

March 30, 1937

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2,075,656

RUG AND CARPET BINDING SEWING MACHINE

Filed June 27, 1936

5 Sheets-Sheet 1

Fig. 1.

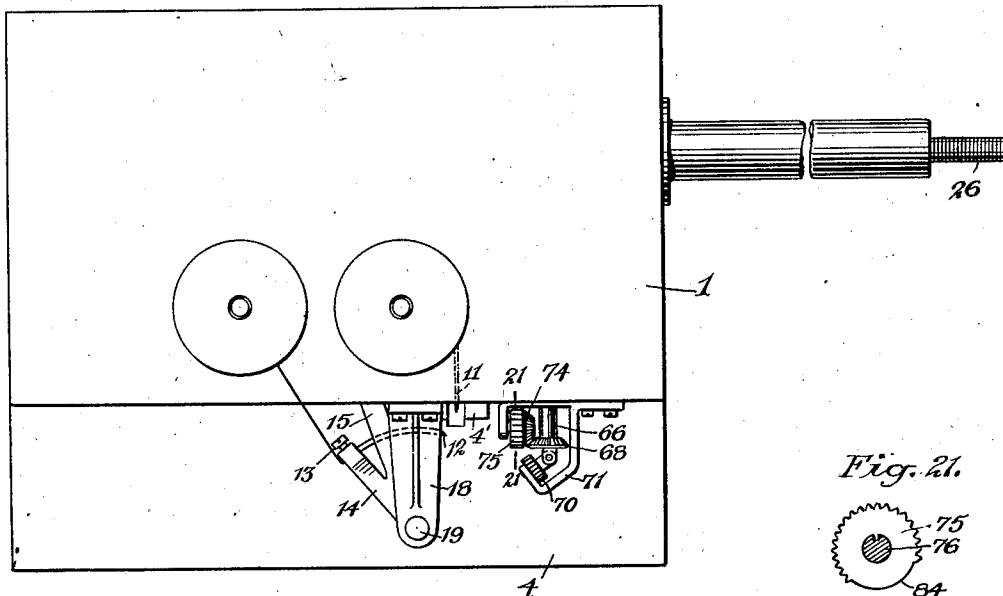
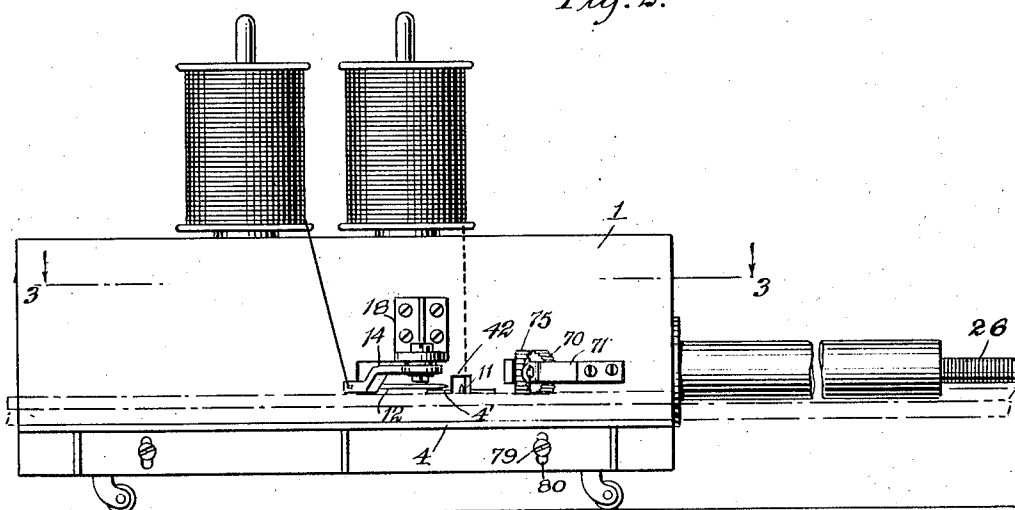


Fig. 21.



Fig. 2.



