

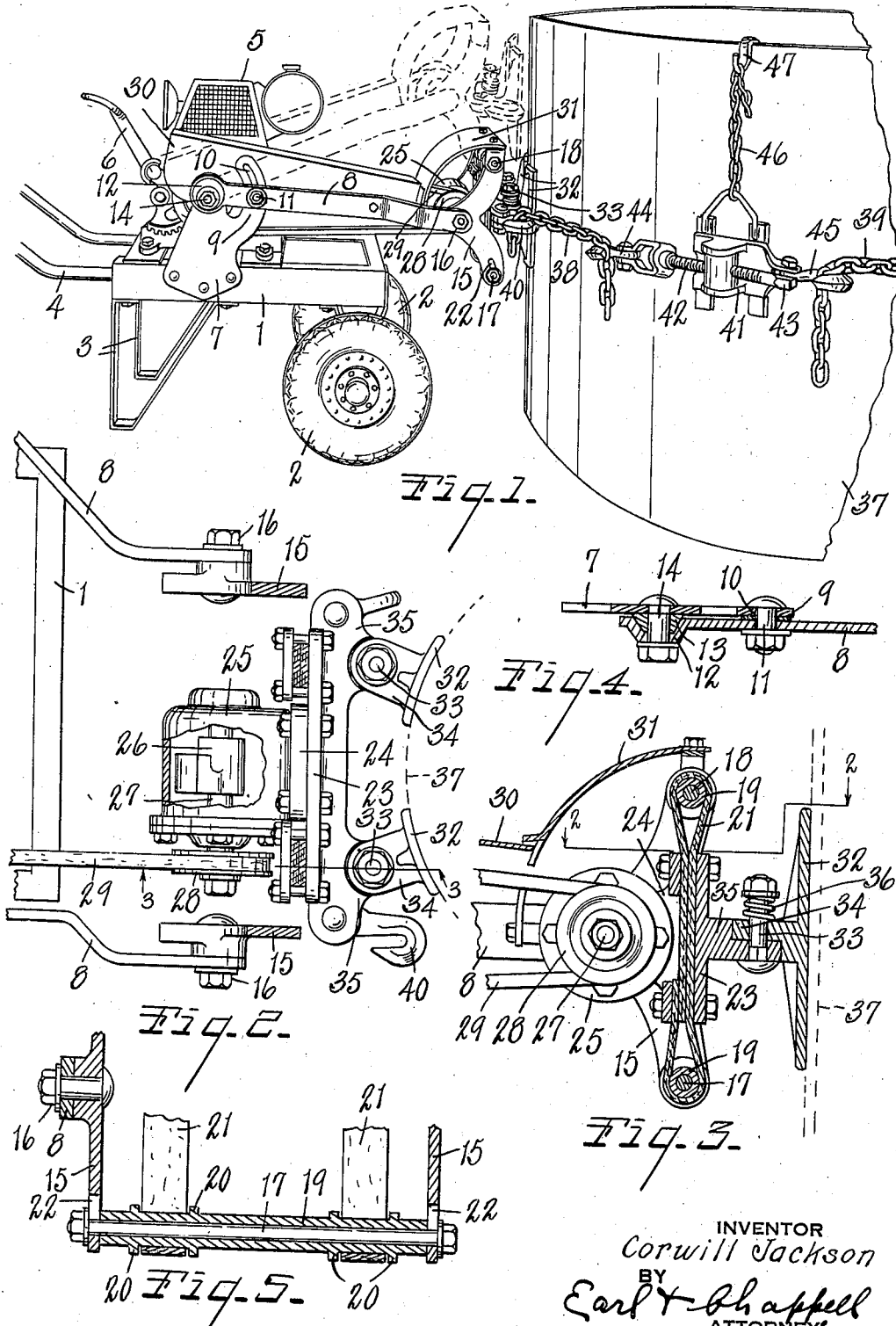
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PORTABLE FORM VIBRATOR

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PORTABLE FORM VIBRATOR

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5 Claims. (Cl. 259—1)

This invention relates to improvements in portable form vibrators.

