Jan. 9, 1934. C. JACKSON 1,943,076

APPARATUS FOR WORKING CONCRETE AND THE LIKE

Filed Oct. 22, 1932

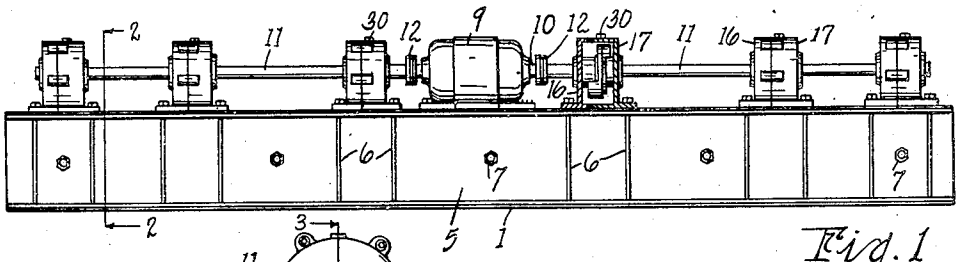

Fig. 1

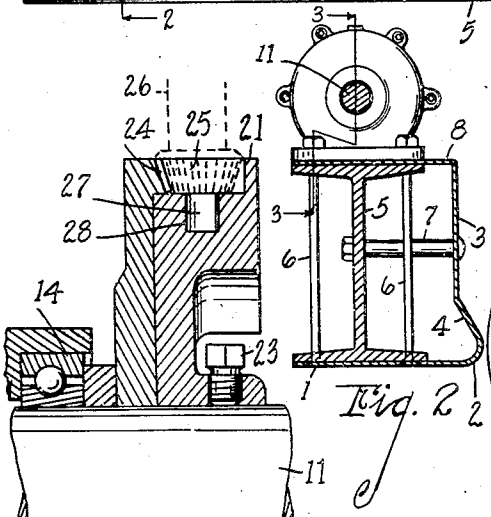

Fig. 2

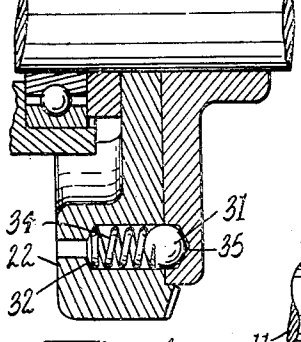

Fig. 4

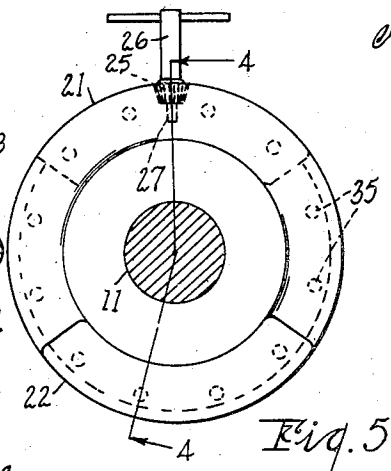

Fig. 5

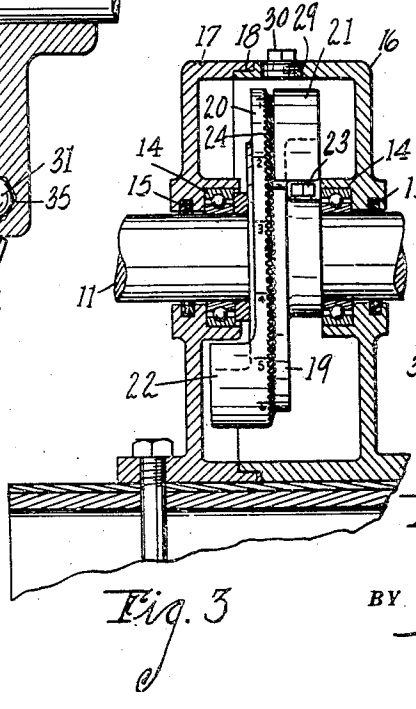

Fig. 3

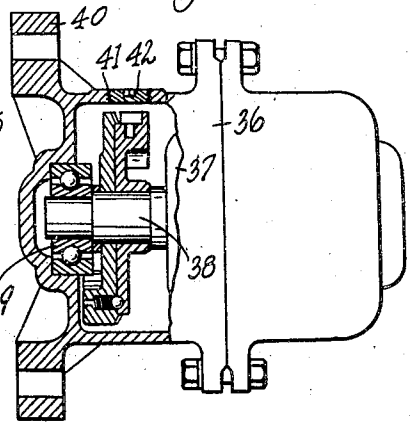

Fig. 6

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Patented Jan. 9, 1934 1,943,076

UNITED STATES PATENT OFFICE

1,943,076

APPARATUS FOR WORKING CONCRETE AND THE LIKE

Corwill Jackson, Ludington, Mich.

