D. ZEISER.

FOLDING ATTACHMENT FOR SEWING MACHINES.

APPLICATION FILED SEPT. 20, 1907.

1,108,419.

Patented Aug. 25, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

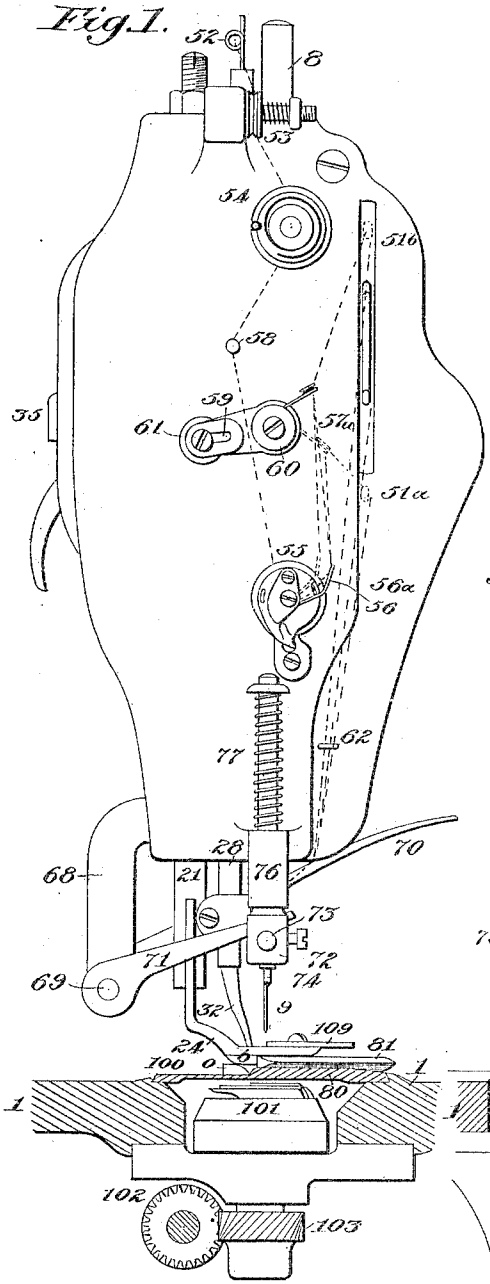
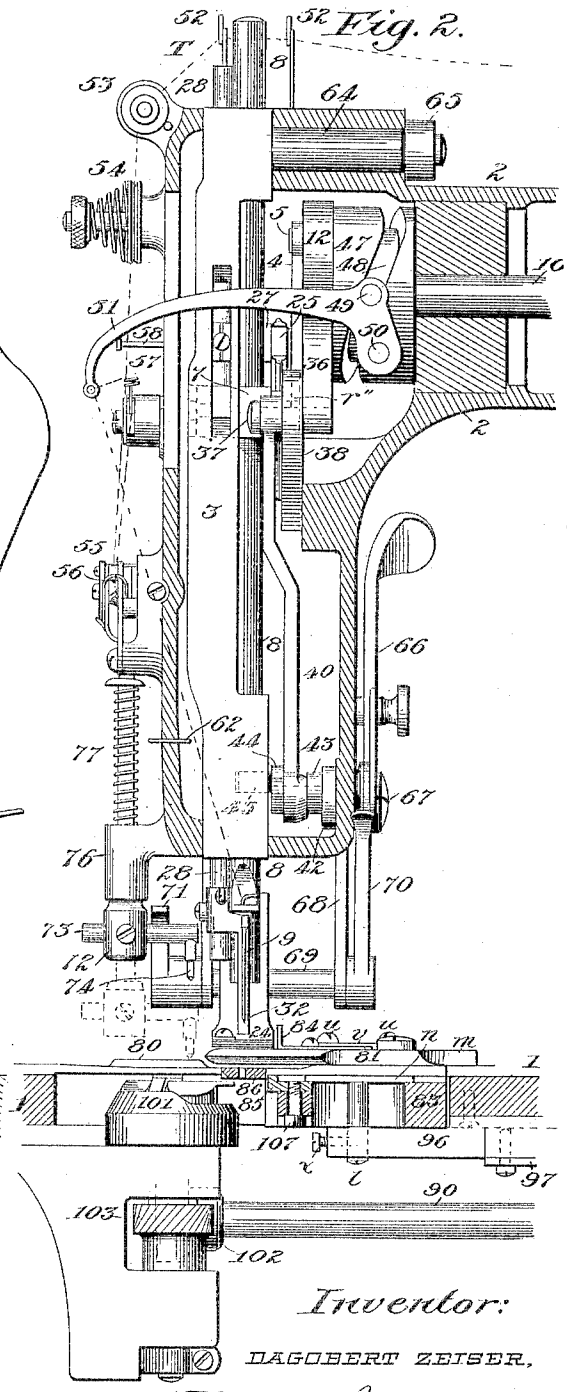


