

No. 763,391.

PATENTED JUNE 28. 1904.

P. C. HAINS & C. R. WEAVER.
LIFTING BUCKET.

APPLICATION FILED MAR. 22, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

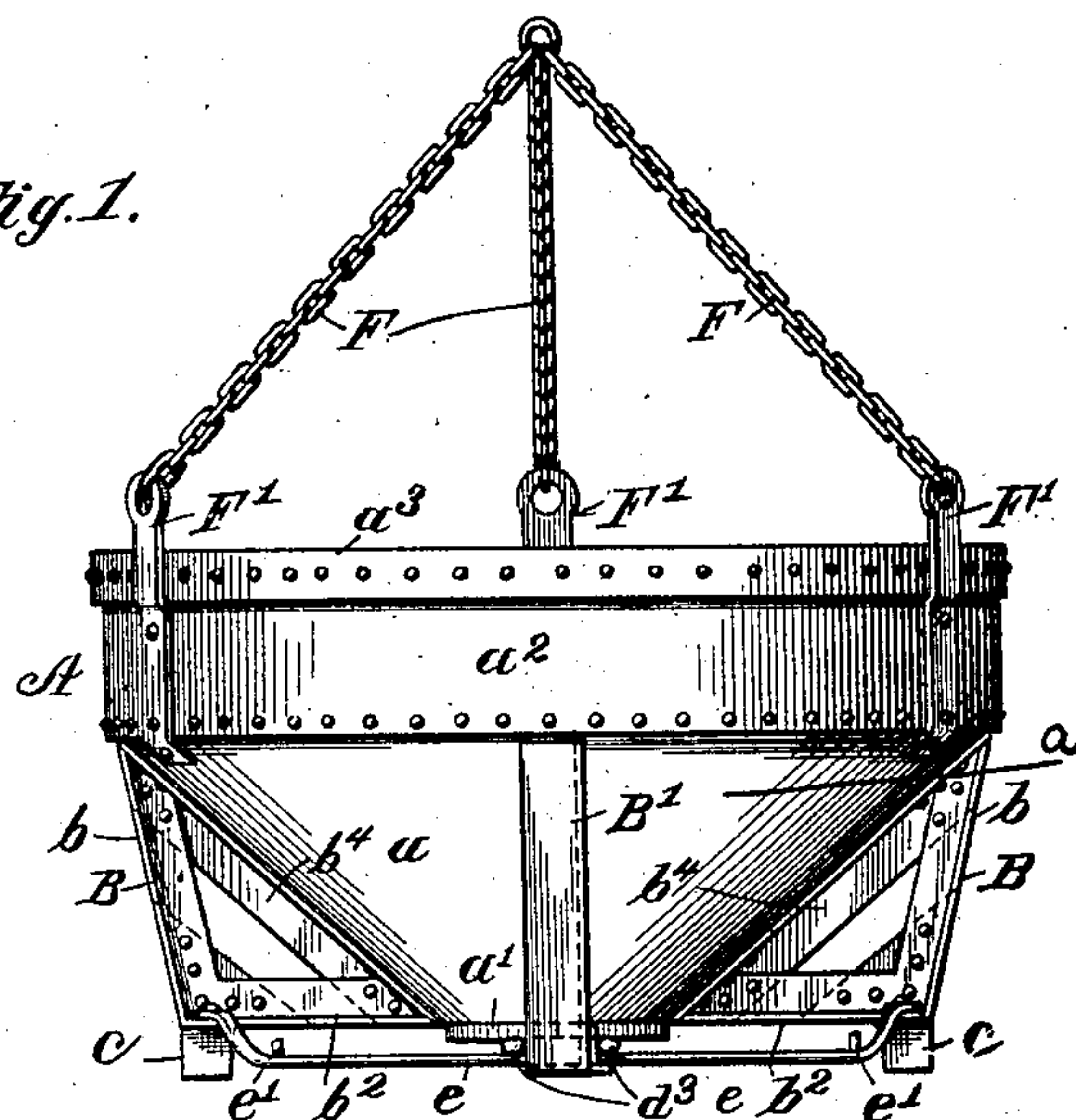


Fig. 2.

