

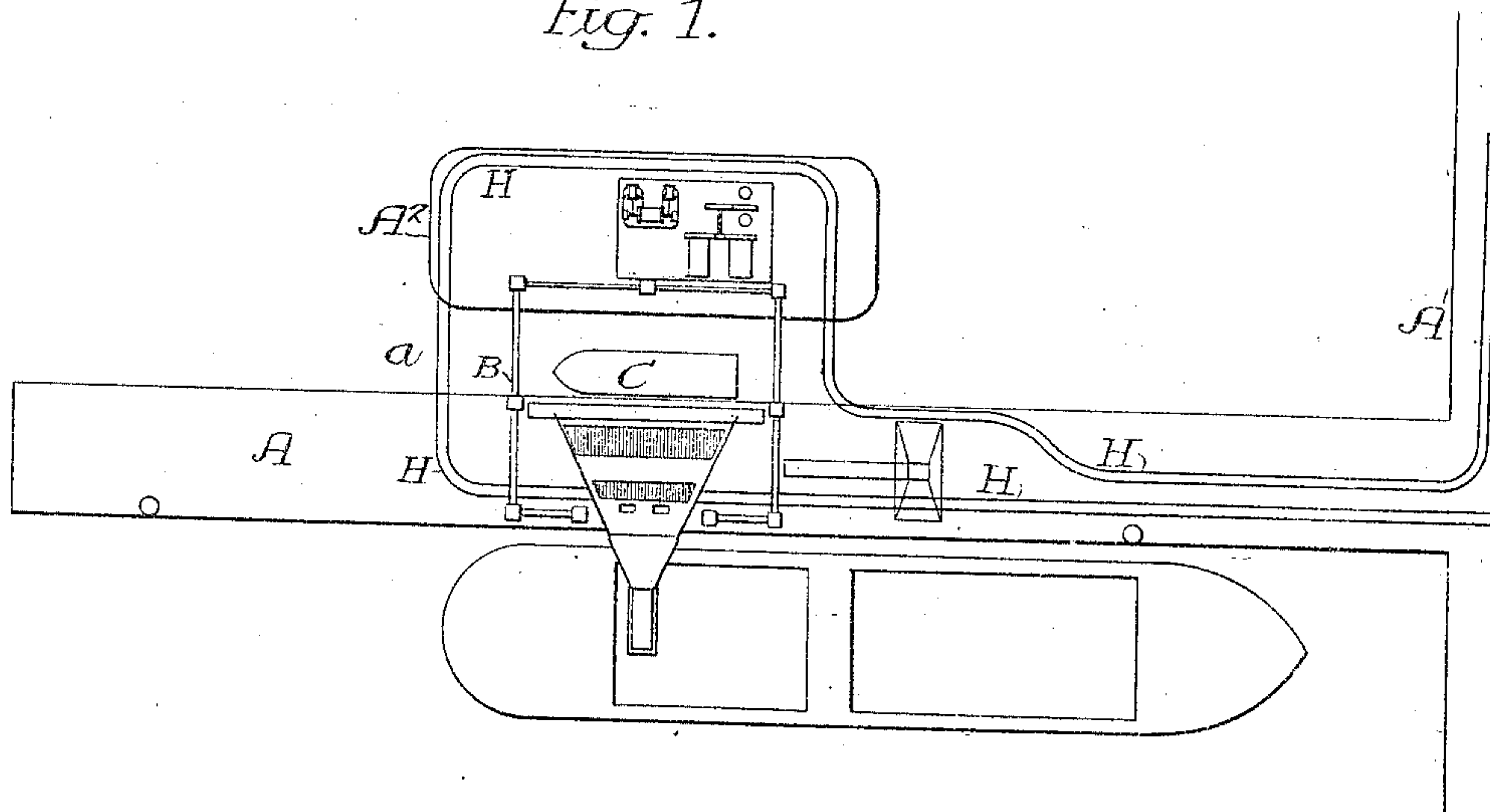
918,224.

