No. 897,014. PATENTED AUG. 25, 1908.

J. E. RICHARDS.

APPARATUS FOR HANDLING COAL.

APPLICATION FILED AUG. 5, 1907. RENEWED JULY 16, 1908.

2 SHEETS—SHEET 1.

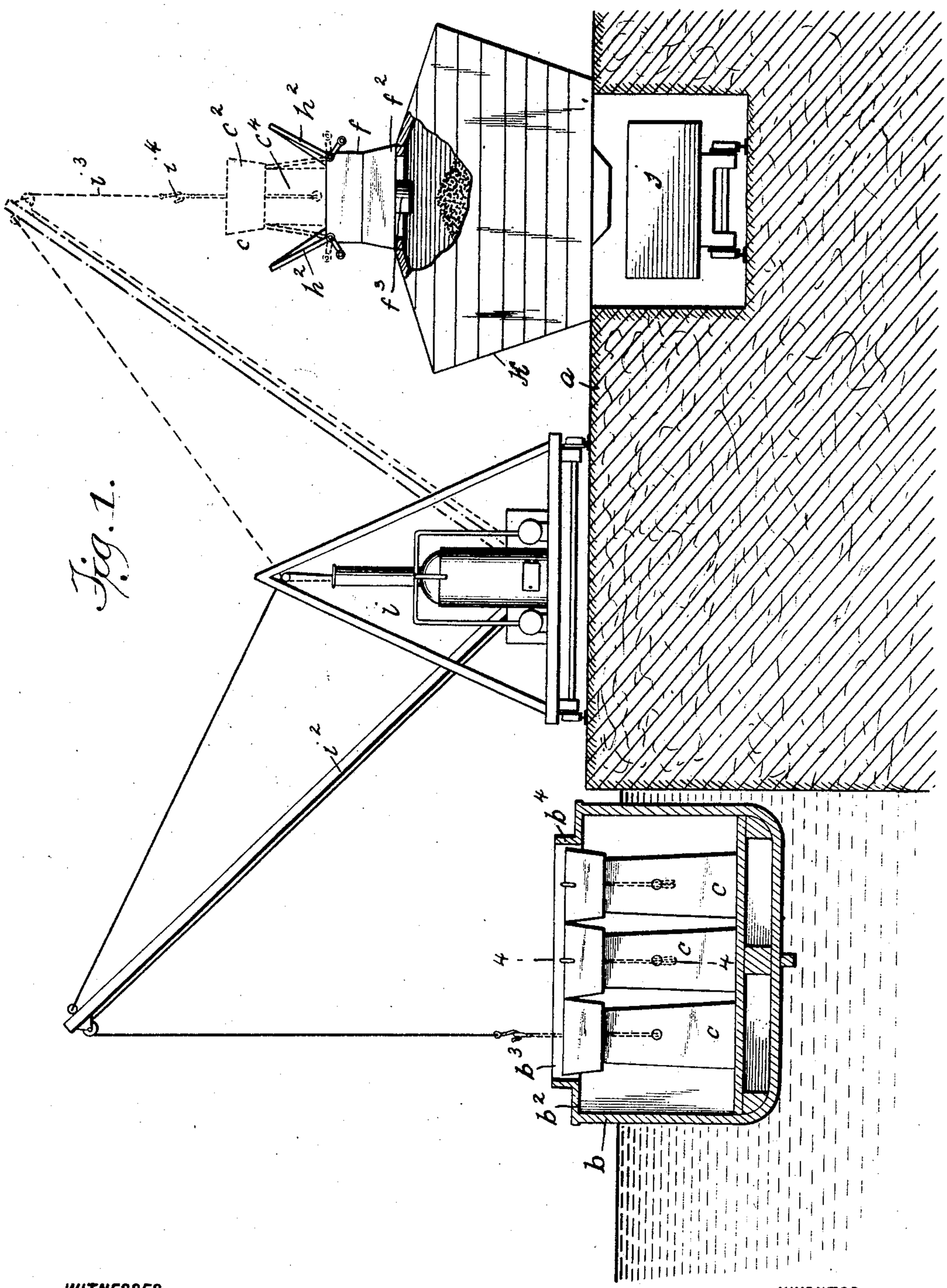

Fig. 1.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

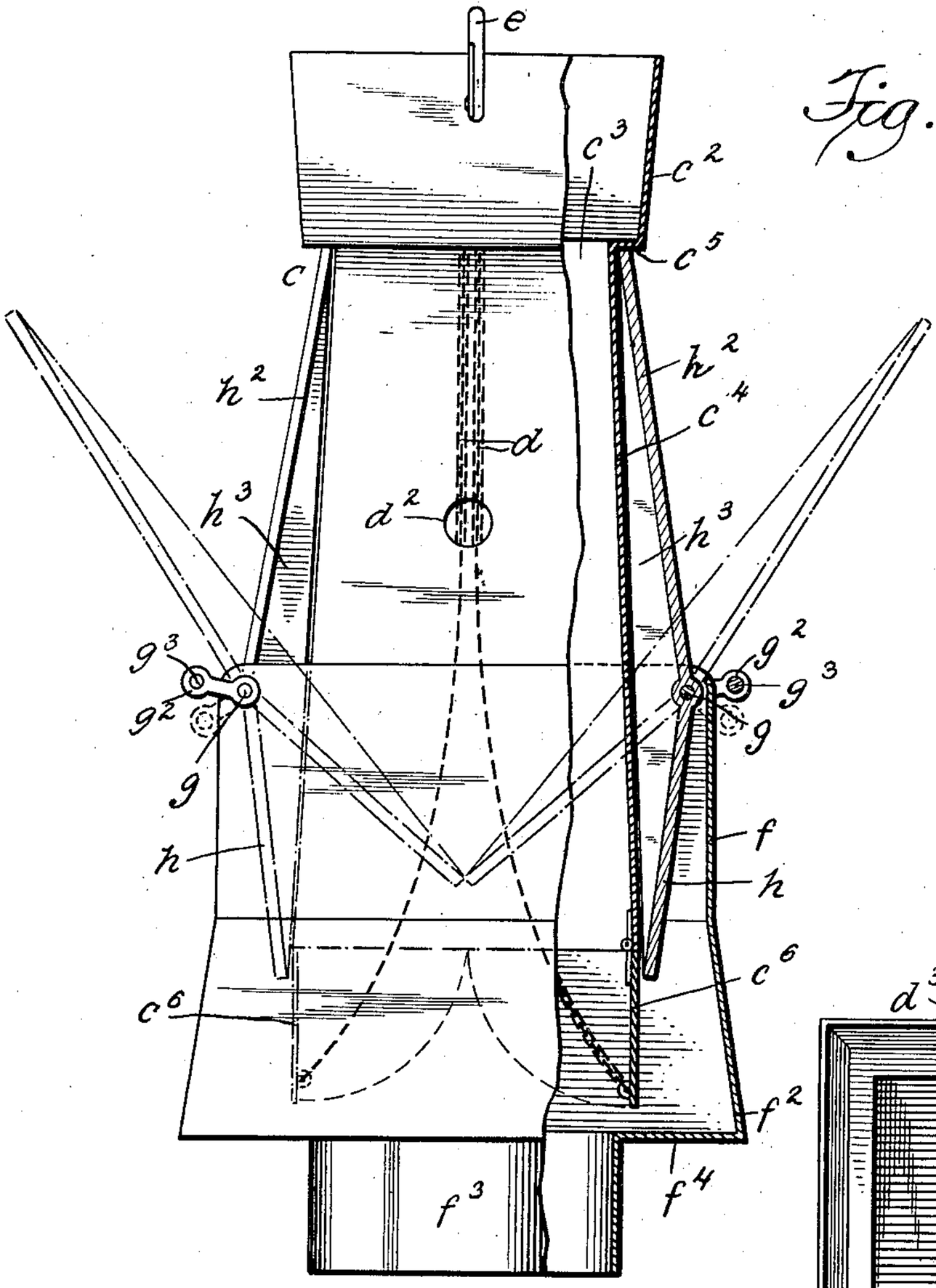
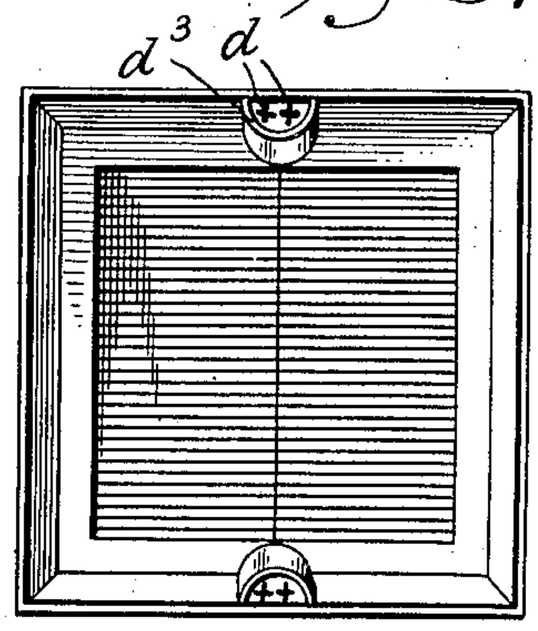


