Dec. 9, 1930. J. C. PELTON 1,784,385

COMPACTING MECHANISM

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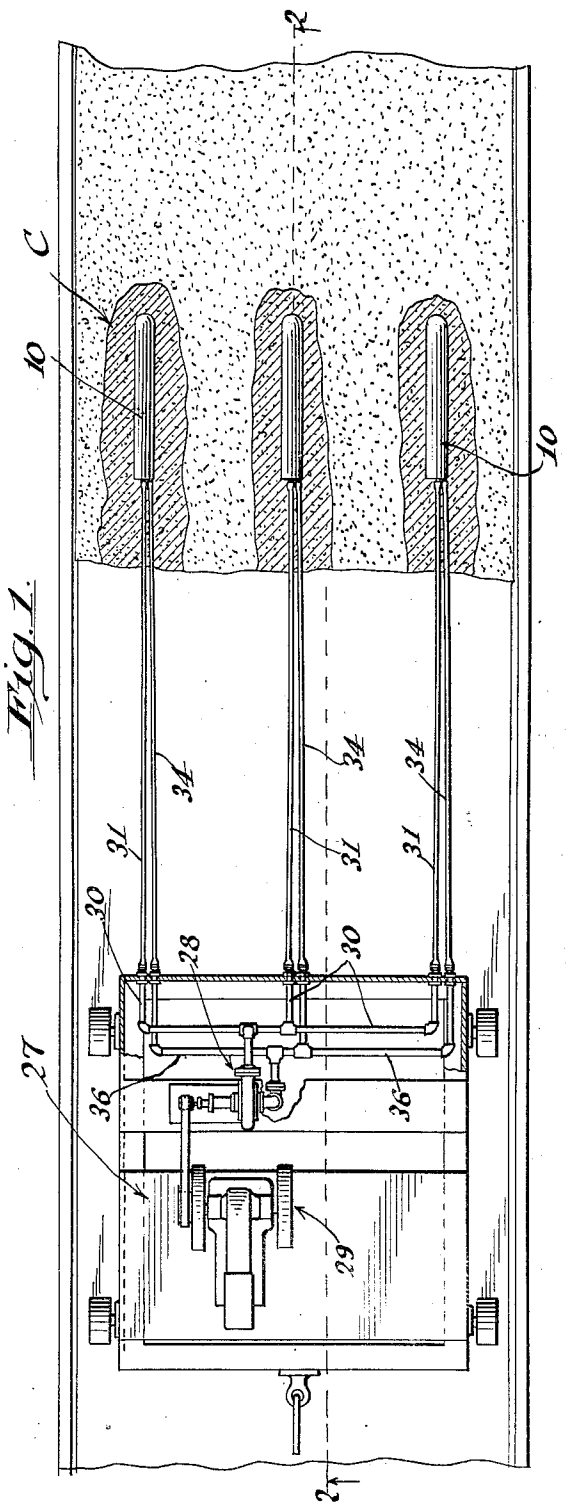


Fig. 1.

