

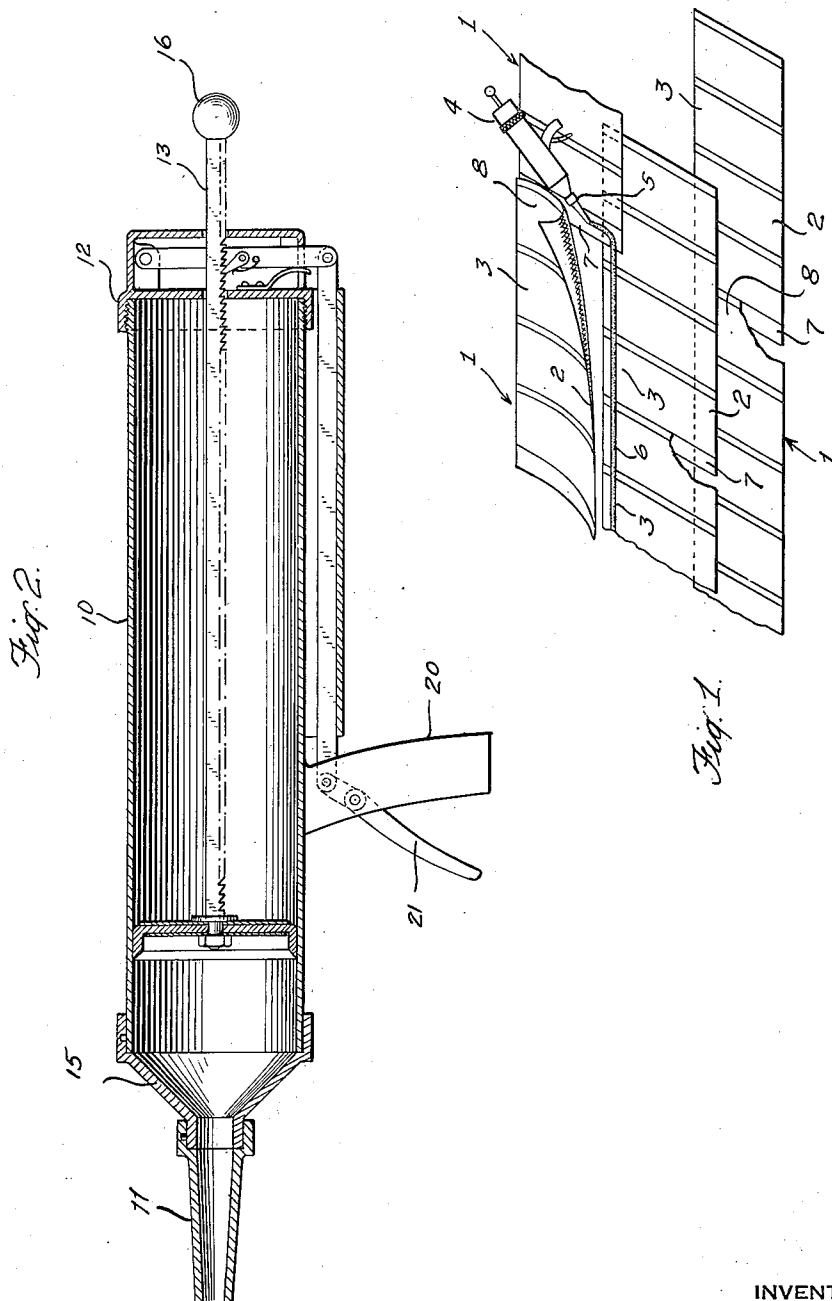
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METHOD AND MEANS FOR LAYING WATERPROOF COVERINGS

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METHOD AND MEANS FOR LAYING
WATERPROOF COVERINGS

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4 Claims. (Cl. 108—7)

This invention relates to methods and means for applying weatherproof coverings and particularly to methods and means for applying adhesives for securing the said coverings in position and rendering them waterproof.