The main objects of this invention are:

First, to provide a concrete form vibrator which has a very wide range of uses.

Second, to provide a portable vibrator which may be easily adjusted for a wide variety of uses—for example, in the vibrating of the forms of conduits, columns, walls or the like.

Third, to provide a portable vibrator which may be quickly and easily adjusted to the form to be vibrated and, if desired, clamped thereto for imparting vibrations uniformly to a form of large dimensions.

Fourth, to provide a portable vibrator having these advantages which is simple in structure and very easily manipulated.

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 perspective view of my improved portable vibrator shown in operative relation to a conventionally illustrated conduit form, a second position of adjustment being illustrated by dotted lines.

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

Fig. 3 is a fragmentary view partially in section on line 3—3 of Fig. 2.

Fig. 4 is a detail section illustrating the mounting of one of the vibratory member supporting arms.

Fig. 5 is a detail view partially in section illustrating details of the mounting for the vibratory member.

In the embodiment of my invention illustrated, I provide a wheeled carriage 1 having wheels 2 at its front end preferably rubber-tired. Legs 3 are provided at the rear end of the carriage, these legs being of advantage in stabilizing the carriage when it is positioned—that is, tending to hold it in its adjusted position. The carriage is moved about and adjusted by means of the handle 4.

A motor 5, in the embodiment illustrated an internal combustion engine, is mounted on the carriage, the embodiment illustrated being provided with a starting lever 6. As the details of the motor and starting means form no part of this invention, they are not detailed or further described herein.

At each side of the motor, the carriage is pro-

vided with upwardly projecting brackets 7 on which I pivotally mount the arms 8 for vertical swinging adjustment. To secure the arms in their adjusted position, the uprights are provided with brackets 9 having slots 10 therein receiving the bolts 11. In Fig. 4, it will be noted that the arms are provided with sockets 12 which engage the conical bushings 13 on the bolts 14.

At the outer end of the arms I mount the forked bracket 15, the bracket being tiltably mounted on the arms at 16. The arms of these brackets carry the rods 17 and 18 having sleeves 19, the sleeves being provided with spaced pairs of flanges 20 positioning the straps 21. The bolt or rod 17 is engaged in slots 22 in the arms so that the straps may be tensioned. To these straps I clamp the crosshead 23 to which the base 24 of the rotor housing 25 is bolted. Within this rotor housing is an unbalanced rotor 26, the shaft 27 of which is provided with the V-pulley 28 driven from the motor through the belt 29. A guard 30 is preferably provided for the belt 29 and also a guard 31 for the vibrating member just described.

The crosshead 23 has a pair of abutment plates 32 pivotally mounted thereon, the pivots 33 for these abutment members being disposed vertically. It will be noted that the arms 34 on the abutment plates and the arms 35 on the crosshead have shouldered engagement providing a thrust surface for the abutment plates and relieving the pivot bolts 33 of some of the strain to which they would otherwise be subjected under the vibrations of the vibratory member. These pivots 33 are provided with springs 36 which serve to retain the plates in their adjusted positions—that is, prevent their free swinging about while permitting them to swing to a position to effectively engage the side of a form shown at 37, see Figs. 1 and 2.

This manner of supporting the vibratory member permits high frequency vibrations thereof with very little transmission of the vibrations to the vibratory member support and carriage.

In Fig. 1, I illustrate my machine in operative relation to a conduit form and as being clamped thereto. Effective results, however, may be had without clamping to the form—that is, the machine may be positioned with the abutment members against the form and easily held in that position manually without the operator being subjected to disagreeable or injurious vibrations.

The clamping means illustrated comprise a chain or cable made of sections 38 and 39, and a crosshead or vibratory member having hooks 40

at its ends with which one end of the cable sections may be engaged.

To easily tighten the cable, I provide a tightening or tensioning means consisting of the block 41 having a screw 42 threaded therein, the screw being adapted to receive a wrench at 43. The screw has a swiveled hook 44 on one end thereof with which the cable section 38 is engaged. The block has a hook 45 with which the cable section 39 may be engaged. The block has a suspending cable 46 provided with a form engaging hook or hanger 47.