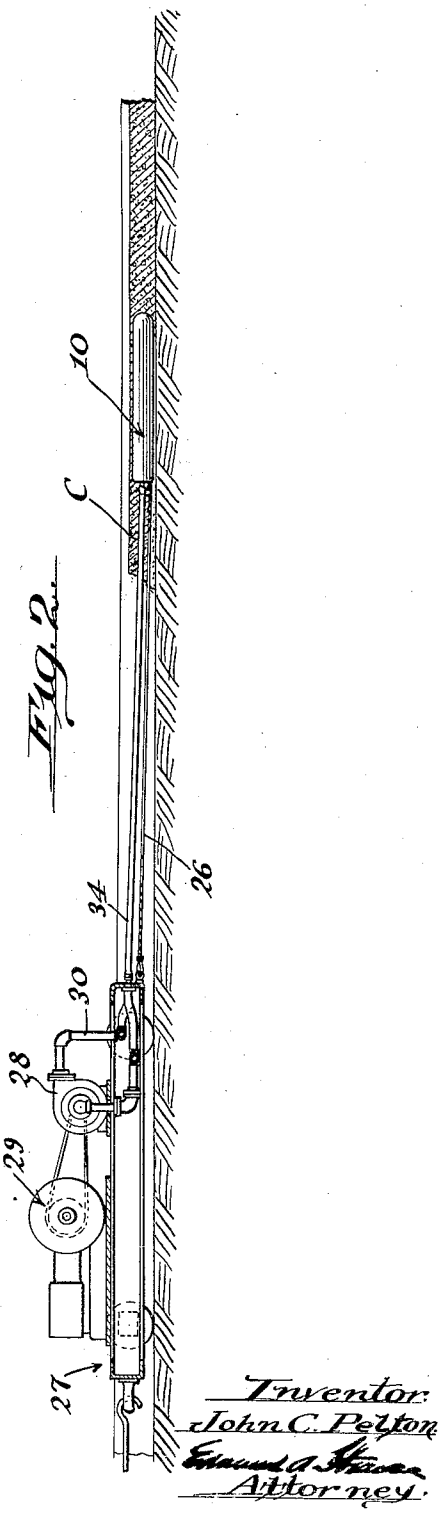


Fig. 2.

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Fig. 3.

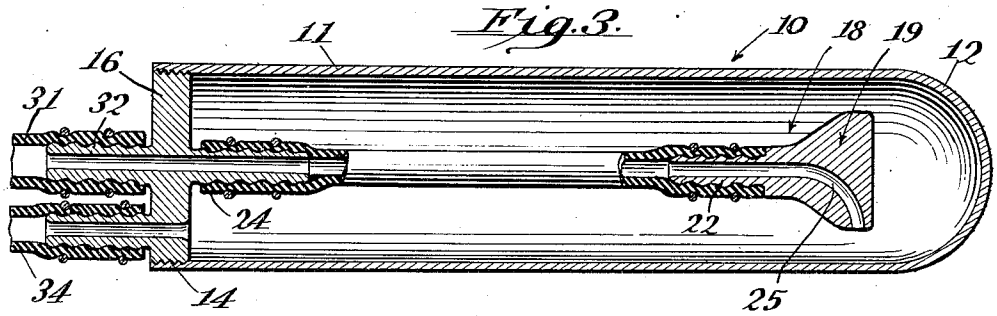


Fig. 4.

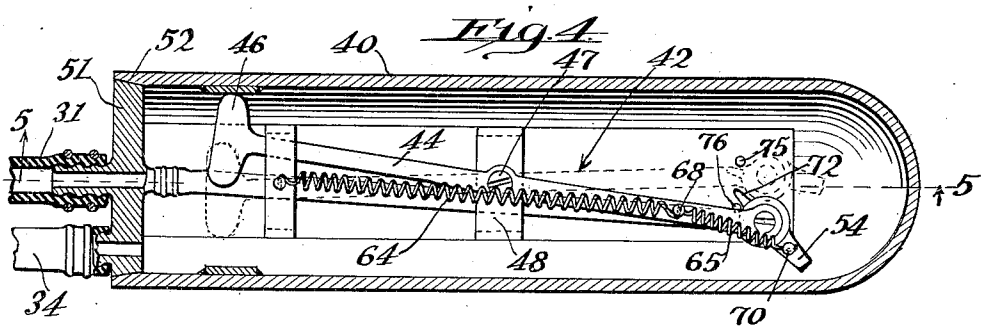


Fig. 5.

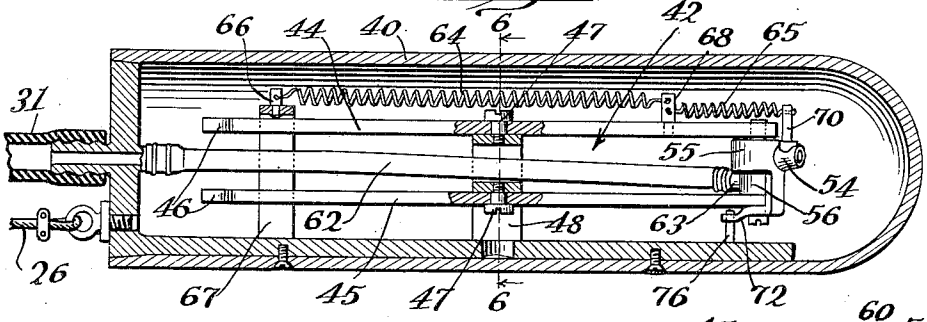


Fig. 6.

