July 10, 1956 H. D. BROWN 2,753,771

POWER TAMPER

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Fig. 1.

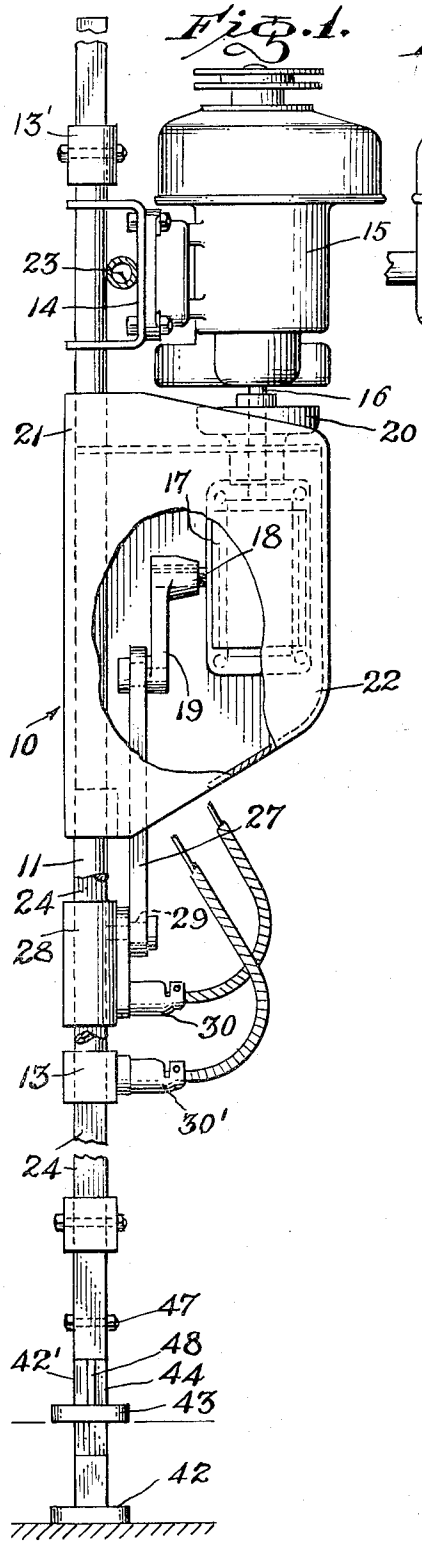


Fig. 2.

