A. HILDT.

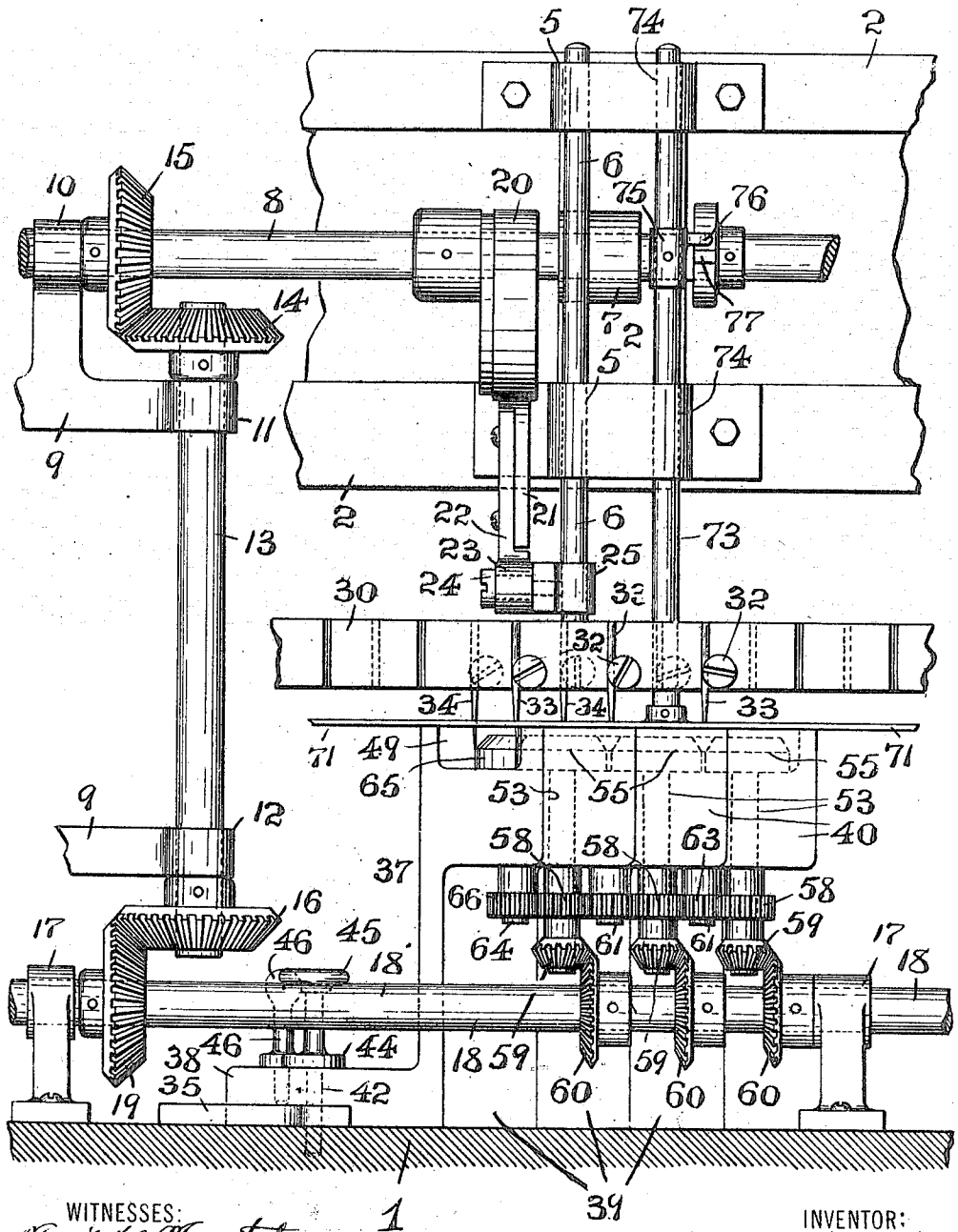
QUILTING MACHINE.

APPLICATION FILED MAR. 1, 1916.

1,221,857.

Patented Apr. 10, 1917.

