

Oct. 22, 1940.

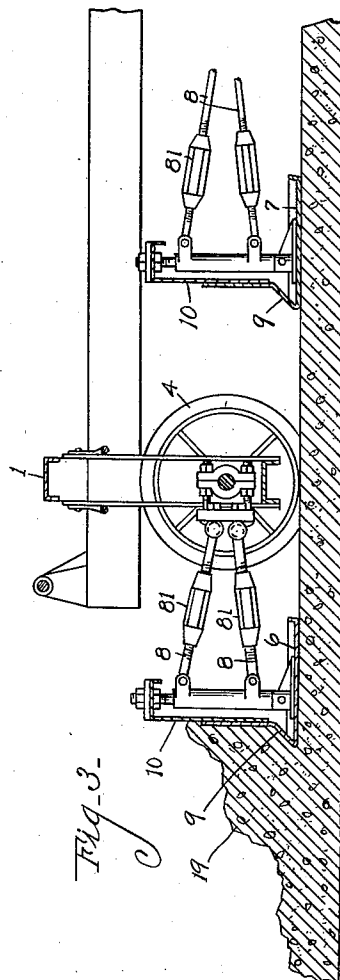
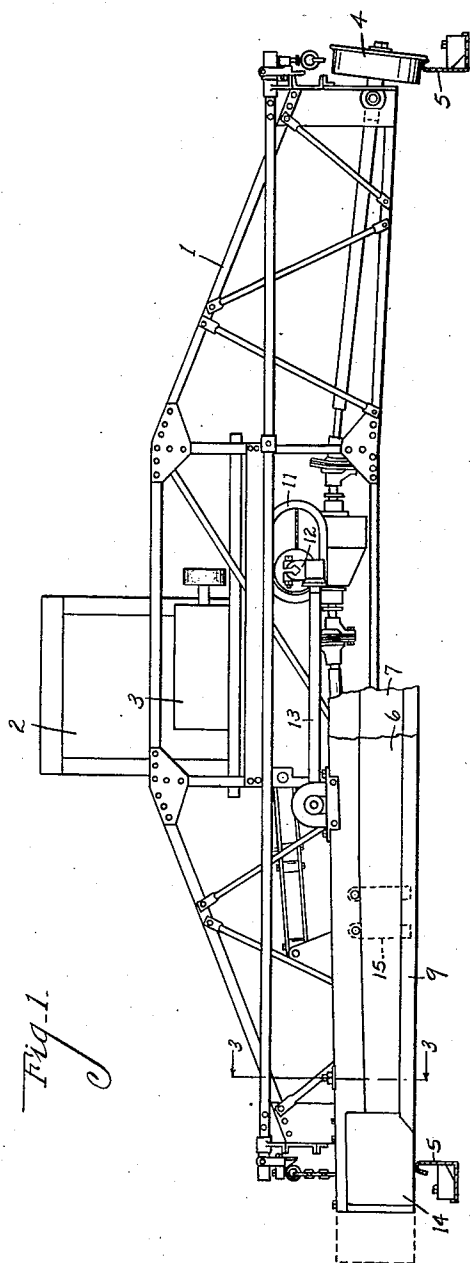
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2,219,246

