July 8, 1969 R. F. HOLTZ 3,454,113

ADAPTER FOR DRIVING POSTS BY MEANS OF A POWER HAMMER

Filed June 12, 1967 Sheet 1 of 2

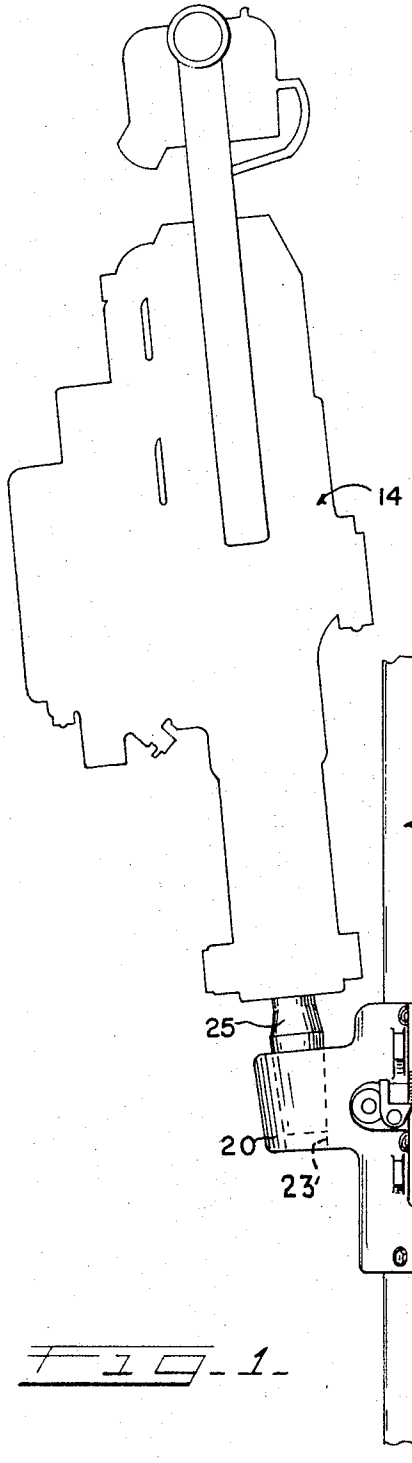


FIG. 1

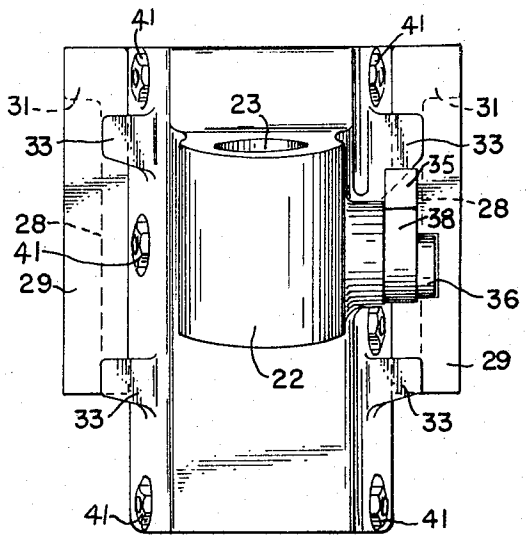


FIG. 3

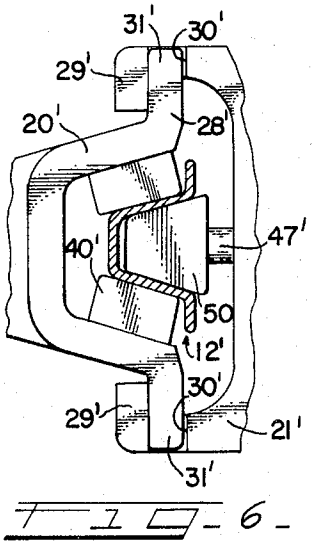


FIG. 6

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ADAPTER FOR DRIVING POSTS BY MEANS OF A POWER HAMMER

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FIG. 2

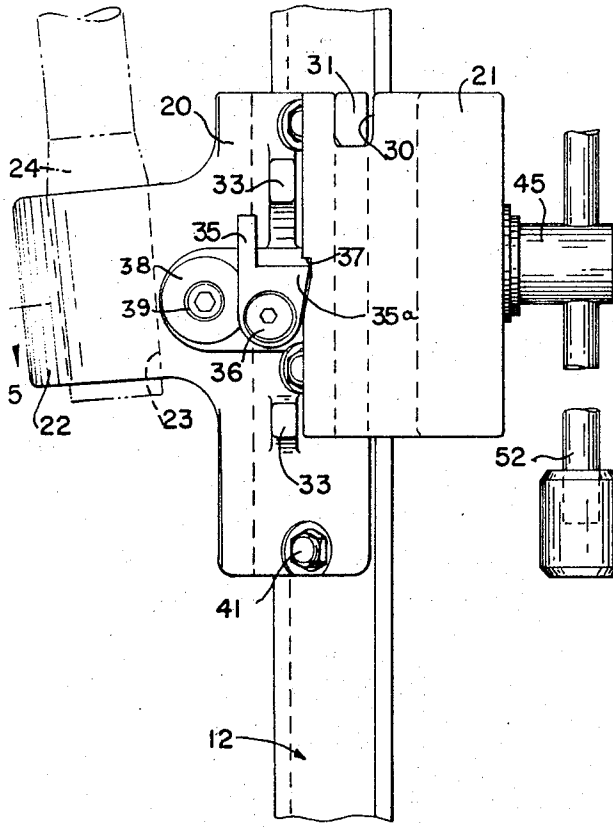
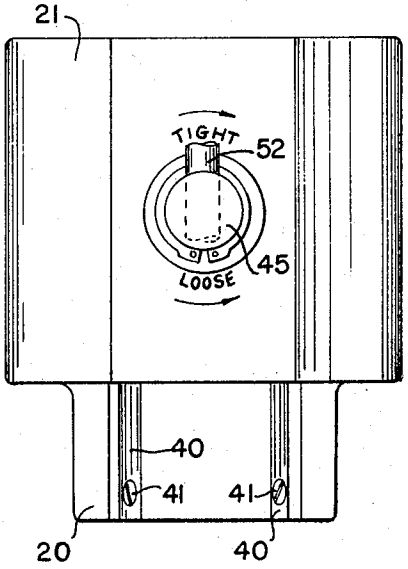


FIG. 4



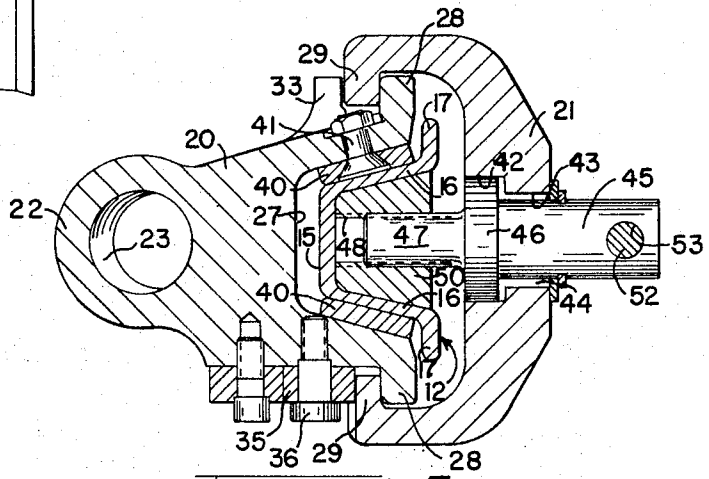


FIG. 5

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3,454,113

ADAPTER FOR DRIVING POSTS BY MEANS OF A POWER HAMMER

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Int. Cl. E21c *11/00;* B25d *17/28*
U.S. Cl. 173—129 4 Claims

ABSTRACT OF THE DISCLOSURE

The adapter consists of a body having relatively movable surfaces for releasable gripping engagement with a sign post of the type having a hat-shaped cross-section. Manually operated screw means are provided for moving the surfaces toward and away from each other thereby to position the adapted body at any location along the sign post and quickly to reposition the device along the post as the same is driven into the earth. The body includes a bore for receiving one end of a tool element extending into a power hammer for being impacted by the striker thereof.