It has heretofore been the practice in applying covering materials in sheets and sometimes in the form of units such as artificial shingles or shingle-simulating strips to fasten such sheets or units by the application of an adhesive to the surfaces to be held together, by means of a mop or brush or a trowel or similar instrument. Such a method provides no adequate control of the quantity of material applied to the surfaces to be joined and is a costly and laborious method of making joints in a waterproof covering.

An example of such former practice has been the laying of sheets of roofing felt laid upon the roof with the lower portions of one sheet overlapping portions of another. To the overlapped portions of the sheet below has been applied with a mop pitch or asphalt which upon hardening binds the overlapping portion to the sheet below. Such a method in addition to being expensive necessitates great care to prevent excess material from being applied to the surfaces and from running upon the exposed surfaces of the roof and it has been difficult or impossible to carry on the operation in neat and orderly fashion.

In the laying of individual units such as shingles it has been the practice to apply an adhesive cement upon the back of the shingle and place the coated face upon the roof. It then has been necessary to move the shingle about slightly in its place to insure proper adhesion. This made difficult or impossible an alignment which would produce a pleasing effect on the roof.

In the application of strip shingles such a procedure would be laborious and costly even though done with a brush of suitable size or with a trowel if cement of sufficient consistency were used. The practice has therefore been to lay the strip with a large overlap so that without cementing water will not flow or be driven in under the overlapping portions and over the overlapped edge of the strip beneath. This, however, necessitates the use of a large amount of material and a correspondingly large cost of laying.

In the development of various types of strips having surfaces simulating groups of shingles as is disclosed in my co-pending application Serial No. 493,784, filed November 6, 1930, it has

been found advantageous from the standpoint of saving of material and of labor to lay the strips endwise in rows but with the ends overlapping, the rows being laid upon the roof in overlapped arrangement but with the overlapped portions superimposed only to such a degree as to provide a proper surface upon which to apply an adhesive or cement. This adhesive then serves to hold down upon the overlapped surface of the strip below the overlapping edge portion of the strip above or adjacent thereto endwise. Such constructions for surfaces exposed to the weather, such as roofs, have been found to be remarkably advantageous as to cost while providing a thoroughly artistic and pleasing shingle-simulating effect.

In view, however, of the relatively small surface to which the cement is to be applied in such constructions it is desirable to control the amount of adhesive or cementing material used so as not to apply an excess which will overrun beyond the edges of the overlapping portions while at the same time applying sufficient to insure a good holding condition in the joint and also a condition suitable for preventing the leakage of water and preventing the action of wind and the weather in curling up the edge of the overlapping portion or otherwise disturbing the construction. In order to properly control the amount applied it has been found desirable to use a device which will produce this result.

One object therefore of the present invention is to provide a method of laying units in lapped arrangement on a surface to be covered which will permit laying with large exposure and little lap, thus making possible laying at little cost.

Another object of the present invention is to provide a method by which adhesive may be applied to joints in material used for covering exposed surfaces.

A further object of the invention is to provide means which will control the amount of material as it issues therefrom both in amount and in the form of its discharge so that it may be applied in the quantity and form best suited to the surface to which it is to adhere.

A further aim of the invention is to provide a method of applying the cement by which cement may be discharged from a container through a nozzle upon the overlapped portions of a weather resisting covering whereby the application may be easily controlled by the operator.

One feature therefore of the present invention is the method of applying cement, such as roofing cement, in plastic form to the joints formed

by overlapping sheets of weatherproof material or to the lap joints of units such as roofing strips or other units used to simulate shingles on roofs or on sides of buildings or to simulate brickwork or other constructions. Such constructions are usually built up of a plurality of sheets or of units, such as individual shingles or shingle-simulating strips or strips simulating brickwork, with the lower portion of the sheet or unit overlapping the upper portion of the sheet or unit just below upon the roof or wall. It is a purpose of the present invention to provide a method and means for applying to such relatively limited overlapped areas the cement in the form of a strand or cord or in some cases as a ribbon, applied preferably lengthwise of said area and of sufficient width and thickness that when the overlapping portions of the superimposed unit or strip bear upon the overlapped portions of the unit below, the cement will spread sufficiently upon these contacting surfaces to properly cover the same and hold them upon drying in permanent relationship and also to seal against the water which may otherwise be driven between these surfaces and cause leakage through the covering.

