July 30, 1957 C. D. CLEMENT 2,800,700

CONCRETE DRAIN TILE MACHINE

Filed Nov. 6, 1953 3 Sheets-Sheet 1

Fig. 1.

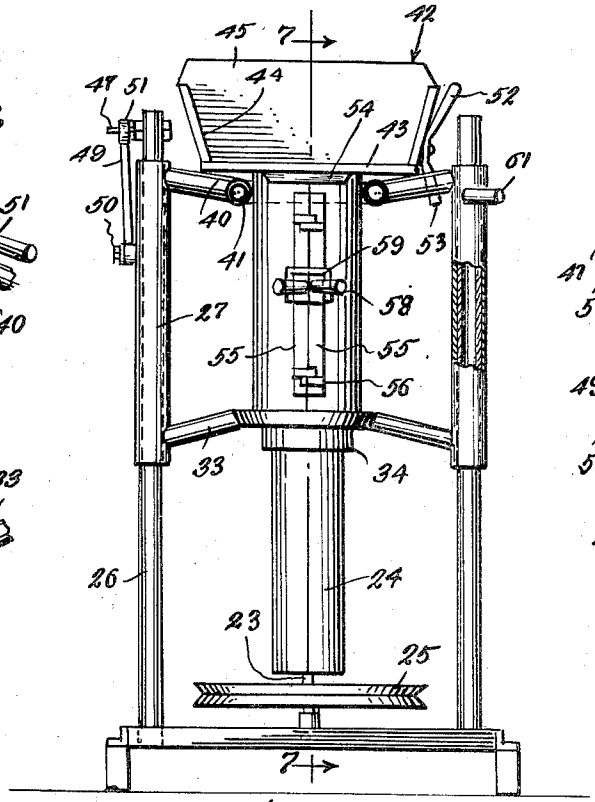


Fig. 16.

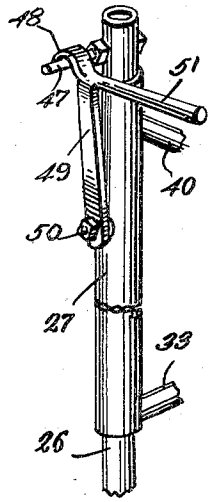


Fig. 17.

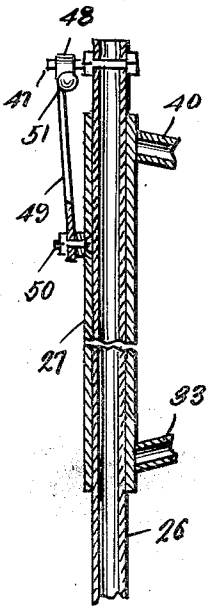


Fig. 2.

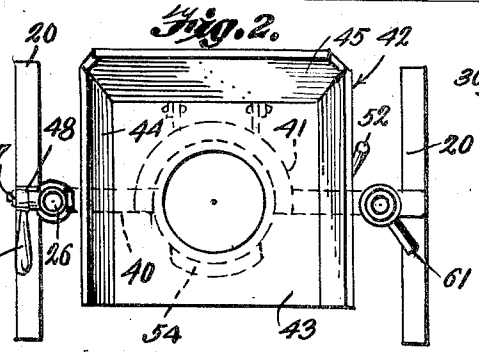


Fig. 11.

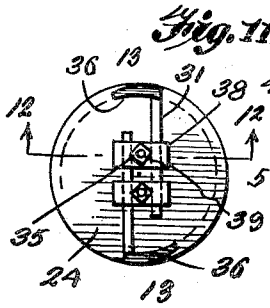


Fig. 13.

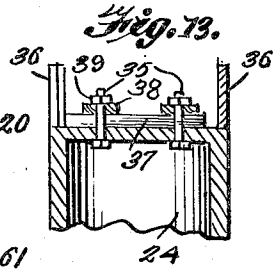


Fig. 12.

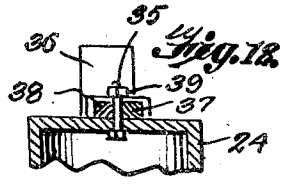
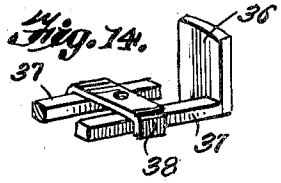


Fig. 14.



