May 12, 1959 C. JACKSON 2,885,861

VIBRATORY COMPACTOR FOR DITCHES, CANALS AND THE LIKE

Filed Sept. 3, 1954 2 Sheets-Sheet 1

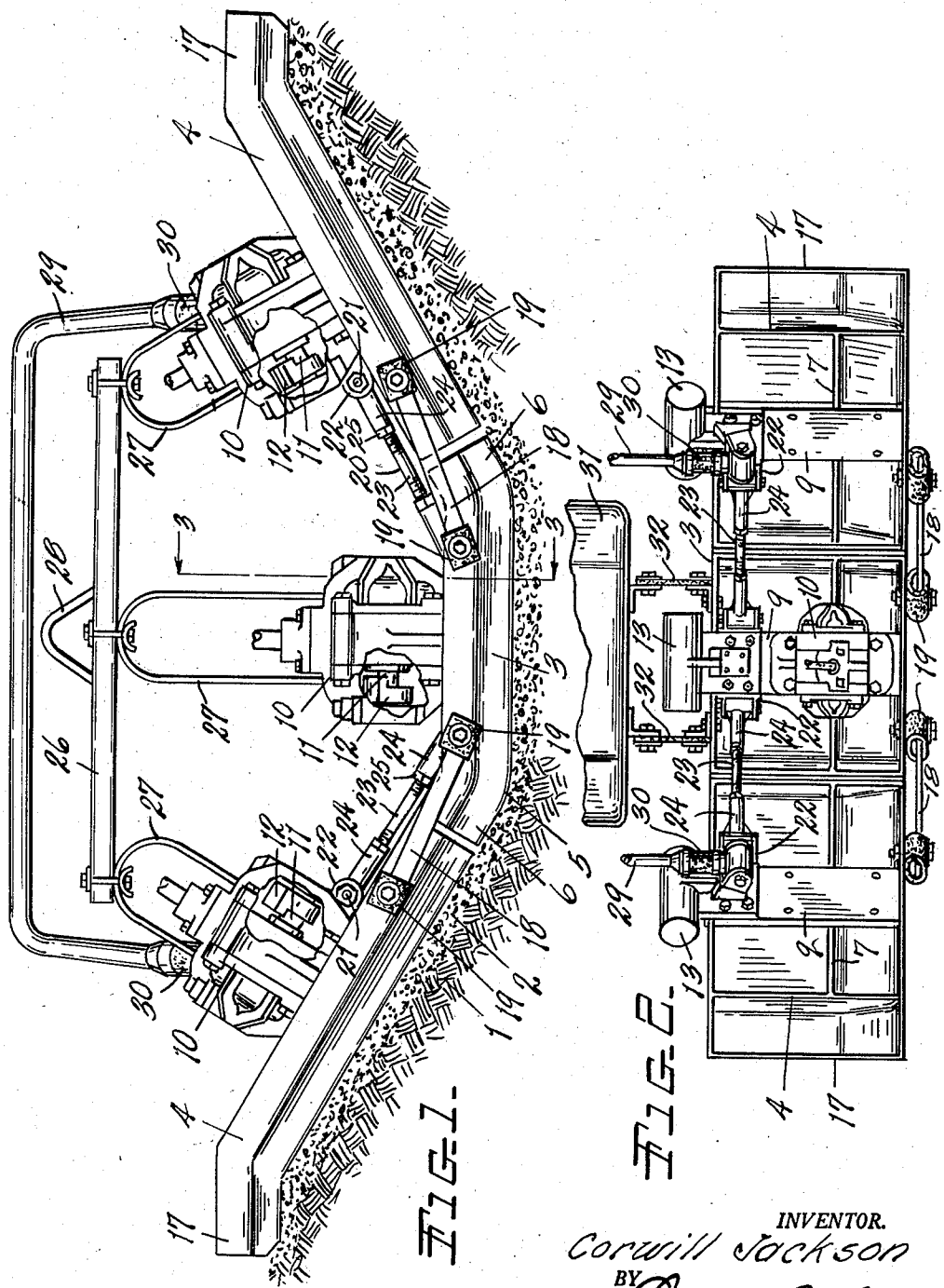


FIG. 1.



FIG. 2.

