Feb. 1, 1966 F. M. FROHNAUER 3,232,188

TAMPING MACHINE

Filed Sept. 18, 1961 4 Sheets-Sheet 1

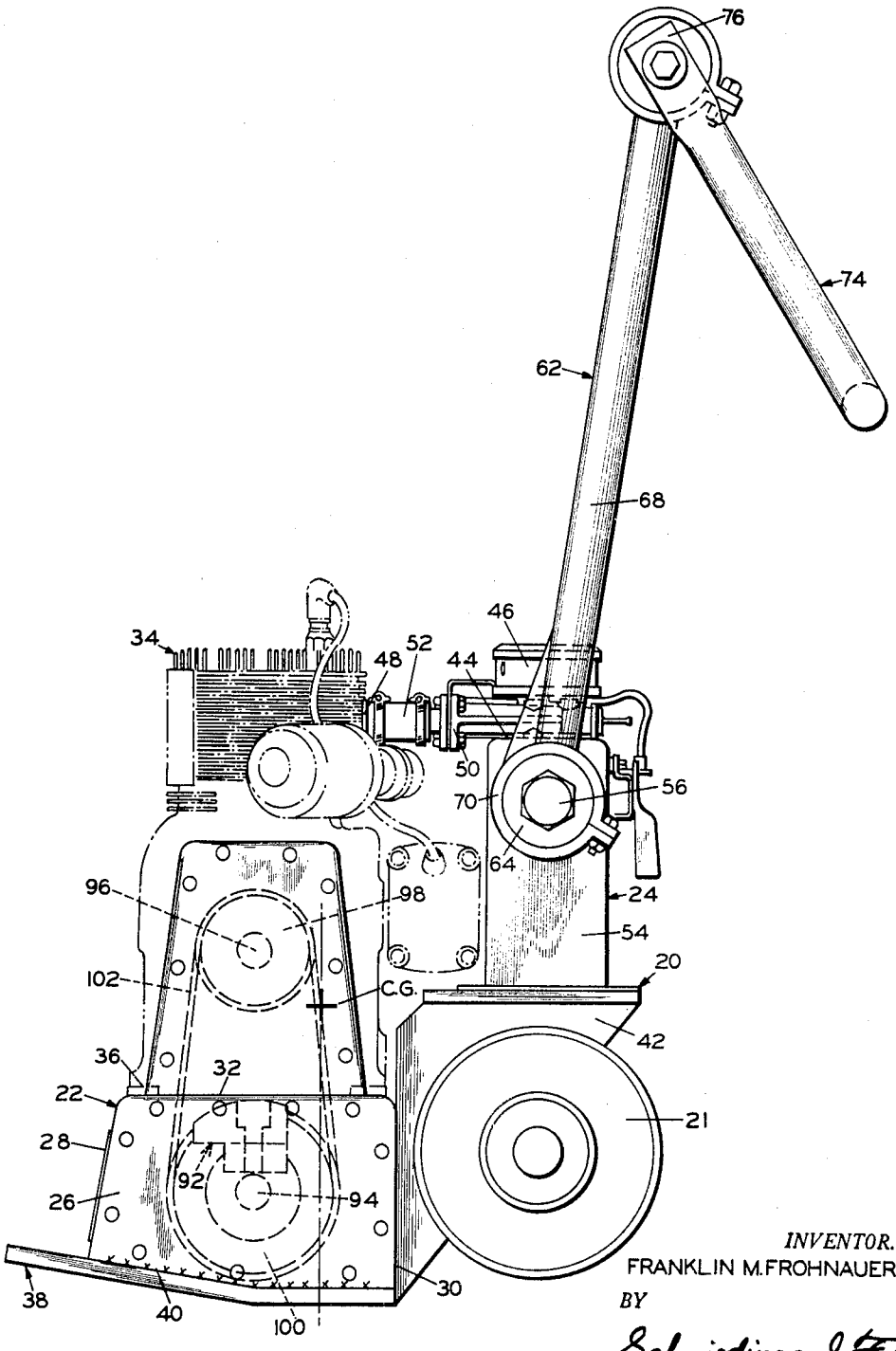

FIG. 1

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TAMPING MACHINE

Filed Sept. 13, 1961 4 Sheets-Sheet 2

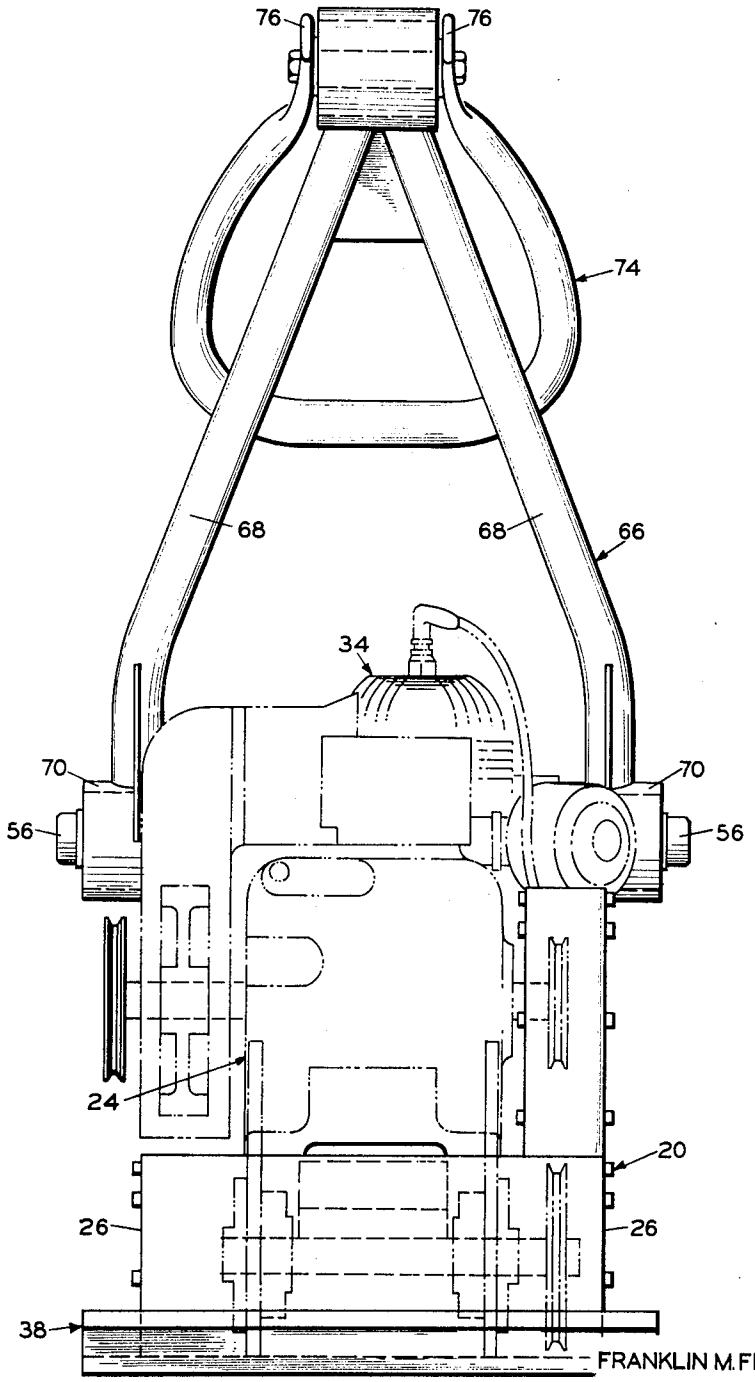

FIG. 2