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

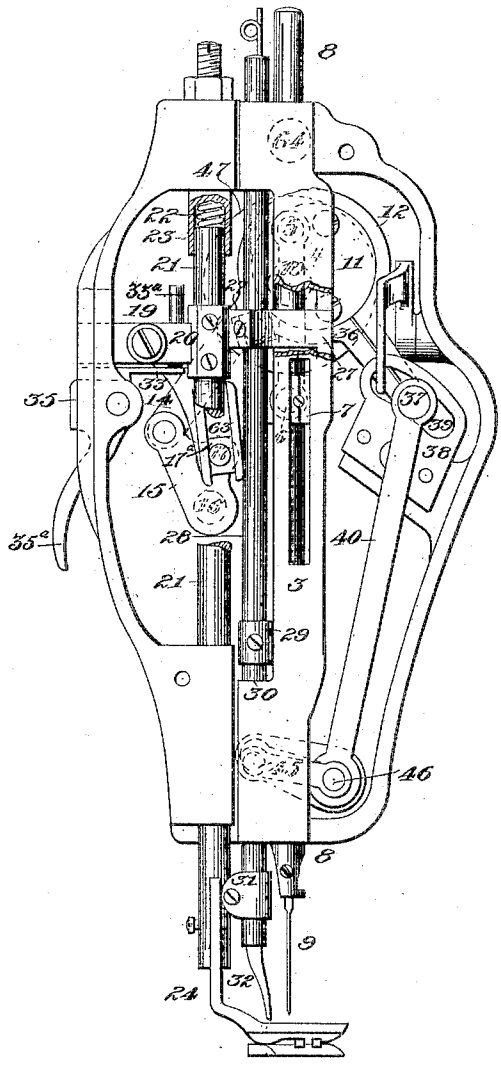
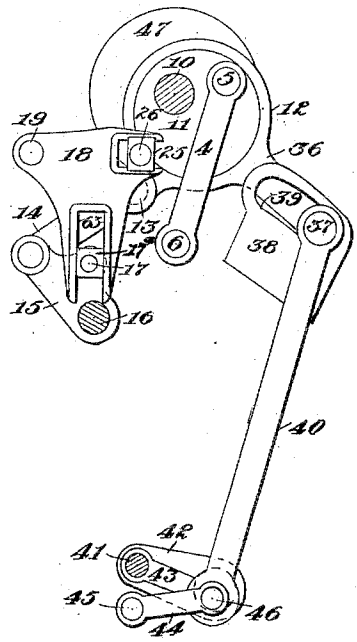


Fig. 4.



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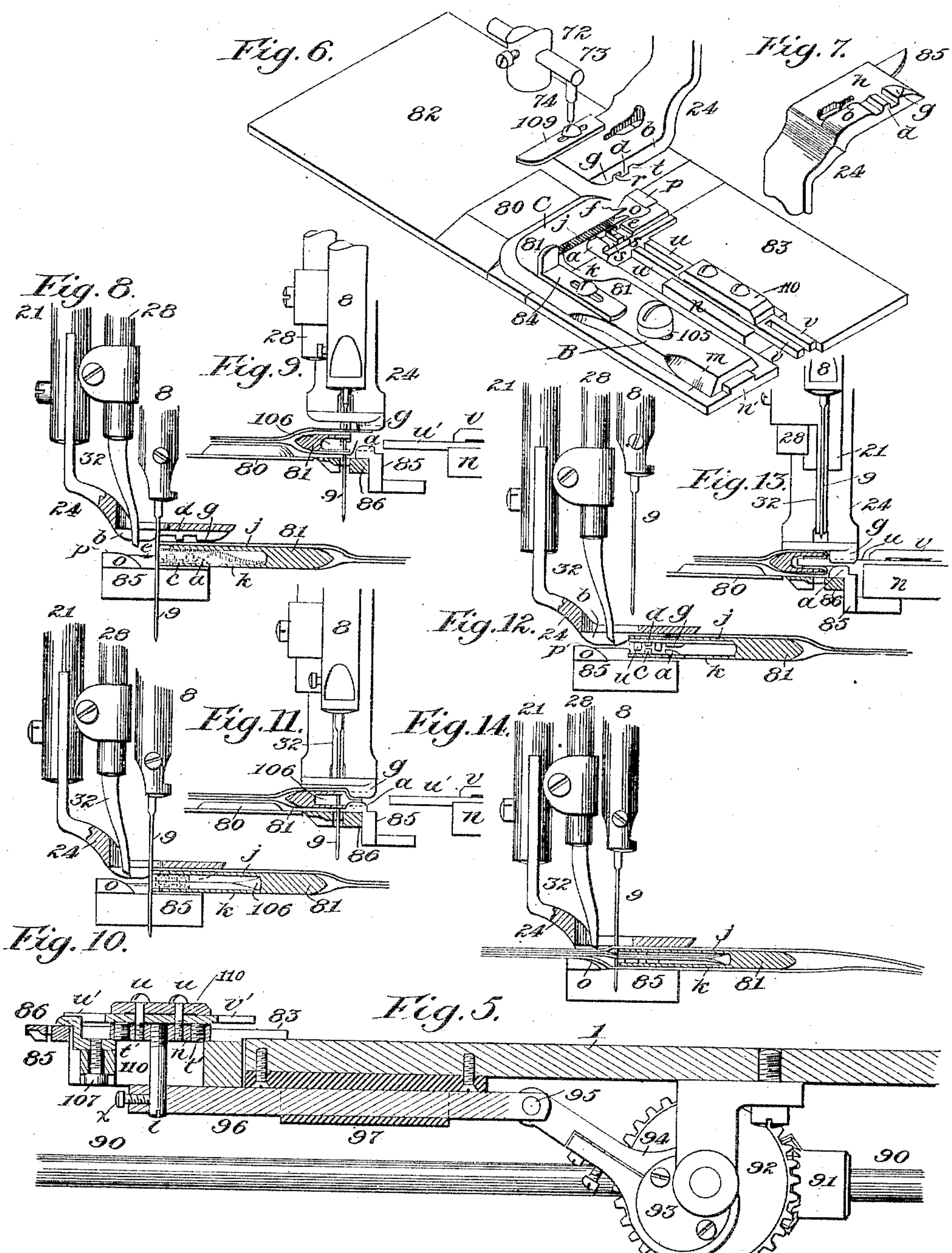
3 SHEETS—SHEET 3.



