Nov. 3, 1970 L. F. MIKLOS 3,537,941

CAULKING STRIP APPLICATOR FOR CORRUGATED PANEL

Filed Feb. 7, 1968 2 Sheets-Sheet 1

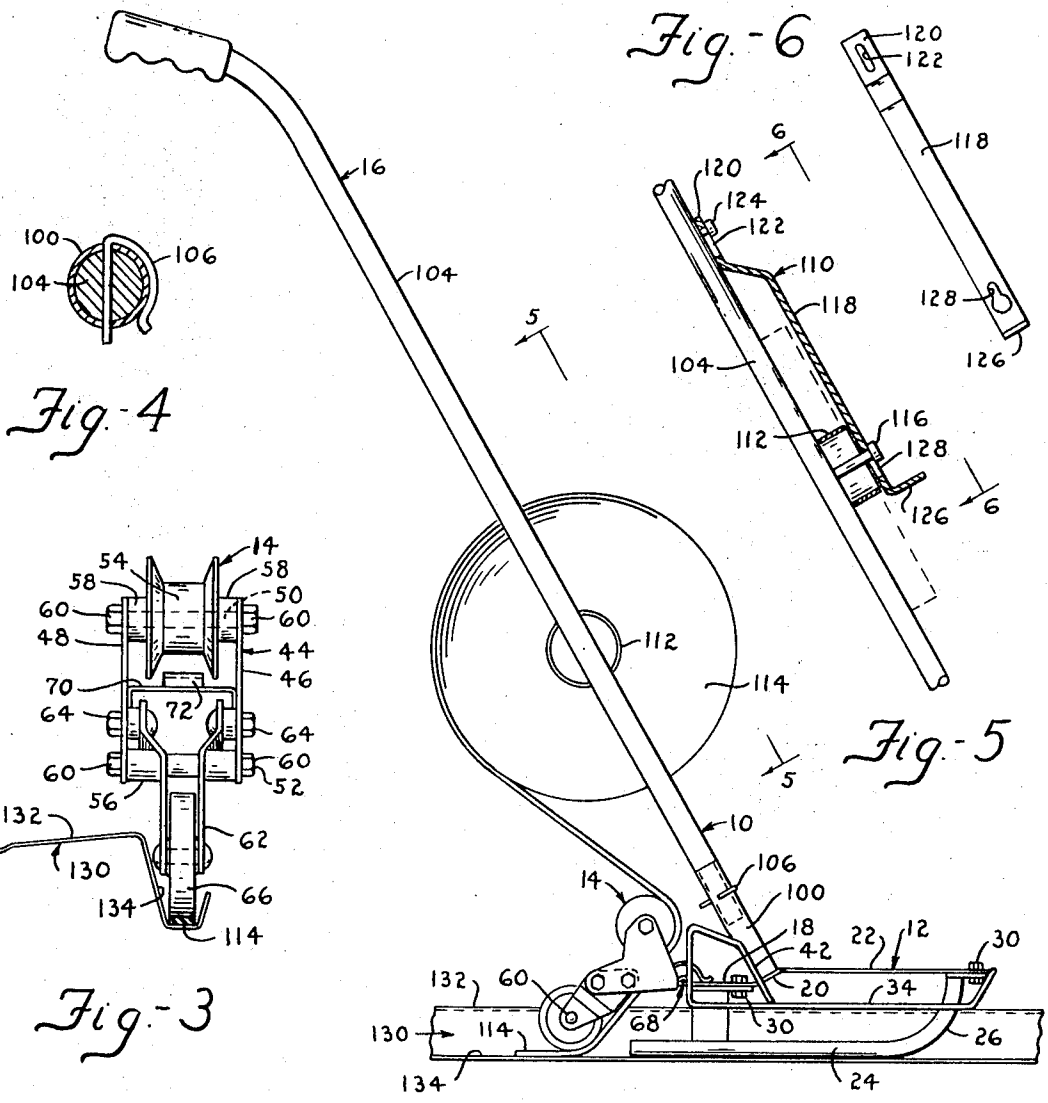


Fig. 1

Fig. 5

Fig. 6

Fig. 4

Fig. 3

Fig. 2

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CAULKING STRIP APPLICATOR FOR CORRUGATED PANEL

Filed Feb. 7, 1968 2 Sheets-Sheet 2

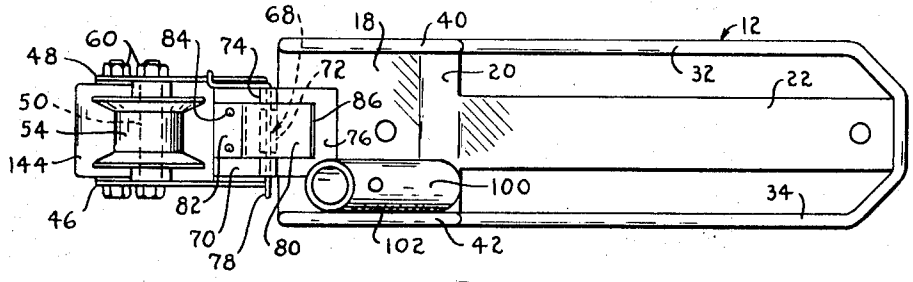


Fig.-7

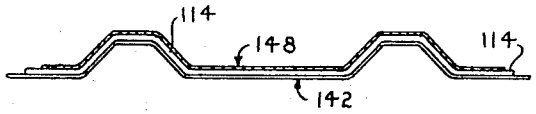


Fig.-13

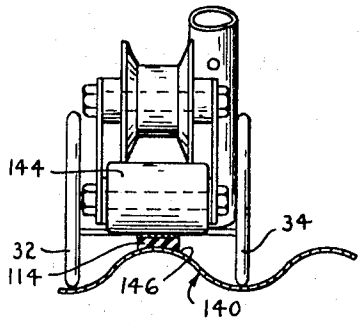


Fig.-10

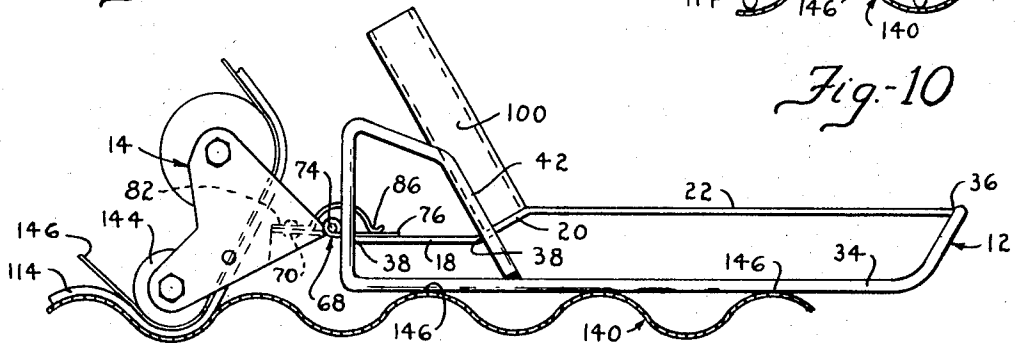


Fig.-8

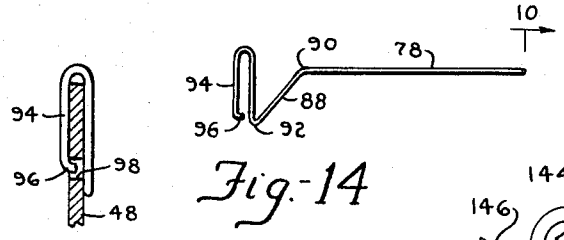


Fig.-14

Fig.-15

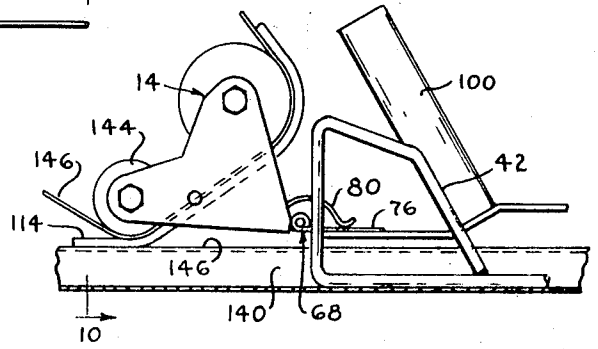


Fig.-9

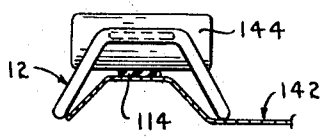


Fig.-11

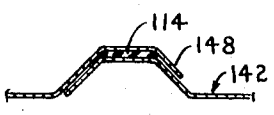


Fig.-12

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CAULKING STRIP APPLICATOR FOR CORRUGATED PANEL

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Int. Cl. E04d 15/06
U.S. Cl. 156—577 7 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for applying caulking strip easily, rapidly and with uniform pressure to building panels having a corrugated surface, either in a longitudinal direction on the valley or crest of a corrugation, or laterally over the crests and valleys of the corrugation to provide a seal between adjacent overlying panels forming the building wall. The apparatus comprises a sled device having runners adapted to slide longitudinally in the valley portion of the panel or straddling the crest portion thereof, and laterally