

Nov. 26, 1940.

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2,223,024

TAMPING MACHINE

Filed July 26, 1937

Fig. 1.

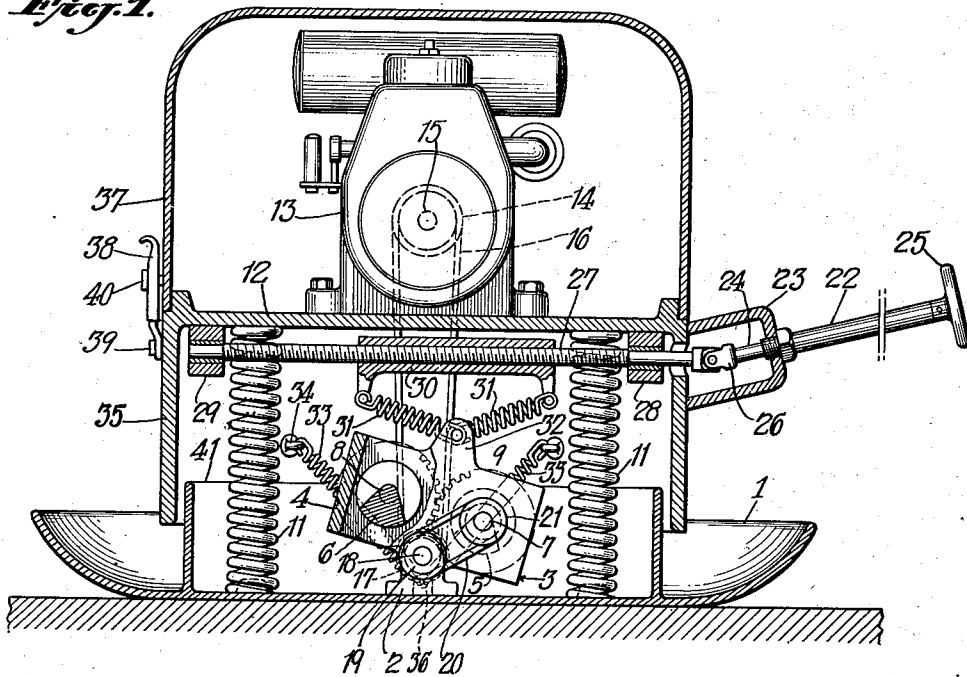
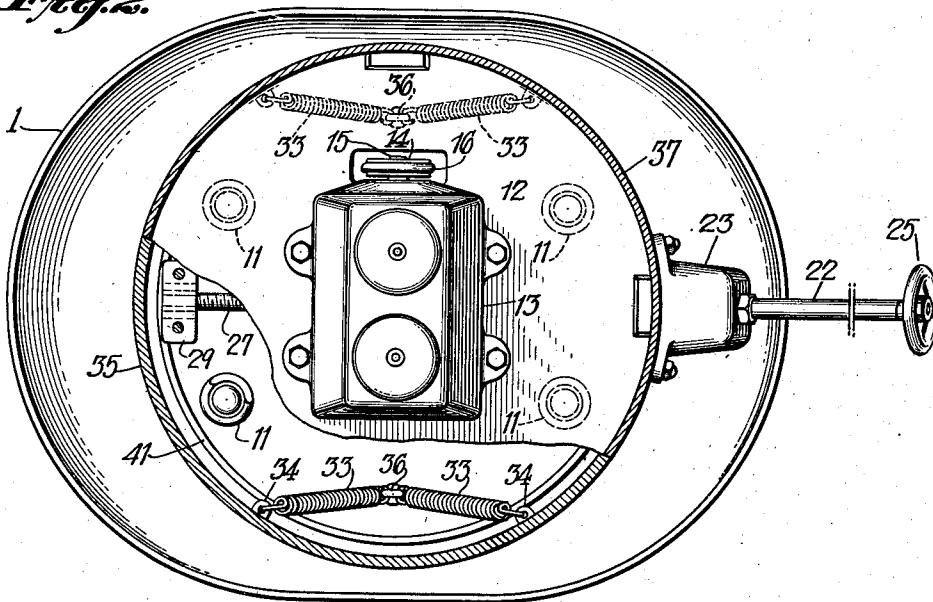


Fig. 2.



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2,223,024

TAMPING MACHINE

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Application July 26, 1937, Serial No. 155,834
In Germany September 14, 1936

3 Claims. (Cl. 94—48)

This invention relates to a tamping machine and its primary object is to make a machine of this kind which can be more easily handled and is more efficient than such machines have been heretofore.

The operation of early tamping machines has been interfered with by a tendency to dance, rendering many of the impulses ineffective and making the machine difficult to handle. This tendency is controlled by connecting the vibrating part of the machine by springs to a heavy stabilizing mass, the said vibrating part being relatively light.

In accordance with one feature of this invention the arrangement described is secured by utilizing the motor which drives the impulse device as a substantial part of the stabilizing mass.

In accordance with another feature of the invention a progressive movement can be imparted to the machine by changing the angle of the direction of the impulses and the speed and direction of this movement of the machine can be controlled by manipulative means mounted upon the stabilizing part of the machine. The transmission of the forces for controlling the speed of movement of the machine may be taken care of by the interposition of elastic devices, such as springs between the manipulative means and the impulse device. For controlling the direction of movement of the machine the stabilizing part of the machine can also be connected to the vibrating part by elastic means, such as springs, to maintain a more or less constant relative angular position in the horizontal plane.

In accordance with another feature of the invention the massive stabilizing part of the machine and the vibrating part, for instance the tamping plate, can be so formed that a casing of the former part overhangs a flange, or the like, upon the latter part.

