

J. P. WEIS.
 STITCH FORMING MECHANISM FOR SEWING MACHINES.
 APPLICATION FILED AUG. 23, 1902.

971,229.

Patented Sept. 27, 1910.
 3 SHEETS—SHEET 1.

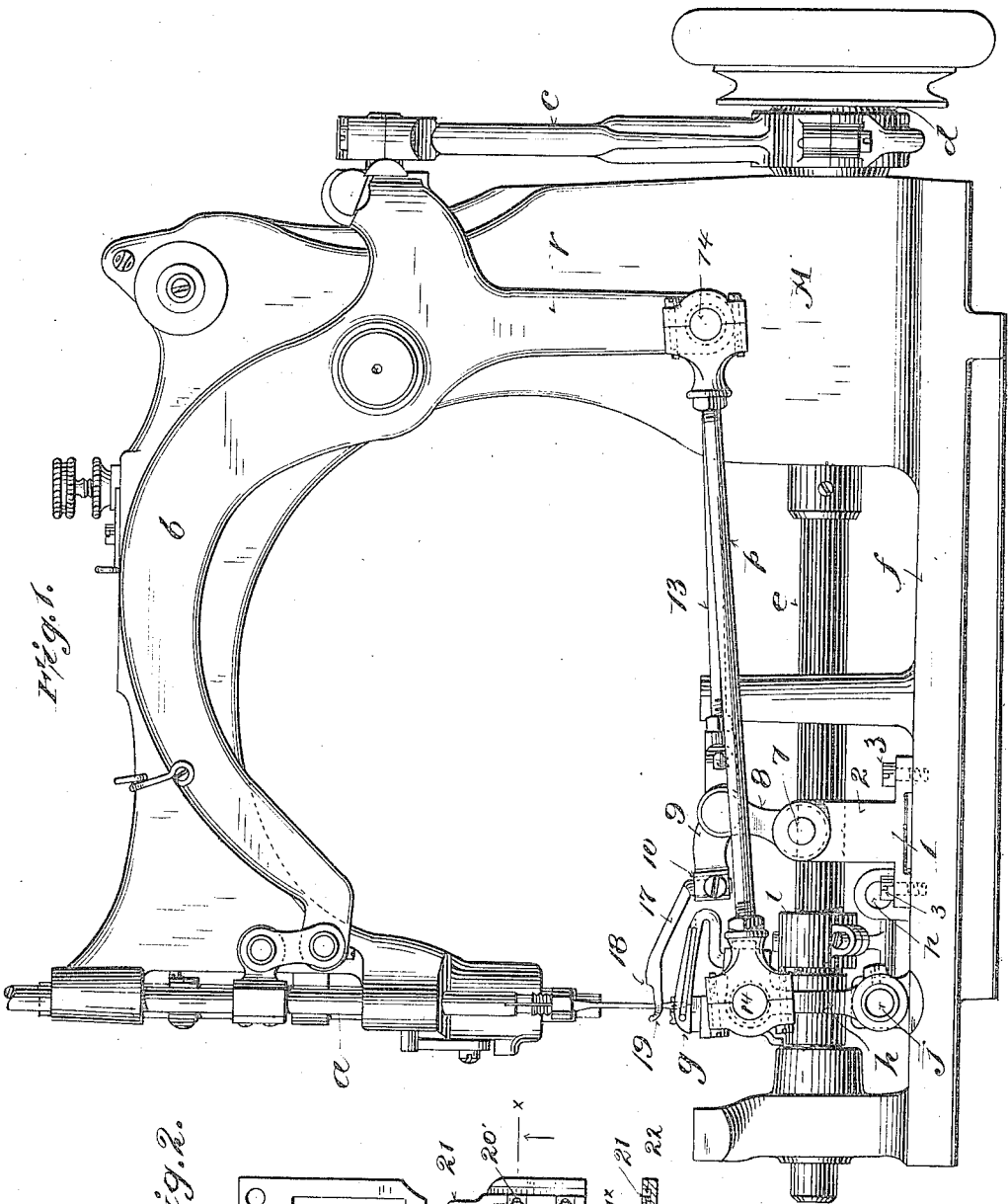


Fig. 1.