Application October 22, 1932. Serial No. 639,067

16 Claims. (Cl. 74—14)

The main objects of this invention are:

First, to provide a machine or apparatus for placing or treatment of concrete which is well adapted for the laying of concrete pavements and other relatively large areas.

Second, to provide a vibratory apparatus for the placing or treatment of concrete in which the intensity of the vibrations may be effectively controlled.

Third, to provide a machine embodying these advantages in which a relatively long member such as the screed of a paving machine, may be uniformly vibrated throughout its length.

Fourth, to provide a machine in which the intensity of the vibrations are capable of a wide variation in which the parts are effectively protected and not likely to be accidentally displaced.

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

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a rear elevation of a paving machine screed unit embodying the features of my invention, portions being shown in vertical section.

Fig. 2 is an enlarged vertical section on line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary view mainly in section on line 3—3 of Fig. 2.

Fig. 4 is an enlarged fragmentary view mainly in section on line 4—4 of Fig. 5.

Fig. 5 is an enlarged transverse section illustrating details of the adjusting mechanism.

Fig. 6 is a fragmentary section of a modified form or adaptation of my invention illustrating the same as embodied in a motor unit for application to a vibratory member.

In Figs. 1, 2 and 3 I show my improvements as embodied in screed units of paving machines such as illustrated in my application for Letters Patent, Serial No. 489,795, filed October 20, 1930.

The shoe or screed 1 has a rounded nose 2 at its front edge and a front plate 3 extending upwardly from the nose or merged therein with a downwardly inclined portion 4. A bed member or sill 5 of T-cross section is mounted onto the shoe and is rigidly bolted thereto by the vertical bolt 6 and to the front plate by the bolts 7. The front plate is further secured to the bed piece by a top plate 8 overlying the bed piece. This unit is particularly designed to be mounted on a paving machine such as shown in my said application, but I have not herein shown the mounting means.

Centrally of the bed piece I mount a motor 9, the motor shaft 10 of which projects at each end of the housing. Shafts 11 are connected to the shaft 10 by the universal joints 12. These universal joints are provided to avoid the necessity of great accuracy in aligning and to compensate for any springing that might result in use.

The shafts 11 are supported by a plurality of housings comprising sections 16 and 17, each housing being provided with a pair of spaced bearings 14. At the outside of these bearings, the housings are provided with packings 15 for excluding dust. The housings are adapted as lubricant chambers, the bearings being effectively lubricated and the dust being excluded therefrom.

The housings are made up of sections 16 and 17 having a rabbeted or stepped joint 18. The bolts 6 serve to secure the housings in place. Within the housings are vibrating or unbalancing weight units each consisting of a disk-like relatively fixed member 19 and a coacting relatively adjustable member 20, these members having eccentric or unbalancing weights 21 and 22 respectively.

The members 19 are secured to the shaft by means of the set screws 23. The members 20 have annular beveled crown gears 24 adapted to receive the pinions 25 of the key 26. The members 19 have bearing-like sockets 27 adapted to receive the spindles 28 of the key so that the key is rotatably supported with its pinion in operative relation to the rack, as shown in Fig. 4.

The key is adapted to be introduced through the openings 29 which are provided with closure plugs 30. By this means the member 20 may be adjusted relative to the member 19 thereby varying the relative positions of their weights, and thereby control the intensity of the vibrations.

The adjustable member is retained in its adjusted positions by means of the spring pressed detent, the detent illustrated consisting of a ball 31 arranged in the bore 32 and yieldingly supported by the spring 34 to coact wtih the recess-like keepers 35. These keepers are uniformly spaced as indicated in Fig. 5 so that the operator is able to determine the extent of adjustment. Indicia may be provided on the peripheries of the members as shown in Fig. 3.

The housings are adapted to receive and retain lubricant so that the bearings are effectively lubricated, the unbalancing weights and eccentric weights constituting splash members for the lubri-

cant. A further advantage is that the unbalancing weights are effectively housed so that a workman is not likely to be injured or his clothing become entangled therewith.

