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S. J. KENT ET AL

2,752,597

CARPET ANCHOR STRIP MACHINE

Filed Oct. 25, 1954

3 Sheets-Sheet 1

Fig. 1.

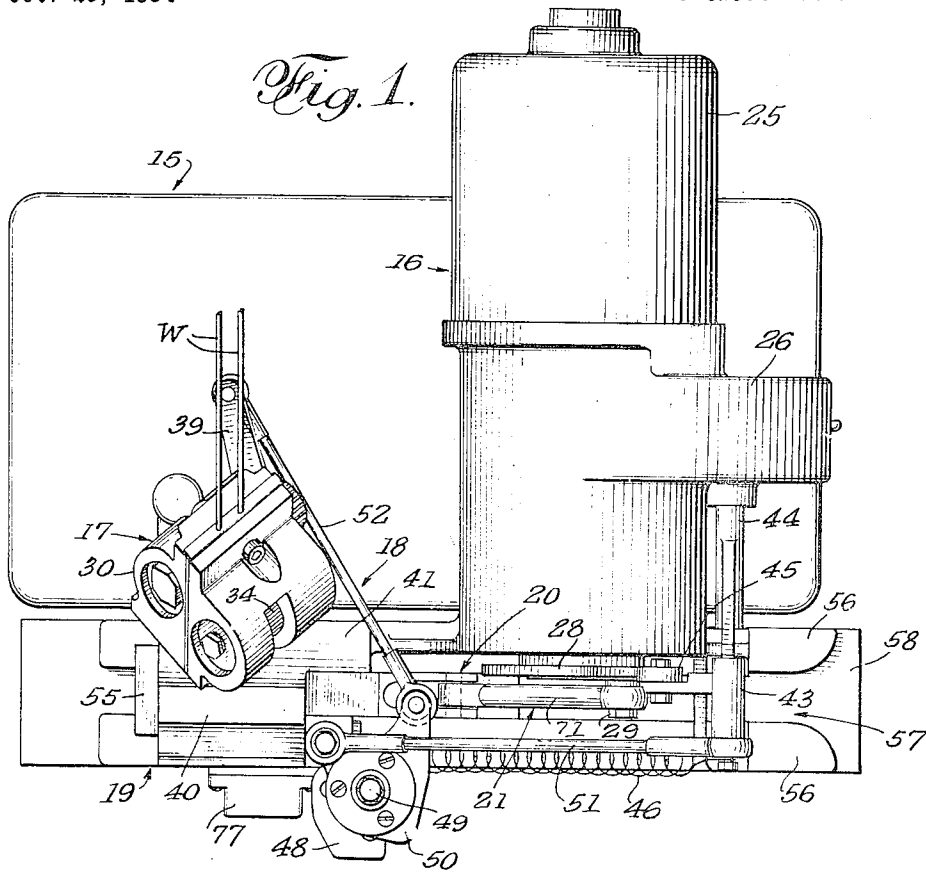
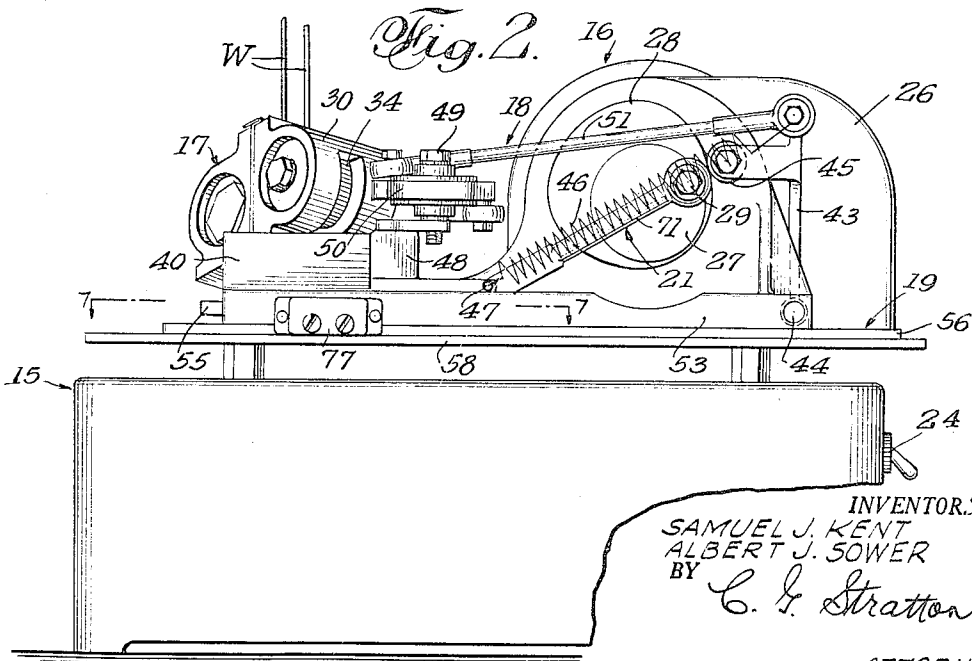


