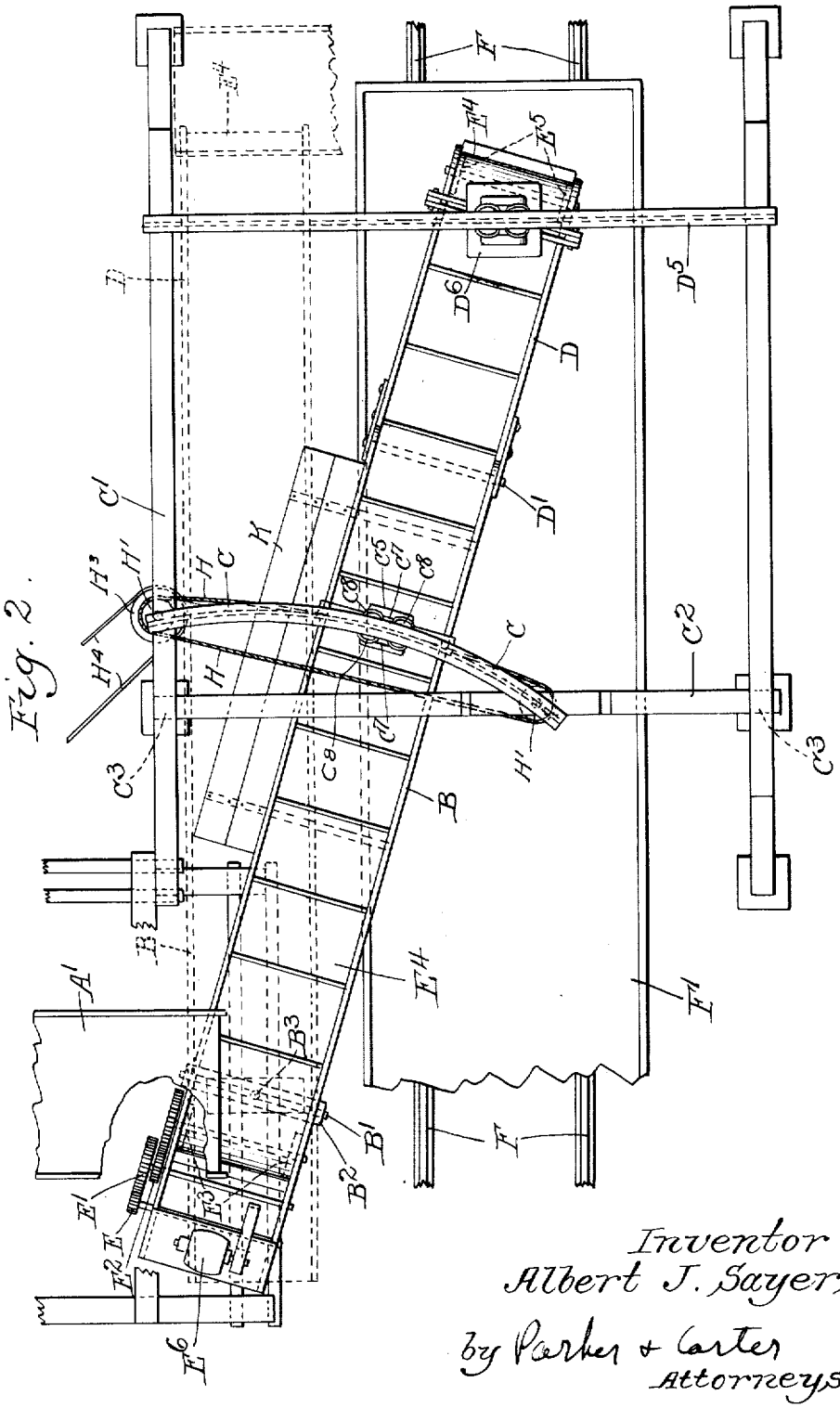


Fig. 2.

Inventor.
Albert J. Sayers.
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Patented Dec. 9, 1924. 1,518,759

UNITED STATES PATENT OFFICE.

ALBERT J. SAYERS, OF CHICAGO, ILLINOIS, ASSIGNOR TO LINK-BELT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

LOADING BOOM.

Application filed March 12, 1923. Serial No. 624,337.

To all whom it may concern:

Be it known that I, ALBERT J. SAYERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Loading Booms, of which the following is a specification.

My invention relates to a loading boom for loading coal or other similarly divided substances upon cars, and has particular relation to a boom adapted to deliver such materials to a train consisting partly of open topped cars and partly of box cars. Another object is to provide a loading boom adapted to receive material at a point to one side of the track along which the cars pass and at a level lower than the tops of the cars. Another object is to provide a boom adapted to minimize the breakage of the coal at the point where the coal is delivered to the boom and at the point where the coal is delivered from the boom to the car. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings wherein—

Figure 1 is a side elevation with parts in section.

Figure 2 is a plan view.

Like parts are illustrated by like symbols throughout the specification and drawings.

