

Oct. 23, 1945.

C. J. DAVIES

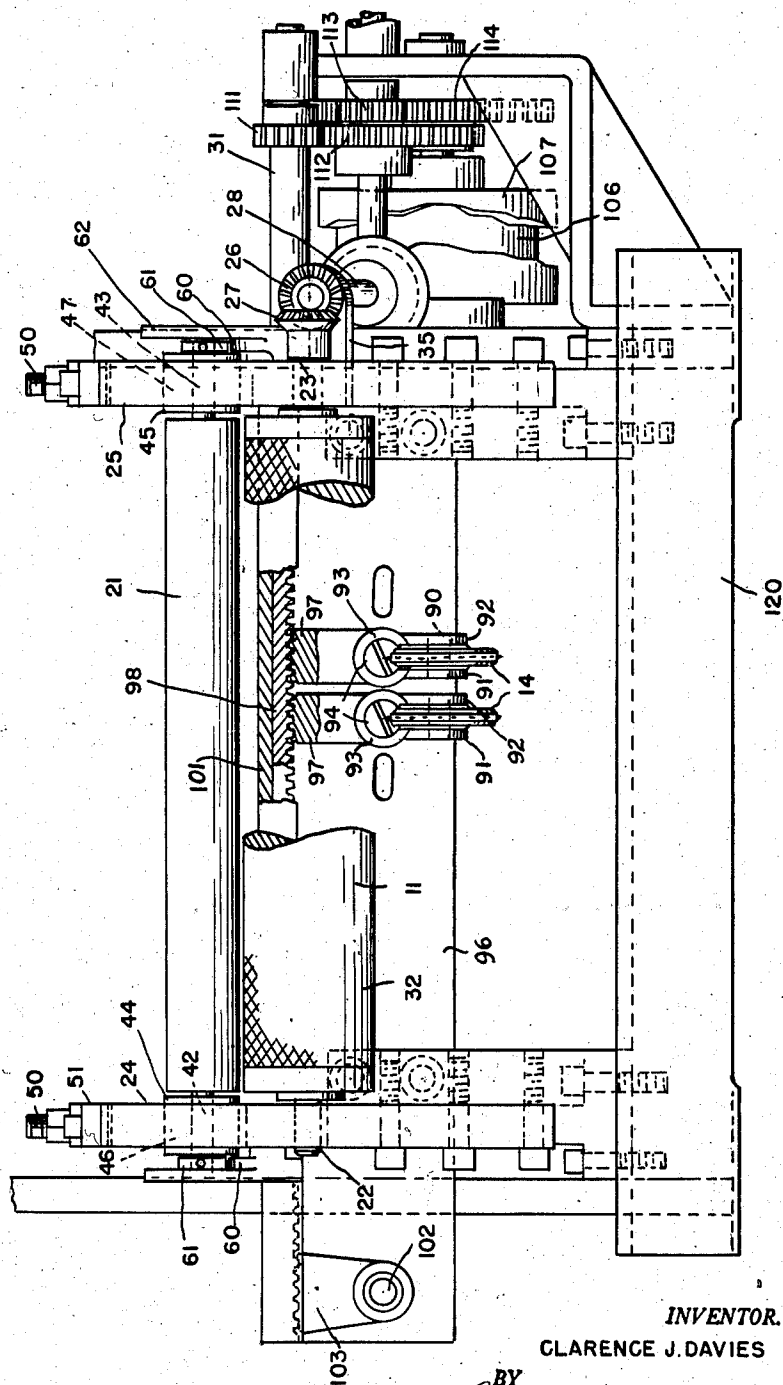
2,387,649

ATTACHMENT FOR SEWING MACHINES

Filed Aug. 2, 1943

5 Sheets-Sheet 1

FIG. 1.