In the construction of the roofs mentioned above, in which shingle-simulating strips having a small portion only of the strips overlapping the upper portions of strips adjacent below and having the end edges of such strips in overlapping arrangement, or in similar overlapping construction the present invention provides a method according to which the cement may be applied in the form of a strand of circular cross section, for example a strand of $\frac{1}{2}$ inch diameter, which may be forced from a nozzle attached to a chamber such as is provided by the so-called "gun" type of tool by pressure upon the cement created by suitable means. The nozzle when directed at the surface to be covered may be moved over the surface as the pressure is caused to act upon the cement. A cord or strand of cement issues from the nozzle and is laid upon the surface preferably lengthwise thereof and in such position thereon relative to the edge of the overlapping strip or unit that when said overlapping unit is pressed in place the spread of the cement will not proceed beyond the overlapping edge but will properly cover the surfaces for adhesive action.

In laying strips of the type referred to the lower edge of the overlapping strip may be lifted and the cement may be applied with such a "gun" type of tool, arranged so that the nozzle may be easily handled, by running the nozzle along the upper edge of the strip while causing the cement to issue therefrom and, upon reaching the end of the strip where such end overlaps the adjacent strip endwise thereof, to coat upon the end of said adjacent strip a similar cord or strand of cement by suitably turning the nozzle and the direction of its movement. This method of applying the cement has been found to be rapid and less costly than applying it by the usual methods and avoids the difficulty experienced in the usual methods in many cases, namely, that of applying too large an amount of cementing material so that in the spread of the cement this material runs out from under the overlapped portion and becomes exposed upon the roof resulting in an unsightly appearance as well as causing waste and imperfect sealing. In other cases too little cement may be applied and an improper joint made. The controlled amount

of cement which may be caused to issue from the nozzle by suitable control of pressure and of control devices on the nozzle or gun itself make possible the advantageous results just described which constitute the features of the present invention.

Roofing and roofing strips and other coverings for weather resistance usually are made with a surface covering of granular mineral material such as slate or ground rock to provide a wear-resisting cover and to present an artistic and pleasing appearance. By usual methods it is difficult or impossible to apply cement to such granular surfaces in proper amount to avoid excess while insuring the application of sufficient cement to produce a secure bond and a waterproof joint.

By the method of the present invention, however, it is possible to apply the cement or other adhesive to the granular cover with equal facility as to a smooth surface. The amount delivered and the location of its application on the surface being controlled, it is possible to so apply it that it will fill in the voids around the granular material and spread over the surface to such a width as to give a proper bond to the overlapping sheet or strip when it is pressed down upon the cement.

The invention includes therefore the method of applying adhesive in suitable form to joints in roof covering or coverings for surfaces exposed to the weather by the use of a tool provided with a nozzle and a device for causing the discharge of the adhesive from said nozzle in controlled amount and in such form that it may be applied by a movement of the nozzle over the extent of the surface so that when the contacting surfaces are joined no substantial excess will have been applied and sufficient material will have adhered to accomplish the binding and cementing.

Other features of the invention will appear from the following description and drawing in which—

Figure 1 shows an assembly of covering units laid upon a surface and the application of adhesive with the "gun" type of tool; and

Figure 2 shows a longitudinal view of the "gun" type of tool.