BACKGROUND OF THE INVENTION

At the present time, roadway sign posts, which are usually of hat-shaped cross-section, are driven into the earth either by complicated machinery including a heavy striker member which strikes the post at the upper end thereof or by means of a heavy weight which is suspended by a cable and which is actually allowed to drop onto the top of the post thereby to force the same into the earth. The large machinery just referred to is expensive and is time consuming and awkward to operate along roadways, and therefore has obvious disadvantages. Use of the heavy weight just referred to also involves rather cumbersome equipment and presents some danger to the workmen who guide the posts into the ground. This weight may slide or deflect off the upper end of the post and strike the workmen. Accordingly, there is a need in the art to provide an inexpensive, lightweight, and readily portable adapter to permit driving of these posts into the earth by means of portable power hammers which are in widespread use and which may be of the pneumatic type or internal combustion engine type shown, for example, in Naslund U.S. Patent No. 3,114,423 and Bard et al. U.S. Patent No. 3,012,549 respectively.

OBJECTS OF THE INVENTION

The invention may be summarized as relating to a device for clamping to a post at any point along the length of the latter thereby to adapt a power hammer to drive such post into the earth. The device includes a body having relatively movable surfaces for gripping engagement with the post, the gripping force being completely independent of movement of either of these surfaces relative to the post axially thereof, thereby to prevent binding of the device with the post and thereby facilitating easy release of the device from the post. The device is particularly adapted for driving a post of the type having a hat-shaped cross-section.

A primary object of the invention is the provision of a device for adapting a portable power hammer to drive a post into the earth.

Another object of the invention is the provision of a device of the type described having means for releasable gripping engagement with a post at any location along the length thereof, thereby permitting driving of the post by engaging the same at a location adjacent ground level.

Still another object of the present invention is the provision of a device of the type described having mechanism adapting the device for being quickly and readily brought into gripping engagement with the post at any location along the length thereof and for quickly changing or adjusting the position or location at which the device grips the post.

Another object of the present invention is the provision of a device according to the foregoing objects and which is of lightweight and inexpensive construction.

These and other objects and advantages of the invention will become apparent from the following specification disclosing a preferred embodiment illustrated in the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the adapter device according to the present invention, showing the same in gripping engagement with a hat-shaped sign post and also engaged with the tool member of a gasoline powered hammer;

FIG. 2 is an enlarged side elevational view of the adapter shown in FIG. 1;

FIG. 3 is an end elevational view showing only the adapter device itself;

FIG. 4 is an end elevational view of the adapter device itself; showing the end opposite the end shown in FIG. 3;

FIG. 5 is a section taken along the line **5—5** of FIG. 2; and

FIG. 6 is a section similar to FIG. 5 but showing the device adapted for gripping engagement with a sign post having a cross-sectional size different from the size of the post shown in FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIG. 1 and by way of brief introduction, the adapter device according to the present invention, generally designated **10**, is adapted for releasable gripping engagement with a post, such as a roadway sign post **12**, at any location along the length thereof, for adapting a power hammer **14** to drive the post into the earth. The power hammer **14** may be of the type disclosed and claimed in Bard et al. Patent No. 3,012,549, although it will be understood that the adapter of this invention is not to be limited to any particular form or type of power hammer. The sign post **12**, the cross-section of which is best illustrated in FIG. 5, is in widespread use and is referred to as a "hat" section post. The post consists of a bight portion **15**, side flange portions **16** and outwardly extending end flange portions **17**.

