April 29, 1941. C. JACKSON 2,239,785

TAMPING AND LIKE IMPLEMENT

Filed April 29, 1940 2 Sheets-Sheet 1

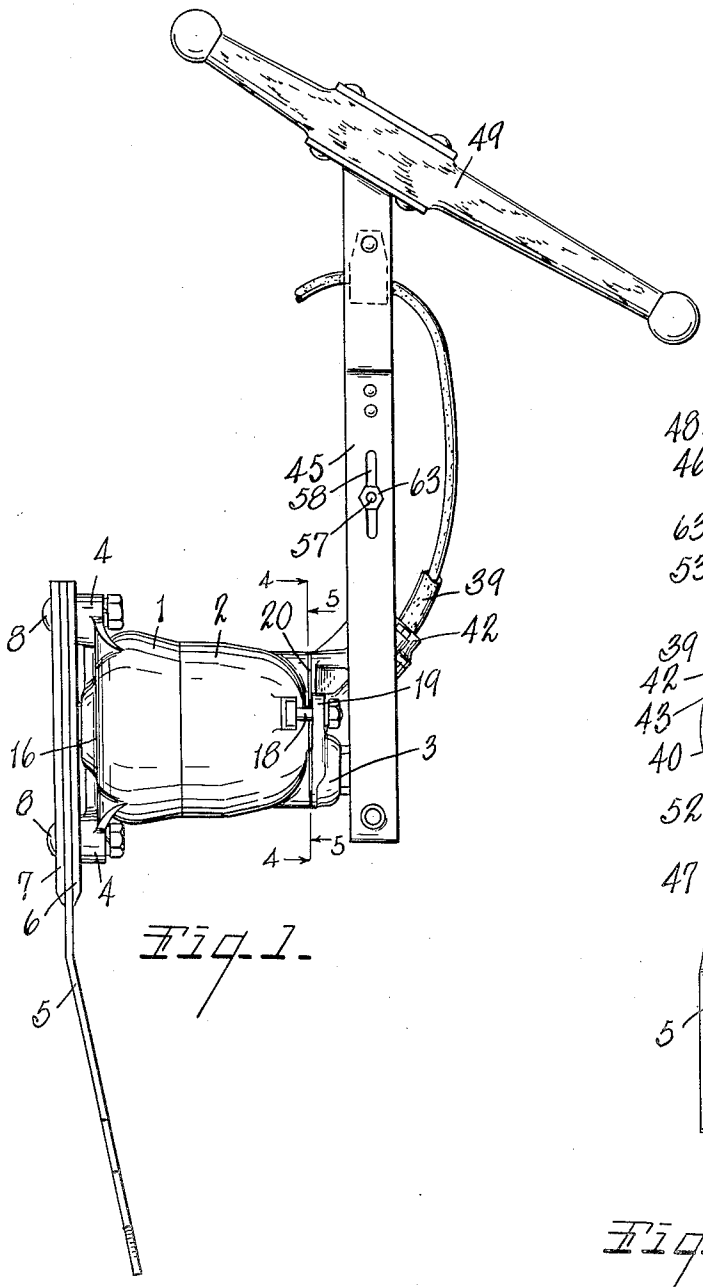


Fig. 1.

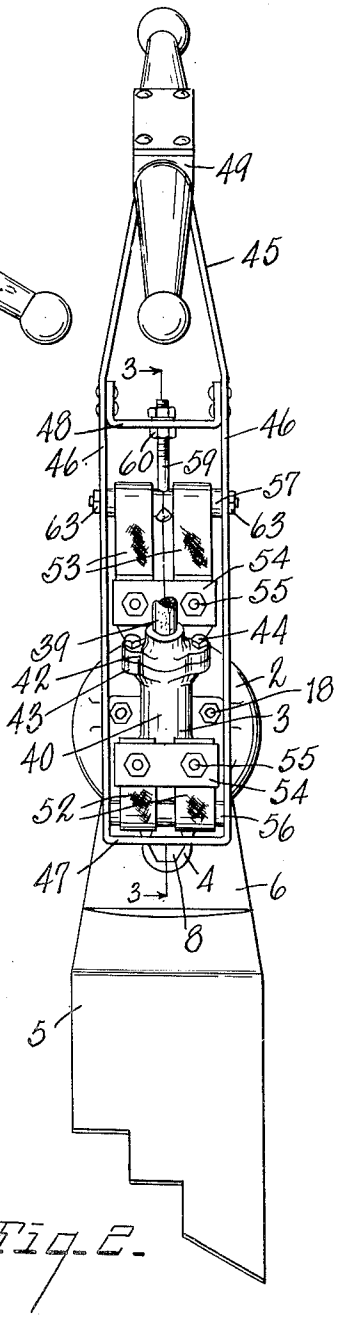


Fig. 2.

