Dec. 3, 1968 A. F. CRONE 3,413,900

GROOVE FILLER

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Fig. 1.

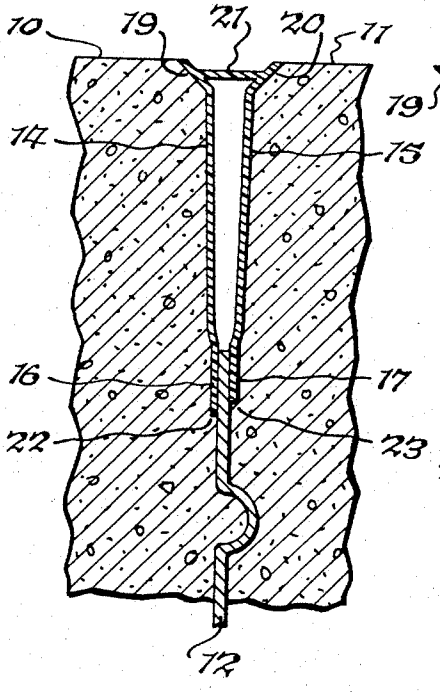


Fig. 2.

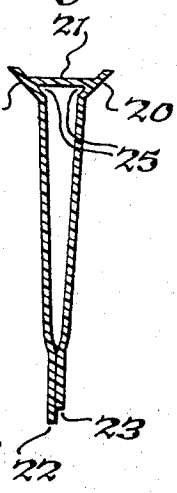


Fig. 3.

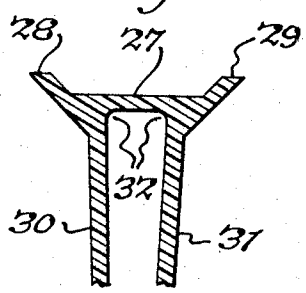


Fig. 4.

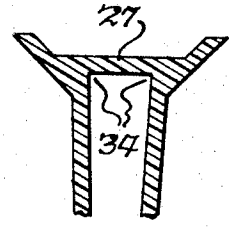


Fig. 5.

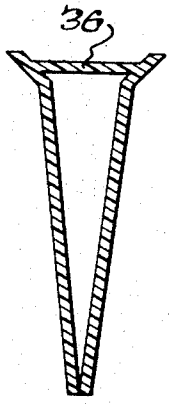
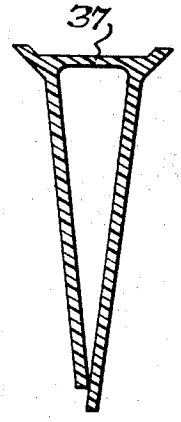


Fig. 6.



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GROOVE FILLER

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Fig. 7.

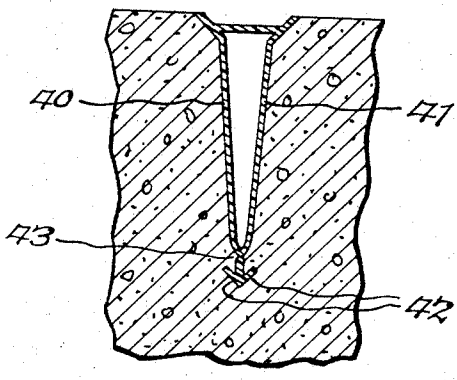


Fig. 8.

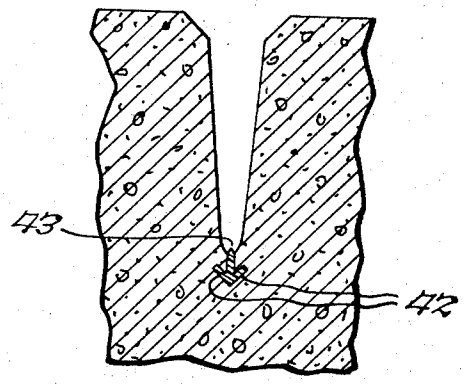


Fig. 9.

