Jan. 21, 1930. C. L. LA PLANT ET AL 1,744,272

CONCRETE PAVEMENT SURFACE FINISHING ROLLER

Filed July 10, 1928 2 Sheets-Sheet 1

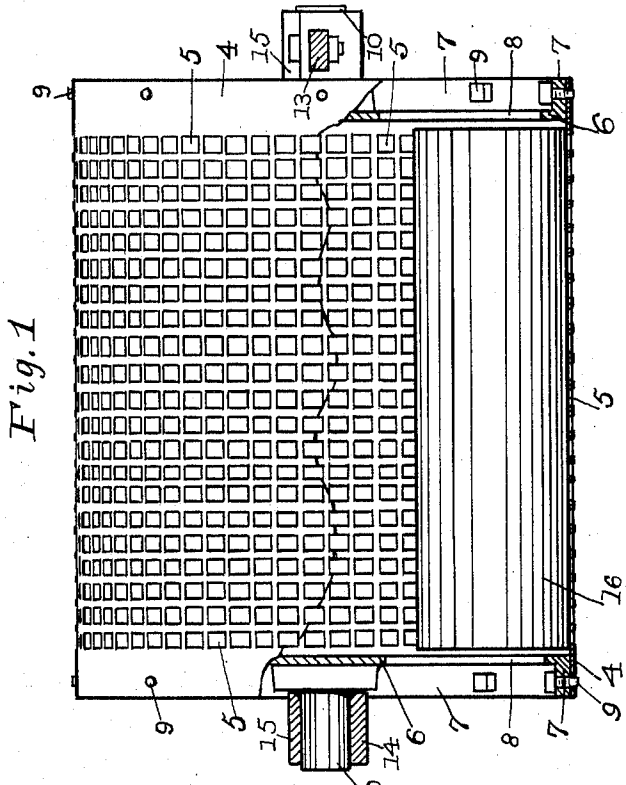


Fig. 1

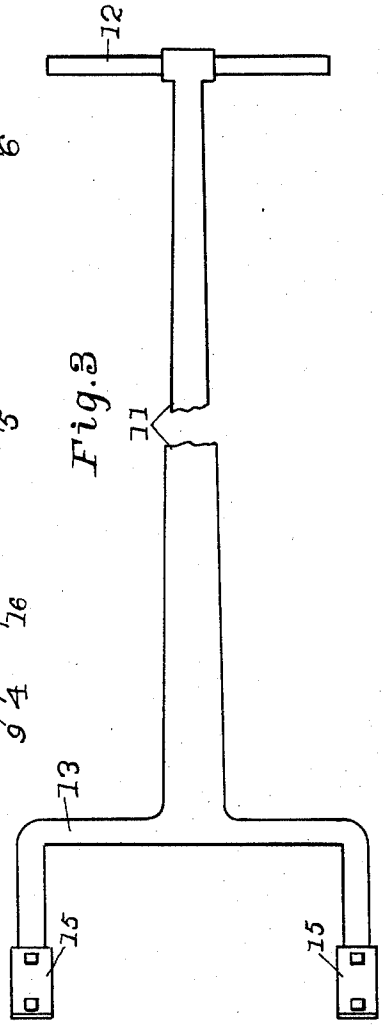


Fig. 3

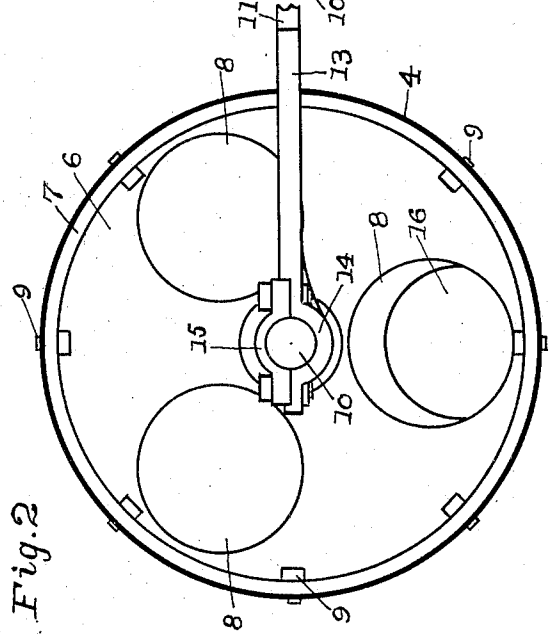


Fig. 2

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CONCRETE PAVEMENT SURFACE FINISHING ROLLER