CONCRETE WORKING APPARATUS

Filed Oct. 20, 1930

2 Sheets-Sheet 1



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CONCRETE WORKING APPARATUS

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Fig. 5

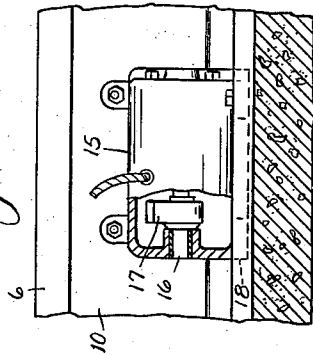


Fig. 4

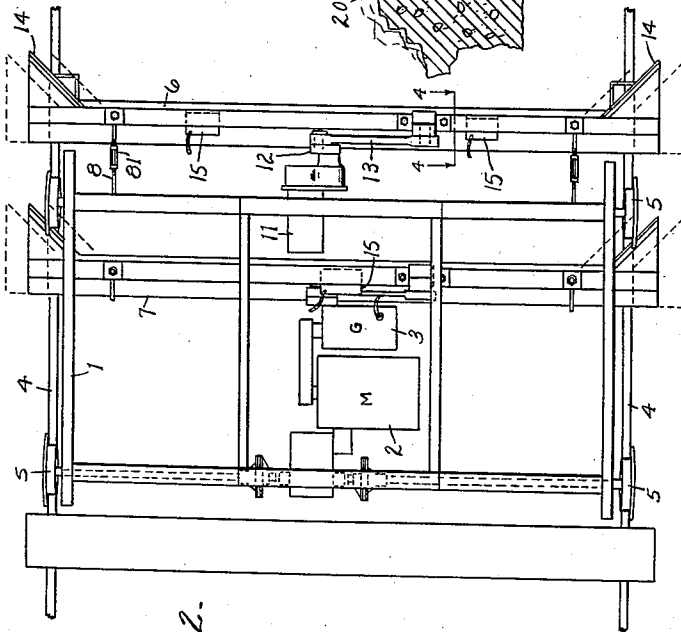
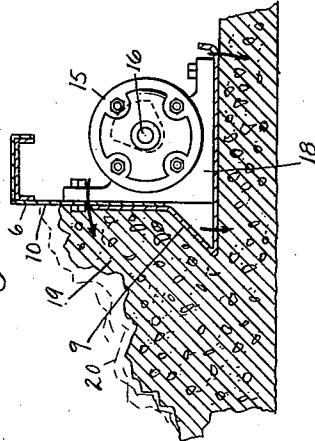


Fig. 2

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UNITED STATES PATENT OFFICE

2,219,246

CONCRETE WORKING APPARATUS

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Application October 20, 1930, Serial No. 489,795

7 Claims. (Cl. 94—45)

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 relatively dry or harsh mixtures, that is, mixtures of such low water content that they are not workable with apparatus heretofore employed.

Second, to provide a machine for working concrete which is of very large capacity enabling the rapid and effective laying of concrete in a pavement or like large surface.

Third, to provide a machine embodying these advantages which is very easily manipulated and leaves the surface in a finished condition.

Fourth, to provide an improved method of laying or placing concrete in pavements and the like.

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 drawings, in which:

Fig. 1 is a fragmentary front elevation of a concrete working machine embodying the features of my invention, certain parts being shown conventionally for convenience in illustration.

Fig. 2 is a fragmentary plan view, only such parts being shown as are deemed necessary to illustrate the embodiment of my invention and certain of these parts being shown conventionally.

Fig. 3 is a fragmentary vertical section on line 3—3 of Fig. 1 illustrating the machine in operative relation to the concrete being worked.

Fig. 4 is a fragmentary section on line 4—4 of Fig. 2 further illustrating the action of the machine.

Fig. 5 is a fragmentary rear view of one of the shoes and its vibrating means.

This application is a continuation in part of my Patent No. 2,015,899, issued October 1, 1935.

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. The power unit or motor is indicated at 2 and a generator at 3.

The carriage wheels 4 are adapted to travel on the upper edges of the forms 5 which are of such character as to constitute rails for the wheels. It will be understood, of course, that the wheels might travel on special rails provided therefor,

although in laying pavements and like surfaces, the wheels should be provided with supports that will carry the machine in a horizontal line on the level or in a horizontal plane.

I mount one or more shoes, as 6 and 7, so as to permit longitudinal reciprocation thereof or reciprocation transversely of the path of the carriage. These shoes are supported in the plane of the finished work so that they serve as strikers and finishing members therefor. The shoes are supported by pairs of links 8 having turn buckles 8¹ which permit the adjustment of the shoes to a horizontal position.

The shoes are provided with rearwardly inclined nose pieces 9 and front walls 10 of substantial height. The second shoe is in the nature of a finishing or troweling shoe, the main work being performed by the front shoe. The second shoe may be omitted if desired.

The shoe is oscillated on its supporting links or arms through a transmission designated by the numeral 11 having a crank 12 connected by the pitman 13 to the shoe. The reciprocatory movement of the shoe is indicated by dotted lines in Fig. 4. The shoe preferably has forwardly projecting wings 14 at its ends tending to work or keep the concrete material back between the forms.

The shoe and front plate, or the walls thereof, are vibrated at high frequency during the reciprocating movement. This I preferably accomplish by means of a motor 15 having a shaft 16 provided with an unbalancing weight 17. In the embodiment illustrated a pair of these motors are mounted on the front shoe.