4 SHEETS—SHEET 1.



WITNESSES:

Fredk. H. W. Fraentzel

Eva E. Resch

Fig. 1

INVENTOR:

August Hildt,

BY Fraentzel and Richards,

ATTORNEYS

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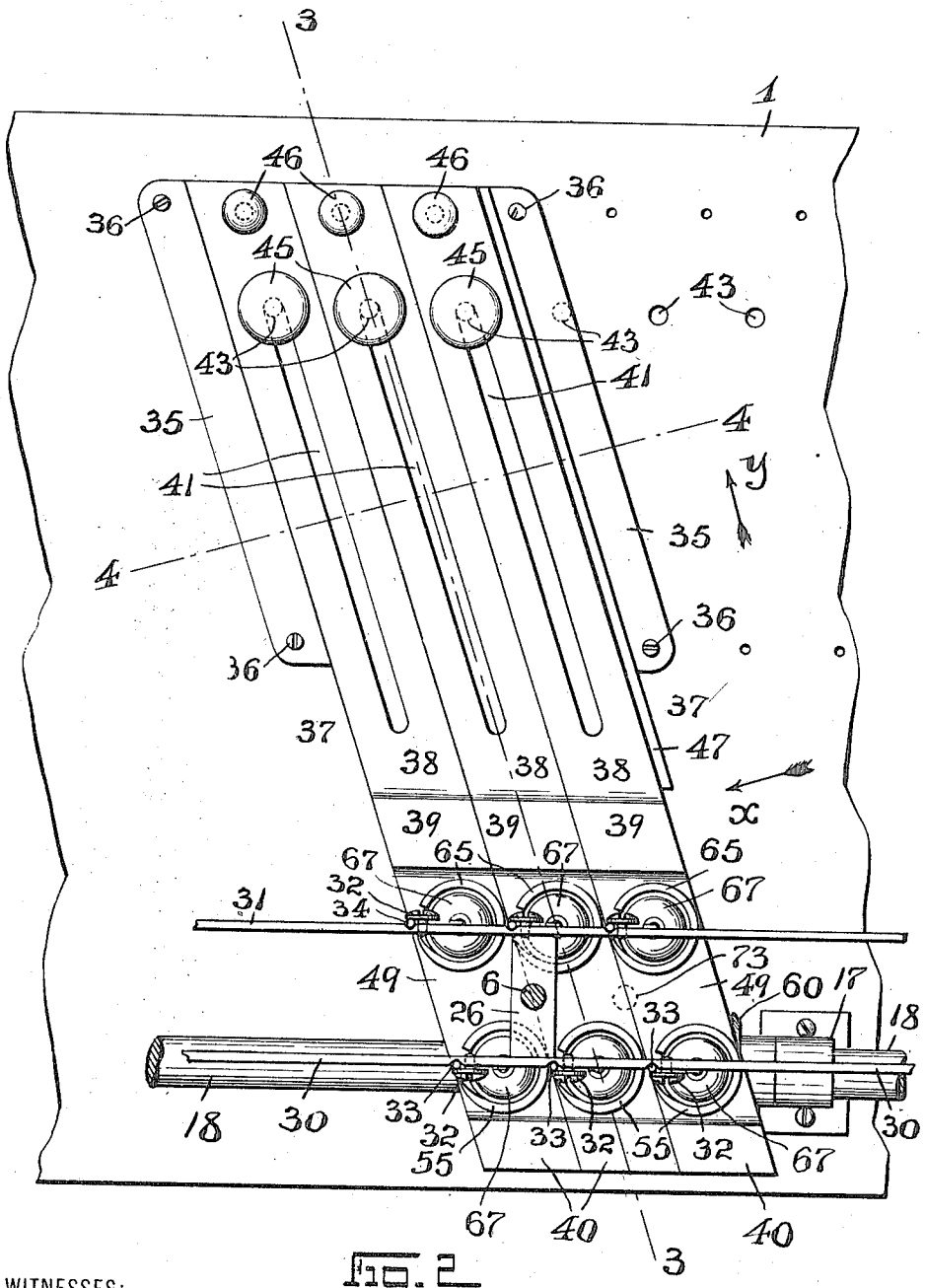