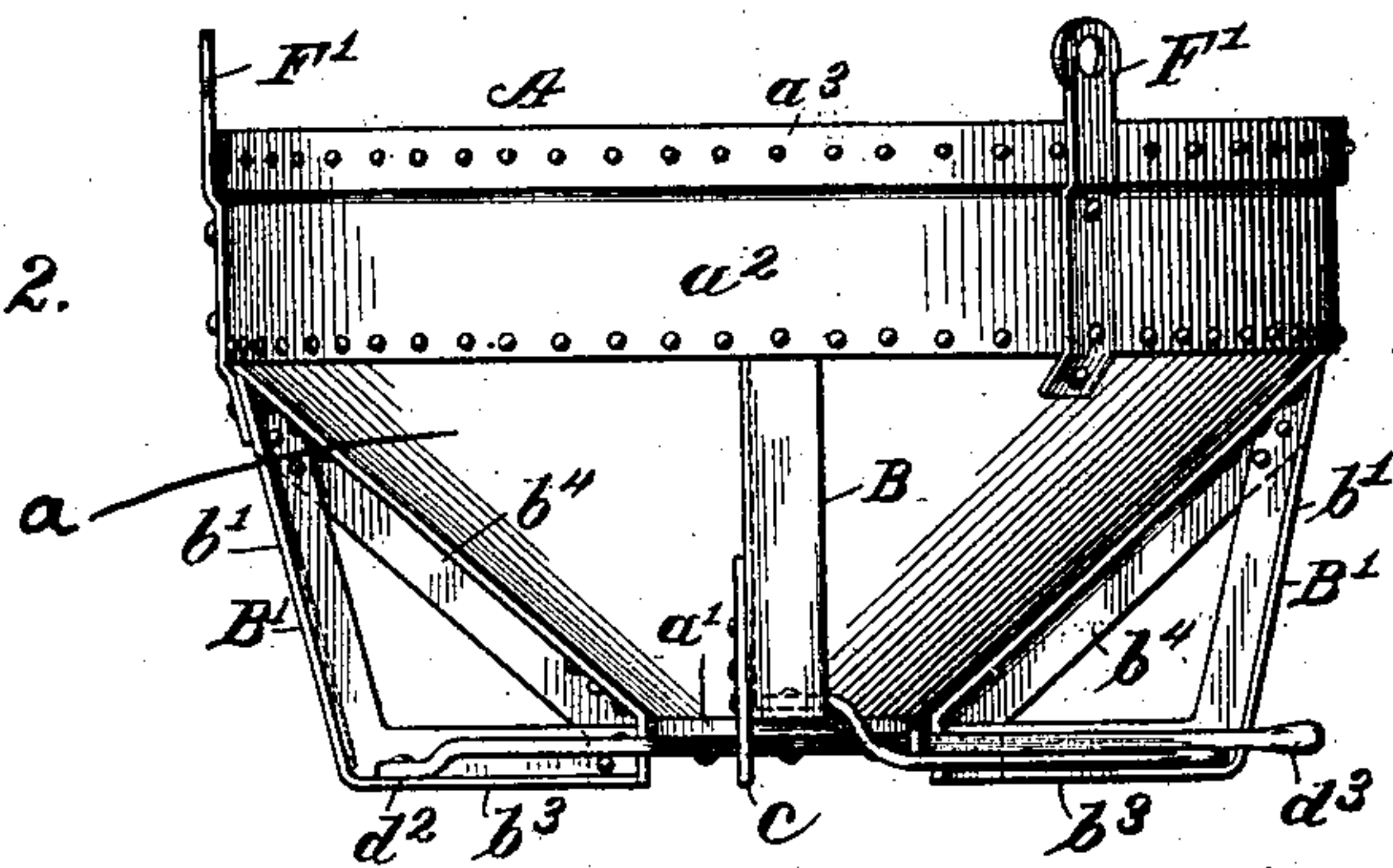
