

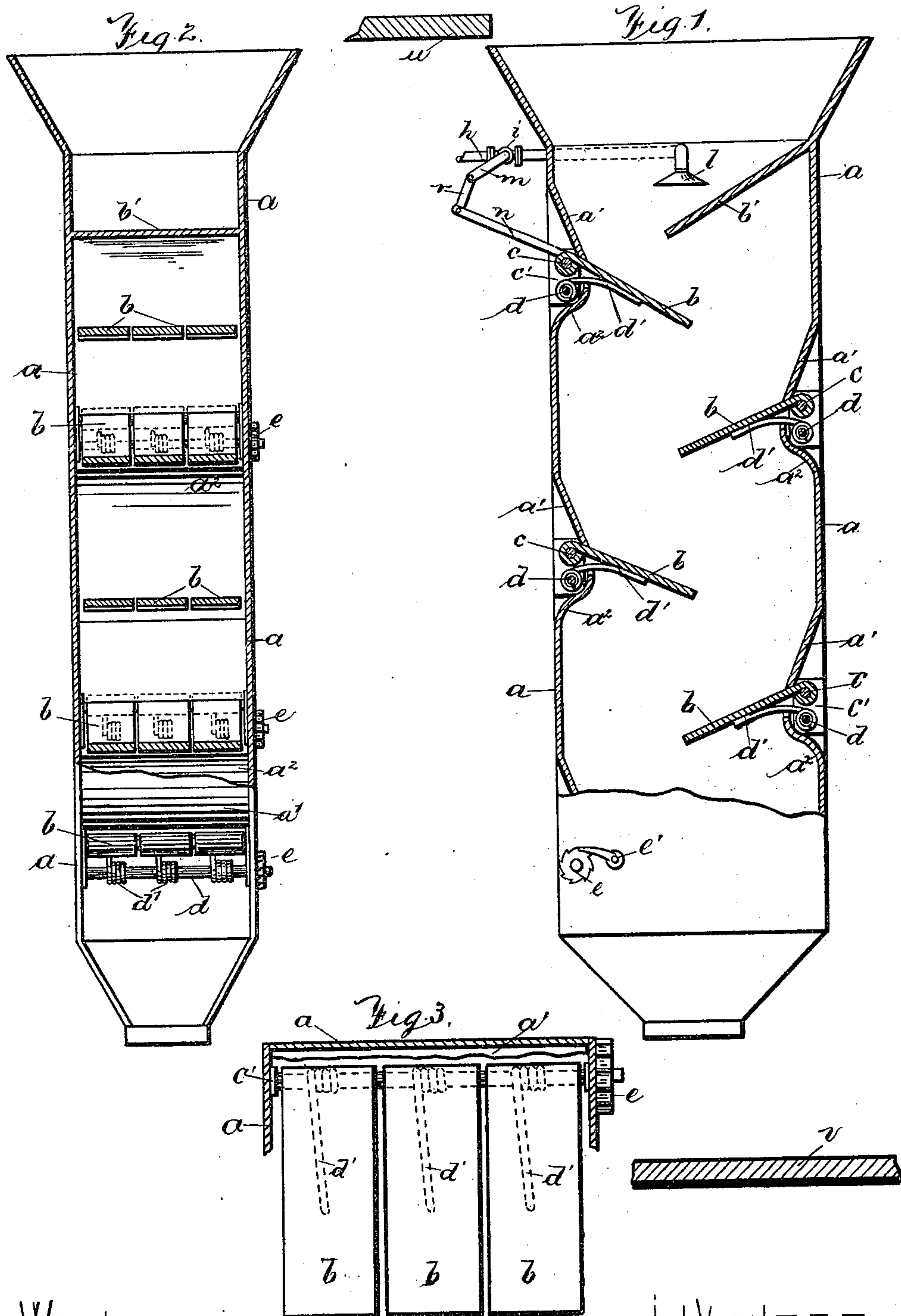
No. 670,222.

Patented Mar. 19, 1901.

H. CAMPBELL.
CONCRETE MIXER.

(Application filed Dec. 20, 1900.)

(No Model.)



WITNESSES

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UNITED STATES PATENT OFFICE.

HOWARD CAMPBELL, OF BROOKLYN, NEW YORK.

CONCRETE-MIXER.

SPECIFICATION forming part of Letters Patent No. 670,222, dated March 19, 1901.

Application filed December 20, 1900. Serial No. 40,496. (No model.)