across the crest portions of the panel. A spring loaded wheel assembly pivotally connects to the sled device to pivotally follow the sled. An upright handle is connected to the sled device by which means the apparatus is manually moved across the panel; and means are provided on the handle to rotatably support a caulking strip roll which is payed out between the wheel and the panel to which the strip adheres with uniform thickness because the wheel is made to bear against the strip with uniform pressure.

This invention relates generally to apparatus for applying strip material and more particularly to new and useful improvements in apparatus for applying caulking strip material to corrugated sheet panels.

Corrugated sheet panels are commonly used in building construction for covering a framework and forming the walls and roof thereof. These corrugated panel sheets are connected to the framework members and overlap each other at their edges to provide a joined, continuous wall thereover. The overlapping edges of the adjoining corrugated panels are connected together by means of fasteners and are further provided therebetween with an adhering caulking material in the form of continuous strips to provide sealed joints. The problem that my invention is directed to is the application of the caulking strip to the corrugated surface of the construction panels prior to the overlapping assembly.

The method of the prior art employed to apply an adhering caulking strip is by means of hand application. This manual labor slows the assembly of panel sheets and substantially increases the cost of the finished construction. In addition, manual application of the seal strip results in uneven pressure at different points along the length of the seal strip with consequent nonuniform thickness thereof and possible leakage at points of depression. Uneven pressure on the seal strip at different points along the length thereof also causes tearing of the paper strip convolutely rolled with the seal strip material for providing a non-stick side therefor. This results from the fact that the paper strip is not elastic and does not follow the deformation of the seal strip at the point of excessive pressure application, but will instead tear apart at that point. This in turn causes additional labor to be expended to remove a plurality of separate paper strips from the applied seal strip.

Accordingly, the object of my invention is the provision of apparatus for applying seal strip material to corrugated sheets.

Another object of my invention is to provide an apparatus for applying seal strip material to corrugated sheets parallel to the corrugations and at right angles to the corrugations.

Still another object of my invention is to provide an apparatus for applying seal strip material to corrugated sheets with uniform pressure and obtaining uniform thickness.

An additional object of my invention is to provide an apparatus for applying seal strip material to corrugated sheets which is economical to manufacture and easy to operate.

