STRIP INSERTING APPARATUS

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Filed: May 26, 1970
Appl. No.: 40,570

ABSTRACT

A strip inserting apparatus comprising a pair of elongated jaw members extending in a side-by-side relation and connected together for relative axial movement by a pair of links pivotally mounted adjacent opposite ends of the jaw members to form a parallelogram linkage. A longitudinally and downwardly tapered groove is provided in the apparatus for progressively inserting a strip of material into a slot. The groove is defined by laterally spaced gripping surfaces on the jaw members, which surfaces are tapered rearwardly of the apparatus in a converging relation and a pair of downwardly inclined surfaces extending inwardly of the respective gripping surfaces. Anti-friction rollers can be provided on the jaw members to facilitate relative movement between the jaw members and the strip. At least one insert wheel is journaled on the rearward portion of the apparatus to insert the strip to the desired depth. An actuator connected to the jaw members moves the jaw members alternately in an axial direction along the strip. A vibrator is mounted on the jaw members below the actuator for facilitating insertion of the strip. Passages formed in the jaw members direct a lubricant-adhesive to the sides of the strip prior to insertion thereof.

16 Claims, 17 Drawing Figures
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STRIP INSERTING APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to a strip inserting apparatus and, more particularly, to an apparatus for inserting a continuous sealing strip of elastomeric material into an elongated slot formed between adjacent building blocks or slabs. In highway and bridge construction, it is generally known to insert elongated seals of resilient elastomeric material into slots or grooves formed between adjacent blocks or slabs of concrete or other building material which are exposed to variations in temperature causing expansion and contraction of the same and resulting in variations in the width of the slots between such blocks or slabs. The sealing strip used in these slots must be capable of completely sealing the joint under all conditions. When the slot is contracted due to expansion of the pavement material, the strip must compress without unduly extruding from the slot above the surface of the pavement. When the slot is expanded due to contraction of the pavement material, the strip must expand to effectively seal the wider slot. Normally, the sealing strip is wider than the slot in which it is to be inserted so that the strip must be compressed prior to insertion.

Various machines and devices have been designed to insert sealing strips in expansion joint slots formed between bridge and highway pavements. Although these machines are adequate for inserting sealing strips in slots on horizontal surfaces, they are not satisfactory for inserting sealing strips in slots formed in vertical or suspended surfaces such as are found in architectural concourses and structural designs, because they are bulky, heavy and awkward to handle. Moreover, they are costly and often constitute a component of a larger highway surfacing apparatus. As far as can be ascertained, the present practice for inserting sealing strips into expansion slots formed in ceilings and vertical surfaces is to employ a hand tool, such as a screwdriver or a putty knife for example. It is readily apparent that the strip is easily scarred or nicked during such tedious hand insertion. Moreover, the strip is not uniformly inserted the desired depth.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a strip inserting apparatus particularly adapted for inserting strips in expansion joint slots formed in vertical and suspended surfaces.

Another object of the present invention is to provide a strip inserting apparatus which is simple and strong in construction, rugged and durable in use, inexpensive, and which can be easily manipulated by hand.

A further object of this invention is to provide a strip inserting apparatus having means for compressing the strip and means for directing a lubricant-adhesive to the seal prior to insertion.

Another object of the present invention is to provide a strip inserting apparatus having adjusting means for accommodating sealing strips of varying widths.

Generally speaking, the strip inserting apparatus of this invention, as hereinafter described, comprises a pair of elongated jaw members extending in a side-by-side relationship and connected together for relative axial movement by a pair of links pivotally mounted at opposite ends to the jaw members and forming a parallelogram linkage therewith. The jaw members have laterally spaced gripping surfaces tapered rearwardly in a converging relation and downwardly inclined surfaces which together with the gripping surfaces define a groove adapted to carry the strip rearwardly and upwardly for progressively inserting a sealing strip into an expansion joint slot. An insert wheel is journaled on the rearward portion of the apparatus to insert the strip to the desired depth. An actuator is provided for actuating the jaw members alternately along the length of the strip. A vibrator is mounted on the apparatus to facilitate insertion of the strip. Passages are provided in the jaw members to admit a lubricant-adhesive to the strip prior to insertion. Anti-friction rollers can be provided on the jaw members for bearing engagement against the strip to facilitate relative axial movement between the jaw members and the strip.