The adapter **10** includes two main body parts or castings **20** and **21** which are adapted for being quickly engaged and disengaged from each other as will be explained hereinbelow. The body part **20** includes an integral formation **22** having a frusto-conical bore **23** adapted to receive the complementary shaped end **24** of an elongated tool member **25** which extends into the power hammer **14** for being impacted or struck by the piston or striker therein. The body part **20** includes a cavity **27** bordered by a pair of outwardly extending flanges **28** which extend for the full length of the part **20**.

The body part **21** is generally U-shaped in cross-section and includes inwardly extending flanges **29** for engagement with the flanges **28** on the body part **20**. The part **21** includes two oppositely disposed notches **30** in the upper edge thereof, which notches receive, respectively, a pair of ears **31** integral with the flanges **28** and extending outwardly therefrom at the upper end of such flanges. Two pairs of integral lugs **33**, one pair on each side of the body part **20**, aid in holding the two body

parts in alignment during engagement as will be explained hereinbelow. Body part **20** includes a latch **35** releasably held by a fastener **36**. This latch has a corner portion **35***a* adapted to be received within a notch **37** formed in the adjacent flange **29** for preventing downward movement of the part **21** relative to the part **20**. A rubber ring **38** secured to the part **20** by a fastener **39** urges the latch **35** in a clockwise direction about the fastener **36**.

As noted in FIG. 5, when the body parts **20** and **21** are arranged with respective flanges **28** and **29** in engagement with each other, such parts define an open ended chamber for receiving the sign post **12** therein. The part **20** includes a pair of shim plates **40** for frictional engagement with the outer surfaces of the flange portions **16** of the sign post. Such shim plates are detachably secured to the part **20** by a plurality of fasteners **41**.

The body part **21** includes a central through bore **42** having a coaxial, reduced-in-diameter portion **43** mounting a bearing sleeve **44** which in turn journals a shaft **45**. The shaft includes an enlarged portion **46** received within the bore **42**, and a coaxial, reduced-in-diameter portion **47** which is externally threaded and in threading engagement with a threaded bore **48** in a wedge member **50**. The wedge member **50** is shaped for snug gripping engagement with interior surfaces of the post **12**. The shaft **45** is manually rotated by a handle **52** received within a cross bore **53** in the outer end of the shaft. Obviously, rotation of the shaft in one direction causes the wedge **50** to be pressed against the interior surfaces of the post **12**, whereas rotation of the shaft **45** in the opposite direction withdraws the wedge from the post. Indicia may be provided on the body part **21**, as indicated in FIG. 4, to indicate the direction the shaft **45** should be rotated to accomplish the result desired.

In operation, a workman holds the sign post **12** in a vertical position over the location in which it is to be driven into the earth. Another workman holds the body part **20** with the shim plates **40** in engagement with the outer surfaces of the post **12** and then holds the body part **21** on the other side of the post **12** but at a location lower than the body part **20**. Upward movement of the body part **21** relative to the part **20** (or lowering of the part **20** relative to the part **21**) will bring the flanges **28**, **29** into inner engagement. The lugs **33** aid in guiding the parts **20**, **21** in opposite relative directions along parallel paths. This relative movement between the two body parts is continued until the ears **31** are received in the notches **30**. As this occurs, the rubber member **38** will force the latch corner portion **35***a* into the notch **37**. Now, further relative movement between the parts **20**, **21** in a direction parallel with the post **12** is prevented. Next, the handle **52** is manipulated for rotating the shaft **45** to bring the wedge **50** into snug gripping engagement with the sign post **12** thereby forcing the same snugly against the shim plates **40**. The adapter **10** will now be in tight gripping engagement with the sign post **12**. Preferably, the adapter device will be gripped to the post at a location rather near the surface of the earth in order to minimize bending of the sign post **12** and to facilitate operation of the portable power hammer.

The end **24** of the tool member **25** is inserted in the bore **23**, whereupon operation of the power hammer **14** will result in the post being driven into the earth by a series of impact blows. The bore **23** is substantially parallel with the post and therefore the impact blows are transferred to the post substantially longitudinally thereof and of course in a downward direction. As soon as the adapter **10** approaches the surface of the earth, the handle **52** is rotated for releasing the wedge **50**, whereupon the device **10** is repositioned on the post **12** at a higher location. The power hammer **14** is again operated until the post is driven a further distance bringing the adapter **10** adjacent the surface of the earth, whereupon the adapter is released and readjusted for another cycle of operation.

