Sept. 12, 1933. B. S. CLARK 1,926,193

LEVELING AND TROWELING DEVICE FOR CONCRETE

Filed April 9, 1930

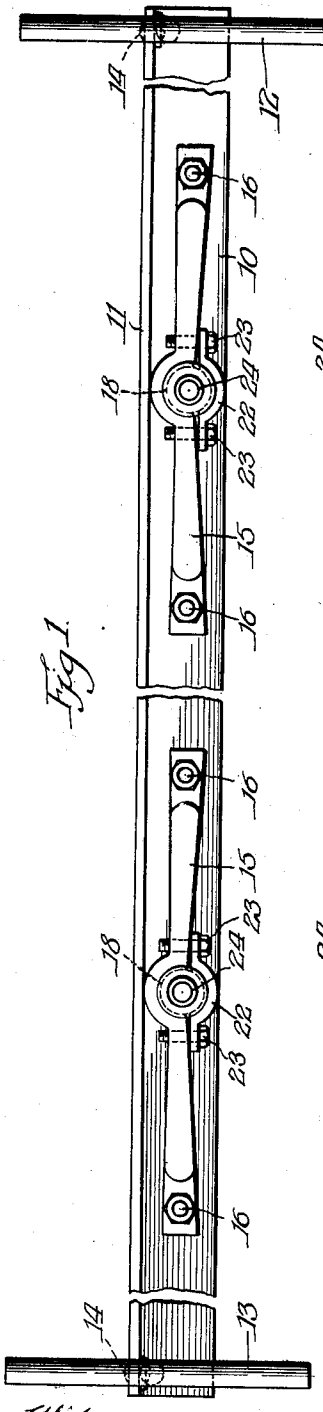


Fig. 1.

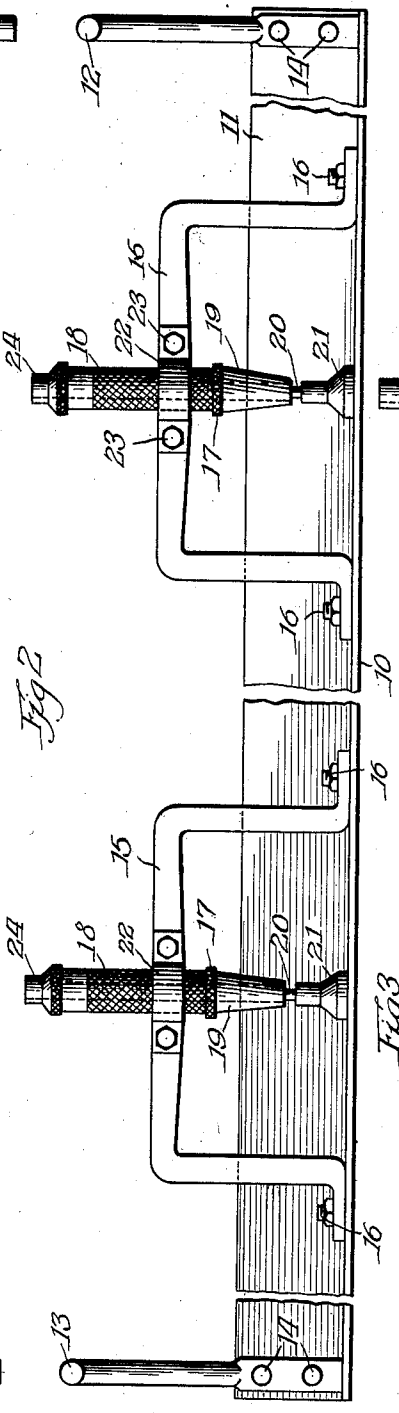


Fig. 2.

