July 8, 1952 G. A. VAUGHN 2,602,410

TILE-LAYING ATTACHMENT

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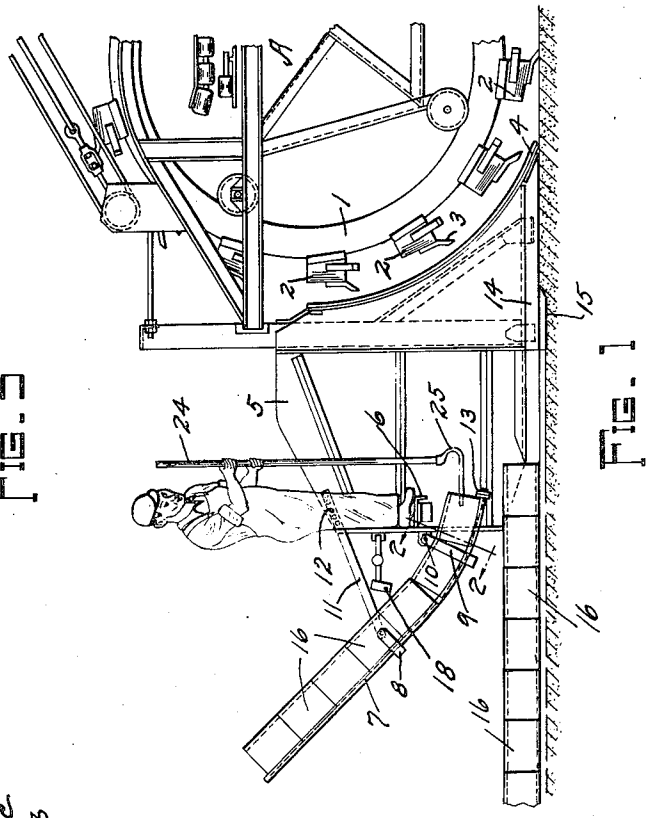


Fig. 1

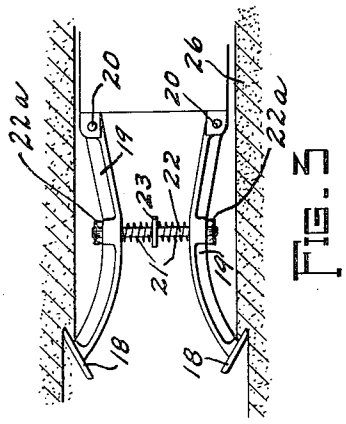


Fig. 3

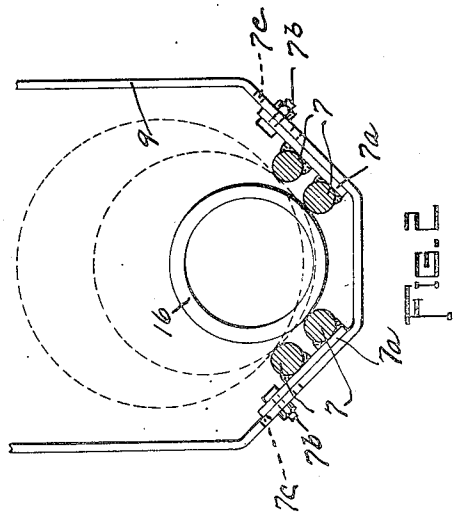


Fig. 2

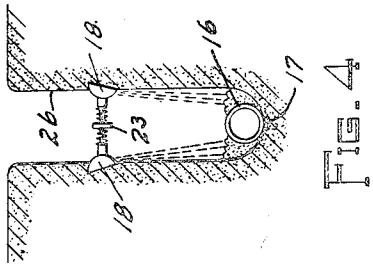


Fig. 4

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TILE-LAYING ATTACHMENT

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3 Claims. (Cl. 111—5)

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My present invention pertains to the art of laying tile in ditches or trenches and includes novel instrumentalities useful in performing such tile-laying operations.

In carrying out my invention the general method employed utilizes a machine in the form of an excavating wheel or like ditching machine that is progressively advanced in the formation or digging of the trench or ditch in which the tile is laid. The said machine carries a tile chuting appurtenance comprising guide means for guiding the tiles in a gravitative manner toward the bottom of the trench as the latter is excavated. Broadly this type of machine and method of operation has been heretofore proposed in the art as for instance exemplified by United States Patent #895,439 issued August 11, 1908.