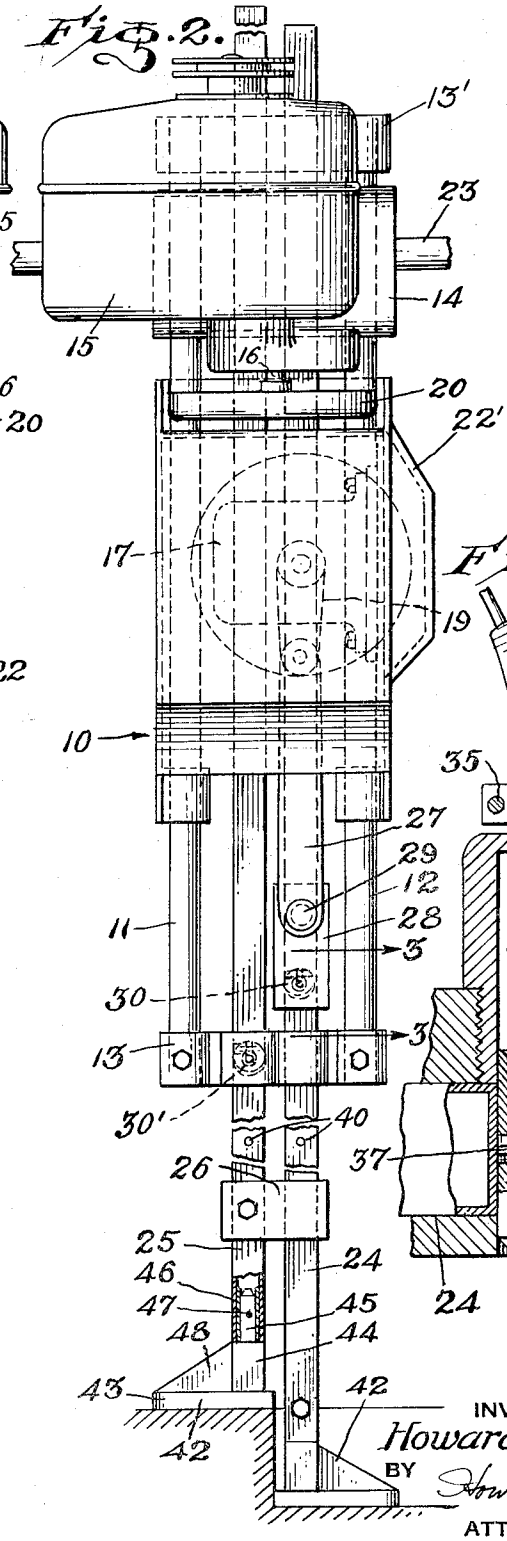
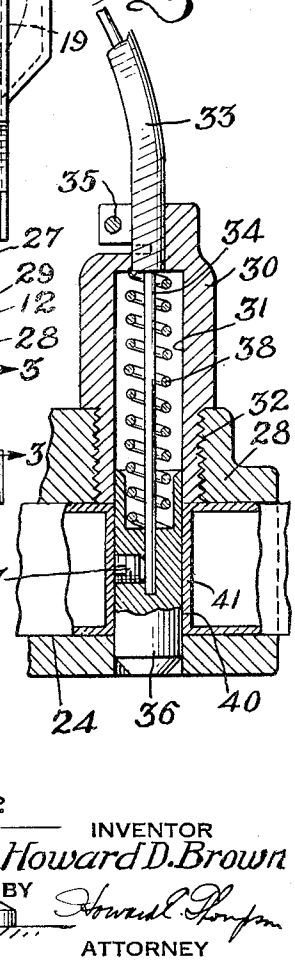


Fig. 3.



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POWER TAMPER

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4 Claims. (Cl. 94—49)

This invention relates to apparatus designed for use in tamping soil for the purpose of solidly packing the soil, particularly in the formation of holes for supporting posts, poles and the like. More particularly, the invention deals with an apparatus of the character described employing a pair of feed or tamper heads with means for positively actuating one of the heads and, wherein, both tampers are adjustable longitudinally with respect to the driving mechanism in control of the depth of operation of the apparatus.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a side view of a tamper made according to my invention, with parts of the construction broken away.

Fig. 2 is a face view of the structure as seen in Fig. 1; and

Fig. 3 is an enlarged sectional detail view on the line 3—3 of Fig. 2, the view being rotated 90°.

In practice, I provide a frame **10**, comprising a pair of rods **11** and **12** joined at the lower end portion by a cross-strap **13** and at the upper end portion by a transverse frame plate **14**, note Fig. 1. The plate **14** forms a support for an engine or motor **15**, the drive shaft **16** of which extends downwardly into a suitable transmission **17** having a crank shaft **18**, on which a crank **19** is mounted.

A suitable coupling **20** is provided between the shaft **16** and the transmission **17** and the transmission is supported in a frame **21** fixed to the frame rods **11** and **12**, the frame **21** including a suitable casing or housing, as at **22**, to enclose the drive mechanism.

Supported within the plate **14** is a transverse handle rod **23**, by means of which the apparatus can be manipulated and on the handle rod or member will be controls for regulating the shifting of the two tamper rods **24** and **25**, as later described.

The rods **24** and **25** have bearings in the members **13** and **14** and fixed to the stationary rod **25** is a guide and bearing collar **26**, in which the tamper rod **24** is slidably mounted.

