

Dec. 31, 1946.

C. JACKSON

2,413,632

CONCRETE PLACEMENT APPARATUS

Filed April 13, 1942

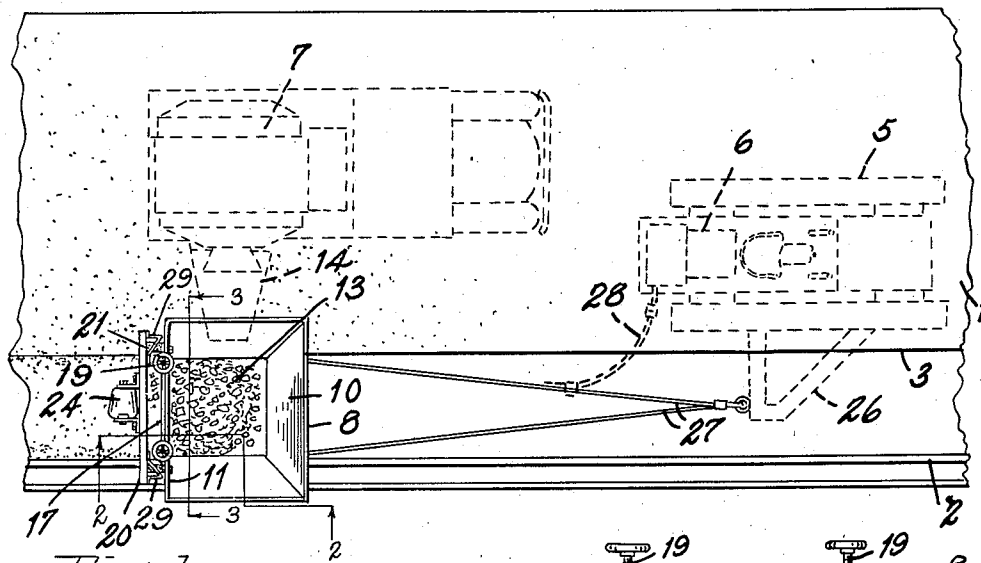


Fig. 1.

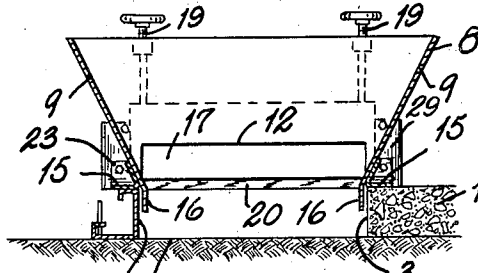


Fig. 3.

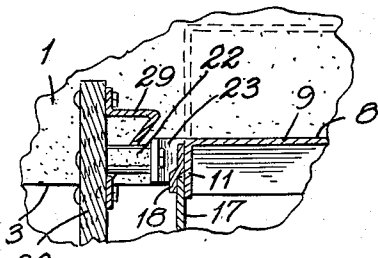


Fig. 4.

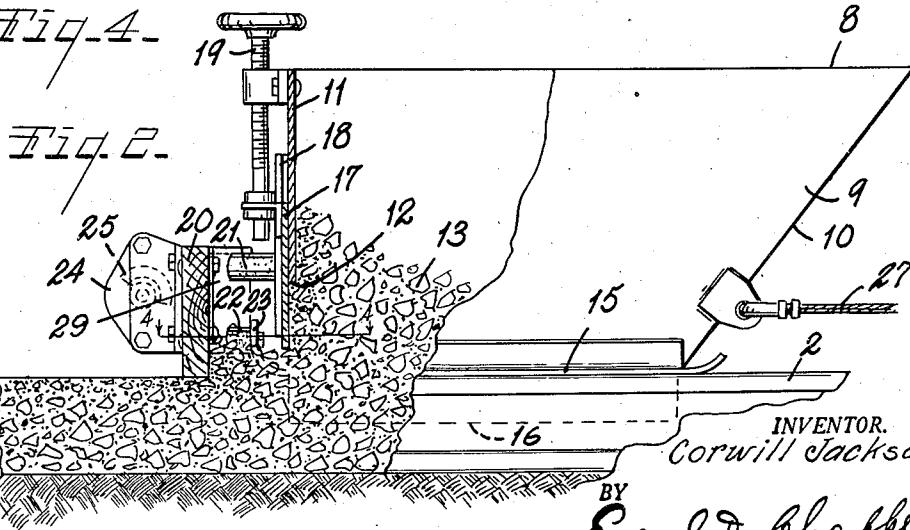


Fig. 2.