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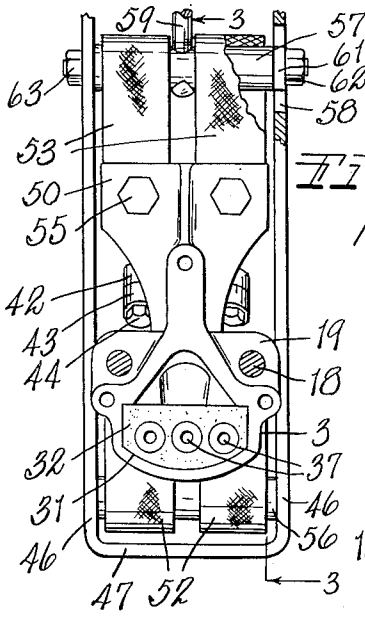


Fig. 4.

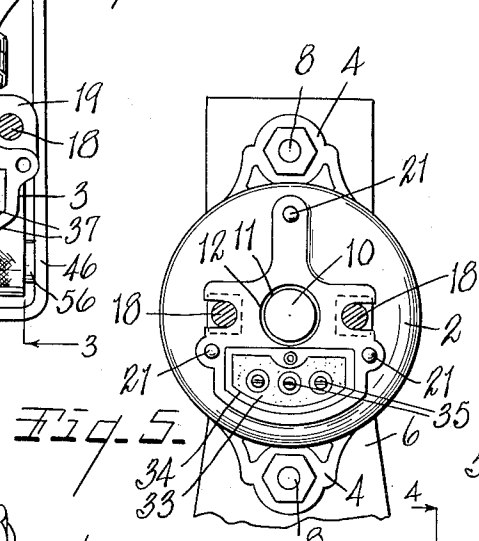


Fig. 5.

Fig. 3.

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Patented Apr. 29, 1941 2,239,785

UNITED STATES PATENT OFFICE

2,239,785

TAMPING AND LIKE IMPLEMENT

Corwill Jackson, Ludington, Mich.

Application April 29, 1940, Serial No. 332,253

14 Claims. (Cl. 259—1)

This invention relates to improvements in tamping and like implements.

The main objects of this invention are:

First, to provide a tamping implement adapted for the tamping of ballast in railway foundations and the like which is highly efficient and at the same time easy to manipulate.

Second, to provide a tamping or ballast working implement in which the parts are so formed and arranged that the implement may be used in tamping or working the ballast of railway beds with a minimum of likelihood of injury to the ties.

Third, to provide an implement of the class described in which the moving parts are effectively housed and at the same time readily accessible.

Fourth, to provide an electric powered implement of the class described in which the electrical connections are so made and housed as to minimize the likelihood of injury thereto in use and also to permit assembling and disassembling by relatively unskilled workmen.

Further objects relating 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 side elevation of a tamping or ballast working implement embodying the features of my invention.

Fig. 2 is a front elevation.

Fig. 3 is an enlarged fragmentary view partially in section on line 3—3 of Figs. 2 and 4.

Fig. 4 is a fragmentary view partially in section on line 4—4 of Figs. 1 and 3.

Fig. 5 is a fragmentary view in section on line 5—5 of Figs. 1 and 3.

My present invention relates to the type of vibratory tamper or ballast working implement illustrated in my Patents No. 1,537,304 dated March 12, 1925, and No. 2,741,240 dated December 31, 1929. The tamper blade or tool illustrated is of the type shown in my copending application Serial No. 280,394 filed June 21, 1939.

The embodiment of my invention illustrated in the accompanying drawings comprises a casing or housing of a general acorn shape and consists of a base section 1, an intermediate section 2 and a top section 3, the sections 1 and 2, however, constituting the housing for the electric motor. The section 1 is provided with projecting foot portions 4 to which the tamper blade or tool 5 is secured by means of the clamping plates 6 and 7, the shank of the blade being arranged between these clamping plates and clamped together therewith to the foot portions by means of the bolts 8. It will be noted that the base section has a shoulder or annular rabbeted recess 9 adapted to provide a seat for the intermediate section 2, the sections 1 and 2 at the joint being of the same external diameter or dimensions. The sections 1 and 2 are clamped together by means of the tie bolt 10, the head 11 of which is seated in a recess 12 provided therefor in the outer end of the intermediate section 2. The nut 13 is disposed in alined openings 14 provided in the clamping plate 6 and 7 and the blade, and is accessible through these openings. Packings 15 are provided for this bolt, the packing surrounding the opening in the bottom 16 of the bottom section 1 and the opening for the bolt in the top 17 of the intermediate section 2.