At **27** is shown a link, placing the crank **19** in operative engagement with the rod **24**, the link **27** being pivoted to a bushing portion **28** on the rod **24**, as seen at **29**. The bushing **28** also carries a key pin mechanism **30**, another of which is shown at **30'**, the latter being mounted in the cross-strap **13** of the frame. As both mechanisms or devices **30**, **30'** are of the same construction, the brief description of one will apply to both and the mechanism or device **30** is shown in enlarged detail in Fig. 3 of the drawing and comprises a tubular body **31** having a threaded extension **32** coupled with the bushing **28**. A flexible housing **33** for a flexible shaft **34** is clamped to the outer end of the sleeve **31**, as at **35**, and the shaft is fixed to

a key plug or pin **36** as by a set screw **37**. A spring **38** is mounted in the sleeve **31** and seats in a recessed portion of the key pin and normally extends the same into operative position to pass through a transverse aperture **40** in the rod **24**. The rod **24** is tubular in form and the aperture **40** is reinforced and partially formed by a lining tube **41** which traverses the rod **24**.

It will be apparent that a series of the apertures **40** are spaced longitudinally of the broken away portion of rod **24** and also longitudinally of the broken away portion of rod **25** and these rods are preferably square in cross-sectional form, so as to prevent rotation thereof. The apertures **40** are employed to adjust the extension of the rods **24** and **25** with respect to the frame **10**. In other words, this adjustment compensates for the depth of the base of a hole being tamped.

It will be apparent, from a consideration of Fig. 2 of the drawing, that the housing **22** is extended, as seen at **22'**, in order to give clearance for the full throw of the crank **19** in the drive of the tamper **24**. Suitable hand controls will be provided on the handle member **23** for actuating the flexible shafts **34** of the two devices **30**, **30'** so as to withdraw the pin **36** of each device in the operation of raising or lowering the rods **24** and **25**. These rods project from the upper end of the apparatus to the length which will adapt the apparatus to any specific use.

Fixed to the lower end portions of each rod **24**, **25** is a tamper head or foot **42**, **42'** and, here again, as the two heads, or feet, are of the same construction, the brief description of one will apply to both. The head or foot **42'** will be described in detail and comprises a substantially rectangular base plate **43** with an upstanding cylindrical portion **44** at one end, the latter having a reduced pin **45** which fits in a liner sleeve **46** welded or otherwise secured in the lower end portion of the rod **25** and a transverse bolt **47** is employed to detachably couple the head or foot for repair or removal, as and when required. The head or foot is reinforced by a web **48** extending between the far end of the plate **43** to the cylindrical portion **44**, as clearly shown in Fig. 2 of the drawing.

In the use of the tamper in tamping soil for any purpose and, particularly, in tamping ground in the formation of and setting posts, poles and the like, it will be apparent that the stationary foot **42'** is supported on the ground, while the vertically reciprocating or tamping foot **42** is actuated to pack the soil and it will also be apparent that, in this operation, the rebounding action on the apparatus is transmitted to the stationary foot and this foot, by virtue of the weight of the apparatus, will tamp the soil to a reasonable degree and, from time to time, the apparatus can be shifted to tamp a given area which may be the area of a hole to be formed, or the area of ground around any given point or section. It will also be understood that the stroke motion of the tamper may be varied by the particular drive employed and, by virtue of the construction and mode of operation, efficient tamping operations can be performed with a minimum amount of vibratory action transmitted to the apparatus as a whole, thus substantially dispensing with the objectionable vibrations which are transmitted to an operator. In this connection, it will be understood that the principles of the apparatus can be utilized in the performance of any type and kind of operation, wherein a reciprocating member is employed to act upon a surface and, in all cases, the stationary or supporting foot is employed to support the apparatus, while the reciprocated member actuated upon the surface.