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FOLDING ATTACHMENT FOR SEWING-MACHINES.

1,108,419. Specification of Letters Patent. Patented Aug. 25, 1914.

Original application filed August 14, 1905, Serial No. 274,069. Divided and this application filed September 20, 1907. Serial No. 393,766.

To all whom it may concern:

Be it known that I, DAGOBERT ZEISER, of the city of Troy, in the county of Rensselaer and State of New York, have invented certain Improvements in Sewing-Machines, hereinafter designated as a "Folding Attachment for Sewing-Machines," of which invention the following is a specification, reference being made to the accompanying drawings, illustrative thereof.

My invention relates to that class of sewing machines employed in the manufacture of collars, cuffs, shirt neck-bands, and other analogous articles where several thicknesses or plies of material or fabric are combined and finished by first infolding their opposing margins and then stitching along the edge through the entire complement of plies and infolds. The construction and action of the several coöperative parts of the invention being such that the infolding of the margins of the plies and the sewing of them are simultaneously carried on so as to commence and complete the assembling, edge-folding and sewing of the finished edge of the article at a single passage of the article through the machine. Such machines have heretofore been complex in construction, requiring a high degree of skill in their operation, and difficulty has been encountered in so controlling the tension of the sewing thread as to secure uniformity in drawing up the stitches and in so holding and handling the complement of plies of fabric during their passage under the needle as to maintain a flat, even lay of the plies of interlining between the outer plies after the article has been sewed.

The objects of this invention, among other things are to consolidate in a single operative device as many of the preëxisting separate operative elements found in the prior art as possible, to eliminate, in the process of infolding, the movements, of certain pre-existing operative elements and thereby dispense with the mechanism required to effect such movements, to so mold the surface of the bed or table which supports the plies of fabric while undergoing manipulation as to produce and maintain such a bent form of the fabric as will tend to preserve proper relation between the plies of the interlining and the surface plies during the sewing operation as well as to preserve proper relation at their edges between the plies themselves; to secure proper tension of the upper thread at the moment of tightening the stitch so that no slack stitches shall occur in the finished seam. Also to provide means for handling a diversity of plies, as for instance, one, two, three, four or more plies with the same infolding devices, whereby a minimum of parts is secured. Also to provide improved means for turning and holding the fabric in stitching around curves, as in stitching around the corner of a cuff or collar. Other minor features of novelty will appear in the description and claims.

Another object secured by these improvements consists in adapting the aforesaid devices for use on a horizontal work-supporting table in contra-distinction from supporting the work in a vertical or perpendicular position while passing it through the machine.

As here disclosed the drawings show the invention as applied to a manufacturing Wheeler & Wilson sewing machine of which nearly all the substantial parts remain unchanged and with the construction of which sewing machine owners and operators are familiar.