The top section 3 is detachably secured to the intermediate section 2 by means of bolts 18 arranged through ears 19 on the section 3. This section 3, as stated, does not constitute a part of the motor housing, proper, but provides the housing for certain of the electrical connections and a mounting for the handle, the electric cable and certain other parts as will appear from the description to follow.

A gasket 20 is provided for the joint between the sections 2 and 3 and in addition to the bolts 18 dowel pins 21 are provided to assist in securing and maintaining the parts. The parts thus arranged and connected provide a housing which is not only waterproof but also oil proof, preventing leakage of grease from the bearings.

The stator of the motor designated generally by the numeral 22 is fitted into the housing member 2 which is provided with a cylindrical portion 23 at its lower end so that the stator can be a supporting fit. The rotor indicated by dotted lines at 24 is provided with a tubular shaft 25 which is supported in roller bearings 26, the outer ball race members 27 of which are supported in inwardly projecting flanges 28 and 29 formed on the end walls of the housing sections 1 and 3, see Fig. 3. This provides for a very effective mounting of the rotor and it is provided with the unbalancing weight 30 at its lower end. It will be noted that a major portion of the unbalancing weight lies in the plane of the flange-like bearing support 28, or, in other words, overhangs this bearing support. This tends to center the vibratory action close to the tool.

It will also be noted that the bottom of the

housing section 1 is of considerable thickness, and owing to the fact that the diameter of the housing member 1 is substantially greater than the diameter of the main portion of the housing member 2, the center of gravity or the greatest volume of weight is at the bottom of the housing and close to the tool, which very materially increases the effectiveness of the tool as compared to a structure in which the center of gravity is midway of the housing.

A further advantage of the construction is that there are no projecting ears or parts such as are present in the structures of my above mentioned patents intermediate the housing which are likely to be brought into contact with a tie, for instance, chipping or breaking the tie, which is particularly objectionable where ties are creosote treated as it opens up the wood below the creosote penetration point. A further advantage of this placement of the weight makes the tool easier to handle.

The top section 3 is provided with a downwardly facing recess 31 adapted to receive an insulating block 32 which, when the parts are assembled, is in opposed relation to the insulating block 33 arranged in an outwardly facing recess 34 in the end wall 17 of the housing section 2, see Fig. 3. The block 33 carries terminals, one of which is illustrated at 35 in Fig. 3, for the motor connections 36. Sockets 37 are carried by the block 32, one of the sockets being shown in Fig. 3. These sockets are connected to the circuit wires 38 led to the machine through the cable 39. This cable is carried through a tubular extension 40 in the member 3 and is clamped thereto by the clamping means consisting of clamping ring 41 arranged in an annular recess formed between the clamp-members 42 and the enlarged and recessed end 43 on the extension 40, see Fig. 3. Bolts 44 are provided to secure these parts together and the cable is thus anchored so that it is not likely to be pulled out or the connections broken through careless or unskilled handling.

With this arrangement of parts the electrical connections are formed by merely bolting the housing member 3 to the housing member 2 as has been described, and, of course, they are broken when the housing member 3 is removed. The housing member 3 also provides for connecting the handle thereto.

The handle designated generally by the numeral 45 comprises a pair of spaced side members 46 which are provided with cross pieces 47 and 48. The outer ends of the side pieces are brought together for the attachment of the grip or handle bar 49.

The housing member 3 is provided with a pair of ears 50, 51 to which the flexible non-extensible belt-like handle supporting members 52 and 53 are secured by means of the clamps 54 and the clamping bolts 55. The ends of these supports are clamped to the housing member 3 and their bights passed around the cross pieces 56 and 57 on the handle. The cross piece 57 is adjustably supported in the slots 58 and is adjusted by the threaded rod 59 arranged through the cross piece 48 and adjustably secured by the nuts 60. This provides for tensioning the flexible handle supports. The tension should be adjusted to provide for convenient manipulation of the tool and at the same time to relieve the operator of undesirable vibration. This arrangement of the handle supports permits the positioning of the housing extension 40 between them. The arrangement of the support members 52 and 53 in pairs not only permits effective clamping, but the members 53 are spaced so that the adjustable rod 59 passes between them.

The cross piece 57 has flattened portions 61 which engage in the slot 58 to prevent rotation of this cross piece and also provide shoulders 62 so that the nuts 63 on the ends of the cross member may be adjusted to clamp the cross member in its adjusted positions. The cable 39 is passed between the handle side members above the cross piece 48 thereof so that it is effectively supported as the implement is manipulated in use.