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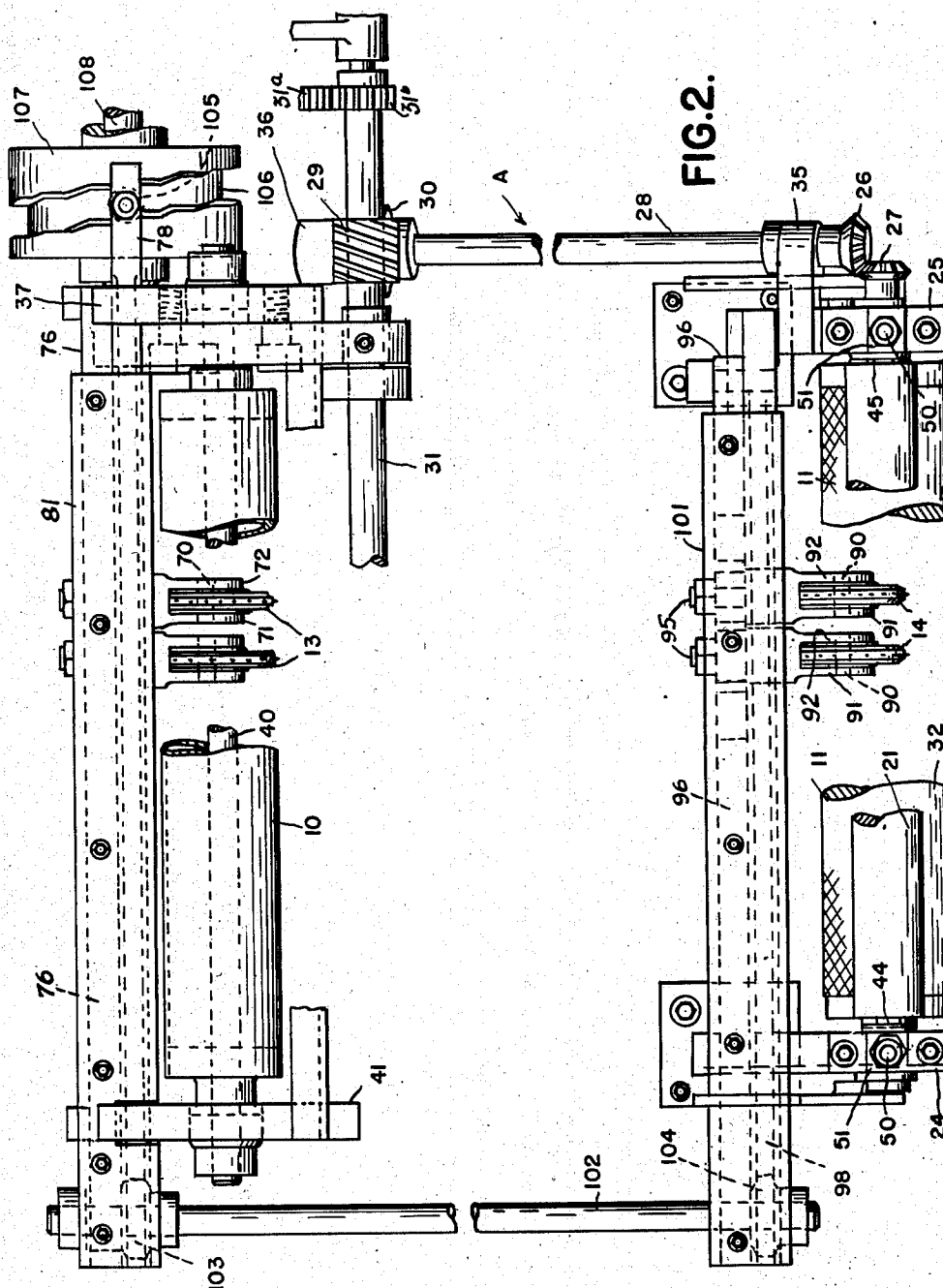
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ATTACHMENT FOR SEWING MACHINES