G. E. TITCOMB.
CANAL BOAT DUMPING APPARATUS.
APPLICATION FILED AUG. 25, 1908.

Patented Apr. 13, 1909.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses—
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Willis A. Burrone

Inventor—
George E. Titcomb,
by his Attorneys—
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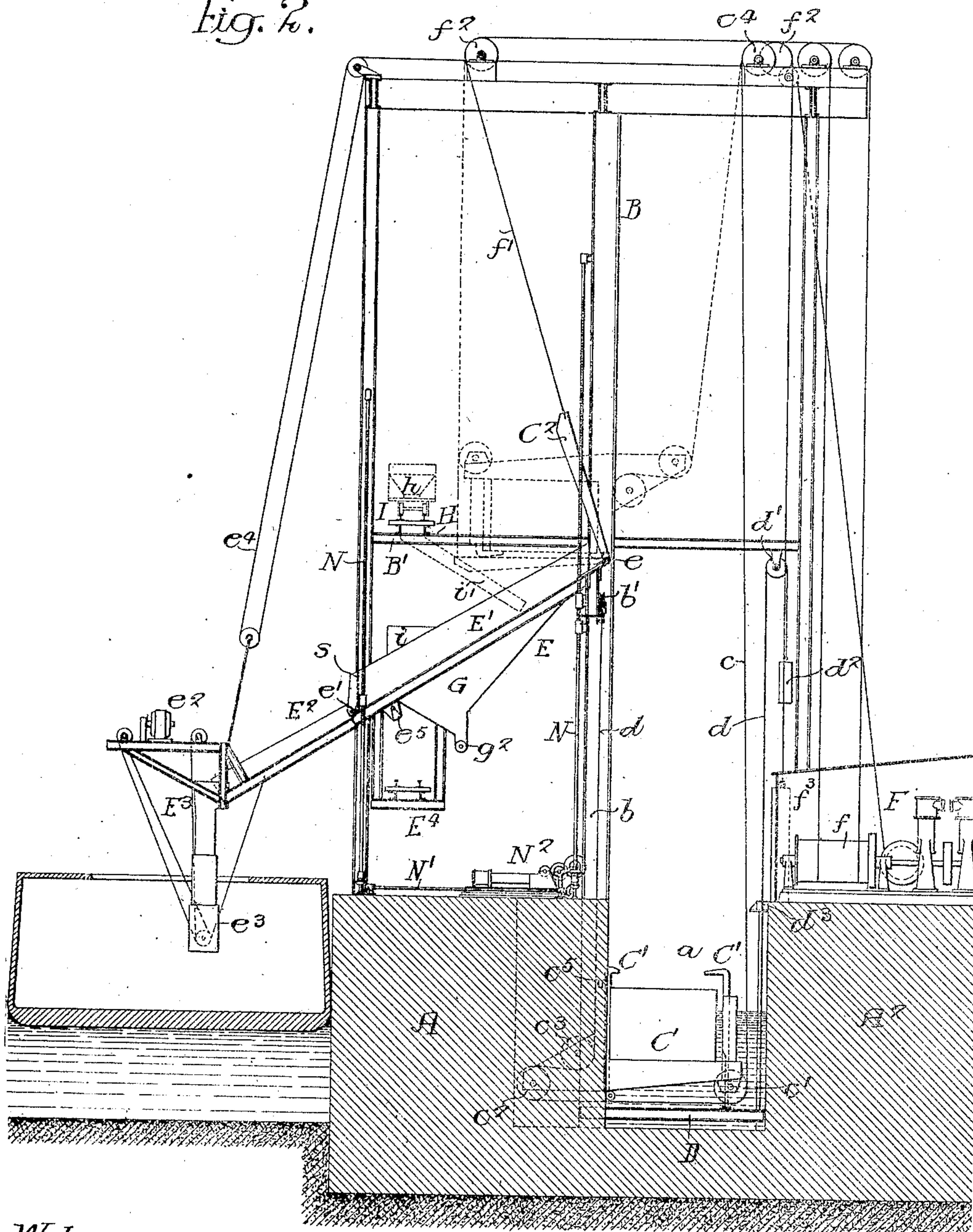
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 4.

Fig. 5.