Fig. 2

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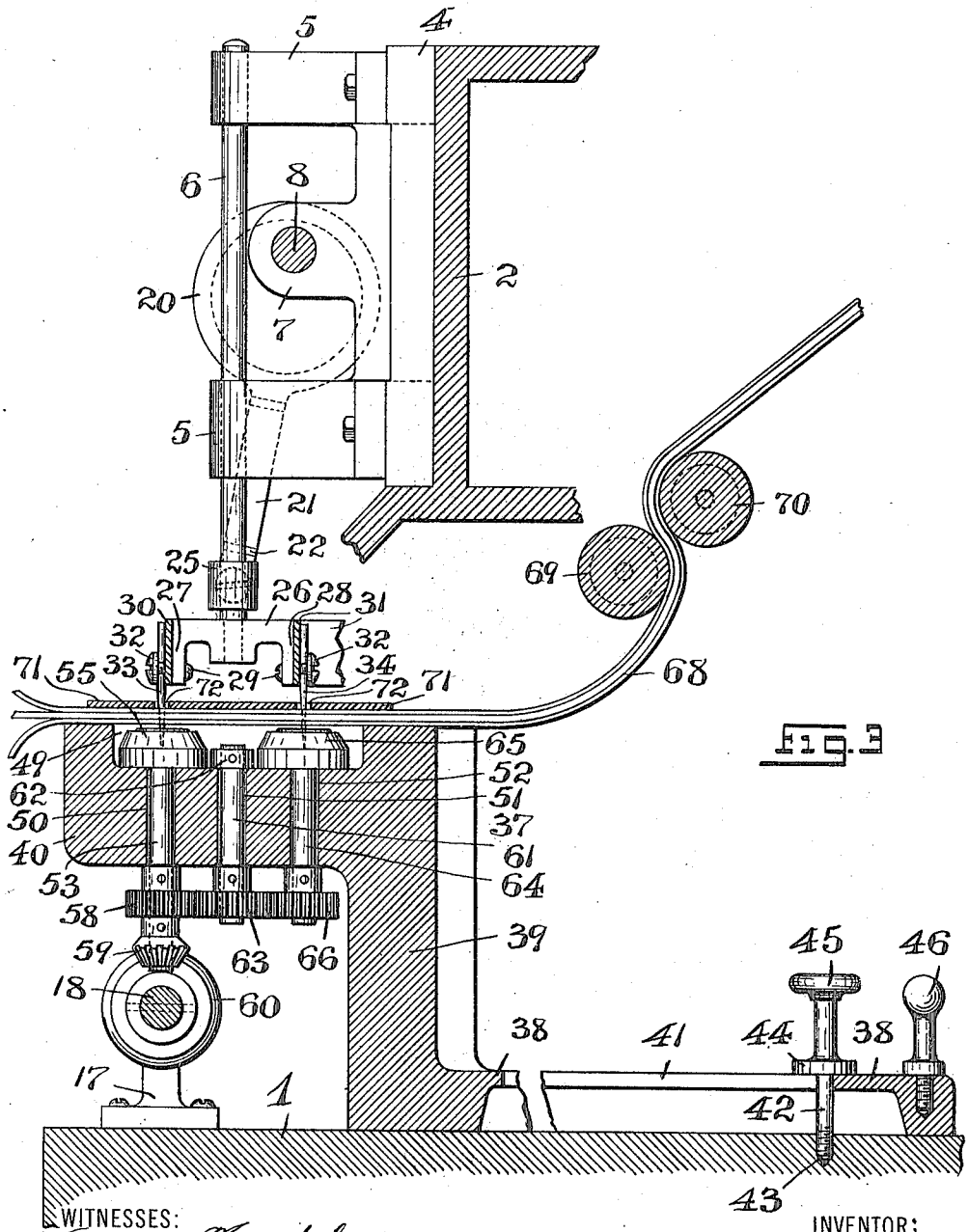

Fig. 3

WITNESSES:

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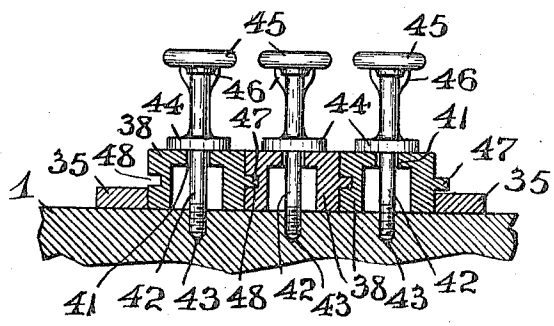