Fig. 2.

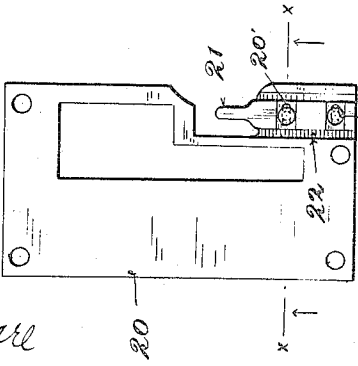
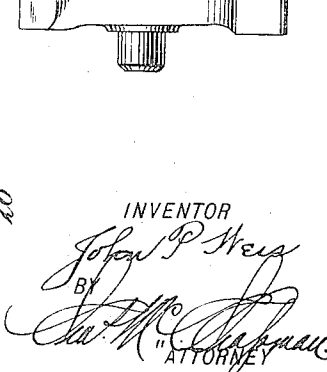


Fig. 3.



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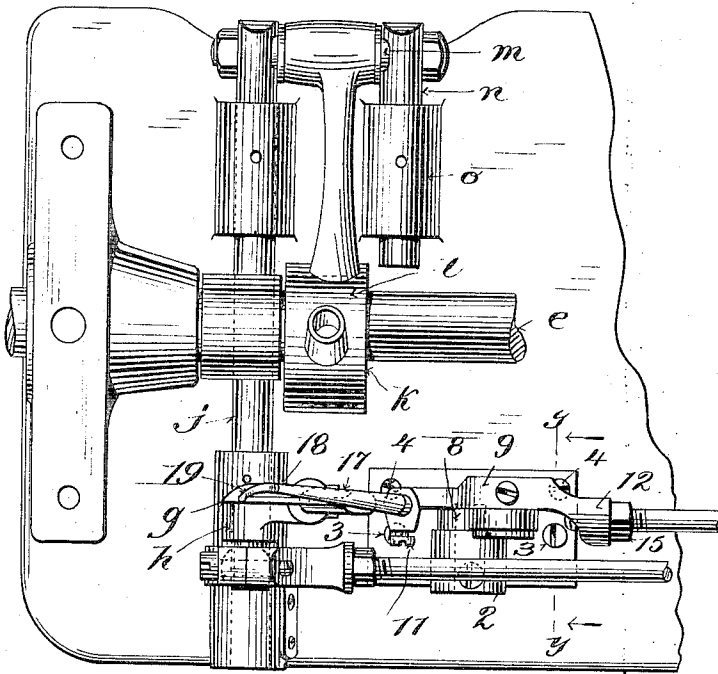


Fig. 4.

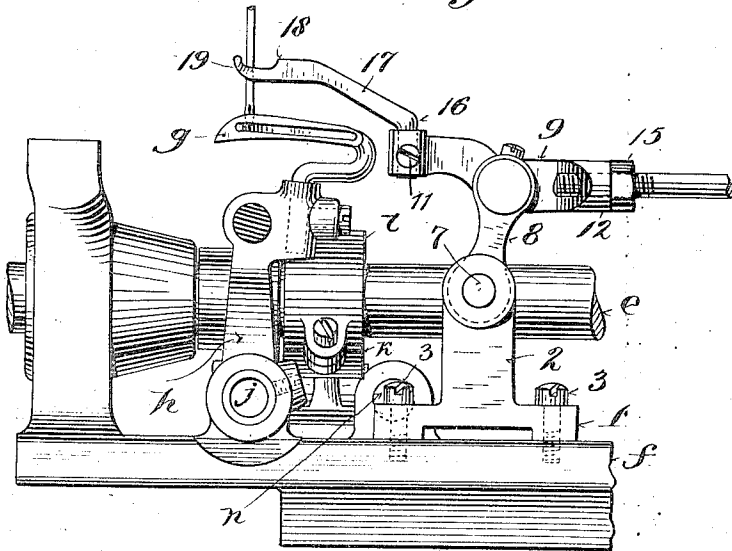


Fig. 5.

