April 12, 1932. J. E. BUSHNELL 1,853,546

DISTRIBUTING APPARATUS

Filed Dec. 6, 1928

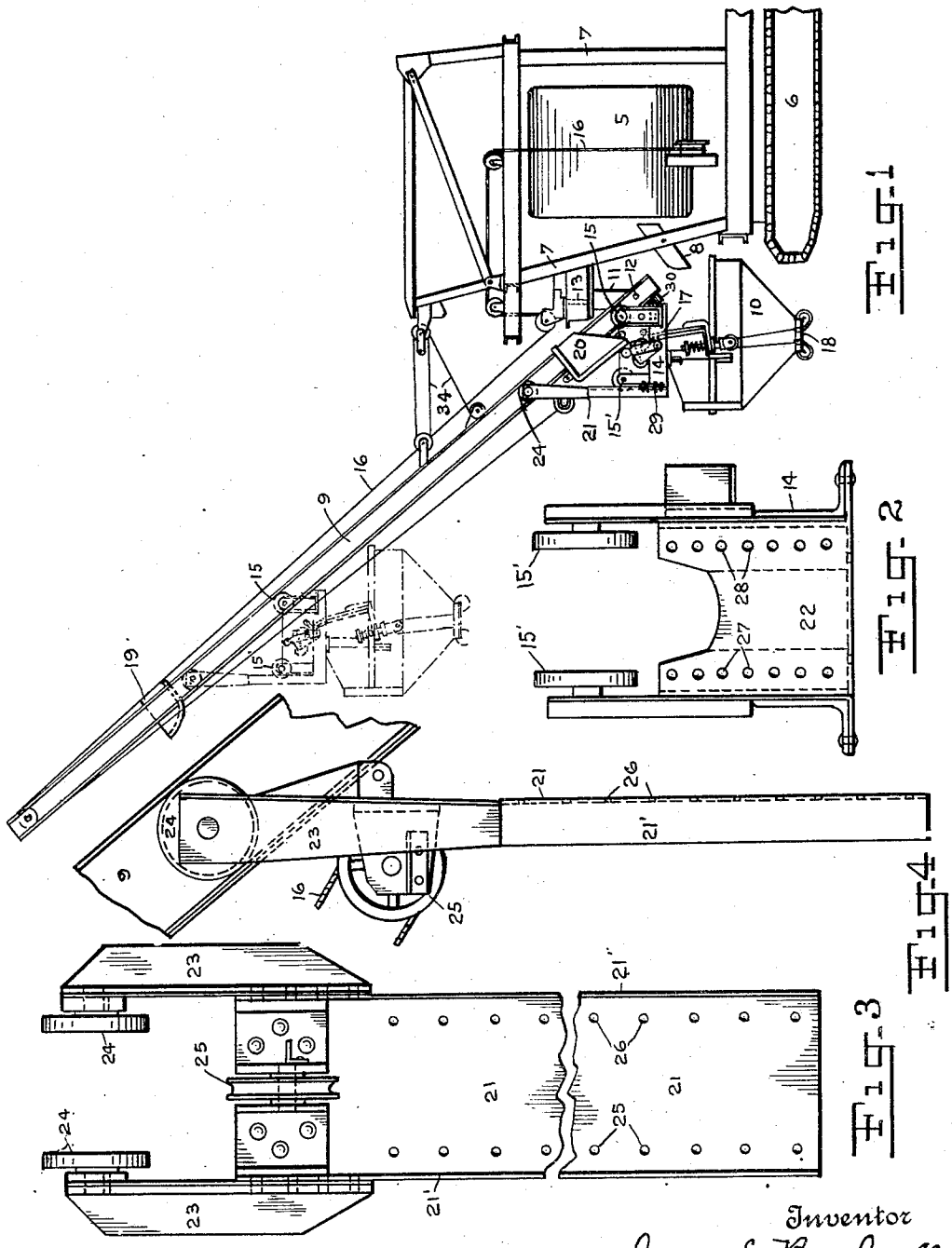

Fig. 1

Fig. 2

Fig. 4

Fig. 3

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UNITED STATES PATENT OFFICE

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DISTRIBUTING APPARATUS

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The present improvements relate to distributing apparatus and more particularly to that type of apparatus wherein freshly mixed concrete is placed by means of a boom and bucket construction.