Fig. 4

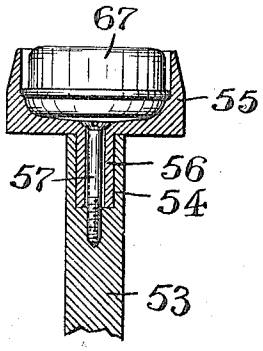

Fig. 5

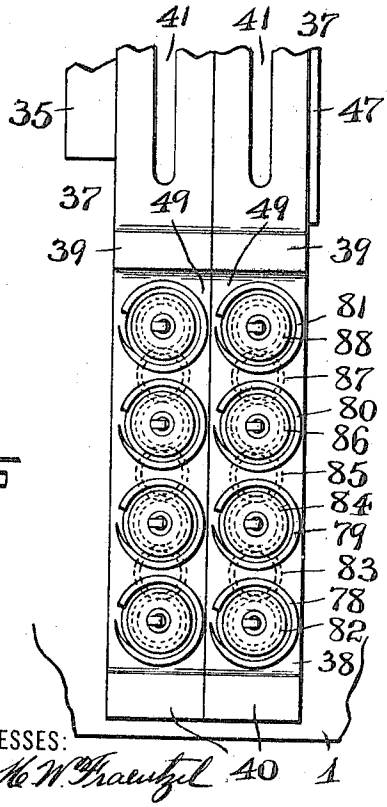

Fig. 6

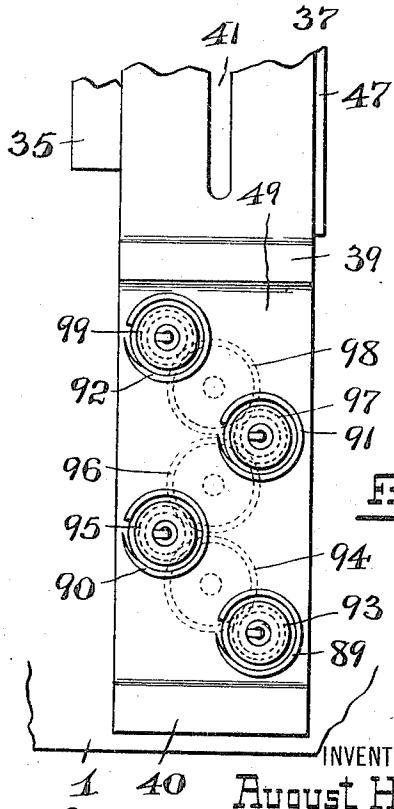

Fig. 7

UNITED STATES PATENT OFFICE.

AUGUST HILDT, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO NEW JERSEY QUILTING CO., A CORPORATION OF NEW JERSEY.

QUILTING-MACHINE.

1,221,857. Specification of Letters Patent. Patented Apr. 10, 1917.

Application filed March 1, 1916. Serial No. 81,316.

To all whom it may concern:

Be it known that I, AUGUST HILDT, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Quilting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates, generally, to that class of sewing machines known in the art as quilting machines; and the present invention has reference, more particularly, to a novel quilting machine for quilting fabrics of the various kinds, in which are employed in connection with suitable driving and operating mechanism, a plurality of reciprocating needles and a plurality of correspondingly disposed rotary hooks or loopers, all arranged in such a manner and cooperating with one another, so that the fabric or goods may be provided with suitable quilt-stitchings.

The present invention has for its principal object to provide a multiple-stitching quilting machine embodying, primarily, the features herein-above stated in a simple operative and effective manner; and, the invention has for its further purpose to provide in connection with a quilting machine, a bracket-like hook or looper-carrying element, which is slidably disposed upon the bed-plate or frame of the sewing machine, so that the said element, when it is desired to remove a rotary hook or looper, can be easily and quickly moved in a rearward direction away from beneath the quilted portion of the fabric or goods, so that the latter will not act as an obstruction, and that the sewing machine operator may readily get at the hook or looper, for removal from its support, as will hereinafter more fully appear.

The invention has for its further object to provide in connection with a plurality of sewing needles, arranged in rows, a plurality of such bracket-like elements, each of which is capable of independent rearward movement for the purpose above stated, and a battery of correspondingly located rotary hooks or loopers, adapted to be variously located upon the bed-plate or frame of the sewing machine, so as to produce various quilt-stitchings.

Other objects of the present invention not at this time more particularly enumerated will be clearly understood from the following detailed description of the present invention.

With the various objects of the present invention in view, the said invention consists, primarily, in the novel quilting machine hereinafter set forth; and, the invention consists, furthermore in the novel arrangements and combinations of the several devices and parts, as well as in the details of the construction of the said parts, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claims which are attached to and form an essential part of the said specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a front face view of the various devices and elements embodying the principles of the present invention, certain parts of the sewing-machine proper being omitted from said view as non-essential to a clear understanding of the said invention.

Fig. 2 is a plan or top view of a fragmentary portion of the bed-plate or frame of the sewing machine, said view illustrating in connection therewith, a pair of reciprocatory needle-bars and needles mounted thereon and suspended from said bars, and an arrangement of the slidably disposed hook or looper-supporting bracket-like elements, with the rotary hooks or loopers in position, showing one embodiment of the principles of the present invention; and Fig. 3 is a vertical sectional representation taken on line 3—3 in said Fig. 2, looking in the direction of the arrow *x*, said view showing in connection therewith, in section, a portion of the upper part of the machine-frame; also in elevation a fragmentary portion of the fabric sewed upon, and of a bearing, a rod movable in said bearing, upon which the needle-bar is mounted, and means for actuating said rod.

Fig. 4 is a detail transverse section, taken on line 4—4 in said Fig. 2, looking in the direction of the arrow *y;* and Fig. 5 is a detail transverse sectional representation of one of the rotary hooks or loopers and a portion of the spindle with which it is con-

nected, showing one means of operatively connecting the said hooks or loopers and spindle.