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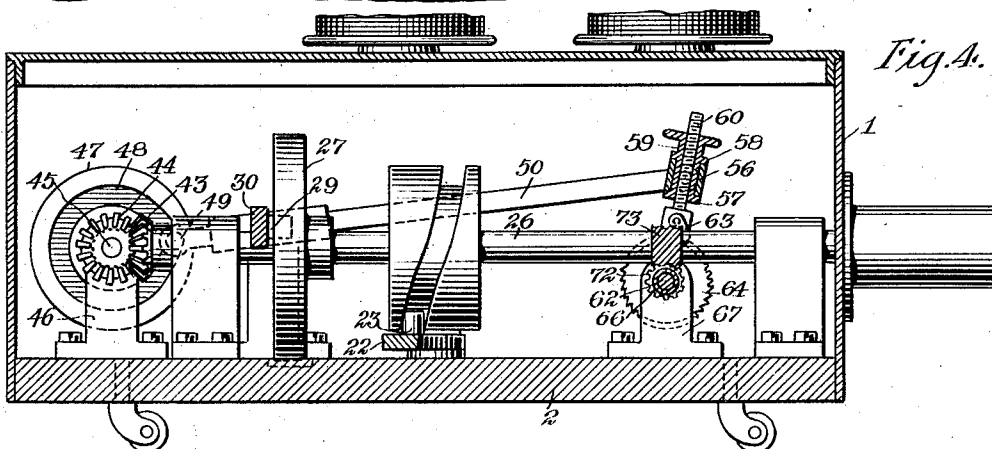
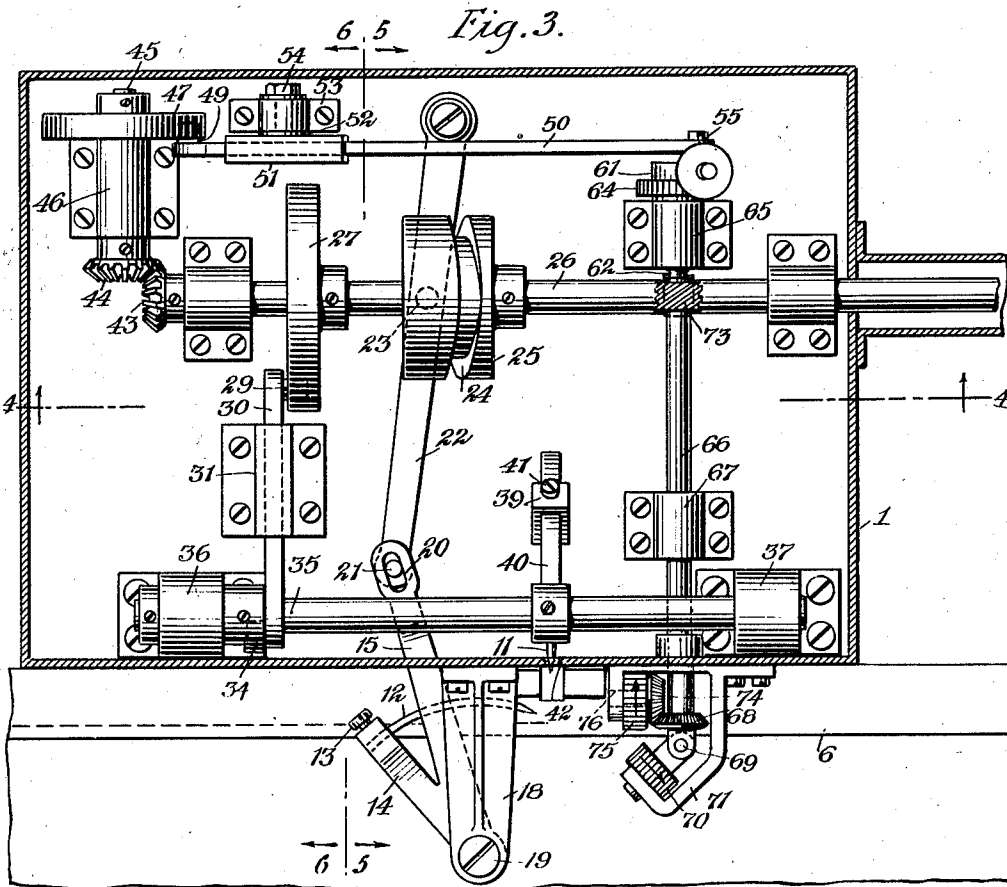
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RUG AND CARPET BINDING SEWING MACHINE

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5 Sheets-Sheet 2



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RUG AND CARPET BINDING SEWING MACHINE