INVENTOR.
Corwill Jackson

BY
Earl D. Chappell

UNITED STATES PATENT OFFICE

2,413,632

CONCRETE PLACEMENT APPARATUS

Corwill Jackson, Ludington, Mich.

Application April 13, 1942, Serial No. 438,757

12 Claims. (Cl. 94-44)

1

This invention relates to improvements in concrete placement apparatus.

The main objects of this invention are:

First, to provide a concrete pavement apparatus which is well adapted for use in widening of pavements.

Second, to provide a concrete placement apparatus of this character which is efficient and of large capacity, enabling the very rapid widening of paved highways and the like.

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 drawing, in which:

Fig. 1 is a fragmentary plan view of a concrete placement apparatus embodying the features of my invention shown in operative relation to a pavement being widened and to a propelling tractor and mixer indicated by dotted lines.

Fig. 2 is an enlarged fragmentary view partially in longitudinal section on a line corresponding to line 2-2 of Fig. 1.

Fig. 3 is an enlarged fragmentary transverse section on line 3-3 of Fig. 1.

Fig. 4 is a fragmentary horizontal section on line 4-4 of Fig. 2 showing details of the strike-off member.

It is, under present conditions, frequently desired to widen paved highways and it is desirable to do that as rapidly as possible consistent with a satisfactory pavement. My present invention is designed to enable the very rapid widening of pavements and at the same time provide a satisfactory durable pavement.

In the embodiment illustrated, 1 represents a pavement to be widened, 2 a longitudinal form disposed in spaced relation to the edge 3 of the pavement 1 which edge constitutes a form element.

In laying the pavement, the shoulder of the pavement is excavated to the desired depth, as indicated at 4, to provide the foundation for the new slab. 5 represents a tractor having a current generated power unit 6 thereon. 7 represents a concrete mixer of the motor vehicle type.

My apparatus comprises a hopper 8 open at the bottom and preferably having inclined side walls 9, 9, an inclined front wall 10 and a vertical rear wall 11. This hopper has a bottom discharge opening while the rear wall 11 has a discharge opening 12 at the bottom thereof opening to the bottom discharge opening.

2

A concrete mixture indicated at 13 is discharged into the hopper from the spout 14 of the mixer.

The hopper is provided with shoes 15 adapted to travel on the form elements—that is, one of the shoes is adapted to travel on the pavement which constitutes one of the form elements and the other upon the longitudinal form 2.

The side walls 9 have depending wing-like vibratory members 16 which depend on the inner side of the form elements and quite close thereto, these vibratory elements being commonly designated as “spading” elements—that is, they vibrate the concrete placed on the inner sides of the form elements, eliminating air pockets and honeycomb structure at this point.

The rear discharge opening is provided with a vertical slidable gate 17 disposed on the slide-ways 18 and vertically adjusted and supported in its adjusted position by means of the screws 19.

At the rear of the hopper I mount a vibratory strike-off or screeding member 20, this being supported in spaced opposed relation to the discharge opening of the hopper.

The adjustable gate forms in effect a strike-off member—that is, it allows the desired amount of concrete material to pass out of the rear discharge opening.

The vibratory member 20 is supported on the hopper by means of resilient connections 21 and 22, the members 22 being connected to the up-turned ends 23 of the shoes while the members 21 are connected to the rear wall of the hopper at each side of the gate. These members are formed of relatively rigid reinforced rubber cylinders or tube sections—that is, they are sufficiently rigid to support the member 20 in its proper position and at the same time permitting high frequency vibration thereof by the motor 24 having an unbalanced rotor 25. This motor is rigidly bolted to the rear side of the strike-off member. The vibrations of the strike-off member are transmitted with modified intensity through these support members 21 and 22 to the hopper and to the longitudinal vibratory members or spading members 16.