Figs. 6 and 7 are plan or top views of two other arrangements of rotary hook or looper-supporting bracket-like elements, and modified arrangements of hooks or loopers, said views showing two other embodiments of the principles of the present invention.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to the said drawings, the reference-character 1 indicates the bed-plate of the machine which may be suitably mounted upon any suitable construction of framework, and the character 2, see Figs. 1 and 3, indicates a portion of a suitable overhang or upper frame-work forming a portion of the main frame of the quilting machine. The said bed-plate 1 and the said frame-portion or overhang 2 may be of any suitable lengths, according to the size of the material to be quilted, and the consequent number of sewing needles and corresponding rotary hooks or loopers and bobbins necessarily employed.

Suitably secured to the said frame-portion or overhang 2, by means of bolts 3, or otherwise, is a bracket-member or element, as 4, provided with forwardly projecting bearing-portions 5, of any suitable construction in which is slidably mounted a rod or stem, as 6. The said bracket-member or element 4 is also provided, at a suitable point, with another forwardly projecting bearing-portion 7 in which is rotatably mounted a shaft 8. Another portion of this shaft is also mounted in a suitably disposed bearing-member or portion, as 10, of the frame-portion 9 of the frame-work of the machine, other bearing-members or portions 11 and 12 being also provided in connection with this portion of the machine-frame. Rotatably mounted in said bearing-members or portions 11 and 12 is a vertical spindle 13 carrying a miter or bevel-wheel 14, upon its upper portion, which is in mesh with a miter or bevel-wheel 15 mounted upon the above-mentioned shaft or spindle 8, while upon its lower portion the said spindle 13 is provided with another miter or bevel-wheel 16. Suitably mounted, in suitable locations, upon the said bed-plate 1, are bearing-members, as 17, in which is rotatably mounted a main driving shaft 18 upon which is secured a miter or bevel-gear 19 which meshes with the miter or bevel-gear 16. As will be evident, from an inspection of Fig. 1 of the drawings, the rotary motion of the said main shaft 18 is thus transferred by means of the said vertical spindle 13, and the various miter or bevel-gears to the upper shaft 8. Suitably mounted upon the said shaft 8 is an eccentric 20, or other similar device, the stem 21 of which is suitably connected with a rod or bar 22 having a perforated pivot-pin receiving portion, as 23, oscillatorily mounted upon a suitably screw-threaded pivot-pin, as 24. As indicated in said Fig. 1 of the drawings, the screw-threaded shank of the said pivot-pin is screwed into a suitably formed collar 25, which is mounted upon the previously-mentioned rod or stem 6, and has its end in retained engagement with the said rod or stem 6, substantially as indicated. Thus, by means of this mechanism, the rotary motion of the shaft 8 is transferred to the said rod or stem 6, the latter receiving thereby a reciprocatory movement in the bearing-members or portions 5.

Suitably mounted and secured upon the lower end-portion of the rod or stem 6 is a suitably formed cross-bar or plate, as 26, and secured upon the end-portions 27 and 28 of the said bar of plate 26, by means of screws 29, or other suitable fastening means, are suitably formed needle-bars or elements, as 30 and 31, to which are attached in any suitable manner, usually by means of fastening screws, as 32, a plurality of sewing needles, as 33 and 34.

Movably disposed between suitably placed guiding members, as 35, secured in position upon the said bed-plate 1 by means of screws 36, or otherwise, are a plurality of rotary hook or looper and bobbin-supporting bracket-like elements, generally designated by the reference-character 37.

These elements may be arranged in the manner illustrated more particularly in Figs. 1, 2 and 3 of the drawings, the general outline of each element in that case, when viewed from the top, forming a parallelogram, but the said elements may also be arranged, substantially as indicated in Figs. 6 and 7 of the drawings, in which case the outline of each element, when viewed from the top, is in the form of a right-angled parallelogram.

Referring now to the said Figs. 1 to 3 inclusive, it will be seen, that each element 37 comprises a rearwardly extending supporting member 38 and an upwardly projecting portion 39, from which extends in a forward direction a supporting table or element, as 40. The rearwardly extending member 38 is made with an elongated opening, as 41, in which is arranged a binding screw 42, having its screw-threaded shank screwed into a properly located screw-threaded hole 43 in the bed-plate 1, as illustrated in Fig. 3 of the drawings. The said binding screw 42 has an annular flange or shoulder 44 for binding purposes, and is also provided with a head or enlargement, as 45, forming a means for the manipulation of the said screw 42, as will be clearly evident. Upon or near its rear end-portion,

the said rearwardly extending supporting member 38 is also provided with a suitable fingerpiece, as 46, for sliding the element 37 backwardly or forwardly upon the said bed-plate 1, in the manner and for the purposes hereinafter more fully set forth.