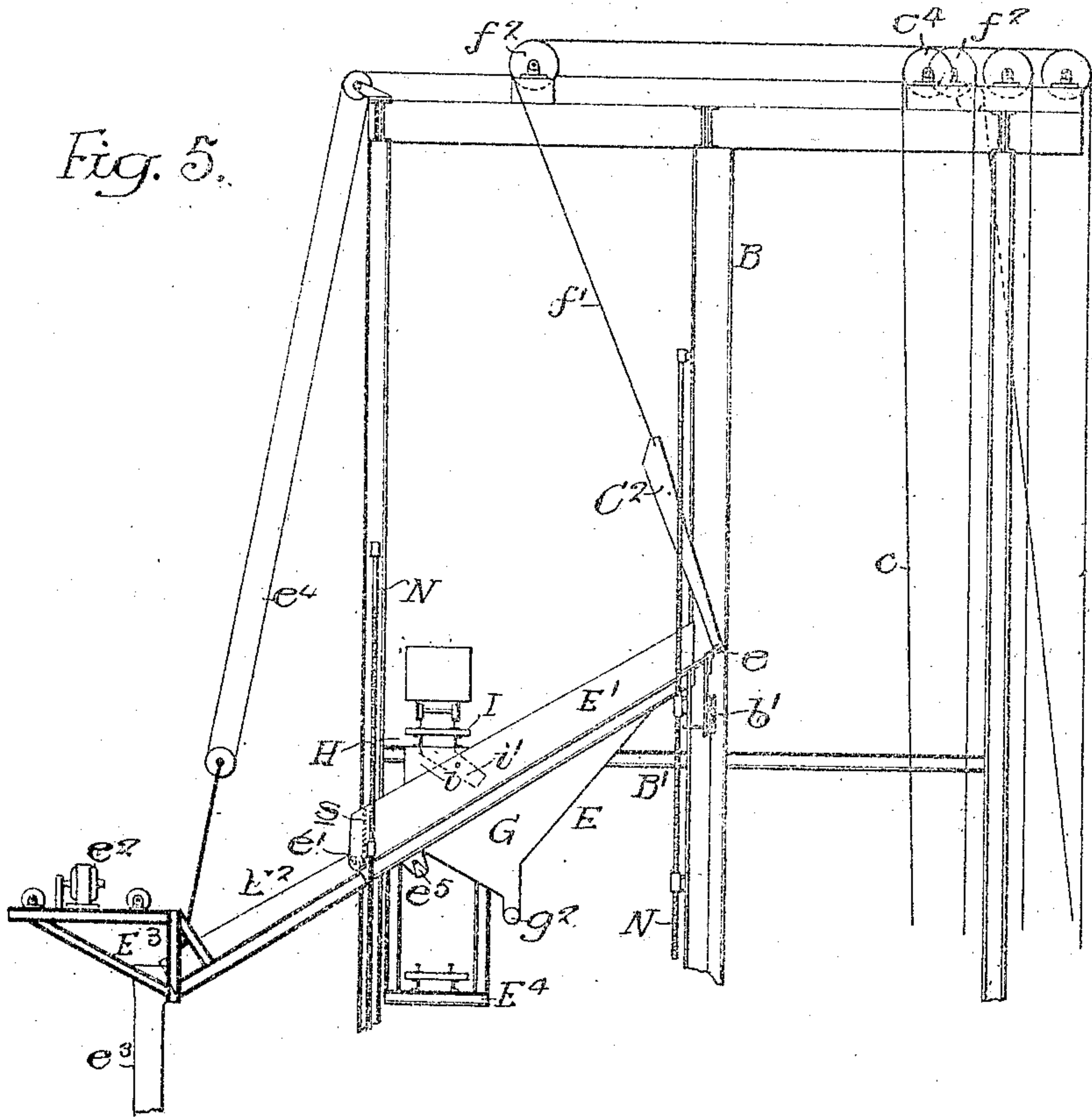
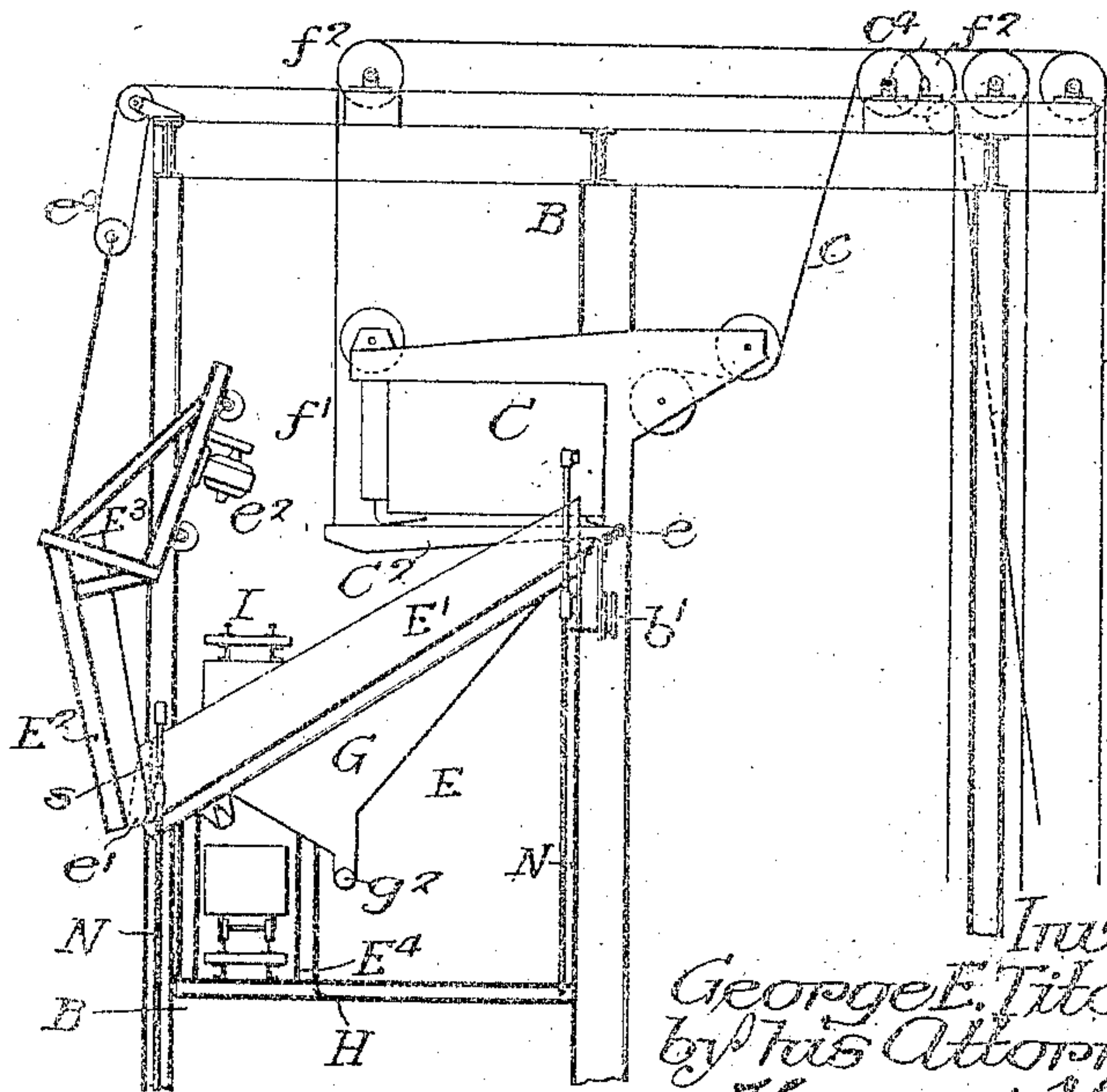