Devices of this general character, known as concrete pavers, commonly employ a projecting boom upon which a dumping bucket travels, the latter transporting the freshly mixed concrete from the mixer to the point of placement. Due to the fluent character of the concrete and for other reasons, this distributing arrangement extends laterally of the mixer in a horizontal plane so that the bucket will constantly be on an even keel and thus avoid slopping over. In practice, an apparatus of the foregoing description encounters grades and uneven terrain, wherein the boom and bucket follow the inclination of the paver unit proper with the attendant tilting of the bucket and the consequent reduction of its capacity, as well as slopping over.

The present improvements have as their primary object, among others, the provision of a paver unit which will function efficiently under the aforementioned or other similar adverse conditions encountered in the field. A further object is to provide a paver unit wherein the boom is adjustable and may be placed in a plurality of positions. A still further object is to provide an adjustable bucket which may be adjusted to remain level irrespective of the inclination of the boom or paver and thus compensate for such abnormal conditions.

Other objects and advantages will be apparent to those skilled in the art upon reference to the accompanying specification and drawings in which

Fig. 1 is a side elevation of a paver unit embodying the present improvements;

Fig. 2 is an enlarged front view of the bucket carriage;

Fig. 3 is an enlarged front view of the bucket adjusting means, and

Fig. 4 is a side view of the means shown in Fig. 3, indicating its relation to the boom.

Referring to the drawings, a portable mixing apparatus is illustrated comprising a mixer drum 5, traction means 6, supporting frame 7, discharge chute 8, projecting boom 9 and distributing bucket 10. The boom 9 is mounted adjacent its inner end on the frame 7 in any suitable manner as, for example, by saddle 11. A horizontally disposed pivot 12 serves to connect the boom to the saddle and the latter has a vertically disposed swivel connection 13 with the main frame 7, whereby universal movement of the boom is afforded. Any convenient means such as cable 34 passing over suitably arranged sheaves to a power drum may be provided for elevating and lowering the boom about the axis 12, and for holding said boom in any angular position.

Interposed between the boom 9 and bucket 10 is a bucket carriage 14 having rollers 15, 15′, which latter fit on the track of the boom and afford traction means for the carriage and suspended bucket when the boom is disposed in a level or horizontal position. A cable 16 passing over suitable sheaves to a power drum is provided for accomplishing outward travel of the bucket and carriage, and a similar cable (not shown) may be provided for returning same to charging position adjacent the mixer.

The bucket 10 is of well known type, having a latch mechanism 17 for holding its dumping doors 18 closed, the latch 17 being tripped and the doors released by cam 19 on the outer portion of boom 9. Upon inward travel of the bucket and carriage, a cam 20 automatically restores the latch mechanism 17 and doors 18 to closing position.

It is understood that when the apparatus is operating on the level, the boom 9 is horizontally disposed and the bucket and carriage travel along same on rollers 15, 15′ as is well known in paving machines.

However, in the event that the paver unit is not resting on an even keel or should the boom 9 be elevated, an adjusting means for the bucket is provided and in case such means is employed, the rollers 15′ of the carriage 14 are idle or removed.

The adjusting means selected for illustration comprises a bracket 21 adapted to cooperate with the front face 22 of the carriage 14. This bracket member 21 is of chan-

nel form, the sides 21′ adding strength and rigidity to the member as well as providing an attachment means for spaced ears 23, which latter are provided adjacent their ends, with stub shafts for loosely supporting rollers 24. As in the case of rollers 15, 15′, these rollers 24 are adapted to travel on the tracks provided by the channel-shaped boom 9. The upper face of bracket 21 is provided with a sheave 25 for receiving power cable 16. The face of the bracket 21 is provided with a plurality of spaced aligned holes 25 and 26 adjacent the edges of the bracket, as illustrated in Figs. 3 and 4. Referring to Fig. 2, it will be seen that the front face 22 of carriage 14 is similarly provided with holes 27 and 28. When it is apparent that the bucket 10 will not travel along the boom 9 in a level condition, due to causes previously mentioned, the rollers 15′ of the carriage 14 are removed and the bracket 21 employed with the rollers 24 fitted onto the boom tracks and the bracket 21 bolted or pinned to the face 22 of carriage 14 by means of bolts 29 passing through registering apertures 25 and 27, and 26 and 28 respectively.