These motors are provided with angled bases 18 which rest upon the shoe and against the front wall or front plate, and are rigidly bolted or secured thereto with the result that the shoe, particularly the front wall, is vibrated as the shoe is reciprocated at relatively low speeds and also as it is advanced by the advancement of the carriage.

In the embodiment illustrated the motors are driven from the generator 3, the electrical connections not being illustrated.

One advantage of this is that the speed of vibration may be conveniently regulated by varying the speed of the motor, although variable speed motors may be used if desired. The advantage of varying the speed is that, if it is desired to pass the machine over the surface a second time, as may be required where insufficient concrete has been applied to bring the surface up to grade, the vibrations may be slowed down to

advantage, owing to the fact that concrete of a different water content is usually provided in filling depressions or in this leveling process.

In practice the concrete material indicated at 5 19 is dumped on the bed in front of the machine in sufficient quantities, and preferably this is of a low water content or such water content as not to permit practical working by the usual tamping methods. The material is roughly spread and is 10 of such quantity that as the machine is advanced the material piles up in front of the front shoe as indicated at 4, Fig. 1. The result is that the mass is vibrated at considerable distance from the shoe, as I have attempted to indicate by the 15 lines 20, Fig. 4, thereby subjecting the mass, broadly considered, to the method of my Patent No. 1,787,449, issued January 6, 1931. My present method is an adaptation thereof and an improvement thereon especially adapting the same to 20 the laying of pavements.

The most desirable results are obtained by mounting the motors or vibrating units with their shafts longitudinally of the shoes, the direction of vibrations then being as indicated by 25 the arrows in Fig. 4. However, quite satisfactory results can be secured with other vibrating means or with the motors otherwise arranged on the shoes.

My improved concrete working machine very 30 greatly facilitates the laying of pavements and like large surfaces of concrete, minimizing labor and resulting in a very superior product, although owing to the character of the mixture a very substantial saving in cement results over 35 methods heretofore used.

I have not attempted to illustrate or describe various adaptations and embodiments of my invention as it is believed that this disclosure will enable those skilled in the art to embody or adapt 40 the same 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 said 45 carriage for horizontal reciprocatory movement, means for reciprocating said shoe as the carriage is advanced, and means for imparting high frequency vibrations to said shoe, said shoe having a front plate adapted for supporting engagement 50 with a substantial mass of concrete as advanced against the same.

2. In a concrete working machine, the combination of a carriage, a shoe mounted on said carriage for horizontal reciprocatory movement and having a front plate adapted to support a 5 substantial mass of concrete as the shoe is advanced by the carriage, means for reciprocating said shoe at relatively low speed, and means for vibrating the front plate of said shoe at high frequency during the reciprocatory movement of 10 the shoe.

3. In a concrete working machine, the combination of a carriage, a shoe mounted on said carriage, said shoe having a front plate extending upwardly therefrom, means for reciprocating 15 said shoe as the carriage is advanced, and means for vibrating said shoe and front plate comprising a motor provided with a base resting upon said shoe and secured to said shoe and to said front plate, said motor having a shaft disposed longitudinally of the shoe and provided with an 20 unbalancing weight.

4. In a concrete working machine, the combination of a carriage, a shoe mounted on said carriage and having a front plate adapted to support a substantial mass of concrete as the 25 shoe is advanced, and means for vibrating the front plate of said shoe at high frequency.

5. In a concrete working machine, the combination of a shoe mounted for forward advancement and reciprocating movement transversely 30 of the path of forward travel; means for reciprocating and simultaneously advancing said shoe, and means for vibrating said shoe and its front plate while it is reciprocated and advanced.

6. In a concrete working machine, the combination of a shoe adapted for horizontal reciprocatory movement and having a front plate adapted to support a substantial mass of concrete as the shoe is advanced in a horizontal plane, 40 and means for vibrating said shoe and its front plate at high frequency during its advancement.

7. In a concrete working machine, the combination of a shoe adapted for horizontal reciprocating movement and provided with a front plate adapted for supporting engagement with a 45 substantial mass of concrete against which the shoe is advanced, and means for vibrating said front plate as the shoe is advanced.

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