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5 Sheets-Sheet 3

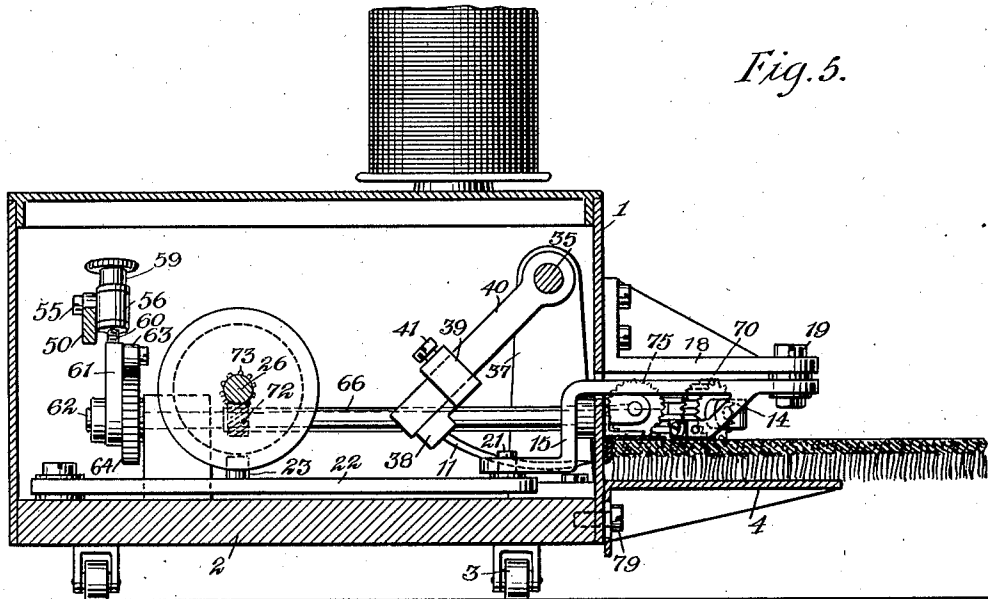


Fig. 5.

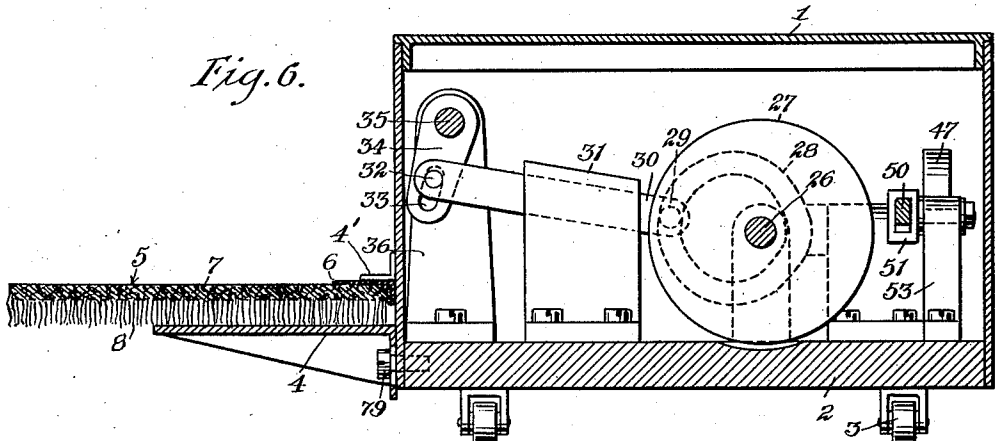


Fig. 6.

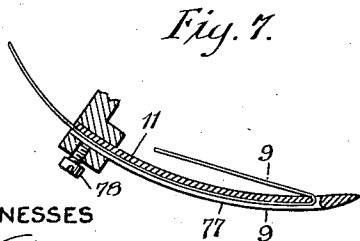


Fig. 7.

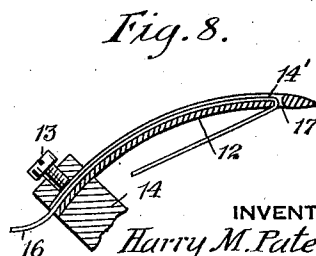


Fig. 8.

