

Nov. 20, 1956

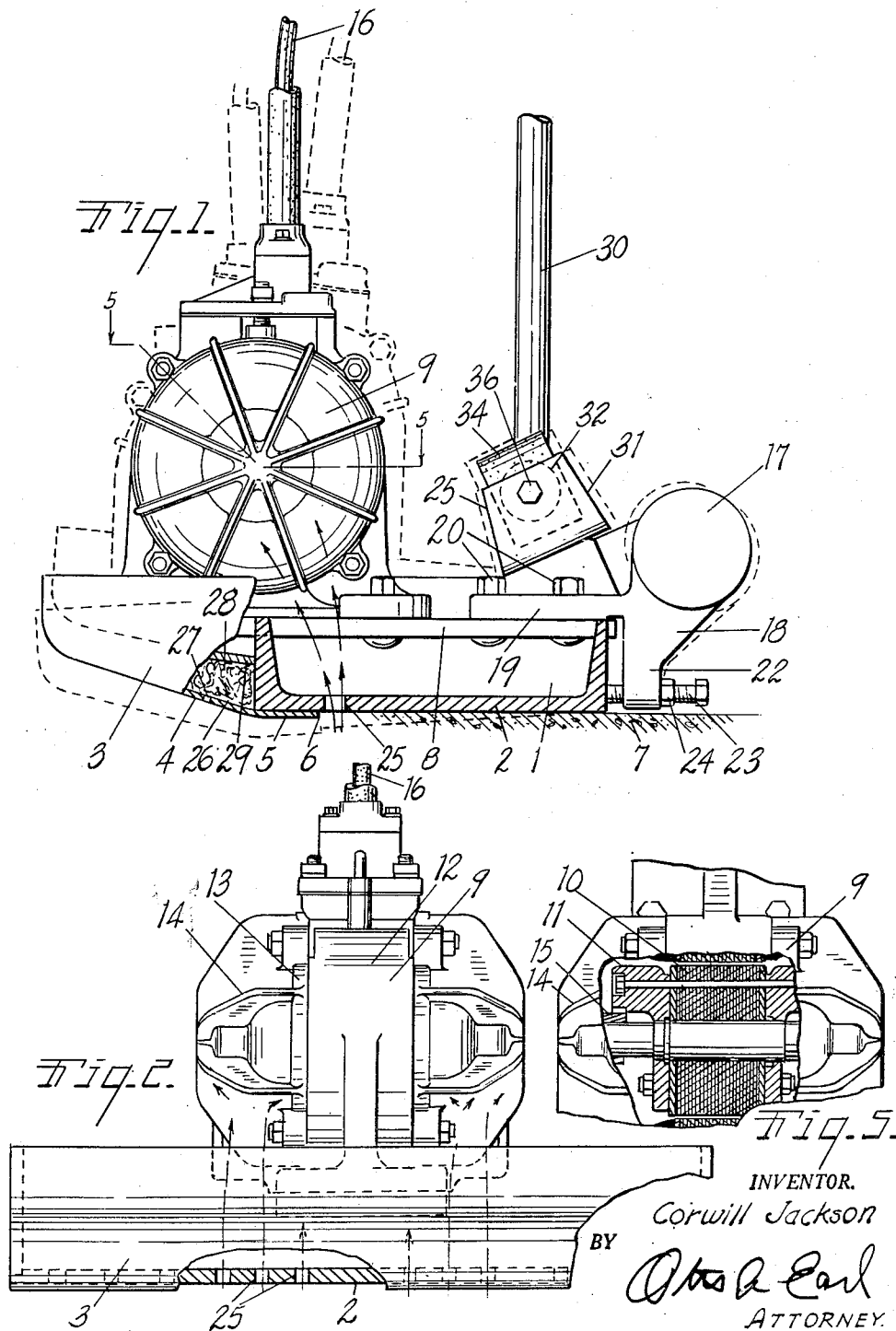
C. JACKSON

2,771,012

COMPACTOR FOR ASPHALTIC AND OTHER COMPACTABLE MATERIALS

Filed April 6, 1953

2 Sheets-Sheet 1



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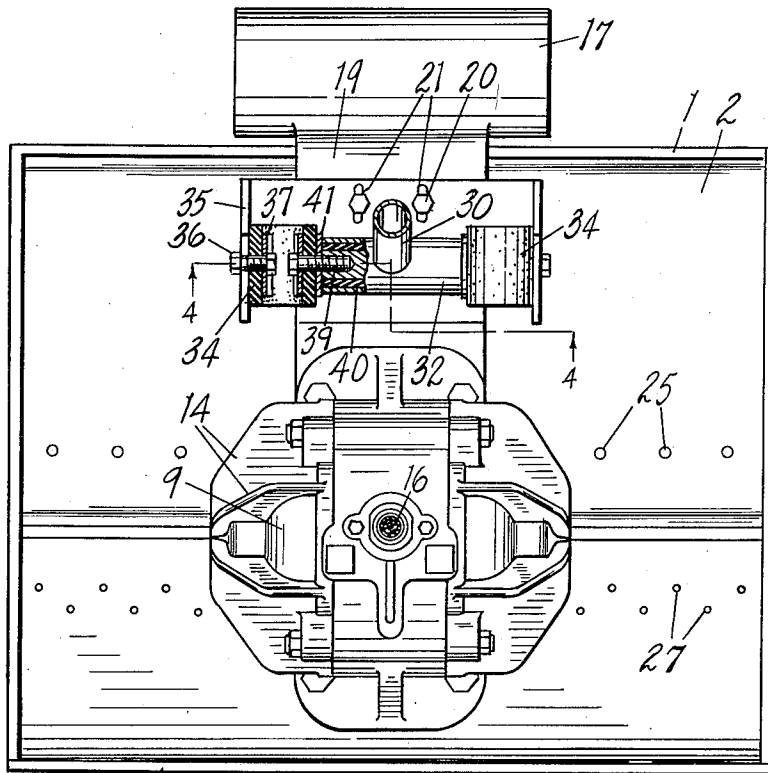


Fig. 3.

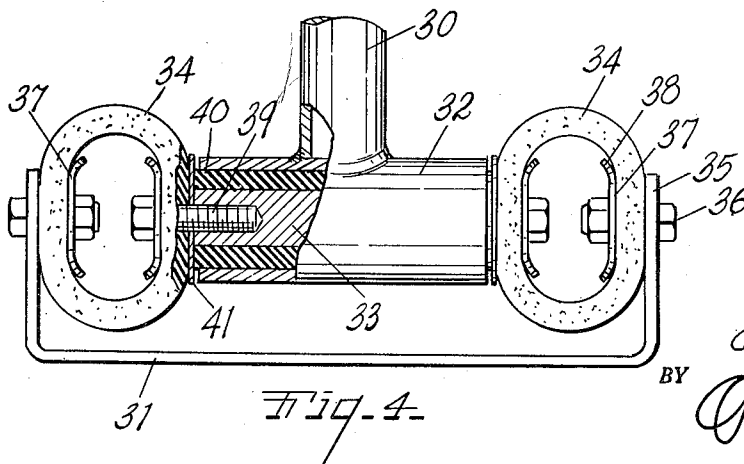


Fig. 4.

INVENTOR.
Corwill Jackson
BY *John A. Earl*
ATTORNEY.

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COMPACTOR FOR ASPHALTIC AND OTHER COMPACTABLE MATERIALS

Corwill Jackson, Ludington, Mich., assignor to Jackson
Vibrators, Inc., Ludington, Mich.

Application April 6, 1953, Serial No. 346,887

8 Claims. (Cl. 94—48)

This invention relates to improvements in a compactor for asphaltic and other compactable materials.

My present invention relates to the type of compactor illustrated in my application for Letters Patent filed August 14, 1951, Serial Number 241,720, Patent No. 2,737,094, issued March 6, 1956, and in some respects is an improvement upon and an adaptation of certain features thereof.

The main objects of this invention are:

First, to provide a compactor for asphaltic, cementitious, and like materials which is highly efficient.

Second, to provide a vibrator compactor in which the vibrating means, for example an electric motor provided with an unbalanced rotor, is efficiently cooled or prevented from overheating even when operated for long periods of time, exposed to the sun, or subjected to high surrounding temperatures.

Third, to provide a compactor which may be operated with substantially less current consumption as compared to other compactor machines of the vibratory shoe type.

Fourth, to provide a structure having these advantages which is self-propelling and requires little manual effort to operate.

Fifth, to provide a compactor which is highly efficient for use with granular material as well as with plastic or semiplastic material, such as unset asphaltic and cementitious materials.

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

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary side elevational view of a machine embodying my invention shown in relation to a material being treated which is conventionally indicated, and illustrating the vibratory impacting movement of the compactor by dotted lines, the handle being shown in upright position.

Fig. 2 is a fragmentary front elevational view partially in vertical transverse section.

Fig. 3 is a plan view with the handle mounting partially in section, the handle being broken away as is also the electrical circuit connection. The cover for the liquid feed reservoir and the liquid holding material is omitted.

Fig. 4 is an enlarged fragmentary view showing details of the handle mounting partially in section on line 4—4 of Fig. 3.

Fig. 5 is a fragmentary view partially broken away and partially in section on a line corresponding to line 5—5 of Fig. 1, illustrating certain details of the vibratory motor.