Fig. 3.



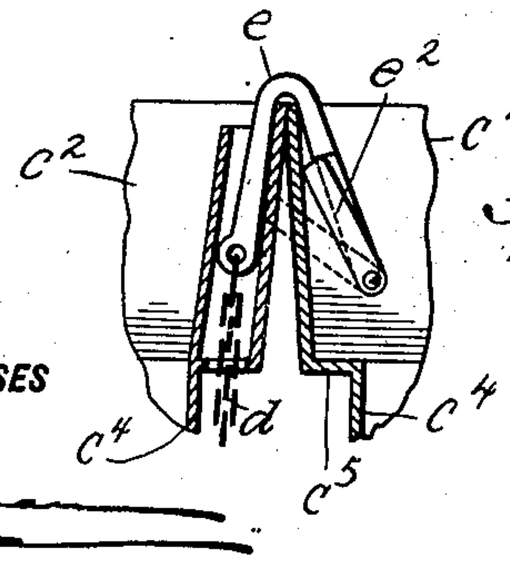


Fig. 4.

WITNESSES

A. Ropplemann

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UNITED STATES PATENT OFFICE.

JAMES EDWIN RICHARDS, OF LONDON, ENGLAND, ASSIGNOR OF ONE-HALF TO MARIA A. BERRY, OF NEW YORK, N. Y.

APPARATUS FOR HANDLING COAL.

No. 897,014. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed August 5, 1907, Serial No. 387,181. Renewed July 16, 1908. Serial No. 443,839.

To all whom it may concern:

Be it known that I, JAMES EDWIN RICHARDS, a subject of the King of Great Britain, and residing at Stepney, London, E. C., in the county of Middlesex, England, have invented certain new and useful Improvements in Apparatus for Handling Coal, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to means or apparatus for handling coal or other material and particularly to means or apparatus for loading coal into a barge, transporting it to any desired point, and for loading a ship or other vessel from the barge or unloading the barge into a pocket, car or other receptacle; and the object thereof is to provide an improved apparatus of this class which is simple in construction and convenient of manipulation, and by means of which a large saving may be effected in the handling of coal or other material.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a sectional view showing my improved apparatus and the method of operating it and including a barge, a dock, a coal car and a derrick or similar device; Fig. 2 a sectional side elevation of a part of the apparatus which I employ; Fig. 3 a plan view of the top part of that portion of the apparatus shown in Fig. 2; and, Fig. 4 a partial sectional view on the line 4—4 of Fig. 1.

In the drawing forming part of this specification, I have shown at a a part of a dock and at b a barge adapted to convey coal or other material, and the deck b^2 of the barge is provided with a longitudinal opening b^3 around which is preferably placed a rim or wall b^4.

My improved means for handling coal or other material consists, in part, of a plurality of pockets c composed of top parts c^2 which are hopper shape and preferably rectangular in form, and the bottoms of which are open as shown at c^3 in Fig. 2, and provided with depending members c^4 which are of the same form in cross section as the top parts c^2, but which are larger at the bottom and taper inwardly and upwardly to the top parts c^2, whereby a bottom shoulder c^5 is formed on the top parts c^2 of the pockets c. The opposite side portions of the bottom members c^4 of the pockets c are provided with hinged doors c^6 with the opposite end portions of which are connected two chains d which pass upwardly through the bottom portions of the bottom members c^4 of the pockets c and out through openings d^2 in the sides thereof and up through the shoulder c^5 at the opposite sides of the top parts of the pockets and through keepers d^3 secured to or formed on the inner side of the opposite side portions of the top parts c^2 of said pockets, and the separate pairs of chains d are connected at their tops or upper ends with hooks e which are V-shaped in form, and one arm of which is provided in its end portion with a pivoted dog e^2, and in practice, the pockets c are adapted to be placed in the barge b through the open spaces b^3, and the hooks e of one pocket are adapted to engage the top thereof, or of another pocket as clearly shown in Fig. 4.