The foregoing and other objects, advantages and characterizing features of the present invention will become clearly apparent from the ensuing detailed description of certain illustrative embodiments thereof, taken together with the accompanying drawings wherein like reference characters denote like parts throughout the various views.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view, partially in section, of a strip inserting apparatus of this invention;

FIG. 2 is a horizontal sectional view taken about on line 2--2 of FIG. 1;

FIG. 3 is a top plan view, partially in section, of the strip inserting apparatus shown in FIG. 1;

FIG. 4 is a bottom plan view of the strip inserting apparatus shown in FIG. 1;

FIG. 5 is a view similar to FIG. 4 but showing the jaw members in an alternate relative position;

FIG. 6 is a front elevational view of the apparatus of FIG. 1;

FIG. 7 is a rear elevational view of the apparatus of FIG. 1;

FIG. 8 is a vertical sectional view taken about on line 8--8 of FIG. 2;

FIG. 9 is a transverse sectional view of a sealing strip shown inserted in a slot between adjacent building blocks;

FIG. 10 is a diagrammatic view illustrating paths of movement of various components of the apparatus of FIG. 1;

FIG. 11 is a horizontal sectional view showing another form of the invention;

FIG. 12 is a fragmentary bottom plan view of still another form of the present invention;

FIG. 13 is a fragmentary vertical sectional view taken about on line 13--13 of FIG. 12;

FIG. 14 is a side elevational view of yet another form of strip inserting apparatus of this invention;

FIG. 15 is a front elevational view of the strip inserting apparatus of FIG. 14;

FIG. 16 is a top plan view of the strip inserting apparatus of FIG. 14, and

FIG. 17 is a rear elevational view of the strip inserting apparatus of FIG. 14.

DETAILED DESCRIPTION OF AN ILLUSTRATED EMBODIMENT

Referring to the drawings and particularly to FIGS. 1 and 2, there is shown a strip inserting apparatus, generally designated 20, comprising a pair of elongated jaw members 22 and 24 extending in a side-by-side relationship and connected together for relative axial movement by means of links 26 and 28. Link 26 is pivotally adjacent one end thereof about an upstanding pin 30 having a head 31 received in an annular recess 33 in the bottom of jaw member 22 and extending upwardly through jaw member 22, link 26, and having a threaded portion 32 at the free end thereof for a purpose hereinafter explained. The other end of link 26 is provided with an elongated slot 34 for loosely accommodating a depending pin 36 having a head 37 bearing on a washer 38 disposed on the top of link 26 and extending downwardly through slot 34 and threadably secured in jaw member 24. In a similar but opposite manner, link 28 is pivotally adjacent one end thereof about an upstanding pin 40 having a head 41 received in an annular recess 43 in the bottom of jaw member 24 and extending upwardly through jaw member 24 and having a threaded portion at the free end thereof projecting above the upper surface of link 28 for a purpose hereinafter explained. The other end of link 28 is provided with an elongated slot 42 for loosely accommodating a depending pin 44 having a head 45 bearing on a washer 46 on link 28 and extending downwardly through slot 42 and threadably secured in jaw member 22. Links 26 and 28
together with jaw members 22 and 24 form a parallelogram linkage for permitting arcuate and axial movement of one jaw member relative to the other. In this connection, it should be noted that there is relative pivotal movement between the pins and their associated links.

The terms upwardly, downwardly, top, bottom, forwardly, rearwardly, and the like, as used herein, are applied only for convenience of description with reference to FIGS. 1 and should not be taken as limiting the scope of this invention. Likewise, for purposes of this description, the forward end of the apparatus 20 is taken to be the right hand end as seen in FIG. 1.