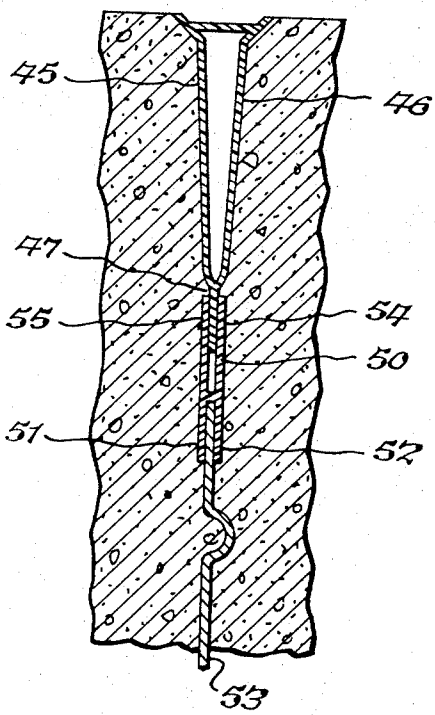
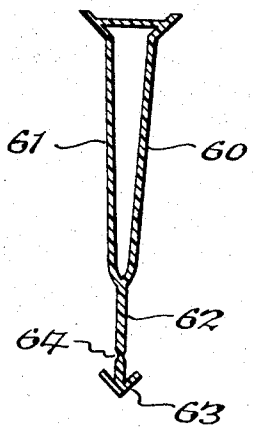


Fig. 10.



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United States Patent Office 3,413,900
Patented Dec. 3, 1968

3,413,900

GROOVE FILLER

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Filed Sept. 30, 1966, Ser. No. 583,180
3 Claims. (Cl. 94—17)

ABSTRACT OF THE DISCLOSURE

This disclosure relates to improvements in groove formers or fillers of unitary construction for concrete pavements, which form grooves in the pavement and are removably positioned in the grooves thus formed at pavement joints to close these grooves and maintain them in correct shape while the pavement is hardening.

The groove fillers as heretofore formed had the upper edges of the sides of the fillers extending more or less straight up or vertically and this formed at the upper edges of the grooves at their intersection with the upper surface of the pavement substantially right angled edges which were found to be somewhat fragile and would easily spall when subjected to pressure of tires of heavy vehicles. It has consequently been found desirable to form these upper edges of the grooves at their intersection with the pavement surface with less abrupt edges to reduce the spalling or breaking of the pavement adjacent to the grooves.

It is consequently one object of this invention to provide grooves having the upper edges thereof formed to flare or extend outwardly, thus forming the upper edges of the grooves at an inclination to the surface of the pavement which will reduce spalling.

A further object is to provide groove fillers with flaring upper ends which are constructed to produce grooves of this type.

Another object is to provide groove fillers with upper walls or members which extend crosswise of the sides so as to space the upper ends of the sides from each other and also brace the upper flaring ends of the sides to resist bending of the same due to pressure of the concrete against them.

Another object is to provide these groove fillers of such construction that they can be readily extruded of a plastic or similar material.

In the accompanying drawings:

FIG. 1 is a transverse sectional view of the upper portion of a pavement showing a groove between the pavement slabs and a groove filler embodying this invention.

FIG. 2 is a transverse section of a groove filler of slightly modified construction.

FIGS. 3 and 4 are sectional views on an enlarged scale of the upper ends of the groove fillers of slightly modified forms.

FIGS. 5 and 6 are transverse sections of groove fillers of still other modified forms.

FIG. 7 is a fragmentary section of a pavement having a groove filler of still different form embedded therein and embodying my invention.

FIG. 8 is a similar section of the same pavement after the major portion of the groove filler shown in FIG. 7 has been removed.

FIG. 9 is a sectional view of a portion of the pavement showing a groove filler embodying this invention and showing it mounted on a center plate of a pavement.

FIG. 10 is a transverse sectional view of a groove filler of another modified construction.

Referring to FIG. 1, two adjacent slabs of a pavement **10** and **11** are shown partly separated from each other by means of a center plate **12** of usual construction and having their upper parts spaced from each other by means of a groove filler embodying this invention. This groove filler has two sides **14** and **15** which converge downwardly toward each other and have their lower ends **16** and **17** slightly separated from each other to straddle the upper edge of the center plate **12**.