In Figure 1 the covering units 1 are shown as strips of rectangular shape laid in overlapping arrangement upon the surface to be covered. As disclosed in my co-pending application, Serial No. 493,784, filed November 6, 1930, strips surfaced to simulate shingles may be laid with a small amount of lap, the laps being cemented in place.

In applying the cement according to the present invention the overlapping portion 2 of the strips may be lifted and the cement laid upon the overlapped area 3 thus exposed by means of the "gun" type of tool 4 having a nozzle 5, from which the cement is caused to discharge as a strand or cord 6 upon the area 3. It will be seen that the nozzle 5 may be guided across the area 3 while the cement issues therefrom and the proper amount of cement may be laid upon the area 3 by control of the amount issuing in relation to the movement of the nozzle over the area. The strand 6 may be laid in any desired direction, preferably lengthwise of the area 3 and by suitable direction of the nozzle and its movement may be turned to cover the portion 7 of the area which is overlapped by the end 8 of the strip 1 adjacent endwise in the row.

By this means may be applied to the surface to be joined the proper quantity of cement or ad-

hesive so placed as to properly cover the area to be joined. When the strip is lapped again upon the strip below a strong waterproof joint will be made while avoiding waste and disfigurement of the exposed area of the covering by cement forced out from the joint when pressure is applied to the lapped area. It will be seen that a quick method of laying coverings in overlapped arrangement is thus provided and one in which large saving in materials is effected while producing a better joint.

The "gun" type tool mentioned above consists fundamentally of a nozzle connected by a suitable conduit or directly to a chamber in which the adhesive or cement to be applied is placed. This cement being in plastic or semi-solid state is adapted to flow under moderate pressure. Various means of creating the pressure upon the chamber may be adopted, such as the provision of a plunger fitting the chamber of cylindrical form to which plunger mechanical force may be applied to push the cement to the nozzle and discharge it therefrom. The pressure utilized for forcing the cement from the chamber may also be provided by connecting to the chamber at a suitable point a source of fluid pressure such as air, so as to cause the cement to flow to and be discharged from the nozzle. By use of a suitable hose or other flexible connection between the chamber and the nozzle great flexibility and range of action can be obtained.

A modification of this type of instrument which has been found practical and useful is a tool provided with a cylindrical chamber 10 at one end of which is connected the nozzle 11. Such a chamber may be about 3 inches in diameter and 12 inches long and the nozzle may be about 1/2 inch inside diameter and 3 to 4 inches long. At the end of the chamber opposite the nozzle is provided a cap 12 through which runs a rod 13 connected to an internal plunger 14, said plunger fitting the bore of the cylinder sufficiently closely to prevent leakage of the cement thereby. The cap 15 to which the nozzle is attached may be removable so as to load the cylinder with the cement. At the opposite end of the rod may be provided a suitable flange or handle 16 to which to apply pressure for forcing the rod through the hole in the cap 12 and thereby forcing the plunger 14 toward the opposite end of the cylinder.

While in its broad features such a "gun" type of tool has been heretofore utilized for various uses, its use for applying cement to joints in weather-resisting materials laid in overlapping arrangement has not been proposed. One feature which has been found to be of importance in the adaptation of such a "gun" type of tool for the purpose of making joints of the character herein described is that the tool should be so balanced as to be easily handled by the operator with one hand. As explained above it is advantageous to lift the overlapping edge of the shingle strip or sheet and this may be done with one hand while the other hand and arm are used to handle the tool. The position of a handle or grip 20 for holding the tool therefore is such in relation to the center of gravity of the tool that it may be easily balanced upon the arm while being held in one hand. It is further desirable that the device 21, connected by mechanism to control the movement of the rod 13 and therefore of the plunger 14 to which it is attached, be operated from this grip or by action upon the device 21 of the fingers of the hand holding the tool by means

of this grip. If the hand is to be used for forcing the plunger forward the movement is best effected from this same grip or the position of the control device. The application of the pressure to force the cement from the nozzle and the movement of the nozzle over the surface to which the cement is being applied must be under simultaneous control of the operator and preferably under the control of his one hand. The application of adhesive or cement by means of such a tool utilizing one hand only is a feature of the present invention.