Jaw members 22 and 24 are provided with adjoining side walls 48 and 50, respectively (FIGS. 2 and 6) having recessed portions therein extending to bottom surfaces 52 and 54 of jaw members 22 and 24 to form a tapered groove for accommodating a sealing strip as will hereinafter become apparent. Such tapered groove is defined by surfaces 56 and 58 extending inwardly from side walls 48 and 50 and inclined downwardly from the forward portions of jaw members 22 and 24 rearwardly to merge with bottom surfaces 52 and 54 as shown in FIG. 6. The slip shown in FIG. 6, surfaces 56 and 58 also are inclined laterally and converge downwardly to form a composite V-shaped configuration which is disposed in an abutting relation to conform generally to the top wall of the strip to be inserted. Surfaces 56 and 58 intersect with offset side walls 62 and 64 formed in members 22 and 24, which side walls 62 and 64, extend the length of inclined surfaces 56 and 58 and are slightly inclined downwardly in a converging relation. Offset side walls 62 and 64 also are slightly inclined rearwardly in a converging relation as shown in FIGS. 2, 4 and 8. Thus, inclined surfaces 56, 58 and side walls 62 and 64 define a groove which decreases in width rearwardly of apparatus 20 and is inclined downwardly thereof to progressively compress the sealing strip and urge it downwardly in the compressed state into the expansion slot wherein it expands to exert outward sealing pressure against the walls of the joint.

Side walls 62 and 64 constitute gripping surfaces and are provided with a series of indentations 66 to more effectively grip the sides of the sealing strip to be inserted. As shown in FIGS. 4 and 5, these indentations have inwardly extending shoulders 68 and cammed surfaces 70 inclined rearwardly and inwardly for a purpose hereinafter more fully explained. It should be understood that only one indentation 66, or any desired number can be provided on each gripping surface within the purview of this invention.

Means are provided at the forward end of strip inserting apparatus 20 to guide the same along the slot to be worked. Such means comprise a pair of angle members 72 and 74 secured in recesses provided in bottom surfaces 52 and 54 by suitable fasteners, such as screws 76 for example. Legs 78 and 80 depend from the forward portions of angle members 72 and 74 below bottom surfaces 52 and 54 of jaw members 22 and 24 and have rounded surfaces as shown at 82 in FIG. 1 for easy insertion and movement in the slot of the expansion joint. Legs 78 and 80 are generally parallel and are spaced a distance slightly less than the width of the slot so that they can be easily inserted in the expansion slot.

An insert wheel 86 is mounted on a shaft 88 journalized for rotation in an offset side wall portion of jaw member 22. The periphery of wheel 86 extends below bottom surfaces 52 and 54 of jaw members 22 and 24 and is adapted to engage the depressed middle portion of sealing strip S. Shoulders 90 are provided on opposite sides of wheel 86 to engage the diverging top walls portion of strip S and thereby prevent rolling or bulging of these portions to insure that the entire width of the strip is properly inserted to the desired depth. The radius of wheel 86 can vary in accordance with the desired depth of strip disposition.

Jaw members 22 and 24 are provided with ports 92 communicative with lateral passages 94 having outlets in offset side walls 62 and 64. Ports 92 are connected by suitable coupling means 96 to conduits 98 leading to a source of lubricant-adhesive material. Thus, a lubricant-adhesive is applied to the side portions of sealing strip S just prior to its being inserted in the expansion joint slot to facilitate insertion of strip S and to maintain the same in place when the adhesive sets.

A suitable pneumatic vibrator is located above jaw members 22 and 24 and is mounted at opposite ends on pins 30 and 40 for pivotal movements therewith. Suitable conduits 102 are connected to vibrator 100 for admitting and exhausting air under pressure to and from vibrator 100. The purpose of vibrator 100 is to induce vibrations in strip inserting apparatus 20 to facilitate the insertion of strip S into the expansion joint slot and is particularly advantageous when inserting strips of relatively large diameter sizes. For smaller diameter strips, vibrator 100 is not necessary and can be removed from strip inserting apparatus 20.