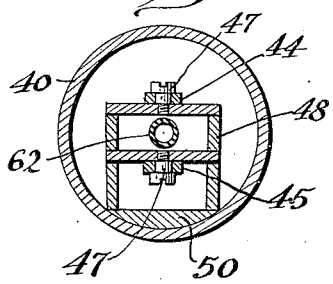


Fig. 7

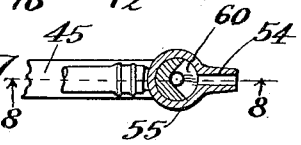
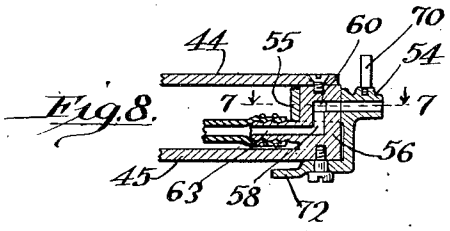


Fig. 8.



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Patented Dec. 9, 1930 1,784,385

UNITED STATES PATENT OFFICE

JOHN C. PELTON, OF SANTA BARBARA, CALIFORNIA

COMPACTING MECHANISM

Application filed November 5, 1929. Serial No. 405,041.

This apparatus relates more specifically to an apparatus for compacting by vibration, plastic masses utilized in the construction of roadways and the like.

A main object of the invention is to provide a portable apparatus provided with vibratory members capable of compacting plastic material as it is poured in the construction of roadways, floors, and similar surfaces, and which may be readily adapted to compact plastic masses in the construction of the walls of buildings, dams, and like structures in an economical and effective manner.

Another object is to provide an apparatus that will effectively compact concrete as the same is poured in the formation of roadways and eliminate all air cavities formed therein before the mass is set.

Other objects and advantages will be apparent from the following description, reference being had to the accompanying drawings which illustrate a single embodiment of the invention, in which:

Fig. 1 is a top plan view of a street or roadway during course of construction showing the improved impacting apparatus in use for compacting the material employed in paving the streets;

Fig. 2 is a horizontal sectional view through the roadway taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a longitudinal sectional view taken through the preferred form of compacting or vibrating member;

Fig. 4 is a horizontal section taken through a modified form of compacting member;

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4;

Fig. 6 is a transverse section taken on line 6—6 of Fig. 5;

Fig. 7 is a detail view of the nozzle mounting;

Fig. 8 is a section taken on line 8—8 of Fig. 7.

This invention is somewhat similar in construction to my apparatus shown and described in my co-pending allowed application bearing Serial No. 228,256, filed in the Patent Office October 24, 1927.

In the above application the vibratory member is actuated electrically, and especially adapted for the compaction of concrete in the formation of concrete building walls, and the like structures. In this application the forces created by the vibration of the vibratory members are especially adapted for the compacting of plastic masses in the formation of streets, highways, and like horizontal surfaces, the apparatus being capable of movement along the surfaces being laid as the masses are poured.

Referring by numerals to the drawings, the compacting member is generally designated at 10 and consists of an elongated tubular casing or shell 11 preferably formed of cast metal having a hemispherical end 12, and threaded as indicated at 14 to receive a plug 16 to which is attached the vibrating member 18.

Vibrating member 18 consists of a head or hammer 19 having a shank 22 to which is connected a flexible hose 23 which in turn is connected to a shank 24 projecting inwardly from the plug, the hammer having a port or passage 25 extending therethrough adapted to discharge a jet or stream of fluid against the wall of the casing to effect vibration.

Vibration of the compacting member is effected by fluid pressure, i. e. by a current of compressed air, or liquid induced through the flexible hose and port in the head which forms a jet or stream of fluid re-acting against the inner surface of the casing resulting in rapid vibration or hammering action thereon which in turn is transmitted to concrete in which the impacting member is adapted to be embedded.

An example of the use of the impacting member is shown in Figs. 1 and 2 in which instance it is illustrated employed in connection with road paving construction. The impacting member is adapted to be covered with or embedded in the concrete designated at C and slowly moved along during paving of the street, and at the same time impacting the concrete, a plurality of impacting members being usually employed, depending on the width of the street, and are connected by cables or chains 26 to a structure

or carriage 27 which may be drawn by a tractor or other means not shown.