In order to provide the upper edges of the groove in the pavement with outwardly flaring or chamfered edges, I have provided the upper edges of the sides **14** and **15** of the groove filler with outwardly flaring parts or edges **19** and **20**. The groove filler is also provided with an upper wall **21** which extends crosswise so as to connect the two sides **14** and **15** and the flaring upper parts thereof. The top wall **21** is preferably formed integral with the outwardly flaring, upper parts **19** and **20**. As described, the structure of the groove filler is such that it can be readily extruded and is preferably made of a suitable plastic material. The top wall **21** is preferably connected with the flaring upper parts of the sides of the groove filler approximately intermediate between their upper edges and their connections with the sides **14** and **15**. In this way the upper wall **21** not only connects the sides of the groove filler, but also spaces the flaring upper parts from each other so as to prevent them from folding or bending inwardly toward each other, due to the pressure of the pavement material.

The lower ends of the two sides **14** and **15** of the groove filler may be made on unequal lengths as shown at **22** and **23**. This facilitates the positioning of the groove filler upon the center plate **12** while the pavement material is in plastic condition by first engaging the lower end **22** with the upper edge of the center plate **12** and then urging the groove filler toward the opposite side of the center plate so that the lower end **23** will be separated from the longer end **22**, whereupon the groove filler can be readily moved downwardly to cause the lower ends of the groove filler to lie on opposite sides of the upper edge of the center plate. In this manner the groove filler can be readily positioned on the center plate so as to form an upper extension of the same. Consequently during expansion and contraction of the pavement the upper part of the pavement slabs can move into and out of the groove filler without damage to the pavement. It will of course be understood that after the paving material has become cured, the groove filler can be drawn upwardly out of the pavement thus leaving a groove into which permanent seals can be inserted.

In FIG. 2 I have shown a groove filler which is similar to the one shown in FIG. 1 except that the junction of the lower face of the cross wall **21** with the outwardly flaring edges or parts **19** and **20** is rounded as shown at **25**, whereas the corresponding parts in FIG. 1 are shown as having sharp intersections.

In FIGS. 1 and 2 the cross wall **21** terminates its upper sides at approximately midway between the upper and lower ends of the outwardly flaring parts **19** and **20**. However, in FIG. 3 a top cross wall **27** is provided, the upper surface of which extends to about half way between the upper ends **28** and **29** and lower edges of the outwardly flaring parts **19** and **20** but the lower surface of the cross wall **27** is formed as a continuation of the upper inner surfaces of the side walls **30** and **31** of the groove filler and is joined with these side walls by means of rounded or arc-shaped edges or fillets **32**.

In FIG. 4 a similar structure is shown which differs from that of FIG. 3 only in that the lower edges of the cross wall **22** form substantially abrupt or right angle corners at **34** with upward extensions of the side walls of the groove filler. In FIGS. 3 and 4 the upper portions of the side walls extend straight down and converge only at their lower ends to form grooves of different shapes.

The groove filler shown in FIG. 5 is very similar to that shown in FIG. 1 except that the lower ends of the side wall both terminate at equal distances from the cross wall **36**, which may be desired.

FIG. 6 shows a groove filler similar to that shown in FIG. 3 except that the groove filler in FIG. 6 has its sides converging downwardly from the top cross wall **37**.

My invention can also be applied to groove fillers which have the lower ends of their sides connected. For example, that shown in FIG. 7 has its sides **40** and **41** connected at their lower ends which may be provided with outwardly and upwardly inclined anchoring webs **42** which are deflected upwardly when the groove filler is inserted downwardly into plastic road material but which bend outwardly when the filler is finally positioned in the pavement and when pulled upwardly, to resist removal of the filler from the pavement. However, the anchoring webs are provided near their juncture with the groove filler sides with lines or grooves of weakness **43** so that when sufficient upwardly pull is exerted, the groove filler is torn or separated from the anchoring webs, thus leaving the pavement groove as shown in FIG. 8.

