Aug. 21, 1951 F. TAMBORELLO 2,565,279

ELECTRIC HAMMER

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Fig. 1.

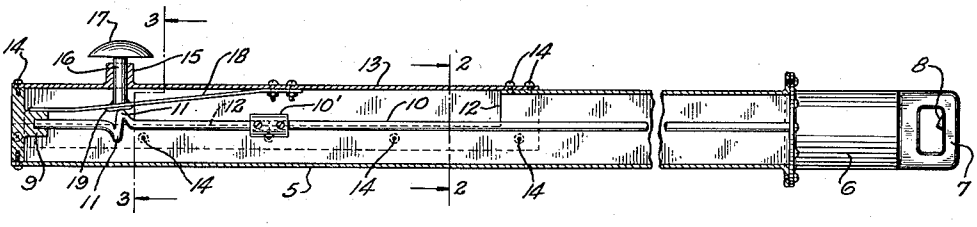


Fig. 2.

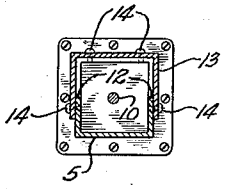
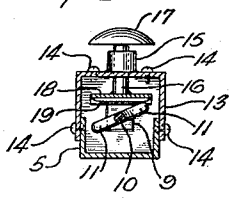


Fig. 3.



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ELECTRIC HAMMER

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5 Claims. (Cl. 153—48)

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This invention relates to improvements in electric hammers.

Electric hammers as heretofore developed have been very useful and labor saving devices. They have not, however, been usable in many applications because of the bulkiness of said devices which prohibited their use in limited or in constricted spaces. Prior electric hammers have been of complicated construction and have used coil springs in conjunction with the hammer plungers thereof. Coil type springs necessarily resulted in bulkiness of the complete hammer assemblage.

It is a general object of the present invention to provide an electric hammer which is of such shape that it is adapted for use in constricted places which were heretofore inaccessible for conventional electric hammers.

A further object of the invention is to provide an electric hammer of the class described which has a body section of relatively small cross-sectional size.

A further object of the invention is to provide a hammer of the class described which reduces operation fatigue by reason of having relatively few working parts at the hammer plunger end thereof.

A further object of the invention is to provide a hammer of the class described which is particularly well adapted for auto body and fender work by reason of its being provided with an elongated supporting housing or body.

A further object of the invention is to provide a hammer of the class described which employs a band spring in conjunction with the hammer plunger, rather than a coil spring.

A further object of the invention is to provide a hammer of the class described which is so constructed that the hammer plunger and the band spring coacting therewith can be quickly removed from the assembly by removing a readily removable cover for a portion of the hammer housing.

A further object of the invention is to provide a hammer of the class described having an elongated drive shaft formed with a double cam portion adjacent one end, said cam portion drivingly engaging a hammer plunger which extends at substantially a right angle thereto.

A further object of the invention is to provide a hammer of the class described wherein the drive shaft cams each engage different portions of the hammer plunger.

A further object of the invention is to provide an electric hammer of the class described which is simple in construction, easy and inexpensive to manufacture, and which is otherwise well adapted for the purposes described.

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With the above and other objects in view, the invention consists of the improved electric hammer and all of its parts and combinations, as set forth in the claims and all equivalents thereof.

In the drawing accompanying and forming a part of this specification wherein is shown one complete embodiment of the preferred form of the invention, and wherein the same reference characters indicate the same parts in all of the views:

Fig. 1 is a side elevational view of the improved hammer with parts broken away and shown in longitudinal vertical section;

Fig. 2 is a transverse vertical sectional view taken approximately along the line 2—2 of Fig. 1; and

Fig. 3 is a transverse vertical, sectional view taken along the line 3—3 of Fig. 1.

Referring more particularly to the drawing, the numeral 5 indicates an elongated tubular housing or supporting member having connected to one end thereof, as by the flanged connection shown, an electric motor 6. The motor 6 is formed with a manually engageable handle 7 which may be provided with a trigger type electric switch 8 for controlling the motor operation.

At the opposite end of the housing 5 is fixed a shaft bearing 9 in which is rotatably supported one end of an elongated drive shaft 10 which projects from and is driven by the motor 6. Adjacent the end thereof mounted in the bearing 9, the shaft 10 is formed with one or more cams 11, preferably as shown. The drive shaft 10 may be formed of two sections which may be connected by a coupling 10'.

The housing 5 has a cut-away upper portion 12 extending from a point intermediate its length to the end adjacent the bearing 9, as shown. A cover 13, having a generally U-shaped cross section, is removably connected to the housing 5 and fits over the cut-away portion 12 thereof, there being suitable connecting means, such as screws 14 for making said connection.