The novel feature of this invention lies in the use of my machine for progressive forward movement to excavate the trench in which the tile is to be laid, manually depositing the tile to avoid any digging action of the ends of the tile, and as the tiles are being laid causing the machine to perform a blind filling operation to detach dirt from the sides of the trench previously excavated, whereby said dirt will fall to the bottom of the trench at opposite of the tiles previously deposited by the method of operation above set forth.

The instrumentalities for effecting the above blind filling operation comprise certain specific novel features hereof.

My invention will be understood upon reference to the following detailed description, in conjunction with the annexed drawings, in which:

Figure 1 is a side view illustrating the rear end portion of a conventional type of ditching machine as modified in frame construction to carry my novel tile laying attachment structure, the illustration depicting the fresh tiles being chuted gravitatively downward in the detaining chute, ready for depositing by manual operation as a continuation of the conduit made up of the tiles shown at the bottom of the trench.

Figure 2 is an enlarged cross sectional view taken approximately on the section line 2—2 of Figure 1.

Figure 3 is a horizontal sectional view showing more particularly the blind filling scraper devices that loosen the dirt at the opposite sides of the trench excavated, for falling on the bottom of the trench at opposite sides of laid tiles.

Figure 4 is a vertical sectional view bringing out more clearly the arrangement of the parts of Figure 3 as when in operation, in relation to the tile already deposited on the bottom of the trench.

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In Figure 1 of my drawings I have illustrated a somewhat conventional type of wheel ditching or trenching machine generally designated at A. Such machines are commonly known to those versed in this art and include the trench cutting or digging wheel 1 having the buckets 2 equipped with cutting teeth 3 in the customary manner. The frame of such a conventional ditching machine is equipped with a plow 4 adapted to operate at the bottom and side portions of the trench excavated by means of the excavating ditching wheel and the rear end of the frame of the excavator is equipped with a box-like extension 5 comprising a vertical member or members supporting a platform 6 on which the operator who handles the tile laying work may stand after the manner depicted in Figure 1. The extension 5 is built to support the tile chuting device comprising a plurality of parallel bars 7 connected together by means of an upper U-shaped member 8 and a lower larger U-shaped hanger support 9. The support member 9 is pivotally connected at 10 to the rear end of the extension 5 of the tile laying attachment and the member 8 is connected to said extension 5 by means of one or more connector plates or bars 11 pivotally attached to the member 8 at its rear end or their rear ends and adjustably connected at its or their front ends to the extension 5 as by means of a fastening member 12 adapted to enter a selected one or ones of a series of openings in the extension 5.

The guide members or rods 7 which make up the skeleton chuting device are curved at their lower ends in a forward direction from the general inclination of the bodies of said rods and these rods may be welded or otherwise attached to the members 8 and 9 as seen by reference to Figure 2 of the drawing.

At the lower ends of the rods or chuting device comprising the members 7, said rods are equipped with stops 13 which are adapted to abut with the lower end of the lowermost tile of the group of tiles which may be in process of being chuted down the chuting device.

By reason of the provision of the stops 13 the tiles will be detained in the chuting device in the manner generally illustrated in Figure 1, when supplied to said device manually. Since the lower end of the chuting device is spaced some distance above the bottom of the trench it will be obvious that the tiles in the chuting device, particularly the lowermost one ready to be delivered to the trench will be supported above the

said bottom of the trench against unauthorized displacement.

In rear of the plow 4 there extends a supporting member 14 equipped with a shoe 15 adapted to ride on the bottom of the trench excavated by the wheel buckets 2 and teeth 3, such shoe forming a longitudinal groove or recess in the bottom of said trench, the purpose of which is to center or stabilize the tiles 16 in positions longitudinally centrally on the trench bottom. The recess or groove formed is designated 17 in Figure 4.

Mounted on the rear end of the extension 5 of the title laying attachment is the blind filling attachment of my invention which comprises the opposite scrapers 18 carried by horizontal arms 19, one on the rear end of each arm. The arms 19 are pivoted at their forward ends at 20 to the extension 5. The said arms 19 are furthermore normally pressed apart by means of expansion coiled springs 21 encircling a rod 22 the ends of which pass guidingly through the middle portions of the arms 19, the outer ends of the springs 21 bearing against the inner surfaces of adjacent arms and the inner ends of the spring 21 having a common bearing abutment 23 located at the middle of the rod 22.

