Oct. 22, 1940. C. JACKSON 2,219,247

APPARATUS FOR WORKING CONCRETE AND THE LIKE

Filed Aug. 28, 1933 2 Sheets-Sheet 1

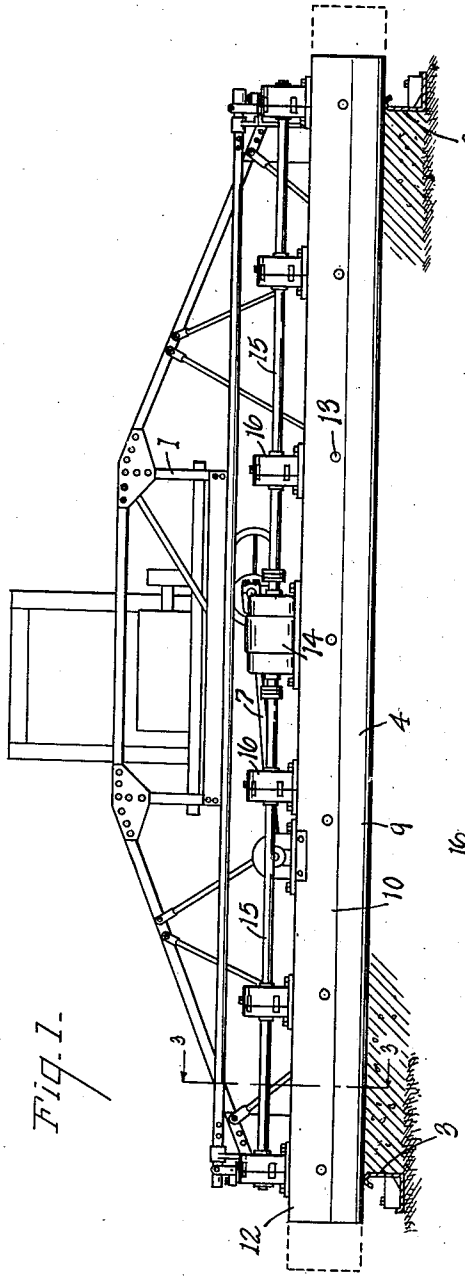


Fig. 1.

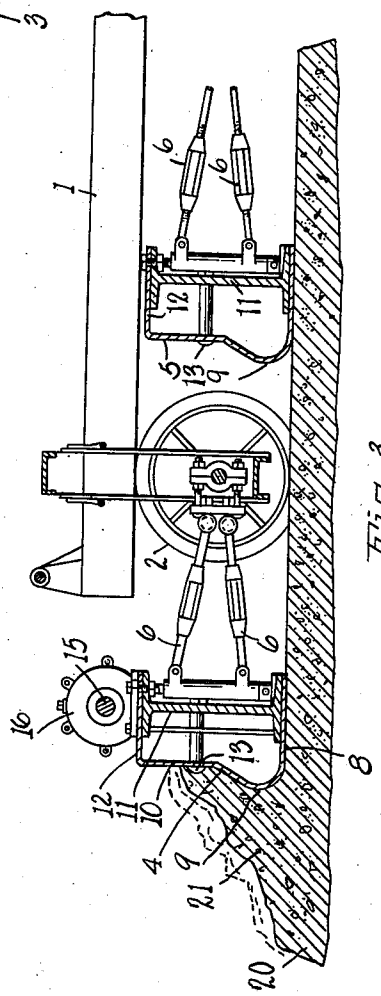


Fig. 3.

INVENTOR
Corwill Jackson
BY
Chappell Earl
ATTORNEYS

Oct. 22, 1940. C. JACKSON 2,219,247

APPARATUS FOR WORKING CONCRETE AND THE LIKE

Filed Aug. 28, 1933 2 Sheets-Sheet 2

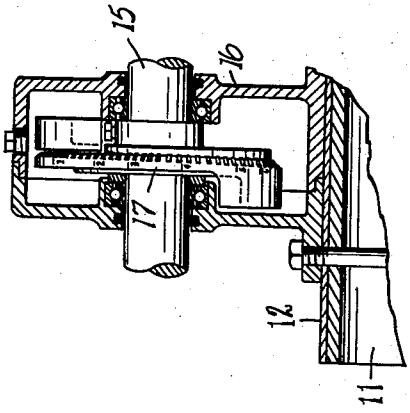


FIG. 4.

