June 16, 1953 C. A. CLETUS ET AL 2,641,975

CONCRETE FLOOR COMPACTOR

Filed June 4, 1951 3 Sheets-Sheet 1

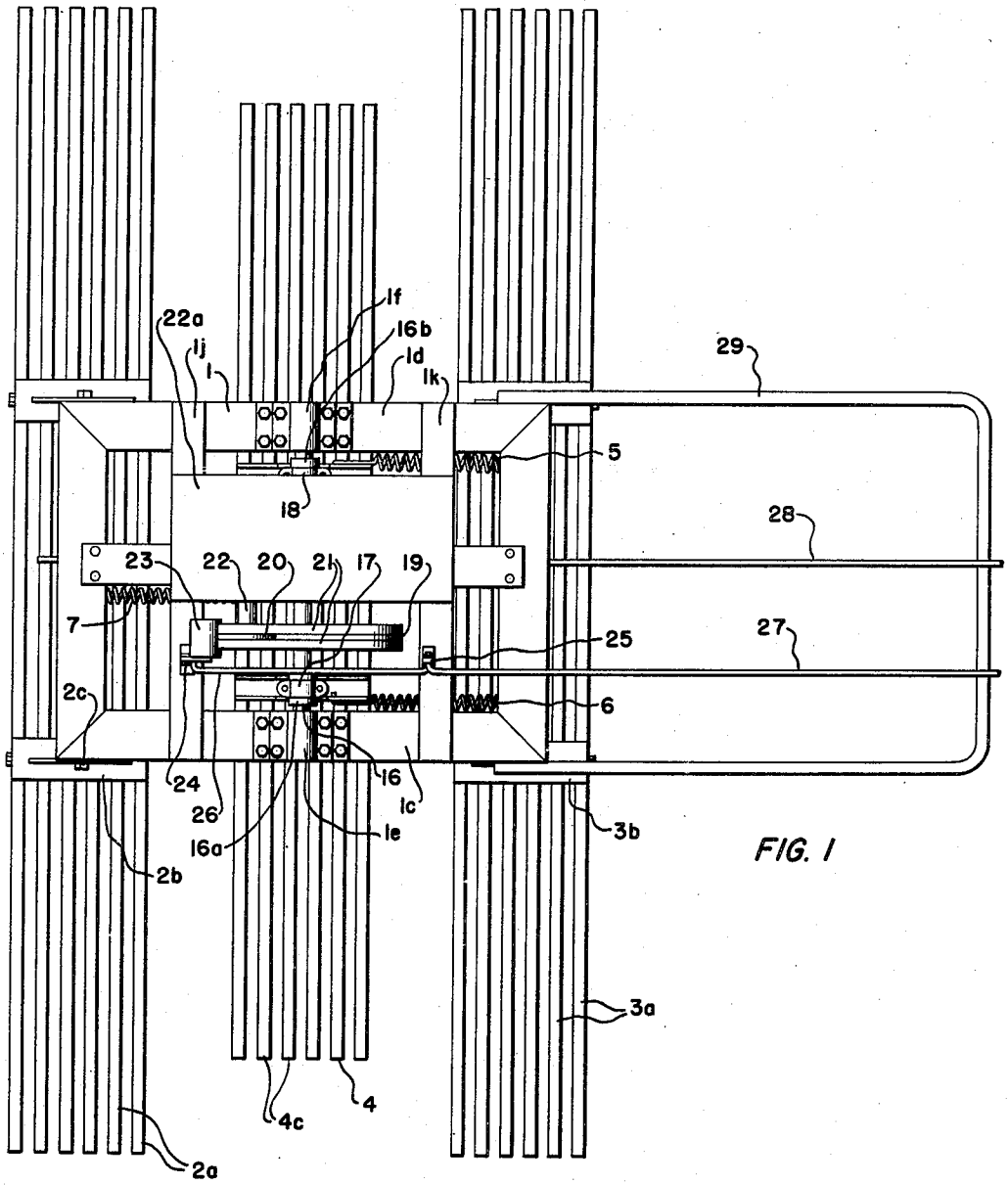


FIG. 1

INVENTORS
CARL A. CLETUS &
OLOF G. ANDERSON

BY Wm. H. Dean

AGENT

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Filed June 4, 1951 3 Sheets-Sheet 2

