Dec. 22, 1942. C. JACKSON 2,306,123

APPARATUS FOR PLACEMENT OF CONCRETE AND THE LIKE

Filed April 29, 1940

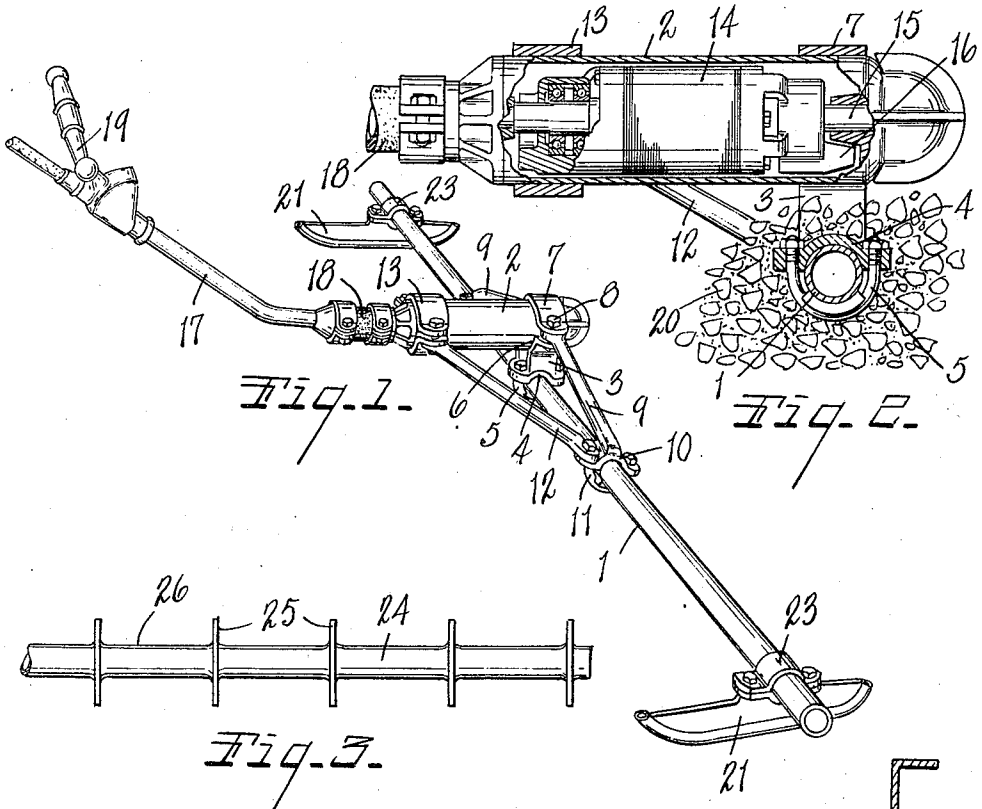


Fig. 1.

Fig. 2.

Fig. 3.

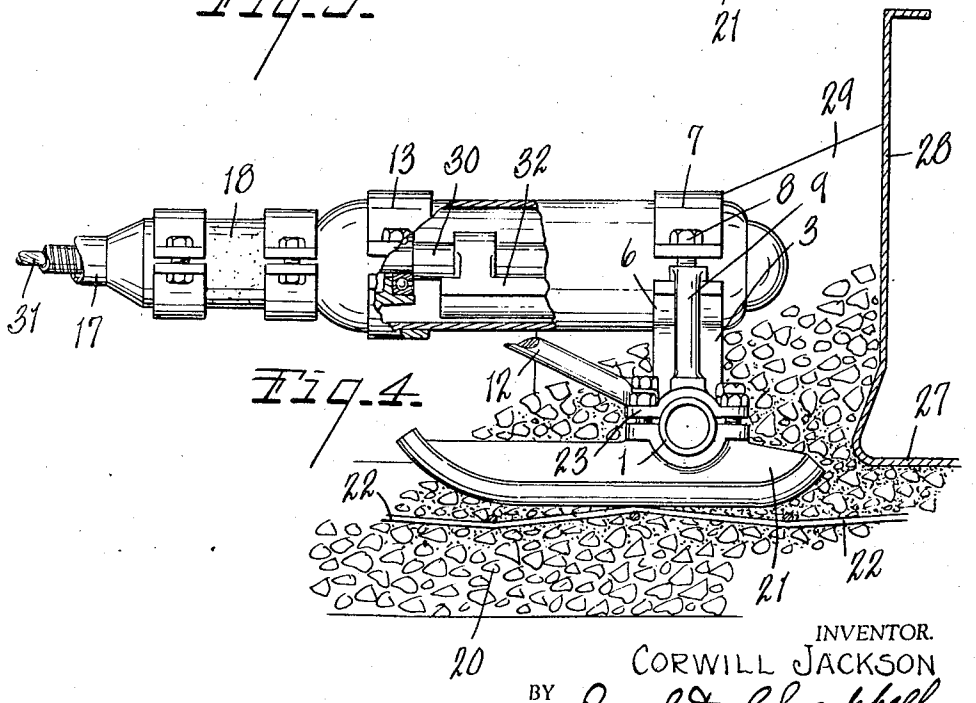


Fig. 4.