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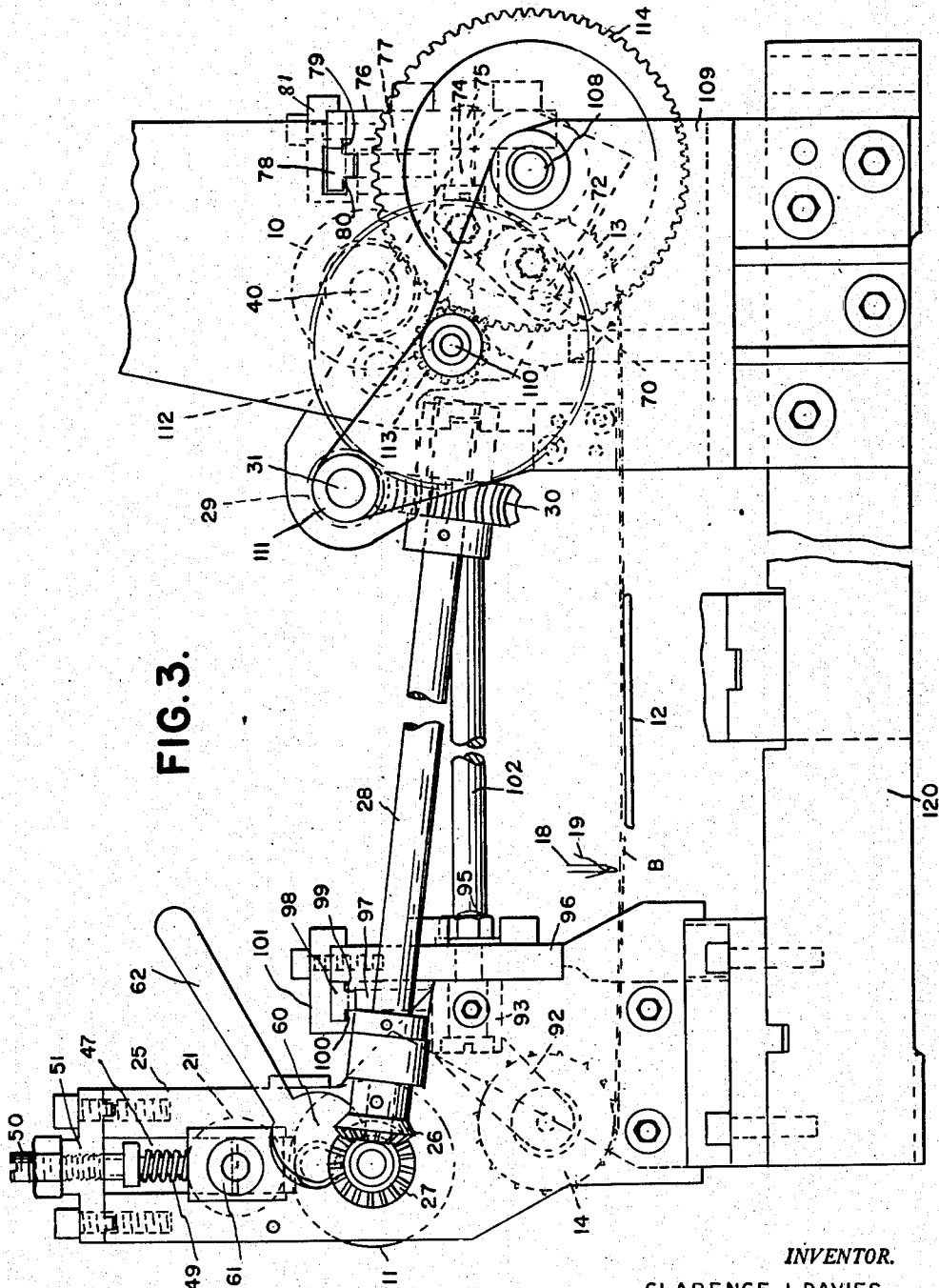


FIG. 3.

