(No Model.)

2 Sheets—Sheet 1.

J. CHASE.

COAL BARGE.

No. 494,121. Patented Mar. 28, 1893.

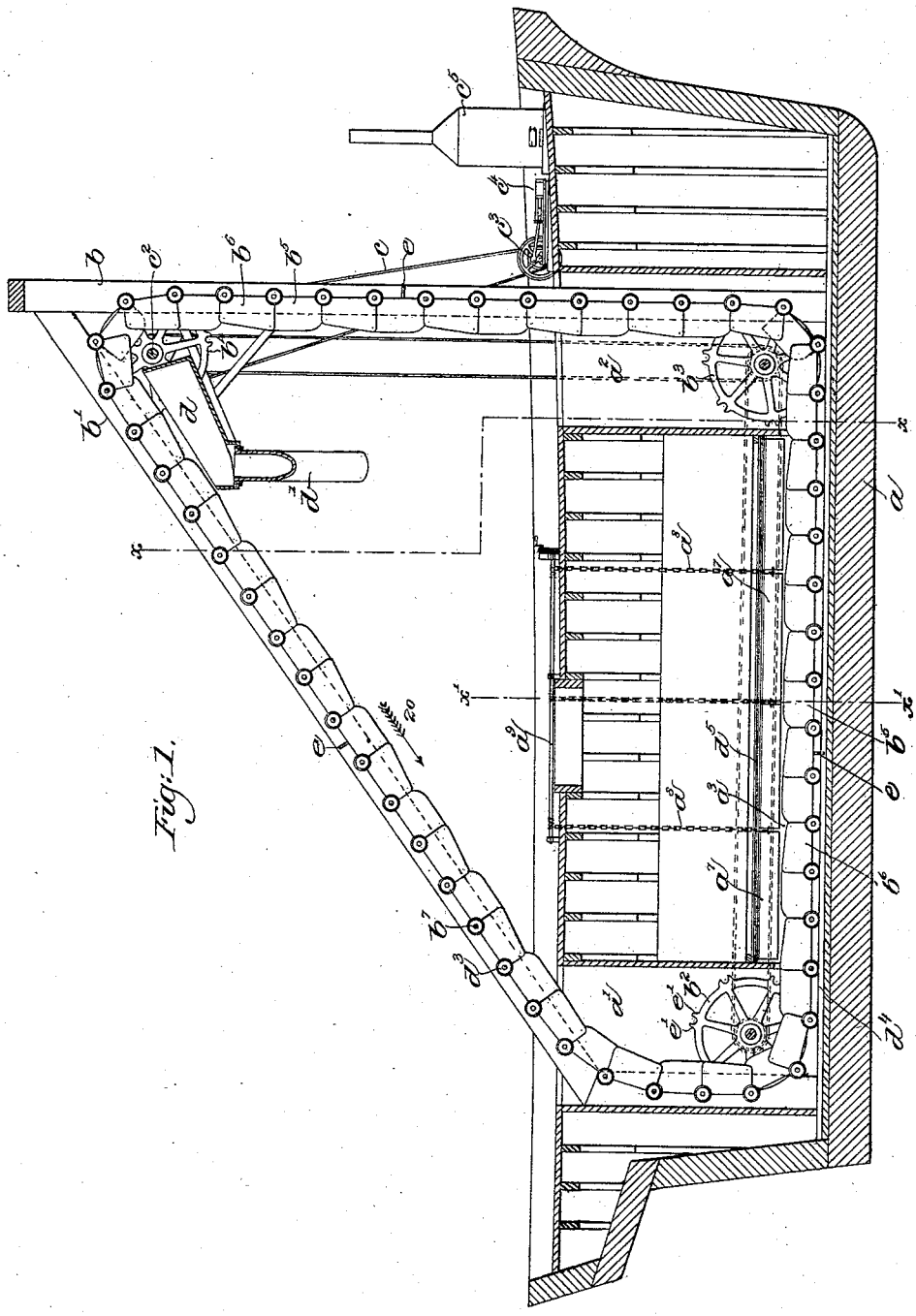

Fig. 1.

Witnesses.
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Inventor.
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(No Model.) 2 Sheets—Sheet 2.