Referring to the drawings, Figure 1 is an end elevation of the head of a Wheeler & Wilson machine with my invention applied thereto. Fig. 2 is a view of the interior of the head of such a machine as seen from the operator's position in front, parts of the case being removed for that purpose. Fig. 3 is a view of the mechanism and interior of the case as seen from the left hand side of the machine with the side covering plate removed. Fig. 4 is a detail view of the parts which impart movement to needle, presser jaw and stripper finger detached from their working connections. Fig. 5 is a vertical longitudinal section of a part of the machine taken on the plane of the axis of the needle when making the down stroke, and shows the connections for driving the rammer in the process of crowding the free edges of the plies in between the blades of the folder. Fig. 6 is a perspective view of my invention showing the principal parts thereof as they appear on the upper side of the work-table of the sewing machine. Fig. 7 is a perspective view of the under side of the presser jaw when inverted. Figs. 8 and

9 are respectively side and front detail elevations of the positions of the needle and folding jaws as they should be arranged preparatory to the placing of the plies in position to commence stitching. Here the presser jaw is elevated and the needle thrown back to the rearward limit of its feed stroke. Figs. 10 and 11 are similar views of the positions of the same parts after the driving shaft has been rotated until the presser jaw descends upon the fabric. Figs. 12 and 13 are similar views of the same parts after the needle has been raised and swung forward to the front limit of its feed stroke preparatory to making a stitch. Fig. 14 is a side elevation of the same parts showing the position of the needle after making its back throw in the process of feeding the fabric along one stitch.

The provisions for imparting to the needle its longitudinal reciprocating motion consist of the main driving shaft 10, Fig. 4 disk 11, crank pin 5, pitman 4, stud 6, attached to the needle bar 8 by means of clamp 7, Figs. 2 and 3, and the sway-bar 3 in which the bar 8 slides. Sway-bar 3 is hung on a journal stud 64, from the top of the head as seen in Fig. 2, so that it may oscillate in producing a step by step feed. With these connections it is plain that rotation of the driving crank will impart proper motion to the needle. The needle coöperates with the rotary shuttle 101 which carries a spool of thread. This shuttle is driven by shaft 10 through shaft 90 with which it is operatively geared, and spiral gears 102 and 103, Fig. 2, the latter being mounted on the shaft which carries the shuttle. The shafts 10 and 90 are appropriately geared together so as to impart to the several parts geared to them respectively their appropriate motions. The feed movement is effected through the cooperation of shaft 10, eccentric disk 11, mounted on said shaft, eccentric ring 12 provided with arm 36 from the end of which projects a stud 37 fitted with a roller which revolves in slot 39 of bracket 38. A link connection 40 is pivoted at one end to stud 37 and to its lower end two links, 43 and 44 are pivoted. The other end of link 43 is pivoted to a stud 41 which projects from the end of an arm 42 carried on a short rockshaft 67, Fig. 2. The position of center 41 may be changed by swinging arm 66, and change in position of center 41 will change the length of the stitch. Link 44 connects the lower end of link 40, with a stud 45 which projects from the inside of the lower end of the sway bar as seen in Fig. 2. From these connections it is plain that rotation of eccentric 11 will produce reciprocation of stud 37 through the inclined slot 39, thus causing the upper end of link 40 to rise and fall. This movement causes center 46 or the pivot at the lower end of link 40 to swing around center 41 for a limited distance. Such swing will cause sway bar 3 to swing on its pivot 64 a very short distance which is the length of a stitch.

A stripping finger 32 is attached to a vertical bar 28 which is adapted to slide in bearings in the sway bar and swings in unison therewith. The office of this finger is to hold the fabric down when the needle is rising so as to prevent the impaled plies of cloth clinging to the needle and rising therewith. Its motion vertically is regulated by devices independent of the needle-actuating mechanism as will be explained farther on.

The presser jaw is raised intermittently to allow the fabrics to be fed along by the conjoint action of the following named parts:— To one side of the eccentric ring 12 at 13 the link 14 is attached which connects at its other end with the rocker arm 15 which oscillates on stationary pivot 16. This arm 15 has a pivot stud as at 17 projecting from its upper edge which carries a block-bearing 17^a that is fitted to slide vertically between the slide-ways 63 of the bell crank lever 18. This lever is pivoted on a stud 19 which projects from the vertically movable block 20. Block 20 is clamped to the presser bar 21 and moves therewith. The upper end of bar 21 enters a spring socket 23 and its descending motion is controlled by spring 22 in said socket, the force of which is normally exerted to force the presser jaw 24 against the upper side of the fabric beneath it and the latter against the upper side of the folder to hold the cloth in place during the folding and sewing operation. The presser bar with the connected jaw may be lifted independently by turning up cam 35 by means of handle 35^a which works under a wear-plate 33, which is interposed between cam 35 and block 20 to which the presser rod 21 is attached. A guide-pin 33^a projects from plate 33 upwardly through block 20 which serves to keep the parts in correct relationship. When this wear plate is worn out it may be replaced by a new one without difficulty. The upper arm of the bell-crank lever 18 is fitted with two jaw slides between which the bearing block 25 may slide. In this bearing block a pivot stud 26 works which is an attachment of finger bar 28 and is the device through which movement is imparted to said bar according with the oscillating movement of the bell crank lever as the same is actuated by the rotation of the eccentric ring through the connection above described. On this finger bar a collar 29 is adjustably fitted which on the down stroke of the bar will impinge against and rest upon the shoulder 30 of the sway bar. This arrest of downward movement of the finger bar renders pivot 26 stationary and shifts the fulcrum of lever 18 from pivot 19 to pivot 26, from which instant the further rotation of the eccentric will cause