INVENTOR.
Corwill Jackson
BY
Otto A. Earl
Attorney

May 12, 1959 C. JACKSON 2,885,861

VIBRATORY COMPACTOR FOR DITCHES, CANALS AND THE LIKE

Filed Sept. 3, 1954 2 Sheets-Sheet 2

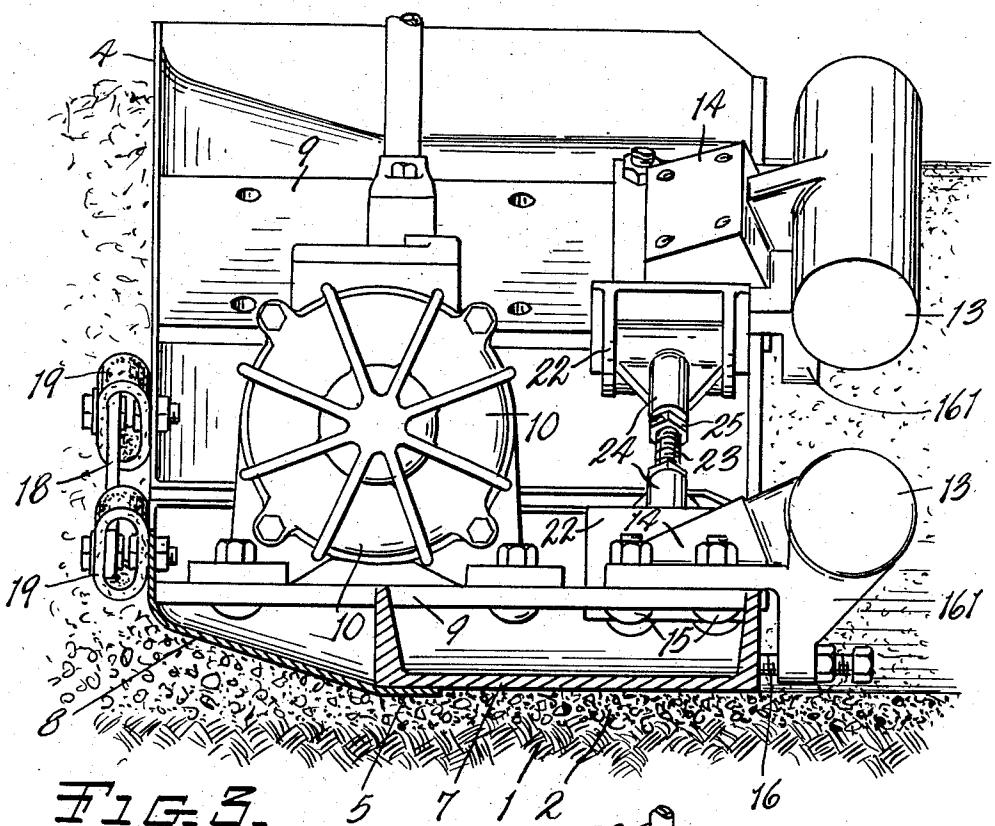



FIG. 3.

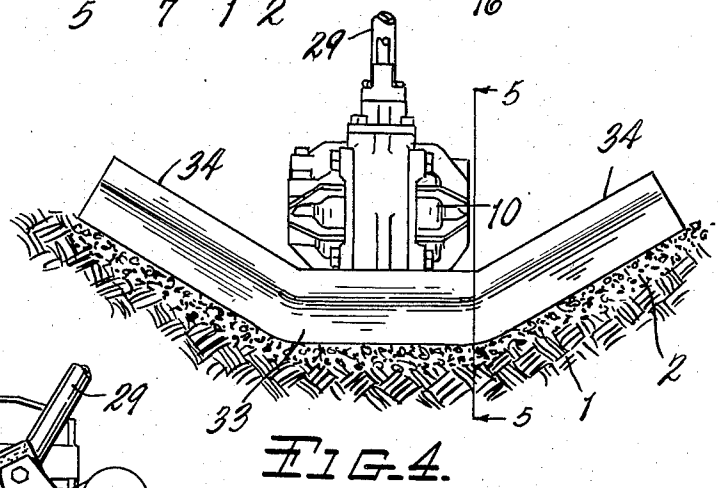



FIG. 4.