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TAMPING MACHINE

Filed Sept. 18, 1961 4 Sheets-Sheet 3

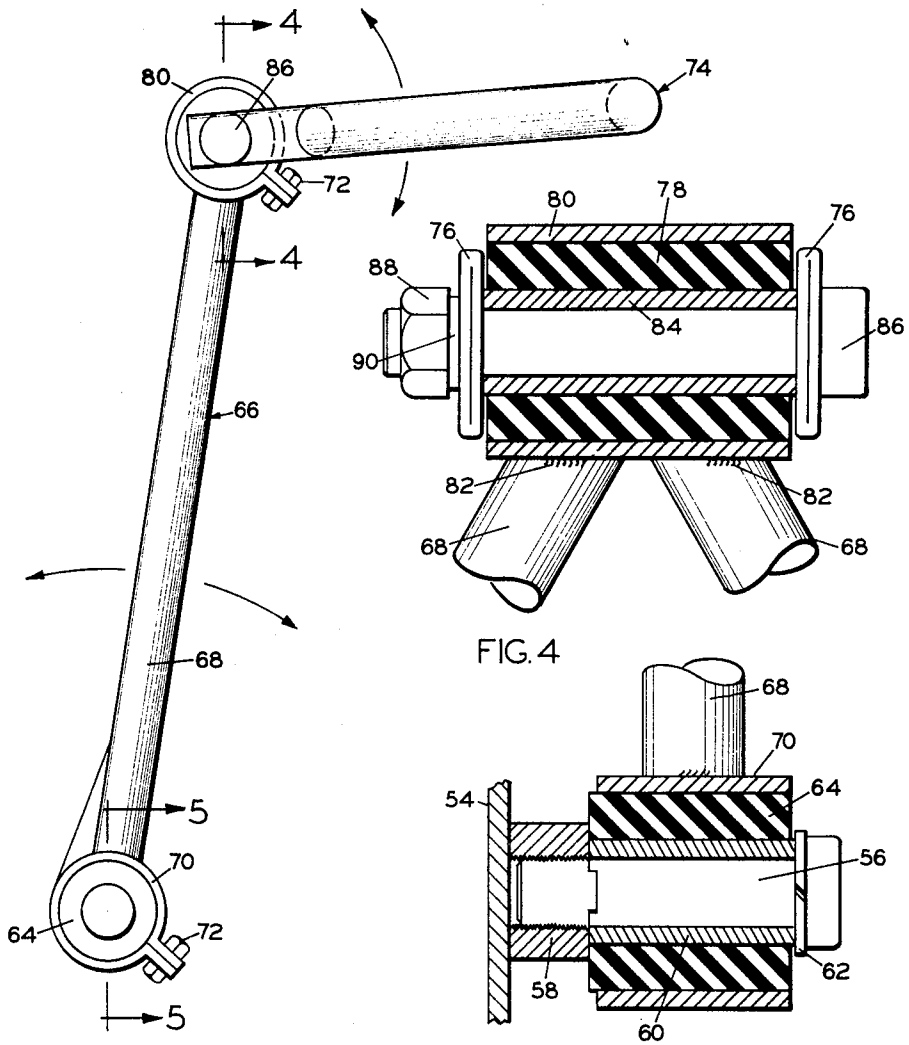

FIG. 3

FIG. 4

FIG. 5

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TAMPING MACHINE

Filed Sept. 18, 1961

4 Sheets-Sheet 4

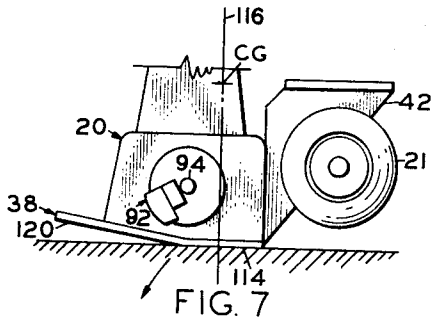

FIG. 7

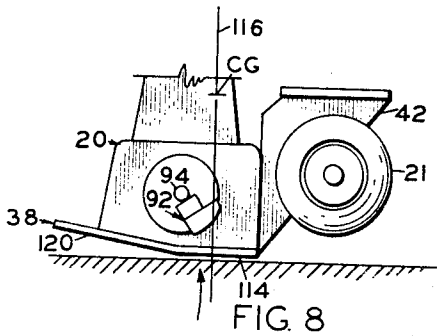