Fig. 2.



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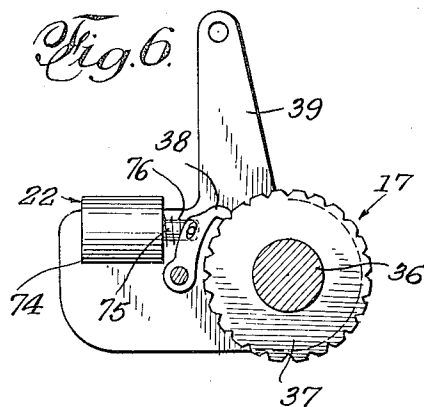
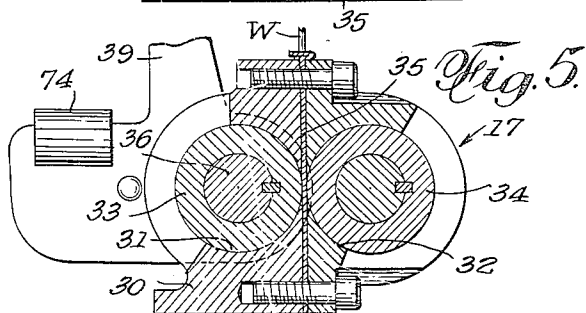
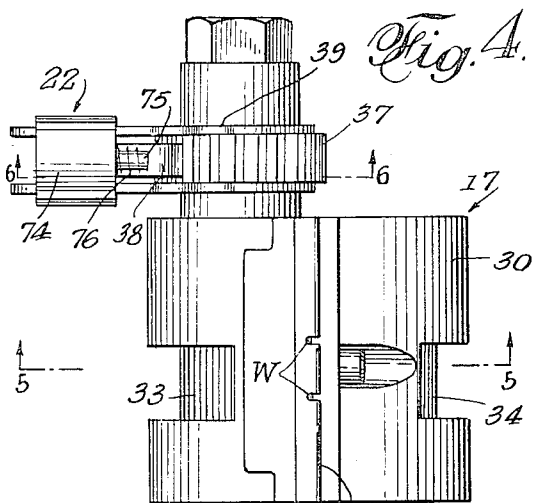
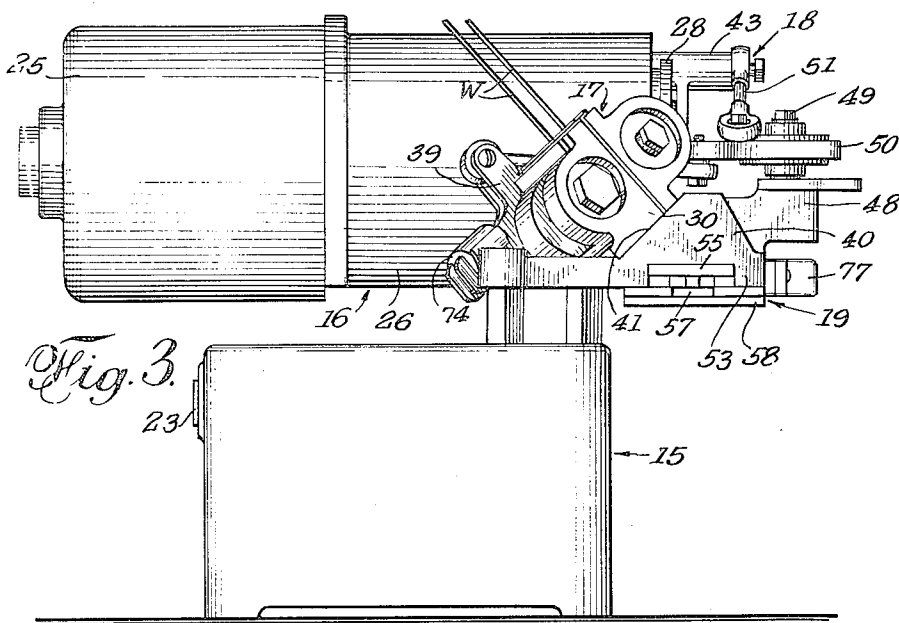
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CARPET ANCHOR STRIP MACHINE