A cement for use according to the above described method and especially for use with the "gun" type of tool for applying the same should have the characteristics of suitable plasticity to enable it to be readily discharged from the nozzle of the gun and to "flow" under pressure upon the surface to which it is to be applied. It should not be so fluid in consistency as to "run" readily under the action of gravity or to run out from under the surfaces to which it is applied before hardening. It further should have the characteristic of hardening in a relatively short time and to make a firm bond between the surfaces which are to be joined. Further, it should have waterproof qualities which will prevent the seepage and flow of water through the joint.

While modifications of the composition may be made within limits to provide the above indicated qualities I have found that a cement of a composition containing approximately by weight saturating asphalt 55%, coating asphalt 9%, turpentine substitute 22%, asbestos 14% is preferable for the purpose of the present invention. A cement of this character therefore falls within the scope of the present invention.

What is claimed as new is—

1. Method of applying adhesive to the surfaces to be joined of a covering composed of units in overlapped arrangement which comprises lifting the overlapping portions and applying to the marginal surfaces only of the overlapped portions adhesive in the form of a strand of predetermined cross section laid lengthwise of said marginal overlapped portion and of such plastic consistency as to retain its cross-section until deformed by pressure.

2. Method of applying to a surface a covering composed of a plurality of units which comprises laying said units upon said surface with a marginal portion only of each unit overlapped by a portion of another unit, lifting the overlapping portions, and applying plastic adhesive to the overlapped portion by positively forcing the adhesive through a nozzle moved over the surface at a rate in relation to the rate of discharge of the adhesive therefrom such that the adhesive is laid upon the overlapped portion lengthwise thereof as a single continuous strand of substantially uniform cross-section, said adhesive being of such consistency as to retain its strand form until flattened by pressure, said cross section being such with respect to the amount of overlap of the units that when the overlapping units are firmed in place said strand flattens and spreads substantially to cover the overlapped portions without excess.

3. Method of applying a weather-resisting covering to a surface exposed to the weather which comprises laying units in the form of strips of said covering placed lengthwise in courses and with one lengthwise edge portion of each strip overlapping the lengthwise marginal portion only

of a strip in an adjacent course and with one end of each strip overlapping an end margin of the strip adjacent in the course, lifting the overlapping portions, applying plastic adhesive to the marginal portions and margins of the adjacent strips under said overlapping edge portions and ends, and laying the overlapping edge portions and ends in adhering contact upon said marginal portions and margins, said adhesive having such a consistency as to retain its form until de-
 10 formed by pressure and being applied in a strand continuous under the overlapping lengthwise edge and the end of each strip of such size as to provide an amount of adhesive which will flatten and spread laterally of the strand substantially
 15 only to the overlapping edges when said overlapping portions and ends are pressed into adhering contact respectively with said overlapped marginal portion and margins.

20 4. Method of laying a surface covering which comprises laying strips of covering material in overlapping courses with the edge of one course overlapping only upon a relatively narrow mar-

ginal portion of an adjacent course so as to expose a relatively large portion of each course, lifting the overlapping edge of a course to expose the overlapped marginal portion of an adjacent course, applying cement to said overlapped marginal portion, again laying the overlapping edge of said first course upon the cement applied to said overlapped marginal portion, and pressing said overlapping marginal portion to cause said cement to bind said overlapping portion to said overlapped portion, said cement as applied being in the form of a strand laid lengthwise of said overlapped marginal portion and of such predetermined cross section as laid as not to cover said marginal portion and of such plastic consistency that said strand retains its strand form until flattened by pressure thereon and when said overlapping edge is firmly pressed thereon the strand will flatten and spread to cover the overlapped marginal portion but substantially without excess exuding from the joint upon the exposed portion of said adjacent course.

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