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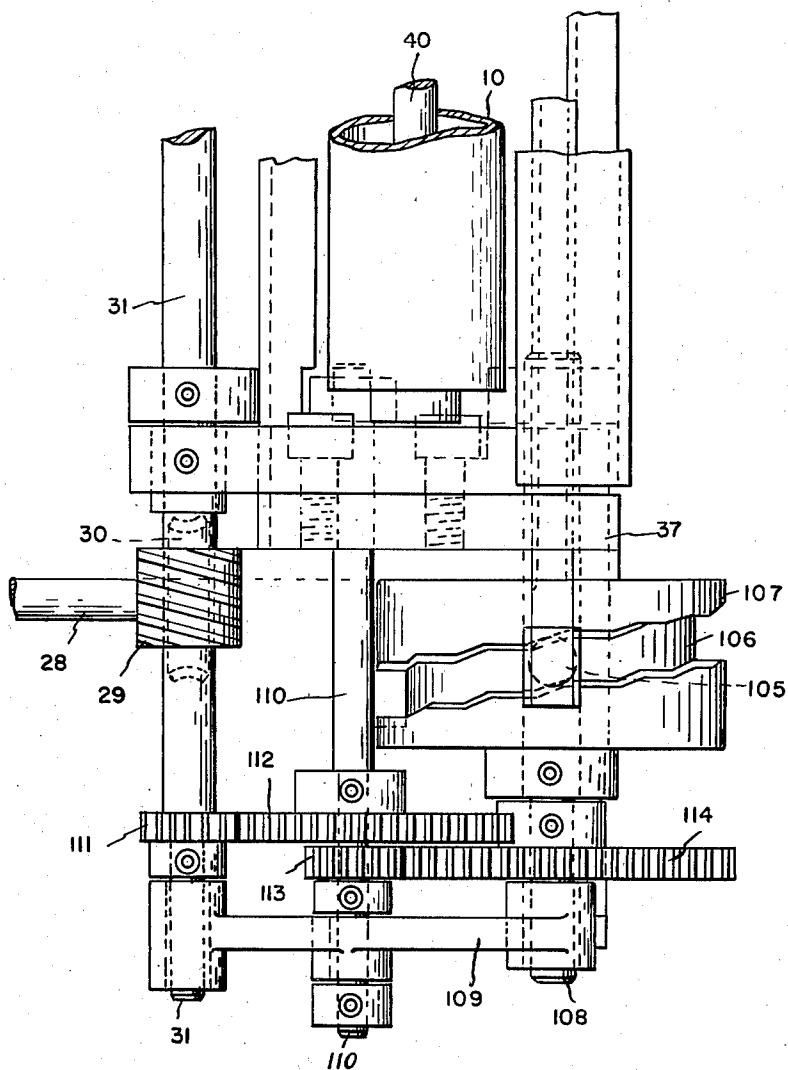
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FIG. 4.



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ATTACHMENT FOR SEWING MACHINES

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FIG. 6.

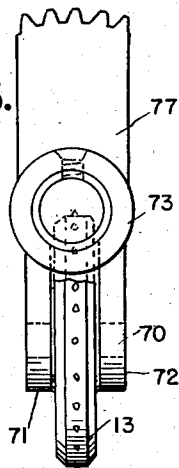


FIG. 5.

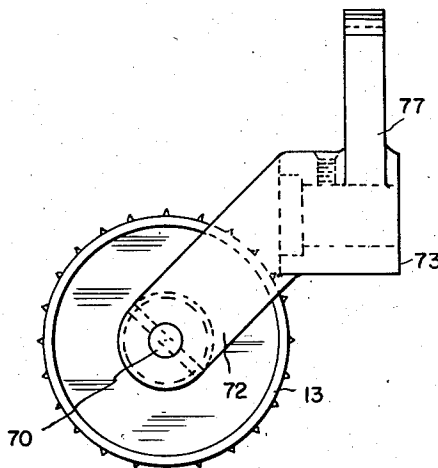


FIG. 8.

FIG. 7.

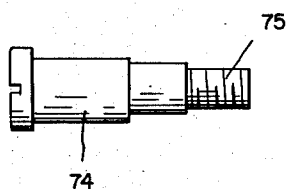
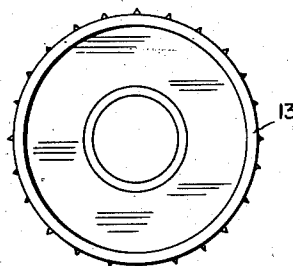


FIG. 9.

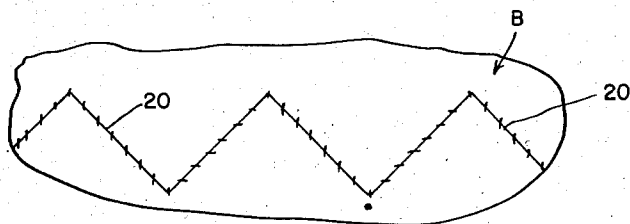
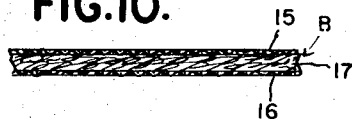


FIG. 10.



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2,387,649

ATTACHMENT FOR SEWING MACHINES

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Application August 2, 1943, Serial No. 497,068

15 Claims. (Cl. 112—118)

This invention relates generally to attachments for sewing machines and refers more particularly to an attachment for sewing quilts and the like.

One of the essential objects of the invention is to provide an attachment having means for moving the material to be quilted in a predetermined manner relative to the needle of the sewing machine so that such material will be provided with a particular pattern or formation of stitching.