To illustrate the function of the apparatus, let us assume that the stroke of drive of the rod **24** is four inches and, in performing its working operation, it only

penetrates the object such, for example, as soil, for two inches. In the remaining two inches, the entire apparatus would be raised, including the rod 25 and, in the downward stroke, the rod 25 is driven by the recoil action, including the weight of the apparatus, to force the ground downwardly and, in this last operation, the rod 24 is raised by the crank, thus lifting the rod 24 from the previously engaged surface. In actual practice, it has been found that substantially each blow of the rods 24 and 25 would be the same in the action upon the surface being worked upon. In some instances, and where the surface is hard, the downward movement of 24 would be slight and, accordingly, the upward movement of the apparatus, including the rod 24, would be great; thus producing a greater downward impact of 25 on the surface. To illustrate, if 24 penetrates the surface to the extent of ½", then 25 would be raised 3½", or substantially so. If the ground or surface should be very soft, the degree of this latter upward movement would vary but, in such instance, the stroke of the rod 24 is, of course, materially greater and might be as much as 3½".

It will appear from a consideration of Figs. 1 and 2 of the drawing that the frame 10 also includes, at the upper portion thereof, a cross-strap 13', generally similar to the strap 13, with the exception that the key pin mechanism, as at 30', is dispensed with. The rods 24 and 25 will have a bearing support in the upper strap 13'.

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

1. An apparatus of the character described, comprising an elongated frame, a pair of elongated parallel rods arranged in juxtaposition in and extending beyond said frame, means adjusting the position of one of said rods longitudinally in the frame, said rod being supported by the frame, a drive unit supported in the frame, a crank driven by said unit, a connecting rod coupling said crank with a bushing on the other of said rods to actuate said rod longitudinally of the frame, means for adjusting position of the second named rod in said bushing, each of said rods supporting, at one end, a foot, said feet being adapted to engage a surface actuated upon, and said frame including a handle member.

2. An apparatus of the character described, comprising an elongated frame, a pair of elongated parallel rods arranged in juxtaposition in and extending beyond said frame, means adjusting the position of one of said rods longitudinally in the frame, said rod being supported by the frame, a drive unit supported in the frame, a crank driven by said unit, a connecting rod coupling said crank with a bushing on the other of said rods to actuate said rod longitudinally of the frame, means for adjusting position of the second named rod in said bushing, each of said rods supporting, at one end, a foot, said feet being adapted to engage a surface actuated upon, said frame including a handle member, the drive unit of said crank comprising an engine, and means supporting the engine on the frame above said crank.

3. An apparatus of the character described, comprising an elongated frame, a driving unit, means at one end portion of the frame for supporting the driving unit on the frame, a pair of elongated closely arranged parallel rods, said rods having feet at one end, means adjusting and fixing the position of one rod longitudinally in said frame, said rod being supported by the frame, a drive mechanism supported on the frame and actuated by said driving unit, means coupling said mechanism with the other of said rods, said last named means including a bushing on the second named rod, said second named rod being movable longitudinally in said bushing, means for adjusting the coupling of said bushing with the second named rod, and said first named rod having a bearing portion spaced from the frame, in which the second named rod is slidably mounted.

4. A tamping apparatus of the character described, comprising a frame, an elongated member mounted in and projecting from said frame for supporting the frame on a surface to be tamped, an elongated tamper rod arranged in the frame in close parallel relationship to said member, the lower end of said rod having a tamper head adapted to engage a surface adjacent the surface on which the apparatus is supported by said member, driving means supported on the frame and in operative engagement with said tamper rod to reciprocate said rod in the frame toward and from the surface to be tamped, said member being supported by and adjustable longitudinally of the frame to control position of the apparatus with respect to the surface to be tamped, a manually controlled pin fixing position of the member in the frame, said driving means including a bushing on said rod and in which said rod is longitudinally moveable, and means for adjustably coupling said tamping rod with said bushing to compensate for adjustment of the member in said frame.

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