The second part of my improved apparatus for handling coal and other material comprises a pocket receiver f adapted to receive the bottom members c^4 of the pockets c, and the pocket receiver f, in the form of construction shown, is larger at the bottom than at the top as shown at f^2, and the bottom thereof is provided with a central downwardly directed discharge chute or pipe f^3 around which is a shoulder f^4. The pocket receiver f is of the same form in cross section as the depending members c^4 of the pockets c and is also slightly larger in transverse dimensions, and in the opposite sides of the top portion thereof are mounted transverse rods g having end cranks or arms g^2 in which are mounted rods g^3 parallel with the rods g but on the outer sides of the top part of the pocket receiver f. Secured to the rods g are doors h having upwardly directed extensions h^2 arranged, in the form of construction shown, at an angle to said doors h, and the doors h and the extensions h^2 thereof are braced on their inner sides by longitudinal ribs h^3.

The doors h are normally in the position shown in dotted lines in Fig. 2, in which the pocket receiver f is closed, but when one of the pockets c is lifted out of the barge b, as hereinafter described, and deposited in the pocket receiver f, the downwardly directed member c^4 of said pocket presses on the doors

h and forces them downwardly and the upwardly directed extension h^2 of said doors fold inwardly and catch under the shoulder c^5 of the top portion c^2 of the pocket and support it as shown in said figure. I have also shown at i in Fig. 1, a derrick of any kind or class, and at j a coal car mounted on a track sunk into the dock a, and, in practice, I also preferably employ, when my improved apparatus is used for loading coal cars, a bunker k which is placed over the coal car j, as clearly shown in Fig. 1, and the derrick i is provided with a boom or arm i^2 which may be manipulated or operated in the usual manner, but said derrick in the details of its construction forms no part of my invention, and, in practice, any suitable crane or similar device may be substituted therefor.

In practice, the pockets c are placed in the barge b and are filled in the usual or any desired manner with coal, and in this operation the doors c^6 at the bottom of the downwardly directed members c^4 of said pockets are closed and rest on the bottom b^5 of the barge. The derrick or other device i is provided with the usual cable i^3 having a hook i^4, and when it is desired to unload the barge or to load the car j, the hook i^4 is connected with the hooks e which are secured to the opposite pairs of chains d of one of the pockets c, and the said pocket is lifted from the barge and moved into the position shown in dotted lines in Fig. 1, and lowered so that the downwardly directed member c^4 thereof will enter the top part of the pocket receiver, and when the said pocket is lowered the doors h and the upwardly directed extensions h^2 thereof will swing into the position shown in full lines in Fig. 2, and the pockets c will be supported by the upwardly directed extensions h^2 of the doors h, and when the cable i^3 or the hook i^4 at the end thereof is lowered, the doors c^6 at the lower end of the downwardly directed member c^4 of the pocket will be opened by the weight of coal in said pocket and the latter will drop into the bunker k and may be discharged therefrom into the car j in the usual manner after which the pocket may be again raised by means of the cable i^3 and chains d, in which operation the door c^6 will be closed, and the pocket may be reconveyed to the barge and deposited therein and another pocket lifted out.

In connecting the hook i^4 with the hooks e, it is only necessary to pass said hook i^4 beneath the arms of the hooks e in which the dogs e^2 are pivoted, and the dogs e^2 are intended to prevent the accidental disconnection of the hook i^4 from said hooks e. It will be understood that, when the doors c^6 are closed, there is considerable slack in the chains d and the hooks e may be manipulated in any way, but when the pockets c are in position in the barge b the top parts of said pockets are close together and the hooks e are suspended from the top portion of two of said pockets as shown in Fig. 4, but when the pockets are out of the barge, the hooks e may be suspended from the top portions of their respective pockets.

Although, I have shown my invention as applied for unloading coal from a barge into a bunker or car, it will be understood that the same may be used for loading a ship with coal, and for many other purposes, and in loading a ship with coal, the bunker k may or may not be employed, and any suitable support on the ship may be provided for the pocket receiver f and into which the coal may be discharged from said pocket receiver.