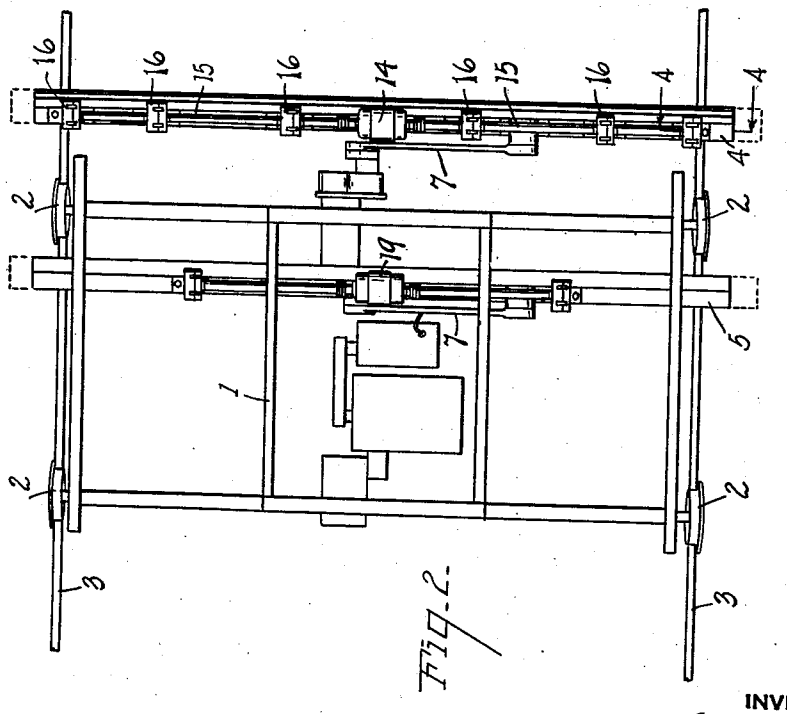


FIG. 2.

INVENTOR
Corwill Jackson
BY
Chappell & Earl
ATTORNEYS

Patented Oct. 22, 1940

2,219,247

UNITED STATES PATENT OFFICE

2,219,247

APPARATUS FOR WORKING CONCRETE AND THE LIKE

Corwill Jackson, Ludington, Mich.

Application August 28, 1933, Serial No. 687,083

6 Claims. (Cl. 94—48)

This application is a continuation in part of my application for Letters Patent filed October 22, 1932, Serial No. 639,067.

The main objects of this invention are:

First, to provide an improved machine for laying pavements and other large concrete surfaces which enables the effective placing of a relatively dry or harsh mixture, that is, a mixture of such low water ratio or content that it is not commercially placeable or workable with means or apparatus heretofore employed.

Second, to provide a machine for working concrete which is of very large capacity and is highly effective in the laying of concrete in large surfaces or areas such as pavements, and one which leaves the surface in a finished condition or a condition which does not require manual troweling or surfacing.

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 embodying the features of my invention is clearly illustrated in the accompanying drawings, in which:

Fig. 1 is a front elevation of a machine embodying the features of my invention in operative relation to a bed or sub-grade, the concrete and bed being conventionally illustrated.

Fig. 2 is a plan view, certain parts being shown conventionally and other parts omitted.

Fig. 3 is a fragmentary vertical section on line 3—3 of Fig. 1.

Fig. 4 is an enlarged detail view partially in section on line 4—4 of Fig. 2.

In the embodiment of my invention illustrated I provide a wheeled frame or carriage designated generally by the numeral 1 and designed to support the operating parts, preferably both the power means and the concrete working shoes or screeds. The wheels 2 of the carriage are designed to travel on the upper edges of the forms 3 which constitute tracks. It will be understood that the wheels might travel on special rails provided therefor, although in laying pavements and the like the wheels should be provided with tracks or ways that will carry the machine in an approximately horizontal plane.

I mount one or more screeds as 4 and 5 so as to permit longitudinal reciprocation thereof or reciprocation transversely of the path of the carriage. These shoes or screeds are supported in the plane of the finished work so that they serve as strikers and finishing members therefor. The screeds are supported in the embodiment illustrated by links 6 and reciprocated by means of pitmans 7, the driving connections for the pitmans to the motor not being illustrated. The rear screed 5 is more particularly a smoothing screed, while the front screed is not only designed to smooth and surface the material but also is provided with vibrating means whereby it is vibrated at high frequency during the reciprocating movement. The rear screed is also provided with similar vibrating means but this is not so essential on the rear screed.

The screeds comprise shoes 8 having rounded noses 9 extended into front walls 10 of substantial height. The bed pieces 11, preferably I beams as illustrated, are disposed longitudinally of the shoe and fixedly secured thereto, the front wall 10 having a rearwardly projecting flange 12 lapping the top of the beam or bed piece and rigidly secured thereto. Bolts 13 provided with suitable spacing sleeves secure the front wall to the web of the bed piece while the bottom flange of the bed piece is secured to the shoe.

The vibrating means as illustrated consists of an electric motor 14 mounted centrally of the bed piece and having a shaft 15 projecting at each end of the motor, the shaft being approximately the length of the bed piece. At spaced intervals housings 16 constituting bearing members for the shaft are provided, these housings having the unbalancing members 17 of the shaft arranged therein. These unbalancing members or units are preferably such as illustrated in my above mentioned application Serial No. 639,067.