My improved tamping element or ballast working implement is highly efficient in proportion to its weight, the center of weight or the center of gravity being located so that it effectively coacts with the vibrating means in imparting vibrating blows or impulses to the ballast. A further advantage is that there are no projecting parts on the housing which are likely to engage and injure a tie or other part being worked around, or to cause injury to the housing as might occur if projecting parts were to engage a rail. It will be understood that various types of blades or tools may be used and, as a matter of fact, one type of blade may be desirable for one type of work and another for another type of work. In my Patent No. 1,779,476 issued October 28, 1930, I have illustrated a blade which is highly desirable for certain types of work.

I have illustrated my invention in an embodiment which I have found highly satisfactory. I have not attempted to illustrate or describe other adaptations which are desirable as it is believed this disclosure will enable those skilled in the art to embody or adapt my invention 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 structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member being upwardly tapered and having a relatively thick bottom wall having a central inwardly projecting annular flange-like bearing support and laterally projecting foot portions, the bottom and intermediate members having a rabbeted joint, the intermediate member having a lower cylindrical portion and an upwardly tapered upper portion terminating in a top wall having a central inwardly projecting annular flange-like bearing support, a tie bolt disposed through the top and bottom walls, the top wall having a recess receiving the head of the bolt, the bolt extending through the bottom wall to receive a clamping nut, means for detachably securing the top housing member to said intermediate housing member, said housing members providing a housing of general acorn shape with a preponderance of the weight at the bottom thereof, the top and intermediate housing members having coacting disengageable electrical circuit connections which are engaged when said housing members are in assembled position, said top housing member being provided with means for clamping an electrical cable thereto, a motor stator seated in said cylindrical portion of said intermediate member, a rotor provided with a tubular shaft through which said tie bolt extends, bearings for said rotor carried by said bearing supports, an unbalancing weight on the

lower end of said rotor shaft overhanging the said bearing support on said bottom wall, a tool clamped to said foot members of said bottom housing member and provided with an opening affording access to the nut of said bolt, and a handle having a vibration absorbing connection to said top housing member.

2. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member having a central inwardly projecting annular flange-like bearing support, the intermediate member having a top wall having a central inwardly projecting annular flange-like bearing support, a tie bolt disposed through the top and bottom walls, means for detachably securing the top housing member to said intermediate housing member, the top and intermediate housing members having coacting disengageable electrical circuit connections which are engaged when said housing members are in assembled position, said top housing member being provided with means for clamping an electrical cable thereto, a motor stator mounted in said intermediate member, a rotor provided with a tubular shaft through which said tie bolt extends, bearings for said rotor carried by said bearing supports, an unbalancing weight on said rotor shaft overhanging the said bearing support on said bottom wall, a tool mounted on said bottom housing member, and a handle having a vibration absorbing connection to said top housing member.

3. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member being upwardly tapered and having a relatively thick bottom wall having a central inwardly projecting annular flange-like bearing support, the bottom and intermediate members having an interengaging joint, the intermediate member having a lower cylindrical portion and an upwardly tapered upper portion terminating in a top wall having a central inwardly projecting annular flange-like bearing support, means for detachably securing the top housing member to said intermediate housing member, said housing members providing a housing of general acorn shape with a preponderance of the weight at the bottom thereof, a motor stator seated in said cylindrical portion of said intermediate member, a rotor, bearings for said rotor carried by said bearing supports, an unbalancing weight on the lower end of said rotor shaft overhanging the said bearing support on said bottom wall, a tool mounted on said bottom housing member, and a handle having a vibration absorbing connection to said top housing member.

4. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member having a central inwardly projecting annular flange-like bearing support, the bottom and intermediate members having an inter-engaging joint, the intermediate member having a top wall having a central inwardly projecting annular flange-like bearing support, means for detachably securing the top housing member to said intermediate housing member, said housing members providing a housing of general acorn shape with a preponderance of the weight at the bottom thereof, a motor stator mounted in said intermediate member, a rotor, bearings for said rotor carried by said bearing supports, an unbalancing weight on the lower end of said rotor shaft overhanging the said bearing support on said bottom wall, a tool mounted on said bottom housing member, and a handle having a vibration absorbing connection to said top housing member.

5. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member having a central inwardly projecting annular flange-like bearing support, the bottom and intermediate members having an inter-engaging joint, the intermediate member having a top wall having a central inwardly projecting annular flange-like bearing support, means for detachably securing the top housing member to said intermediate housing member, said housing members providing a housing of general acorn shape with a preponderance of the weight at the bottom thereof, the top and intermediate housing members having coacting disengageable electrical circuit connections which are engaged when said housing members are in assembled position, a motor stator mounted in said intermediate member, a rotor, bearings for said rotor carried by said bearing supports, an unbalancing weight on the lower end of said rotor shaft overhanging the said bearing support on said bottom wall, a tool mounted on said bottom housing member, and a handle having a vibration absorbing connection to said top housing member.

6. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member being upwardly tapered and having a relatively thick bottom wall, the bottom and intermediate members having an inter-engaging joint, the intermediate member having a lower cylindrical portion and an upwardly tapered upper portion terminating in a top wall, a tie bolt disposed centrally through the bottom and intermediate members, means for detachably securing the top housing member to said intermediate housing member, a motor stator seated in said cylindrical portion of said intermediate member, an unbalanced rotor provided with a tubular shaft through which said tie bolt extends, a tool mounted on said bottom housing member, and a handle having a vibration absorbing connection to said top housing member.

7. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member and intermediate member having an interengaging joint, a tie bolt disposed centrally through the bottom and intermediate members, means for detachably securing the top housing member to said intermediate housing member, a motor stator mounted in said intermediate member, an unbalanced rotor provided with a tubular shaft through which said tie bolt extends, a tool mounted on said bottom housing member, and a handle having a vibration absorbing connection to said top housing member.

8. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member and intermediate member having an interengaging joint, a tie bolt disposed centrally through the bottom and intermediate members, means for detachably securing the top housing member to said intermediate housing member, said housing members providing a housing of general acorn shape with a preponderance of the weight at the bottom thereof, the top and intermediate housing members having coacting disengageable electrical circuit connections

which are engaged when said housing members are in assembled position, said top housing member being provided with means for clamping an electrical cable thereto, a motor stator mounted in said intermediate member, an unbalanced rotor provided with a tubular shaft through which said tie bolt extends, a tool mounted on said bottom housing member, and a handle having a vibration absorbing connection to said top housing member.

9. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom member having a relatively thick bottom wall and the bottom and intermediate members coacting to provide a motor housing, the housing members coacting to provide a structure of general acorn shape with a preponderance of weight at the bottom thereof, means for detachably securing the top member to said intermediate member, the top and intermediate members having coacting disengageable electric circuit connections which are engaged and disengaged by the assembling and disassembling of said housing members, an electric motor housed within said bottom and intermediate members including an unbalanced rotor within said housing, the unbalancing weight of said rotor being closely adjacent to the bottom wall of the bottom member, said bottom member being adapted to have a tool mounted thereon, and a handle connected to said housing.

10. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom and intermediate members coacting to provide a motor housing, means for detachably securing the top member to said intermediate member, the top and intermediate members having coacting disengageable electric circuit connections which are engaged and disengaged by the assembling and disassembling of said housing members, an electric motor housed within said bottom and intermediate members including an unbalanced rotor within said housing, said bottom member being adapted to have a tool mounted thereon, and a handle connected to said top housing.

11. In a structure of the class described, the combination of a housing comprising bottom, intermediate and top members, the bottom and intermediate members coacting to provide a motor housing, means for detachably securing the top member to said intermediate member, the top and intermediate members having coacting disengageable electric circuit connections which are engaged and disengaged by the assembling and disassembling of said housing members, an electric motor housed within said bottom and intermediate members including an unbalanced rotor, said bottom member being adapted to have a tool mounted thereon, and a handle connected to said housing.

12. In a structure of the class described, the combination with a sectional housing having an electrically driven vibrating unit housed therein and adapted to have a tool mounted on the lower end thereof, the top housing member having disengageable electrical connections in engagement when it is in assembled position, and a handle connected to said housing.

13. In a structure of the class described, the combination of a housing adapted for the mounting of a tool on the lower end thereof, an electrically driven vibrating unit housed within said housing, said housing comprising a detachable top member having an electric circuit cable secured through said detachable top section having electrical connections engaged when the top member is in assembled position, and a handle having a vibration absorbing connection to said top housing member.

14. In a structure of the class described, the combination of a motor housing having a vibrating unit housed therein, said housing having an angularly disposed extension adapted to receive an electric cable and provided with cable clamping means, a handle comprising spaced side members provided with cross pieces, one of said cross pieces being adjustable longitudinally of said side pieces, pairs of flexible non-extensible supporting straps looped around said cross pieces and clamped to said housing at opposite sides of said cable receiving extension, and threaded means for adjusting said adjustable cross piece and clamping it in its adjusted position.

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