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E. BARTLING

2,624,480

## PARTICLE ELEVATOR FOR CONCRETE MIXERS

Filed Dec. 23, 1950

2 SHEETS--SHEET 1

Fig. 1.

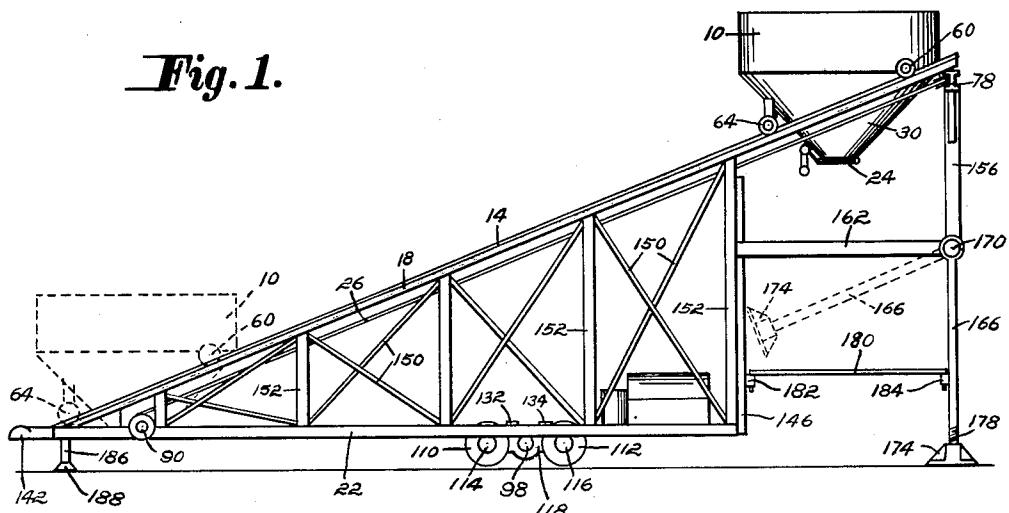
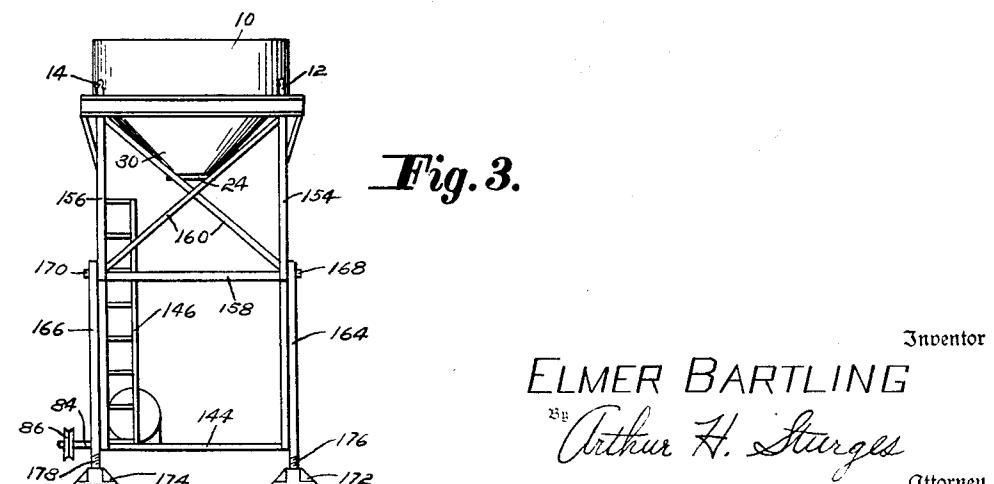


Fig. 2.



ELMER BARTLING  
By Arthur H. Sturges  
Attorney

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E. BARTLING

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PORTRABLE ELEVATOR FOR CONCRETE MIXERS

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2 SHEETS—SHEET 2

Fig. 4.