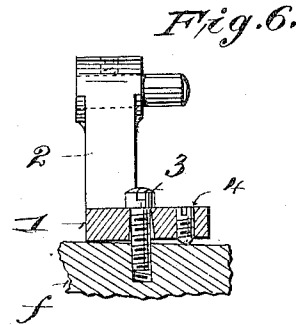
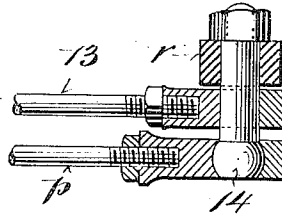


Fig. 6.



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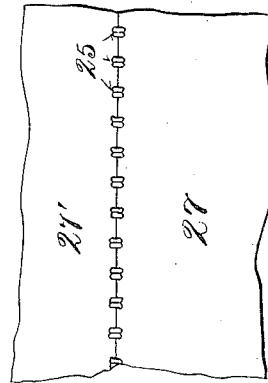
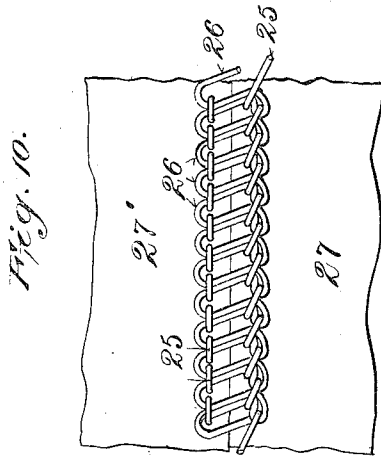
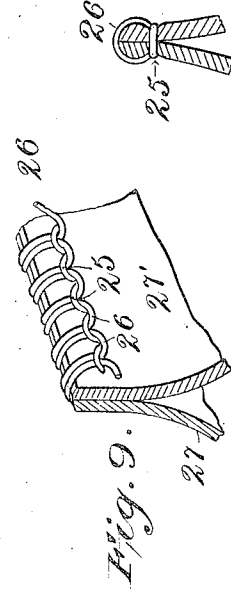
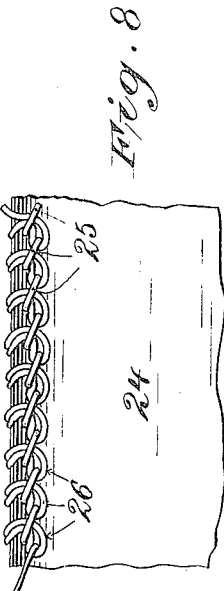
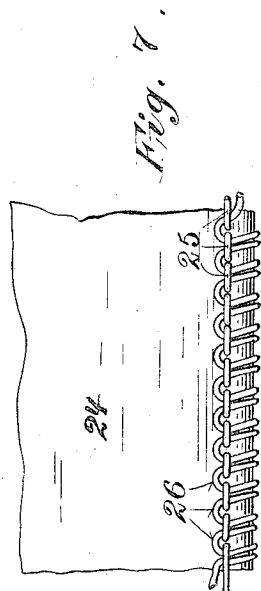


Fig. 12.



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UNITED STATES PATENT OFFICE.

JOHN P. WEIS, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
METROPOLITAN SEWING MACHINE COMPANY, A CORPORATION OF NEW YORK.

STITCH-FORMING MECHANISM FOR SEWING-MACHINES.

971,229.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed August 23, 1902. Serial No. 120,780.

To all whom it may concern:

Be it known that I, JOHN P. WEIS, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Stitch-Forming Mechanism for Sewing-Machines, of which the following is a description.

This invention relates to chain stitch sewing machines, and more particularly to machines using two threads for making a lock-chain stitch, to be employed on, or in connection with, all kinds of goods or materials.

Specially, this machine is constructed for the purpose of overedging elastic goods of all character, as well as hat-sweats, gloves, and other articles and materials.

It is an object of my invention to produce a machine for the purpose of effecting various results in connection with a piece, or pieces, of fabric; that is to say, to provide a mechanism which will make an elastic seam in joining pieces of fabric, or will produce an ornate appearance in overedging, or in stitching in the body of goods.

It is a further object of my invention to provide a mechanism which can be adapted to any chain-stitch machine without altering the same in any material particular.