Another object is to provide an attachment capable of providing laminated material, such as two layers of fabric and an intermediate layer of fibrous material, with zigzag stitching.

Another object is to provide an attachment wherein the means aforesaid for moving the material relative to the needle to obtain the stitching mentioned is operated in timed relation to the advancement of the material through the attachment.

Another object is to provide an attachment wherein the movement of the material relative to the needle is regular so that the pattern or formation of the stitching is uniform.

Another object is to provide an attachment that is efficient in operation and capable of providing the stitching at a minimum of expense.

The foregoing, as well as other objects, will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a front elevational view of an attachment embodying my invention, with parts broken away in section;

Figure 2 is a top plan view of the structure illustrated in Figure 1;

Figure 3 is a side elevation of the structure illustrated in Figure 1;

Figure 4 is a top plan view of a portion of the structure illustrated in Figure 3;

Figure 5 is a detailed elevational view of one of the spiked wheel sectors;

Figure 6 is an edge elevational view of the structure illustrated in Figure 5;

Figure 7 is a detailed view of one of the spiked wheel sector elements;

Figure 8 is a detailed elevational view of one of the spiked wheels;

Figure 9 is a diagrammatic view of the zigzag stitching produced by my attachment; and

Figure 10 is a fragmentary vertical sectional view through the material to be sewed or quilted.

Referring now to the drawings, A is a sewing machine attachment embodying my invention having rollers 10 and 11 respectively and an in-

termediate horizontal plate-like support or table 12 over which the material B to be sewed or quilted is advanced, and having spiked wheels 13 and 14 respectively below and adjacent the rollers 10 and 11 for moving the material B transversely back and forth on the horizontal support 12 relative to its course of advancement.

Preferably the material B to be sewed has upper and lower layers 15 and 16 respectively of fabric or sheeting and an intermediate layer 17 of cotton or other fibrous material and passes over and downwardly around the roller 10 to the spiked wheels 13, thence downwardly around and beneath the spiked wheels 13 to the horizontal support 12, thence over the horizontal support 12 to the underside of the spiked wheels 14 thence upwardly around the spiked wheels 14 to the roller 11, and thence upwardly around and over the roller 11 to a roll or other suitable means (not shown) for receiving the material after it leaves the attachment.

18 is a vertically reciprocating needle of a sewing machine (not shown) engageable with the material B as it is moved transversely back and forth on the horizontal support 12 by the spiked wheels 13 and 14 and provided with suitable thread 19 to provide the material B with zigzag stitching 20.

In the present instance the roller 11 is power driven and cooperates with a pressure roller 21 to draw the material B through the attachment. As shown the roller 11 has trunnions 22 and 23 respectively journaled in upright side plates 24 and 25 respectively of the attachment and is driven by mitre gears 26 and 27, shaft 28, worm 29 and worm wheel 30 from a main drive shaft 31. Preferably the surface 32 of the roller 11 is roughened or serrated for proper non-slip engagement with the material B. More specifically, the mitre gears 26 and 27 are rigid with the shaft 28 and trunnion 23 respectively. The shaft 28 is journaled in bearing blocks 35 and 36 respectively rigid with the side plates 25 and 27 respectively. The worm 29 is rigid with the shaft 31 and meshes with the worm wheel 30 which in turn is rigid with the shaft 28. Any suitable means such as a gear 31a and pinion 31b may be employed for rotating the drive shaft 31. The roller 10 is merely an idler and has a shaft 40 journaled freely in side plates 37 and 41 respectively of the attachment. The surface of this roller 10 may be smooth.

Preferably the pressure roller 21 has suitable trunnions 42 and 43 respectively journaled in bearing blocks 44 and 45 that in turn are slidable

vertically in suitable slots 46 and 47 respectively and the upright side plates 24 and 25 of the attachment. Coil springs 49 sleeved on adjusting screws 50 threadedly engaging caps 51 for the side plates 24 and 25 bear downwardly upon the blocks 44 and 45 and normally maintain the pressure roller 21 in firm engagement with the material B on the roller 11. Any suitable means such as cam 60 pivoted upon the outer sides of the side plates 24 and 25 and engageable with lifting discs 61 on the trunnions 42 and 43 of the pressure roller 21 may be operated by hand levers 62 to lift the pressure roller 21 against the tension of the springs 49 relative to the roller 11 when it is desired to stop the feed of material B through the attachment.