The rear screed 5 is provided with a similar vibrating unit designated generally by the numeral 19.

The machine illustrated is especially designed and adapted for the placing of concrete in accordance with the method of my Patent No. 1,787,449, issued January 6, 1931, that is, subjecting concrete of such low water ratio or content as to be unworkable to high frequency vibrations, as a result of which it is reduced to a flowing or workable condition as pointed out in my said patent.

The structure of this application is an improvement upon my application for Letters Patent Serial No. 489,795, filed October 20, 1930. In that application reciprocating shoes or screeds are illustrated provided with means for vibrating during reciprocating motion. The screeds in that application, however, have sharp noses. The rounded noses of the screeds of this application are a substantial improvement and act to carry a substantial quantity of concrete below the

screeds which would otherwise be sheared or struck off, permitting the vibrating shoe to act upon this excess amount of material, and it is less likely to require a second operation after additional concrete has been added.

In practice the concrete material indicated at 20 is dumped on the bed in front of the machine in sufficient quantities and, as stated, is preferably of such low water content as not to permit practical working by usual tamping and placing methods. The material is roughly spread or is of such quantity that as the machine is advanced it piles up in front of the shoe as indicated at 21 in Fig. 3. The result is that the mass is vibrated at a considerable distance from the screed, thereby subjecting the mass, broadly considered, to the method of my said Patent No. 1,787,449.

The most desirable results are obtained by mounting the vibrating units as I have illustrated, that is, with their shafts longitudinally of the screeds, but very satisfactory results may be obtained by otherwise arranging the vibrating means.

My improved concrete working machine very greatly facilitates the laying of pavements and large surfaces of concrete, minimizing labor and insuring a very superior product. Owing to the character of the mixture a very substantial saving in cement results over methods heretofore employed.

I have not attempted to illustrate certain modifications or adaptations of my improvements which are possible as it is believed that this disclosure will enable those skilled in the art to embody or adapt my improvements 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 concrete working machine, the combination of a carriage, a shoe mounted on the carriage for horizontal reciprocatory movement, said shoe having a front plate extended upwardly therefrom, means for reciprocating said shoe as the carriage is advanced, a bed piece disposed longitudinally of and rigidly secured to said shoe and to its front plate, and a vibrating unit mounted on said bed piece comprising a centrally disposed motor and provided with a shaft extending at both ends of the motor, spaced bearings for said shaft carried by said bed piece, and unbalancing weights on said shaft disposed adjacent said bearings.

2. In a concrete working machine, the combination of a carriage, a shoe mounted on the carriage for horizontal reciprocatory movement transversely of the path of movement of the carriage, said shoe having a front plate extended upwardly therefrom, means for reciprocating said shoe as the carriage is advanced, a bed piece disposed longitudinally of and rigidly secured to said shoe and to its front plate, and a vibrating unit mounted on said bed piece comprising a centrally disposed motor and provided with a shaft extending at both ends of the motor, spaced bearings for said shaft carried by said bed piece, and unbalancing weights on said shaft disposed adjacent said bearings.

3. In a concrete working machine, the combination of a carriage, a shoe mounted on the carriage for horizontal reciprocatory movement transversely of the path of movement of the carriage, said shoe having a front plate extended upwardly therefrom, means for reciprocating said shoe as the carriage is advanced, a bed piece disposed longitudinally of and rigidly secured to said shoe and to its front plate, and a vibrating unit mounted on said bed piece.

4. In a machine for placing concrete, the combination with an elongated shoe adapted as a screed and having a front plate extending upwardly therefrom, and means for reciprocating said shoe, of a support disposed longitudinally of and rigidly secured to said shoe and its said front plate, and a vibrating unit mounted on said support.

5. A concrete working apparatus comprising a screed of substantially channel section arranged with its web upright and its flanges projecting rearwardly, a bed piece of I-section arranged in said screed with its flanges fitting between the flanges of the screed in supporting engagement and secured thereto, bolts provided with spacing sleeves connecting the webs of the bed piece and screed, alined shaft bearings mounted on the upper flange of the screed and secured to the upper flange of the bed piece, a shaft journaled in said bearings and having unbalancing weights adjacent the same for vibrating the screed when the shaft is rotated, means for rotating said shaft, and means for reciprocating said screed transversely of its direction of travel.

6. A concrete working apparatus comprising a screed of substantially channel section arranged with its web upright and its flanges projecting rearwardly, a bed piece fitting between the flanges of the screed in supporting engagement and secured thereto, alined shaft bearings mounted on the upper flange of the screed and secured to the bed piece, a shaft journaled in said bearings and having unbalancing weights adjacent the same for vibrating the screed when the shaft is rotated, and means for rotating said shaft.

CORWILL JACKSON.