With the several objects above set forth in view, and others to be hereafter noted, the invention consists in the parts, features, and mechanism hereinafter described and claimed.

In the drawings: Figure 1 is a side elevation of a machine embodying my invention, the bed-plate being removed and other parts, not essential to the illustration, being omitted; Fig. 2 is a plan showing the throat-plate and the adjustable tongue; Fig. 3 is a section on the line $x-x$ of Fig. 2, looking in the direction of arrows in the latter figure; Fig. 4 is a plan of the end of the machine, shown in Fig. 1, the means for actuating the looper being shown, and the connection between the needle-lever and the actuating pitman being shown in section; Fig. 5 is a side elevation of the parts shown in Fig. 4, the view being intended to show details of the spreader mechanism; Fig. 6 is a section of the bracket for supporting the spreader-carrier, the same being taken on the line $y-y$, Fig. 4, looking in the direction of the arrows in the latter figure, and showing the means for adjusting the bracket; Fig. 7

shows in top-plan the stitch applied to the edge of a single piece of work; Fig. 8 is a bottom view of the same piece of work; Fig. 9 is a perspective of a section of two pieces of superposed fabric, showing how the same would be bound according to my method and on my machine; Fig. 10 is a top-plan of the work of Fig. 9; and Fig. 11 is a bottom view of the work of Fig. 10. Fig. 12 is a detail sectional view showing the manner in which two pieces of fabric are overedged, the section being taken, for example, between any two of the overedge stitches shown in Fig. 9.

The frame of the machine is indicated by A, the needle-bar by a , the needle-bar operating lever by b , the eccentric strap for operating the needle-bar lever by c , and the actuating eccentric by d , on the main-shaft e , suitably supported in the bed-plate f , of the machine. The thread-carrying looper g , is carried by the arm h , fixed to the rock-shaft j , suitably journaled on the bed-plate, said shaft being actuated by an eccentric k , carried on and near the forward end of the main-shaft, said eccentric being surrounded by the eccentric-strap l , journaled on a cross-bar m , connected to a pin n , sliding in and supported by a bracket-piece o , on the bed-plate. The cross-bar is loosely connected to the end of the rock-shaft j , and the mechanism just described gives to said rock shaft a sliding movement in the direction of its length and transversely to its rocking movement. The shaft is rocked by the pitman p , jointed at one end to the looper arm or carrier h , and at its other end to the depending arm r , of the needle-actuating lever. These parts, together with the feed mechanism, take-up, and tension, may be of ordinary character and may form the stitch-forming essentials of any ordinary chain-stitch machine.

A bracket 1, having a vertical extension 2, is secured to the bed-plate of the machine just back of the rock-shaft of the looper mechanism, said bracket being secured to the bed-plate and held in position thereon by screws 3, and being adjustable by means of small screws 4, extending through the base of the bracket and impinging upon said bed-plate. This means renders the bracket adjustable so as to tilt the same laterally relatively to the bed-plate as shown in Fig. 6, in order to obtain the proper or desired co-

operation between the needle, spreader and looper. Set in the upper end of extension 2, is a short shaft or pin 7, affording a journal for the lower end of a link 8, which at its other end is pivoted to a carrier 9, having in its forward end a vertical socket 10, for the reception of the stem of the spreader. The spreader is held in said socket by means of the screw 11, and the structure just described enables said spreader to be adjusted vertically and laterally relatively to the needle, as will be obvious. The spreader-carrier, at its rear end 12, is provided with a screw threaded socket for the reception of the forward end of a pitman 13, which at its rear end is jointed to the pin or support 14, carried by the depending arm *r*, of the needle-bar actuating lever. The forward end of the pitman 13, is also screw-threaded, whereby the same may be screwed into the screw-threaded socket of the spreader-carrier, and this connection renders said carrier adjustable in the direction of its length so as to project the spreader more or less forward relatively to the path of reciprocation of the needle. When the adjustment just described has been accomplished a jam-nut 15, is screwed up against the end of the spreader-carrier so as to prevent accidental change in position of the parts.