To all whom it may concern:

Be it known that I, HOWARD CAMPBELL, a citizen of the United States, residing at the borough of Brooklyn, city and State of New York, have invented a new and useful Improvement in Concrete-Mixers, of which the following is a specification.

The object of my invention is to provide a device to thoroughly mix the component parts of concrete or similar substances and at the same time to supply automatically the right quantity of water to such component parts as they are being mixed by agitation and the movement of the materials by gravity. My device approaches closely to the workman's method of mixing such ingredients by constantly lifting and turning them with a shovel or hoe. The automatic water-supply is also a labor-economizer.

I am aware that various devices have been used for mixing the component parts of concrete by gravity. These devices generally consist of an elongated rotating box into which the ingredients are shoveled, said box having staggered shelves on its opposite sides and set at an inclination. The ingredients being shoveled in at the top of these mixers merely roll from one shelf to another, and so on through the mixer, sometimes passing through cross-bars to make the mixing more thorough. These mixers are apt to clog with very little service and are not generally efficient.

My device comprises an elongated shell, preferably of rectangular cross-section and set vertically. The upper part, into which the concrete ingredients are shoveled, is hopper-shaped, and the bottom is tapered in order that the concrete may be brought together before leaving the mixer. Inside the shell I provide inclined staggered deflectors, with which the concrete comes in contact. These deflectors are secured to rods passing through the shell. The sides of the shell adjacent to the rods and above the deflectors are turned in to form a stop for said deflectors. I also provide a spring for every deflector to keep the same in bearing with said stops. As the ingredients in their descent strike these deflectors they are borne down and then react, moving back to position by the action of the springs, and by this reac-

tion the ingredients are thrown upward and toward the opposite side of the mixer and are not allowed merely to roll from one deflector to another through the mixer by gravity. The details of construction and the automatic water-supply will be hereinafter more particularly set forth.

In the drawings, Figure 1 is a front elevation and partial section of the mixer. Fig. 2 is an elevation and partial section of the side of the mixer. Fig. 3 is an enlarged plan view of one series of shelves.

a represents the elongated shell, preferably of rectangular cross-section. At staggered intervals on the opposite narrow sides of the mixer the shell is bent in at *a'*. Below this portion *a'* the same narrow side is rolled in, as at *a''*, leaving a small space between the lower part of *a'* and the upper part of *a''*. The deflectors *b* are secured to rods *c* by hinges or otherwise, the rods *c* being supported by suitable bearings *c'*; which latter are secured to the wide sides of the shell. The deflectors *b* and rods *c* are so placed that in their normal position the deflectors bear upon the lower ends of the bent-in parts *a'*. Beneath the rod *c* and supported in the same bearing I employ rods *d*. Around these rods are springs *d'*, one for every deflector, one end of the springs being attached to the rods *d* and the other ends passing through slots in the portions *a''* of the shell and brought to bear on the under sides of the deflectors. One end of each rod *d* passes through the front of the shell and carries a ratchet *e*, having a pawl adapted to engage the same. It will be apparent from this construction that any desired tension may be brought to bear upon the deflectors *b* through the springs *d'*, the lower portions *a'* of the shell forming stops for the deflectors.

The portions *a''* of the narrow sides of the shell may be rolled in and extended, so as to leave sufficient space for the deflectors to move down and have sufficient play, the parts *a''* having slots for the springs *d'* to pass through. It will be noticed by this construction that the essential parts of the springs and the parts supporting and upon which the deflectors swing are amply protected from contact with the concrete ingredients as they pass through the mixer, the

part of the shell α' forming a shield above them and the part α^2 forming a protector against those parts of the concrete ingredients which may be thrown up from the next 5 deflectors below. Hence the tendency to clog is reduced to a minimum. By this construction the springs and their supports and the supports for the deflectors are also on the outside of the shell, which is a feature of no 10 small importance and convenience in the matter of repairs.

The upper or first deflector b' I prefer to make integral with the shell α . All the other deflectors are arranged as described, and as 15 many series of them may be employed as is necessary to a thorough mixing of the ingredients.

A pipe h conveys the necessary water to the mixer. This pipe terminates in the center of the mixer above the shelf b' in a nozzle or sprayer l . In the pipe h and in a suitable position outside the shell is a valve i , whose valve-stem carries a lever m . To the 20 upper series of deflectors b I secure an arm n . The lever m and the arm n are connected by the link r . In the normal position, as shown, the valve is closed; but when the deflectors of the upper series are depressed the valve is opened through lever m , link r , 30 and arm n , and water is permitted to escape into the mixer. The valve is closed again as soon as the deflectors return to the normal position.