Other objects and advantages of my invention will become more apparent after a more careful study of the following description of the specification taken together with the accompanying drawing in which is illustrated a preferred embodiment of my invention and in which:

FIG. 1 is a side elevation of the apparatus of my invention;

FIG. 2 is an enlarged side elevation of my invention with the handle portion broken away;

FIG. 3 is an enlarged elevation of the roller device of my invention as viewed from the left side of FIG. 1;

FIG. 4 is a detail of the handle means sectioned at line 4—4 of FIG. 1;

FIG. 5 is a fragmentary view of the handle means as viewed along lines 5—5 of FIG. 1 showing the tape retainer bar longitudinally sectioned;

FIG. 6 is a frontal view of the tape retainer bar shown disassociated from the handle means;

FIG. 7 is a plan elevation of the apparatus of my invention illustrated in FIGS. 1–7 modified to apply a seal strip on a corrugated panel longitudinally on the corrugation crest and laterally over the crest and valleys thereof, the handle means is removed for illustrative convenience;

FIG. 8 is a side elevation of the apparatus of FIG. 7 illustrating the operation thereof to apply a seal strip on the crest valley portions of the corrugations of a panel in a lateral direction thereover;

FIG. 9 is a side elevation of the apparatus of my invention shown in fragment, with the handle means removed therefrom illustrating the operation thereof to apply a caulking strip on the crest portion of the corrugation of a panel in a longitudinal direction thereof;

FIG. 10 is an end elevation of the apparatus of FIG. 9 as viewed from line 10—10 of FIG. 9;

FIG. 11 is a front view detail of the carriage runners and strip applicator roller showing the guide function of the runners as the strip is longitudinally applied on the crest of the corrugated panel;

FIG. 12 is an end view of the overlapping portions of laterally adjacent panels having a seal strip therebetween applied thereto by the apparatus of my invention;

FIG. 13 is an end view of longitudinally overlapping portions of corrugated panels showing the seal strip therebetween applied laterally thereacross by the apparatus of my invention;

FIG. 14 is a horizontal perspective view of the hinge pin for the strip applicator device; and

FIG. 15 is a sectional detail of the locking portion of the hinge pin connecting the side wall of the strip applicator device shown in fragment.

With reference now to the drawings, reference numeral 10 designates generally the apparatus of my invention. The preferred embodiment of my invention comprises broadly a carriage device 12, a strip applicator device 14 and a handle means 16. Carriage device 12 is fabricated to include a horizontal plate member 18, one side 20 thereof is upturned; an elongated bar member 22 extending therefrom horizontally; a central longitudinal runner 24 having a forward bow end 26 and an upright leg brace 28 adapted for removable connection to the

underside of plate and bar members **18** and **22** such as by screw connection **30**; and side runners **32** and **34** connected to plate and bar members **18** and **22** such as by weldments at **36** and **38** to support runners **32** and **34** in parallel spaced relation astride central longitudinal runner **24** at a level raised therefrom. The forepart of runners **32** and **34** are cured upwardly and inwardly becoming unitary at which portion it is connected to the forward end of bar member **22** by weldment as stated above. The rear end portions **40** and **42** of runners **32** and **34** respectively, are angled upwardly and returned to their respective runners and connected thereto by weldments to serve as brace means or stiffeners.

With particular reference to FIGS. 1, 2 and 3, strip applicator device **14** is a wheel assembly comprising a frame member **44** having spaced apart side walls **46** and **48** which are provided with laterally aligned holes to receive the ends of pin **50** on which is rotatably mounted a flanged guide wheel **54**, and to receive the ends of pin **52** on which is mounted spacer sleeve **56**. Spacer members **58** are provided on pin **50** which, together with spacer sleeve **56** maintain side walls **46** and **48** in spaced parallel relation. Nuts **60** threadedly engage the ends of pins **50** and **52** to fix side walls **46** and **48** in position. Spacer sleeve **56** also serves as a support and retaining means for yoke member **62** preventing pivotal movement thereof about its axis of support at the ends of yoke member **62** which are connected to side walls **46** and **48** by means of screw fasteners **64**. Yoke member **62** rotatably supports strip applicator wheel **66** at the distal end thereof and extends beyond frame member **44** a distance sufficient so as to allow wheel **66** to apply caulking strip longitudinally in the valley of the corrugations of the panel sheet. Strip applicator device **14** is pivotally appended to carriage device **12** by hinge means **68** which comprises a hinge bar **70** fixed between side wall **46** and **48** which is formed with a hinge knuckle **72** adapted to fit between a pair of hinge knuckles **74** of hinge bar **76** connecting plate member **18** of carriage device **12**. Hinge pin **78** through axially aligned knuckles **72** and **74** pivotally connects applicator device **14** to carriage device **12**. I provide leaf spring **80** which is formed to loop over the hinge joint. One end **82** of spring **80** is connected to hinge bar **70** as at **84** and the other end **86** thereof biasly bears against plate member **18** so that strip applicator device **14** pivotally rotates upwardly against the bias of spring **80**, and pivotally rotates downwardly due to the urging of spring **80**. One end portion **88** of hinge pin **78** is angled at right angles to the hinge axis as at **90** and again angled 90° to the hinge axis of pin **78** and end portion **88** as at **92**. End **94** of pin **78** is bent back upon itself slightly spaced apart to receive side wall **48** edgewise. End **94** is formed with a hook **96** which springs into a recess or hole **98** (FIGS. 14 and 15) provided therefor in side wall **48** of frame member **44**.