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Fig. 9.
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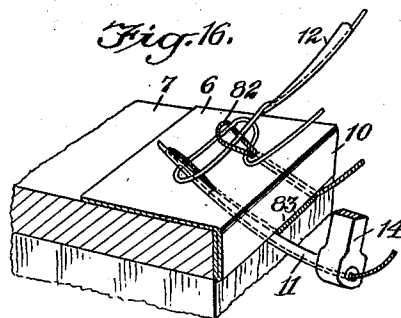
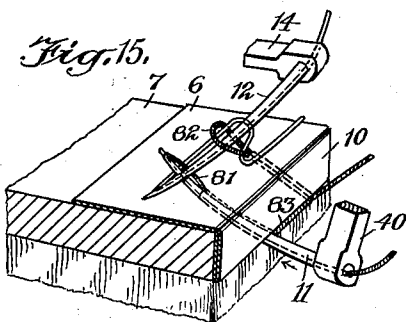
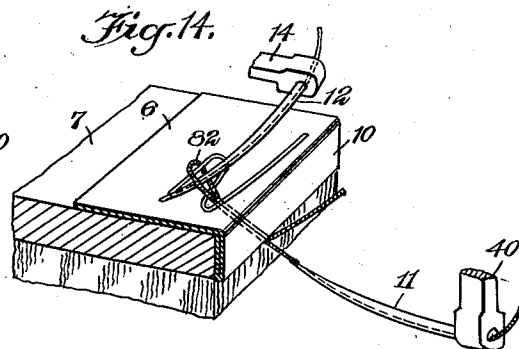
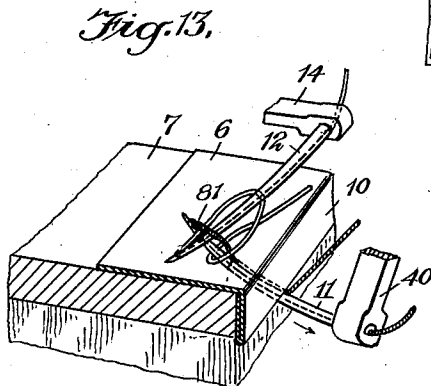
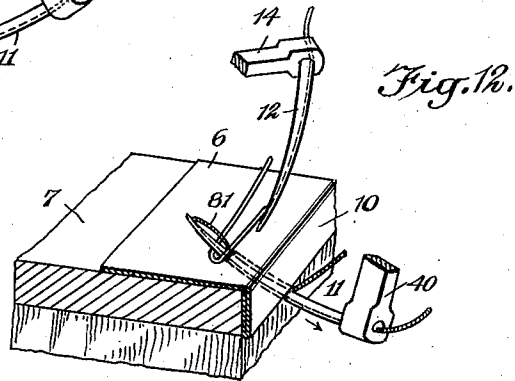
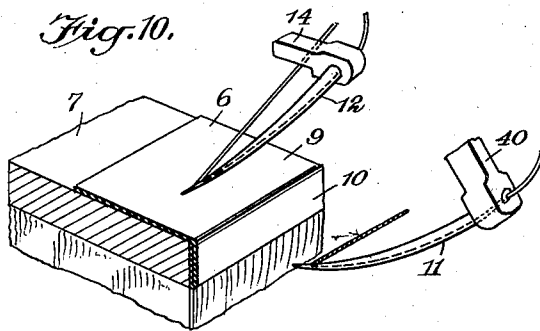
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RUG AND CARPET BINDING SEWING MACHINE

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5 Sheets-Sheet 4



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RUG AND CARPET BINDING SEWING MACHINE

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Fig. 11.

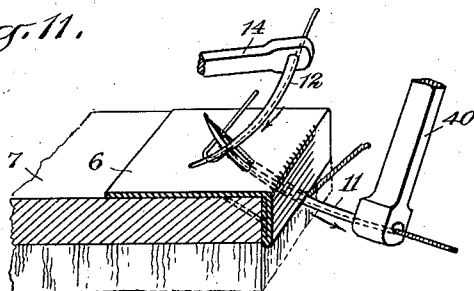


Fig. 20.

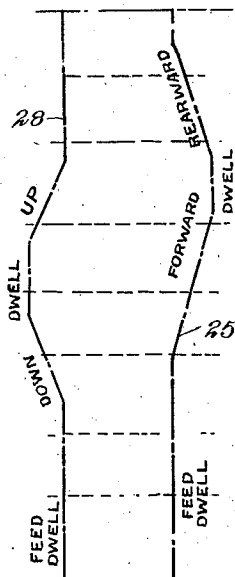


Fig. 17.

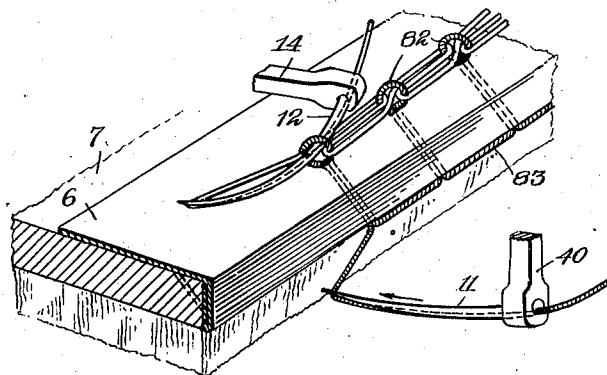


Fig. 18.