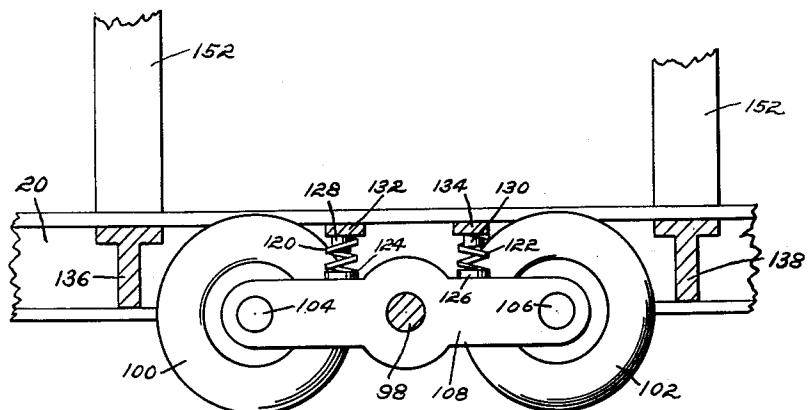
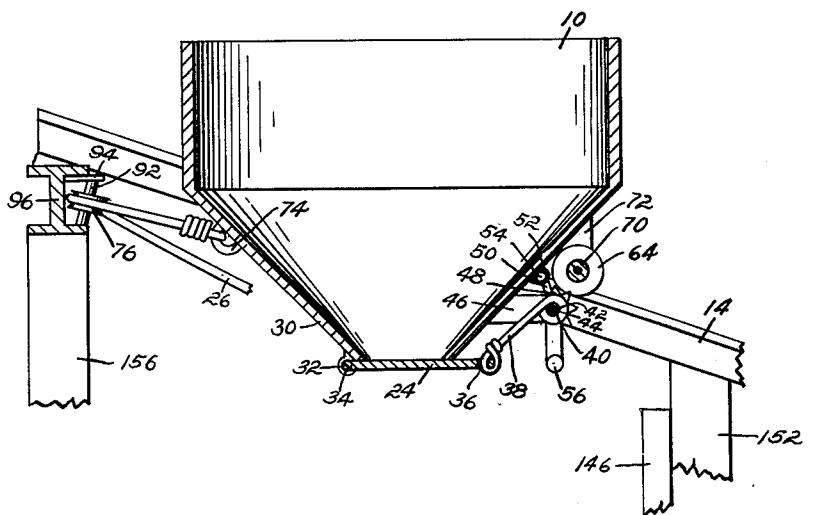


Fig. 5.

Inventor

ELMER BARTLING

By *Arthur H. Sturges*

Attorney

## UNITED STATES PATENT OFFICE

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PORTABLE ELEVATOR FOR CONCRETE  
MIXERS

Elmer Bartling, Arlington, Nebr.

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3 Claims. (Cl. 214—100)

**1**

This invention relates to concrete mixing apparatus where concrete is mixed on the job, and particularly where the ingredients, such as cement, sand, and stone or gravel, are deposited into a mixing truck or the like, and in particular this invention includes an inclined portable elevator having a traveling bucket actuated by a cable from a loading position on the lower end of a track on the elevator to a dumping position at the opposite or high end of the track where the contents thereof are dumped into a truck or the like.

The purpose of this invention is to provide portable means for elevating the ingredients of concrete from a low receiving position to a high dumping position from which the ingredients may be deposited into a truck.

Various types of scoops have been used for dumping the ingredients of concrete into concrete mixers where it is convenient to run the mixed concrete into forms or on a highway, but where it is necessary to carry the concrete to points remotely situated from the source of supply of the ingredients, much time is lost in shoveling the sand and gravel, or in otherwise elevating the ingredients into the mixing and conveying trucks.

With this thought in mind this invention contemplates a portable framework or structure having a bucket mounted by wheels on an inclined track with the bucket actuated by a cable from a winch and with the bucket provided with a gate and means for opening and closing the gate.

The object of this invention is, therefore, to provide a portable elevating structure with which a bucket is elevated from a loading position to a dumping position whereby unmixed ingredients of concrete may readily be elevated and dumped into trucks and the like.

Another object of the invention is to provide elevating means for ingredients of concrete that may readily be towed from job to job.

Another object of the invention is to provide means in a portable elevating structure whereby the structure is rigidly supported in the operative position.

A further object of the invention is to provide a portable elevator structure for elevating ingredients of concrete in which the structure is formed with conventional structural and other parts.

A still further object of the invention is to provide a portable structure for elevating ingredients of concrete to a dumping position above trucks and the like which is of a simple and economical construction.

**2**

With these and other objects and advantages in view the invention embodies a structural frame mounted on wheels and having an inclined track on the upper surface with a bucket mounted by wheels on the track and having a manually actuated dumping gate, and a winch with a cable for elevating and lowering the bucket.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings, wherein:

Figure 1 is a view showing a side elevation of the elevator with the bucket shown in full lines in the upper or dumping position and in dotted lines in the lower or loading position, and with lower supporting sections of end legs of the structure shown in full lines in the operative position and in the folded or traveling position in dotted lines.