A, A are the frame members of any suitable tipple or supporting structure, the details of which form no part of the present invention. A^1 is the delivery end of any suitable shaking chute or screen down which passes the material to be delivered, herein illustrated as a relatively broad screen.

B is a horizontally supported loading boom section which is pivoted as at B^1 in the yoke B^2 which in turn is swiveled or pivoted upon the vertical element B^3 and is supported upon the block B^4 which is provided with any suitable bearing surface or member B^5.

The outer end of the boom section may be supported by any means adapted to maintain the boom in horizontal position, while permitting free rotation about its vertical pivot. I illustrate, however, the arcuate track C overlying the boom and supported, for example, at one end upon the horizontal frame member C^1 and at the other upon the transversal frame member C^2 supported in turn upon the upright members C^3 at both sides of the track. Adapted to travel along the arcuate track C is a trolley member C^5 which is provided with a depending flange C^6 and upwardly projecting arms C^7, terminating in rollers C^8 which engage the lower flange of the track C. C^9 is a supporting frame secured adjacent the outer end of the boom section B and connected to the trolley element, for example, by the rods C^{10}. Any suitable means may be provided for moving the trolley element along the track or for otherwise rotating the boom section B about its vertical pivot.

However, I illustrate herein a cable H running about sheaves or pulleys H^1 and secured at each end to the trolley member C^5. Any suitable means may be used to drive one of the pulleys H^1, which may be associated with a drive pulley H^3 about which passes the belt H^4 to any suitable power source.

While I have illustrated an over-lying track, it is obvious that the boom might be supported by an arcuate track lying at the same level as the track upon which the railroad cars run, the boom being supported by any suitable relatively rigid support which is shaped to permit the outer end of the boom to swing out over the car as illustrated in Figure 1.

D is an outer or terminal boom section pivoted to the section B as at D^1. I provide any suitable tackle whereby the inclination of the section D in relation to the section B may be controlled at will. The upper end of said tackle might be adapted to ride along the arcuate track in unison with the movement of the boom B, but I have illustrated a separate transverse track D^5 along which travels a trolley element D^6 which is connected by any suitable tackle D^7 with the yoke D^8 pivoted to the outer end of said section D.

E^6 is any suitable motive means mounted upon the boom and adapted to drive, through the gears E, E^1, E^2, the conveyor sprocket E^3 to propel the endless conveyor E^4 which extends thereabout and thence to the end of the boom section D where it passes about the terminal sprocket E^5. Any suitable supporting means may be provided for the conveyor, the details of which form no part of the present invention.

F, F are the railroad tracks along which

the cars to be loaded pass and F^1 is a diagrammatically illustrated open topped car. K is any suitable picking table mounted upon or along the ma n boom section B.

It will be realized that while I have illustrated a working device, many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention.

The use and operation of my invention are as follows:

It is frequently necessary to coal a mixed train of open and closed cars. The direct loading boom normally used for coaling open cars is in many instances not suited for coaling the closed car. If the loading boom is mounted above and in line with the track, it will conveniently drop coal into the top of an open car, but it is not conveniently located for delivering coal into the side door of a closed car. In some cases, moreover, the point of delivery of the coal to the boom is lower than the necessary point of clearance for a closed car. I have provided a loading boom which will fill open and closed cars with equal facility and which is adapted to receive coal from a point lower than the top of a closed car.

Preferably I employ a boom provided with an endless belt or conveyor which receives coal at one end of the boom and conveys it along the boom, regardless of the angle at which the boom is positioned and deposits it in the opposite end of the boom.

In order to minimize breakage at the point where the coal is delivered to the boom, I provide a boom consisting of two sections, the inner or primary section being pivoted on a vertical axis adjacent the end of the coal delivery screen or chute, but so mounted at its outer end as to be held continuously in a horizontal plane. Thus even where a broad screen is used, its delivery point can be placed so close to the top of the loading boom that there is relatively no breakage. Where an inclined boom is used, or a boom rotatable about a horizontal axis, there would be interference between the boom and the screen or chute. Furthermore, while the coal at the side of the screen nearest the pivot of the chute might drop without breakage, the inclination of the boom would produce a larger and often damaging drop at the opposite edge of the screen.

The horizontal boom section is mounted at a height sufficient to clear the top of an open coal car and is pivoted on a vertical axis at its end adjacent the coal screen. I have illustrated an over-lying track supporting the outer end of the horizontal section, but it obviously might be supported by a track upon the ground level, the essential point being that means are provided for supporting the boom in a horizontal plane and for swinging it out over the top of an open coal car, the boom being vertically pivoted at a point to one side of the track along which the coal cars are conveyed.

To enable the coal to be delivered without breakage to the interior of the coal car, I provide a boom with an end section pivoted horizontally to the horizontal section and provided with an over-lying track and hoisting means for raising and lowering it. Thus the boom can deliver coal without breakage to cars of varying floor levels.