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CARPET ANCHOR STRIP MACHINE

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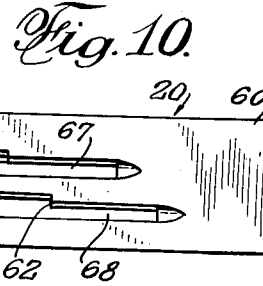
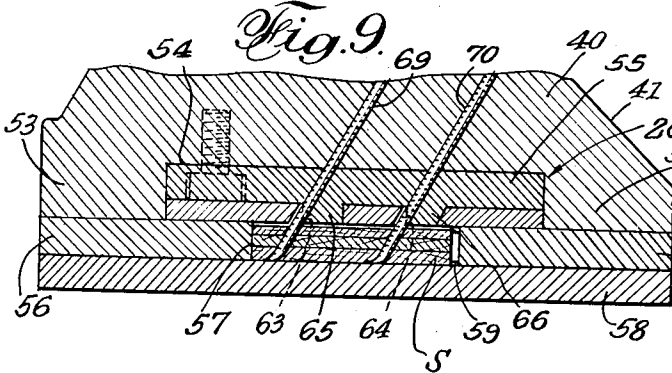
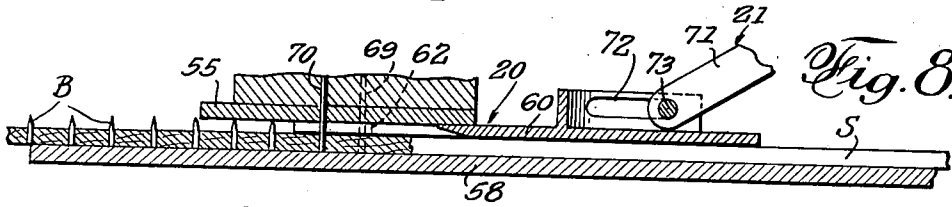
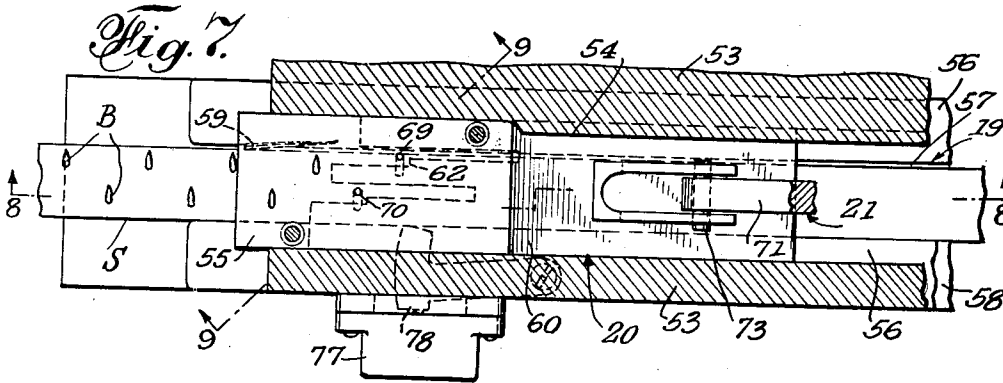


Fig. 11.