INVENTOR.
CORWILL JACKSON
BY Earl & Chappell
ATTORNEYS.

Patented Dec. 22, 1942

2,306,123

UNITED STATES PATENT OFFICE

2,306,123

APPARATUS FOR PLACEMENT OF CONCRETE AND THE LIKE

Corwill Jackson, Ludington, Mich.

Application April 29, 1940, Serial No. 332,254

10 Claims. (Cl. 94—48)

The main objects of this invention are:

First, to provide an apparatus for the placement of concrete and the like in the manufacture of pavements, sidewalks, canals or drains which may be manipulated manually and is highly efficient.

Second, to provide an apparatus of this character which may be manipulated in operative relation to the screed of a paving machine.

Third, to provide an apparatus for the treatment of concrete which is well adapted for use in the placement of the top or surface layer in a pavement, sidewalk, canal, or the like, having reinforcing incorporated therein.

Fourth, to provide an apparatus of this character which is highly efficient and at the same time capable of manipulation manually.

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

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

Fig. 1 is a perspective view of an apparatus embodying the features of my invention.

Fig. 2 is a fragmentary view partially in transverse section.

Fig. 3 is a fragmentary plan view of a modified form or embodiment of the elongated vibratory element.

Fig. 4 is a fragmentary view partially in vertical section of a modified form or embodiment of my invention shown in operative relation to a paving screed and to material being placed in relation to the vibratory apparatus and to the screed.

The embodiments of my invention illustrated in the accompanying drawing are structures especially designed for manual manipulation in situations where it is not desirable or practical to use larger machines such as illustrated in my application for Letters Patent Serial No. 278,594, filed June 12, 1939. My present improvements are particularly well adapted for use in the placement of sidewalks, the addition of relatively narrow strips to pavements, and the lining of canals, conduits and the like.

The embodiment illustrated in Figs. 1 and 2 comprises an elongated horizontally disposed submersible vibratory element 1 which is preferably formed of a piece of pipe or tubing. The vibrating unit in this embodiment comprises the motor housing 2 which is disposed horizontally above and transversely of the vibratory element 1 and is rigidly secured thereto by means of the bracket 3 which is provided with a downwardly facing seat 4 for the vibratory element. The vibratory element is clamped in this seat by means of the U clamping bolt 5. The bracket 3 has an upwardly facing seat 6 for the housing 2, the housing being clamped in the seat by means of the clamping member 7 and suitable bolts as 8. The housing is preferably clamped to the vibratory element to project forwardly therefrom as illustrated.

Downwardly inclined braces 9 extend from the bolts 8 to the clamping members 10, being preferably formed integrally therewith. U-bolts 11 complete the clamping of the braces 9 to the vibratory member. The diagonally disposed forward braces 12 are engaged with the U bolts 11 and secured to the forward end of the housing by the clamping members 13. This provides a very rigid connection for the vibrating means or unit to the vibratory element.

In this embodiment the electric motor 14 is housed within the housing 2 and its rotor shaft 15 is provided with an unbalancing weight 16. The angled handle 17 is connected to the forward end of the housing by means of the tubular resilient coupling 18 which serves as a shock absorber or vibration absorber for the handle which is provided with a cross bar 19. The apparatus is adapted to be manipulated with the vibratory element in submerged relation to a mass of concrete being treated as indicated at 20 in Fig. 2.

Preferably the vibratory element is provided with runners or shoes 21 having upturned or upwardly curved ends so that the runners pass freely over reinforce as indicated at 22 in Fig. 4 without engagement or displacement thereof. The runners are preferably detachably secured to the vibratory element by means of the clips 23 so that they can be readily attached or removed. It will be noted that the vibratory element is secured to the vibrating means by means of clips, one of the advantages being that vibratory elements of different lengths may be interchangeably used to adapt the apparatus for the particular work. There are many placements of varying width such as in sidewalks, additions to existing pavements, canals, conduits or the like where it is a decided advantage to be able to quickly vary the length of the vibratory element.

In Fig. 3 I illustrate the vibratory element 24 corresponding to the vibratory element 1 as provided with a plurality of disk-like fins 25 of substantial diameter. These are spaced on the vi-

bratory member in such relation as to provide a series of pockets 26 for the mass treated. The axis of the unbalanced vibrating rotor is preferably disposed transversely of the vibratory element so that the material within these pockets is subjected to a very effective vibration and the capacity of the device is substantially increased. Also, these disks serve quite effectively as runners, although where runners are desirable I preferably use runners of the type shown at 21.

The implement may be used in relation to a paving screed 27 shown in Fig. 4 having a face plate 28 of such height as to support a substantial mass of concrete being placed, and my placement apparatus is manipulated in front of the screed in such relation that it is embedded in the mass supported by the face plate. The screed is provided with wings 29 which further assist in supporting the material.