FIG. 2

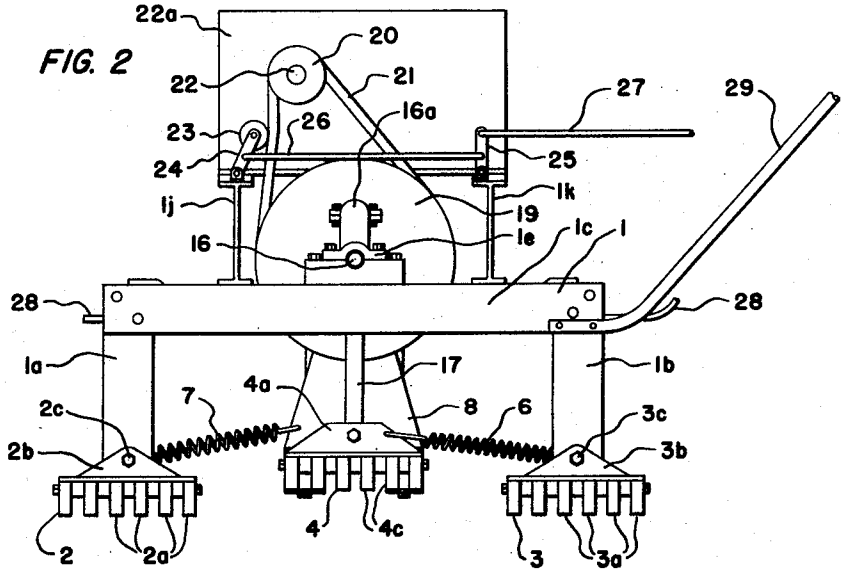
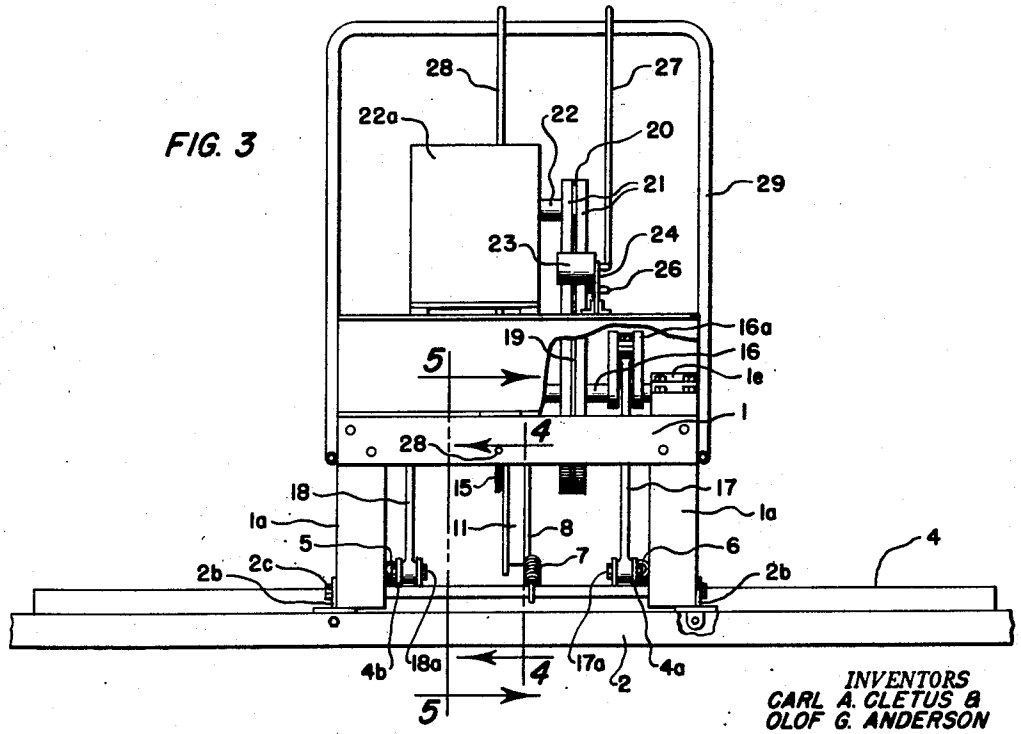