In FIG. 9 I have shown a groove filler, the upper portion of which may be similar to those described in the preceding figures. The lower ends of the sides **45** and **46** are connected and form a single, downwardly extending web or fin **47**. This groove filler is intended primarily for use with a connecting member **50** which may be made of a plastic material and is of H shape having upper and lower slots or recesses. In the lower part of this member the recess is formed by the downwardly extending webs **51** and **52** formed to straddle the upper end of a center plate **53** and the two upwardly extending webs **54** and **55** form a recess into which the downwardly extending web **47** of the groove filler extends. By means of this construction there is sufficient leeway between the groove filler and the center plate so that the groove filler may be adjusted vertically relatively to the center plate so that the groove filler may be accurately positioned relatively to the pavement even though the center plate may not be accurately located.

The groove filler shown in FIG. 10 is intended to serve two purposes, namely as the one shown in FIG. 9 and also as that shown in FIGS. 7 and 8. For this purpose the upper part of the groove filler is as described in connection with the preceding figures and has two sides **60** and **61** which converge at their lower ends to form a web or fin **62**. This fin is provided at its lower end with an anchoring member **63** similar to the anchoring member **42** shown in FIGS. 7 and 8, with upwardly inclined webs which when embedded in the concrete resist pulling out of the same to hold the groove filler in the desired positions, as in the construction shown in FIG. 7. The groove filler in FIG. 10 has a groove or line of weakness **64** located adjacent to the juncture of the lower end of the fin and the anchoring member **62**. This makes it possible for the upper portion of the groove filler fin to be severed from the lower anchoring portion **43** when the groove filler is pulled upwardly out of its position in the road material **64**. However, this groove or line of weakness **64** also enables the anchoring part **63** to be torn or severed from the fin **62** so that the anchoring member will then be similar to the one shown in FIG. 9 and may be used in a construction similar to that shown in FIG. 9.

The arrangement of the upper walls of each of the various groove fillers as described serves the two-fold purpose of spacing the sides of the groove fillers relatively to each other and at the same time holding the upper flaring or inclined parts of the groove fillers with sufficient rigidity so that during the final smoothing or luting of the pavement the groove fillers will be pushed into the plastic concrete to be level with the upper surface of the concrete. The result of the use of these groove fillers is that the adjacent upper edges of two slabs of pavement are provided with chamfered upper edges which have a very great resistance to damage by tires rolling over the pavement, since obviously the chamfered edges are much less liable to break or spall than edges in which the two surfaces meet abruptly at nearly right angles.

When the pavement is hardened and the groove former has been removed, any suitable seal may be inserted into the groove in such a manner that the upper edge of the seal will terminate at the lower edges of the upper inclined or chamfered parts of the pavement, thus leaving a space at the upper edge of the groove which prevents tires, snow plows or the like from touching the seals and damaging them.

By means of the constructions illustrated the upper edges of the flaring parts of the groove filler are sufficiently reinforced by the upper wall so that the groove formers can be levelled with the upper surface of the pavement to form grooves in the pavement of uniform depth and shape.

It will be understood that various changes in the details, materials and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. A groove filler of resilient material and of unitary construction for positioning in a pavement to form two adjacent sections of pavement with outwardly flaring upper edges, said groove filler having

opposite sides extending downwardly and converging toward each other and having their upper parts flared outwardly from each other,

and a transverse upper wall formed integral with and connecting said outwardly flared upper parts below their outer and upper edges and supporting them and said sides in spaced relation to each other.

2. A groove filler according to claim **1** in which the lower ends of the sides are disconnected from each other and yieldingly urged toward each other, by said upper wall one of said sides being longer than the other to facilitate separating of said sides.

3. A groove filler of resilient material and of unitary construction for positioning in a pavement to form the pavement into sections with outwardly flaring upper edges, said groove filler having

opposite sides extending downwardly and converging toward each other and having outwardly flared upper ends,

a transverse upper wall formed integral with and connecting said outwardly flared upper ends below their outer upper edges and supporting them in spaced relation to each other,

said converging sides terminating at their lower ends in a downwardly extending fin,

an anchoring member having an integral connection with the lower end of said fin and having upwardly extending webs for restricting removal of said groove filler upwardly out of road material when embedded therein,

said internal connection having a line of weakness extending across the same for breaking said anchoring member from said fin to enable said groove filler to be used for attaching to a center plate.

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