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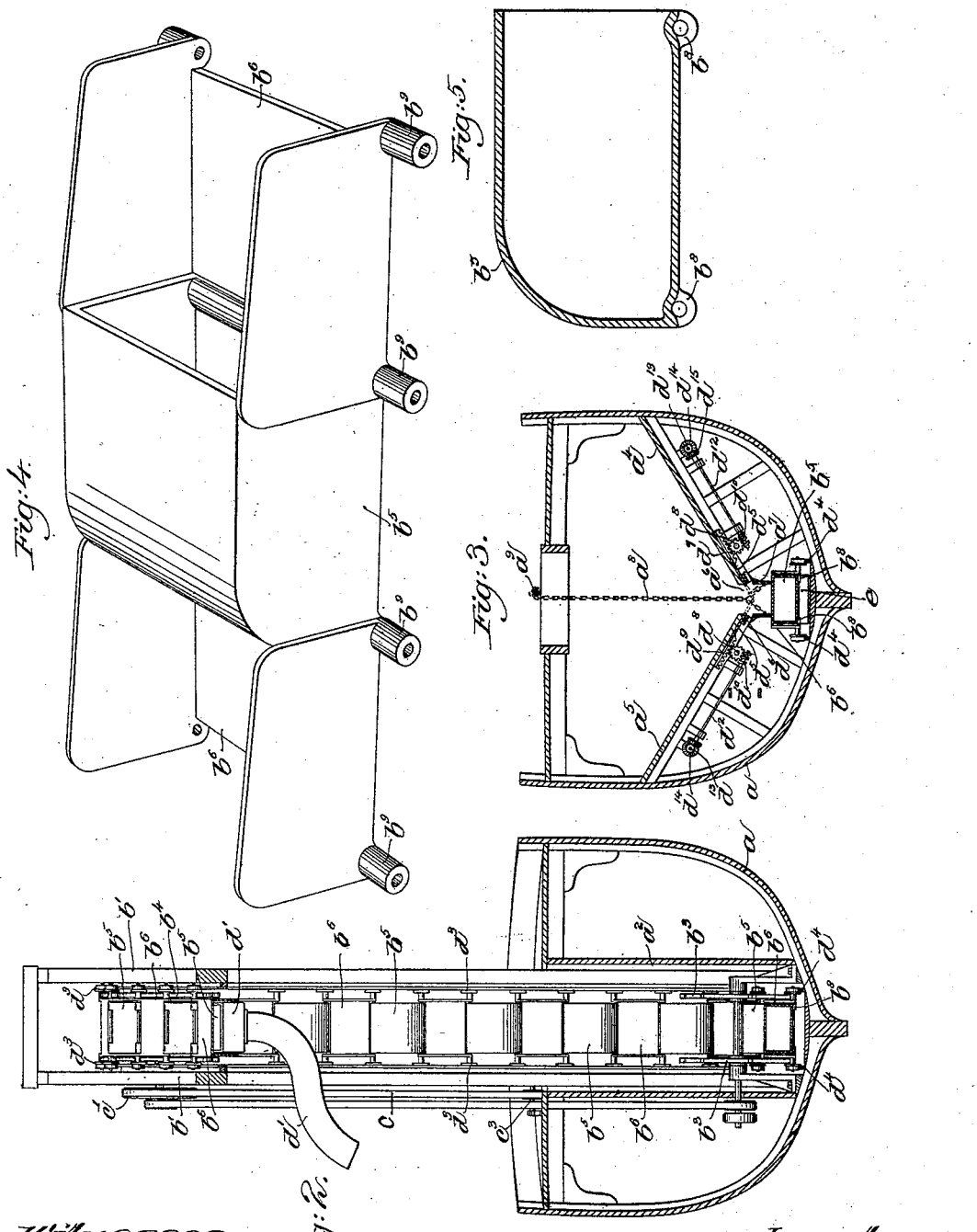

Fig. 4.

Fig. 5.

Fig. 3.

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

JONATHAN CHASE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HENRY KELLOGG, JR., OF SAME PLACE.

COAL-BARGE.

SPECIFICATION forming part of Letters Patent No. 494,121, dated March 28, 1893.

Application filed August 16, 1888. Serial No. 282,838. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN CHASE, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Coal Barges or Vessels, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to barges or vessels especially adapted for the transportation of coal and other granular material, and has for its object to provide a barge or vessel with an elevating mechanism as will be described, whereby the coal or other material in the barge or vessel may be rapidly discharged therefrom with substantially little labor.