The doors h when the pocket c is removed from the pocket receiver f assume the position shown in dotted lines in Fig. 2 and thus prevent dust from escaping from the pocket receiver, and said doors or their extensions h^2 thereof serve to support the pocket when the latter is lowered into the pocket receiver as hereinbefore described.

The rods g^3 and cranks or arms g^2 with which said rods are connected normally serve as weights to hold the doors h in their closed position as shown in dotted lines in Fig. 2 and also limit the movement of said doors, and in practice, any desired number of the pocket receivers f may be employed together with any desired number of the bunkers k and any number of cranes or derricks in the unloading of a barge.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an apparatus for handling coal or other material, a pocket comprising a top portion having a downwardly directed member of less dimensions at the top than the bottom of the top portion, said downwardly directed member being provided at the bottom thereof with doors hinged to the opposite sides thereof, and said doors being provided with upwardly directed extensions arranged at an angle thereto and adapted to engage the top portion of the pocket and at their opposite ends with flexible lifters which pass up through the socket.

2. In an apparatus for handling coal or other material, a pocket comprising a top portion having a downwardly directed member of less dimensions at the top than the bottom of the top portion, said downwardly directed member being provided at the bottom thereof with doors hinged to the opposite sides thereof, and said doors being provided at their opposite ends with flexible lifters which pass up through the pocket and are provided at their upper ends with hooks, and a pocket receiver open at the top and bottom and the opposite sides of which are provided at the top with pivoted doors which extend downwardly thereinto and are provided with upwardly directed extensions ar-

ranged at an angle thereto and adapted to form supports for the top part of the o ket when the bottom member thereof is inserted into said pocket receiver.

3. In an apparatus for handling coal or other material, a pocket comprising a top portion having a downwardly directed member of less dimensions at the top than the bottom of the top portion, said downwardly directed member being provided at the bottom thereof with doors hinged to the opposite sides thereof, and said doors being provided at their opposite ends with flexible lifters which pass up through the pocket and are provided at their upper ends with hooks, and a pocket receiver open at the top and bottom and the opposite sides of which are provided at the top with pivoted doors which extend downwardly thereinto and are provided with upwardly directed extensions arranged at an angle thereto and adapted to form supports for the top part of the pocket when the bottom member thereof is inserted into said pocket receiver, said doors being provided with means for holding them in a closed position, and limiting the movement thereof.

4. In an apparatus for handling coal or other material, pockets comprising an open top part having a downwardly directed member the opposite sides of which are pro ided at its lower end with hinged doors, and flexible hoisting devices connected with said doors and passed up through the pocket and provided at their upper ends with hooks said doors being provided with upwardly directed extensions arranged at an angle thereto and adapted to engage the bottom of the top part of the pockets.

5. In an apparatus for handling coal or other material, pockets comprising an open top part having a downwardly directed member the opposite sides of which are provided at its lower end with hinged doors, and flexible hoisting devices connected with said doors and passed up through the pocket and provided at their upper ends with hooks, and a pocket receiver open at the top and bottom and the top part of which is adapted to receive the downwardly directed member of a pocket, said pocket receiver being provided at the opposite sides of the top thereof with pivoted doors which extend downwardly thereinto, and said doors being provided with upwardly directed extensions arranged at an angle thereto and which are adapted to engage the top part of the pocket when the downwardly directed member thereof is inserted into the said pocket receiver.

6. In an apparatus for handling coal or other material, pockets comprising an open top part having a downwardly directed member the opposite sides of which are provided at its lower end with hinged doors, and flexible hoisting devices connected with said doors and passed up through the pocket and provided at their upper ends with hooks, and a pocket receiver open at the top and bottom and the top part of which is adapted to receive the downwardly directed member of a pocket, said pocket receiver being provided at the opposite sides of the top thereof with pivoted doors which extend downwardly thereinto, and said doors being provided with upwardly directed extensions arranged at an angle thereto and which are adapted to engage the top part of the pocket when the downwardly directed member thereof is inserted into the said pocket receiver, said doors being provided with means for holding them in a closed position.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 22nd day of July 1907.

JAMES EDWIN RICHARDS.

Witnesses:
THOMAS HENRY HOWE,
ALFRED NUTTING.