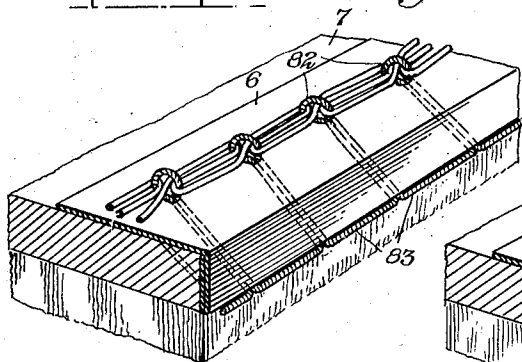
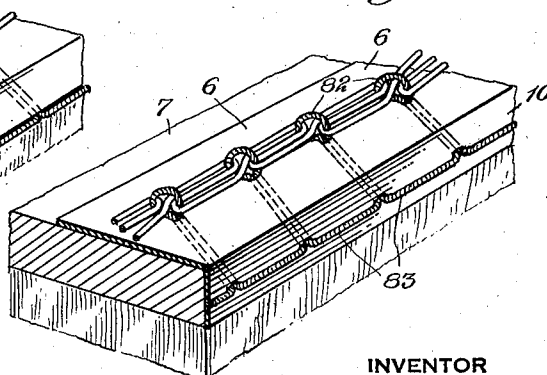


Fig. 19.



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RUG AND CARPET BINDING SEWING
MACHINE

Harry M. Paternayan, New York, N. Y.

Application June 27, 1936, Serial No. 87,651

5 Claims. (Cl. 112-197)

This invention relates to sewing machines, and particularly to an improved sewing machine adapted to sew a binding on a carpet or rug, an object being to provide a construction which will sew the binding in place by a seam extending diagonally through the base of the rug to the rear surface thereof and also through two parts of the binding.

Another object of the invention is to provide a sewing machine for securing bindings on rugs, carpets and the like wherein means are provided for completing a preliminary sewing of a binding or presenting an original retaining seam for the binding.

An additional object is to provide a sewing machine utilizing a needle and a looper operating in planes at right angles to each other for presenting a diagonal seam extending through two sections of the binding for holding one section along the edge of the base and the other section on the bottom of the base.

In the accompanying drawings:

Fig. 1 is a plan view of a sewing machine disclosing an embodiment of the invention;

Fig. 2 is a side elevation of the structure shown in Fig. 1;

Fig. 3 is a sectional view through Fig. 2 approximately on the line 3-3, the same being on an enlarged scale;

Fig. 4 is a sectional view through Fig. 3 approximately on the line 4-4;

Fig. 5 is a transverse sectional view through Fig. 3 approximately on the line 5-5;

Fig. 6 is a transverse sectional view through Fig. 3 approximately on the line 6-6;

Fig. 7 is a fragmentary sectional view through the needle shown in Fig. 3;

Fig. 8 is a sectional view through the looper shown in Fig. 3;

Fig. 9 is a transverse sectional view through Fig. 7 on the line 9-9;

Fig. 10 is a fragmentary perspective view showing how the needle and looper are positioned when the end of the rug is placed in position for stitching;

Fig. 11 is a view similar to Fig. 10 but showing the needle as having made its first full movement;

Fig. 12 is a view similar to Fig. 11 but showing the looper withdrawn;

Fig. 13 is a view showing the next movement from Fig. 12 for illustrating how the vertical needle is moved into the loop formed by the looper;

Fig. 14 is a view similar to Fig. 13 but show-

ing the vertical needle moved back ready for the next stitch;

Fig. 15 is a view similar to Fig. 14 but showing the rug advanced and the vertical needle as it completes its second thrust;

Fig. 16 is a view similar to Fig. 15 but showing the looper withdrawn;

Fig. 17 is a perspective view showing more of the rug and with a number of stitches having been formed;

Fig. 18 is a view similar to Fig. 17 except that the seam or line of stitching has been completed;

Fig. 19 is a view similar to Fig. 18 but showing a slightly modified arrangement wherein the needle forming the stitch penetrates the turned-down part of the binding;

Fig. 20 is a diagram showing the action of the cams which actuate the needle and looper;

Fig. 21 is a side view of a toothed member used in holding the binding tight.

Referring to the accompanying drawings by numerals, 1 indicates a casing of metal or other material which encloses most of the working parts. This casing may have, if desired, a metal bottom 2 as shown in Fig. 6, and to this bottom may be connected casters 3 whereby the device may be rolled along the rug or carpet as the same is used. It will be understood that the device may be moved along the rug or carpet or the carpet may be moved along the device. In order that the needle shall function properly a relative movement of the rug and device must take place and this is regulated more or less by the operator as he pulls the device along.

