Jan. 14, 1930. W. H. NORFOLK 1,743,474

DEVICE FOR FILLING AND SEALING CRACKS

Filed March 13, 1928

Fig. 1.

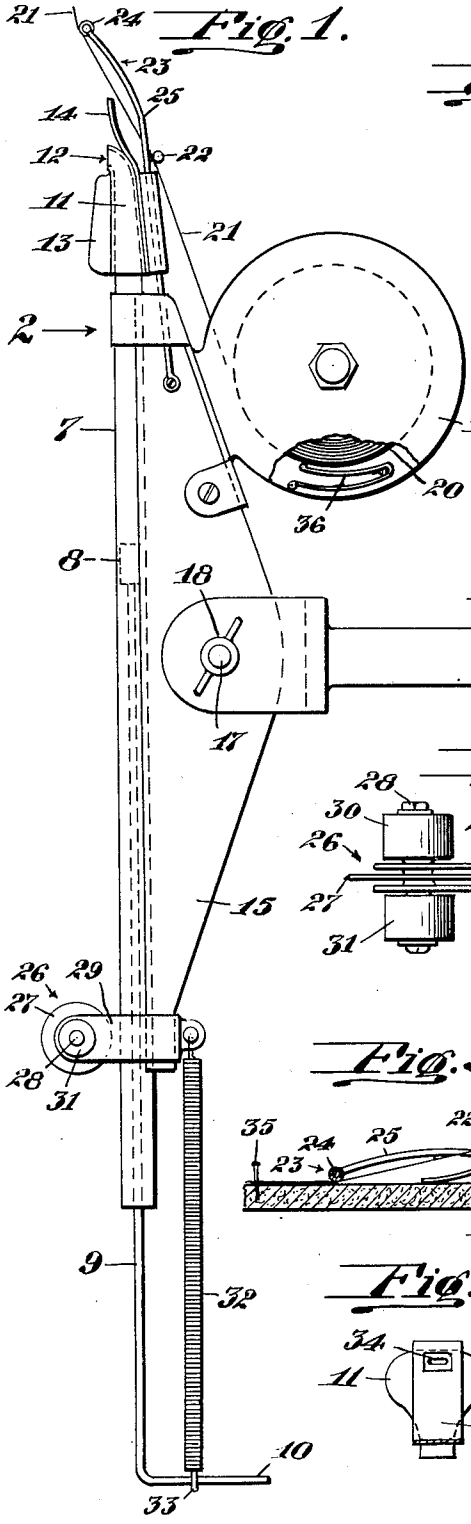


Fig. 2.

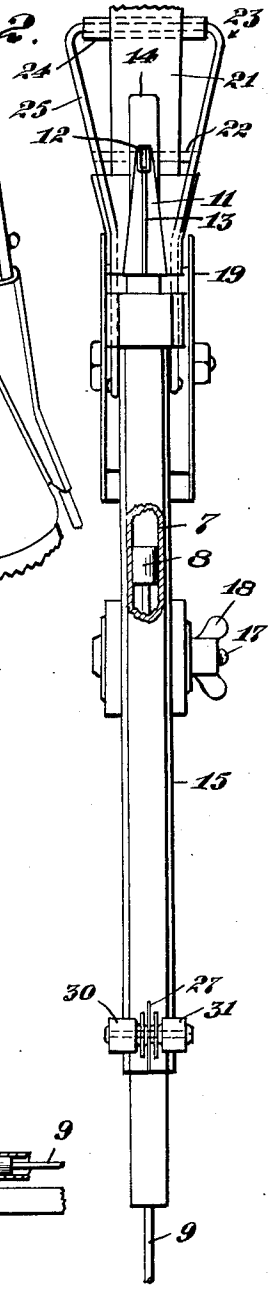


Fig. 3.

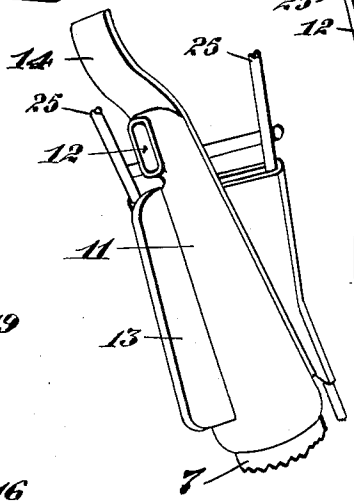


Fig. 4.

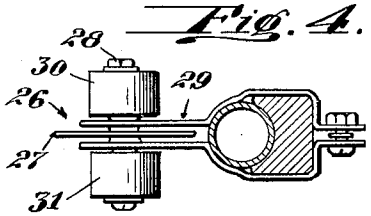


Fig. 5.