The spiked wheels 13 at the rear of the attachment are free to turn on pins 70 carried by inclined parallel arms 71 and 72 respectively of sleeves 73 mounted to turn on cylindrical portions 74 of horizontal pivot elements 75 fastened to a suitable upright supporting plate 76 at the rear of the attachment. 77 are gear sectors integral with the sleeves 73 and meshing with a longitudinally movable horizontal rack 78 slidably engaging portions 79 and 80 respectively of the supporting plate 76 and of a retainer bar 81 fastened to said supporting plate.

Likewise the spiked wheels 14 at the front of the attachment are free to turn on pins 90 carried by inclined parallel arms 91 and 92 respectively of sleeves 93 mounted to turn on cylindrical portions 94 of horizontal pivot elements 95 fastened to a suitable upright supporting plate 96 at the front of the attachment. 97 are gear sectors integral with the sleeves 93 and meshing with a longitudinally movable horizontal rack 98 slidably engaging portions 99 and 100 respectively of the supporting plate 96 and of a retainer bar 101 fastened to said supporting plate 96.

102 is a connecting shaft journaled in the front and rear supporting plates 96 and 76 and provided with gear sectors 103 and 104 respectively that mesh with the racks 78 and 98 respectively. Thus the racks move in unison and cause the sleeves 73 and 93 to rock or turn on their pivot elements 75 and 95 so that the spiked wheels 13 and 14 will tilt or swing sideways and thereby move the material B as it is advanced transversely back and forth on the horizontal support 12 relative to the needle 18 of the sewing machine. As a result, the stitching produced in the material B by the threaded needle 18 will be zigzag in configuration, as illustrated in Figure 9.

Preferably the spiked wheels 13 and 14 are operated regularly and in timed relation to the advancement of the material B through the attachment so that the zigzag pattern or formation of the stitching 20 is uniform. For example, 105 is a roller pivoted on the rack 78 and engaging a cam groove 106 in a wheel 107 fixed to a shaft 108 disposed parallel to the main drive shaft 31 and journaled in the upright side plate 37 and in a bracket 109 of the attachment. 110 is a shaft also journaled in the side plate 37 and bracket 109 between and parallel to the cam shaft 108 and main drive shaft 31, 111 is a pinion fixed to the drive shaft, 112 is a gear fixed to the intermediate shaft 110 and meshing with the pinion 111 so as to be driven thereby, 113 is a pinion fixed to the intermediate shaft 110, and 114 is a gear fixed to the cam shaft 108 and meshing with the pinion 113 so as to be driven thereby. Thus, the cam wheel 107, as well as the feed

roller 11 for the material B, is driven from the main drive shaft 31.

The base 120 of the attachment upon which the bracket 109, upright plates 24, 25, 37, 76, 96, etc., and associated parts are mounted may be attached by any suitable means (not shown) to any suitable part (not shown) of the sewing machine having the vertically reciprocating needle 18 so that the horizontal support 12 for the material B will be in the proper position relative to said needle. If desired, the attachment A and sewing machine or the sewing head thereof may have a common mounting or support so that the parts will be in proper position relative to each other. Likewise the source of power for the main drive shaft 31 of the attachment may be the same as that for the sewing head drive shaft or other driving element of the sewing machine proper.

In use, the material B to be sewed or quilted is drawn through the attachment from the rear to the front thereof by the cooperating rollers 11 and 21 at the front of the attachment. Such material may be supplied from any suitable source (not shown) and passes over and downwardly around the idler roller 10 to the spiked wheels 13 and 14 and thence upwardly and outwardly between the cooperating rollers 11 and 21 to a suitable receiving roller or device (not shown). As the material B is advanced over the horizontal support 12, it is moved transversely back and forth thereon by the rack actuated spiked wheels 13 and 14 swinging sideways in unison in the front and rear of the attachment. The threaded needle 18 of the sewing machine (not shown) reciprocates vertically in the usual manner and provides approximately seven stitches in one line as the material is moved transversely back while being advanced, and provides approximately seven stitches in a line disposed substantially at right angles to the line just mentioned as the material is moved forth transversely while being advanced. Thus, the zig zag stitching 20 is provided in the material B by the threaded needle 18 as the material is moved transversely back and forth relative thereto while being advanced.