the presser bar to rise till the eccentric passes dead center, after which the presser bar will drop until the block 20 strikes the bearing on plate 33 at which instant the fulcrum of lever 18 shifts to pivot 19 and the finger bar rises.

The tension devices consist of the friction disks 53 and 54, guide pin 58, spring loop 56, auxiliary spring loop 57, take-up arm 51 and guides thence to the needle. These parts are seen in Figs. 1 and 2. Their arrangement and mode of operation are precisely as in the standard Wheeler & Wilson machine before referred to except as the same may be modified by the interposition of the auxiliary spring take-up loop 57. The provision of this extra take-up is a part of my invention and the successful operation of the sewing devices is in certain particulars directly dependent upon this. Its function is to assist in uniformly drawing up the thread firmly in the formation of the stitch. Inasmuch as the upper and under plies of the fabrics are separated by the interposed folder which is of substantial thickness, without the aid of this auxiliary take-up so much slack is left in the upper thread when the needle rises and the take-up arm 51 drops, that in the operation of the looper the upper thread is not held taut enough to secure a well drawn-up stitch and slack stitches will appear in the seam. If, to remedy these slack stitches, the tension on the upper thread is increased, it has been demonstrated that the thread will break. This auxiliary take-up comes into action at the moment when the looper hook has entered the needle loop and carried it around to a point where it is about to cast it off which is the point of greatest strain on the upper thread. Now if, at this moment, there is sufficient tension on that thread to secure a tightly drawn up stitch, the thread is liable to break, and if there is not more than will avoid breakage, it will be loose and the face stitches will be unevenly drawn up. Hence, it has been found that by interposing between the principal tension devices and the main take-up arm a yielding spring take-up like or similar to that shown at 57, so that if there is a momentary slack in the take-up tension at the "moment" above referred to, this slack will be taken up by the auxiliary take-up 57 without the needle thread being drawn through the devices 53, 54 and 55.

The principal features of my invention as applied to a machine of the character above described, are shown in Fig. 6. As a form over which to turn and fold the edges of the plies of fabric to be sewed I employ a former 81 which has a body B, and tongue C, arranged at right angles thereto. This tongue lies parallel with the direction of the line of feed. The under side of the shank or body B, is grooved to fit over a tongue n', of the bed plate of this part of the machine to admit of slight lateral adjustment of the tongue toward and away from the needle and is confined in position by a set screw 105 which passes through an elongated slot in the body. Its position with reference to the bed may be registered by the graduated micrometer scale m. The tongue is recessed from one edge as seen in cross section in Fig. 9, thus leaving a thin upper blade j, and lower blade k, which open out at their front ends as seen in Fig. 6. The front ends of these blades are notched as at f, Fig. 6 for the passage of the needle. A thin space is left between the under side of the former blades and the bed for the passage of the under plies of fabric. Two jaws 24 and 85 coöperate with the former blades in turning the margins of the plies of cloth across the edges of the blades j, and k. The upper, which I term the presser jaw, as it performs the functions of the old presser foot, is designed substantially as shown in inverted view in Fig. 7. It is provided with a ledge along one edge to form a shoulder parallel with the edge of the upper blade j of the former, which ledge is transversely grooved as at r, and t, to leave channels for the passage of the rammer prongs. Thus the bosses g and b are formed. The front boss g, is beveled at its toe as seen in Fig. 7, so that when in position fabric may be easily slipped under it and so that it will offer no resistance to the passage of the cloth at any time. The front corner of the heel boss b, is also beveled to facilitate the turning of the fabric in stitching around a round corner as in a collar or cuff. When in position, with the plies in place, the dropping of this presser jaw will bend the edge of the upper plies over the inner edge of the upper former blade as seen in Fig. 11. The lower jaw piece 85 is stationary and is attached to the bed plate 83 by the screw 107 which passes through the elongated slot, in its shank whereby the jaw may have slight lateral adjustment with reference to the needle. The lower jaw in some respects is a counterpart in structure of the presser jaw, that is to say, it has a corresponding shoulder substantially parallel with the edge of the lower former blade k, to upturn the edges of the under piles and is similarly channeled as at s, s, Fig. 6, for the passage of the rammer prongs. The parts should be so arranged and adjusted that the folding shoulders of the two jaws shall be in the same vertical plane and set distant from the inner edges of the former blades only far enough to allow the insertion and passage of the plies of cloth between them without binding. The channels r, and t, should exactly register over the like channels s, and s, of the lower jaw to leave a clear passage for the

rammer prongs in the process of infolding the edges of the plies after being folded over the edges of the blades *j*, and *k*.