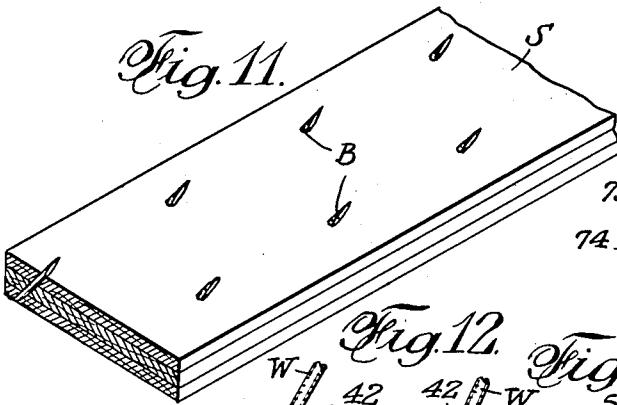


Fig. 12.

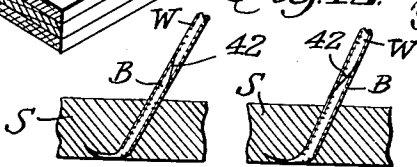
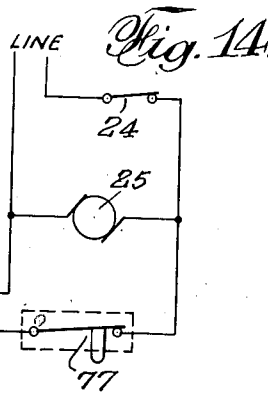


Fig. 13.

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CARPET ANCHOR STRIP MACHINE

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Application October 25, 1954, Serial No. 464,305

6 Claims. (Cl. 1—92)

This invention relates to a machine for making strips which are to be fastened to the floor at the base of the walls and which are to serve as means for anchoring the marginal edges of wall-to-wall carpeting. On wooden floors, said strips are usually nailed in place and on cement floors or the like, they are affixed in place with a suitable cement.

The present invention contemplates the provision of a machine for automatically providing a length or lengths of wooden or composition strips with a series of angularly directed and sharp-pointed carpet-anchoring pins or prongs by driving the end of a roll of wire into such a strip and then severing the same from the roll to form a new end. By severing the wire at an angle to both the length and transverse section of the wire, the prong remaining in the strip has a sharp end and the new end of the wire is sharp for easy penetration into the strip. It is an object of the present invention to provide a machine that provides a strip with prongs in the above-indicated manner.

Another object of the invention is to provide a machine to drive a headless barb into a strip to provide a carpet-anchor member and to sever said barb from a continuous length of wire in an automatic manner.

A further object of the invention is to provide a machine of the character referred to in which the spacing of the barbs longitudinally of the strip, into which driven, results from a reciprocative movement of a cutter that severs the barb from a roll of wire, the cutter constituting means to engage the projecting end of the barb and move the same and the strip to the next barb-receiving position.

The tension often necessary to hold a carpet in place without slack or wrinkles is frequently of such substantial magnitude as to place considerable bending strain on the barbs. A still further object of the invention is to provide a machine, as above, that simultaneously drives two barbs in such relation to each other that the strip is provided with two rows of barbs and the barbs of said rows are in alternate spacing, one with the other.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawings merely show and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

Fig. 1 is a plan view of a machine for making carpet-anchoring strips, the same being at present preferred.

Fig. 2 is a front elevational view thereof, the lower right corner of the machine base being broken away.

Fig. 3 is an end view as seen from the left of Fig. 2.

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Fig. 4 is an enlarged plan view of wire-feeding means used in the present invention.

Fig. 5 is a cross-sectional view as taken on line 5—5 of Fig. 4.

Fig. 6 is a similar view taken on line 6—6 of Fig. 4.