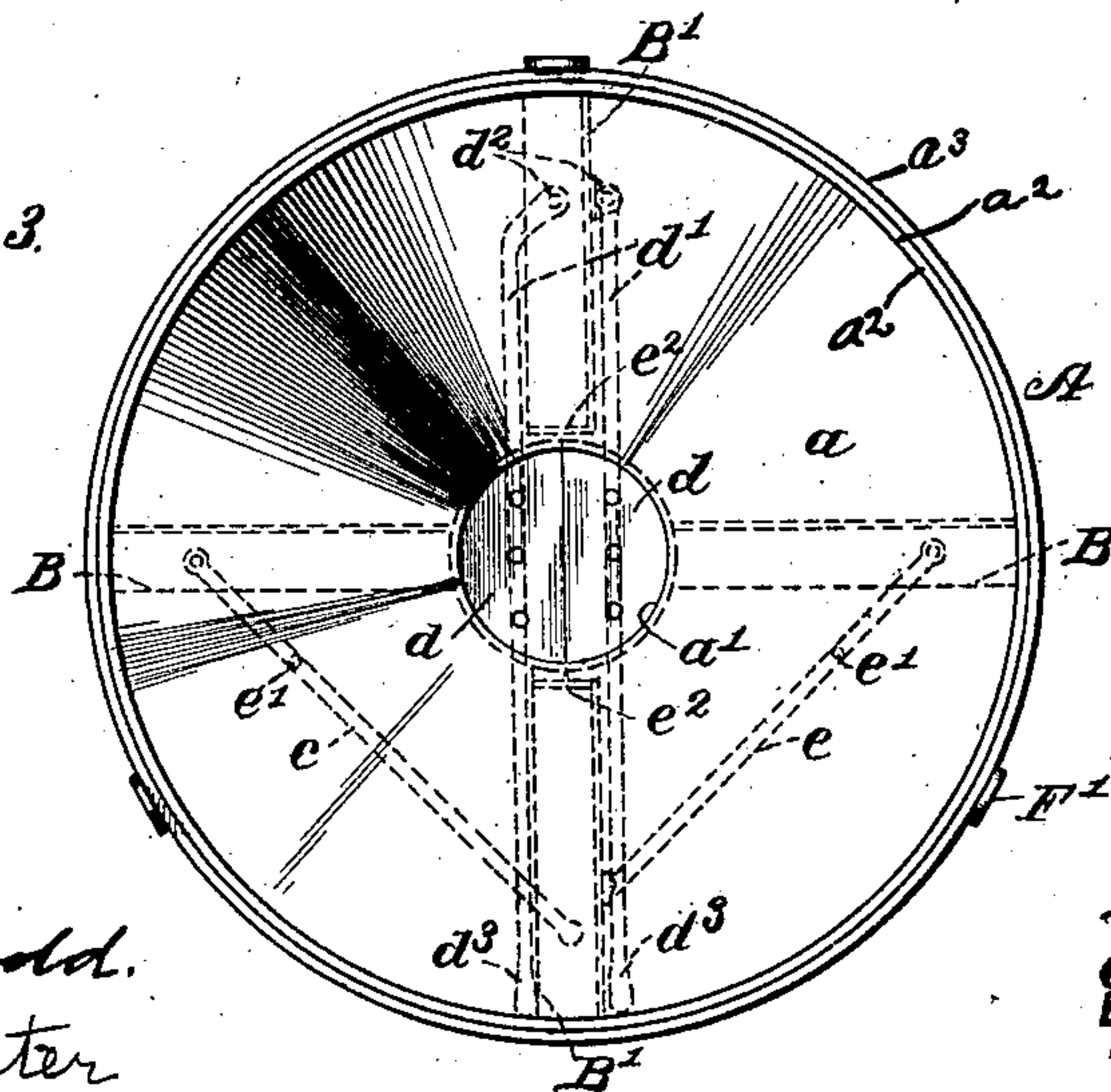