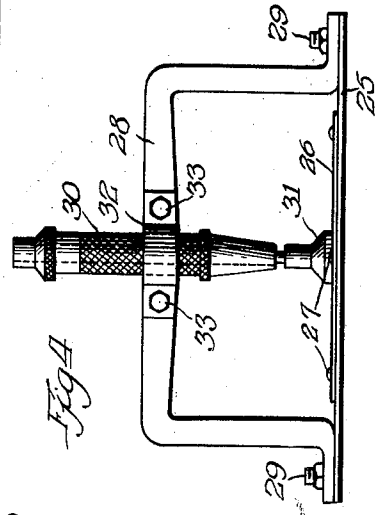


Fig. 4.

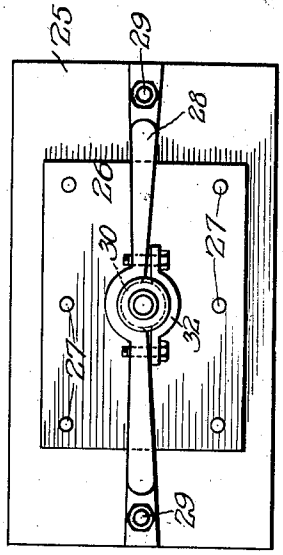


Fig. 3.

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LEVELING AND TROWELING DEVICE FOR CONCRETE

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Application April 9, 1930. Serial No. 442,832

2 Claims. (Cl. 94—48)

My invention relates to a vibrator for cement tamping, and has particular reference to a vibrating device which is used for the purpose of packing cement in blocks or slabs where the slabs are made in molds in precast condition to be inserted in sidewalks, building and the like, or the device may be used where the cement is laid in sidewalks, floors, for road making and the like, and where it is desired to pack the concrete in order to secure proper bonding of the particles.

Another and further object of my invention is the provision of a tamping or puddling apparatus which imparts a vibratory action to the concrete which is being puddled, rather than a succession of hard blows, so that the particles of the material forming the concrete are packed tightly together without reaction from the particles, and bringing the mass into a closer unit than is possible where the concrete is tamped by hand apparatus, as has been the practice heretofore.

Another and further object of my invention is the provision of a vibrating, packing or puddling apparatus which, in addition to performing its function as a tamping device, also can be used as a leveling off device simultaneous with its use as a packing device, thereby performing the two functions and leaving the concrete slab in such condition that the top surface is smooth after the tamping operation.

These and other objects of my invention will be more fully and better understood by reference to the accompanying sheet of drawing, and in which—

Figure 1 is a top plan view of my improved device adapted to be used as a tamping unit and also as a striking off device;

Figure 2 is a view partially in section and partially in elevation of the device shown in Figure 1;

Figure 3 is a top plan view of a similar unit which is adapted to be used with a mold for precasting flat slabs of concrete; and

Figure 4 is a side elevational view partially in section of the device shown in Figure 3.

Referring now specifically to the drawing, and in which like reference characters refer to like parts throughout, a tamping plate 10 is shown having an upstanding forward edge 11, which forms the striking off portion of the tamping device as it is moved over the topping of the concrete slab, floor, sidewalk, or road section, as the case may be. At each end of the member 10 handles 12 and 13 are provided for facilitating the handling of the device, these members being secured to the upstanding portion 11 by means of rivets 14, 14.

Attached to the member 10 is a pair of yokes 15, 15 these members having outwardly turned foot portions through which bolts 16, 16 extend and through the plate 10 which forms the base of the tamping or packing member.

Air hammers 17 are provided which comprise body members 18, 18 having cylinders 19, 19 therein, with plunger tappets 20, 20 mounted in the cylinders 19, 19 and upon which foot portions 21, 21 are mounted which are in contact with the upper surface of the plate 10. These air hammers 17 are the usual commercial form of hammers used for riveting, excavating and the like, with the exception that foot portions 21, 21, having flat bottom surfaces, are provided on the ends of the plunger tappets 20, 20, and detailed description of these air hammers is unnecessary for understanding the invention.