With particular reference to FIGS. 1 and 4–10, handle means **16** comprises a sleeve base **100** which is secured to carriage device **12** at an incline by being connected to the upturned side **20** of plate **18** by welding. As shown in FIG. 7, sleeve base **100** is off-set from the longitudinal center line of carriage device **12** and connected to the returned portion of end **42** of runner **34** by weldment as at **102** thereby providing prop means to buttress and hold rigid sleeve base **100** in its inclined position. Handle bar **104** is adapted at one end thereof to telescopically seat in sleeve base **100** and is locked therein by means of key pin **106** having one leg thereof inserted through aligned holes in handle bar **104** and sleeve base **100**. The other end of key pin **108** is curved to resiliently clip semicircumferentially around sleeve base **100** as more clearly illustrated in FIG. 4. The other end of handle bar **104** is adapted for manual holding. Intermediate said ends of handle bar **104**, caulking strip roll support means **110** is provided thereon. Support means **110** comprises a hub member **112** for rotatably supporting thereon the convolutely rolled caulking strip **114**. A headed pin **116** extends from the center of hub **112** for engaging roll retention bar **118**. Bar **118** is formed so that end **120** thereof is laterally displaced as by bending so that the flat of bar **118** is laterally spaced from the flat of end **120** and parallel thereto. This configuration allows for parallel sliding contact of end **120** with handle bar **104** and spacial accommodation of the roll of caulking strip **114**. Slotted hole **122** is provided in end **120** through which screw pin **124** is inserted and connected to a threaded hole in handle bar **104** provided therefor. The other end **126** is provided with a slot **128** having an enlarged end; the enlarged end of slot **128** allows the passage therethrough of the head of pin **116** and accomplishes the retention of bar **118** in place over hub member **112** when bar **118** is longitudinally shifted to place pin **116** in the narrow portion of slot **128**. End **126** is bent outwardly to provide manual grasp means therefor to longitudinally shift bar **118** and to remove it from its roll retaining position when necessary to do so such as when it is necessary to replace a roll of caulking strip. I allow sufficient clearance between the end **120** of roll retention bar **118** and handle bar **104** at screw pin **124** to permit disengagement of bar **118** from pin **116**.

The above described apparatus **10** of my invention is applicable to apply seal tape such as caulking strip **114**, longitudinally in the valley of the corrugated panel **130** shown in part in FIG. 3. It will be noted that this panel design as shown in FIG. 3, comprises a plurality of broad, planular sections **132** spaced by narrow valleys such as valley **134**. Valley **134** adjacent the edge of panel **130** overlappingly receives the valley portion of the adjacent panel (not shown) after caulking strip **114** is applied to valley **134** with the apparatus **10** of my invention. Central runner **24** of carriage member **12** is longitudinally guided by the confining embankment of valley **134**. Wheel **66** being distally mounted on strip applicator device **14** by means of yoke **62** functions to descend in valley **134** by the urging of spring **80** acting to pivot strip applicator device **14** downward and to roll over caulking strip **114** with sufficient force to cause a firm adherance of caulking strip **114** to panel **130**. Since the roll of caulking strip **114** is rotatably supported on hub member **112**, the strip is freely payed out from the roll around guide wheel **54** and around and under wheel **66** whereby it is firmly, rapidly and uniformly applied to panel **130**. Side runners **34** ride on the raised planular sections **132** of panel **130** astride valley **134**. The adherance of caulking strip **114** to panel **130** also serves as an anchor whereby the caulking strip is dispensed from its roll when the apparatus **10** of my invention is manually pushed to slide over panel **130**.