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE E. TITCOMB, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO DODGE COAL STORAGE COMPANY, OF NAUGATUCK, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CANAL-BOAT-DUMPING APPARATUS.

No. 918,224.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed August 25, 1908. Serial No. 450,152.

To all whom it may concern:

Be it known that I, GEORGE E. TITCOMB, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Canal-Boat-Dumping Apparatus, of which the following is a specification.

My invention relates to certain improvements in dumping apparatus used in transferring material in bulk from a canal boat,
10 car, or other carrier to a vessel or storage floor.

My invention is particularly adapted for discharging canal boats, although certain
15 features of the invention can be applied to mechanism for discharging cars or other containers.

One object of my invention is to so construct a dumping apparatus that a canal
20 boat can be carried up to a certain point and inverted so as to discharge its contents into a chute, through which it is transferred either to a vessel or to a car which will carry the material to a storage floor.

A further object of the invention is to provide means whereby the material from the
25 storage floor can be discharged into the chute and from the chute into a vessel when the apparatus is not used in discharging directly from a canal boat into a vessel.

These objects I attain in the following manner, reference being had to the accompanying drawings, in which:—

Figure 1, is a plan view showing a pier
35 illustrating my improved canal boat dumping apparatus; Fig. 2, is a vertical sectional view of the apparatus showing the chute in such a position that the canal boat can be discharged by overturning it above the
40 chute and allowing the material to flow through the chute into a vessel; Fig. 3, is a front elevation; Fig. 4, is a sectional plan view; Fig. 5, is a view illustrating the chute in position to receive material from a car on
45 a track leading from the piling floor; and Fig. 6, is a view showing the chute elevated so as to bring the under track in line with the fixed track leading to the piling floor.