FIG. 3



INVENTORS
CARL A. CLETUS &
OLOF G. ANDERSON

BY

Wm. H. Dean

AGENT

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Filed June 4, 1951 3 Sheets-Sheet 3

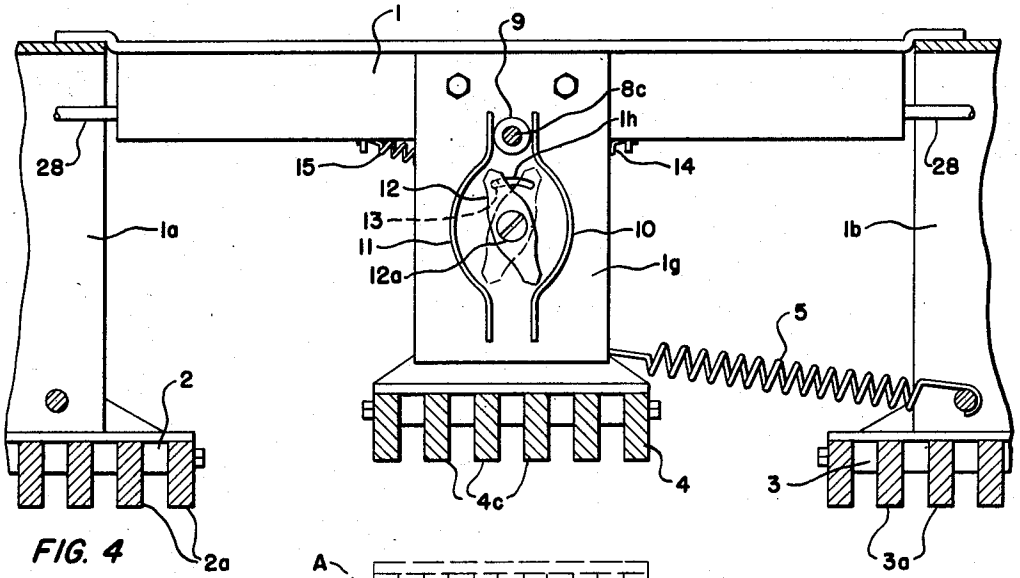


FIG. 4

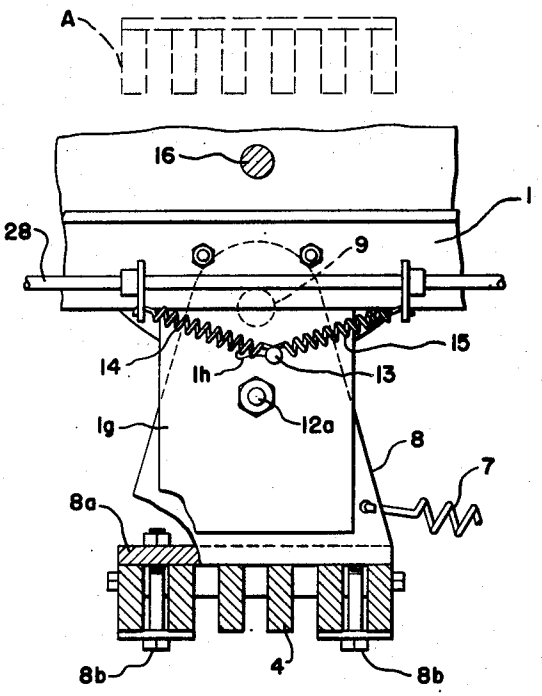


FIG. 5

INVENTORS
CARL A. CLETUS &
OLOF G. ANDERSON

BY

Wm. H. Dean

AGENT

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CONCRETE FLOOR COMPACTOR

Carl A. Cletus and Olof G. Anderson,
San Diego, Calif.

