May 13, 1958 J. E. GOODMAN 2,834,198

SEALING STRIP

Filed March 21, 1957

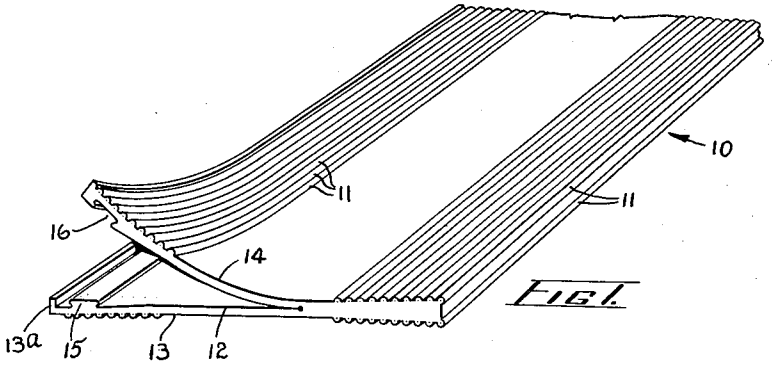


FIG. 1.

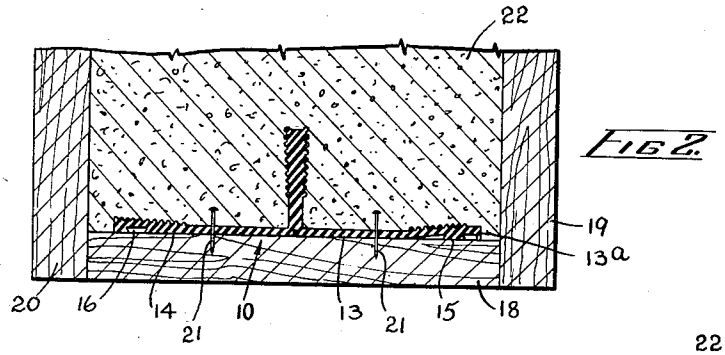


FIG. 2.

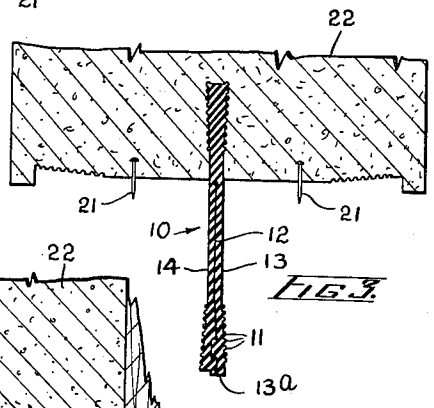
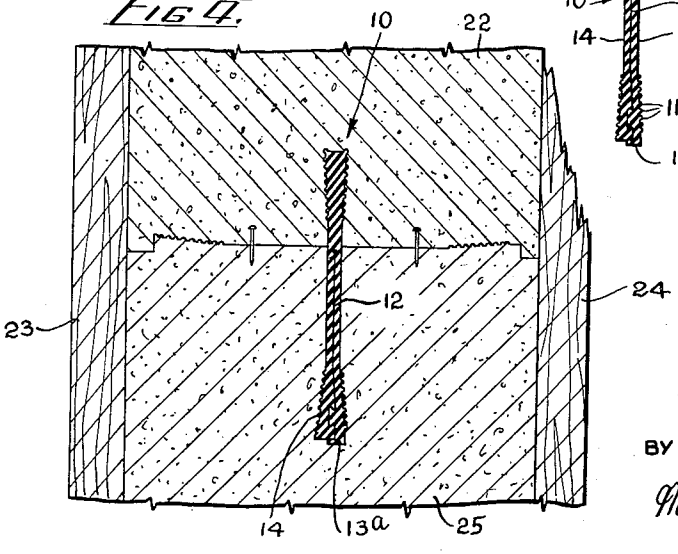


FIG. 3.

FIG. 4.



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SEALING STRIP

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5 Claims. (Cl. 72—106)

This invention relates to a sealing strip, of the type commonly known as a "waterstop," and the invention is specifically concerned with a sealing strip which, when viewed in transverse cross section, is bifurcated in a direction extending parallel to the width of the strip (i. e. the bifurcation extends transversely to the thickness of the strip).