Fig. 3.



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2 SHEETS—SHEET 2.

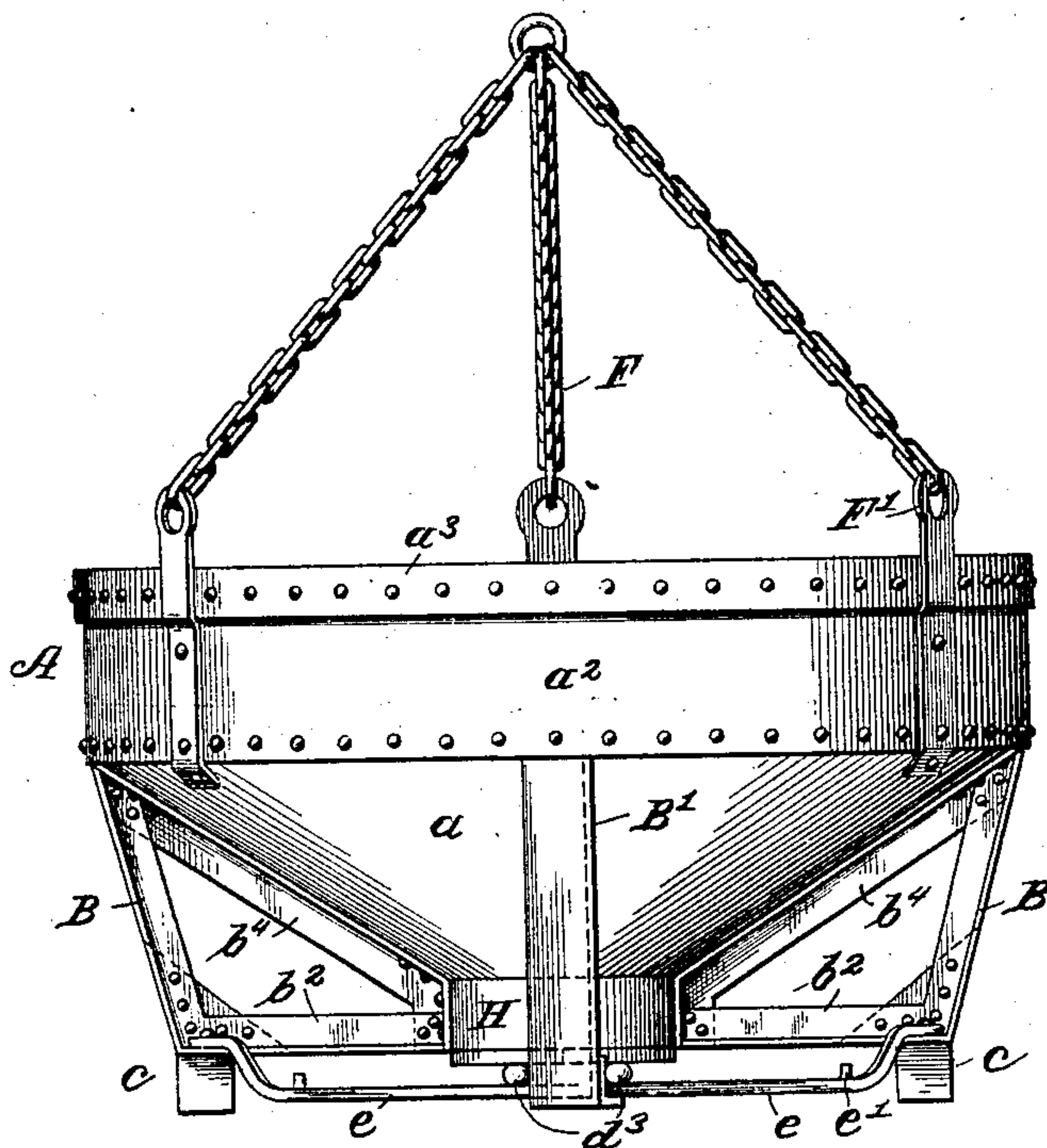


Fig. 4.