Application June 4, 1951, Serial No. 229,808

5 Claims. (Cl. 94—49)

1

Our invention relates to a concrete floor compactor, more particularly for use in vibrating and compacting moist concrete in forming a floor surface and the objects of our invention are:

First, to provide a compactor of this class which is a self motivated vertically vibrating and tamping machine which vibrates moist concrete into compact condition and submerges the coarse particles of the concrete permitting the fine, moist material of the concrete mix to rise to the surface whereupon a smooth, fine grain material is present at the upper surface of the floor when the concrete dries;

Second, to provide a compactor of this class which readily and conveniently covers all of a concrete floor during its movement thereover including the compaction of a concrete floor into and adjacent corners so that uniformity of compaction throughout the entire floor area is accomplished;

Third, to provide a compactor of this class having long straight feet portions which may be motivated toward a wall parallel thereto until the said feet are contiguous to the wall whereupon said compactor may be readily reversed for motivating the same away from the wall obtaining complete coverage and compaction of floors throughout the total floor area and contiguous to all of the walls;

Fourth, to provide a compactor of this class which requires the exercise of a minimum amount of manual effort in the operation of the same;

Fifth, to provide a floor compactor of this class having novel motivating means including a vertically vibrating foot provided with diverting means which shifts the same when firmly engaged with the concrete in its lowermost vibrating position;

Sixth, to provide a concrete floor compactor of this class having stationary feet and a centrally disposed vertically vibrating foot the amplitude of which is equal to the raising of the stationary feet clear of the upper surface of the concrete floor being compacted whereby lateral shifting of the vibrating foot when the stationary feet are above the surface of the concrete causes motivation of the entire compactor; and

Seventh, to provide a concrete floor compactor of this class which is very simple and economical of construction in accordance to its utility, efficient in its action and which will not readily deteriorate or get out of order.

With these and other objects in view as will appear hereinafter, our invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon forming a part of this application in which:

Figure 1 is a top or plan view of our concrete floor compactor; Fig. 2 is a side elevational view thereof; Fig. 3 is a front end elevational view

2

thereof; Fig. 4 is an enlarged fragmentary sectional view taken from the line 4—4 of Fig. 3; and Fig. 5 is an enlarged fragmentary sectional view taken from the line 5—5 of Fig. 3.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings.

The frame 1, feet 2 and 3, vibrating foot 4, springs 5, 6 and 7, plate 8, roller 9, roller guides 10 and 11, roller diverter 12, pin 13, springs 14 and 15, crank shaft 16, connecting rods 18 and 17, pulleys 19 and 20, belts 21, motor shaft 22, idler roller 23, levers 24 and 25, link 26, control rods 27 and 28 and the handle 29 constitute the principal parts and portions of our concrete floor compactor.

The frame 1 of our concrete floor compactor is provided with downwardly extending leg portions 1*a* and 1*b* on the lower ends of which are the feet 2 and 3. These feet are constructed of spaced timbers 2*a* and 3*a* respectively having transverse connecting clips, or flanges, 2*b* and 3*b* through which extend the bolts 2*c* and 3*c* forming the support for these feet 2 and 3. It will be noted that the bolts 2*c* and 3*c* extend through the lower ends of the legs 1*a* and 1*b* of the frame 1, the legs 1*a* being at one end of the frame 1 while the legs 1*b* are positioned at the opposite end of the frame 1 and spaced as shown in Fig. 3 of the drawings. The feet 2 and 3 are of considerable length longitudinally of the axis of the bolts 2*c* and 3*c* as shown best in Fig. 1 of the drawings. The frame 1 is provided with opposed side rails 1*c* and 1*d* on which the bearings 1*e* and 1*f* are secured. Opposite ends of the crank shaft 16 are journaled in the bearings 1*e* and 1*f* and this crank shaft 16 is provided with a pair of crank portions 16*a* and 16*b* on which the connecting rods 17 and 18 are journaled at their upper ends. The lower ends of the connecting rods 17 and 18 are journaled by means of bolts 17*a* and 18*a* to the bearing brackets 4*a* and 4*b* secured to the vibrating foot 4. This vibrating foot 4 is substantially the same construction as the feet 2 and 3 and incorporates spaced timbers 4*c* similar to the spaced timbers 2*a* and 3*a* of the feet 2 and 3. Secured to the vibrating foot 4 at its middle portion intermediate the connecting rods 17 and 18 is the plate or flat member 8. This plate or flat member 8, as shown in Fig. 5, is rigidly connected to the vibrating foot 4 at its flange portion 8*a* by means of the bolts 8*b*. Rigidly connected to the plate 8 is a bearing pin 8*c* on which the roller 9 is freely, rotatably mounted. This roller 9 extends from one side of the plate 8 which is vertically movable adjacent the roller guides 10 and 11, as shown best in Fig. 4 of the drawings.