Fig. 7 is a similarly enlarged plan sectional view as taken on line 7—7 of Fig. 2.

Fig. 8 is a longitudinal sectional view as taken on line 8—8 of Fig. 7.

Fig. 9 is a still further enlarged cross-sectional view as taken on line 9—9 of Fig. 7.

Fig. 10 is a fragmentary bottom plan view of a cutter member shown in Figs. 7, 8 and 9, the same being shown to the scale of the latter views.

Fig. 11 is a perspective view of the carpet-anchoring strip produced by the present machine.

Fig. 12 is a substantially enlarged fragmentary sectional view showing a barb as driven into a strip and also the line of severance of said barb from the roll or supply thereof.

Fig. 13 is a similar view of a modification.

Fig. 14 is a diagrammatic view of the electric-controls of the present machine.

The machine that is illustrated comprises, generally, a base 15, a prime mover 16 mounted on said base, wire-feeding means 17, means 18 driven by the prime mover to operate the means 17, a guideway 19 for a strip S that is to be penetrated by the ends of wire W fed by the means 17, cutter means 20 to cut the ends of wires W so that barbs B remain embedded in strip S, cutter operating means 21, driven by the prime mover, to operate the cutter means 20, and strip-controlled, switch-operated means 22 to control the wire-feeding means 17.

The base 15 merely comprises a means to integrate the different components of the machine and more particularly mounts the prime mover 16, and slideway 19, the other machine components being connected to one or both said prime mover and said slideway. Said base also is utilized as a mount for a socket 23, that brings electric-current to the machine, and a master switch 24 (Fig. 14) that connects the machine in and out of circuit, as desired.

The prime mover 16 is shown as an electric-motor 25 that is provided with a suitable speed reducer 26 so that the output end 27 of the latter has a reduced speed relative to motor speed, as desired. In this instance, the motor and reducer are arranged horizontally on and above base 15. Said output end is provided with a cam 28 that controls means 18 that, in turn, controls the wire-feeding means 17, and with a crank or eccentric pin 29 that controls the cutter operating means 21 that, in turn, controls the cutter means 20.

The wire-feeding means 17, as best shown in Figs. 4, 5, and 6, comprises a two-part housing 30 that is provided with parallel bores 31 and 32 in which reside feed rolls 33 and 34, respectively, the latter having cylindrical faces that are preferably straight knurled, and a suitable spacer 35 between the parts of housing 30 and suitably grooved to pass the wires W in position to be fed in a downward direction by said feed rollers. To insure positive feed of both wires W, the spacer or shim 35 permits the knurled feed rolls to bite into and thus serrate or roughen the same. This is nail-forming technique and is here used to insure firm anchor of the barbs B in the strip S.

The roll 33 is the driven roll of the pair and has a shaft 36 extending beyond housing 30, the shaft 36 being provided with a feed ratchet 37 that is engageable by a driving dog 38 that is normally in driving engagement with said ratchet and is carried by an arm 39 that is oscillatory on shaft 36 around the axis thereof. The ratchet 37 is turned intermittently by dog 38 as the arm 39 is

oscillated by the means 18. Hence, the degree of angular movement of arm 39 controls the amount of rotational feed of rollers 33 and 34 and the length of feed of the ends of wires W.

In the present instance, see Figs. 1, 2, and 3, the guideway 19 is arranged longitudinally along the front of the machine and transverse to the center or axis of output 21 of the prime mover 16. A housing part 40 is built up from said guideway and is provided with a face 41 that slopes downwardly and rearwardly. The above-described wire-feeding means 17 is mounted on said face and, therefore, has a sloping position best seen in Fig. 3. Since the wire is passed through said housing part 40 substantially normal to face 41, the direction of said wire and the feed thereof is at an angle that is the complement of the angle of face 41. As seen in Fig. 12, said angle may be about 60° to the plane of the strip S if the line of severance 42 is on the side of the wire that forms the obtuse angle with the strip, or about 70° if the line of severance is on the opposite side, as in Fig. 13. Thus, the angle of the barbs relative to the strip S will be approximately the same except that, in one case, the serrations caused by the feed rolls 31 and 32 will be on the side of the barb not hooked by the rug (Fig. 12) and, in the other case, said serrations will be on the side hooked by the rug (Fig. 13). The former is preferred because the ease of removal of a rug is facilitated by the smooth severed faces of the barbs.