Referring in the first instance to Fig. 1, A
50 is a pier extending from a bulkhead A' on which is the piling floor tracks. A² is a section of the pier spaced a sufficient distance from it to allow for the passage of canal boats.

B is the structure mounted on the pier or
55 wharf and extending over the canal cut *a*.

C is a carrier adapted to receive a canal boat and on this carrier are clamps C' to engage the boat and firmly lock it to the carrier. The carrier is adapted to travel on
60 suitable vertical ways *b* and is raised by means of ropes *c* passing around wheels *c'*, *c*², *c*³ on the carrier and around sheaves *b'* on the structure B down to a fixed point on the carrier C. The opposite end of each rope passes
65 around a sheave *c*⁴ to the drum *f* of a power hoisting engine F, as shown in Fig. 2. The carrier with the boat is raised from the position shown in full lines in Fig. 2 and turned
70 over as shown by dotted lines in said figure, and under the carrier is a platform D which actuates the clamps C'. This platform is suspended within the cut *a* for the canal boat—by ropes or chains *d* which pass
75 around sheaves *d'* and have suspended from them the counterweights *d*². The upward movement of the platform may be limited by stops *d*³ if desired, or the platform may be stopped by the counterweights contacting
80 with a permanent part of the structure. The object being to prevent the platform moving above the high water line.

The clamps C', of the carrier C are not shown in detail as they are fully set forth and claimed in the patent granted to me on
85 July 18th, 1905, No. 795,012, but these clamps were actuated by other means than the platform which I now show; the object being to automatically clamp the canal boat to the carrier as it leaves the water and to
90 release the clamps as soon as the empty boat returns to the water, so that the empty boat can be floated to one side and a loaded boat moved into position.

The carrier with the boat is raised from
95 the position shown by full lines in Fig. 2, until its notched portion *c*⁵ comes in contact with a pin *e* on a vertically adjustable chute structure E adapted to ways in the frame B and on the continued movement of the
100 carrier C it turns around the pin *e* as a pivot and the body comes in contact with the platform C² which is counterweighted. Ropes *f'* lead from the end of the pivoted platform C² around sheaves *f*² to the counterweights
105 *f*³. This platform is pivoted to the framework of the chute structure E about in line with the pivot pins *e* so that it is vertically

adjustable with the chute structure. When the carrier C with the canal boat comes in contact with the pivot e it is turned over by the continued movement of the carrier, resting upon the platform C^2 and the platform gradually lowers, so that the canal boat assumes the inverted position shown by dotted lines in Fig. 2, directly above the chute proper E' and the contents of the boat are discharged into this chute.

The body portion of the chute is preferably tapered in form, as shown in Figs. 3 and 4, and inclined at the proper angle, and pivoted at e' to the end of the chute E' is a section E^2 carrying an extension E^3 on which is a motor e^2 adapted to operate the spout e^3 . This spout and the mechanism for operating forms no part of my present invention.

The section E^2 of the chute can be raised or lowered by ropes e^4 which lead over idlers to the power mechanism. When the chute is extended, as shown in full lines in Fig. 2, the contents of the canal boat are discharged into the chute and travel down the chute into a vessel at the side of the pier A and the spout e^3 can be operated so as to discharge material within a certain radius. The chute may be raised or lowered to any desired position and the spout can be extended or contracted as desired.

As shown in the drawings, the chute has two screens g, g' and under the screens is a hopper G to receive the screenings. The screen g screens the material as it is delivered from the canal boat onto the chute and the screen g' screens the material as it is discharged from the storing pile described hereafter. The screenings received by the screenings hopper G are carried away by any suitable conveyer g^2 , a screw conveyer being shown in the present instance which leads from one side of the structure E and delivered into the boot G' of a bucket conveyer G^2 . The connection being telescopic so that no matter what vertical position the chute structure is in the connection will be maintained. The conveyer G^2 can carry the screenings to any suitable bin or storage floor.