Means are provided to actuate jaw members 22 and 24 alternately in a step-by-step manner axially along strip S. Such means comprises a pneumatic actuator 104 comprising a cylinder 106 and reciprocating piston (not shown) connected to a piston rod 108. Preferably, an actuator of the type having built in spool type pilot valves (not shown) suitably connected by a piping arrangement, (also not shown) to a control valve 110 mounted on the head end of cylinder 106, is employed to provide automatic reciprocation of the piston within cylinder 106. A conduit 112 is provided to admit air under pressure to control valve 110. Such actuators are common and can be of the type known as the Micro-Line Cylinder with Micro-Line Inter-Pilots manufactured by the Meads Manufacturing Company. It should be understood that the specific actuator shown is illustrative only and, per se, forms no part of this invention. If desired, other types of actuators can be used within the purview of this invention.

The head end of actuator 104 is connected to jaw member 22 and is pivotally mounted on the threaded end portion of pin 40 above vibrator 100. The rod end of actuator 104 is connected to jaw member 22 by means of an angle member 114 having one leg 116 mounted on threaded portion 32 of pin 30 above vibrator 100 and the other leg 118 mounted on piston rod 108. A pair of stop nuts 120 are threaded onto piston rod 108 adjacent the free end thereof and are adapted to engage leg 118 during retraction of piston rod 108 and a pair of stop nuts 122 are threaded onto an intermediate portion of piston rod 108 and are adapted to engage leg 118 during extension of piston rod 108. Thus, there is a certain amount of lost motion between piston rod 108 and angle member 114 during actuation of piston rod 108.

In use, a strip S of resilient elastomeric material, such as neoprene for example, is placed in position along an elongated slot S formed in an expansion joint between adjacent building blocks B. One end of the strip is anchored and the free end is threaded into the groove of apparatus 20, which groove is defined by gripping surfaces 62, 64 and inclined surfaces 56, 58. Air is then admitted to vibrator 100 and actuator 104 to actuate jaw members 22 and 24. As piston rod 108 is extended, stop nuts 122 engage leg 118 of angle member 114 to urge the same forwardly and move jaw member 22 in an arcuate and forward direction relative to jaw member 24 along strip S. Although jaw member 22 moves rearwardly to some extent while jaw member 22 moves forwardly, the overall effect is that jaw member 22 advances forwardly of jaw member 24 as shown in FIGS. 2, 3 and 4. When piston rod 108 is retracted within cylinder 106, jaw member 24 advances axially of strip S and forwardly of jaw member 22.

FIG. 10 illustrates the accurate movement of links 26 and 28 and the gripping surfaces 62 and 64 of jaw members 22 and 24. Since the movement of both links 26 and 28 are substantially identical, it is believed that a description of the movement of link 26 only will suffice. Letters A and B represent the pivot axes of pins 30 and 36 of link 26 as shown in FIG. 2. Arrows C and D indicate accurate movement of these pivot axes and arrows E and F indicate accurate movement of a given point on gripping surfaces 62 and 64. Starting at the left end of the diagram, pivot axis A of link 26 remains fixed while the
pivot axis B of link 26 moves in an arcuate direction along arrow D to point B' upon retraction of piston rod 108. Link 26 carries jaw member 24 along with it in the same arcuate direction and gripping surface 64 moves along arrow F as shown in FIG. 10. When piston rod 108 is extended, the pivot axis now represented by B' remains fixed while pivot axis A moves along arrow C to point A'. Side wall 62 of jaw member 22 also follows a similar arcuate path along arrow E. Elongated slots 34 and 42 permit further relative sliding movement between jaw members 22 and 24 when upper side walls 48 and 50 abut prior to completion of the jaw member movement. The above described cycle is repeated to effect a step-by-step movement of jaw members 22 and 24 in a walking fashion along strip S.