The apparatus for turning the folds of the edges of the plies in between the blades of the former consist of the rammer 110, which has at each end two prongs *u'*, and *u'*, and *v'*, and *v'*. The prongs of this rammer are made in thickness to accommodate the number of plies of cloth to be operated upon. The greater the thickness of the plies the thinner must be the prongs. They should be of such a thickness that they may push the edges of the plies in between the blades and hold them without pinching. This rammer may be made with the thickness of the prongs reduced on one side somewhat as seen in Fig. 5, where the under side of the right hand prongs is reduced in thickness an amount equivalent to one thickness of cloth. This provision is intended to be used in sewing collars or like articles where an odd number of plies are combined, as where two outside plies are combined with one thickness of interlining. In such case two plies must go on one side of the folder and only one on the other, and the rammer is adjusted so that the rabbeted side of the prongs shall come opposite the double thickness. As many of these rammers may be provided as may be necessary, and they are symmetrically designed so that they may be reversed endwise or inverted. Where the prongs of one end of the rammer are reduced on one side of the plane of its axis it may be used for inturning the edges of an odd number of plies where, for instance, two plies are to be turned on one side and only one on the other, by setting the rammer so that its rabbeted side shall come opposite the greater thickness of cloth.

The rammer is carried by the carrier, Fig. 7, which is fitted to slide in ways in the bed plate 83. This carrier is longitudinally grooved on its upper side to provide a seat for the rammer and to hold it in true longitudinal adjustment. Under the rammer when in position are two adjusting screws *t'*, *t'*, for regulating the elevation of the rammer so as to bring the prongs in alinement with the transverse channels of the jaws so that it may pass freely through them when brought together without colliding with them. The rammer is also perforated with two holes for the binding screws *u*, and *u*.

A binding cap *v*, similarly perforated for the binding screws lies upon the top of the rammer over the carrier *n*, and when the screws *u*, *u*, are entered in place and screwed down the rammer becomes firmly gripped between the binding cap and the tops of the adjusting screws *t'*, *t'*. A stud *l*, depends from the under side of the rammer carrier and is connected with the slide 96, which is reciprocated in the slideway 97, by means of the connection 94 and eccentric 93, which is attached to the gear 92. The latter is driven by the bevel pinion 91 on the shuttle driving shaft 90. This shaft is driven from shaft 10, by belt or gears (not shown,) so timed that shaft 90 will make two turns to one of shaft 10. Gears 91 and 92 are similarly timed so that the reciprocations of the rammer synchronize with the strokes of the needle. The stud *l*, is prevented from rising in its position by the set screw *x*, which confines it to the slide 96. By loosening screw *x*, the carrier *n*, may be lifted and semi-rotated upon stud *l*, so as to reverse the position of the rammer end for end.

A gage 84 is attached to the former which acts as a guide to the operator in directing the cloth to the needle, and another gage 109 is attached to the presser jaw to indicate to the operator when to arrest the straight stitching before stitching around a corner.

The provisions for guiding the fabric in stitching around a curved corner consist of a center pin 74, which projects from the under side of an adjustable arm 73 carried in a socket of a vertical sliding bar 72. This moves in fixed bearings and has a long, vertical stem around which is a spiral spring 77, which at its lower end abuts upon the top of the bearing 76 and at its upper end against a collar on the stem. Its normal force is exerted to force the rod upwardly. It can be forced down so as to bring the point of the pin 74 to bear upon the fabric lying on the table beneath it by depressing arm 70 of rockshaft 69 which will cause arm 71, on the same rockshaft, the end of which bears upon the upper side of arm 73, to force the bar 72 and pin 74 down until it bears upon the cloth. This center pin differs from a needle which penetrates the cloth for the same purpose in that it does not perforate the fabric, thereby leaving a hole which is undesirable, nor hold the cloth so firmly that if any pull or strain upon the cloth is put upon it by the needle in feeding it through the machine, it cannot yield or give way and thus avoid making a hole, which might result if the fabric were held by a center pin or needle which perforated the fabric.

