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Cutting tool for trench stabilization channels

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ABSTRACT

This disclosure describes a cutting tool for cutting horizontal stabilizer channels along sidewalls of trenches. The cutting tool includes a shank with a depth stop, a bearing guide, and a cutting head. The cutting head is configured to make a horizontal cut into the sidewalls of the trench at a specified depth. The depth can be adjusted to accommodate different engineering requirements. The cutting tool is driven by a vertical shaft from an electric or gasoline powered walk behind router. The cutting tool can be utilized to provide horizontal stabilizer channels in trenches that can reduce repair costs due to sealant failures and mitigate safety hazards that can arise from changes in sealant elevation. Additionally, this device can be used with a “straight” router bit to resurface existing sidewalls (cleaning).

KEYWORDS

- Fiber optic cable
- Trench
- Sealant stability
- Channel key
- Narrow-trenching
- Micro-trenching
- Stabilization
- Router

BACKGROUND

Narrow-trenching or micro trenching techniques are utilized for laying cables to carry data. A trench measuring about ½ inch to 2 inches wide and a total depth of 6-8 inches is cut into the asphalt or concrete to enable the laying of the cable. A sealant (e.g. a two-part sealant) is applied to seal the trench.

Less than ideal environmental conditions such as presence of dust, dirt, moisture, etc. during application of the sealant prevent the sealant from sticking to the entire sidewall surface and can lead to breaches in the trench seal. The breaches can lead to water ingress into the trench. Freezing and expansion of the water can lead to sealant expansion above grade and the creation of a public safety hazard.

Improperly adhering sealants can be subject to rapid changes in temperature over short periods of time, leading to sealant expansion. Settling of filler material or backer rod can cause improperly adhered sealants to sink below grade creating a safety hazard. Trench profiles that include horizontal stabilizer channels along the sides of the trench enable greater robustness to non-ideal environmental conditions during the sealant application process.

DESCRIPTION

This disclosure describes a cutting tool that can be utilized for cutting horizontal stabilizer channels along sidewalls of trenches. The cutting tool is fitted to a walk-behind gas or electric powered router. The cutting head of the tool is rated for cutting concrete and asphalt pavement.

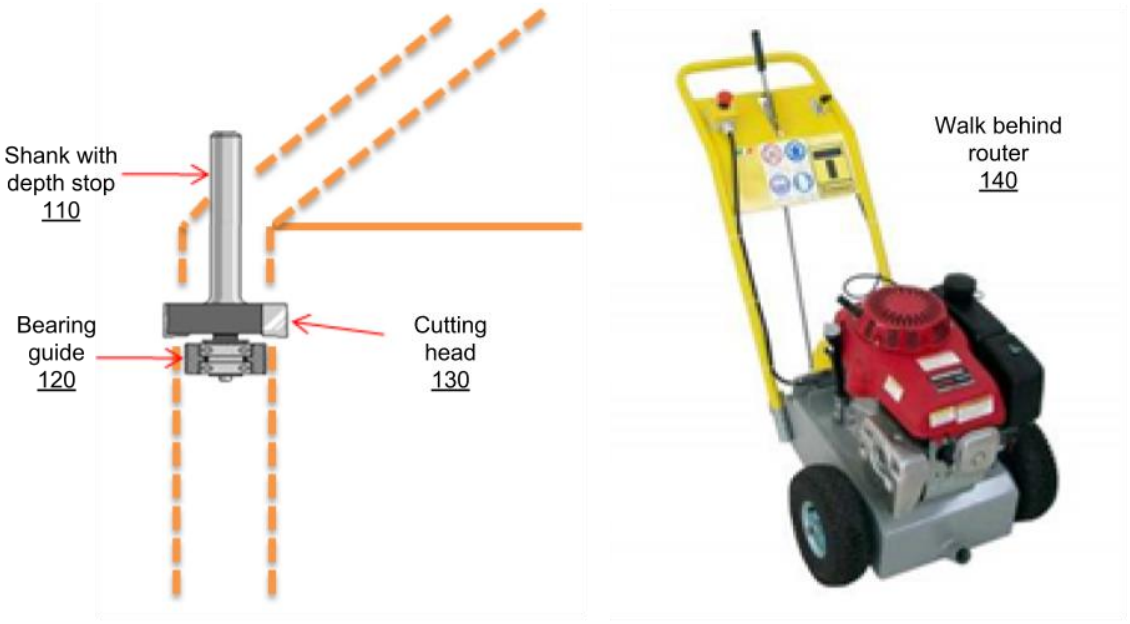

Fig. 1: Cutting head tool and router for cutting stabilizer channels in trenches

Fig. 1 depicts an example of a cutting tool and router that can be utilized for cutting horizontal stabilizer channels in trenches. The cutting tool includes a shank with a depth stop (110), a bearing guide (120), and a cutting head (130). The cutting head is configured to make a horizontal cut into the sidewalls of the trench at a specified depth. The depth can be adjusted to accommodate different engineering requirements. The cutting tool is driven by a vertical shaft from an electric or gasoline powered walk behind router (140). Additionally, this device can be used with a “straight” router bit to resurface existing sidewalls (cleaning).

The use of stabilizer channels can reduce repair costs due to sealant failures and mitigate safety hazards that can arise from changes in sealant elevation. The robustness of sealant application to environmental factors (depth, sidewall dust, residual moisture, etc.) can reduce operational cost of trench preparation in sidewall dust removal and wait-times for sealant application.

CONCLUSION

This disclosure describes a cutting tool for cutting horizontal stabilizer channels along sidewalls of trenches. The cutting tool includes a shank with a depth stop, a bearing guide, and a cutting head. The cutting head is configured to make a horizontal cut into the sidewalls of the trench at a specified depth. The depth can be adjusted to accommodate different engineering requirements. The cutting tool is driven by a vertical shaft from an electric or gasoline powered walk behind router. The cutting tool can be utilized to provide horizontal stabilizer channels in trenches that can reduce repair costs due to sealant failures and mitigate safety hazards that can arise from changes in sealant elevation. Additionally, this device can be used with a “straight” router bit to resurface existing sidewalls (cleaning).