The spreader consists of a vertical stem 16, and a long arm or shank 17, arranged substantially at an obtuse-angle to the stem, this structure enabling the arm to be projected vertically above and below the bed-plate through an opening provided therein. The forward end of the spreader is provided, on its upper side, with a shoulder 18, and a short laterally and vertically extended finger 19, the finger being for the purpose of catching the looper-thread and carrying it vertically from below the bed-plate to a position above the same and beside the path of reciprocation of the needle. The shoulder 18, prevents the said loop, carried by the finger, from slipping too far back upon the shank of the spreader, and aids in spreading and holding the loop of looper-thread in position for the needle to enter the same, during its descent, and carry its thread therethrough.

The bed-plate is provided with a throat-plate 20, having a free ended tongue 21, over which the stitch is formed and from the free end of which the stitch slips as the work is fed. This tongue is shown adjustable on the throat plate by means of slots 20', in the tongue and screws 21*, passing through said slots and entering the throat-plate as shown in Fig. 2. The tongue is set in a groove, or countersink, 22, in the throat-plate, which is sufficiently wide to permit of the requisite adjustment. It will be understood that this is only an example of means for adjusting said tongue.

The bed-plate is to be provided with an

adjustable edge-gage, of any character suitable for the purpose of guiding the material and maintaining its edge in proper position relative to the stitch-forming mechanism.

The single fabric 24, in Figs. 7 and 8, is shown as having its edge bound or over-stitched, the needle-thread being shown at 25, and the looper-thread at 26. In these figures the stitching is shown as loosely formed so as to clearly illustrate the concatenation of threads and loops. In Figs. 9, 10 and 11, the two pieces of fabric which are joined are indicated by 27 and 27', the looper thread being shown at 26 and the needle-thread at 25, as in Figs. 7 and 8, the stitch formation being also loose for the purpose of clear illustration.

The operation of the parts above described is as follows: The needle reciprocates vertically and the looper enters the loop cast thereby and interlocks its thread with the needle thread in the ordinary manner. The addition of the spreader device of my invention changes the character of the chain-stitch by carrying the looper-thread, in the form of a loop, vertically through the bed-plate and over the edge of the work into position for entrance of the needle during its descent, thus making an overedge binding-stitch in which the loop of looper-thread passes through the loop of needle-thread, which looper-loop is in turn entered and held by the needle-thread,—this being all on the under-side of the work,—and the said looper-loop being, on the face of the work, bodily encompassed and held by the needle-thread.

The manipulation of the threads, just described is carried out in connection with all character of work; but, by arranging the work, or pieces of work, differently various effects can be secured. For example, when hat-sweats are stitched or single pieces of material of any kind are overedged, as just described, the result is an ornate, substantial binding or finish for the edge of the work, as in Figs. 7 and 8; but, when two pieces of material are joined by first superposing and then overedging them, it will be found, upon spreading the pieces apart, that a beading, rib, or corded edge, is produced, the looper-thread lying over the two edges of the work, giving it a finish, and the needle-thread, on the face of the work, spanning the crease, or line of seam, in parallel lines. See Figs. 9, 10 and 11. If knit, or other elastic, goods are manipulated as above described, it will be found that the seam, or edging, as the case may be, is quite elastic as the work and that a strong and substantial seam, or edging, is produced; and, in the latter case, that the edges are so bound as to prevent fraying, thus producing, in effect, an artificial selvage. Then again, if the stitching is made in the

body of the work,—as by folding the same and producing an edge in the manner of the other manipulations described,—the result will be an ornamental rib or beading, resulting from the fold of the work, covered by the looper-thread, which may be silk and colored. This effect is found to be useful and desirable in connection with the backs of gloves, and may also be produced on the surface of other articles for ornamental purposes.

The various adjustments above described are for the following purposes: The standard, which supports the spreader-mechanism, is adjustable for the purpose of giving lateral clearance between the needle and spreader and between the looper and spreader; that is to say, after the spreader has been properly adjusted in its socket, if the same interferes with either the needle or the looper during its movements, such interference may be avoided by tilting the bracket in the manner described and to the extent necessary. And it may be found necessary to give to the supporting bracket or standard a considerable tilt in order to cause the spreader to properly coöperate with the needle and looper to carry the looper-loop over the edge of the work into the path of the needle. Hence, it is a part of my invention to provide a tiltable and tilted standard for the support of a spreader and in the claims I purpose covering the same broadly.