My invention therefore consists essentially in the combination with a barge or vessel provided with a passage-way extended lengthwise of the vessel and communicating with its deck, of an upright frame, and a continuous or endless chain of buckets extended through the said passage-way and over the said upright frame, substantially as will be described and claimed.

Other features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 is a longitudinal section of a barge or vessel provided with an elevating mechanism in accordance with my invention; Fig. 2 a transverse section of Fig. 1 on line x, x, Fig. 1, looking toward the right; Fig. 3 a transverse section of the barge shown in Fig. 1 on line x', x', looking toward the left, and Figs. 4 and 5 details to more clearly show the construction of the buckets.

The barge or vessel a which may be of any ordinary construction such as now commonly employed for transporting coal, is provided near its opposite ends with elevator wells a' a^2 extended from the deck to near the bottom of the vessel. The elevator wells communicate with each other by passage way a^3 formed as herein shown by a false bottom preferably made in two parts a^4 a^5, see Fig. 3, which incline toward the longitudinal center of the vessel. The inclined parts a^4 a^5 forming the false bottom, do not come together, but are separated to leave a discharge mouth or opening a^6, which is closed as herein shown by a series of doors a^7, hinged to the parts a^4 a^5, and held closed by chains a^8, secured it may be to shafts or rods a^9 supported above the deck, the said doors opening downward as herein shown.

The barge or vessel supports an upright frame b herein shown as extended into the well a^2, and having secured to its upper end, side rails b' which are extended to the elevator well a'. The elevator wells a' a^2 have located in them near their bottoms, sprocket wheels b^2 b^3, and the upright frame supports a sprocket wheel b^4. The sprocket wheels b^2 b^3 b^4, have passed about them an endless chain of buckets b^5, and troughs b^6, the said buckets being shaped as shown in Figs. 4 and 5, and the troughs having sides which overlap the sides of the said buckets, the said buckets and troughs being united by shafts or arbors b^7 extended through hubs or bosses b^8 b^9 on the said buckets and troughs respectively.

The endless chain of buckets is caused to travel by the rotation of the sprocket wheels which are driven by a belt c passed over a pulley c' on the shaft c^2 of the sprocket wheel b^4, and a pulley c^3 on the shaft of an engine c^4, carried by the barge or vessel, and driven as herein shown by steam from a boiler c^5.

The shaft of each sprocket wheel is preferably provided with a pulley, and the said pulleys are connected by belts whereby the strain is relieved from the endless chain of buckets. The endless chain of buckets is made to travel in the direction of arrow 20, and those buckets passing through the passage way a^3 beneath the doors, are filled with the coal or other granular material carried by the barge; the said coal falling into the troughs and from the troughs into the buckets when the said troughs are moved into an upright position, that is, when they have passed by the sprocket wheels b^3. The coal elevated by the buckets, is discharged therefrom as the said buckets pass over the shaft of the sprocket wheels b^4, the said coal being discharged as herein shown into a chute d supported from the upright frame, and provided as shown with a discharge nozzle or goose neck d', free to be swung in a circle to discharge the coal from the side of the barge into any suitable hopper or chute. The shaft

or arbor b^7, will preferably be provided with wheels d^3 on opposite sides of the buckets which run on tracks d^4 located in the passage way, see Fig. 3, and secured to the inclined side rails b', the said wheels diminishing the friction and thereby obtaining an easier working apparatus.

In order that a portion of the cargo may be discharged, I have provided auxiliary doors or knives d^5, movable in guides d^6, secured as shown to the underside of the false bottom, each of the said knives being operated as herein shown by a worm gear d^8 in mesh with a rack bar d^9 secured to or forming part of the said knife, the said worm gear being driven by a worm d^{10} on a shaft d^{12}, herein shown as driven by a shaft d^{13} provided with a bevel gear d^{14} in engagement with a bevel gear d^{15} on the shaft d^{12}.

To take up any coal which may fall below the buckets, I have provided one or more projections or brushes e secured to the underside of the endless chain of buckets.

The sprocket wheels are provided with fingers e' at given distances apart on their peripheries, to engage the hubs b^9 on the troughs, the buckets and troughs being located between said wheels so that the load is within the circumference of the sprocket wheels.

It will be noticed that the bottom of each bucket is substantially on a line with the circumference of the sprocket wheels, so that the sides of the buckets extend inward or toward the center of the sprocket wheels, that is, the said buckets are inverted. By inverting the buckets as described, the said buckets are brought into correct position below the doors of the barge to permit the coal to drop directly into them. This is an important feature when coal and like material which is hard and would resist the scooping action of outwardly hung buckets, is to be elevated.