In coaling a mixed train, when an open topped car has been coaled and is followed by a closed car, the end section is raised to clear the top of the car and the whole boom is swung to one side of the track in position parallel with the train. The closed car is then spotted with its door way adjacent the end of the boom. Coal is then conveyed along the boom and deposited in any suitable chute whereby it is delivered to the interior of the closed car, and thereby distributed in final position, either by manual labor or by any suitable coaling machine, the details of which form no part of the present invention. The position of the boom and of the supplementary coaling means are shown in dotted lines in Figures 1 and 2.

I provide a picking table mounted along a horizontal boom section, and if desired, the coal may be picked by workmen standing upon it as it passes along the boom.

I claim:

1. In a material handling structure, a railroad track, a material delivery means situated at one side of the track, a loading boom pivoted adjacent thereto on a vertical axis to one side of the track and adapted to receive material from said material delivery means, means for conveying material along said boom, the outer end of said boom being pivoted in relation to the rest of said boom, means for raising and lowering said pivoted outer end of the boom, said boom being adapted to be rotated as a whole about its vertical axis to a point overlying said track.

2. In a material handling structure, a railroad track, a material delivery means situated at one side of the track, a loading boom pivoted adjacent thereto on a vertical axis to one side of the track and adapted to receive material from said material delivery means, means for conveying material along said boom, the outer end of said boom being pivoted in relation to the rest of said boom, means for supporting said boom in a substantially horizontal plane, means for raising and lowering said pivoted outer end of the boom, said boom being adapted to be rotated as a whole about its vertical axis to a point overlying said track.

3. In a coaling assembly comprising in part a track along which the cars to be loaded are propelled, coal delivery means adapted to deliver coal to a point at one side of said

track, a loading boom pivoted at one end about a vertical axis adjacent said delivery means, means for supporting the other end of the boom, comprising a track transversely over-lying said boom, a supporting element movable therealong and a connection between it and the boom, means for moving said supporting element along such track, to rotate said boom about its vertical axis, an end section pivoted in relation to the rest of the boom, and means for raising and lowering it.

4. In a coaling assembly comprising in part a track along which the cars to be loaded are propelled, coal delivery means adapted to deliver coal to a point at one side of said track, a loading boom pivoted at one end about a vertical axis adjacent said delivery means, means for supporting the other end of the boom, an endless conveyor extending from end to end of said boom and motive means therefor, and a picking platform mounted upon said boom.

5. In a material handling structure, a railroad track, a material delivery means situated at one side of the track, a loading boom pivoted on a vertical axis, adjacent said material delivery means, and adapted to receive material therefrom, and means for conveying the material along the boom, an outer end section of the boom pivoted in relation to the rest of the boom, means for raising and lowering said pivoted outer end section, in relation to the body of the boom, the boom as a whole being adapted to be rotated about its vertical axis to a point overlying said track, the length of the boom being substantially greater than the distance between the material delivery means and the track.

6. In a material handling structure, a railroad track, a material delivery means situated at one side of the track, a loading boom pivoted on a vertical axis, adjacent said material delivery means, and adapted to receive material therefrom, said loading boom comprising in part a main body section, means for supporting it at a height sufficient to clear an open freight car, an outer end section pivoted to said body section, means for raising and lowering it in relation to said body section, the boom as a whole being adapted to be rotated about its vertical axis to a point overlying said track, the length of the boom being substantially greater than the distance between the material delivery means and the track.

7. In a material handling structure, a railroad track, a material delivery means situated at one side of the track, a loading boom pivoted on a vertical axis, adjacent said material delivery means, and adapted to receive material therefrom, said loading boom comprising in part a main body section, means for supporting it at a height sufficient to clear an open freight car, a supporting track transversely overlying the railroad track, a supporting element movable therealong, and a supporting connection between it and said body section, an outer end section pivoted to said body section, means for raising and lowering it in relation to said body section, com prising a second supporting track transversely overlying the railroad track, a supporting element movable therealong, and a supporting connection between it and said outer end section, and means for adjusting the distance therebetween, the boom as a whole being adapted to be rotated about its vertical axis to a point overlying said track, the length of the boom being substantially greater than the distance between the material delivery means and the track.

Signed at Chicago, county of Cook and State of Illinois, this 7th day of March, 1923.

ALBERT J. SAYERS.

DISCLAIMER.

1,518,759.—*Albert J. Sayers*, Chicago, Ill. LOADING BOOM. Patent dated December 9, 1924. Disclaimer filed April 9, 1926, by the patentee.

Hereby enters this disclaimer to that claim in said Letters Patent which is in the following words, to wit:

"4. In a coaling assembly comprising in part a track along which the cars to be loaded are propelled coal delivery means adapted to deliver coal to a point at one side of said track, a loading boom pivoted at one end about a vertical axis adjacent said delivery means, means for supporting the other end of the boom, an endless conveyor extending from end to end of said boom and motive means therefor, and a picking platform mounted upon said boom."

[*Official Gazette April 27, 1926.*]