The means 18 is here shown as an arm 43 on a pivot 44 and provided with a cam follower 45 held in engagement with cam 28 of the prime mover 16 by a spring 46 extending between the free end on arm 43 and a fixed point 47 of the guideway. A bracket 48 is affixed to said guideway and has a pivot 49, mounting a horizontal rock plate 50. A pitman 51 connects the free end of arm 43 and said rock plate, the latter being given an oscillating motion by the cam 28. A second pitman 52 connects said rock plate and the outer end of arm 39. Consequently, the oscillating motion of plate 50 is translated by pitman 52 into oscillating motion of arm 39 to impart, through ratchet 37 and dog 38, intermittent rotary movement to the feed rolls 31 and 32.

The guideway 19 is particularly detailed in Figs. 7, 8 and 9 and is here shown as comprising side rails 53 formed in the lower portion of housing part 40 to define a slideway 54 in which is fixedly mounted a shear plate 55 that has operative association with the cutter means 20 operable in slideway 54.

Said rails 53 are extended toward the right (Figs. 1 and 2) and carry along the bottom faces side guides 56 which define the passage 57 in which strip S is guided. A fixed plate 58 forms a bottom closure for passage 57. Thus, the guideway 19 includes a slideway 54 for the cutter means 20 and a passage 57 beneath said slideway for the strip S.

One of the guides 56, near the exit end of passage 57, is provided with resilient finger 59 that presses the strip into sliding engagement with the opposite guide 56. Thus, said strip always has a fixed path regardless of looseness thereof in the passage 57.

The cutter means 20, see Fig. 10, comprises a reciprocative cutter member 60 operating in slideway 54, and portions of the shear plate 55. Since two wires W are fed simultaneously, the cutter member 60 is provided with two cutter or shear abutments 61 and 62 that cooperate with abutments 63 and 64 provided on the respective cleat-like projections 65 and 66 on shear plate 55. The cutter member 60 is provided with slots 67 and 68 that accommodate said projections 65 and 66 of the shear plate when the cutter is reciprocated.

The shear plate 55 has orifices that align with orifices 69 and 70 in housing part 40, said aligned orifices passing the ends of the wires that penetrate strip S when fed by the means 17. Since the cutter shear abutments 61 and 62 bear against the barbs B that have been driven into

the strip 5, said abutments constitute means to advance the strip S to the new position preparatory to being again penetrated by the sharpened ends of the wires W.

The cutter operating means 21 comprises the mentioned crank pin 29, a pitman 71 extending from said pin to the cutter member 60. The latter is provided with a lost-motion slot 72 (Fig. 8) for a pin 73 on the end of pitman 71. Thus, the cutter member is at rest during the first motion of pitman 71 and the means 17 can effect feed of the wires before said pin 73 reaches the end of slot 72 to institute advance of the cutter member.

The means 22 to control the wire-feeding means 17 is shown best in Figs. 4, 6, 7 and 14. The same comprises a solenoid 74, carried by arm 39, and having a core 75 that is projected by spring 76. Said core, or an extension thereof, is connected, as by a pin and slot, to dog 38. When said solenoid is de-energized, the dog is in driving engagement with ratchet 37.

A normally-closed microswitch 77 is connected in series with solenoid 74, through master switch 24 (Fig. 14). The motor 25 is connected across said microswitch and solenoid. An arm 78 (Fig. 7) is in position to be actuated by the strip S and to open the normally-closed switch 77.

When the switch 24 is closed, the prime mover will start operation and the cutter member set into reciprocative movement. There being no strip S in the passage 57, switch 77 remains closed, solenoid 74 energized, and dog 38 held withdrawn by said solenoid. Thus, arm 39 oscillates without, however, rotating the feed rolls 31 and 32.