It should be understood that FIG. 10 illustrates only the theoretical relative link and gripping surface movement and does not represent jaw member movement nor movement of strip S caused by inertia and compressive forces. In operation, with gripping surfaces 62 and 64 in engagement with opposite sides of a strip, jaw members 22 and 24 move in opposite arcuate directions. However, the forward movement of one jaw member will exceed the rearward movement of the other jaw member to effect an overall forward advancement of the jaw members relative to strip S for the following reasons. Strip S is in a compressed state between gripping surfaces 62 and 64 and tends to bulge laterally outwardly against such surfaces during their relative arcuate movement, and back into the now wider space. With reference to FIG. 4, when jaw member 22 moves in an arcuate forward path, due to extension of piston rod 108, cammed surfaces 70 of indentations 66 enable these surfaces to slip relative to strip S allowing jaw member 22 to move forward. Simultaneously, jaw member 24 tends to move in an opposite rearward direction. However, portions of strip S will bulge into the spaces defined by indentations 66 and be compressed by shoulder 68 upon rearward movement of jaw member 24 until a reaction force is sufficiently induced in such portions of strip S to stop further reverse movement of jaw member 24. Jaw member 22 continues to move forward until it completes the end of its travel as shown in FIG. 4 while jaw member 24 remains substantially stationary. With the retraction of piston rod 108, jaw member 24 moves forward by reason of slippage of cammed surface 70 relative to strip S and jaw member 22 moves rearward until stopped by the reactive bearing pressure of compressed strip S on shoulders 68 of jaw member 22. Jaw member 24 continues to move forward until it reaches the end of its stroke as shown in FIG. 5.

As strip inserting apparatus 20 advances along strip S in the above-described manner, strip S is progressively inserted in expansion joint slot S by means of downwardly inclined surfaces 56 and 58 and finally inserted to the desired depth by wheel 86. Shoulders 90 bear against the top wall side portions of strip S to insure proper disposition of strip S within the slot. FIG. 11 illustrates another form of the invention particularly adapted for accommodating varied diameter sizes of sealing strips. This form of the invention is identical to the form previously described with the exception that adjusting means are provided for varying the spacing between the side walls 48 and 50 of jaw members 22 and 24. As shown in FIG. 11, link 26' is pivotally mounted at one end thereof about a pin 36' and an adjustable pin 130 located intermediate the end of link 26'. Pin 130 is mounted in a moveable block 132 guided for axial movement on spaced guideways 134 formed in link 26'. An elongated screw 136 extends through an opening provided in an end wall 138 of link 26' and is connected at its one end to block 132. A pair of lock nuts 140 are threaded onto screw 136 opposite sides of end wall 138. Screws 136 and 148 can be manipulated to adjust the spacing between jaw members 22 and 24 to accommodate various widths of sealing strips and to change the length of links 26' and 28'. Also, links 26' and 28' can be individually adjusted to provide a tapered spacing between jaw members 22 and 24, if desired. FIGS. 12 and 13 illustrate still another form of the invention which is particularly adapted for sealing strips having large widths. A plurality of rollers 160 are mounted on rotatable shafts 162 journaled for rotation in jaw members 22 and 24. Shafts 162 are oriented parallel to inclined surfaces 56 and 58 and provide inclined roller bearing surfaces for thick, heavy duty sealing strips to facilitate relative axial movement between jaw members 22 and 24 and strip S.

Still another form of the invention particularly adapted for large, heavy duty sealing strips is shown in FIGS. 14-17 for reducing the friction between jaw members 22 and 24 and strip S and facilitating relative axial movement therebetween. The strip inserting apparatus of FIGS. 14-17 is comprehensively designated 20' and comprises a pair of elongated, laterally spaced jaw members 22' and 24' connected together for relative axial movement by means of links 26' and 28'. Link 26' is pivotally adjacent one end thereof about a pin 170 extending downwardly through link 26' and suitably threaded in jaw member 24'. The other end of link 26' is pivotally mounted about a pin 172 threaded into jaw member 22'. Link 28' is pivotally mounted adjacent one end thereof about a pin 174 suitably threaded in jaw member 24', the other end of link 28' being pivotally mounted about pin 176 threaded into jaw member 22'. The heads of pins 174 and 176 are received in corresponding recesses provided in the upper recess of link 28'. Links 26' and 28' together with jaw members 22' and 24' form a parallelogram linkage for permitting arcuate and axial movement of one jaw member relative to the other.