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ASSIGNOR TO SAID HAINS.

LIFTING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 763,391, dated June 28, 1904.

Application filed March 22, 1904. Serial No. 199,412. (No model.)

To all whom it may concern:

Be it known that we, PETER C. HAINS, residing at Washington, in the District of Columbia, and CHARLES R. WEAVER, residing at Baltimore, in the State of Maryland, citizens of the United States, have invented certain new and useful Improvements in Lifting-Buckets, of which the following is a specification.

The invention to be hereinafter described relates to buckets whereby not only can concrete be transported while in a plastic condition, but the ingredients composing the concrete can be intimately mixed and discharged either directly in place or into a similar bucket, whereby further mixing may be assured.

As pointed out in Letters Patent No. 633,312, granted to Peter C. Hains, Jr., and Charles R. Weaver, dated September 19, 1899, an excellent quality of concrete can be made by arranging the cement, sand, and stone in layers in a suitable receptacle, wetting the coarser ingredients, and then discharging the mass from the bottom of the receptacle, so that the wet coarse material in falling is brought in contact with the cement and sand and becomes thoroughly covered. In carrying out the process set forth in said Letters Patent, however, it has been necessary to elevate the separate materials, and in devising the present character of bucket due consideration has been given these matters. It is also found in the practical placement of concrete that at times only a portion of the entire contents of the bucket is desired to complete a particular piece of work and that means should be available to permit the discharge of the desired quantity and no more, and it is likewise an important consideration that such mixing or handling bucket, while provided with a bottom discharge, shall be adapted to rest upon the ground or other support while being loaded without at the same time subjecting the bottom discharging-closure to injury.

With these various requirements in view the objects of the present invention, generally stated, are to provide a properly-shaped mix-

ing and handling bucket having a contracted bottom discharge controllable as to the quantity of concrete that may be permitted to pass and so shaped and braced by supporting-legs that it shall be of simple construction, yet sufficiently strong and unyielding in character to withstand the strains and shocks to which it is subjected in use and which may rest upon the ground or other support without danger of injuring the bottom closure devices.

With these general objects in view the invention consists of the parts and combinations hereinafter more fully described, and definitely pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the bucket, showing the discharging-doors closed. Fig. 2 is a similar side elevation of the bucket at right angles to the view shown in Fig. 1. Fig. 3 is a plan view showing the supporting and strengthening brackets, doors, handles, and braces in dotted lines; and Fig. 4 is a view similar to Fig. 1, showing a slightly-modified form of receptacle, but essentially similar to those of Figs. 1 and 2.

The bucket comprises a receptacle (designated generally by A) which may be made of any suitable material, having downwardly-converging walls a , forming an inverted truncated cone, and provided at the bottom with a contracted discharge-opening a' , through which the concrete may be discharged more or less slowly in contradistinction to a sudden bulk discharge which takes place, when, as in a cylindrical bucket with a swinging door, the entire contents of the bucket are permitted to fall simultaneously. Preferably the upper portion of the inclined part a of the receptacle may be provided with a short bracing-ring a^2 , of metal, surmounted by a strengthened band a^3 , the said parts being properly riveted together, as shown in the drawings. Secured to the inclined exterior walls of the receptacle are the brackets B and B', which may be of any suitable construction and of desired number, so as to form both vertical and horizontal supports for the inclined walls of the receptacle, as hereinafter more fully

described. As shown in the drawings and as one embodiment of the invention, the brackets B B' are formed of angle-iron having the vertical supporting portions $b b'$ and the horizontal strengthening portions $b^2 b^3$, respectively, the ends of which vertical and horizontal portions are preferably joined by a diagonal strengthening rib or flange b^4 . The vertical supporting portions b' of the oppositely-disposed brackets B', Fig. 2, extend downward from the inclined walls of the receptacle below the bottom discharge-opening a' , and the lower surface of the horizontal strengthening portions b^3 of the brackets B' are thus disposed below the opening a' , the ends of the vertical supporting and horizontal strengthening portions b' and b^3 of brackets B', as shown in Fig. 2, being secured to the inclined walls of the receptacle and connected by the diagonal flange or rib b^4 , also secured to the inclined walls.