Corrugated panels **140** and **142** shown in cross and longitudinal section in FIGS. 8 and 9, respectively, and FIGS. 11–13, respectively, together with panel **130** of FIG. 3 are frequently used in the construction of buildings. I contemplate the apparatus **10** of my invention to be easily adaptable for use on either of corrugated panels **140** and **142** by removing central runner **24** from carriage device **12** by unfastening screw means **30**. I also remove screw fasteners **64** and nuts **60** to remove yoke member **62** carrying wheel **66**, and spacer sleeve **56**. Pin **52** is reinserted in side walls **46** and **48** with pressure roller **144** rotatably mounted thereon. Thus readily and easily modified, the apparatus **10** of my invention as shown in FIGS. 7–10 accomplishes the application of caulking strip **114** to the crest portion **146** of the corrugation of the panel design illustrated in FIGS. 8 and 10. As shown, spaced runners **32** and **34** ride in the adjacent valleys of corrugated panel **140** and are longitudinally guided therein by the slopping sides thereof. I illustrate in FIG. 8, caulking strip **114** being applied by the apparatus **10** of my invention traversally across the corrugations of panel **140** by runners **32** and **34** sliding over adjacent crests **146** of

the corrugations. Caulking strip **114** is laid in the valleys and on the crests of the corrugations of panel **140** by the pivotal movement of strip applicator device **14** as the caulking strip is dispensed from its roll and pressure roller **144** follows the contour of the corrugations of panel **140**. Runners **32** and **34** span adjacent crests **146** of the corrugations to allow unimpeded movement thereacross while the caulking strip **114** is being applied by the apparatus **10** of my invention with uniform pressure over the crest and valleys of the corrugated panel. The operation of my invention is the same when caulking strip is applied to panel design **142** shown in FIGS. 11–13.

After the corrugated panel is provided with caulking strip along the required edges thereof by means of the apparatus **10** of my invention, and the paper strip **146** separating the convolutely rolled caulking strip **114**, is removed from the caulking strip material, the edges of overlapping panel member **148** is placed thereover to provide an effective seal therebetween as illustrated in FIGS. 12 and 13.

It is apparent from the foregoing description that my invention provides new and novel means for applying a caulking strip on corrugated sheets longitudinally and laterally thereof with ease, simply, rapidly and with the minimum amount of labor.

It is understood that modifications to the structure of my invention may occur to one skilled in the art to which this invention appertains to obtain cooperation of various parts thereof to different designs of corrugated building panels. For example, lateral runners **32** and **34** could be provided with different configurative forms depending upon the corrugated contour of the panel. Also it is noted, as another example, that sleeve base **100** is off-set from the longitudinal center line of carriage device **12**. This construction provides a stiffened construction and affords a less obstructed view of the working area and also places the roll of caulking strip rotatably supported on handle bar **104** in vertical alignment with the wheel assembly of strip applicator device **14**. If it is desired to double the roll capacity supportably on handle bar **104**, the apparatus of my invention may be modified to connect the sleeve base **100** at the center of carriage device **12** and duplicate roll support means **110** on the opposite side of handle bar **104** to rotatably hold a second convolutely rolled caulking strip. Though the vertical alignment of the rolls of caulking strip **114** will be slightly off-set to either side, guiding means **54** would be adequate to align the caulking strip **114** through the strip applicator device **14**.