H is a fixed track on each side of the structure B, in the present instance, which leads to and from the piling floor at any suitable distance away from the pier, as clearly shown in the plan view, Fig. 1. Adapted to travel on the track are cars h which can be moved by any suitable power mechanism desired. The track H stops at each side of the space occupied by the vertically adjustable chute structure E and suspended from the underside of this chute structure is a track E^4 carried, in the present instance, by part of the framework of the structure E, so that when the chute is raised and lowered the track E^4 is also raised

and lowered and when this track is in the position shown in Fig. 2 it is out of alignment with the permanent fixed track H, but when the chute structure E is moved to the position shown in Fig. 6 the track E^4 is in alignment with the fixed track H, so that the cars can be run from the fixed track onto the track E^4 to receive material from the chute, as the chute has openings e^5 provided with suitable gates so that when these gates are opened the material instead of flowing into the vessel will flow into the cars located directly below the chute, as in Fig. 6.

When the material is to be discharged into the cars then the pivoted section E^2 of the chute is turned up, or a valve is provided at the end of the main section E' for the purpose of stopping the flow of material farther than the openings e^5 . By this means material can be discharged from the canal boat into cars and conveyed to a piling floor, so as to hold material in reserve when a vessel is not at the pier. To discharge the material from the piling floor into the chute E, I provide an independent track structure I which normally rests upon the beams B' of the structure E, but is free to be carried by the chute structure E when the said chute structure is moved above the fixed track H; the track I then rests upon the supports i carried by the chute structure E. The rails of this track structure I aline with the rails of the fixed track H when the chute is lowered below the level of the track H, so that when it is desired to discharge material from the storage floor the chute structure E is lowered to the position illustrated in Fig. 5 or Fig. 2, and a collapsible chute i' can be mounted so as to direct material discharged from cars on the track I into the chute E' and from this chute the material can be directed into the vessel. The cars can run on the track H from and to the piling floor.

Different forms of mechanism may be used for raising and lowering the chute structure E, in the present instance I have shown four screws N supported vertically in suitable bearings in the structure B and adjacent to the chute structure D, and these screws are adapted to nuts n on the chute structure, as illustrated in Fig. 3, and are driven in unison, being connected together by shafting N' , having bevel gears which mesh with bevel gears on the screw shafts. This shafting is driven through the main power shaft by an engine or other suitable motor N^2 .

Suitable shifting mechanism is used to reverse the motion of the driving mechanism and consequently the movement of the screw shafts N, so that when the screw shafts are turned in one direction the chute structure E is raised and when the shafts are turned in the reverse direction the chute structure E is lowered, the screws locking the chute in any position to which it is adjusted.

In the type of chute shown I prefer to use a pivoted gate *s* which will not only act as a gate to prevent the flow of material from the main portion of the chute, but will also act as a bridge plate between the chute and its extension *E'*. In modifications of this structure where the connection is made very close this gate or bridge plate may be dispensed with.

By the above apparatus it will be seen that I can load a vessel directly from a canal boat, or from a storage floor, and the material can be transferred from a canal boat directly to the storage floor, if desired.

When it is wished to discharge a canal boat the carrier *C* is lowered into a canal to a depth below the actual depth of the canal boat, the clamps *c* being raised by coming in contact with the platform *D*. When the canal boat is in position in the carrier, said carrier is elevated through the medium of the ropes *c* which pass around the sheaves, as previously described, and as soon as the carrier leaves the platform *D* the clamps are dropped onto the canal boat and locked in this position, holding it so that it must turn with the carrier. As the carrier is raised it comes in contact with the pivot pin *e* on the chute structure *E* and is turned by the continued movement of the ropes *c*. It will be noticed that the wheel or sheave *c'* is mounted on a projecting portion of the carrier, so that when the carrier is turned, as shown by dotted lines in Fig. 2, the sheave *c'* is still a considerable distance from the vertical center line through the pivot and the main portion of the rope *c* is deflected very little out of the vertical line, so that the upper sheave *c'* can be mounted in a fixed bearing and the carrier can be forced over more readily than where the sheave *c'* is not mounted on a projection on the carrier. As the canal boat is turned over it comes in contact with the counterbalanced platform *C'* and is finally discharged when inverted, as shown by dotted lines in Fig. 2, the contents discharging into the chute *E'* of the chute structure *E* and the material, such as coal for instance, is screened as it passes down the chute and finally discharged into the vessel; the screenings passing into the screenings hopper. If it is not wished to discharge the material into a vessel then the parts are moved to the position shown in Fig. 6, and the gates in the bottom of the chute opened, cars are run onto the track *E'*, the material passes through the openings in the chute into the cars and carried to the storage floor or other discharge point so that the apparatus can be used whether there is a vessel at the pier or not. When it is desired to load a vessel from the piling floor then the track *I* is brought into alinement with the fixed track *H*, as in Fig. 5; and the car loaded at the piling floor, and conveyed over a track *H*