Figure 2 is a plan view of the elevator with the bucket shown in the upper position.

Figure 3 is an end elevational view of the elevator looking toward the high or dumping end thereof.

Figure 4 is a detail showing a section taken on line 4—4 of Figure 2, with the parts shown on an enlarged scale.

Figure 5 is a similar section, also with the parts shown on an enlarged scale, and taken on line 5—5 of Figure 2.

Referring now to the drawings wherein like reference characters denote corresponding parts the improved concrete ingredient elevator of this invention includes a bucket 10 mounted to travel on rails 12 and 14 positioned on inclined beams 16 and 18 of a portable structure having horizontally disposed lower beams 20 and 22 from which the inclined beams are supported, and the bucket, which is provided with a gate 24 is actuated by a cable 26 from a winch 28, that is mounted on the lower beam 22.

As illustrated in Figure 4, the bucket 10 includes a cylindrical upper section and a lower conical-shape section or hopper 30, and the gate 24 which is positioned against the lower end of the hopper, is hinged between lugs 32 with a pin 34. The opposite end of the gate is provided with an eye 36 to which a cable 38 is attached and the cable extends from a drum 40 of a winch 42, which is journaled by a shaft 44 in arms 46 that extend from the hopper. The drum of the winch is provided with a star wheel 48 that is engaged by a pawl 50, which is pivotally mounted on a lug 52 by a pin 54. The pawl is positioned to hold the winch with the gate closed, and the winch is actuated by a hand lever 56, whereby after

being released by the pawl for dumping, the gate is drawn upwardly to the closed position.

The bucket is provided with wheels 58 and 60 on the upper end and similar wheels 62 and 64 on the lower end, the wheels on the upper end being journaled on studs 66 and 68, and the lower wheels 62 and 64 being journaled on a shaft 70 which is mounted in bearings 72.

The cable 26, by which the bucket is drawn upwardly on the rails, is attached to an eye 14 on the forward side of the hopper of the bucket, and from the eye the cable extends over pulleys 76 and 78 to the winch 28, which is mounted on the lower beam 22. The winch is journaled in bearings 80 and 82 through a shaft 84 and the shaft is provided with a sheave 86, and also a universal joint 88, through which the shaft may be connected to the power take off of a tractor with a flexible shaft, as indicated by the numeral 90. For some uses the shaft may be driven by a belt or the like through the sheave 86.

The pulley 76 in the center of the upper end of the structure is journaled on a pin 92, the upper end of which is held in a bracket 94, and the lower end in the lower flange of an upper cross beam 96 connecting the upper ends of the inclined beams 16 and 18.

The elevator structure is supported by trucks pivotally mounted on an axle 98 extended between the lower beams 20 and 22 of the structure and wheels 100 and 102; on one side are journaled on shafts 104 and 106, respectively, in the ends of a bolster 108 which is pivotally mounted on the axle 98. Similar wheels 110 and 112 on the opposite side are journaled on shafts 114 and 116 in the ends of a bolster 118 which is also pivotally mounted on the axle 98. The trucks are provided with shock absorbers or springs 120 and 122, the lower ends of which are held in cups 124 and 126, respectively, on the bolsters, and the upper ends are positioned on pins 128 and 130 of transversely disposed frame members 132 and 134.

The wheels are positioned between transversely disposed cross beams 136 and 138 and similar beams are provided at spaced points throughout the length of the structure. The lower beams 20 and 22 at the low end of the structure are connected by a cross beam 140 and the beam 140 is provided with a hitch 142. The opposite ends of the beams 20 and 22 are connected by a cross beam 144, from which a ladder 146 extends upwardly to provide a support from which the gate 24 is opened and closed by the hand lever 56.

The structure is provided with diagonal bracing 148 that is positioned between the cross members of the lower beams 20 and 22, and similar bracing 150 is provided between vertical struts 152 positioned between the lower beams and the inclined beams 16 and 18. The upper ends of the beams 16 and 18 and the cross beam 96 are supported by an end frame formed with vertical struts 154 and 156 connected by a lower cross beam 158 and supported by diagonal bracing 160. Horizontal beams 162 connect the lower ends of the struts 154 and 156 to the vertical struts 152 at the end of the structure.