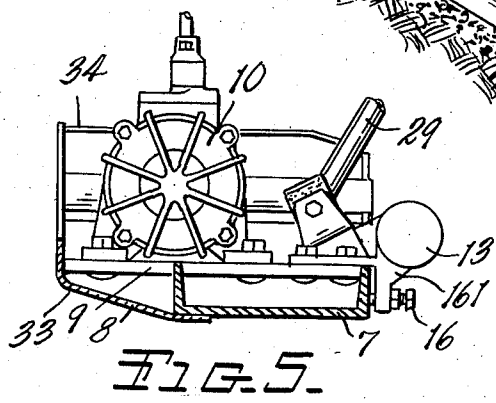



FIG. 5.

INVENTOR.
Cornwill Jackson
BY Otto Earl
Attorney.

United States Patent Office 2,885,861
Patented May 12, 1959



2,885,861

# VIBRATORY COMPACTOR FOR DITCHES, CANALS AND THE LIKE

Corwill Jackson, Ludington, Mich., assignor to Jackson Vibrators, Inc., Ludington, Mich., a corporation of Michigan

Application September 3, 1954, Serial No. 454,051

7 Claims. (Cl. 61—63)

This invention relates to a vibratory compactor for soil-cements, asphaltic materials and the like. The invention relates particularly to a vibratory compactor which is adapted for use in the construction of ditches, canals and the like including those which are surfaced by so-called soil-cement materials.

The main objects of this invention are:

First, to provide a vibratory compactor for ditches, canals and the like including a plurality of shoes which are disposed in adjacent side by side relation and adapted to be positioned relative to each other to generally conform to a ditch or canal having a flat bottom portion and outwardly inclined side portions.

Second, to provide a vibratory compactor of this character comprising an intermediate unit and side units, each provided with a shoe and vibrating means therefor, in which the shoes may be angularly positioned relative to each other and at the same time are independently vibrated at high frequency.

Third, to provide a compactor having these advantages which is self-propelled or translated over the surface which is being compacted.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined in the claims.

A structure which embodies the features of the invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a front elevation view of a compactor embodying the invention shown in relation to the material compacted.

Fig. 2 is a fragmentary top plan view with the vibrating means of the side vibratory units omitted.

Fig. 3 is an enlarged fragmentary view on a line corresponding to line 3—3 of Fig. 1.

Fig. 4 is a fragmentary front elevational view of a modified form or embodiment of the invention.

Fig. 5 is a fragmentary view in section on a line corresponding to line 5—5 of Fig. 4.

The embodiment of the invention illustrated is especially designed for the compacting of soil-cement mixtures although adapted for use in compacting soil foundations designed to receive a soil-cement surface or asphaltic or concrete surfacing. The term "soil-cement" is used in its generally accepted commercial sense and consists of a mixture of soil and cement with the addition of water. The proportions of soil, cement and water depend on the characterof soil used. The amount of water used should be sufficient to hydrate the cement and to facilitate the compacting of the mixture as it is essential that the soil-cement mixture be well compacted and the invention is particularly designed for the compacting of soil-cement in ditches, canals, drains and the like.

In the accompanying drawing 1 represents the foundation soil of a ditch or drain and 2 the surfacing thereof. The machine illustrated comprises the intermediate unit 3 and similar side units 4, 4 disposed in transverse alignment. Each unit comprises a shoe and vibratory means



mounted on the shoe. The shoe 5 of the intermediate unit has upwardly inclined side portions 6 of substantial width. The shoes are desirably formed of upwardly facing channel members 7 having rearwardly and downwardly inclined nose portions 8.

The centrally disposed bar 9 extends from front to rear of the shoe and serves as a support for the vibratory means comprising an electric motor 10 having an unbalanced rotor 11 and an unbalancing weight 12 on each end of the rotor, only one of which is illustrated. Each unit is provided with a weight 13 having a forwardly projecting arm or bracket 14 fixedly secured to the bar 9 as by means of the bolt 15. The weight is further supported by the screw 16 on the downwardly projecting arm 161, the screw engaging the bracket to facilitate positioning of the weight.