In the embodiment shown in Fig. 5, I illustrate my improvements as embodied in a motor housing 36, the rotor 37 of the motor having a shaft 38 supported in a bearing 39, the housing having a base or foot 40 by means of which it may be bolted directly to the vibrating unit or mounted upon a support which is in turn attached to the unit. In this construction, the unbalancing unit, as has been described, is provided, the motor housing having an opening 41 provided with a closure 42 which permits the manipulation of the unbalancing unit from the exterior of the housing.

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

1. The combination with an elongated bed piece, of a motor mounted centrally on said bed piece and provided with a shaft extending at both ends of the motor, a plurality of spaced housings mounted on said bed piece and provided with spaced bearings for said shaft, said housings having packings coacting with said shaft at the outer side of said bearings and being adapted as lubricant chambers, and unbalancing weight units disposed within said housings and each comprising a relatively fixed member and a relatively adjustable member disposed side by side between said bearings and having unbalancing weights, the adjustable member being rotatable on said shaft, said housings being provided with openings provided with closures permitting the introduction of a key for manipulation of the adjustable member from the outside of the housings.

2. The combination with an elongated bed piece, of a motor mounted centrally on said bed piece and provided with a shaft extending at both ends of the motor, a plurality of spaced housings mounted on said bed piece and provided with bearings for said shaft, said housings being adapted as lubricant chambers, and unbalancing weight units disposed within said housings and each comprising a relatively fixed member and a relatively adjustable member having unbalancing weights, the adjustable member being rotatable on said shaft, said housings being provided with openings provided with closures permitting the introduction of a key for manipulation of the adjustable member from the outside of the housings.

3. The combination with an elongated bed piece, of a motor mounted centrally on said bed piece and provided with a shaft extending at both ends of the motor, a plurality of spaced housings mounted on said bed piece and provided with bearings for said shaft, said housings being adapted as lubricant chambers, and unbalancing weight units disposed within said housings and each comprising a relatively fixed member and a relatively adjustable member having unbalancing weights, the adjustable member being rotatable on said shaft and having a beveled crown gear, the fixed member being adapted to support a key in coacting relation to said crown gear so that the adjustable member may be rotated relative to the fixed member, one of said members having a spring detent and the other a series of uniformly spaced recess-like keepers coacting with said detent for yieldingly retaining the adjustable member in its adjusted position relative to the fixed member, the weights of the fixed members of the several units being disposed in the same angular relation on the shaft, said housings being provided with openings provided with closures permitting the introduction of a key for manipulation of the adjustable member from the outside of the housings.

4. A vibrator comprising a shaft, a housing provided with spaced bearings for said shaft, said housing having packings coacting with said shaft at the outer side of said bearings and being adapted as a lubricant chamber, and an unbalancing weight unit disposed within said housing and comprising a relatively fixed member and a relatively adjustable member disposed side by side between said bearings and having unbalancing weights, the adjustable member being rotatable on said shaft and having a beveled crown gear, the fixed member being adapted to support a key in coacting relation to said crown gear so that the adjustable member may be rotated relative to the fixed member, said housing being provided with an opening provided with a closure permitting the introduction of a key for manipulation of the adjustable member from the outside of the housing.

5. A vibrator comprising a shaft, a housing, and an unbalancing weight unit disposed within said housing and comprising a relatively fixed member and a relatively adjustable member disposed side by side between said bearings and having unbalancing weights, the adjustable member being rotatable on said shaft and having a beveled crown gear, the fixed member being adapted to support a key in coacting relation to said rack so that the adjustable member may be rotated relative to the fixed member, said housing being provided with an opening provided with a closure permitting the introduction of a key for manipulation of the adjustable member from the outside of the housing.

6. A vibrator comprising a shaft, a housing, and an unbalancing weight unit disposed within said housing and comprising a relatively fixed member and a relatively adjustable member disposed side by side between said bearings and having unbalancing weights, the adjustable member being rotatable on said shaft and having a beveled crown gear, the fixed member being adapted to support a key in coacting relation to said crown gear so that the adjustable member may be rotated relative to the fixed member, one of said members having a spring detent and the other a series of uniformly spaced recess-like keepers coacting with said detent for yieldingly retaining the adjustable member in its adjusted positions relative to the fixed member, said housing being provided with an opening provided with a closure permitting the introduction of a key for manipulation of the adjustable member from the outside of the housing.