This apparatus is propelled from the tractor 5 which has a laterally projecting bracket 26 thereon from which the draft cables 27 extend to the hopper. The electrical connections from the current generator 6 to the motor 24 is partially indicated at 28.

The high frequency vibration of the strike-off and the reduced vibrations of the hopper and the spading elements is such as to enable the place-

3

ment of relatively dry or harsh concrete mixes, the material being reduced to a suitable degree of fluidity by the vibrating walls of the hopper and the gate which constitutes a part of the wall and the strike-off or screed member.

The vibratory strike-off member 20 is provided with forwardly projecting wings 29 at the ends thereof designed to prevent excess concrete from spilling over the form elements and from passing around the ends of the strike-off. As shown in Fig. 2 the strike off member 20 has a front surface for engaging the loose concrete forward thereof, and a relatively narrow bottom surface for engaging the concrete beneath the same, said surfaces meeting each other to form a relatively sharp concrete cutting edge to prevent the rising of the apparatus above the slab 1 and the side form 2 as the machine advances.

I have illustrated and described my pavement widening apparatus in an embodiment which I have found very satisfactory in the matter of effectively placing the concrete and also as being of large capacity. It will be understood of course that the apparatus is designed for a particular width of strip to be added; also that it might be used for the laying of walks and the like.

I have not attempted to illustrate or describe the various modifications and adaptations which I contemplate for different purposes or to meet various different conditions as it is believed that this disclosure will enable those skilled in the art to modify 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 an apparatus of the class described, the combination of a hopper having a bottom discharge opening and a rear discharge opening in its rear wall opening to the bottom discharge opening, a vertically adjustable gate for said rear discharge opening, adjusting means for said gate, shoes for said hopper, one of which is adapted to slide upon a pavement to be widened and the other upon a form element disposed in spaced relation to the edge of the pavement which constitutes a second form element, vibratory members on the side walls of said hopper depending at the inner sides of said form elements and disposed for spading and packing concrete along said form elements, a vibratory strike-off member disposed at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for said vibratory strike-off member to said hopper permitting high frequency vibration thereof, said connections transmitting vibrations of lesser extent to said hopper and to said depending vibratory members than are imparted to said vibratory strike-off member, and means for vibrating said vibratory strike-off member mounted thereon, the vibrations imparted to said strike-off member including vertical movements thereto.

2. In an apparatus of the class described, the combination of a hopper having a bottom discharge opening and a rear discharge opening in its rear wall opening to the bottom discharge opening, a vertically adjustable gate for said rear discharge opening, adjusting means for said gate, shoes for said hopper, one of which is adapted to slide upon a pavement to be widened and the other upon a form element disposed in spaced re-

4

lation to the edge of the pavement which constitutes a second form element, a vibratory strike-off member disposed at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for said vibratory member to said hopper permitting high frequency vibration thereof, and means for vibrating said vibratory strike-off member mounted thereon, the vibrations imparted to said strike-off member including vertical movements thereto.

3. In an apparatus of the class described, the combination of a hopper having a bottom discharge opening and a rear discharge opening in its rear wall opening to the bottom discharge opening, shoes for said hopper, one of which is adapted to slide upon a pavement to be widened and the other upon a form element disposed in spaced relation to the edge of the pavement which constitutes a second form element, vibratory members on the side walls of said hopper depending at the inner sides of said form elements and disposed for spading and packing concrete along said form elements, a vibratory strike-off member mounted at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for connecting said strike-off member to said hopper, and means for vibrating said vibratory members and said vibrating strike-off members at high frequency, the vibrations imparted to said strike-off member including vertical movements thereto.