The adjustment and operation of the machine are as follows:—The folder is so set that the edges of the former blades will be at such a distance at the right of the needle as to locate the line of stitching the desired distance inside of the edge of the finished article. The under jaw-block 85 is then set so as to leave sufficient space between its folding shoulder and the edge of the lower former blade to push the lower plies of fabric over the top boss, *a*, and between the shoulder and edge of the blade into position to commence the stitching. The rammer is

adjusted at such a height that when its prongs are moved up against the plies which are held confined between the presser and lower jaws, the edges of the plies will be presented fairly opposite the ends of the prongs and practically opposite the centers of the prongs. The gage 84 is then set to allow the desired margin of fabric to supply what is requisite to turn in between the former blades and be caught by the needle, far enough from the edges of the fabric that it will not pull or fray out. The gage 109 is also set so that its point will indicate the proper point at which to stop the machine and let down the pivot 74 preparatory to stitching around a corner. The machine is then started and moved until the needle has swung backward to the rear limit of its feed stroke and has risen about half its upstroke but still its point is below the folder and spans the passageway for the cloth. The presser jaw being elevated, the upper and lower plies of the article to be sewed are then slid into position from the front of the machine as it appears in Fig. 2, care being taken that the lower plies are bent over the inner margin of table 80, under the former and up over boss *a*, of the lower jaw. The upper plies are then passed under the presser jaw, resting on the upper side of the upper folding blade. These positions are shown in Figs. 8 and 9, the back edges of the cloth bearing against the front side of the needle. The rammer at this stage is about to make its forestroke and is in the position shown. The machine on being started, drops the upper presser jaw, its folding shoulders closing over the cloth lying between them and the edge of the upper blade of the former, and bending it and the free edge of the under plies into the shape shown in Figs. 10 and 11. Thus all the edges of the plies will be held between the jaws with their edges lying across the centers of the prong channels of the jaws directly in the path of the prongs of the rammer when it advances. From this position or stage further movement withdraws the needle and swings it forward into position to start its downstroke, and concurrently, the rammer has advanced and its prongs, engaging the edges of the plies which are firmly held by the presser jaws in connection with the former blades and upraised corner of table 80, forces them in between the former blades as seen in Fig. 13. In this situation the cloth is immovably held to its proper position by the rammer and former when the needle descends and stabbing the cloth makes its first stitch. This accomplished, the edges of the plies are left partially inturned between the blades, so that in making subsequent strokes the rammer finds its work partially done, and the continuation and completion of the process is easy. As the plies are fed along beyond the rear ends of the former blades they come under the action of the stripping finger 32. This performs the double duty of holding the plies down while the needle is withdrawn on its upward stroke, and also assists in pressing the plies together as the stitch is drawn up by the bobbin hook. In order to symmetrize the conditions of the upper and under plies as to curves, swells, twists and strains in passing over and under the various obstacles in their path located around the former, a boss *o*, is provided on the table in rear of the back ends of the former blades, the top of which is of such height as to bring the sewed plies as they reach and pass over it as nearly on a level with the center of the space between the folder blades as possible. The side table 80 is provided for a similar purpose and aids materially in improving the finish of the edges of the article under treatment. The boss *b*, of the upper jaw also coöperates with the elevated flat *e*, of the lower jaw to keep the edge of the seam in line as it is fed through the machine.

Heretofore, machines of this character have generally been fitted with two movable former jaws for bending the edges of the plies over the edges of the former blades, each of which has been provided with an independent set of actuating devices. In some cases the former blades have been separate and both were movable. Such constructions have been complex and difficult to keep in adjustment or in proper working condition. In this invention the former is made with both blades integral, and one of the folding jaws, the lower one, forms practically a part of the table which supports the work, or else is designed as a removable and adjustable attachment to the table which is rigidly attached to the table when the machine is in use. Hence, in this specification, in speaking of the lower folding jaw, it is to be taken and understood that the lower folding jaw, which is stationary, includes that portion of the table or bedplate of the machine which lies beneath the folder and the folding shoulders or ledges or bosses of the block 85. By using a fixed integral former in combination with one fixed clamping and folding jaw, a large amount of mechanism for actuating one set of movable devices is dispensed with, and the machine is rendered simpler, cheaper and more effective in its operation.

By adapting this invention to a vertical movement of the needle, which is the most natural and convenient mode of operation of that member of a sewing apparatus, a horizontal table or work support is secured which is much better and more practical as distinguished from previous machines of

this character in which the needle plays horizontally and the work is held in a vertical position.