onto the track *I* and discharged onto the chute *E'*, the material flowing from the chute into the vessel. Thus it will be seen that when a vessel and a series of canal boats are at a pier the contents of one canal boat after another can be discharged into a vessel, but when there is no vessel at the pier the contents of canal boats can be discharged onto a piling floor, so that if there are no canal boats at the pier when the vessels arrive then the vessel can be loaded directly from the piling floor.

In some instances it may be desirable to change the inclination of the chute according to the character of the material being transferred and this can be accomplished by providing means for independently operating the front and rear screws.

While I have illustrated my invention in connection with mechanism for discharging canal boats, it will be understood that the vertical adjustable chute mechanism may be used in connection with car dumping apparatus without departing from the essential features of my invention.

I claim:—

1. The combination in an apparatus for dumping canal boats, of a frame, a carrier adapted to be raised and lowered on said frame and to receive a canal boat, means for clamping the canal boat to the carrier, means for inverting the canal boat and the carrier when in an elevated position, a chute adapted to receive material from the canal boat when inverted, and means for vertically adjusting the chute.

2. The combination in canal boat dumping apparatus, of a frame, a carrier adapted to receive a canal boat, means for clamping the boat to the carrier, means for elevating and turning the carrier so as to invert the canal boat, a chute, means for raising and lowering the chute, means for elevating the extension, discharge openings in the body of the chute, means for closing said discharge openings, and a track under the chute on which cars can be run to receive material from the chute through the openings.

3. The combination in a canal boat dumping apparatus, of a frame, a carrier adapted to receive a canal boat, means for clamping the boat to the carrier, means for elevating and turning the carrier so as to invert the canal boat, a chute, means for raising and lowering the chute, said chute having a pivoted extension, means for elevating the extension, discharge openings in the body of the chute, means for closing said discharge openings, and a track under the chute on which cars can be run to receive material from the chute through the openings when the pivoted extension of the chute is raised.

4. The combination in a dumping apparatus, of a frame, a carrier mounted on the frame and adapted to receive a boat, means

for elevating the frame and dumping the boat, a chute situated so as to receive material from the boat, a track suspended from the chute and carried thereby, and a fixed track leading to a storage floor, said track carried by the chute being adapted to aline with the fixed track.

5. The combination in a boat dumping apparatus, of a frame, a carrier adapted to receive the boat, means for raising the carrier and inverting it with the boat, a chute vertically adjustable and adapted to receive the material from the boat, said chute having a pivoted extension, means for elevating the extension and retaining it in its elevated position, openings in the bottom of the main chute, means for closing said openings, a track carried by the chute and suspended from the underside thereof in line with the openings so that a car on the track can receive material from the chute through the openings, and a fixed track leading to a storage floor, said track carried by the chute being adapted to aline with the fixed track.

6. The combination in a boat dumping apparatus, of a frame, means for elevating and discharging the contents of the boat, a vertically adjustable chute, a track suspended from the underside of the chute, openings in the chute so located that material discharged from the chute through said openings will enter cars on the track, a track carried by the upper portion of the chute, and a fixed track extending at the side of the chute and adapted to aline with either track of the chute.

7. The combination in apparatus for dumping boats, of a carrier for the boat, means for elevating and inverting the carrier with the boat, a vertically adjustable chute so situated in respect to the carrier as to receive material from the boat when discharged, an extension pivoted to the chute and adapted to be raised and lowered, a track suspended from the underside of the chute, openings in the chute directly above the track, means for closing said openings, said chute having a screen near the bottom thereof, a hopper under the chute into which the screenings pass, and means for conveying the screenings from the hopper.

8. The combination in a structure, of a vertically adjustable chute mounted in the structure, means for discharging material into the chute, said chute having a pivoted extension adapted to be raised, openings in the bottom of the chute, means for closing said openings, a track suspended from the underside of the chute directly under the openings so that material discharged through the openings will enter cars on the track, and a fixed track at the side of the structure with which the track on the chute is adapted to aline.