FIG. 8

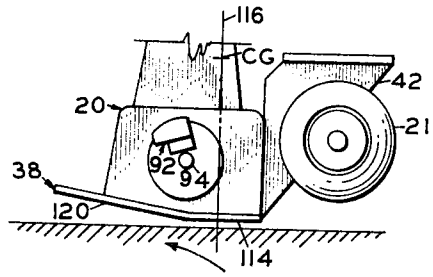

FIG. 9

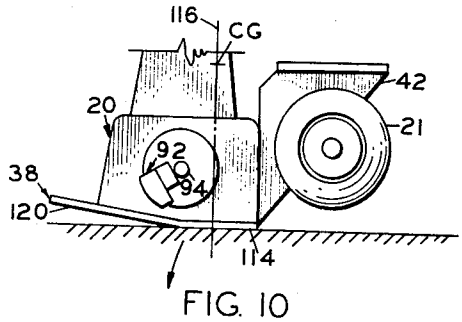

FIG. 10

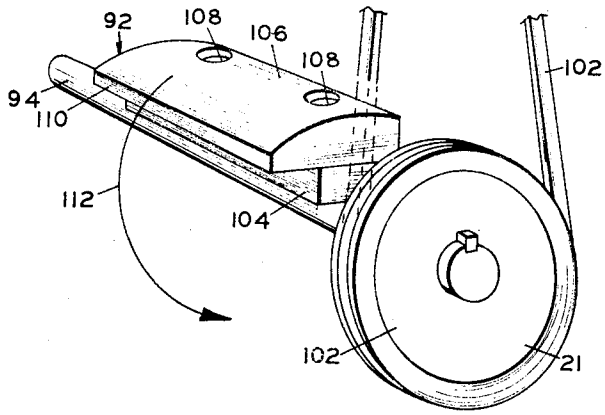

FIG. 6

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3,232,188

TAMPING MACHINE

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Filed Sept. 18, 1961, Ser. No. 138,797