As shown in Fig. 6, there is provided a platform 4 which may be bolted or otherwise rigidly secured to the base 2 and which supports a small portion of the rug 5. It is to be understood that the rug 5 is inverted when the binding 6 is to be applied so that the base 7 will be uppermost and the pile 8 will be facing downwardly. In placing the binding 6 in position it is fed by any suitable feeding means so that a large section 9 will rest against the bottom surface of the base 7 and a folded edge 10 will rest against the edge of the base 7 as clearly shown in Fig. 10. It is of course evident that instead of folding the edge 10 it could be left straight or unfolded as shown in Fig. 19. The tape may be fed by hand into position or automatic feeding means may be provided as disclosed in my copending application Serial No. 75,058.

Referring particularly to Fig. 3, it will be observed that there is provided what may be termed a vertical needle 11 and a horizontal looper 12. 55

The needle 11 moves back and forth in a vertical plane and the looper 12 moves back and forth in a horizontal plane, and the needle and looper move and dwell at different points to produce the desired loops and stitching as illustrated in Figs. 10 to 19 inclusive. From Fig. 3 it will be observed that the looper 12 is secured by a set screw 13 to an arm 14 of lever 15. As illustrated in Fig. 8, looper 12 is provided with a groove 14' so that the thread 16 may extend through the arm 14 to the eye 17 and then back to form the desired loop. Lever 15 as shown in Fig. 3 is pivotally mounted on bracket 18 by a suitable pivotal pin or screw 19. Bracket 18 is screwed to the casing 1 and is held rigidly in place. Arm 14 is provided with a slot 20 which accommodates the pin 21 carried by lever 22. Lever 22 is provided with a pin 23 extending into the cam groove 24 of the cam 25 so that as cam 25 moves lever 22 will swing back and forth in the order as indicated in Fig. 20.

Cam 25 is rigidly secured to a power shaft 26 which extends outwardly through the casing 1 and is connected to an electric motor or other power means which preferably is rotating shaft 26 at a constant speed during the functioning of the device. Also rigidly secured to the shaft 26 is a cam wheel 27 which has a cam groove 28 which accommodates the pin 29 carried by the reciprocating bar 30. Bar 30 is slidably mounted in a suitable bearing structure 31 and has a pin 32 (Fig. 6) at the outer end extending through the slot 33 of the short lever 34 which is keyed or otherwise rigidly secured to the rock shaft 35. Shaft 35 is mounted in suitable journal members 36 and 37 carried by the bottom 2 of the casing. It will therefore be seen that as shaft 26 rotates, rock shaft 35 will be rocked back and forth but the movement will be according to the shape of the cam 28 which is shown in diagram in Fig. 20 and which causes the needle to move back and forth but dwell at different points of its movement.

Needle 11 is rigidly secured by a set screw or other means to a sliding plate 38, which plate has an encircling member 39 encircling arm 40. The encircling member 39 is slidable along the arm 40 but normally is rigidly clamped thereto by a set screw 41. This arrangement permits the needle to be adjusted to move in a lower or higher path to coact properly with the looper. The arm 40 is keyed or otherwise rigidly secured to shaft 35 so as to move therewith. The casing 1 is cut away at 42 to permit the needle 11 to move back and forth as desired. It will be noted that the looper 12 is exteriorly of the casing 1 at all times and is intended to move horizontally over the binding 6 but not to enter this binding or any part of the rug. The vertical needle 11, however, is intended to be thrust through the edge of the rug diagonally from near the top part of the base of the rug to the bottom of the rug as illustrated particularly in Fig. 11 of the drawings.

While power is being transmitted to the needle and looper as just described, power will also be transmitted through pinion 43 to pinion 44 which is rigidly secured to shaft 45 carried by a suitable bearing 46. A cam wheel 47 is also rigidly secured to shaft 45, said cam wheel having a cam groove 48 for accommodating the pin 49 carried by the reciprocating and oscillating rod 50. This rod is slidably carried by a support 51 having a laterally projecting extension 52 rockably mounted in the bearing box 53 and held in place

by the screw 54 whereby the rod 50 is caused to reciprocate as the cam wheel 47 rotates. At the end of rod 50 opposite the cam wheel 47 a pin 55 loosely extends through the rod and is preferably rigidly secured to the sleeve 56, which sleeve is held between enlargements 57 and 58 of an internally threaded member 59 as shown in Fig. 4. A threaded member 60 is screwed into member 59 and in addition is provided with an enlargement 61 which surrounds the end of shaft 62 and which carries a pawl 63 adapted to coact with a ratchet wheel 64. The ratchet wheel 64 is rigidly secured to shaft 62 and upon each reciprocation of the rod 50 the pawl 63 engages one of the teeth of the ratchet wheel and moves the ratchet wheel a certain distance. By adjusting the member 56 upwardly or downwardly on member 60 as shown in Fig. 4, the amount of movement of ratchet wheel 64 may be determined. In this way shaft 62 is given an intermittent movement during the rotation of the power shaft 26.