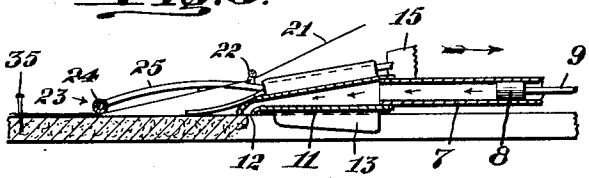


Fig. 6.

Inventor
William H. Norfolk;
By R. S. Berry
Atty.

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UNITED STATES PATENT OFFICE

WILLIAM H. NORFOLK, OF BRENTWOOD HEIGHTS, CALIFORNIA

DEVICE FOR FILLING AND SEALING CRACKS

Application filed March 13, 1928. Serial No. 261,368.

This invention relates to a device for filling and sealing cracks, and has as its primary object the provision of a tool whereby a plastic substance may be readily introduced into a crack to fill the latter.

Another object is to provide a device of the above character including a means whereby a flexible strip may be applied over the filled crack.

Another object is to provide the tool with a magazine from which the plastic substance may be automatically ejected.

Another object is to provide a device which is especially suitable for use in filling and sealing the cracks or spaces formed between contiguous panels of wall board whereby a joint may be readily formed between the panels with a smooth surface extending flush with the outer faces of the wall board panels and whereby the crack may be filled and a reenforcing strip applied thereover in a single operation.

With the foregoing objects in view, together with such other objects and advantages and features as may subsequently appear, the invention resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed and illustrated by way of example in the accompanying drawing in which:

Fig. 1 is a view of the tool as seen in side elevation;

Fig. 2 is an elevational view of the tool with parts broken away as seen from the side thereof indicated by the arrow in Fig. 1;

Fig. 3 is a perspective view of the nozzle of the tool;

Fig. 4 is a detail in cross section as seen on the line 4—4 of Fig. 1;

Fig. 5 is a diagram in section illustrating an application of the invention;

Fig. 6 is an end view of the nozzle.

Referring to the drawing more specifically, 7 indicates a magazine here shown as embodying an elongated tube which is fitted with a reciprocal plunger 8 affixed on a stem 9 projecting through one end of the tube and having a handle 10 on its outer end. A nozzle 11 is mounted on the other end of the tubular magazine which is formed with a side outlet opening 12 and projecting in the direction faced by the outlet opening is a fin 13 extending in the direction of the length of the tubular magazine and here shown as formed on the nozzle with one end thereof terminating adjacent the outlet opening. This fin is adapted to enter the crack to be filled and to be guided therein and then operate to position the nozzle outlet opening facing the crack so as to deliver a plastic material from the nozzle to the crack as will be hereinafter more fully described. Projecting from the end of the nozzle is a flexible resilient blade 14 operable to press the plastic material discharged from the nozzle into the crack.

The magazine is here shown as mounted on a bar 15 fitted with a hand-hold 16 projecting from the side thereof opposite the tubular magazine and connected to the bar intermediate the ends thereof; the hand-hold being pivotally attached to the bar by a pivot pin 17 fitted with a wing nut 18 operable to clamp the hand-hold in various angular positions relatively to the bar.

Mounted on the bar 15, is a carrier 19 for pivotally supporting a reel 20 on which is wound a flexible strip 21 formed of cloth or paper, which strip leads beneath a guide 22 arranged adjacent the nozzle 11 and is passed beneath a pressure device 23 here shown as embodying a roller 24 carried on the connecting portion of a U-shaped spring wire 25, the ends of which are affixed to the bar 15.

Mounted on the magazine and bar and projecting from the magazine in alignment with the fin 13 is a revoluble cutter 26 here shown as embodying a disc 27 having a knife edge; the disc being turnable on a pivot pin 28 carried by yoke members 29 clamped astride the magazine and bar. This cutter is adapted to project into the crack to be filled and acts on advance of the tool to open the crack and remove obstructions therefrom. As a means for limiting the extent of penetration of the cutter blade and to afford a roller bearing for the tool, a pair of rollers 30 and 31 are mounted on the yoke members 29, being here shown as carried on the pivot pin 28.

The plunger 8 is designed to be manually

retracted and automatically advanced for which latter purpose a spiral spring 32 is provided, one end of which is attached to the bar 15 and the other end of which is fitted with a hook or loop 33 for detachable engagement with the handle 10 of the plunger stem. The spring is here shown as connected to the bar through the yoke members 29.

As a means for moistening the strip 21, the nozzle 11 may be formed with a small end orifice 34 arranged to direct liquid from the magazine onto the strip.

In the operation of the invention, the magazine is charged with any suitable plastic composition of cementitious or glutinous character and which is fluid while wet, but which hardens when dry; the magazine being charged by inserting the nozzle in a batch of the composition and manually retracting the plunger 8 to draw a charge of the plastic into the magazine. During this operation, the spring 32 may be detached from the handle 10, being reconnected thereto after charging of the magazine when it is desired to effect automatic ejection of the plastic therefrom.