In an adjusting to a form, the carriage is moved into position and the arms 8 adjusted to support the vibratory member at the desired elevation and the bracket 15 adjusted to properly present the abutment plates to the form—that is, to bring them to a vertical position in the event the form is vertical. The cable is then positioned as illustrated in Fig. 1 and this can be done with the parts in such position as may be easily engaged and screw adjusted to securely clamp the vibratory member with its foot plates or abutments firmly against the side of the form. The pivotal mounting of the abutment plates enables them to be adjusted so as to present a substantial face to the form. The machine is then started and high frequency vibrations are imparted throughout the full diameter of the form. The axis of the unbalancing rotor is preferably disposed horizontally as this is found to avoid any nodes or zones of varying vibration.

My machine is capable of a very wide range of use in vibrating wall forms, columns, conduit forms and various other uses. It is particularly desirable in field work—for example, where large conduits are molded in order to minimize transportation. The machine can be moved from form to form where it is desired to cast or mold the units adjacent the point where they are to be laid. By providing the carriage, the vibrating device is readily transported from place to place and it is so supported that it may be adjusted to the form with a minimum of labor on the part of the workmen.

I have illustrated and described my improvements in an embodiment which I have found highly practical. I have not attempted to illustrate and describe various modifications and embodiments which I contemplate 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 portable form vibrator, the combination with a carriage provided with wheels at its front end and with legs at its rear end and with handles whereby it may be manipulated on said wheels, of a motor on said carriage, supporting uprights at the sides of said motor, arms mounted on said uprights for pivotal vertically swinging adjustment, means for supporting said arms in their adjusted position on said uprights, a

bracket mounted on the outer ends of said arms for vertical pivotal adjustment, said bracket having vertically spaced cross pieces, a vibratory member having an unbalanced rotor thereon disposed with its axis horizontally, flexible supporting means for said vibratory member extending between said cross pieces, abutment plates pivotally mounted on said vibratory member, and a flexible driving connection for said motor to said rotor.

2. In a portable form vibrator, the combination with a carriage, of a motor on said carriage, arms adjustably mounted on said carriage for vertically swinging adjustment, means for supporting said arms in their adjusted position, a bracket mounted on the other end of said arms for vertical pivotal adjustment, said bracket having vertically spaced cross pieces, one of said cross pieces being mounted for adjustment to and from the other, a vibratory member provided with a form abutment and having an unbalanced rotor thereon, a flexible supporting strap for said vibratory member extending between said cross pieces, and a driving connection for said motor to said rotor.

3. In a portable form vibrator, the combination with a carriage, of a motor on said carriage, arms adjustably mounted on said carriage for vertically swinging adjustment, means for supporting said arms in their adjusted position, a bracket mounted on the other end of said arms for vertical pivotal adjustment, a vibratory member provided with a form abutment and having an unbalanced rotor thereon, a flexible supporting strap for said vibratory member carried by said bracket, and a driving connection for said motor to said rotor.

4. In a form vibrator, the combination with a portable support, of a motor on said support, an arm mounted on said support for vertical swinging adjustment and provided with means for securing it in its adjusted positions, a vibratory member support mounted on the swinging end of said arm for tilting adjustment, a vibratory member mounted on said vibratory member support on said arm for vibrating movement independent of said support and having an unbalanced rotor thereon disposed with its axis horizontally, a flexible driving connection for said motor to said rotor, and means for connecting said vibratory member to said form comprising a form embracing cable connected to said vibratory member, and means for adjusting said cable.

5. The combination with a carriage, of an arm pivoted on said carriage, a vibratory member mounted on said arm for vibratory movement thereon provided with a form abutment member, and means for vibrating said vibratory member at high frequency comprising an unbalanced rotor mounted thereon with its axis horizontally, and means for clamping said vibratory member to a form comprising a form embracing cable.

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