Any desired number of these rotary hook or looper and bobbin-supporting bracket-like elements 37 may be arranged between a pair of the accordingly located guiding members 35, as will be clearly evident, and the supporting members 38 of the respective elements 37, may be properly connected in their sliding relation by longitudinally extending ribs or tongues 47 registering with grooves 48, substantially as illustrated in Fig. 4 of the drawings. The supporting table or element 40 of each hook or looper and bobbin-supporting element 37 is provided in its upper surface with a suitable recess or depression, as 49, and with a series of spindle-receiving holes 50, 51 and 52. As an illustration, in Fig. 2 of the drawings, I have shown an arrangement of three elements 37, placed so as to provide a front row of holes 50, a rear row of holes 52, and an intermediate row of holes 51. Rotatably disposed in each hole 50 is a spindle 53, formed in its upper portion with a receiving socket 54 for the arrangement therein of the tubular stem 56 of a rotary hook or looper 55, the parts being secured in their assembled relation by means of a screw 57 in a manner, as illustrated in Fig. 5 of the drawings. The stems or spindles 53 have their lower end-portions projecting from the said holes 50, beneath the lower surfaces of the supporting tables or elements 40, and suitably mounted upon the said projecting end-portions of the said stems 53, are pinions 58 and bevel or miter gears 59, the said bevel or miter gears 59 being in mesh with correspondingly placed bevel or miter gears 60 which are suitably mounted upon the previously mentioned main driving shaft 18 substantially as illustrated in Fig. 1 of the drawings. When thus assembled, the rotary hooks or loopers 55 are disposed in the previously mentioned depressions or recesses 49 of the supporting tables of the respective elements 37, substantially as illustrated in Fig. 3. Rotatably disposed in each hole 51 is a spindle 61, said spindles 61 having their upper end-portions projecting into the depressions or recesses 49 of the respective supporting tables 40 and being retained in operative relation by means of suitable collars 62, or other suitable retaining means connected with the said spindles 61. The said stems or spindles 61 have their lower end-portions projecting from the holes 51, beneath the lower surfaces of the supporting tables or elements 40, and suitably mounted upon the said projecting end-portions of the said stems or spindles 51 are gears, as 63, which are in mesh with the pinions or gears 58 of the stems or spindles 53. Also rotatably disposed in each hole 52 is a stem or spindle 64, the said stems or spindles having mounted upon their upper end-portions, in the manner of the stems or spindles 53 and the rotary hooks or loopers 55, similar hooks or loopers 65. The said stems or spindles 64 have their lower end-portions projecting from the said holes 52, beneath the lower surfaces of the supporting tables or elements 40, and suitably mounted upon the said projecting end-portions of the said stems or spindles 64 are gears, as 66, which are in mesh with the previously-mentioned gears 63.

It will be fully understood that the rotary motion of each stem or spindle 53 is transmitted by this arrangement of gears 58, 63 and 66 to the stem or spindle 64, so that the rotation of all the hooks or loopers, when the quilting machine is being operated, will be in the same direction.

Of course, it must be understood, that within each rotary hook or looper casing is the usual bobbin-shell or casing 67, see Fig. 5, in which the thread-bobbin is placed.

The material which is to be quilted is indicated by the reference-character 68, and the same is passed upon and above the upper face of the supporting table or element 40, the needles 33 and 34 passing into and through the material or fabric 68, during the sewing operation, causing the threads of the said needles to pick up and "loop" with the threads from the bobbin contained in the rotary hooks or loopers, while the quilted material passes in a rearward direction, usually between suitably located feed-rolls, as 69 and 70, to a point beyond the machine. The reference-character 71 indicates a suitably formed presser-bar or plate, provided with holes or perforations 72 through which the needles pass, the said presser-bar or plate being suitably mounted upon the lower end of a rod or stem 73 and being adapted to reciprocate in suitable guide-holes, as 74, in the bearing-members 5. A sleeve or collar 75 is secured at the proper location upon this rod or stem 73, said sleeve or collar 75 being provided with a finger or projection 76 with which a suitable cam-device, as 77, mounted upon the shaft or spindle 8, is adapted to be brought into operative engagement for intermittently raising and lowering the said presser-bar or plate 71, as will be clearly evident.

As has been previously stated, any desired number of sewing needles may be employed, using with the bed-plate 1 of the sewing machine a corresponding number of hook or looper and bobbin-carrying bracket-like elements 37, which according to the kind of quilt-stitching desired, may be arranged at acute angles to the front edge of the sewing

table, in a manner represented in Fig. 2 of the drawings, or they may be arranged at right angles to the said front edge of the sewing table, as represented in Figs. 6 and 7 of the drawings.