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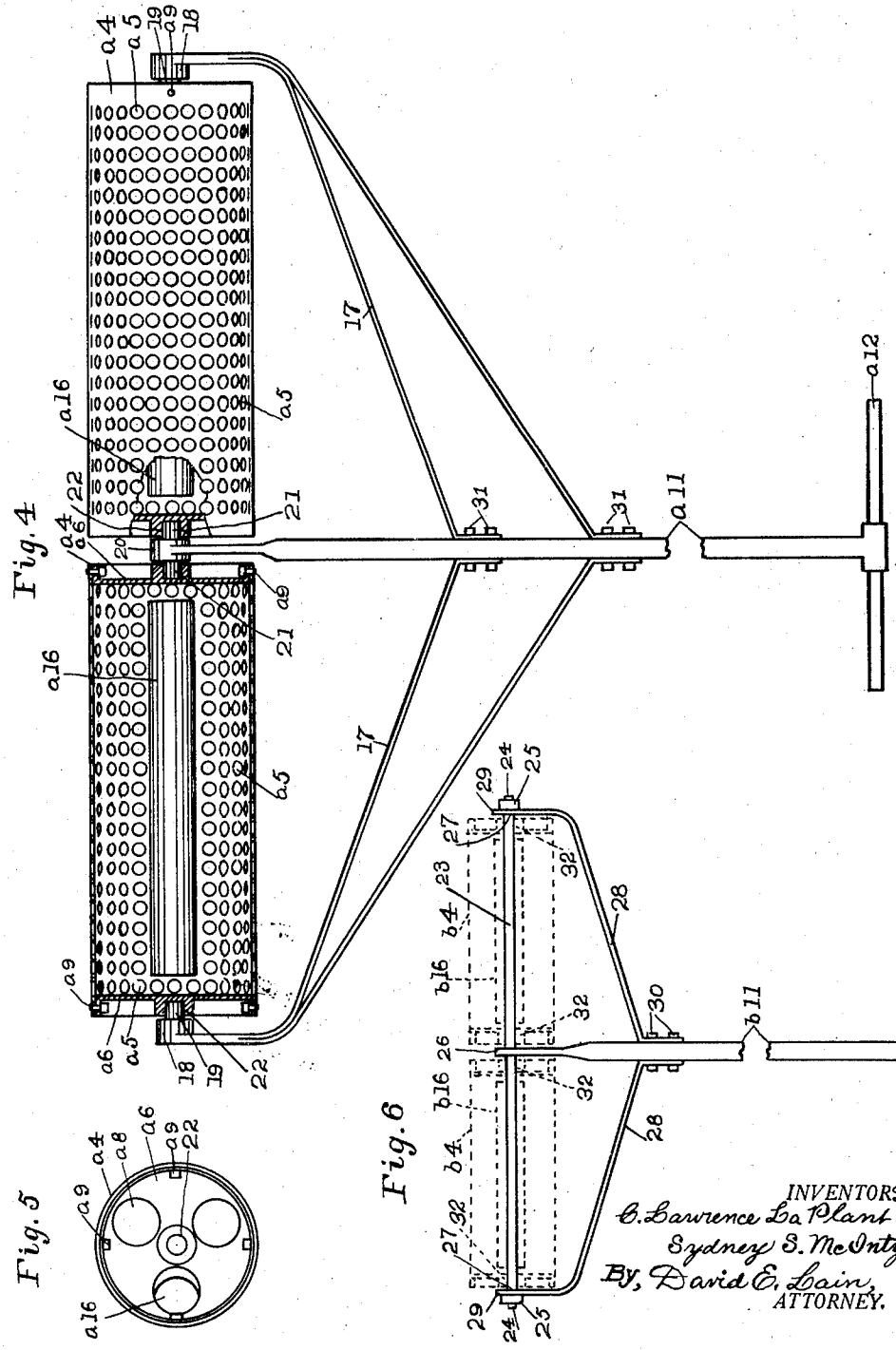


Fig. 4

Fig. 5

Fig. 6

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UNITED STATES PATENT OFFICE

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CONCRETE-PAVEMENT SURFACE-FINISHING ROLLER

Application filed July 10, 1928. Serial No. 291,553.