The end frame including the struts 154 and 156 is supported by legs 164 and 166 which are pivotally connected to the lower end of the end frame by bolts 168 and 170, so that the legs swing upwardly to the positions shown in dotted lines in Figure 1 when the structure is towed from one position to another. Each of the legs 164 and 166 is provided with a base, as indicated by the numerals 172 and 174, and the bases are connected by threaded studs 176 and 178, respec-

tively. The legs are supported in upright positions by bars 180 with hooks on the ends which extend into eyes 182 on the structure and 184 on the legs, as shown in Figure 1. The opposite end 5 of the structure is also provided with a leg 186, and the leg 186 may also be provided with a threaded base 188. By this means the structure may be leveled for use, and the bases may be adjusted to rigidly hold the structure on smooth or uneven surfaces.

With the parts arranged in this manner cement, sand, and gravel, or other ingredients of concrete, or other products, may be placed in the bucket or hopper, with the bucket in the position 15 shown in dotted lines in Figure 1, and by operating the winch 28, the bucket is drawn upwardly to the position shown in full lines. A truck or other carrier is backed into the high end of the structure and, with the bucket in the upper position, the gate 24 is opened, so that the contents of the bucket are deposited into the truck.

From the foregoing description it is thought to be obvious that a portable elevator constructed in accordance with my invention is particularly 25 well adapted for use by reason of the convenience and facility with which it may be transported, set up for use and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this 30 reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, except as claimed.

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

1. In a portable elevator for aggregate for concrete mixers, the combination which comprises an elongated horizontally disposed inclined elevator structure including spaced horizontally positioned parallel lower beams, upwardly inclined parallel upper beams positioned above the lower beams and extended upwardly from the ends of the lower beams at the low end of the structure, 45 said upwardly inclined beams extended beyond the ends of the lower beams at the high end of the structure, spaced vertically disposed struts supporting the upwardly inclined beams from the lower beams, vertically disposed end struts extended downwardly from the upper ends of said 50 upwardly inclined beams, lower sections pivotally mounted on the lower ends of said end struts for supporting the high end of the structure from a surface upon which the elevator may be positioned, supporting means for retaining said pivotally mounted lower sections in upright positions, trucks having wheels thereon positioned substantially midway of the length of the structure and mounted on said lower beams, adjustable 55 supporting means depending from the lower end of the structure, and a dumping bucket mounted 60 to travel on said upwardly inclined beams.

2. In a portable elevator for aggregate for concrete mixers, the combination which comprises an elongated horizontally disposed inclined elevator structure including spaced horizontally positioned parallel lower beams, upwardly inclined parallel upper beams positioned above the lower beams and extended upwardly from the ends of the lower beams at the low end of the structure, 65 said upwardly inclined beams extended beyond the ends of the lower beams at the high end of the structure, spaced vertically disposed struts supporting the upwardly inclined beams from the lower beams, vertically disposed end struts ex-

tended downwardly from the upper ends of said upwardly inclined beams, lower sections pivotally mounted on the lower ends of said end struts for supporting the high end of the structure, temporarily, from a surface upon which the elevator may be positioned, supporting means for retaining said pivotally mounted lower sections in upright positions, trucks having wheels thereon upon which said lower beams are mounted, adjustable supporting means depending from the low end of the structure, a dumping bucket having a conical-shaped bottom providing a hopper mounted to travel on said upwardly inclined beams, a gate providing a closure hinged on the lower end of the hopper, means holding the gate in the closed position, and means for releasing the holding means of the gate.

3. In a portable elevator for aggregate for concrete mixers, the combination which comprises an elongated horizontally disposed inclined elevator structure including spaced horizontally positioned parallel lower beams, upwardly inclined parallel upper beams positioned above the lower beams and extended upwardly from the ends of said lower beams at the low end of the structure, said upwardly inclined beams extended beyond the ends of the lower beams at the high end of the structure, spaced vertically disposed struts supporting the upwardly inclined beams from the lower beams, vertically disposed end struts extended downwardly from the upper ends of said upwardly inclined beams, the lower ends

of said vertically disposed end struts being spaced above a surface upon which the elevator is positioned a sufficient distance to clear the body of a truck, horizontally disposed beams connecting the lower ends of said vertically disposed end struts to said vertically disposed struts supporting the upwardly inclined beams from the lower beams, a dumping bucket having a conical-shaped hopper forming the bottom thereof mounted to travel on said upwardly inclined beams, a gate at the lower end of the hopper, means for opening and closing said gate, wheels mounted on said lower beams for spacing said lower beams above a surface upon which the elevator is positioned, and adjustable supporting means depending from the low end of the structure.

ELMER BARTLING.

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