The machine illustrated in the accompanying drawing is an embodiment of my invention designed for manual

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manipulation. Several of the machines or units illustrated may be arranged in side by side relation, in general as is shown in my said Patent No. 2,737,094. The machine illustrated is desirable for use in compacting a wide variety of materials and it is especially desirable in compacting hot or cold asphaltic materials such as are used in the construction of floors, decks, pavements, and the like.

The structure comprises a base designated generally by the numeral 1 and constituting a shoe. The shoe comprises a flat faced rear member, portion or member 2, and a front portion member 3 desirably formed as a sheet metal stamping. The front member has a rearwardly inclined face portion 4 merging into an impact portion 5 which is lapped upon and fixedly secured to the shoe portion 2, the face of which extends rearwardly therefrom. This impact portion is relatively narrow as compared to the front to rear width of the shoe portion 2.

The impact portion 5 extends transversely across the shoe and its face is parallel to but in a plane below the plane of the rear portion of the shoe as is clearly shown in Fig. 1. The rear edge 6 of the impact portion provides a rearwardly facing shoulder. The material to be treated is indicated at 7.

The shoe is provided with supporting means 8 for the vibrating motor designated generally by the numeral 9. This motor is in this preferred embodiment an electric motor, the rotor 10 of which is provided with unbalancing weights 11. The housing 12 of the motor includes detachable end members 13 which are provided with radially disposed longitudinally extending heat radiating fins 14. The rotor bearings 15 are carried by these demountable end members. Other structural details of the vibrating motor form no part of my present invention and are not described herein. The numeral 16 represents the supply cable.

In this preferred embodiment the axis of the rotor is substantially in the vertical plane of the impact portion 5 of the shoe, being as illustrated substantially vertically aligned with the front edge of the impact member of the shoe. To increase the amplitude of vibrations of the impact member or portion of the shoe relative to the amplitude of the vibration of the rear portion of the shoe, I provide a weight 17 which is carried by the bracket 18 having an arm 19 lapped upon and adjustably secured to the support member 8, the attaching bolts 20 engaging slots 21 in the arm 19.

The bracket is provided with a depending arm 22 carrying the adjusting screw 23 which is threaded through the arm to engage the rear end of the shoe as shown in Fig. 1 and provided with a lock nut 24. This enables the accurate adjustment of the weight 17 to secure the desired amplitude of vibration of the impact member of the shoe, that is, within the range of the particular structure, and adjustment of the weight. The purpose of this arrangement of the weight is to increase the amplitude of vibration of the impact member of the shoe relative to the vibration of the rear end of the shoe. This results in high efficiency in the matter of compacting material treated.

The shoe is provided with a series of holes 25 disposed transversely of the shoe adjacent the rear edge of the impact member. These holes 25 serve a double purpose, namely the breaking of vacuum or suction resulting from the vibration of the shoe upon material such as asphalt or other plastic material as the shoe moves on its up stroke. On the down stroke of the shoe, air is forced through the openings 25 and impinged

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against the motor housing, as is indicated by the arrows, and acts as an efficient cooling medium for the motor or other vibratory means.

To apply lubricant to the surface of the material treated, which is especially desirable with asphaltic materials, the shoe is provided with a reservoir designated generally by the numeral 26 located above the inclined portion 4 of the shoe, the reservoir being provided with a series of discharge openings 27 so that the lubricant, such as kerosene, for example, or fuel oil, may be discharged upon the surface on which the machine is operating in advance of the impact or material engaging portions of the shoe.

The vibrations of the shoe discharge the liquid through the openings 27 in substantially regulated amounts. The reservoir is provided with a cover 29 which desirably rests upon the absorbing material 28. However, the main purpose of this cover is to keep dust and dirt from the absorbent material.

The machine illustrated is self-propelling. The handle 30 is used to guide and manipulate the machine upon or along the material treated. The handle 30 is connected to the U-shaped handle bracket 31 on the machine through a vibration absorbing means best shown in Fig. 4. The handle 30 is provided with a tubular crosspiece 32 at its lower end which receives the supporting spindle 33 carried by the annular resilient members 34 which are secured to the upwardly projecting arms 35 of the mounting bracket 31 by means of bolts 36, the bolts being provided with washers 37 desirably of substantial size and having curved ends 38, as is illustrated in Fig. 4. The spindle 33 is connected to the opposite sides of the annular members 34 by means of the screw bolts 39 which have washers 37 corresponding to the washers on the bolts 36.

The spindle 33 is surrounded by a resilient sleeve 40 which fits within the tubular crosspiece of the handle desirably close enough to hold the handle in upright position as shown in Fig. 1 while permitting swinging thereof. The washers 41 are arranged between the ends of the spindle and the shock absorbing loops 34. This mounting of the handle is effective in substantially minimizing the transmission of vibrations from the shoe to the operator, at the same time the handle is connected so that it is effective in guiding or steering the shoe over the surface to be treated and in turning the machine.