These roller guides 10 and 11 are positioned in opposed relationship to each other at opposite sides of the roller diverter 12, as shown best in Fig. 4 of the drawings. The roller guides 10 and 11 are fixed to a suspended plate 1*g* of the frame 1 as shown in Fig. 4 of the drawings, and the roller diverter 12 is pivoted intermediate the

roller guides 10 and 11 on the bolts 12a in connection with the plate 1g. This plate 1g is provided with an arcuate slotted portion 1h therein through which the pin 13 extends. This pin 13 is fixed to the roller diverter 12 near its one end and engaging the opposite end of the pin 13 are the springs 14 and 15. These springs 14 and 15 are connected to the slidably movable control rod 28. This control rod 28 is reciprocally mounted in connection with the frame 1 longitudinally thereof and is arranged to reverse the angular direction of the roller diverter 12 for reversing the directional operation of our concrete floor compactor.

Opposite ends of the slotted portion 1h in the plate 1g provide stops for the pin 13 held by the springs 14 and 15 as shown best in Figs. 4 and 5 of the drawings. As shown in Fig. 4 of the drawings, the roller guides 10 and 11 are shaped to provide parallel portions at their opposite ends spaced substantially the diameter of the roller 9. Each of the guides intermediate its ends is curved outwardly away from the roller 9 so that the roller 9 may pass at either side of the roller diverter 12 inwardly of one of the roller guides 10 or 11, whichever direction the roller 9 is traveling. As shown in Fig. 4 of the drawings, the roller 9 is near one extremity of each of the roller guides 10 and 11 and when the vibrating foot 4 is in its lowermost position, the roller 9 is near the opposite extremity of the roller guides 10 and 11 at their spaced parallel portions near the lower end of the plate 1g. The springs 5 and 6 are connected to the leg 1b of the frame 1 and to the bearing clips 4a and 4b on the vibrating foot 4. In opposed relation to these springs 5 and 6, is the spring 7 which is connected to the frame 1 on the bolt 2c extending through the legs 1a of the frame 1. This spring 7 at its opposite end is connected to the plate 8 as shown best in Fig. 3 of the drawings, whereby opposed tension is applied to the vibrating foot 4 urged in one direction by the springs 5 and 6. Fixed on the crank shaft 16 is a pulley 19 over which the belts 21 extend and these belts 21 engage the pulley 20 fixed on the motor shaft 22 extending from the motor housing 22a. This motor housing 22a is supported on frame cross members 1k and 1j and pivoted to the upper side of the cross member 1j is the lever 24 having the idler roller 23 revolubly mounted at the upper end thereof. This idler roller 23 is adapted to engage the belts 21 and linked to the lever 24 below this roller 23 is the link 26 which is pivoted at its opposite end to the lever 25 pivotally mounted on the upper end of the cross member 1k. The control rod 27 is pivotally mounted to the upper end of the lever 25 and extends backwardly adjacent the handle 29 for manual operation of the idler roller 23 which places sufficient tension in the belts 21 to initiate operation of the crank shaft 16.