The yokes 15, 15 have semi-circular portions formed at the centers within the body members 18, 18 of the air hammers are fitted with cooperating loops 22, 22 being attached to the yokes 15, 15 through bolts 23, 23, and which are fitted against the air hammer bodies 18, 18, so that the hammers are clamped in upright position upon the yokes 15, 15 with their foot portions in contact with the plate 10. Connections 24, 24 are provided by means of which the usual air hose, which leads to a compression device, is attached to the air hammers 17.

Referring now particularly to Figures 3 and 4 in which a modified form of the device is shown, a tamping plate 25 is provided upon which a second plate 26 is placed and secured thereto by means of rivets 27, 27. A yoke 28 is provided which is secured to the main plate 25 by bolts 29, 29 and has an air hammer 30 having a foot portion 31 in contact with the plate 26 and is secured to the semi-circular portion of the yoke by means of a loop 32 by bolts 33, 33. This form of device is especially adapted for use in tamping flat slabs of concrete into a mold in which the plate 25 is substantially the same size and dimension as the mold itself.

In operation, if a large slab of concrete is being formed, the device illustrated in Figures 1 and 2 is set on top of the concrete and compressed air turned into the air hammers 17, which, through the foot 21 imparts a vibratory action to the plate 10. This plate is caused to vibrate, which causes the coarse aggregate to

settle into place and also causes the paste of the mix to fill the voids in the concrete mix. The intensity of the vibration is controlled by regulating the pressure of the compressed air through the air hose admitted to the air hammers 17, 17. The device is moved along over the top of the mix which is tamped in place, and then the member 11 forms a striking off plate for the topping so that any surplus of the topping mixture is pushed off from the mold by the upstanding member 11 of the plate 10, so that as the device is moved over the top of the mix, and preferably allowed to rest upon the sides of the form or upon the mold, the mixture is tamped into position and is also struck off at the top.

In the device shown in Figures 3 and 4, the plate 25 is set on the top of the mixture in a mold and air turned into the hammer which causes a vibrating of the mix and a tamping of the mixture in the manner as described above. This form is particularly useful where the mixture is quite wet and a part of the aggregate floats in the mixture in that the floating particles are forced down and vibrated into the mixture so as to become an integral part thereof. The device has also been found to operate highly successfully in mixtures which are exceptionally dry because the vibration of the mix forces the paste into the interstices around the coarser particles of the aggregate and holds them until a sufficient bonding takes place to mold the mixture into a dense mass.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. In a combined leveling and troweling device, the combination of an elongated sheet metal member formed with a horizontal flange having a lower smooth troweling surface, and with a vertically extending flange adapted to level off the surface of the concrete, a pair of upwardly extending handles carried by said vertical flange and located one at each end of said elongated metal member, and a plurality of vibrators carried by said elongated metal member and located at predetermined points, each of said vibrators comprising an air hammer, a bracket carried by said elongated metal member, clamping means carried by said bracket for securing said air hammer in position to engage said elongated metal member, and a vibrating impact member carried by said air hammer and adapted to engage said elongated metal member.

2. In a combined leveling and troweling device, the combination of an elongated sheet metal member formed with a horizontal flange having a lower smooth troweling surface, and with a vertically extending flange adapted to level off the surface of the concrete, a pair of upwardly extending handles carried by said vertical flange and located one at each end of said elongated metal member, a plurality of vibrators, each vibrator having means for impacting said leveling device, said vibrators comprising air hammers, a bracket for each vibrator, said bracket having clamping means for engaging the body of the vibrator and supporting the same, each of said brackets having laterally and downwardly projecting arms and supporting feet, said feet being spaced from said vibrator whereby said feet are adapted to resist the reaction of said vibrator upon impact of the vibrator part with said leveling device and said leveling device is adapted to be placed in a state of high frequency vibration at a multiplicity of spaced points throughout its length.

BYRON S. CLARK.