The brackets B, arranged on diametrically opposite sides of the bucket at right angles to the brackets B', have their vertical supporting portions b extended downward a less distance than the vertical supporting portions b' of the brackets B', so that the lower surface of the horizontal strengthening portions b^2 of the brackets B are disposed above the bottom opening a' for a purpose as will presently appear. In other respects the vertical supporting and horizontal strengthening portions $b b^2$ of brackets B are formed and secured together and to the inclined walls of the receptacle a substantially in the same manner as described for the brackets B'.

The brackets B each have secured thereto a projecting foot c , preferably in prolongation of the vertical supporting portion b and extended below the horizontal strengthening portions b^2 , so that they and the horizontal strengthening portions b^3 of the brackets B' form a support for the bucket while resting upon the ground, the bottom opening a' in this position being supported some distance above the ground. The contracted discharge-opening a' is preferably closed by a sliding door, which may be formed of two parts, as indicated in the drawings at $d d$, and each of said portions $d d$ of the door is carried by an arm d' , pivoted at d^2 to one of the brackets B', their opposite ends being prolonged to form handles d^3 , by which the doors may be operated. Connecting the brackets B B' with one of the brackets B' are the braces e , as more clearly shown in Figs. 1 and 3, and these braces provide a supporting means upon which the handles d^3 of the door-operating means may slide during their opening and closing movements, suitable stops e' being provided on the braces e to regulate the extent of opening movement of the doors $d d$. Similar stops e^2 may be secured to the brackets B' to limit the doors in their closing movement; but, as will be understood, of course, these and the stops

e' are not essential, they being merely convenient means for regulating the extent of full opening and closing movement of the doors.

Since the doors are slidable over the opening a' , it is manifest that the horizontal strengthening portions b^2 of the brackets B would prevent such sliding movement of the doors if they were disposed below the door-opening, as are the horizontal strengthening portions b^3 of the brackets B'; but, as heretofore stated, the horizontal strengthening portions b^2 being disposed above the bottom opening the portions $d d$ of the door may be moved sidewise by the operating-handles. In this movement of the doors the handles rest upon the braces e and serve as supports, as well as braces, between the brackets B and B', and the doors in their opening movement slide beneath the lower surface of the horizontal strengthening portions b^2 of the brackets B, as will be clearly apparent from Fig. 1.

In a device of the character described, intended for the handling and mixing of concrete, it is obvious that the receptacle is subjected to many vertical and horizontal strains during loading and hoisting, owing to the material contained therein, and the brackets B B' serve to impart to the receptacle sufficient horizontal and vertical bracing to obviate any distortion of the bucket in use, and particularly is this the case, since the brackets are secured to the inclined walls of the receptacle.

The bucket is provided with suitable eye or lifting plates F', to which the chains F or other lifting means may be attached.

In Fig. 4 we have shown a slightly-modified form of the receptacle, which instead of having its walls of uniform inclination, as shown in Figs. 1, 2, and 3, has the lower part formed with a different inclination, as shown at H, through which the material passes on its way out of the receptacle. This portion H may for the purpose of identification be designated a "deflecting" device, since as the material passing through the bottom opening slides down the inclined sides of the receptacle more or less its momentum carries it across the part H, and it strikes the opposite wall thereof, thus being deflected again in an opposite direction, so that when the bucket is used for mixing concrete the heavier and weighty material is more thoroughly brought into contact and coated with the cement. It is not always necessary to use the deflecting device H, although it is under some conditions desirable.

We have not found it necessary to enlarge upon the method of mixing concrete by the present form of bucket, as that is fully described and made clear in the Patent No. 633,312, hereinbefore referred to.