From an inspection of said Fig. 7, it will be seen, that by enlarging the receiving spaces formed by the depressions or recesses 49 in the supporting tables or elements 40 of the hook or looper and bobbin-carrying elements 37, a greater number of rows of hooks or loopers, as 78, 79, 80 and 81, and their corresponding bobbins may be employed, the hooks or loopers being rotated in the same direction by means of the gears 82, 83, 84, 85, 86, 87 and 88; or, as indicated in Fig. 7, a staggered or zig-zag arrangement of hooks or loopers, as 89, 90, 91 and 92 may be made, the hooks or loopers being rotated in the same direction by means of the gears 93, 94, 95, 96, 97, 98 and 99.

Of course it will be understood that with these arrangements of the rotary hooks or loopers and the various driving gears, as represented in said Figs. 6 and 7, the means for actuating the driving mechanism is changed accordingly, and a corresponding number of needle-bars and needles must be arranged accordingly.

From the foregoing description of the present invention it will be clearly evident, that I have provided a novel and simply-constructed quilting machine in which a plurality of reciprocating sewing needles are employed with coöperating rotary hooks or loopers and their thread-bobbins; and, furthermore, by the rearward sliding arrangement of any one of the bracket-like elements 37, in case of the breaking of a thread, or the placing of a new thread-bobbin in the bobbin-shell, the bracket-like element can easily be moved clear of the fabric or material 68, so as to permit of the thread being re-arranged, or the placing of a new thread-bobbin in the bobbin-shell, after which the said rearwardly moved bracket-like element can be slid back into its normal or initial sewing position and secured in said position.

I am fully aware that changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction of the said parts, without departing from the scope of the present invention as described in the foregoing specification, and as defined in the clauses of the claims which are appended thereto. Hence, I do not limit my present invention to the exact arrangements and combinations of the said devices and parts, as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts, as illustrated in the accompanying drawings.

I claim:—

1. In a machine of the class described, a work-support, comprising a series of adjacent members, said members being slidable rearwardly with respect to the line of feed, a looper mounted in each member, each looper being adapted to receive a thread-bobbin, a plurality of sewing needles, means coöperating with said needles for producing reciprocatory movements of said needles, and mechanism coöperating with said loopers for rotating the said loopers.

2. In a machine of the class described, a work-support, comprising adjacent members, said members being slidable rearwardly with respect to the line of feed, spindles mounted in each member, bobbin-containing loopers mounted upon some of said spindles, a plurality of sewing needles, means coöperating with said needles for producing reciprocatory movements of said needles, and means coöperating with said spindles for rotating the same and the said loopers.

3. In a machine of the class described, a work-support, comprising adjacent members, said members being slidable rearwardly with respect to the line of feed, spindles mounted in each member, bobbin-containing loopers mounted upon some of said spindles, a plurality of sewing needles, means coöperating with said needles for producing reciprocatory movements of said needles, intermeshing gear-wheels mounted upon said spindles, bevel-gears also mounted upon some of said spindles, a main driving shaft, and bevel-gears upon said main shaft in mesh with the bevel-gears of said spindles.

4. In a machine of the class described, in combination with the frame-work of the machine, a work-support, comprising adjacent members, said members being slidable rearwardly with respect to the line of feed, spindles mounted in each member, bobbin-containing loopers mounted upon some of said spindles, intermeshing gear-wheels mounted upon said spindles, bevel-gears also mounted upon some of said spindles, a main driving shaft, bevel-gears upon said main driving shaft in mesh with the bevel-gears of said spindles, a bracket-member carried by said frame-work, bearing portions connected with said bracket-member, a rod slidably mounted in said bearing-portions, a cross-bar secured upon the lower portion of said rod, needle-bars carried by said cross-bar and needles attached to said needle-bars, means connected with said rod for producing reciprocatory movements of the latter, and mechanism between the said rod-reciprocating means and the main driving shaft and operated from said main driving shaft for actuating the said rod-reciprocating means.

5. In a quilting machine, a bed-plate, and a work-support slidably mounted upon said bed-plate, said work-support comprising a series of adjacent members, each member be-

ing adapted to be moved in a rearward direction with respect to the line of feed so as to clear the work.

6. In a quilting machine, a bed-plate, and a work-support mounted upon said bed-plate, said work-support comprising a series of adjacent members, a looper mounted in each member, each member being slidably mounted upon said bed-plate and each member being adapted to be moved independently in a rearward direction with respect to the line of feed so as to clear the work.

7. In a quilting machine, a bed-plate, and a bracket-like looper and bobbin-carrying element, said element comprising a rearwardly extending supporting member, an upwardly projecting portion, and a forwardly extending table-like supporting element, combined with means attached to the bed-plate and coöperating with said rearwardly extending supporting member to fix the said bracket-like looper and bobbin-carrying element in its work-supporting position upon the bed-plate, but permitting the said element to be moved rearwardly so as to clear the work.