The means for actuating jaw member 22' and 24' alternately in a step-by-step manner axially along strip S comprises a pneumatic actuator, generally designated 178, having a cylinder 180 and a piston (not shown) reciprocable therein and connected to a piston rod 182. A control valve and piping arrangement (not shown), which can be similar to that described in connection with the first form of the invention illustrated in FIG. 1, are suitable connected to actuator 178 for automatically reciprocating the piston within cylinder 180. The head of actuator 178 is connected to jaw member 24' by means of an L-shaped bracket 184 having one leg 186 rigidly secured to actuator 178 by means of a fastener 188, the other leg 190 of bracket 184 disposed beneath link 28' and about pin 174. Piston rod 182 is connected to jaw member 22' by means of a bracket 192 having one leg 194 disposed beneath the head of pin 172 and about the shank thereof, the other leg 196 receiving the reduced diameter, threaded end portion 198 of piston 182. A pair of stop nuts 200 are threaded onto portion 198 of piston rod 182 adjacent the free end thereof to engage and carry bracket 192 along therewith during retraction of piston rod 182. The transition between piston rod 182 and the reduced diameter portion thereof forms a shoulder 202 engageable with bracket 192 for moving the same axially outwardly during extension of the piston rod 182.

Jaw members 22' and 24' are provided with spaced side walls 204 and 206 having recessed portions therein defined by gripping surfaces or tapered, converging side walls 208 and 210 and upper cam surfaces or inclined walls 212 and 214 defining a tapered groove which decreases in width rearwardly of apparatus 20' and is inclined downwardly for receiving a sealing strip S therein to progressively compress the same and urge it downwardly in the compressed state into the pavement groove wherein it expands to exert outward sealing pressure against the walls of the groove. Two sets of rollers 216 and 218 journaled for rotation on shafts 220 and 222 secured in side walls 208 and 210, respectively, are provided for reducing the
friction between inclined walls 212, 214 and strip S. The peripheral contact surface of these rollers project slightly below their respective inclined walls 212 and 214. Likewise, two sets of rollers 224 and 226 journeled for rotation on upwardly inclined shafts 228 and 230 mounted in jaw members 222' and 224', respectively, are provided for reducing the friction between side walls 208, 210 and said S, in order to facilitate relative axial movement therebetween.

The bottom ends of jaw members 222' and 224' are inclined adjacent their forward ends upwardly toward the front of apparatus 20' as shown at 232 in FIG. 14. A pair of laterally spaced insert wheels 238 and 240 are rotatably mounted on shafts 242 and 244 mounted in jaw members 222' and 224', respectively, adjacent the bottom rear ends thereof. Insert wheels 238 and 240 are mounted in arcuate cavities 246 and 248 formed in jaw members 222' and 224'. These insert wheels force the sealing strip S downwardly into the pavement groove and determine the depth to which strip S is inserted. Of course, the radii of wheels 238 and 240 can vary in accordance with the desired depth of strip position.

The operation of strip inserting apparatus 20' is similar to that described in connection with apparatus 20. A handle 250 is mounted on apparatus 20' for manually guiding and manipulating such apparatus. Once a portion of the sealing strip S is past the interior groove of apparatus 20' defined by side walls 208, 210 and upper inclined walls 212 and 214, air is admitted to actuator 178 to actuate jaw members 222' and 224' in the same manner described in connection with jaws 22 and 24 of apparatus 20 in the form of the invention illustrated in FIGS. 1-10. Thus, jaw members 222' and 224' are moved axially along sealing strip S to urge the same progressively into the pavement groove by means of inclined walls 212 and 214 and the frictionless rollers 216 and 218. Rollers 222' and 224' also facilitate axial movement between jaw members 222', 224' and strip S while insert rollers 238 and 240 force strip S to the proper depth within the pavement slot. Just prior to strip S being introduced into the pavement groove, it is laterally compressed by means of rollers 234 and 236 to insure ease of insertion of strip S into the groove.