The cover 13 is formed with a bearing sleeve or boss 15 adjacent the cams 11 of the shaft 10. A hammer plunger 16 is slidably positioned in the bearing boss and is formed with an external head 17. Removably fixed at one end to an intermediate upper portion of the cover 13 is a cantilever leaf or band spring 18 which extends angularly toward the bearing 9 and rests thereon as shown. The spring 18 is preferably welded to the inner end of the hammer plunger 16, as shown, and is provided on its opposite side with an integral metallic pad 19 having an arcuate surface which is held by said spring in contact

with the cams 11 of the drive shaft 10. The hammer plunger 16, the pad 19 and the spring 18, therefore, form a single unit, and the pad 19, in effect, acts as the head of the plunger 16 for engagement by the cams 11.

In operation, as the drive shaft 10 is rotated, one of the cams 11 pushes the hammer plunger 16 outwardly and also thereby deflects the spring 18. As the cam 11 continues to rotate, it moves away from the pad 19 and permits the spring 18 to retract the hammer 16. Upon such retraction, the other cam 11 engages the pad 19 and pushes it outwardly for the next oscillatory movement.

The improved hammer, by reason of its small cross-sectional size, is well adapted for use in many places where only a limited amount of working space is available. By removing the cover 13, the hammer plunger and the spring 18 are simultaneously removed therewith, thereby facilitating quick inspection or replacement of said parts.

The elongated shape of the housing 5 permits the improved hammer to be used by one operator in many applications where formerly two operators were required. For example, in auto fender work, the operator can hold the hammer against the under side of the fender and observe the work as it progresses from the upper side. With conventional hammers it is frequently necessary for the auto wheels to be removed and for one operator to be underneath the fender to hold the hammer while a second workman observes the progress of the work from the upper or outer side of the fender.

The likelihood of failure of the hammer plunger is greatly reduced in the improved hammer due to the fact that each of the cams 11 does not engage the same point on the pad 19. Frictional heat which may cause hammer plunger failure is thereby greatly reduced.

Various changes and modifications may be made without departing from the spirit of the invention, such as changes in the specific structural association of the plunger 16 with the spring 18 and the cams 11, and all of such changes are contemplated as may come within the scope of the claims.

What I claim is:

1. In an electric hammer, an elongated tubular housing having a cut-away upper portion adjacent one end; an elongated longitudinally extending cover for said cut-away portion removably connected to said housing, a drive shaft extending longitudinally of and rotatably supported in said housing; a hammer plunger, said cover having means for slidably supporting said plunger at an angle to said drive shaft; at least one cam on said drive shaft engageable with said plunger to cause axial movement of the latter upon rotation of said shaft; and a leaf spring connected to said cover and extending longitudinally of the housing for urging said plunger into engagement with said cam.

2. In an electric hammer, an elongated tubular housing having a cut-away upper portion adjacent one end; an elongated longitudinally extending removable cover for said cut-away portion connected to said housing, a drive shaft extending longitudinally of and rotatably supported in said housing; a hammer plunger, said cover

having means for slidably supporting said plunger at an angle to said drive shaft; at least one cam on said drive shaft engageable with said plunger to cause axial movement of the latter upon rotation of said shaft; and a leaf spring connected to said cover and extending longitudinally of the housing and integral with said plunger for urging said plunger into engagement with said cam.

3. In an electric hammer: an elongated tubular housing having a cut-away portion adjacent one end; a cover for said cut-away portion removably connected to said housing; a sectional drive shaft extending longitudinally of and rotatably supported in said housing, said housing cut-away portion being of sufficient length to provide for removal of one of said drive shaft sections therethrough; an axially slidable hammer plunger carried by said removable cover at an angle to said drive shaft; at least one cam on the removable section of said drive shaft and engageable with said plunger to cause axial movement of the latter upon rotation of said shaft; and a leaf spring carried by said removable cover and extending longitudinally of the housing for urging said plunger into engagement with said cam.

4. In an electric hammer: an elongated tubular housing having a cut-away portion adjacent one end; a cover for said cut-away portion removably connected to said housing; a sectional drive shaft extending longitudinally of and rotatably supported in said housing, said housing cut-away portion being of sufficient length to provide for removal of one of said drive shaft sections therethrough; an axially slidable hammer plunger carried by said removable cover at substantially a right angle to said drive shaft; at least one substantially U-shaped cam formed on the removable section of said drive shaft and engageable with said plunger to cause axial movement of the latter upon rotation of said shaft; and a leaf spring carried by said removable cover and extending longitudinally of the housing for urging said plunger into engagement with said cam.

5. In an electric hammer: an elongated tubular housing having a cut-away portion adjacent one end; a cover for said cut-away portion removably connected to said housing; a sectional drive shaft extending longitudinally of and rotatably supported in said housing, said housing cut-away portion being of sufficient length to provide for removal of said drive shaft sections therethrough; an axially slidable hammer plunger carried by said removable cover; at least one substantially U-shaped cam formed on the removable section of said drive shaft and engageable with said plunger to cause axial movement of the latter upon rotation of said shaft; and a leaf spring carried by said removable cover and extending longitudinally of the housing and integral with said plunger for urging said plunger into engagement with said cam.

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