The tool may be employed to fill a crack either with or without application of the sealing strip 21. In either instance, the tool is applied by positioning it with the cutter blade 27 and the fin 13 projecting into the crack, whereupon the tool is advanced longitudinally of the crack with the cutter blade 27 forwardmost, whereby the cutter will act to ream the crack in advance of the fin 13, which fin in following the cutter will act as a plow to remove cuttings, or loose particles from the crack. The cutter and fin will also serve to guide the tool so that the nozzle opening 12 will be maintained in a position facing the crack. While advancing the tool longitudinally of the crack, the plunger 8 is operated through the urge of the spring 32 to eject plastic from the magazine and deliver it to the crack from the nozzle 11. The blade 14 following the nozzle will act to press the plastic into the crack and to trowel the surface thereof so as to render it smooth, and also compact the plastic in the crack. When it is desired to apply the sealing strip 21 over the plastic filled crack, the strip 21 is passed beneath the presser and the outer end thereof is affixed to the surface on opposite sides of the crack by means of a prong 35 as shown in Fig. 5. Advancing of the tool will then feed the strip from the reel 20 and the presser 23 will act under tension of the spring members 25 to tightly press the strip over the filled crack. The strip 21 may be gummed on the side thereof presented to the surface to which it is applied, as is common in seamed covering tape. This gummed surface may be moistened in any suitable manner, as the strip is fed to the presser, but is here shown as moistened by means of a spray delivered through the orifice 34 of the nozzle; the plastic composition containing sufficient liquid that when the plastic is forced from the nozzle, a portion of the liquid content thereof will be projected against the under side of the strip.

It is desirable that the strip 21 be fed from the reel under resistance, and for this purpose, a tension spring 36 is mounted on the carrier 18 and arranged to bear under pressure on the strip and thereby act as a brake to retard rotation of the reel 20.

While I have shown and described a specific embodiment of my invention, I do not limit myself to the exact details of construction and arrangement shown, but may employ such changes and modifications as come within the scope of the appended claims.

I claim:

1. In a device for filling cracks, a magazine, a nozzle on said magazine, means insertable in a crack for guiding said nozzle with its discharge outlet opening to the crack, means for ejecting a plastic composition from said magazine through said nozzle, and means on said magazine engageable with a crack cooperating with said guiding means and operable to ream the crack in advance of said guiding means as the device is advanced longitudinally of the crack.

2. In a device for filling cracks, a magazine a nozzle on said magazine, means engageable with a crack for guiding said nozzle with the discharge end opening to the crack, a plunger in said magazine operable to discharge a plastic composition from said nozzle, means on said nozzle for pressing the plastic composition into the crack as the nozzle advances, spring means for automatically advancing said plunger, and means for applying a covering strip over the filled crack as the device is advanced longitudinally of the crack.

3. In a device for filling cracks, a magazine, a nozzle on said magazine, means engageable with a crack for guiding said nozzle with the discharge end opening to the crack, a plunger in said magazine operable to discharge a plastic composition from said nozzle, means on said nozzle for pressing the plastic composition into the crack as the nozzle advances, spring means for automatically advancing said plunger, means for applying a covering strip over the filled crack as the device is advanced longitudinally of the crack, and means for moistening the strip as the latter feeds to its position over the crack.

4. In a device for filling cracks, a magazine, a nozzle on said magazine, means engageable with a crack for guiding said nozzle with the discharge end opening to the crack, a plunger in said magazine operable to discharge a plastic composition from said nozzle, means on said nozzle for pressing the plastic composition into the crack as the nozzle advances, spring means for automatically advancing

said plunger, means for applying a covering strip over the filled crack as the device is advanced longitudinally of the crack, means for moistening the strip as the latter feeds to its position over the crack, and means for yieldably resisting feeding of the strip.

5. In a device for filling and feeding cracks, a magazine, a nozzle on said magazine, a fin engageable with a crack operable to guide the nozzle with its discharge end opening to the crack, a plunger operable to eject a plastic composition from said magazine to said nozzle, means for automatically advancing said plunger, means on said magazine for reaming a crack in advance of the fin as the device advances longitudinally of the crack, means on the nozzle operable to press the plastic into the crack, and means for applying a sealing strip over the filled crack under pressure as the device advances.

6. In a device for filling and feeding cracks, a magazine, a nozzle on said magazine, a fin engageable with a crack operable to guide the nozzle with its discharge end opening to the crack, a plunger operable to eject a plastic composition from said magazine to said nozzle, means for automatically advancing said plunger, means on said magazine for reaming a crack in advance of the fin as the device advances longitudinally of the crack, means for applying a sealing strip over the filled crack under pressure as the device advances, and means for moistening the strip during feeding thereof.

In testimony whereof, I have affixed my signature.

WILLIAM H. NORFOLK.