The scraping elements 18 are positioned so that they are engaged in the normal progressive forward movement of my machine with the sidewalls of the trench a short distance below the top of the trench, see Figure 3, and as the ditching machine moves forwardly the scrapers 18 automatically loosen material from the sides of the trench so that it may be caused to fall down to the bottom of the trench. This operation is depicted in a general way in Figure 4 in a self-evident manner.

It is proposed to utilize one or more of the guide rods 7 at each side of the chuting device, each pair or more of a series of such rods being suitably spaced from the opposite pair or series of such rods in the manner shown in Figure 2 so that the tiles 16 may slide down the rods more closely spaced together or farther spaced apart, depending upon the different sizes of tile 16 to be handled. In Figure 2 a small tile is shown in full line as cooperating with the lowermost of the guide rods and other sizes of tiles that may be handled by the chuting device are illustrated by dotted lines in a general way.

With the foregoing construction of my machine in mind the operation of the machine will now be set forth.

The ditching machine will be operated in the customary way by the operator who is seated on the machine for controlling the various driving instrumentalities of the latter. The tile laying operation is performed by a separate operator who stands on the platform 6 previously referred to in the manner illustrated in Figure 1. The tile laying operator will be equipped with a pole or staff having a tile carrying hook, the staff designated 24 and the hook 25. This operator grasps the pole or staff 24 and in order to deposit a tile in the trench 26 he will engage the hook 25 with the internal portion of the tile 16 lowermost in the chuting device 7—7. He will then detach this lowermost tile from the chuting device by lifting it out of engagement with the stops 13 and holding the tile in a horizontal position with its axis substantially parallel with the bottom of the trench he will lower the tile in an accurate vertical line of movement to carry the tile with its rear end into close juxtaposition with the front end of the previously laid tile.

In the above manner of operation, of course, there will be no tendency of the tile last deposited digging by its rear end into the bottom of the trench to move dirt in a position that would space the tiles apart in respect to the finally laid conduit.

Of course, during the above method of operation the ditching machine will be progressively moving forward building the trench by its digging action, while the tile operator is supported in standing position on the platform 6 and properly manipulating the tile in the manner set forth.

When the operator removes the lowermost tile 16 in the chuting device the tiles above said lowermost tile will gravitate down the chuting device and come to a stop when the next lowermost tile abuts with the stop members 13.

The dirt dislodged by the scrapers 18 drops to the trench bottom on opposite sides of the tile, and holds the tile in place, or centered on the trench bottom, in case of wash from water being drained, cave-ins, or wash from rain.

The rod 22 has end nuts 22*a* which by adjustment will adjust the arms 19 outwardly or inwardly for various widths of trenches operated on by the scrapers 18, and said nuts prevent the displacement of the arms 18 from connection with the rod 22.

Plates 7*a* carry the rods 7 and if only one rod is on each plate, the plate may be held by and adjusted on the member 8 or 9, as the case may be by a bolt 7*b*, the adjustment being obtained by the bolt 7*b* for each plate 7*a*, adapted to pass through a selected opening 7*c* of several provided in the member 8 or member 9.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. For use with tile-laying means having trench forming means and a trailing extension traveling in the formed trench, scraping means attached to said extension intermediate the top and bottom of the formed trench, said scraping means comprising a pair of arms extending rearwardly from said extension, each of said arms being connected at one end to said extension and carrying a scraper at the other end, and means between said arms urging the scrapers against the side walls of the formed trench.

2. For use with tile-laying means having trench forming means and a box-like trailing extension adapted to travel in the formed trench, scraping means attached to the rear of said extension, intermediate the top and bottom of the formed trench, said scraping means comprising a pair of arms disposed in a substantially horizontal plane, each of said arms being pivoted at one end to the rear of said extension and carrying a scraper on the other end, and resilient means between said arms urging the scrapers against the side walls of the formed trench.

3. Scraping means as claimed in claim 2, wherein said resilient means comprise spring means.

GEORGE A. VAUGHN.

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