Our invention relates to improvements in concrete pavement surface finishers, and has for an object to provide a device to press down beneath the surface the coarser solids and allow only the finer mixture to occupy the top surface stratum.

Another object of our improvement is to provide a device adapted to distribute, surface, compress and remove the surplus water from said segregated top stratum.

Another object of our improvement is to provide a device adapted to cause said segregation, distribution, surfacing, compressing and water removal to proceed simultaneously under the operation of a single apparatus.

Another object of our improvement is to provide for the easy removal of the interior rollers, when used, without taking the apparatus apart.

A further object of our improvement is to provide an apparatus for the stated purpose of relatively simple and inexpensive construction suited for cleaning with water when completely assembled and easily taken apart.

Further objects of our improvement will appear as the description proceeds.

We attain these and other objects of our improvement with the mechanism illustrated in the accompanying two sheets of drawings in which Figure 1 is an elevation view of our single roller machine, having the handle and the lower front part of the shell broken away, Fig. 2 is an end elevation view of Fig. 1 with part of the handle broken away, Fig. 3 is a plan view of the handle used with our single roller machine having the central portion thereof broken away for lack of space and drawn on a smaller scale, Fig. 4 is a plan view of our two-roller machine the upper half of one roller of which is broken away to a medial horizontal plane and the central portion also of the handle is broken away and the drawing is made on a smaller scale, Fig. 5 is an end elevation of Fig. 4 with the handle removed, and Fig. 6 is a plan view of another of our two-roller machines in which a shaft extends through the machine and provides axle mounting for both outside rollers, a central portion of the handle is broken away and the rollers are shown in dotted outlines only and the drawing is made on a smaller scale.

Similar characters refer to similar parts throughout, and certain parts are broken away for lack of space or to show other parts hidden thereby.

With more particular reference to the designated parts: The external roller of our single-roller machine, as illustrated, consists of cylindrical shell 4 having a large number of perforations 5 evenly disposed over its wall. These perforations are shown as rectangular but may be of other desired shape of cross section. In the ends of shell 4 are fitted heads 6, 6 each of which has an outwardly turned flange 7 contacting with the inner wall of said shell. Flanges 7 have tapped holes therein registering with holes in shell 4 near the ends thereof through which are extended cap screws 9 to removably fasten the heads in the shell.

A stud shaft 10 is fastened centrally in each of said heads projecting outwardly and these shafts are in line.

Handle 11 has handle bar 12 on one end and yoke 13 on the other end thereof. The ends of said yoke are shaped to provide the lower halves of boxes 14, 14 and each has a cap 15 retained in place by cap screws. In this manner the removal of the handle is provided for.

Heads 6 have openings 8 therethrough.

Cylindrical roller 16 is placed in shell 4 with its ends adjacent heads 6. When roller 16 is of the relatively small diameter illustrated it is preferably solid to provide weight. But it also may be of larger diameter when desired and the interior of shell 4 is made clear for this object. When of the small diameter shown, it can pass through head openings 8 for removal or replacement. When of larger diameter it may be made hollow with closed ends to avoid undesirable weight.

As shown, roller 16 nearly fills the length of shell 4 and is free to revolve and roll therein as said shell rolls over the ground.

One of our two-roller machines is shown in Fig. 4 in which a^4, a^4 are the cylindrical shells, a^5 circular perforations in the walls of said shells, a^6 heads fastened in the ends of

shells a^4 by cap screws a^9, and a^{16} are the interior rollers within shells a^4.

Handle a^{11} has handle bar a^{12} on its outer end and boss 20 on its inner end into which are fastened double axles 21, 21. Bracing shank brackets 17, 17 are fastened to handle a^{11} with bolts 31 and have end bosses 18, 18 into which are fastened axles 19, 19. The axes of axles 19 and 21 are in line and at right angles with handle a^{11}. Centrally in the outer wall of each of heads a^5 is hub bearing 22 suited to mount one of said axles, and shells a^4, a^4 are mounted to operate on handle a^{11}, by first removing brackets 17 from handle a^{11}, placing shells a^4, a^4 end to end with axles 21, 21 mounted in opposite bearings, and then fastening brackets 17, 17 with bolts 31 to handle a^{11} after having mounted axles 19, 19 in outer bearings 22, 22.