Shaft 62 (Fig. 4) is supported by a journal member 65 and in turn supports a sleeve 66 which extends through the journal member 67 and has a pinion 68 rigidly secured thereto. Shaft 62 has a universal joint 69 as shown in Fig. 3 whereby the toothed feeding wheel 70 may be set at an angle, certain parts being supported by the bracket 71 rigidly secured to casing 1. Sleeve 66 carries a gear wheel 72 which continually meshes with the gear wheel 73 rigidly secured to shaft 26 whereby the sleeve 66 will rotate at a greater rate of speed than shaft 62 and by reason of the pinion 74 will drive the toothed wheel 75 at a higher speed than the toothed wheel 70. It will of course be understood that the toothed wheel 75 is rigidly secured to a shaft 76 carried by part of bracket 71 and this shaft in turn is rigidly secured to gear wheel 74. The toothed wheel 75 is positioned to give the part 9 of the binding 6 a tendency to move away from the edge of the rug and thus maintain the binding tight during the stitching operation. The toothed wheel 70 is intended to assist in feeding the device along the rug while the toothed wheel 75 maintains the binding 6 taut. It will also be noted from Fig. 6 that the platform 4 is vertically adjustable so as to be movable toward and from the bracket 4'. By this structure rugs of different thicknesses may be taken care of, and also by lowering or raising the platform 4 the needle 11 may be caused to place the stitching as shown in Fig. 17 or as shown in Fig. 19.

Referring again to the needle 11, it will be seen from Fig. 7 that the same has been provided with an outside groove 77 similar to the groove 14' of looper 12. The needle may be fastened into the plate 38 in any desired way, as for instance by the set screw 78. It will also be noted that both the looper 12 and the needle 11 are formed on an arc and therefore travel back and forth in their different arcs as the machine functions. Attention is called to Fig. 2, from which it will be observed that the clamping screws 79 which hold the platform 4 in place extend through suitable slots 80 whereby this platform may be raised and lowered to accommodate rugs of different thicknesses.

When the device is to be used it may be moved along the rug or carpet as it functions or the carpet or rug may be moved past the device. Preferably the device is moved and the rug or carpet is held stationary as the device is comparatively small while the rug is large and heavy. When the rug is first placed in position in the

device it will have the end portion resting on the platform 4 and the needles will be positioned as shown in Fig. 10. Power is then turned on so that shaft 26 will begin to rotate and the first movement will be the movement of needle 11 as it penetrates or is thrust through the edge portion of base 7. This is illustrated in Fig. 11. As shown in Fig. 11 the needle passes immediately below the turned-down portion 10 of the binding 6, but if desired it could pass through the portion 10 as illustrated in Fig. 19 which shows this modified arrangement. This result may be secured by moving the platform 4 as shown in Fig. 6 downwardly the desired distance. As the machine continues to function the parts will move from the position shown in Fig. 11 to that shown in Figs. 12, 13, 14, 15 and 16 respectively.

After the needle 11 has been thrust into position or moved from the position shown in Fig. 10 to that shown in Fig. 11, it is withdrawn a short distance as shown in Fig. 12 so that the loop 81 will be formed. This loop is of ample size to readily permit the looper 12 to be inserted therethrough as shown in Fig. 13, and after this movement of looper 12, needle 11 will be withdrawn as illustrated in Fig. 14 and thus form what may be termed an eye loop 82. After moving to the position shown in Fig. 14, the machine is moved a short distance along the rug and then the needle 11 is again inserted as shown in Fig. 15. The operation then continues as above described, with the result that soon the seam will appear as shown in Fig. 17. This will place a diagonally arranged stitch at the edge of the base of the rug with the binding covering one edge of the base and covering part of the bottom. A single row of loops 83 will be seen at the edge while on the bottom a plurality of loops will be seen interlocked with the eye loops 82. As the machine continues to function this seam is extended along the full side of the rug, and if desired across the ends and on the opposite side. When complete the seam will appear as shown in Fig. 18.