I therefore claim as my invention:

1. In combination, a folding mechanism for sewing machines comprising a bed plate, a former having a body part mounted on the bed plate and a transverse tongue part, the edge of which latter is arranged parallel with the direction of feed and has a recess forming relatively thin upper and lower blades, of an upper vertically movable presser jaw having a ledge along one edge to form a folding shoulder substantially parallel with the edge of the upper former blade; a lower folding jaw positioned on the bed plate to the side of the body part of the former, said lower jaw being fixed against vertical movement but laterally adjustable relative to the vertically movable jaw, and said lower jaw having a ledge along one edge to form a folding shoulder to coöperate with the folding shoulder of the moving jaw, a transversely movable rammer suitably guided on the bed plate, said rammer being adapted in its movement to force the material into the space between the former blades and the shoulders of said jaws having recesses adapted to register with each other and form a guide way for the rammer.

2. In a folding mechanism for sewing machines, the combination of a stationary former, a movable presser foot having an integral folding jaw, an auxiliary stationary folding jaw, the said jaws being adapted to coöperate with opposite blades of said former in bending the plies of fabric over the edge of the blades, means for laterally adjusting the stationary jaw relative to the jaw of the presser foot, and means movable between the jaws for bending the plies of fabric between the same, said last mentioned means being also adjustable.

3. In a folding mechanism for sewing machines, the combination of a stationary former, a stationary folding jaw, a movable folding jaw, a rammer for turning the folded edges of the plies in against the insides of the blades of the former, and means for adjusting the stationary folding jaw in a line parallel to the longitudinal axis of the rammer, and said jaws having a guide way for the rammer.

4. In a folding mechanism for sewing machines, the combination of a supporting table or bed, of a stationary former with means slidably connecting the same to the bed whereby it may be adjusted laterally, a stationary folding jaw adjustably mounted on said bed, a movable folding jaw, and a reciprocating rammer for inturning the folded edges of the plies against the insides of the blades of the former, the said jaws forming therebetween a guide way for the rammer.

5. In a folding mechanism for sewing machines, the combination, of a stationary former, a stationary folding jaw, a movable folding jaw, and an end-wise reversible reciprocating rammer for turning the folded edges of the plies in against the insides of the former blades, substantially as specified.

6. In a folding mechanism for sewing machines, the combination, of a stationary former, a stationary folding jaw, a movable folding jaw, and a vertically reversible reciprocating rammer for turning the folded edges of the plies in against the insides of the former blades, substantially as specified.

7. In a folding mechanism for sewing machines, the combination with two forming blades and two folding jaws to coöperate therewith in folding the edges of the plies over against the edges of the blades, of a rammer adapted to operate in the space between the blades closer to one than to the other, as a provision for use in folding and turning a greater thickness of plies over one blade than over the other, substantially as specified.

8. In a folding mechanism of the character described, the combination with a former and folding jaws, and a rammer to coöperate therewith, of an endwise reversible rammer carrier and means to reciprocate the same, substantially as specified.

9. In a folding mechanism of the character described, the combination with a former and folding jaws and a rammer to coöperate therewith, of a rammer carrier and means connected therewith for effecting vertical adjustment of said rammer upon said carrier, substantially as specified.

10. In a folding mechanism of the character described, the combination with a former and folding jaws and a rammer to coöperate therewith, of a rammer carrier, two independently adjustable bearings upon which the rammer rests, and means for binding the rammer in position upon said carrier bearings, substantially as specified.

11. In a folding mechanism of the character described, the combination with the former and folding jaws, of a bifurcated rammer, a reciprocating carrier upon which said rammer is mounted, means connected therewith for independently adjusting the elevation of the ends of said rammer, and means for confining the same in its elevated position, substantially as specified.

12. In a folding mechanism for sewing machines, the combination of a former, cooperating folding jaws, and an endwise reversible reciprocating rammer for turning the folded edges of the plies in against the insides of the former blades.

13. In a sewing machine, folding mecha-

nism therefor including a stationary former having opposed blades, a movable folder arranged above the former, a coöperating folder arranged below the former, means for fixedly mounting the coöperating folder, whereby the same constitutes in effect a work support and said means being adjustable, and a rammer adapted to move between the blades of the former, substantially as specified.

14. In a sewing machine having a table with a longitudinally extending slot therein, a stationary former mounted on the table, a folding jaw slidably mounted in said slot, means for holding the jaw in stationary adjusted positions on said table, and a coöperating movable combined presser foot and folding jaw, in combination with a rammer adapted to play between the folding jaws, substantially as specified.

15. In a folding mechanism for sewing machines, the combination of a pair of forming blades, a pair of jaws positioned on opposite sides of the blades, one of said jaws being stationary and having an inclined surface overlying one of the former blades whereby in the movement of the material over the stationary jaw the material will be folded, and the other jaw being movable and forming a combined presser member and folding device having an edge adapted in one of its movements to overlie the edge of the other former blade to fold the material thereover.

In testimony whereof I have hereunto subscribed my name in the presence of two witnesses.

DAGOBERT ZEISER.

Witnesses:
OTTO J. ZEISER,
DAVID A. ANDERSON.