When using a sealing strip of the type referred to above, the strip is secured to a board forming a bulkhead of a mold in which a concrete slab or form is to be cast, by spreading the arms of the strip formed by the bifurcation and securing them to the bulkhead by means of nails. The nails are driven in to the bulkhead to an extent sufficient to locate the sealing strip in position, and the heads of the nails are left extending clear of the strip so that they can be surrounded by fluid concrete.

When concrete in a fluid state is poured into the mold, the sealing strip and the heads of the nails become embedded in the concrete as it sets. The bulkhead is then detached from the nails, and the arms of the sealing strip are manually removed from the nails and moved towards each other for the arms to lie adjacent each other. The nails are thus left extending from the surface of the slab or form, and can be used for locating a caulking strip or the extending ends can be removed.

Further mold boards are then set up at the end of the previously cast slab or form, and a further slab or form is cast in edge-to-edge relationship with the previous one.

The sealing strip is provided with longitudinally extending flutes or beadings which become anchored in the cement as it solidifies so that the waterstop will not pull out of its cavity in the event of the adjacent slabs shrinking during the initial hardening of the cement, or due to a drop in temperature. If, however, the arms of the strip are not secured together prior to casting of the said further slab or form, there is a very great tendency for air pockets to form between them, which pockets do not become filled with fluid cement. The pockets form a serious hazard to the formation of a satisfactory watertight joint, for, as the temperature of the slabs or forms decreases, the arms, despite the flutes or beading break away from the surrounding concrete adjacent the pockets and form paths which permit the ingress of water.

To overcome this disadvantage, it has been necessary, after the bulkhead has been removed and the arms have moved towards each other, to staple the arms together in order to prevent the formation of the aforementioned pockets. This is a time consuming operation as the staples have to be applied at frequent intervals and long lengths of sealing strip may have to be treated.

An object of the invention is to provide a sealing strip of the kind above described, in which the need for stapling the arms is obviated.

A further object of the invention is to provide a sealing strip of the kind above described, which can easily and conveniently be manufactured by extrusion molding

Further objects and advantages of the invention will be apparent from a study of the following specification

when taken in conjunction with the accompanying drawings, in which:

Figure 1 is a perspective view showing the transverse cross section of a length of sealing strip according to the invention;

Figure 2 is a sectional plan view of the sealing strip when positioned in a mold and surrounded by cement;

Figure 3 is a view corresponding to Figure 2, but showing the bulkhead and mold boards removed and the arms of the sealing strip secured together; and,

Figure 4 is a view corresponding to Figure 3, showing another concrete form in the process of being cast in end-to-end relationship with the one shown in Figure 3.

Referring firstly to Figure 1, the sealing strip **10** is longitudinally fluted as is indicated at **11** and is bifurcated for the major portion of its width, as is indicated at **12**, to form two arms **13**, **14**. As will be seen from the drawings the sealing strip is of slightly greater thickness at its ends than it is at its central portion.

The sealing strip is preferably formed as an extrusion molding from polyvinyl chloride, or it may be formed from, for example, natural or synthetic rubber, or from a suitable synthetic resin.

The arm **13** has a dovetail **15** formed integrally with its surface adjacent the arm **14** which can be received in a corresponding dovetail groove **16** formed integrally in the arm **14**, the dovetail **15** when received in the groove **16** securing the arms **13** and **14** together. The term "integrally" is used herein and in the appended claims to denote that the respective members are formed in one fuse as opposed to being formed separately and then attached to each other.

In use, the arms **13**, **14** are separated so that they lie substantially in a straight line with the remainder of the sealing strip extending substantially normal to them, and the strip is secured in that condition to a bulkhead **18** which is to form the end wall of a mold in conjunction with mold boards **19**, **20**, as is shown in the Figure 2.

The strip is secured to the bulkhead **18** by means of nails **21** with the heads of the nails extending clear of the arms in such a manner that the strip is secured sufficiently rigidly to allow the mold to be assembled without the sealing strip breaking loose from the bulkhead. When the bulkhead **18** is removed after fluid concrete, indicated by **22**, has been poured into the mold and allowed to set, the adhesion between the concrete and the sealing strip coupled with the taper of the strip prevents the sealing strip from being pulled out of the concrete, the nails **21** during this procedure being pulled out of the bulkhead and remaining extending from the surface of the slab or form. The nails can be used, if desired, for locating caulking strips (not shown), or the extending ends of the nails can be nipped off or left in situ.