INVENTOR.
CHARLES D. CLEMENT

BY

Patrick D Beavers
ATTORNEY

July 30, 1957 C. D. CLEMENT 2,800,700

CONCRETE DRAIN TILE MACHINE

Filed Nov. 6, 1953 3 Sheets-Sheet 2

Fig. 3.

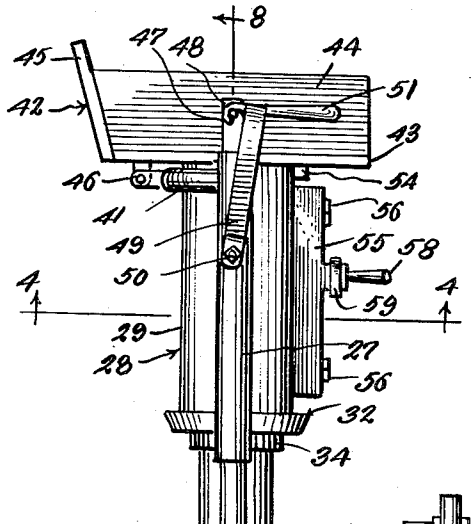


Fig. 5.

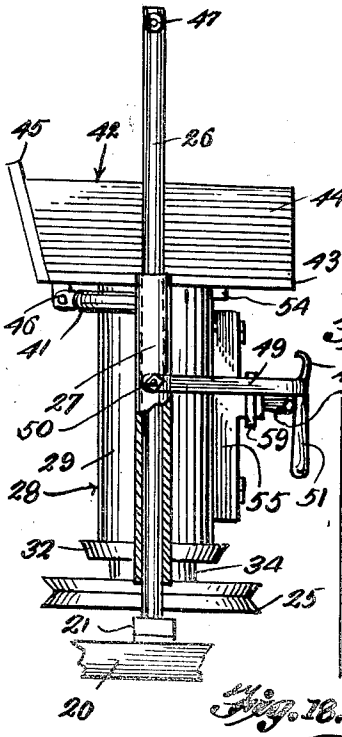


Fig. 6.

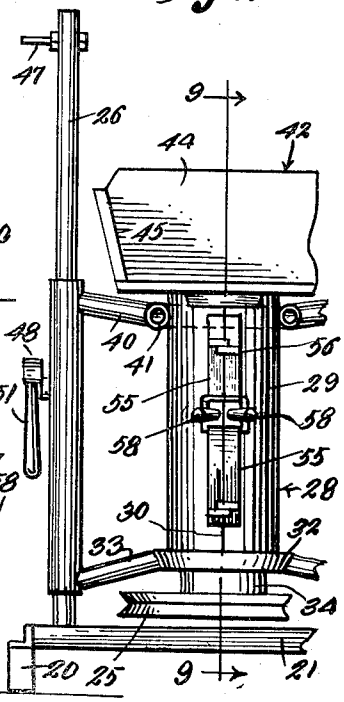


Fig. 4.

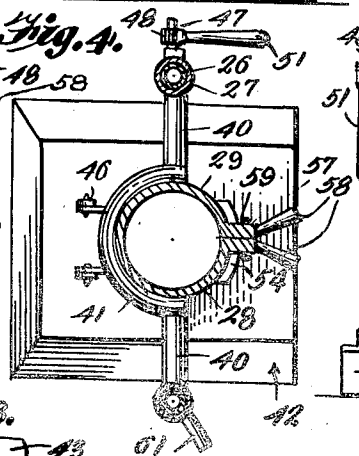
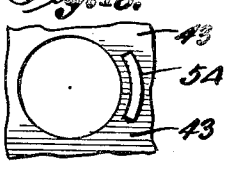


Fig. 10.



INVENTOR.
CHARLES D. CLEMENT
BY
Patrick D. Beavers
ATTORNEY

July 30, 1957 C. D. CLEMENT 2,800,700

CONCRETE DRAIN TILE MACHINE

Filed Nov. 6, 1953 3 Sheets-Sheet 3

Fig. 7.