Interior rollers a^{16}, a^{16} may be introduced or removed through head openings a^8. But, as shown, the chambers within perforated shells a^4, a^4 are clear and rollers larger than the illustrated diameters of a^{16}, a^{16} may be used. In this case they would be placed within said shells when heads a^5 were removed therefrom.

When the rollers used within the perforated shells are somewhat less than the half of the interior diameter thereof we have, in practice, used the simpler and cheaper construction shown in Fig. 6. Here handle b^{11} has hand bar b^{12} on its outer end and an extended inner end 26 having an opening therethrough. Shank brackets 28, 28 are fastened to the handle with bolts 30. The inner ends of these brackets have openings therethrough in line with said opening in handle end 26. Through handle end 26 is extended shaft 23, the ends of which are of reduced diameter and threaded at 24, 24 providing shoulders 27, 27. Said holes in the ends of brackets 28, 28 at 29, 29 are adapted to receive said shaft ends 24, 24 which are extended therethrough and the shaft is maintained in said handle by nuts 25, 25 engaged on shaft ends 24, 24.

Perforated shells b^4, b^4, shown in dotted lines only, have heads with central bearing holes 32 therethrough. While brackets 28 are removed from the handle, shells b^4, b^4 may be mounted on shaft 23 with bearings 32 on said shaft. Then when the brackets are fastened in place on said handle with bolts 30 and also fastened on the ends 24 of shaft 23 the shells are properly connected to the handle for operation. It may be assumed that the heads in shells b^4, b^4 are fastened therein with cap screws or in another easily removable way and that openings therethrough permit the passage of interior rollers b^{16}, b^{16}.

In the building of concrete roads and side walks and following the distribution and grading of the poured concrete over a section of the pavement under construction, it is desirable to depress the coarser solids beneath the top surface to allow a fine rich mixture to compose the top stratum and thus the coarser solids will be covered by a skin consisting of fine materials only.

When no means of depressing the coarser solids is provided it is usually necessary to apply said skin as a separate finishing coat.

Hitherto attempts have been made to effect the desired segregation of a top stratum of fine material by rolling over the plastic pavement a roller made of woven wire screen. This served in a partial way only. After some use it lost its cylindrical shape and in rolling did not properly depress all of the larger solids at the surface. Also, when used in the new quick-setting concrete, the web of the roller frequently became filled with the concrete and rendered it quite useless.

Our perforated cylindrical shell is an improvement over the earlier wire screen roller in that it maintains its cylindrical shape under use.

The use of the interior rollers, as disclosed, provides added pressure on the line of contact to depress the larger solids, surfaces the tops of the smaller solids which enter the holes in the shells the thickness of said shells above the larger solids, thus forming a stipple of the top surface of said solids entirely beneath or on the bottom of the segregated top stratum, distributes the fine top stratum more nearly to the desired surface grade, prevents accumulations of concrete in the perforations and carries the surplus water over the margins of the pavement. These desirable operations proceed simultaneously while one of our machines are rolled forth and back over the plastic pavement.

We build our rollers suitable for hand hauling but it is quite evident that they are also suited for operation with power when arranged for that use.

The thickness of our perforated cylindrical shells, their diameter and number mounted in a single handle, the shape frequency and size of the shell perforations, and the diameter and weight of the interior cylinders are made to suit the character of the work in hand and may vary considerably as desired.

Having thus disclosed our invention, what we claim as new therein and desire to secure by Letters Patent is:—

1. A concrete pavement surface finishing roller consisting of a foraminous cylindrical shell, heads fastened in each end of said shell, pull connections for said roller, means to connect said pull connections to the center of each of said heads for the revolution of said shell on said pull connections, and a cylindrical roller housed in said foraminous shell for free rolling therein and therewith.

2. A concrete pavement surface finishing roller consisting of a plurality of foraminous cylindrical shells of equal diameter disposed end to end, a head fastened in each end of each

of said shells, pull connections for said roller, means to connect said pull connections to the center of each of said heads in the same axis for the revolution of all of said shells on said pull connections, and a cylindrical roller housed in each of said foraminous shells for free rolling therein and therewith.

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