In the embodiment shown in Fig. 4 the rotor 30 is driven from a flexible shaft 31. The unbalancing weight 32 of the rotor in this embodiment is of considerable length. It is quite common practice to lay a foundation of concrete and to place thereon a reinforce net such as 22 and then apply a surfacing layer of concrete. My apparatus is particularly desirable in placing the surfacing layer as it may be manipulated across the reinforcing material without injury thereto or displacement thereof.

I have illustrated and described my invention in highly practical embodiments. I have not attempted to illustrate or describe further modifications or adaptations as it is believed this disclosure will enable those skilled in the art to embody 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 an apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, runners detachably mounted on said vibratory element, said runners having upturned ends to permit their being translated over reinforcing elements without displacing engagement therewith, a motor housing disposed above and transversely of said vibratory element and rigidly secured thereto, a propelling and manipulating handle resiliently connected to the forward end of said motor housing, and an electric motor mounted in said housing and provided with a rotor having an unbalancing weight, the axis of the rotor being disposed transversely of and in spaced non-intersecting relation to the axis of said vibratory element.

2. In a hand manipulated concrete placement apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, a motor housing disposed above and transversely of said vibratory element and rigidly secured thereto, a propelling and manipulating handle resiliently connected to the forward end of said motor housing and provided with means to be manually grasped to advance said housing and element, and an electric motor mounted in said housing and provided with a rotor having an unbalancing weight, the axis of the rotor being disposed transversely of and in spaced non-intersecting relation to the axis of said vibratory element.

3. In an apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, a rotor housing disposed above and transversely of said vibratory element, a supporting and coupling bracket clamped to said rotor housing adjacent its rear end and to said vibratory element centrally thereof, outwardly inclined braces extending from said bracket to said vibratory element, diagonally disposed forward braces clamped to the forward end of said motor housing and to said vibratory element, a propelling and manipulating handle connected to the forward end of said rotor housing, and an unbalanced motor mounted in said housing and having an unbalancing weight, the axis of the rotor being disposed transversely of and in spaced non-intersecting relation to the axis of said vibratory element.

4. In a hand manipulated concrete placement apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, a rotor housing disposed above and transversely of said vibratory element and rigidly secured thereto, a propelling and manipulating handle connected to the forward end of said rotor housing and provided with means to be manually grasped to advance said housing and element, and an unbalanced motor mounted in said housing and having an unbalancing weight, the axis of the rotor being disposed transversely of and in spaced non-intersecting relation to the axis of said vibratory element.

5. In an apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element provided with runners having upturned ends to permit their being translated over reinforcing elements without displacing engagement therewith, a rotor housing disposed above and transversely of said vibratory element and rigidly secured thereto, a propelling and manipulating handle connected to the forward end of said rotor housing, and an unbalanced motor mounted in said housing and having an unbalancing weight, the axis of the rotor being disposed transversely of and in spaced non-intersecting relation to the axis of said vibratory element.

6. In a hand manipulated concrete placement apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, a rotor housing disposed above said vibratory element and rigidly secured thereto, a propelling and manipulating handle connected to the forward end of said rotor housing and provided with means to be manually grasped to advance said housing and element, and a rotor mounted in said housing and provided with an unbalancing weight, the axis of the rotor being disposed transversely of and in spaced non-intersecting relation to the axis of said vibratory element.

7. In a hand manipulated concrete placement apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element having a plurality of spaced fins secured thereto and adapted to receive a substantial amount of the material being treated therebetween, vibratory means for said vibratory element comprising a rotor having an unbalanced weight mounted on said vibratory element with its axis in transverse non-intersecting relation to the axis of the element, and a handle for manually manipulating said vibratory element in its horizontal position.

8. In an apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, a vibrating unit secured to said vibratory element centrally thereof, a vibrating motor disposed with

its axis transversely in non-intersecting relation to the length of the vibratory element, a plurality of fin-like members secured in spaced relation to said vibratory element and adapted to be submerged with said vibratory element in a mass of concrete being treated, said element having runners thereon provided with upturned ends for translating the element over reinforcing structure without displacing the same, and means for manipulating said vibratory element while in horizontal submerged position relative to a mass of concrete.

9. In an apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, means for vibrating said vibratory element at high frequency, a plurality of fin-like members secured in spaced relation on said vibratory element and adapted to provide a plurality of pockets for the mass being treated, said element having runners thereon provided with upturned ends for translating the element over reinforcing structure without displacing the same, and means for manually manipulating said vibratory element while in its horizontal submerged position relative to a mass of concrete.

10. In a hand manipulated concrete placement apparatus of the class described, the combination of an elongated horizontally disposed submersible vibratory element, a rotor housing disposed above said vibratory element and rigidly secured thereto, a propelling and manipulating handle connected to said rotor housing and provided with means to be manually grasped to advance said housing and element, and a rotor mounted in said housing and provided with an unbalancing weight, the axis of the rotor being disposed transversely of and in spaced non-intersecting relation to the axis of said vibratory element.

CORWILL JACKSON.