Fluid pressure for operating the vibrating member is developed by a centrifugal pump 28 mounted on the carriage and operated by an engine or motor 29, fluid discharged from the pump being conveyed to the impacting members through pipe lines 30 and flexible conduits 31 which are connected thereto by suitable fittings 32 formed on the plugs 16, fluid discharged from the vibrating member being returned to the pump through conduits 34 and pipe lines 36.

From the construction it will be seen that the current of fluid created by the pump will effect movement of the vibratory member, it being understood, however, that compressed air may be employed in place of fluid.

A modified form of compacting member is shown in Figs. 4 to 8 and consists of a housing 40 in which is mounted a mechanism generally designated at 42 adapted to impart vibration to the housing. A pair of arms 44 and 45 having hammer heads 46 are pivotally connected by pins 47 to a bracket 48 carried by a plate 50 formed integral with a plug 51 closing the end 52 of the housing.

Movement of the vibrating member is effected by the re-action of a stream or jet of fluid issuing from a nozzle 54 upon the interior walls of the housing, the nozzle projecting from a sleeve 55 rotatably mounted on a member 56 formed on the end of the arm 45 as shown in Figs. 7 and 8.

Fluid is introduced into the nozzle through a port 58 which communicates with a recess 60 formed in the member, a flexible hose 62 being connected to shanks 63 projecting from the member and plug. The nozzle and arms assume the position shown in Fig. 4 (when at rest) by the action or retractile coil springs 64 and 65 respectively, the spring 64 being connected to a pin 66 projecting from a bracket 67 rigid with the plate and a pin 68 on the arm 44, the spring 65 being connected to the pin 68 and a pin 70 extending upwardly from the nozzle.

In operation fluid issuing from the nozzle will cause the arms to swing on the centers of the pins 47 due to the angular position of the nozzle which is maintained by the spring 65. Immediately after the arms have passed "dead" center the spring 64 will aid in moving the arms. As the arms approach the position shown in dotted lines (see Fig. 4) a tappet 72 formed on the nozzle will engage a pin 75 which will tend to reverse its position, the movement of which is completed by the spring 65, thereby directing the jet of fluid against the opposite side of the casing wall, the tappet engaging a pin 76 on return movement which serves the same purpose as the pin 75.

From the foregoing it will be seen that the hammer head alternately strikes the opposite sides of the housing wall, thereby imparting vibratory movement to the impacting member.

I claim:

1. An apparatus for compacting plastic masses comprising a casing, a hose connected to one end of said casing, a head formed of metal having a port or passage extending therethrough connected to said hose, and means for inducing a circulation of fluid through said hose and the passage through said head, whereby the re-action of fluid discharging therefrom against the side wall of said casing will impart vibratory movement to said head which through striking on the side wall of said casing will impart vibration thereto.

2. A compacting apparatus comprising in combination a casing adapted to be embedded in plastic masses, a vibratory member in said casing, a movable structure, means connecting said casing to said movable structure to move said casing with it as the concrete is poured, means for developing fluid pressure carried by said movable structure, and conduits connecting said casing with said means for developing fluid pressure, whereby a circulation of fluid will impart movement to said vibratory member.

3. An apparatus for compacting plastic masses comprising in combination a casing, a vibratory member in said casing comprising a head formed of metal having a port formed therein and a flexible hose connected to said head and casing, a structure adapted to be moved over a horizontal surface, means connecting said casing to said structure, a fluid pressure apparatus carried by said structure, conduits connecting said fluid pressure apparatus with said casing, whereby a circulation of fluid induced by said fluid pressure apparatus through said conduits, flexible hose and port in said head will impart vibratory movement to said head by re-action of fluid discharging from the port therein against the wall of said casing.

4. An apparatus for compacting plastic masses comprising a shell, an oscillatory member mounted within said shell, and means for developing fluid pressure operatively connected to said oscillatory member for oscillating the same, whereby movement of the oscillatory member will vibrate to said shell.

5. A compacting apparatus comprising a casing adapted for placement in a body of plastic material, a vibratory mechanism mounted in said casing, means to move said casing as the plastic material is poured, and fluid pressure conduits connected to the vibratory member in the casing to actuate the same to impart vibration to the casing.

In testimony whereof I affix my signature.

JOHN C. PELTON.