The operation of our concrete floor compactor is substantially as follows:

When the motor shaft 22 is revolving, the belts 21 convey motion to the pulley 19 on the crank shaft 16 which causes rotation of said crank shaft 16 with which the connecting rods 17 and 18 operate. As the connecting rods 17 and 18 force the vibrating foot 4 upwardly and downwardly, the roller 9 on the trunnion or stud 8c of the plate 8 passes from opposite extremities of the roller guides 10 and 11 around the roller diverter 12. As indicated by dash lines A in Fig. 4 of the drawings, the vibrating foot 4 is forced downwardly a considerable distance below the lower plane of the feet 2 and 3 which raises said feet 2 and 3 above the upper surface of the concrete floor being compacted, it being here noted that the concrete floor being compacted is in the form of a layer of wet concrete. As shown in Fig. 4 of the drawings, the vibrating foot 4 when moving from the dash line position A upwardly, the roller 9 passes the roller diverter 12 which causes the roller 9 to travel along the intermediate curved portion of the roller guide 11 and this movement shifts the frame 1 laterally of the timbers 2a and 3a of the feet 2 and 3 before the timbers 2a and 3a engage the upper surface of the wet concrete floor being compacted, it being noted that connecting rods 17 and 18 virtually support the frame 1 together with the pivoted feet 2 and 3 when the vibrating foot 4 is in its lowermost dash line position A as shown in Fig. 4 of the drawings. The connecting rods 17 and 18 in this supporting relationship provide pivotal levers on which the frame 1 moves laterally of the timbers 2a and 3a of the pivoted feet 2 and 3 when the roller 9 moves laterally of the axis of the bolt 12a around the outer side of the roller diverter 12 which is rigidly fixed to the frame 1 on the plate 1g. If it is desired to reverse the directional movement of our concrete floor compactor, the control rod 28 is moved longitudinally of the frame 1 shifting the balance of the springs 14 and 15 causing the pin 13 to be pivoted in the slotted portion 1h of the plate 1g and changing the position of the roller diverter 12 as indicated in Fig. 4 of the drawings by dash lines. When so shifted, the roller diverter 12 causes the roller 9 to pass at opposite sides thereof with each upward and downward movement of the vibrating foot 4. When the roller diverter 12 is in the solid line position as shown in Fig. 4 of the drawings, the roller 9 passes around the left hand side thereof when traveling upwardly and passes around the right hand side thereof when traveling downwardly. With each upward and downward movement of the roller 9, the roller diverter 12 is pivoted against tension of one of the springs 14 or 15 which is accompanied by movement of the pin 13 in the slot 1h. When the roller diverter 12 is shifted to the dash line position as shown in Fig. 4 of the drawings, the roller 8 passes upwardly around the right hand side thereof and downwardly around the left hand side thereof causing pivotal movement against tension of the springs 14 and 15 when traveling in each direction up or down. The extremities of the roller guides 10 and 11 are parallel to each other and are spaced substantially the diameter of the roller 9. The springs 5, 6 and 7 provide initial vertical alignment of the vibrating foot 4 and stabilize the same during vibrating operation thereof. With each lowering of the vibrating foot 4, the feet 2 and 3 are raised above the surface of the concrete being compacted, and with each raising of the vibrating foot 4, the feet 2 and 3 are forcefully gravitated into the concrete being compacted. The vibrating amplitude of the vibrating foot 4 laterally of the timbers 2a and 3a of the feet 2 and 3 is substantially equal to the spaced relationship of the timbers 2a and 3a of the feet 2 and 3 and also the timbers 4c of the vibrating foot 4. Thus, movement of our concrete floor compactor laterally of the timbers 2a, 4c and 3a causes the surface of a floor to be completely agitated as our concrete floor compactor passes thereover. It will be here

noted that the entire weight of our concrete floor compactor serves as a gravitating mass for forcefully engaging the feet 2 and 3 and the vibrating foot 4 with the upper surface of a wet layer of concrete during forming of a floor thereof.

Though we have shown and described a particular construction, combination and arrangement of parts and portions, we do not wish to be limited to this particular construction, combination and arrangement but desire to include in the scope of our invention the construction, combination and arrangement substantially as set forth in the appended claims.