I have illustrated and described my improvements as embodied in a highly practical commercial embodiment thereof. I have not attempted to illustrate or describe other embodiments or adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

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

1. In a machine of the class described, the combination of a vibratory shoe including a flat rear portion and a flat horizontally disposed front impact portion, the rear end of the impact portion being offset downwardly relative to the front end of the flat rear portion to provide a rearwardly facing shoulder extending transversely across the shoe in substantially spaced relation to its rear edge, vibratory means comprising an electric motor supportedly mounted on the shoe and having an unbalanced rotor disposed with its axis transversely of the shoe and in approximately the vertical plane of the front edge of said impact portion, said shoe having a plurality of openings therein adjacent the rear edge of its said impact portion positioned to discharge air forced therethrough by the vibratory movement of the shoe relative to the material treated against the motor to constitute a cooling medium therefor, and weighting means supportedly mounted on said shoe with its center of gravity substantially rearwardly of the rear end of the shoe.

2. In a machine of the class described, the com-

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bination of a vibratory shoe including a rear work engaging portion and an impact work engaging portion extending transversely across the shoe at the front of said rear portion thereof, vibratory means comprising an unbalanced rotor disposed with its axis transversely of the shoe and disposed with its axis coinciding with a vertical plane which approximately intersects said impact portion of the shoe, said shoe having a venting opening at the rear of and adjacent said impact portion, and weighting means on the shoe disposed adjacent to the rear end thereof to increase the amplitude of vibration of the impact portion of the shoe while minimizing the amplitude of the vibrations of the rear end of the shoe.

3. In a machine of the class described, the combination of a vibratory shoe including a rear work engaging portion and an impact work engaging portion disposed forwardly of said rear portion and extending transversely across the shoe, the face of the impact portion being in a plane below the rear portion of the shoe, and vibratory means for said shoe, said shoe having venting openings at the rear of and adjacent said impact portion.

4. In a machine of the class described, the combination of a vibratory shoe including a rear work engaging portion and a transversely disposed front impact work engaging portion and vibratory means mounted above said impact portion thereof, said shoe having openings therein adjacent its said impact portion positioned to discharge air forced therethrough by the vibratory movement of the shoe relative to the material treated against the vibratory means to constitute a cooling medium therefor.

5. In a machine of the class described, the combination of a vibratory shoe, vibratory means carried by said shoe and acting to impart high frequency vibrations thereto, a handle provided with a tubular crosspiece at its inner end, a U-shaped bracket mounted on said shoe, annular resilient shock absorbing members mounted on the inner sides of the arms of said bracket, a spindle secured to the said annular shock absorbing members opposite their mounting connection to said bracket arms, and a resilient sleeve embracing said spindle and fittingly engaged within said tubular crosspiece of said handle.

6. In a machine of the class described, the combination of a vibratory shoe, vibratory means carried by said shoe and acting to impart high frequency vibrations thereto, a handle provided with a tubular crosspiece at its inner end, spaced parallel annular resilient shock absorbing members, means for mounting said shock absorbing members on said shoe, said means supportingly engaging the remote sides of the shock absorbing members, a spindle secured to the said annular shock absorbing members opposite their mounting connections, and a resilient sleeve embracing said spindle and fittingly engaged within said tubular crosspiece of said handle.

7. In a machine of the class described, the combination of a vibratory shoe including a rear work engaging portion, and a horizontally disposed impact portion, the rear edge of the impact portion being offset downwardly relative to the front end of said rear work engaging portion providing a rearwardly facing shoulder extending transversely of the shoe in substantially spaced relation to the rear edge of said rear work engaging portion, and means for vibrating said shoe as a unit carried thereby with the amplitude of vibrators of said impact portion substantially exceeding the amplitude of the vibration of the rear edge portion of said shoe, said shoe having a plurality of openings therein disposed at the rear of and adjacent the rear edge of said impact portion.

8. In a machine of the class described, the combination of a vibratory shoe provided with a rear work engaging portion, and a horizontally and transversely disposed impact work engaging portion forwardly of said rear portion, and vibratory means including an electric motor supportedly mounted on said shoe and having an unbalanced rotor disposed with its axis transversely of the

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shoe and above said impact portion of the shoe, the amplitude of the vibration of the impact portion of the shoe substantially exceeding that of the rear edge portion of said rear work engaging portion, said shoe having a plurality of openings therein at the rear of and adjacent its said impact portion positioned to discharge the air impelled therethrough by the vibration of the shoe relative to the work against the motor.

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References Cited in the file of this patent

UNITED STATES PATENTS

1,945,145	Gordon	Jan. 30, 1934
2,018,294	Baily	Oct. 22, 1935
2,255,344	Baily	Sept. 9, 1941
2,314,985	Jackson	Mar. 30, 1943
2,584,459	Jackson	Feb. 5, 1952
2,659,281	Lucas	Nov. 17, 1953