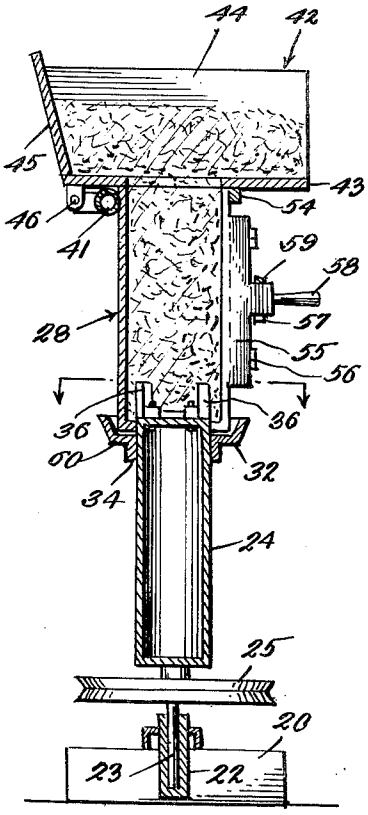


Fig. 8.

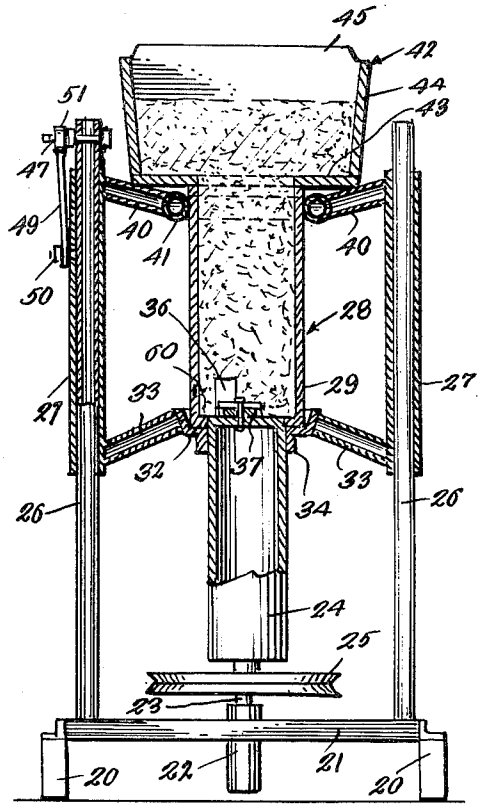


Fig. 9.

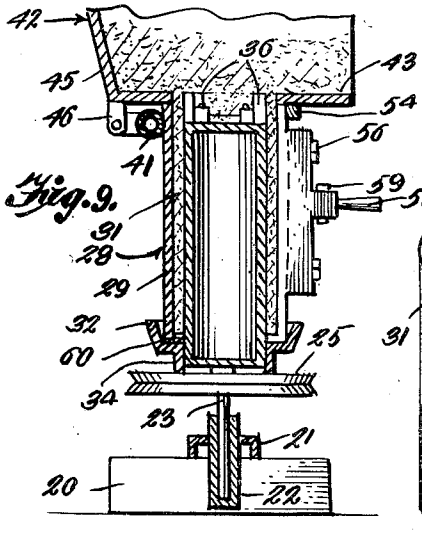


Fig. 15.

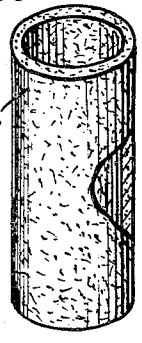
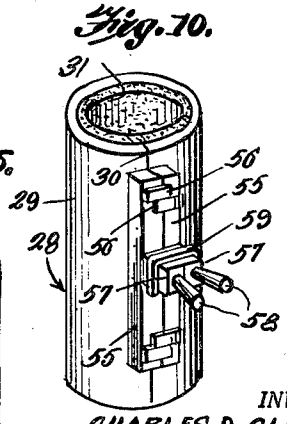


Fig. 10.



INVENTOR.
CHARLES D. CLEMENT
BY
Patrick D Beavers
ATTORNEY

United States Patent Office 2,800,700 Patented July 30, 1957

2,800,700

CONCRETE DRAIN TILE MACHINE

Charles D. Clement, Cornelia, Ga.

Application November 6, 1953, Serial No. 390,521

1 Claim. (Cl. 25—36)

This invention relates to machines or devices for the production of concrete drain tiles.

The principal object of the present invention is to provide a machine whereby concrete drain tiles are manufactured from a semi-dry concrete mix in a quick and efficient manner.

Another important object of the invention is to provide a simplified and low cost machine for the manufacture of concrete drain tiles which because of its low cost can be found well within the reach of most land owners and others requiring considerable drain tiling.