In Fig. 19 the same seam is presented except that the rug has been lowered somewhat so that the loops 83 will be overlying part of the folded portion 10 of the binding 6. In applicant's copending application Serial No. 75,058 a binding has been presented in position with certain forms of stitching and with the machine embodying the present invention a second seam may be added to complete the securing of the binding in place. If preferred, the seam in applicant's copending application could be omitted and the seam as shown in Fig. 19, for instance, used alone. In either event the binding is held in place by a diagonal seam which is out of sight except for the few loops 83 which extend only through the base of the rug and which are substantially covered to a great extent by the pile of the rug falling thereover, which is usually the case when hand sewed.

In Fig. 21 a side view of the wheel 75 is seen and from this view it will be observed that there is provided a portion 84 which is not supplied with teeth and which will not contact with the binding. The parts are so proportioned that the machine will be moved along the rug at the time that the portion 84 is adjacent the binding. It will be noted that when the portion 84 is adjacent the binding there will be no tension on the rug or on the binding and consequently the machine may be pulled along easily. Power from any suitable source may be connected to shaft 26 to

operate the moving parts, or if preferred a motor could be built into and form part of the machine.

I claim:

1. A sewing machine for sewing a binding on the edge of the base of a rug or carpet, including a horizontally functioning looper, a coacting vertically functioning needle, said looper and needle being adapted to form a seam having a portion extending through the binding along one line and diagonally through the edge portion of the base of the rug, power means for causing said looper and needle to function, a feed roller actuated by said power means to hold the rug against the sewing machine and also for tending to move the sewing machine in relation to the rug, and means actuated by said power means for maintaining the binding stretched while said looper and needle function.

2. A rug and carpet binding sewing machine comprising a casing, means for guiding the machine and rug or carpet in respect to each other so that one edge of the rug or carpet will be maintained against one side of the machine, a needle carried by said casing operating in a vertical plane and moving in an arc when functioning, said needle being positioned to move through one edge of said rug or carpet from adjacent the top of the base of the rug or carpet to the bottom thereof, a looper carried by said casing and operating in a horizontal plane at right angles to said needle, said looper being positioned to move in an arc back and forth over the bottom of the base of the rug or carpet, and means for causing said needle to function followed by said looper to form a seam with the thread from the needle extending diagonally through the edge portion of the rug or carpet and the thread from the looper to be positioned on the bottom surface of said base and interlocked with the thread from the needle.

3. A sewing machine for sewing a binding on the edge of the base of a rug, including a looper and coacting needle operating in planes at right angles to each other and adapted to form a seam with part of the thread extending diagonally through the binding and base of the rug, power means for causing said looper and needle to function, a feeding roller actuated by said power means functioning to move said rug and sewing machine relatively to each other each time said looper and needle are in non-functioning position, and a binding tensioning member actuated by said power means for maintaining the binding stretched during the functioning of said looper and needle.

4. A sewing machine for sewing a binding on the edge of the base of a rug, including a needle adapted to swing in an arc as it functions, a rock shaft for causing said needle to function, a continuously moving cam for causing said rock shaft to function, a continuously rotating power shaft for rotating said cam, a looper adapted to move back and forth in an arc as it functions, said looper moving in a plane at right angles to the plane in which said needle functions, a swinging lever carrying said looper, a power lever for causing the swinging lever to function, and a second cam for causing said power lever to function, said second cam being rigidly secured to said power shaft so as to rotate continuously therewith.

5. A sewing machine for sewing a binding on the edge of the base of a rug, including a looper and a needle adapted to form a seam having a portion extending through the binding and diagonally through the edge portion of the base of

the rug, power means for causing said looper and needle to function, a feed roller positioned to engage the under surface of said rug and cause said sewing machine and said rug to move relatively to each other so that the rug will be fed past said looper and needle, a feed shaft for rotating said feed roller, a ratchet wheel rigidly secured to said feed shaft, a swinging arm mounted on said feed shaft, a pawl carried by said arm positioned to engage the teeth of said ratchet wheel when the arm is swinging in one direction to partly rotate said feed shaft and said feed roller, a recip-

rocating bar connected to said arm for actuating the same, a cam functioning to connect said bar and said power means, the cam and associated parts being so connected together as to cause said feed roller to function when said looper and needle are in non-functioning position, a sleeve surrounding said feed shaft, a set of gears for connecting said sleeve to said power means, a binding tensioning wheel, and means for transmitting movement from said sleeve to said tensioning wheel to cause said wheel to rotate.

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