It should be noted that the axis of the rotor is disposed transversely of the shoe and is substantially in advance of the center of gravity of the shoe and its weight 13. The vibrating means for the side units 4 is the same as that described.

The vibrating units are disposed with their adjacent edges in slightly spaced relation with the side vibrating units in an inwardly and downwardly inclined relation to the intermediate unit and in substantial alignment with the inclined side portions 6 thereof. The side vibratory members in this preferred embodiment illustrated have angularly disposed outer portions 17. The units are connected to permit this angular positioning and independent vibration thereof by means of the links 18 having vibrating absorbing connections 19 to the shoes of the unit and the tie rods 20 pivotally connected at 21 to the brackets 22 on the shoes.

Thes tie rods are longitudinally adjustable and include a central section 23 having threaded engagement with the end sections 24 and secured in adjusted position therein by the lock nuts 25. The purpose of this longitudinal adjustment is to spacedly position the shoes of the units. This connection for the units permits independent vibration thereof and the tilting of the shoes of the units relative to each other to generally conform to the ditch or drain which is being compacted.

The units are provided with a common carrying bar 26 having independent flexible connections 27 to the units and provided with a central loop 28 with which a hoist may be engaged for lifting the machine from the ditch or placing it therein. The arrangement of the vibrating means as described with the axis of the vibrating rotor in advance of the center of gravity of the shoes and transversely thereof results not only in vibrating the shoes but in their forward travel at substantial speed. This forward travel is a desirable feature as it avoids the necessity for other translating power means.

In the embodiment illustrated the handle 29 has shock absorbing connections 30 to the side vibratory units. A sliding carriage or support 31 for the workman is connected to the central unit by means of the flexible draft straps 32, these being flexible to serve as vibration absorbers.

In the embodiment shown in Figs. 4 and 5 the single shoe 33 is provided with upwardly inclined side portions 34 of such width that the shoe reaches from side to side as illustrated. The single vibrating motor is mounted on the central part of the shoe. This embodiment is substantially like the unit 3 of Figs. 1, 2 and 3 with the side portions 6 thereof extended to take the place of the side units 4. The embodiment of Figs. 1, 2 and 3 is preferred as it is substantially more efficient in compacting the side portions of the ditch and the side units can conform themselves to variations in the surface compacted. The upwardly inclined side portions 6 of the shoe of the inter-

mediate unit provide a smooth merging of the sides of the ditch with the bottom.

As pointed out, the machine of this invention is particularly well adapted for compacting soil-cement materials which, to be effective as surfacing materials, require thorough compaction. However, the machine is well adapted for use in compacting foundation soil in ditches, drains, canals and the like, also for surfacing materials such as asphalt, concrete and the like.

I have illustrated two practical embodiments of the invention; I have not attempted to illustrate other embodiments or adaptations as it is believed this disclosure will enable those skilled in the art to practice the invention as may be desired.

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

1. A machine for compacting ditches, canals and the like having diverging side walls, comprising intermediate and side vibratory units arranged in spaced side by side relation and each comprising a shoe having a rearwardly and downwardly inclined front portion, vibratory means mounted on each shoe comprising a motor having an unbalanced rotor disposed with its axis transversely of and in advance of the transverse center of the shoe, weighting means mounted on the shoe with its center of gravity substantially rearwardly of the shoe, and the shoe of the intermediate unit having upwardly inclined side portions of substantial width, the outer units being positionable with their shoes in an inwardly inclined relation to the shoe of the intermediate unit and in aligned relation to the said side portions thereof, coupling links for adjacent shoes having vibration absorbing connections thereto, and longitudinally adjustable tie rods for the side units to the intermediate unit disposed above and pivotally connected thereto, said links and tie rods spacedly connecting the units while permitting independent vibratory and lateral tilting movement thereof relative to each other, and a handle having vibration absorbing connection to the outer units.

2. A machine for compacting ditches, canals and the like having diverging side walls, comprising intermediate and side vibratory units arranged in spaced side by side relation and each comprising a shoe having a rearwardly and downwardly inclined front portion, vibratory means mouned on each shoe comprising a motor having an unbalanced rotor disposed with its axis transversely of the shoe, the shoe of the intermediate unit having upwardly inclined side portions of substantial width, the outer units being positionable with their shoes in an inwardly inclined relation to the shoe of the intermediate unit and in aligned relation to the said side portions thereof, coupling links for adjacent shoes having vibration absorbing connections thereto, and longitudinally adjustable tie rods for the side units to the intermediate unit disposed above and pivotally connected thereto, said links and tie rods spacedly connecting the units while permitting independent vibratory and lateral tilting movement thereof relative to each other, and a handle having vibration absorbing connection to the outer units.