Still another important object of the invention is to provide a machine of the character stated which is positive acting and substantially foolproof in operation at all times.

A further object of the invention is to provide a machine which is durable and not susceptible to the ready development of defects.

These and various other important objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 is a front elevational view of the machine showing one of the uprights and its companion sleeve in section.

Figure 2 is a top plan view.

Figure 3 is a side elevation.

Figure 4 is a section taken on line 4—4 of Figure 3.

Figure 5 is a fragmentary side elevational and sectional view showing the hopper and mold band in lowered position.

Figure 6 is a fragmentary front elevational view of the structure shown in Figure 5.

Figure 7 is a vertical sectional view taken substantially on line 7—7 of Figure 1.

Figure 8 is a section taken on line 8—8 of Figure 3.

Figure 9 is a section taken on line 9—9 of Figure 6.

Figure 10 is a perspective view of the mold band removed from the machine.

Figure 11 is a top plan view of the packerhead.

Figure 12 is a fragmentary section taken on line 12—12 of Figure 11.

Figure 13 is a fragmentary sectional view taken on line 13—13 of Figure 11.

Figure 14 is a fragmentary perspective view of the extensible packing elements.

Figure 15 is a perspective view of a formed tile with a portion broken away.

Figure 16 is a fragmentary perspective view showing the guide means for the mold carriage.

Figure 17 is a fragmentary vertical sectional view through the structure shown in Figure 16.

Figure 18 is a fragmentary bottom plan view of the hopper.

Referring to the drawings wherein like numerals designate like parts, it can be seen that the machine includes a base which may be formed of a pair of elongated supporting members 20, 20, bridged by a channeled member

21 and downwardly through this is disposed a bearing 22 in which a spindle 23, depending from the lower end of a packerhead 24 is journalled. There is a power driven pulley 25 on this spindle, above the bearing 22, as seen in Figure 7. An internal combustion engine of low horse power can be utilized in operating the machine through the medium of a belt (not shown) to the pulley 25.

From the end portions of the inverted channeled member 21, rise tubular posts 26, 26 and on these posts 26 ride sleeves 27, 27.

Referring to Figure 8, it can be seen that numeral 28 generally refers to a mold band, which is a metallic band 29, split longitudinally as at 30, so that it can be slightly opened by means hereinafter described in order to permit displacement of a formed or molded drain tile 31. (See Figure 10.)

Numeral 32 denotes an annular shoulder having a sloping side wall, for receiving the lower end of the band 29, as shown in Figure 8 and tubular struts 33, 33 extend from this shoulder 32 and connect at their outer ends to the lower portions of the sleeves 27, 27. It will be observed that where convenient the various connections are made by welding.

The shoulder 32 has a depending apron 34, through which the packerhead 24 is snugly slideable, this packerhead being preferably hollow and of cylindrical shape, the upper end of which having stud bolts 35 rising therefrom to accommodate adjustable packer elements. These packer elements are in the form of cam-like shoes 36, 36, each of which has a leg 37, these legs being disposed under a strap 38 having downturned end portions and each strap is formed with an opening to receive a corresponding stud bolt 35. These stud bolts are equipped with nuts 39, which when tightened down on the straps 38 will hold the legs 37 firmly in place and the packer shoes 36 in a definite adjusted position. This adjustment allows for wear on the shoes. A glance at Figure 11 will show the disposition of the packer shoes 36. These shoes serve to pack the concrete against the inside of the band 29, as the band and its concrete content lowers downwardly on the packerhead cylinder 24.

Tubular struts 40, 40 extend inwardly from the upper ends of the slide sleeves 27, 27 and are welded or otherwise secured to the ends of a yoke 41 having an inside diameter approximately the same as the outside diameter of the mold band 29.

Numeral 42 denotes a concrete containing hopper having a bottom 43, side walls 44 and a back wall 45. A hinge connection 46 is provided between the rear portion of bottom 43 and the yoke 41, as is shown in Figure 7. Thus the hopper becomes part of the carriage and is capable of being swung backwardly, out of the way when the mold band 28 is to be removed.

To maintain the carriage in elevated position, the upper end of one of the posts 26 has an outstanding pin 47 and over this is engageable a hook 48 which is carried by one end of a swingable arm 49 which is pivotally connected as at 50 to the adjacent sleeve 27 and the outer end of this arm 49 has a handle 51.