9. The combination of a structure, a vertically adjustable chute mounted therein, said chute having a pivoted extension, means for raising and lowering the extension, a car track suspended from the underside of the chute, a track mounted above the chute and adapted to move therewith, a fixed track at one side of the structure with which either one of the tracks carried by the chute can be brought into alinement so that cars can be run onto either the upper or the lower track to discharge into the chute or to receive material from the chute.

10. The combination of a wharf, a canal therein, a structure mounted above the wharf and spanning the canal, a vertically movable carrier adapted to enter the canal to receive a boat, means for clamping the boat to the carrier, a platform at the upper end of the structure onto which the boat is inverted, a chute situated below the platform and arranged to receive material therefrom, a screen in the chute and a hopper to receive the screenings passing through the screen of the chute, with means for conveying the screenings from the hopper.

11. The combination of a wharf, a canal therein, a structure mounted on the wharf spanning the canal, a carrier adapted to enter the canal and receive a boat, means for clamping a boat to the carrier, means for raising the carrier and turning the same so as to invert it, a vertically adjustable chute, a track suspended from the underside of the chute, a platform on the chute, a loose track adapted to be picked up by the platform when it is raised above a certain level, and a fixed track on the structure with which the track carried by the chute or the loose track can aline when the chute is moved to certain positions.

12. The combination of a wharf, a canal therein, a structure mounted on the wharf, a carrier adapted to enter the canal to receive a boat, means for clamping a boat to the carrier, and a movable platform adapted to actuate the clamping means.

13. The combination of a wharf, a canal therein, a structure mounted on the wharf, a carrier adapted to enter the canal to receive a boat, means for clamping a boat to the carrier, and a counterbalanced platform adapted to actuate the clamping means.

14. The combination of a wharf, a canal therein, a structure mounted on the wharf, a carrier adapted to enter the canal and receive a boat, clamps for securing the boat to the carrier, said clamps extending below the carrier, a platform mounted below the carrier, means for counterbalancing the platform, stops to limit the upward movement of the platform, the parts being so arranged that when the carrier with the canal boat enters the canal from above, the extensions of the

clamps will strike the counterbalanced platform and release the boat from the carrier, and when the carrier is raised with the canal boat the clamps will be automatically lowered as they are freed from the control of the platform.

15. The combination in a canal boat dumping apparatus, of a frame, a vertically adjustable chute, a pivot on the chute, a carrier adapted to receive a canal boat, said carrier adapted to rotate on the pivot of the chute, means for raising the carrier until it comes in contact with the pivot and on the continued movement of said means the carrier with the canal boat is turned so as to invert the canal boat and discharge its contents onto the chute.

16. The combination in a dumping apparatus, of a structure, a vertically movable chute structure, a track suspended from said chute structure, and a fixed track with which the track on the chute structure is adapted to aline.

17. The combination of a supporting structure, a fixed track at one side of the supporting structure, a vertically adjustable chute structure, an inclined chute thereon having an opening therein, a track carried by the chute structure and directly under the chute so that a car on the said track will receive material from the chute, said track arranged to aline with the fixed track.

18. The combination of a supporting structure, a fixed track at the side of the supporting structure, a vertically adjustable chute structure, an inclined chute thereon, a movable track resting normally in line with the fixed track and above the chute, and

means on the chute structure for supporting said track when raised.

19. The combination of a supporting structure, a fixed track at the side of the said structure, a vertically adjustable chute structure, an inclined chute thereon, a movable track supported in normal position in line with the fixed track and above the chute, means on the chute structure for carrying said movable track when raised, with a track suspended from the underside of the chute structure and also adapted to aline with the fixed track.

20. The combination of a supporting structure, a vertically adjustable chute, means for elevating the front and rear ends of the said chute, said means being independently adjustable so as to vary the inclination of the chute.

21. The combination in a boat dumping apparatus, of a supporting structure, a vertically adjustable chute structure having pivots, a carrier, ropes for elevating said carrier, clamps on the carrier for clamping the boat thereto, a series of sheaves on the carrier, a sheave on each side being mounted on a projection on the carrier, a sheave at the top of the supporting structure around which the elevating ropes pass, the said carrier being notched to engage the pivots mounted on the movable chute structure.

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

GEORGE E. TITCOMB.

Witnesses:

WALTER CHISM,
WM. A. BARR.