By the described arrangement of the motor upon the stabilizing part of the machine several advantages are achieved. The weight of the vibrating parts, and therewith the weight of the whole machine, are considerably reduced, while the motor is protected against harmful vibrations. Furthermore, the possibility is presented of mounting all the handles required for controlling the driving means of the machine upon the stabilizing part, which is relatively still. The proposed means for transmitting the controlling forces for the speed and direction of movement of the machine make it possible to mount not only the aforesaid control members, but all the control members upon the relatively quiet part of

the machine. Finally, the interengaging arrangement of the two parts affords a protection against penetration of dirt into the vulnerable driving mechanism, which is a very important desideratum in this type of machine.

One illustrative form of the invention is shown in the drawing.

Fig. 1 is a vertical section, while

Fig. 2 is a plan view with the upper part of the casing removed and part of the engine base plate broken away.

The ground plate which rests upon the material to be compacted is indicated at 1. In a bearing 2 on the top of this plate is pivotally supported an impulse generating device 3 comprising a casing 4 containing two rotary unbalanced weights 5 and 6. These weights are fixed to shafts 7 and 8 geared together by meshing pinions 9 and 10. The weights are rotated by a driving mechanism to be presently described and are made to rotate oppositely by the intermeshing pinions 9 and 10, so that lateral forces generated by the weights are balanced, while forces in the direction tangent to the pitch circles of the pinions 9 and 10 are unbalanced. This type of impulse generating mechanism is well known per se. By means of springs 11 there is mounted on the ground plate 1 a base plate 12 for a driving motor 13. A pulley 14 on the shaft 15 of the motor is connected by an elastic belt 16 to a pulley 17 mounted by a shaft 18 upon the casing 4 of the impulse generating device. The opposite end of shaft 18 has fixed to it a pulley 19 connected by a belt 20 with a pulley 21 on shaft 7. The described pulleys and belts constitute the power transmission mechanism by which the motor drives the impulse generating device.

The driving motor 13 forms a considerable part, if not the greatest part, of the sprung mass of the machine. Upon the sprung or stabilizing part, preferably upon the base plate 12, is mounted a manipulative device for controlling the speed and direction of movement of the machine. Preferably this manipulative device is in the form of a steering column 22 fixed to a support 23 and containing a shaft 24 which can be rotated by a handwheel 25. The shaft 24 is connected by a universal joint 26 with a screw spindle 27 mounted in bearings 28 and 29 upon the base plate 12. A nut 30 travels upon spindle 27 and is connected by springs 31 with an ear 32 on the housing 4 of the impulse device. By turning the handwheel 25 the impulse device can be made to rock upon its bearing 2 to change the inclination of the impulses. In this way a

simple adjustment of the direction of application of the force of the impulse device, and thereby of the speed of forward movement of the machine is provided for. The stabilizing part of the machine is furthermore connected with the vibrating part by springs 33, stretched between eyes 34 on a downwardly extending skirt 35 of base plate 12 to eyes 36 on the ground plate 1. These springs 33 control the relative rotation of the two parts of the machine in the horizontal plane and in this way lateral movement of the steering column 22 turns not only the sprung upper part of the machine, but in the course of the vibrating movements also the under part resting upon the earth, thereby setting the under part in the desired direction for its progressing movement. Finally, the whole upper part of the machine is preferably covered by a hood, one portion of which is constituted by the skirt 35 of the plate 12, while the upper portion is formed by a cap 37. This cap can be easily removed by unfastening clips 38 pivoted to the skirt 35 at 39 and engaging other pins 40 on the cap 37. The skirt 35 overhangs a flange 41 extending up from the ground plate 1, these parts cooperating to prevent penetration of dirt, or the like, into the machine, while allowing free relative motion in accordance with the vibrations generated by the impulse device.

I claim:

1. A tamping machine comprising a vibrating ground engaging part and a relatively massive stabilizing part, springs supporting said stabilizing part on said ground engaging part, said springs having a characteristic such as to permit a relative movement of considerable amplitude between said two parts of the machine, said vibrating part comprising an impulse generating device, said stabilizing part comprising, as a preponderant part of its mass, a motor located directly above said impulse generating device, elastic driving connections between said motor and said impulse generating device, said impulse generating device being adjustable to change the angle of incidence of the impulses, manipu-

lative means on said stabilizing part, and spring connections between said manipulative means and said impulse generating means for adjusting the latter.

2. A tamping machine comprising a vibrating ground engaging part and a relatively massive stabilizing part, springs supporting said stabilizing part on said ground engaging part, said springs having a characteristic such as to permit a relative movement of considerable amplitude between said two parts of the machine, said vibrating part comprising an impulse generating device, said stabilizing part comprising, as a preponderant part of its mass, a motor located directly above said impulse generating device, elastic driving connections between said motor and said impulse generating device, spring connections between said stabilizing part and said vibrating part adapted yieldingly to resist relative angular movement of said parts in a horizontal plane, and a handle on said stabilizing part whereby it can be turned horizontally to cause said vibrating part to turn through the action of said spring connections.

3. A tamping machine comprising a vibrating ground engaging part and a relatively massive stabilizing part, springs supporting said stabilizing part on said ground engaging part, said springs having a characteristic such as to permit a relative movement of considerable amplitude between said two parts of the machine, said vibrating part comprising an impulse generating device, said stabilizing part comprising, as a preponderant part of its mass, a motor located directly above said impulse generating device, elastic driving connections between said motor and said impulse generating device, a skirt on said stabilizing part extending downward around said supporting springs and said impulse generating device, and a flange on said vibrating part surrounding said supporting springs and said impulse generating device and extending up inside said skirt.

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