Now, a strip is fed into passage 57 and, by encountering arm or lever 78, said strip causes said arm to open microswitch 77. Since solenoid 74 is now de-energized, spring 76 projects core 75 and dog 38 drops into ratchet-engaging position. Therefore, the feed rolls will be intermittently driven to drive the severed sharp ends of the wires into the strip. Thereafter, the operation is automatic and continues as above so long as strips S are continuously fed to the machine. Since the advance of said strips is dependent on wires or barbs in the path of shearing abutments 61 and 62, such advance ceases when the supply of wire is exhausted.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the invention, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. It is, therefore, not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. A carpet anchor strip machine comprising, in combination, wire-feeding means, means to drive said wire-feeding means intermittently, means controlled by a strip in position to be penetrated by the end of a wire being fed by the wire-feeding means to control the latter means, and means to shear the wire above the face of the strip into which the same penetrates, the latter means including a shearing abutment and said abutment constituting a member that pushes against the sheared end of the wire to, thereby, advance the strip to the next wire-penetrating position.

2. A carpet anchor strip machine comprising a base, a prime mover mounted on said base and having an output end, a guideway including a passage for a strip movable longitudinally therein and provided with a slideway, a cutter member operative in said slideway and reciprocative by said output end of the prime mover, said cutter member being provided with a shear abutment, a fixed abutment cooperating with the shear abutment to shear through a wire extending across said passage and guideway into a strip in the former, said shear abutment

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constituting a member that pushes against the sheared end of the wire to advance the strip to the next wire-penetrating position, means connected to the output of the prime mover to feed a wire to penetrate said strip, and means controlled by the strip to control operation of the wire-feeding means.

3. A carpet anchor strip machine, comprising a base, a prime mover mounted on said base and having an output end, a guideway including a passage for a strip movable longitudinally therein and provided with a slideway, a cutter member operative in said slideway and reciprocal by said output end of the prime mover, said cutter member being provided with a shear abutment, a fixed abutment cooperating with the shear abutment to shear through a wire extending across said passage and guideway into a strip in the former, said shear abutment constituting a member that pushes against the sheared end of the wire to advance the strip to the next wire-penetrating position, wire-feeding means fixedly carried by the guideway and mounted at an angle to the plane of the strip in the passage of said guideway, means driven by the output of the prime mover and connected to the wire-feeding means, and means controlled by the strip to control operation of the latter means.

4. A carpet anchor strip machine comprising a base, a prime mover mounted on said base and having an output end, a guideway including a passage for a strip movable longitudinally therein and provided with a slideway, a cutter member operative in said slideway and reciprocal by said output end of the prime mover, said cutter member being provided with a shear abutment, a fixed abutment cooperating with the shear abutment to shear through a wire extending across said passage and guideway into a strip in the former, said shear abutment constituting a member that pushes against the sheared end of the wire to advance the strip to the next

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wire-penetrating position, wire-feeding means fixedly carried by the guideway and mounted at an angle to the plane of the strip in the passage of said guideway, said latter means comprising feed rolls and an oscillating member connected to one of said rolls, means driven by the output of the prime mover to oscillate said member, and means controlled by the strip to operatively engage the oscillating member and the roll connected therewith.

5. A machine according to claim 4: a cutter member driving means including a lost-motion connection, and the wire feeding means being operative during the take-up movement of said connection.

6. In a machine for making carpet anchor strips, a longitudinal guideway for a strip, a cutter member reciprocal in said guideway, said cutter member being provided with a shear abutment to cut a wire, a cutter member driving means including a lost-motion connection, a shear plate fixedly mounted in operative relation to said cutter member, said shear plate also provided with a shear abutment, said shear abutments cooperating to shear through a wire during movement of the cutter member, the shear abutment on the cutter member constituting a pusher that engages the sheared end of the wire to advance the strip to the next wire-penetrating position, and wire-feeding means carried by the guideway and mounted at an angle to the plane of the strip therein, said shear abutments being disposed at an angle relative to the angle of the wire in the wire-feeding means to, thereby, shear said wire at an angle to its length.

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