4 Claims. (Cl. 94—48)

This invention relates to tamping machines of the type that incorporate a rotating eccentrically mounted weight for vibrating a shoe to compact the earth.

In general, the tamping machine of the present invention comprises a frame means that includes a front housing portion and a rear housing portion. The front housing portion functions as a base on which an engine is mounted, a housing for a rotatable eccentric, and a shoe portion for compacting the earth. The rear housing portion forms a fuel tank and also serves as a base for mounting a carburetor for the engine. The fuel intake of the engine and the carburetor outlet are connected together by a flexible conduit whereby the carburetor is isolated from large amplitude vibrations of the engine.

The tamping machine further includes a novel vibration isolating handle means which is mounted on the previously mentioned rear housing portion, said housing portion serving the dual function of a structural support for the handle and a tank for containing engine fuel.

It is, therefore, an object of the present invention to provide an improved tamping machine that includes a novel handle means for isolating the operator from vibrations created by the machine.

It is another object of the present invention to provide an improved tamping machine that includes a structural housing portion that provides mounting means for a handle and also a base on which a carburetor is mounted in isolated relationship with the engine.

It is another object of the present invention to provide an improved tamping machine that includes a novel tamping shoe that functions as a bottom closure for a housing means that rotatably supports an engine driven eccentric.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred form of embodiment of the invention is clearly shown.

In the drawings:

FIG. 1 is a side elevational view of a tamping machine constructed in accordance with the present invention;

FIG. 2 is a front elevational view of the machine of FIG. 1;

FIG. 3 is a side elevational view of a handle means comprising a portion of the machine of the preceding figures;

FIG. 4 is a partial sectional view of the handle means of FIG. 3, the section being taken along the line 4—4 of FIG. 3;

FIG. 5 is a partial sectional view of the handle means of FIG. 3, the section being taken along the line 5—5 of FIG. 3;

FIG. 6 is a perspective view of an eccentrically mounted weight comprising a portion of the tamping machine of the preceding figures; and

FIGS. 7 through 10 are partial side diagrammatic views illustrating the operation of the tamping machine of the preceding figures.

Referring in detail to the drawings, FIGS. 1 and 2 illustrate a tamping machine constructed in accordance with the present invention that comprises a frame means indicated generally at 20 that includes a front housing portion indicated generally at 22 and a rear housing portion indicated generally at 24.

Front housing portion 22 includes side walls 26, front and rear walls 28 and 30, and top wall 32.

An engine indicated generally at 34 includes base flanges 36 bolted to top wall 32 of the front housing portion and a shoe means indicated generally at 38 is rigidly secured to side walls 26 at a welded junction 40.

With continued reference to FIGS. 1 and 2 rear housing portion 24 is secured to front housing portion 22 by spaced triangular plates 42 and forms a sealed chamber for containing the fuel supply for the engine. Rear housing portion 24 further includes a top wall 44 that provides a mount on which a carburetor 46 is bolted.

Engine 34 includes a fuel intake port 48 that is connected to an air-fuel outlet port 50 by a flexible hose 52.

Rear housing portion 24 includes side walls 54 to which are welded laterally extending bolts or stub shafts 56 at internally threaded collars 58. Stub shafts 56 carry spacer collars 60 and lock washers 62 and resilient vibration isolator bushings 64 surround collars 60. These vibration isolators can be formed of synthetic rubber, fiberglass padding, or other suitable vibration isolating material.

With reference to FIGS. 3–5 a handle means indicated generally at 66 includes spacer members 68 on the lower ends of which are mounted collars 70 in surrounding clamped engagement with vibration isolators 64.

Threaded fasteners 72 provide means for drawing up collars 70.

The upper end of handle means 66 is provided with a grip portion indicated generally at 74 provided with flattened forward ends 76 that are mounted to a resilient vibration isolator 78 of the type previously described, said isolator being extended through a tube 80 welded on the top ends of handle members 68 at welded junctions 82. A spacer tube 84 extends centrally through isolator 78 and includes a central core through which a bolt 86 is extended, said bolt being retained in place by a nut 88 and a lock washer 90.

