April 12, 1966 C. L. WILLIAMS ETAL 3,245,482

PILE DRIVING HAMMERS

Filed June 21, 1963

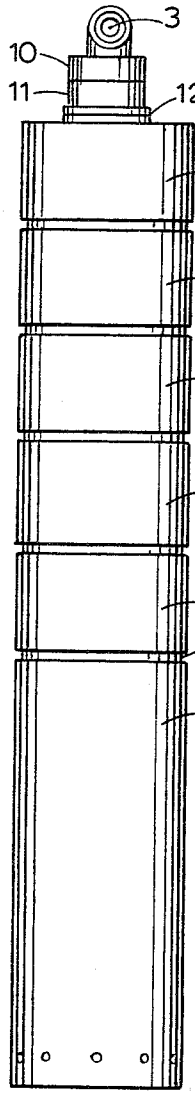


FIG. 1.

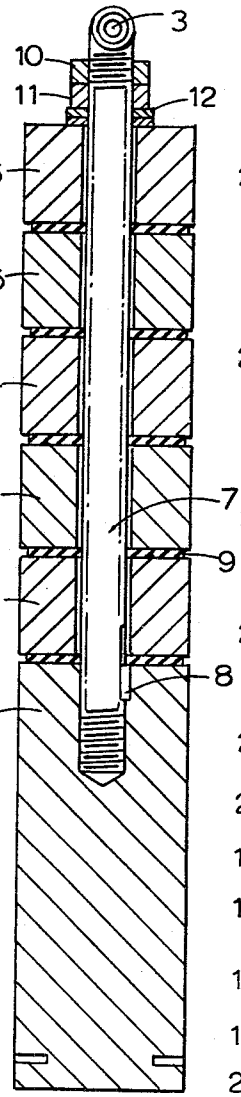


FIG. 2.

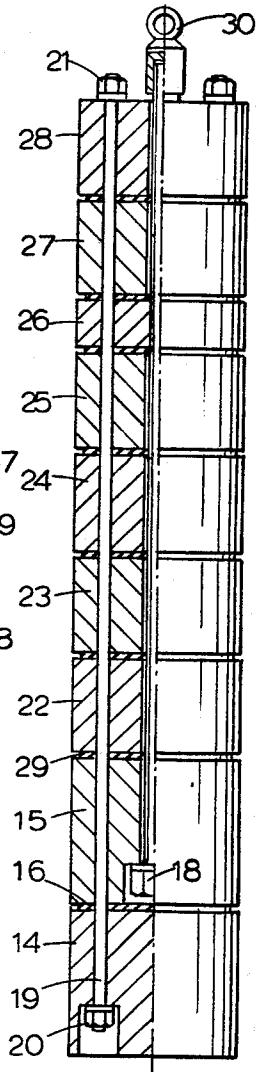


FIG. 4.

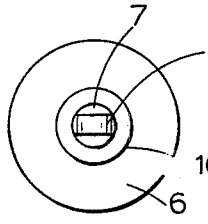


FIG. 3.

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PILE DRIVING HAMMERS

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2 Claims. (Cl. 173—126)

This invention relates to hammers for use in driving piles, in particular piles of pre-cast concrete construction.

One object of the invention is to provide a hammer which is heavier than a normal pile driving hammer which is normally a solid block of metal and if massive would tend to fracture.

Another object of the invention is to provide a pile driving hammer the weight of which may be varied or increased above a normal minimum.

Yet another object of the invention is to provide a pile driving hammer for use with a dolly having faces of rubber or plastic material and placed above the pile to give reduced noise piling.

The pile driving hammer according to the present invention is composed of a plurality of masses of metal each with a layer of plastic material therebetween. The number of such masses may be varied to suit the pile being driven and may be increased from a basic minimum weight up to that necessary for driving any particular pile, the weight increase being for example made during the piling operation when there may be greater resistance to pile movement.

The plastic material may be rubber either natural or synthetic and the equivalent.

Now in order that the invention may be clearly understood and readily carried into effect embodiments of hammer are by way of example hereinafter more fully described with reference to the accompanying drawings, in which:

FIG. 1 shows the hammer in elevation,

FIG. 2 is a section through the hammer of FIG. 1,

FIG. 3 is a plan view looking down on FIG. 1, and

FIG. 4 is a half-sectioned elevation of another construction of hammer.

Referring to FIGS. 1 to 3 of the drawings, the pile driving hammer comprises a plurality say six metal weights **1**, **2**, **3**, **4**, **5** and **6**. The weights may be all the same weight, say of one ton weight each or as illustrated the lowermost weight **1** may be longer and weigh say two tons giving a maximum weight of seven tons.

The weights may be connected together in any convenient manner and as illustrated the lowermost weight **1** has a threaded stem **7** which is locked thereto as by a key **8**. The several supplemental weights **2–6** each have a central aperture through which the stem **7** may pass as an easy sliding fit. To increase the weight of the hammer above the minimum of the weight **1** which is the striker weight, one, two or more of the weights **2–6** are placed on the stem each with a relatively thin disc **9** of displaceable pliable and compressible plastic material such as rubber between it and the adjacent weight such disc being preferably of a diameter less than the diameter of the extra supplemental weight members. The weights

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are retained by lock nuts **10**, **11** with washers **12** and the upper end of the stem is formed as an eye or aperture **13** to receive a lifting cable or hook.

An alternative form of hammer is shown in FIG. 4 and comprises an end striker **14** and an adjacent weight **15** with a plastic disc **16** therebetween. The weight **15** carries a stem **17** (similar to the stem **7**) with an end nut **18** and the striker **14** is connected to such weight **15** by a plurality (say three) stems **19** with end nut **20** and clamping nut **21**. The stems **17**, **19** may be changed for others of different length to accommodate one, two or more of the additional weights **22**, **23**, **24**, **25**, **26**, **27** and **28** which may be of like or dissimilar weight and each with a plastic disc **29** therebetween to make up a hammer of desired weight, these discs **29** being similar to the discs **9** and made of material of a diameter less than that of the weight elements. On the end of the stem **17** an eye member **30** may be placed to receive the customary elevating cable. A hammer of desired weight may be made up prior to driving and it may be reassembled to have greater weight as may be found necessary during the driving operation.

A hammer, made up of a number weight masses each isolated from the next by means of the plastic discs, may be made much heavier than a normal one-piece hammer yet will not fracture and gives a powerful blow to the pile on each drop almost like a rapid sequence of blows. The discs are also noise dampening and when the hammer is used in conjunction with a dolly or impact receiving member placed on the pile and having faces of rubber or plastic material there is a considerable reduction in noise as compared with conventional hammer pile driving.

We claim:

1. A fracture resistant heavy pile driving hammer comprising a bottom heavy metal striker weight; a centrally disposed stem which is adapted to have an elevating cable connected to the upper end thereof, secured nonresiliently to said striker weight and extending upwardly therefrom, a plurality of centrally apertured superimposed supplemental metal weights mounted on said stem; a relatively thin centrally apertured disc of displaceable and compressible pliable material mounted on said stem between the opposed surfaces of contiguous supplemental weights and between the striker weight and its adjacent supplemental weight; and means for holding said weights and said discs together to permit only limited resilient movements of the weights relative to each other.

2. A pile driving hammer as defined by claim **1** in which said means comprises a nut threaded onto said stem adjacent the upper end thereof.

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