What I claim as my invention is:

1. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a drive shaft, means operable by said shaft for advancing material to be sewed in a given direction beneath said needle, a rotary cam operable by said shaft, operatively connected racks operable by said cam, pivotally mounted members having gear sectors operable by said racks, and spiked wheels carried by said pivotally mounted members and operable when the gear sectors are operated by said racks to move the material beneath said needle transversely back and forth relative to the given direction aforesaid so that said threaded needle will provide the material with zigzag stitching.

2. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal plate-like member for supporting material adjacent said needle to be sewn, means for advancing material to be sewn over said plate-like member, and means for shifting the advancing material back and forth across the plate-like member relative to said reciprocating needle to produce zigzag stitches in said material, including swingingly mounted spiked wheels disposed respectively in advance and in rear of said plate-like member and en-

engageable with said advancing material, and means for swinging said spiked wheels in unison substantially at right angles to the path of advancement of said material.

3. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal plate-like member for supporting material adjacent said needle to be sewn, means for advancing material to be sewn over said plate-like member, substantially aligned pivots disposed respectively in advance and in rear of said plate-like member, and means for shifting the advancing material back and forth across the plate-like member relative to said reciprocating needle to produce zigzag stitches in said material, including separate rotatable elements mounted to swing on said aligned pivots and engageable with said advancing material, and means for swinging said rotatable elements in unison at an angle to the path of advancement of said material.

4. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal plate-like member for supporting material adjacent said needle to be sewn, means for advancing material to be sewn over said plate-like member, substantially aligned pivots disposed respectively in advance and in rear of said plate-like member, and means for shifting the advancing material back and forth across the plate-like member relative to said reciprocating needle to produce zigzag stitches in said material, including separate rotatable elements mounted to swing on said aligned pivots and engageable with said advancing material, and means also in advance and in rear of said plate-like member and operable in unison for swinging said rotatable elements in timed relation to the advancement of said material.

5. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal plate-like member for supporting material adjacent said needle to be sewn, means for advancing material to be sewn over said plate-like member, substantially aligned pivots disposed respectively in advance and in rear of said plate-like member, and means for shifting the advancing material back and forth across the plate-like member relative to said reciprocating needle to produce zigzag stitches in said material, including sleeves mounted to turn on said pivot elements and having rigid arms extending toward the path of advancement of said material, rotatable elements carried by said arms at the free ends thereof and engageable with said advancing material, and means for turning said sleeves in unison on their pivot elements.

6. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal plate-like member for supporting material adjacent said needle to be sewn, means for advancing material to be sewn over said plate-like member, substantially aligned pivots disposed respectively in advance and in rear of said plate-like member, and means for shifting the advancing material back and forth across the plate-like member relative to said reciprocating needle to produce zigzag stitches in said material, including sleeves mounted to turn on said pivot elements and having rigid arms extending toward the path of advancement of said material, rotatable elements carried by said arms at the free ends thereof and

engageable with said advancing material, gear sectors rigid with said sleeves, and longitudinally movable racks meshing with said gear sectors.

7. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal plate-like member for supporting material adjacent said needle to be sewn, means for advancing material to be sewn over said plate-like member, substantially aligned pivots in advance and in rear of said plate-like member, and means for shifting the advancing material back and forth across the plate-like member relative to said reciprocating needle to produce zigzag stitches in said material, including sleeves mounted to turn on said pivot elements and having rigid arms extending toward the path of advancement of said material, rotatable elements carried by said arms at the free ends thereof and engageable with said advancing material, and means for turning said sleeves to swing said arms and rotatable elements carried thereby, including gear sectors rigid with said sleeves, longitudinally movable racks meshing with said gear sectors, cam actuated means for moving one of said racks, and means operable by said one rack for moving the other of said racks whereby said racks move in unison to actuate said gear sectors.

8. An attachment for a sewing machine having a vertically movable threaded needle, comprising a substantially horizontal table for supporting material adjacent said needle to be sewn, cooperating rolls for advancing material to be sewn over said table, opposed substantially aligned pivots respectively at the front and rear ends of said table, means for shifting the advancing material back and forth on the table transversely to the path of advancement of said material, including sleeves mounted to turn on said pivot elements and having arms extending toward the path of advancement of said material, rotatable elements carried by said arms at the free ends thereof and engageable with said advancing material, gear sectors rigid with said sleeves, longitudinally movable racks meshing with said gear sectors, a rotary cam for actuating one of said racks, means operable by said one rack for moving the other of said racks whereby said racks move in unison to actuate said gear sectors, a drive shaft, means operable by said drive shaft for actuating said cam, and means operable by said drive shaft to actuate one of the cooperating rolls aforesaid.

9. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal stationary plate-like member for supporting material adjacent said needle to be sewn, means for advancing material to be sewn over said plate-like member, and means for shifting the advancing material back and forth on the plate-like member in a direction substantially at right angles to the path of advancement thereof while the needle is reciprocating to produce zigzag stitches in said material, including substantially aligned rockably mounted rotatable elements disposed respectively in front and in rear of said plate-like member for engagement with said advancing material, and operatively connected means also in front and in rear of said plate-like member for rocking said rotatable elements in unison.

10. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a substantially horizontal plate-like member for supporting material adjacent said

needle to be sewn, means for advancing material to be sewn longitudinally over said plate-like member, and means for shifting the advancing material transversely of the plate-like member relative to the needle while the needle is reciprocating to produce zigzag stitches in said material, including rotatable elements disposed respectively in front and in rear of said plate-like member for engagement with said advancing material, and means operable in timed relation to the advancement of the material for swinging all of said rotatable elements in unison, including longitudinally movable racks disposed respectively in advance and in rear of said plate-like member, and swingingly mounted supports for said rotatable elements having toothed portions meshing with said racks.

11. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a drive shaft, means operable by said shaft for advancing material to be sewed in a given direction beneath said needle, a cam operable by said shaft, operatively connected racks operable by said cam, pivotally mounted members having gear sectors operable by said racks, and means carried by said pivotally mounted members and operable when the gear sectors are operated by said racks to move the material beneath said needle transversely back and forth relative to the given direction aforesaid so that said threaded needle will provide the material with zigzag stitching.

12. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising rotatable elements for advancing material to be sewed in a given direction beneath said needle, rotatable elements disposed respectively in front and in rear of said needle and operable while the material is being advanced to move said material transversely back and forth relative to said given direction so that said threaded needle will provide the material with zigzag stitching, swingingly mounted supports for the last mentioned rotatable elements, longitudinally movable members for actuating said swingingly mounted supports, a drive shaft, a driving connection between said shaft and one of the first mentioned rotatable elements, a driving connection between said shaft and one of said longitudinally movable members, and a driving connection between said one longitudinally movable member and the other of said longitudinally movable members.

13. An attachment for a sewing machine hav-

ing a vertically reciprocating threaded needle, comprising means for advancing material to be sewed in a given direction beneath said needle, means for moving the material beneath said needle transversely back and forth relative to the given direction aforesaid so that said threaded needle will provide the material with a predetermined arrangement of stitching, including wheels disposed respectively in front and in rear of said needle, operatively connected racks disposed respectively in front and in rear of said needle, swingingly mounted supports for said wheels having toothed portions meshing with said racks, a rotary cam for actuating one of said operatively connected racks, a main drive shaft, a driving connection between said shaft and advancing means, and a driving connection between said shaft and said rotary cam.

14. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising a main drive shaft, means operable by said shaft for advancing material to be sewed in a given direction beneath said needle, means for moving the advancing material transversely back and forth relative to the given direction aforesaid so that said threaded needle will provide the material with a predetermined arrangement of stitching, including rotatable elements disposed respectively in front and in rear of said needle, operatively connected longitudinally movable members disposed respectively in front and in rear of said needle, swingingly mounted supports for said rotatable elements operable by said longitudinally movable members, a cam for actuating one of said longitudinally movable members, and means operable by said drive shaft for actuating said cam.

15. An attachment for a sewing machine having a vertically reciprocating threaded needle, comprising rollers for advancing material to be sewed in a given direction beneath said needle, spiked wheels disposed respectively in front and in rear of said needle and operable while the material is being advanced to move said material transversely back and forth relative to said given direction so that said threaded needle will provide the material with zigzag stitching, swingingly mounted supports for said spiked wheels having gear sectors, racks meshing with said gear sectors, a drive shaft for one of said rollers, a driving connection between said shaft and one of said racks, and a driving connection between said one rack and the other of said racks.

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