To maintain the hopper 42 downwardly upon the mold band 28, one side of the hopper 42 is provided with a rockable lever 52. One end of this lever 52 is constructed to form a handle, while the opposite end is formed to provide a hook 53 which is engageable over one of the upper struts 40, as shown in Figure 1. It will also be observed that the upper end of the mold band 28 abuts the bottom of the hopper 42, when the hopper is properly disposed thereover.

Now referring again to the mold band 28, it can be seen that the upper end thereof fits within the yoke 41, as shown in Figure 8 and further shown in Figure 4 and as is brought out in Figures 1, 2 and 18, the bottom 43

of the hopper 42, at the forward portion of the concrete passing opening therein has a depending lip 54, which further serves as an abutment for the upper portion of the mold band 28.

At each side of the slit 30 in the mold band 28 is a cleat 55 and these cleats are provided with fingers 56 which overlap the cleats as shown in Figure 10, when the band is closed. A pair of locks 57, 57 project outwardly from medial portions of the cleats 55 and have handles 58 protruding therefrom. A clip 59 is disposed over the locks 57 to hold the same together and the mold band 29 closed. As is shown in Figure 8, the lower end of the mold band is provided with an in-turned ledge 60 to prevent the fresh tile from slipping out of the band when the band is removed from the machine.

In the use and operation of this machine, the hopper 42 is first swung backwardly out of the way of the upper end of the mold band 28, after the hook 53 has been swung off of the strut 40. This removes the lip 54 (see Figure 7) from in front of the mold band, so that the mold band can be lifted from the shoulder 32 (see Figure 8) and swung forwardly from embracement by the yolk 41.

An emptied mold band 29 is placed in an upright position upon the shoulder 32 and over the upper end of the packerhead 24. The hopper 42 is now swung to the position shown in Figure 7 and a semi-dry concrete mix is poured into the hopper and into the mold band 28 to the extent substantially shown in Figure 7.

The internal combustion engine (not shown) is now set in operation or a clutch actuated so that the pulley wheel 25 is driven. The hook 48 is now released from the pin 47 (see Figure 3) and this permits the carriage including the mold band 28 to move downwardly on the packerhead 24 as the packerhead is rotated by the driven pulley 25 and as the packer shoes 36 move against the concrete mix and force the same against the inside of the mold band, as the mold band lowers on the packerhead 24, the packerhead cylinder serving to form the opening through the tile as the tile wall is being formed by the packer shoes.

When the carriage has fully descended and the top of the mold band 28 has lowered to a point below the top of the packerhead 24, as shown in Figure 9.

The carriage is now lifted, and this moves mold band to the position shown in Figure 8 with the freshly formed tile therein. The hook 53 is now removed from the companion strut 40 and the hopper 42 is swung backwardly clear from the upper end of the mold band 28. This frees the lip 54 from in front of the band and the band with its tile content can then be removed from the shoulder 32. By removing the clip 59, and spreading the handles 58, 58, the drain tile 31 will easily slip from the band 29.

While the foregoing description sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention what is claimed as new is:

In a concrete tile forming machine including a base, uprights on the base, a rotatable packerhead on the base, an expandable mold band vertically slidable on the packerhead, a carriage slidable upon the uprights, a yoke carried by said carriage and embracing a portion of said mold band, struts interconnecting said carriage and said yoke, a hopper hingedly connected to said carriage and having an opening therein adapted to overlie the top of said mold band, and a lip dependent from said hopper and abutting the mold band in opposed relation to said yoke the provision of means for holding the carriage in elevated position, and means for holding the hopper in lowered position, said last-mentioned means comprising a hook pivoted to one side of said hopper and engageable over one of said struts, and said first-mentioned means comprising a pin extending from the upper end portion of one of said uprights, a hook pivoted to said carriage and engageable over said pin.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 1,277	Knight	Feb. 25, 1862
968,360	Johnson	Aug. 23, 1910
1,047,419	Laage	Dec. 17, 1912
1,081,399	Newman	Dec. 16, 1913
1,473,969	Nichols	Nov. 13, 1923
1,504,834	Raffins	Aug. 12, 1924
1,510,220	Heffer	Sept. 30, 1924
2,544,453	Gaudin	Mar. 6, 1951

FOREIGN PATENTS

28,648/30	Australia	Aug. 27, 1931