7. A vibrator comprising a shaft, and an unbalancing weight unit comprising a relatively fixed member and a relatively adjustable member having unbalancing weights, the adjustable member being rotatable on said shaft and having a beveled crown gear, the fixed member being adapted to support a key in coacting relation to said crown gear so that the adjustable member may be rotated relative to the fixed member, one of said members having a spring pressed ball detent and the other a series of uniformly spaced recess-like keepers coacting with said detent for yieldingly retaining the adjustable member in its adjusted positions relative to the fixed member.

8. A vibrator comprising a shaft, and an un-

balancing weight unit comprising a relatively fixed member and a relatively adjustable member having unbalancing weights, the adjustable member being rotatable on said shaft and having a beveled crown gear, the fixed member being adapted to support a key in coacting relation to said crown gear so that the adjustable member may be rotated relative to the fixed member.

9. A vibrator comprising a shaft, a housing provided with a bearing for said shaft, an unbalancing unit on said shaft comprising an eccentric weight fixed to said shaft and a coacting eccentric weight rotatable on said shaft at the side of said fixed weight, said weight rotatable on said shaft having a gear, and a pinion engageable with said fixed weight to be manipulated from the outside of said housing for adjustment of said rotatable weight.

10. A vibrator comprising a vibrated member, a shaft, a housing mounted on said vibrated member and provided with a bearing for said shaft, an unbalancing unit on said shaft comprising an eccentric weight fixed to said shaft and a coacting eccentric weight rotatable on said shaft, and means within said housing for adjustment of said rotatable weight, the housing having an opening for manipulating said means from the outside of the housing.

11. A vibrator comprising a shaft, a housing provided with a bearing for said shaft, an unbalancing unit on said shaft comprising an eccentric weight fixed to said shaft and a coacting eccentric weight rotatable on said shaft, and means within said housing for adjustment of said rotatable weight, the housing having an opening for manipulating said means from the outside of the housing.

12. A vibrator comprising a motor housing a motor arranged within said housing and having a shaft journaled therein, and an unbalancing weight disposed on said shaft within said housing and comprising a relatively fixed member and a relatively adjustable member disposed side by side and provided with unbalancing weights, the adjustable member having a beveled annular crown gear, the fixed member having a peripheral socket-like bearing adapted to receive the spindle of a pinion-like key whereby the key is rotatably supported in coacting relation to said crown gear, the housing being provided with an opening having a closure through which the key may be introduced for manipulation of the adjustable member from the outside of the housing, one of said members having a spring detent and the other a series of uniformly spaced recess-like keepers coacting therewith for yieldingly retaining the adjustable member in its adjusted positions relative to the fixed member.

13. A vibrator comprising a motor housing, a motor arranged within said housing and having a shaft journaled therein, and an unbalancing weight disposed on said shaft within said housing and comprising a relatively fixed member and a relatively adjustable member disposed side by side and provided with unbalancing weights, the adjustable member having a beveled annular crown gear, the fixed member having a peripheral socket-like bearing adapted to receive the spindle of a pinion-like key whereby the key is rotatably supported in coacting relation to said crown gear, the housing being provided with an opening having a closure through which the key may be introduced for manipulation of the adjustable member from the outside of the housing.

14. A vibrator comprising a motor housing, a motor arranged within said housing and having a shaft journaled therein, and an unbalancing unit on said shaft within said housing comprising a relatively fixed eccentric weight member and a rotatable eccentric weight member, the housing being provided with an opening having a closure through which the adjustable member may be manipulated from the outside of the housing, one of said members having a spring detent and the other a series of uniformly spaced recess-like keepers coacting therewith for yieldingly retaining the adjustable member in its adjusted positions relative to the fixed member.

15. A vibrator comprising a motor housing, a motor arranged within said housing and having a shaft journaled therein, and an unbalancing unit on said shaft within said housing comprising a relatively fixed eccentric weight member and a rotatable eccentric weight member, the housing being provided with an opening having a closure through which the adjustable member may be manipulated from the outside of the housing.

16. A vibrator comprising an elongated member to be vibrated, a shaft disposed longitudinally thereof, a plurality of housings mounted on said elongated member and provided with bearings for the shaft, unbalancing units within said housings comprising members fixed to said shaft and having eccentric weights and members rotatable on said shaft and having eccentric weights, and means within the housings for adjusting the rotatable members relative to the fixed members, the housings having openings through which said means can be manipulated from the outside of the housings.

CORWILL JACKSON.