I claim:

1. An apparatus for applying caulking strip to a corrugated surface comprising:
- a carriage device having,
  - a generally horizontal member,
  - lateral runners dependingly supported from said horizontal member in spaced apart relation,
  - a central runner dependingly supported from said horizontal member between said lateral runners,
    - said central runner being vertically spaced below said lateral runners;
- a strip applicator device comprising,
  - a frame member, and
  - a wheel rotatably supported on said frame member,
- said strip applicator device being pivotally connected to said carriage device for up and down movement;
- spring means between said carriage device and said strip applicator device,
  - said spring means urging said strip applicator device downward in its pivotal movement;
  - handle means connected to said carriage device,

2. An apparatus for applying caulking strip to a panel member having longitudinally extending and alternately spaced raised and recessed surfaces, comprising:
- a carriage device having runners for slidable support,

  - said runners including a central runner for slidable movement on the recessed surface of said panel, and lateral runners spaced astride said central runner and vertically spaced therefrom for slidable movement on the raised surfaces of said panel;
- a wheel assembly connected to said carriage device,
- a wheel rotatably mounted on said wheel assembly being axially movable up and down; and
- means for biasing said wheel assembly being axially movable up and down; and
- means for biasing said wheel for downward movement.
  - said handle means inclined upright over said strip applicator device, and
  - means on said handle for rotatably supporting a convolutely rolled caulking strip.

3. The apparatus of claim **2** wherein said central runner of said carriage device is further characterized by being removable from said carriage device, and said lateral runner being slidably movable on said panel straddling said raised surfaces thereof.

4. The apparatus of claim **2** wherein said wheel assembly is further characterized by; being connected to said carriage device to pivot relative thereto; having guide means for guiding said caulking strip to said wheel; and a spring member between said wheel assembly and said carriage device as means for biasing said wheel for downward movement.

5. The apparatus of claim **3** wherein said wheel assembly is further characterized by; being connected to said carriage device to pivot relative thereto; having guide means for guiding said caulking strip to sad wheel; and a spring member between said wheel assembly and said carriage device as means for biasing said wheel for downward movement.

6. An apparatus for applying caulking strip to a panel member having longitudinally extending and alternately spaced raised and recessed surfaces, comprising:
- a carriage device having,
  - a generally horizontal member,
  - lateral runners dependingly supported from said horizontal member in spaced apart relation,
  - a central runner dependingly supported from said horizontal member between said lateral runners,
    - said central runner being vertically spaced below said lateral runners;
- a strip applicator device comprising,
  - a frame member,
  - means for guiding said caulking strip through said frame member,
  - a roller rotatably supported on said frame member;
- said strip applicator device being connected to said carriage device for up and down pivotal movement;
- spring means between said carriage device and said strip applicator device for biasing said strip applicator device for downward pivotal movement;
- handle bar means connected to said carriage device,
  - said handle bar means inclined upward over said strip applicator device, and
  - hub means on said handle bar for rotatably supporting said caulking strip in convolutely rolled form.

7. An apparatus applying caulking strip to a panel member having longitudinally extending and alternately spaced raised and recessed surfaces, comprising:
- a carriage device having,
  - a generally horizontal member,
  - lateral runners dependingly supported from said horizontal member in spaced apart relation,
  - a central runner dependingly supported from said horizontal member between said lateral runners,

said central runner being vertically spaced below said lateral runners;

a strip applicator device comprising,

a frame member,

a wheel rotatably supported on said frame member for guiding said caulking strip through said frame member,

a second frame member removably connected to said first frame member for extending the reach of said first frame member,

a second wheel rotatably supported on said second frame member at the distal end thereof,

said strip applicator device being connected to said horizontal member of said carriage device for up and down pivotal movement;

spring means between said horizontal member of said carriage device and said frame member of said strip applicator device for biasing said strip applicator device for downward pivotal movement;

handle bar means connected to said carriage device,

said handle bar means being inclined upward over said strip applicator device,

hub means on said handle bar for rotatably supporting said caulking strip in convolutely rolled form; and

bar means on said handle for axially retaining said rolled caulking strip on said hub means.

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