The adapter device of the present invention can be readily adapted to accommodate hat-shaped sign posts of different cross-sectional sizes. As noted in FIG. 6 (wherein the parts which correspond to the embodiment just described are indicated by the prime form of numeral), if a smaller sized post **12′** is to be driven, thicker shims **40′** are employed, and a smaller wedge **50′** is used. The shims and wedge are readily detachable and may be provided in a variety of sizes and shaped to accommodate many different sizes of posts.

It should be apparent that the present invention provides a unique device for adapting a power hammer to drive a post into the earth. Initial engagement of the adapter device with the post is made easy, and in this respect it will be noted it is unnecessary to slip the device over one end of the post. The adapter device may be readily positioned on the post in gripping engagement therewith at any location therealong. Further, the adapter device may be gripped to the post at a location thereon adjacent the surfaces of the earth thereby minimizing the possibility of bending of the post and making it easy for an operator to handle and manipulate the power hammer with the working tool thereof in engagement with the adapter device. The adapter device may be readily converted for accommodating sign posts of different size in cross-section. Complete disengagement of the adapter from the post is made easy as it is only necessary to deflect the latch **35** counterclockwise against the rubber ring **38** and then slide the body parts **20**, **21** away from each other.

While the invention has been shown in but one form, it will be obvious to those skilled in the art it is not to be so limited. On the contrary, the invention is susceptible of various forms and modifications without departing from the spirit and scope of the appended claims.

I claim:

1. A device for adapting a power hammer to drive a post into the earth, said device comprising, a body having at least two relatively movable surfaces for releasable gripping engagement with a post at any location along the length thereof thereby to mount the device on the post, means for forcing said surfaces against the post thereby to grip the latter, said surfaces being arranged to apply such gripping force independently of movement of either of the surfaces relative to the post axially thereof, said means being adapted to release said surfaces from the post thereby to relocate the device along the post, and said body having a formation for receiving impact blows from said hammer and for transferring such blows to the post substantially longitudinally thereof in a downward direction.

2. A device for adapting a power hammer to drive a post into the earth, which post is of the type having a hat-shaped cross-section, the device comprising, a body including two sets of surfaces for releasable gripping engagement with the post at any location along the length thereof, thereby to mount the device on the post, one set of surfaces being on one body part and being arranged for gripping engagement with exterior surfaces of the post, and the other set of surfaces being on another body part and being arranged for gripping engagement with interior surfaces of the post, one of said sets of surfaces being mounted for movement relative to the associated body part, means for moving said last mentioned set of surfaces toward and away from the post thereby to adapt the device to grip the post and to relocate the device along the post, and said body having a formation for receiving impact blows from said hammer and for transferring said blows to the post substantially longitudinally thereof in a downward direction.

3. The device according to claim **2** wherein said body parts are detachable and wherein said sets of surfaces define an open ended chamber for receiving a post to be driven.

4. A device for adapting a power hammer to drive a post into the earth, which post is of the type having a hat-shaped cross-section, said device comprising a body including at least two detachable parts which define an open ended chamber for receiving a post to be driven, one of said parts carrying fixed surfaces for gripping engagement with the post, the other of said parts carrying surfaces movable relative thereto for gripping engagement with the post, means on the other part for moving the surfaces thereof toward and away from the post thereby adapting said device for releasable gripping engagement with the post at any location along the length thereof, and said body having a formation for receiving impact blows from said hammer and for transferring such blows to the post substantially longitudinally thereof in a downward direction, said fixed surfaces being arranged for gripping engagement with exterior surfaces

of such post and said relatively movable surfaces being arranged for gripping engagement with interior surfaces of such post.

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U.S. Cl. X.R.

173—130