To adapt my improved elevator mechanism to barges or vessels as now commonly constructed having a substantially high keelson, the inclined parts a^4, a^5, may be made longer or shorter as desired, to bring the discharge mouth or passage at one side of the longitudinal center of the barge or vessel, but I do not desire to limit myself to the use of a false bottom composed of inclined sides for forming the passage way a^3.

I claim—

1. The combination, with a barge or vessel provided with elevator wells a' a^2 at or near its opposite ends, and a false bottom forming a passage way to connect the said elevator wells, a sprocket wheel located in each elevator well, an upright frame, and a sprocket wheel supported thereby, of an endless chain of buckets extended through said elevator wells and passage way, and means to rotate said sprocket wheels to cause the endless chain of buckets to travel, substantially as and for the purpose specified.

2. The combination with a barge or vessel provided with elevator wells a' a^2 at or near its opposite ends, and a false bottom composed of inclined parts a^4 a^5 forming a passage way to connect the said elevator wells, doors a^7 hinged to the parts, and connections to operate said doors from above the deck, and an upright frame, of an endless chain of buckets, and sprocket wheels about which the endless chain is passed, and means to drive said endless chain of buckets, substantially as described.

3. The combination with a barge or vessel provided with elevator wells a' a^2 at or near its opposite ends, and inclined parts a^4 a^5 forming a passage way to connect said elevator wells, of an upright frame extended above the deck of the barge or vessel, side rails b' extended from the frame to the elevator well a', sprocket wheels located in said elevator wells and on said frame, and an endless chain of buckets passed about said sprocket wheels and adapted to travel through said elevator wells and passage way, as and for the purpose specified.

4. The combination with a barge or vessel provided with elevator wells a' a^2 at or near its opposite ends, and a false bottom forming a passage way to connect said elevator wells, of an upright frame extended above the deck of the barge or vessel, side rails b' extended from the upright to the elevator well a', sprocket wheels located in said elevator wells and on said frame, and an endless chain of buckets passed about the said sprocket wheels and supported within the circumference of the said wheels, substantially as described.

5. The combination, with a barge or vessel provided with a passage-way extended lengthwise of the same and communicating with the deck, of an upright frame, and a continuous or endless chain of buckets extended through the said passage-way and over the said upright frame, substantially as described.

6. The combination, with a barge or vessel provided with a passage-way extended lengthwise of the vessel, and communicating with the deck, of an upright frame, a continuous or endless chain of inverted buckets extended through said passage-way and over said frame, and means to cause the endless chain of buckets to travel, substantially as described.

7. The combination with a barge or vessel provided with elevator wells a', a^2 at or near its opposite ends, and a false bottom composed of inclined parts a^4, a^5 forming a passage-way to connect the said elevator wells, doors a^7 hinged to the parts, and connections to operate said doors from above the deck, auxiliary doors or knives as d^5, and an upright frame, of an endless chain of buckets, and sprocket wheels about which the endless chain is passed, and means to drive said endless chain of buckets, substantially as described.

8. The combination, with a vessel provided with a passage-way between the bottom and a false-bottom, of a vertically-arranged elevator-frame at the end of such passage-way, an endless chain of buckets arranged in said passage-way and upon said elevator-frame, and wheels to move and guide said chain, whereby the coal or other contents of the vessel may be taken therefrom and carried directly to and up the elevator-frame to be discharged, substantially as described.

9. The combination, with a vessel provided with a passage-way between a false-bottom and the real bottom, of a vertically-arranged elevator-frame at one end of such passage-way, said elevator-frame being provided with a portion overhanging the discharge chute, an endless chain of buckets and troughs arranged in said passage-way and on said elevator-frame, and wheels or pulleys and tracks to move and guide said chain of buckets and troughs, substantially as set forth.

10. The combination, with a barge or vessel provided with a passage-way extended lengthwise of the vessel, of elevator wells connected to the said passage-way at its opposite ends, an upright frame, a continuous or endless chain of inverted buckets extended through said passage-way and over said frame, and means to cause the endless chain of buckets to travel, substantially as described.

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

JONATHAN CHASE.

Witnesses:
JAS. H. CHURCHILL,
F. L. EMERY.