The foregoing construction affords a very rigid and stable mounting for the bucket so that it is always held in rigid angular relation to the boom, irrespective of the position of the latter. Proper operation of the mechanical means for opening and closing the bottom doors of the bucket and prevention of a swinging bucket striking against the mixing machine or other obstructions require that the bucket be held in such rigid relation to the boom. Other forms of adjusting means may be employed. For example, a threaded rod and hand wheel on the carriage cooperating with a threaded nut on the bracket may be substituted.

A feature of importance attending the present improvements resides in the adaptability of the device for use under varying conditions. For example, the apparatus may be used as the usual type of paver construction, with the boom 9 in horizontal position and the bucket and carriage traveling therealong on rollers 15 and 15′. Accompanying such use on level terrain, should the traction elements 6 encounter uneven ground and thus incline the boom 9 upwardly, such inclination can be compensated for by lowering the forward face 22 of the carriage and utilizing bracket 21 and rollers 24, and thus retaining bucket 20 in a level condition. Consequently the reciprocating travel of the bucket may continue as before without slopping over of the contents, or reduction of the bucket capacity due to the fluent concrete seeking its own level. Likewise, this usual paver construction, with the present improvements added, may be converted into an inclined boom construction. Where it is desirable to place the concrete at a higher level than that at which the usual paver operates, it is only necessary to elevate the boom 9 (by cable 34 or other means) to the desired height, adjust the bracket 21 and carriage 14 by appropriately inserting bolts 29 so that bucket 10 remains level and operations may proceed as before without danger of reduction of capacity or loss of contents of the bucket.

It is apparent that when the apparatus is employed under the circumstances just described, a return cable for the bucket and carriage will not be brought into play since the carriage 14 will return from the outer portion of the boom to the charging position adjacent the mixer by gravity. In order to check the shock of the returning carriage and bucket to charging position, springs 30 are provided at the inner end of the boom, as illustrated.

After use, as an inclined boom construction, the same is readily convertible into the usual paver for employment on the level, by lowering boom 9 to the horizontal, dispensing with bracket 21, and utilizing rollers 15, 15′.

Obviously the present improvements do not sacrifice any advantage or utility of the usual horizontal paver but retain same, and add thereto features of utility which increase the scope of utility of a device of this character. Accordingly, the apparatus may distribute material laterally of the mixer, since the boom is movable about the vertical axis 13, or at elevations, as previously described. The apparatus is therefore not limited to paving operations, but embodies a construction unit for building or other purposes. The specific type of bucket employed may be varied. For example, under certain circumstances it may be desirable to mount a roll-over bucket on the adjustable carriage 14, such bucket being arranged to dump by gravity when unlatched at the desired point along the boom and returning to its normal level latched position by gravity when empty.

Furthermore, it is understood that the embodiment shown, illustrates only one of a plurality of applications of the present improvements. For example, it is proposed to modify the construction whereby the bucket may be adjusted to travel in a substantially level condition regardless of the inclination of the boom. Where conditions require that the boom be depressed below the horizontal, the present improvements are adapted for adjustment to maintain the moving bucket level throughout its travel.

Various other modifications, within the scope of the present improvements will occur to those skilled in the art, and are deemed to be within the purview of the invention.

I claim:

A paver unit including a laterally extending distributing boom having a universal pivotal mounting for disposing same in angu-

lar horizontal or vertically inclined positions, a carriage mounted for travel along said boom, a portion of said carriage having a distributing bucket rigidly supported thereon, another portion of said carriage having rollers engaging said boom and including a plate with a series of perforations, said first named carriage portion having corresponding perforations, and securing means removably connecting said carriage portions through registering perforations for positioning said bucket in horizontal position regardless of the position of said boom.

Witness my hand this 4th day of December, 1928, county of Middlesex, State of New Jersey.

JAMES E. BUSHNELL.