At u I have shown a platform from which 35 the component parts are shoveled into the mixer and at v a platform below on which the concrete is received after being mixed.

The apparatus may be supported in any suitable manner, no means of support being 40 shown in the drawings, as the same forms no part of my invention.

In the operation of the apparatus the mixed ingredients are shoveled from the platform u into the hopper at the top of the shell and 45 fall first against the fixed deflector b' and roll down and fall against the top series of deflectors b , depressing the same, opening the valve, and letting water into the mixer. As these deflectors spring back into position after impact they throw the ingredients which caused 50 their deflection up and over to the other side of the shell, where the ingredients fall to the next series of deflectors, this operation being repeated with each series of deflectors until 55 the concrete passes out, mixed, to the platform v .

I claim as my invention—

1. In an apparatus for mixing concrete and similar materials the combination with a rectangular shell, of inclined pivotally-mounted 60 and automatically-movable deflectors for arresting the fall of the materials and diverting the same from side to side as they pass through the shell, substantially as and for 65 the purposes set forth.

2. In an apparatus for mixing concrete, and similar materials, and in combination, an

elongated shell, means for automatically and alternately deflecting and throwing the ingredients to be mixed, from one side of the shell 70 to the other as said ingredients gravitate through the shell, and means for automatically supplying water to the said ingredients as they pass through the mixer, substantially as specified. 75

3. In an apparatus for mixing concrete, and similar materials, the combination with an elongated rectangular shell, of a series of pivoted deflectors on opposite sides of the shell occupying a staggered relation to one another 80 within the shell, springs below said deflectors, variable-tension devices to which one end of each of said springs is fastened the other ends passing through slots in the shell and bearing against said deflectors tending to elevate 85 the same and cause the deflectors to bear upon the lower part of a bent-in portion of the shell, and means for automatically supplying the necessary water to the concrete mixture, substantially as set forth. 90

4. In an apparatus for mixing concrete, and similar materials, the combination with an elongated rectangular shell, of a series of staggered, downwardly-inclined deflectors, springs beneath said deflectors to produce an 95 upward pressure against the same, rods passing through said shell at one end and to which one end of said springs are attached, ratchets on said rods outside the shell, and pawls adapted to engage said ratchets whereby the 100 tension in the springs may be varied, and means for automatically supplying the water necessary to the mixture, substantially as set forth.

5. An apparatus for mixing concrete and 105 similar materials comprising an elongated rectangular shell having opposite bent-in sides at spaced-apart staggered intervals, where there are elongated spaces and openings, a series of inclined deflectors extending 110 through the openings, rods extending across said spaces and on which the deflectors are pivotally mounted, means for holding said deflectors against the lower end of said bent-in portions of the shell and means for varying the pressure against the same; a pipe extending into the shell, a nozzle, at the inner end of the pipe, a valve in said pipe, an arm secured to the upper series of deflectors, a link and lever for connecting the deflectors 120 to the valve-stem of said valve so placed that when said deflectors are depressed the valve is opened and water allowed to escape into the mixer, substantially as and for the purposes set forth. 125

6. An apparatus for mixing concrete and similar materials comprising an elongated rectangular shell having opposite bent-in sides at spaced-apart staggered intervals, where there are elongated spaces and openings, a series of inclined deflectors extending 130 through the openings, rods extending across said spaces and on which the deflectors are pivotally mounted, a series of springs each

having a coil and an arm and agreeing in
number with the deflectors, rods extending
across said spaces and through the coils of
said springs with the arms of said springs
5 bearing upon the under sides of the deflec-
tors to impart an upward pressure, tension
devices for straining the springs, a pipe ex-
tending into the shell, a nozzle at the inner
end of the pipe, a valve in said pipe, an arm
10 secured to the upper series of deflectors, a
link and lever for connecting the deflectors

to the valve-stem of said valve, so placed
that when said deflectors are depressed the
valve is opened and water allowed to escape
into the mixer, substantially as and for the 15
purposes set forth.

Signed by me this 18th day of December,
1900.

HOWARD CAMPBELL.

Witnesses:

GEO. T. PINCKNEY,
BERTHA M. ALLEN.