While we have shown and described the particular forms of brackets B B' as composed of angle-iron and having the brace connection with the inclined walls of the receptacle, it is obvious, of course, that other forms and num-

ber of brackets may be employed, the essential being that, of whatever form, they shall be connected to the inclined walls of the receptacle and have vertical supporting and horizontal strengthening portions, and while we have shown the door as formed of two parts *d d* movable toward and from each other over the discharge-opening it is obvious, of course, that other forms of sliding doors might be employed, the essential being in this respect that the door be operable so as to regulate the amount of concrete that may be discharged at any one time.

We have shown the receptacle *a* in the form of an inverted truncated cone; but it is obvious, of course, that the mere shape or outline in cross-section may be varied as long as the walls of the receptacle are inclined to converge downwardly.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A bucket, comprising a substantially conical shaped receptacle, having a bottom discharge-opening, supporting-brackets secured to said receptacle and extending below the inclined sides thereof, a sliding door for closing said bottom discharge-opening and means for moving said door to permit the discharge of a part or all of the material from said bucket.

2. A bucket, comprising a substantially conical shaped receptacle having a contracted bottom discharge-opening, supporting and strengthening brackets secured to the exterior inclined wall of said receptacle and extending below the bottom discharge-opening to provide a support for said receptacle, a sliding door for closing the bottom discharge-opening, and a handle for operating said door to permit part or all the contents of the receptacle to be discharged.

3. A bucket, comprising a receptacle having walls inclining and converging downwardly toward the bottom, a contracted bottom discharge-opening for said receptacle, brackets having vertical supporting and horizontal strengthening portions, each secured to the inclined walls of the receptacle to sustain the receptacle in both horizontal and vertical directions, the vertical supporting portions having parts extended below the bottom discharge-opening, a sliding door for closing the discharge-opening, and means for operating said door to permit all or a part only of the contents of the receptacle to be discharged.

4. A bucket, comprising a substantially conical shaped receptacle having a contracted bottom discharge-opening, a pair of brackets having vertical supporting and horizontal strengthening portions secured directly to the inclined surface of said receptacle, the lower

surface of said horizontal strengthening portions being disposed below the discharge-opening, a second pair of brackets having vertical supporting and horizontal strengthening portions also secured directly to the inclined surface of the receptacle, the lower surface of said second pair of horizontal strengthening portions having a part disposed above the bottom discharge-opening, a horizontally-movable door, and means to move the same under the horizontal strengthening portions of the second pair of brackets.

5. A bucket, comprising a substantially conical shaped receptacle having a contracted bottom discharge-opening, supporting and strengthening brackets secured to the exterior inclined wall of said receptacle and extending below the bottom discharge-opening to provide a support for said receptacle, braces connecting said supporting and strengthening brackets, a sliding door for closing the bottom discharge-opening, and a handle for operating said door to permit part or all the contents of the receptacle to be discharged.

6. A bucket, comprising a receptacle having walls inclining and converging toward the bottom thereof, a pair of brackets having vertical supporting and horizontal strengthening portions secured directly to the inclined surface of the receptacle, the lower surface of said horizontal portions being disposed below the discharge-opening of the receptacle, a second pair of brackets having vertical supporting and horizontal strengthening portions also secured directly to the inclined surface of the receptacle, the lower surface of said second pair of horizontal strengthening portions being disposed above the bottom discharge-opening, braces connecting the horizontal portions of the second-mentioned pair of brackets with a horizontal portion of one of the other pair of brackets, and sliding doors for controlling the discharge-opening.

7. A bucket comprising a receptacle having downwardly-converging walls, a deflecting device at the lower portion of said receptacle, a contracted bottom discharge-opening, sliding doors for controlling the discharge-opening, brackets having vertical supporting and horizontal strengthening portions secured to the inclined walls of the receptacle, said brackets having portions extending below the discharge-opening to support the bucket and maintain the sliding doors above the ground while the bucket is being loaded.

In testimony whereof we affix our signatures in presence of two witnesses.

PETER C. HAINS.

CHARLES R. WEAVER.

Witnesses:

W. E. ARTHUR BUDD,

EDWIN S. CLARKSON.