3. A machine for compacting ditches, canals and the like having diverging side walls, comprising intermediate and side vibratory units arranged in side by side relation and each comprising a shoe, vibratory means mounted on each shoe, the outer units being positionable with their shoes in an outwardly inclined relation to the shoe of the intermediate unit, coupling links for adjacent shoes having vibration absorbing connections thereto, tie rods for the side units to the intermediate unit pivotally connected thereto, said links and tie rods permitting independent vibratory and lateral tilting movement of the units relative to each other, a handle having vibration absorbing connection to the outer units, and a lift bar common to the units and having independent flexible connections to the units.



4. A machine for compacting ditches, canals and the like having diverging side walls, comprising intermediate and side vibratory units arranged in side by side relation and each comprising a shoe, vibratory means mounted on each shoe, the outer units being positionable with their shoes in an outwardly inclined relation to the shoe of the intermediate unit, coupling links for adjacent shoes having vibration absorbing connections thereto, tie rods for the side units to the intermediate unit pivotally connected thereto, said links and tie rods permitting independent vibratory and lateral tilting movement of the units relative to each other.

5. A machine for compacting ditches, canals and the like having diverging side walls, comprising intermediate and side vibratory units arranged in side by side relation and each comprising a shoe, vibratory means mounted on each shoe comprising an unbalanced rotor disposed with its axis transversely of and in advance of the transverse center of the shoe, weighting means mounted on the shoe with its center of gravity substantially rearwardly of the shoe, the outer units being positionable with their shoes in an outwardly inclined relation to the shoe of the intermediate unit, coupling links for adjacent shoes having vibration absorbing connections thereto, tie rods for the side units to the intermediate unit pivotally connected thereto, said links and tie rods permitting independent vibratory and lateral tilting movement of the units relative to each other.

6. A machine of the class described comprising intermediate and outer vibratory units arranged in closely adjacent but spaced side by side relation to each other other and each comprising a shoe, vibratory means comprising an electric motor mounted on each shoe and having an unbalanced rotor disposed with its axis transversely of the shoe, the center of gravity of the unit being at the rear of the axis of the rotor, the outer units being positionable with their shoes in outwardly inclined relation to the shoe of the intermediate unit, coupling links for adjacent shoes disposed at the front ends of the shoes and having vibration absorbing connections thereto, and spacer members for adjacent units pivotally connected thereto, said links and spacer members spacingly connecting the units while permitting independent vibratory and vertical tilting movement thereof relative to each other.

7. A machine of the class described comprising intermediate and outer vibratory units arranged in closely adjacent but spaced side by side relation to each other and each comprising a shoe, vibratory means for each shoe, the outer units being positionable with their shoes in outwardly inclined relation to the shoe of the intermediate unit, coupling links for the front ends of adjacent shoes having vibration absorbing connections thereto, and spacer members for adjacent units pivotally connected thereto, said links and spacer members spacingly connecting the units while permitting independent vibratory and vertical tilting movement thereof relative to each other.


**References Cited in the file of this patent**

UNITED STATES PATENTS

| | | |
|---|---|---|
| 1,390,479 | Baker | Sept. 13, 1921 |
| 1,988,315 | Jackson | Jan. 15, 1935 |
| 2,032,736 | Briggs | Mar. 3, 1936 |
| 2,049,115 | Hadley | July 28, 1936 |
| 2,094,910 | Baily | Oct. 5, 1937 |
| 2,306,126 | Jackson | Dec. 22, 1942 |
| 2,400,341 | Day et al. | May 14, 1946 |
| 2,412,398 | Harsch | Dec. 10, 1946 |
| 2,446,028 | Sponseller | July 27, 1948 |
| 2,723,608 | Jackson | Nov. 15, 1955 |
| 2,771,012 | Jackson | Nov. 20, 1956 |