The arm **13** is provided with a flange **13***a*, which, when the sealing strip is secured to the bulkhead **18**, will mask the recess formed by the bulkhead, the dovetail **15**, and the arm **13**, thus preventing the arm **13** from being "keyed into" the concrete. As will be seen from Figure 3, when the arms **13** and **14** are brought together, the lip **13***a* lies beyond the end of the arm **14**.

After the bulkhead **18** has been removed, the arms **13**, **14** are moved towards each other, and pressure is applied to them to force the dovetail **15** into the dovetail groove **16**, as is shown in Figure 3. This can be done manually by pressing the dovetail **15** into the groove, or can be done, for example, by means of a pair of pinch rollers which are traversed along the length of the strip, the rollers being resiliently biased towards each other.

The arms **13**, **14** are thus easily and quickly secured together by the interengagement of the dovetail and groove in such a manner that there is little chance of air pockets of any consequence forming or being formed be-

tween the two arms, thus avoiding the disadvantages above mentioned.

Further mold boards **23**, **24** are then set up in end-to-end relationship with the previously formed slab, as is shown in Figure 4, and a further slab **25** is cast by pouring fluid concrete into the mold so that it surrounds the extending portions of the arms **13**, **14**.

What I claim as my invention is:

1. Means for use as a waterstop between adjacent surfaces of concrete slabs or forms, including a strip of a material which is flexible and elastic, the strip, when viewed in transverse cross section, being bifurcated throughout its length in the direction of the width of the strip and transverse to the thickness thereof to an extent enabling the arms formed by the bifurcation to be flexed through at least 180° relative to each other for them to lie substantially in a common plane, and complementary male and female formations integral with the arms and positioned for the formations to interlock when the arms are brought together for the arms to be in substantially parallel relationship.

2. Means for use as a waterstop between adjacent surfaces of concrete slabs or forms, including a strip of a material which is flexible and elastic, the strip, when viewed in transverse cross section, being bifurcated throughout its length in the direction of the width of the strip and transverse to the thickness thereof to an extent enabling the arms formed by the bifurcation to be flexed through at least 180° relative to each other for them to lie substantially in a common plane, and complementary male and female formations integral with the arms and arranged in at least one line parallel to and spaced from the junction of the arms, the said formations being positioned for them to interlock when the arms are brought together for the arms to lie in substantially parallel relationship.

3. Means for use as a waterstop between adjacent surfaces of concrete slabs or forms, including a strip of a material which is flexible and elastic, the strip, when viewed in transverse cross section, being bifurcated throughout its length in the direction of the width of the strip and transverse to the thickness thereof to an extent enabling the arms formed by the bifurcation to be flexed through at least 180° relative to each other for them to lie substantially in a common plane, at least one female formation integral with one of the arms and extending the full length of the strip, and at least one male formation integral with the other arm and extending the full length of the strip, the male formation being positioned for it to be entered into the female formation when the arms are brought together for the arms to be in substantially parallel relationship, the male and female formations providing interlocking elements of a separable fastener.

4. Means for use as a waterstop between adjacent surfaces of concrete slabs or forms, including a strip formed from a material which is flexible and elastic, the strip, when viewed in transverse cross section, being bifurcated throughout its length in the direction of the width of the strip and transverse to the thickness thereof to an extent enabling the arms formed by the bifurcation to be flexed through at least 180° relative to each other for them to lie substantially in a common plane, and a dovetail extending longitudinally of the strip and integral with one of the arms which can be received in a complementary dovetail groove in an adjacent surface of the other of the arms, the dovetail, when entered into the dovetail groove, securing the arms together at a point remote from their common junction.

5. Means for use as a waterstop between adjacent surfaces of concrete slabs or forms, including a strip formed from a material which is flexible and elastic, the strip, when viewed in transverse cross section, being bifurcated throughout its length in the direction of the width of the strip and transverse to the thickness thereof to an extent enabling the arms formed by the bifurcation to be flexed through at least 180° relative to each other for them to lie substantially in a common plane, at least one rib formed integrally with one of the arms and extending the full length of the strip, and at least one flange formed integrally with the other arm of the strip and extending the full length of the strip, the rib of the one arm being positioned for it to interlock with the flange of the other arm to interconnect the arms when the arms are moved towards each other to lie in substantially parallel relationship.

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