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

1. In a concrete floor compactor of the class described, the combination of a frame, a plurality of feet connected to said frame, an intermediate foot, a pair of connecting rods pivoted thereto, a crank shaft on said frame with which the opposite end of said connecting rods are journaled and means for rotating said crank shaft, whereby said second mentioned foot at its lowermost position is considerably below the lower surfaces of said first mentioned feet, a roller for laterally actuating said second mentioned foot and positioned between said second mentioned foot and said crank shaft, a flat member secured to said second mentioned foot and rotatably supporting said roller, a plate suspended from said frame in a plane transverse to said crank shaft and parallel to said flat member, roller guides connected to said plate, said roller having bearing contact with said roller guides for moving said roller laterally of the axis of said crank shaft with each up and down movement of said roller occasioned by rotation of said crank shaft and reciprocation of said connecting rods, said roller guides having portions directed laterally of the axis of said crank shaft, a roller diverter pivoted intermediate said guides arranged to alternately direct said roller laterally of the axis of said crank shaft during up and down movement of said roller relatively thereto and spring means to return said diverter to starting position.

2. In a concrete floor compactor of the class described, the combination of a frame, a plurality of feet connected to said frame, a flat plate, an intermediate foot connected to said plate, a pair of connecting rods pivoted to the foot, a crank shaft on said frame with which the opposite end of said connecting rods are journaled and means for rotating said crank shaft, whereby said second mentioned foot at its lowermost position is considerably below the lower surfaces of said first mentioned feet, a roller mounted on said flat plate for laterally moving said second mentioned foot and positioned between said second mentioned foot and said crank shaft, a second plate suspended from said frame and arranged transversely relative to said crank shaft, roller guides connected to said second plate on which said roller may have bearing contact to move said roller laterally of the axis of said crank shaft with each up and down movement of said roller occasioned by rotation of said crank shaft and reciprocation of said connecting rods, said roller guides having portions directed laterally of the axis of said crank shaft, a roller diverter pivoted intermediate said guides arranged to alternately direct said roller laterally of the axis of said crank shaft during up and down movement of said roller relatively thereto, said roller diverter being spring loaded and pivoted intermediate said roller guides for reversing the lateral movement of said roller relative to said crank shaft.

3. In a concrete floor compactor of the class described, the combination of a frame, a plurality of feet connected to said frame, an intermediate foot, a pair of connecting rods pivoted thereto, a crank shaft on said frame with which the opposite end of said connecting rods are journaled and means for rotating said crank shaft, said feet having spaced bars, means for shifting said second mentioned foot laterally of said first mentioned feet, said means including a flat member connected to said intermediate foot, a roller rotatably mounted on said flat member, a plate secured to said frame transversely arranged relative to said crank shaft, roller guides mounted on said plate, said roller having bearing contact with said roller guides, and springs between said intermediate foot and one of said plurality of feet whereby said intermediate foot is returned to its normal position after being laterally moved by said means.

4. In a concrete floor compactor of the class described, the combination of a frame, a plurality of feet connected to said frame, a flat plate, an intermediate foot connected to said plate, a pair of connecting rods pivoted to the intermediate foot, a crank shaft on said frame with which the opposite end of said connecting rods are journaled and means for rotating said crank shaft, said feet having spaced bars, means for shifting said second mentioned foot laterally of said bars when in downward position for moving said compactor laterally of said bars, said means comprising a roller pivoted and freely rotatably mounted on said flat plate, a second plate parallel to said flat plate and mounted on said frame, roller guides having laterally extended portions secured to said second plate, said roller following said guides during the up and down movement of the crank shaft.

5. In a concrete floor compactor of the class described, the combination of a frame, a plurality of feet connected to said frame, a flat plate, an intermediate foot connected to said plate, a pair of connecting rods pivoted to the intermediate foot, a crank shaft on said frame with which the opposite ends of said connecting rods are journaled and means for rotating said crank shaft, said feet having spaced bars, means for shifting said second mentioned foot laterally of said bars when in downward position for moving said compactor laterally of said bars, said means comprising a roller pivoted and freely rotatably mounted on said flat plate, a second plate parallel to said flat plate and mounted on said frame, roller guides having laterally extended portions secured to said second plate, said roller following said guides during the up and down movements of the crank shaft, said first mentioned feet pivoted to said frame, said second mentioned foot having springs connecting therewith extending laterally of said bars and connected to said frame.

CARL A. CLETUS.
OLOF G. ANDERSON.

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