From the foregoing, it is apparent that the present invention fully accomplishes its intended objects and provides a novel apparatus for expeditiously inserting a sealing strip in expansion joint grooves to the desired depth in a more efficient manner without damaging the strip. The apparatus of this invention is particularly adapted for inserting sealing strips in grooves formed in vertical and suspended surfaces, such as walls, ceilings and the like. The apparatus is compact and can be easily guided by hand. Also, this apparatus comprises means for progressively compressing opposite sides of the strip and means for directing a lubricant-adhesive to such sides prior to insertion of the strip in the slot. The spacing and/or the relative longitudinal inclination between the side walls of the jaw members can be varied by adjusting means, if desired. Anti-friction rollers in bearing contact with the sealing strip can be employed for facilitating relative axial movement between the jaw members of the apparatus and large, heavy duty sealing strips.

If apparatus 20' is actuated without a sealing strip threaded into the groove between members 222', 224', only member 222 will move because of the axial alignment of the drive cylinder with the apparatus. However, in use both jaws will be moved because engagement of member 222 against the strip prevents member 222' from retracting, thereby advancing member 224'.

While a pneumatic cylinder provides the motive power in the illustrated embodiments, any suitable power means can be used. For example, a stationery or portable electric motor can have a cable drive connected to the movable members. Preferred embodiments of this invention having been disclosed in detail, it is to be understood that this has been done by way of illustration only.

1. Apparatus for inserting a sealing strip into a groove comprising a pair of members, means connecting said members together in a side-by-side relation, said members having opposed work engaging surfaces for receiving a sealing strip therebetween, means for moving said members relative to each other and to such strip for advancing said members axially relative to said strip, and means operable upon such relative movement of said members for inserting said strip into the groove.

2. Apparatus according to claim 1 wherein said opposed work engaging surfaces comprise gripping surfaces laterally engaging the strip.

3. Apparatus according to claim 1 wherein said strip inserting means include cam surfaces on said members longitudinally inclined downwardly for directing the strip into the groove.

4. Apparatus according to claim 1 together with means mounted adjacent one end of said members for inserting said strip into said groove at a predetermined depth.

5. Apparatus according to claim 1 including means for guiding said members along said groove.

6. Apparatus according to claim 1 including means for vibrating said members.

7. Apparatus according to claim 1 wherein said connecting means comprises a pair of links pivotally connected adjacent the opposite ends thereof to pins extending upwardly from said members for forming a parallelogram linkage.

8. Apparatus according to claim 7 wherein said links are provided with an elongated slot for loosely members axially extending therethrough to permit lateral play therebetween.

9. Apparatus according to claim 2 wherein each of said gripping surfaces has at least one indentation formed thereon.

10. Apparatus according to claim 2 wherein said gripping surfaces are tapered in converging relation with each other to progressively compress the strip laterally as the apparatus advances along said strip.

11. Apparatus according to claim 3 wherein said cam surfaces also are laterally inclined from said gripping surfaces downwardly in a converging relation.

12. Apparatus according to claim 2 wherein each of said cam surfaces is provided with anti-friction means engageable with said strip.

13. Apparatus according to claim 3 wherein each of said cam surfaces is provided with anti-friction means engageable with said strip.

14. Apparatus according to claim 1 wherein said members are provided with means for compressing said strip laterally prior to insertion in the groove.

15. Apparatus according to claim 14 wherein said compressing means comprise laterally spaced rollers engageable with opposite sides of said strip.

16. Apparatus according to claim 1 including means for adjusting the lateral spacing between said members.