Tube 80 is drawn up around isolator 78 by a threaded fastener 72.

With reference to FIGS. 1 and 6, the machine is caused to vibrate by a rotatable eccentric indicated generally at 92 mounted on a shaft means 94 that is driven from motor crank shaft 96 by pulleys 98 and 100 and V-belt 102.

Eccentric weight 92 includes a radically extending weight portion 104 and an outer weight portion 106, secured to weight portion 104 by a plurality of studs 108. Outer weight portion 104 includes a leading edge 110 that extends forwardly in the direction of rotation of the weight portion, said direction of rotation being diagrammatically indicated at FIG. 6 by an arrow 112. Outer weight portion 106 can be removed and replaced with a lighter weight since it has been found that it is advisable to use a lighter weight when impacting the earth and a heavier weight when impacting blacktop or other similar materials.

Shoe means 38 is so located on the machine that the center of gravity CG of the machine overlies the center of the rear plane portion 114 of shoe means 38.

As seen in FIGS. 7–10 the center of gravity CG lies in a vertical plane 116 passing through the center of and normal to the rear plane portion 114 of the shoe means.

The center of rotation of eccentric weight means 92 is coincident with the center of shaft means 94 and is located forwardly of vertical plane 116 in which the center of gravity is located as previously described.

With this location of shaft means 94 relative to plane shoe portion 114 and the center of gravity CG it has been discovered that the machine will efficiently progress along the surface being tamped and maintain a balanced configuration whereby the movement of the machine is substantially vertical and shoe portion 114 vibrates in paral-

lel relationship with the surface being tamped whereby the tamping force is evenly distributed over the underlying earth.

Shoe means 38 includes a forwardly and upwardly inclined shoe portion 120 that provides a runner for the forward advancement of the vibrating machine.

In operation, when the engine is started and the handle is pulled slightly to the rear the machine will vibrate vertically without advancing forwardly. When it is desired to move forwardly the operator decreases the rear force being applied to the handle and the machine will assume the normal vertical configuration illustrated in FIGS. 1 and 7–10. In this configuration, the inertia force of eccentric weight 92 causes the machine to hop forwardly along the earth and its velocity of forward advance can be readily controlled by the amount of rearwardly directed force that the operator applies to grip portion 74 of the handle means.

While the form of embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

I claim:

1. A tamping machine comprising, in combination, frame means comprising a first housing portion including side walls and a top wall, and a second housing portion located rearwardly of said front housing portion, said second housing portion including side walls that form a fuel tank; an eccentric shaft rotatably mounted between said side walls of said first housing portion; an engine mounted on said top wall and above said eccentric shaft for driving said eccentric shaft, said engine including a fuel intake port; a carburetor mounted on said second housing portion and including an air-fuel mixture outlet port; a flexible hose connecting said outlet port of said carburetor with said fuel intake port of said engine; and handle means secured to said frame means.

2. A tamping machine comprising, in combination, frame means comprising a first housing portion including side walls and a top wall, and a second housing portion located rearwardly of said front housing portion, said second housing portion including side walls that form a fuel tank; an eccentric shaft rotatably mounted between said side walls of said first housing portion; an engine mounted on said top wall and above said eccentric shaft for driving said eccentric shaft, said engine including a fuel intake port; a carburetor mounted on said second housing portion and including an air-fuel mixture outlet port; a

flexible hose connecting said outlet port of said carburetor with said fuel intake port of said engine, said frame means including a handle mount provided with a resilient vibration isolator bushing; and handle means including a lower handle portion mounted on said vibration isolator bushing.

3. The tamping machine defined in claim 2 wherein said handle means includes an upper handle portion joined to said lower handle portion at a second resilient vibration isolator bushing.

4. A tamping machine comprising, in combination, frame means including a front portion and a rear portion located rearwardly of said front frame portion, said frame means including structural side walls that form a handle mount; an eccentric shaft rotatably mounted between said side walls of said front frame portion; an engine mounted on said front portion and above said eccentric shaft and in driving engagement with said eccentric shaft; shaft means mounted on said handle mount and including first and second shaft portion extending laterally therefrom; first and second resilient vibration isolators mounted on said shaft portions; handle means including a lower end provided with first and second collars mounted on said vibration isolators and an upper end; a hand grip member; and a third resilient vibration isolator interconnecting said hand grip member and said upper end of said handle means.

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