4. In an apparatus of the class described, the combination of a hopper having a bottom discharge opening and a rear discharge opening in its rear wall opening to the bottom discharge opening, a vertically adjustable gate for said rear discharge opening, shoes for said hopper, one of which is adapted to slide upon a pavement to be widened and the other upon a form element disposed in spaced relation to the edge of the pavement which constitutes a second form element, a vibratory strike-off member mounted at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for connecting said strike-off member to said hopper, and means for vertically vibrating said vibratory member at high frequency, said strike-off member having a surface to engage loose concrete at the front thereof and a bottom surface to engage the concrete beneath the same, said surfaces meeting each other to form a relatively sharp concrete cutting edge.

5. In an apparatus of the class described, the combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening in its rear wall opening to the bottom discharge opening, a vertically adjustable gate for said rear discharge opening, vibratory members on the hopper disposed adjacent the inner sides of the form elements on which the hopper is traveling and disposed for spading and packing concrete along said form elements, a vibratory strike-off member disposed at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge

5

opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for said vibratory member to said hopper permitting vibration thereof while transmitting vibrations of modified intensity to said hopper and to said depending vibratory member, and means for vibrating said vibratory strike-off member mounted thereon, the vibrations imparted to said strike-off member including vertical movements thereto.

6. In an apparatus of the class described, the combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening, vibratory members on the hopper disposed adjacent the inner sides of the form elements on which the hopper is traveling and disposed for spading and packing concrete along said form elements, a vibratory strike-off member disposed at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for said vibratory member to said hopper permitting vibration thereof while transmitting vibrations of modified intensity to said hopper and to said depending vibratory members, and means for vibrating said vibratory strike-off member mounted thereon, the vibrations imparted to said strike-off member including vertical movements thereto.

7. In an apparatus of the class described, the combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening in its rear wall opening to the bottom discharge opening, a vertically adjustable gate for said rear discharge opening, a vibratory strike-off member disposed at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for said vibratory member to said hopper permitting vibration thereof, and means for vibrating said vibratory strike-off member mounted thereon, the vibrations imparted to said strike-off member including vertical movements thereto.

8. In an apparatus of the class described, the combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening, a vibratory strike-off member disposed at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for said vibratory member to said hopper permitting vibration thereof, and means for vibrating said vibratory strike-off member mounted thereon, the vibrations imparted to said strike-off member including vertical movements thereto.

9. In an apparatus of the class described, the

6

combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening in its rear wall, a vertically adjustable gate for said rear discharge opening, vibratory members on the hopper disposed adjacent the inner sides of the form elements on which the hopper is traveling and disposed for spading and packing concrete along said form elements, a vibratory strike-off member mounted at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, and means for vibrating said vibratory members and said vibratory strike-off member.

10. In an apparatus of the class described, the combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening, vibratory members disposed adjacent the inner sides of the form elements on which the hopper is traveling and disposed for spading and packing concrete along said form, a vibratory strike-off member mounted at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, and means for vibrating said vibratory members and said vibratory strike-off member.

11. In an apparatus of the class described, the combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening in its rear wall, a gate for said rear discharge opening, a vibratory strike-off member mounted at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to the rear discharge opening thereof to rearwardly support the material discharged therefrom, resilient connections of substantial flexibility for connecting said strike-off member to said hopper, and means for vibrating said vibratory member, said strike-off member having a surface to engage loose concrete at the front thereof and a bottom surface to engage the concrete beneath the same, said surfaces meeting each other to form a relatively sharp concrete cutting edge.

12. In an apparatus of the class described, the combination of a hopper adapted to travel on longitudinal form elements, said hopper having a bottom discharge opening and a rear discharge opening in its rear wall, a vibratory strike-off member mounted at the rear of and transversely of the path of travel of the hopper in opposed spaced relation to said rear discharge opening, resilient connections of substantial flexibility for connecting said strike-off member to said hopper, said strike-off member having a relatively narrow bottom edge for engaging the concrete beneath the same and means for vibrating said strike-off member.

CORWILL JACKSON.