8. In a quilting machine, a bed-plate, and a bracket-like looper and bobbin-carrying element, said element comprising a rearwardly extending supporting member, the said member being provided with an elongated opening, an upwardly projecting portion, and a forwardly extending table-like supporting element, combined with a binding screw having a fingerpiece and a flange-like portion adapted to be brought into retaining engagement with the said rearwardly extending supporting member, the shank of the said screw extending into and through the said elongated opening and being screwed into the said bed-plate and cooperating with the said rearwardly extending supporting member to fix the said bracket-like looper and bobbin-carrying element in its work-supporting position upon the bed-plate, but permitting the said element to be moved rearwardly so as to clear the work.

9. In a quilting machine, a bed-plate, and a plurality of bracket-like looper and bobbin-carrying elements, each element comprising a rearwardly extending supporting member, an upwardly projecting portion, and a forwardly extending table-like supporting element, combined with means attached to the bed-plate and coöperating with the rearwardly extending supporting member of each bracket-like looper and bobbin-carrying element, to fix each bracket-like looper and bobbin-carrying element independently in its work-supporting position upon the bed-plate, but permitting each bracket-like looper and bobbin-carrying element to be moved rearwardly so as to clear the work, a plurality of sewing needles, means coöperating with said needles for producing reciprocatory movements of said needles, a plurality of rotary loopers mounted upon the table-like supporting elements of the bracket-like looper and bobbin-carrying elements, and mechanism for rotating the said loopers.

10. In a quilting machine, a bed-plate, and a plurality of bracket-like looper and bobbin-carrying elements, each element comprising a rearwardly extending supporting member, an upwardly projecting portion, and a forwardly extending table-like supporting element, combined with means attached to the bed-plate and coöperating with the rearwardly extending supporting member of each bracket-like looper and bobbin-carrying element, to fix each bracket-like looper and bobbin-carrying element independently in its work-supporting position upon the bed-plate, but permitting each bracket-like looper and bobbin-carrying element to be moved rearwardly so as to clear the work, a plurality of sewing needles, means coöperating with said needles for producing reciprocatory movements of said needles, a plurality of spindles mounted upon said table-like supporting elements of the bracket-like looper and bobbin-carrying elements, bobbin containing loopers mounted upon some of said spindles, and means cooperating with said spindles for rotating the same and the said loopers.

11. In a quilting machine, a bed-plate, and a plurality of bracket-like looper and bobbin-carrying elements, each element comprising a rearwardly extending supporting member, an upwardly projecting portion, and a forwardly extending table-like supporting element, combined with means attached to the bed-plate and coöperating with the rearwardly extending supporting member of each bracket-like looper and bobbing-carrying element to fix each bracket-like looper and bobbin-carrying element independently in its work-supporting position upon the bed-plate but permitting each bracket-like looper and bobbin-carrying element to be moved rearwardly so as to clear the work, a plurality of sewing needles, means coöperating with said needles for producing reciprocatory movements of said needles, a plurality of spindles mounted upon said table-like supporting elements of the bracket-like looper and bobbin-carrying elements, bobbin-containing loopers mounted upon some of said spindles, intermeshing gear-wheels mounted upon said spindles, bevel-gears also mounted upon some of said spindles, a main driving shaft, and bevel-gears upon said main shaft in mesh with the bevel-gears of said spindles.

12. In a quilting machine, a bed-plate, and a plurality of bracket-like looper and bobbin-carrying elements, each element comprising a rearwardly extending supporting

member, an upwardly projecting portion, and a forwardly extending table-like supporting element, combined with means attached to the bed-plate and coöperating with the rearwardly extending supporting member of each bracket-like looper and bobbin-carrying element, to fix each bracket-like looper and bobbin-carrying element independently in its work-supporting position upon the bed-plate, but permitting each bracket-like looper and bobbin-carrying element to be removed rearwardly so as to clear the work, a plurality of spindles mounted upon said table-like supporting elements of the bracket-like looper and bobbin-carrying elements, bobbin-containing loopers mounted upon said spindles, bevel-gears also mounted upon some of said spindles, a main driving shaft, bevel-gears upon said main driving shaft in mesh with the bevel-gears of said spindles, a bracket-like member carried by the upper frame-work of the quilting machine, bearing-portions connected with said last-mentioned bracket-like member, a rod slidably mounted in said bearing-portions, a cross-bar secured upon the lower portion of said rod, needle-bars carried by said cross-bar and needles attached to said needle-bars, means connected with said rod for producing reciprocatory movements of the latter, and mechanism between the said rod-reciprocating means and the said main driving shaft and operated from said main driving shaft for actuating the said rod-reciprocating means.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 26th day of February, 1916.

AUGUST HILDT.

Witnesses:

FREDK. C. FRAENTZEL,

FREDK. H. W. FRAENTZEL.