The longitudinal adjustment of the spreader-carrier is for the purpose of regulating and controlling the position of the shoulder of the spreader relatively to the needle; that is to say, by adjusting the position of the carrier in the direction of its length the projection of the spreader over the tongue on the throat-plate can be regulated, or in other words, the shoulder of the spreader may be advanced or retracted more or less over said tongue relatively to the path of reciprocation of the needle, for the purpose of more or less extending the looper-loop carried thereby, thus deepening or narrowing the bight of the edging or binding stitches. The tongue on the throat-plate, together with the edge-guide, would be necessarily adjusted correspondingly with this particular adjustment of the spreader.

The adjustment of the spreader in the socket of its carrier is for the purpose of positioning the point of the same relatively to the path of reciprocation of the needle and the point of the latter; that is to say, the spreader must be so adjusted that its point will not stand in the path of reciprocation of the needle, and also so that the body of the spreader will not obstruct the needle or cause the same to come into contact therewith so as to spring the same during its reciprocation; also the spreader must be adjusted vertically so that its point will be

certain to catch the looper-thread and properly carry the same over the edge of the work and into position for entrance of the needle. Therefore, this adjustment enables a very nice and fine positioning of the spreader so as to secure the proper coöperation of the latter with the needle.

From the above description it will be clear that I have produced a machine of a very useful character, simple and easy in its operation, and capable of producing many useful and ornate effects. It will also be clear that I have provided a mechanism which can be readily applied to any of the chain-stitch machines now in use, without any material alteration of the latter; and, in this aspect of my invention, the mechanism may be termed an attachment. This is an important feature of my invention and upon it I desire to lay considerable stress; but, at the same time, I wish it to be understood that the invention does not stand in the light of a mere attachment, for the several elements, entering into the combinations for producing the several functions set forth herein, may be so combined and grouped as to make a composite, light and easy running machine for the purposes stated.

It may be noted that the various connections between the pitmen 13 and *p*, and the depending portion of the lever *r*, and between the bracket 2, and the link 8, and between the latter and the carrier 9, may be ball, universal, or of any other character calculated to permit ease of movement.

Having thus described my invention, what I claim and desire to cover by Letters Patent is:

1. A sewing machine having in combination a needle and coöperating looper, means for actuating the same, and a spreader coöperating with the needle and looper, said spreader having a carrier, a stationary bracket pivotally supporting said carrier, means for adjusting said bracket so as to incline the spreader laterally to any desired degree relatively to the looper to position the spreader properly relatively to the looper and needle, and means for actuating said carrier.

2. A sewing machine having in combination a needle and looper, means for actuating the same, a spreader for coöperating with the needle and looper, means for adjusting the spreader bodily to any desired degree at an inclination relatively to the needle and looper so as to position the same properly for the purposes stated, and means for actuating said spreader.

3. A sewing machine having in combination a needle and looper, means for actuating the same, a spreader coöperating with said needle and looper, a spreader-carrier pivotally supporting said spreader, means for lat-

erally adjusting said spreader, and means for actuating said spreader-carrier including means for adjusting the same in the direction of its length, so as to regulate the extent to which the spreader may be projected over the cloth-plate and relatively to the path of movement of the needle.

4. A spreader mechanism for sewing machines comprising a stationary bracket, means for adjusting the bracket by tilting the same laterally, a carrier pivotally supported on said bracket, a spreader supported by said carrier, and means for actuating said carrier; whereby the spreader may be adjusted bodily laterally of its length so as to be supported in an oblique position relatively to the needle and looper.

5. In combination, a vertically reciprocating needle, a thread-carrying looper, a spreader, a throat-plate having a tongue, means for laterally adjusting the said tongue, and means for adjusting the projection of said spreader over said tongue.

6. In combination, a vertically reciprocating needle, a thread-carrying looper, a spreader, means for adjusting the same relatively to the path of reciprocation of the needle, a throat-plate carrying a tongue, means for laterally adjusting said tongue, means for adjusting the projection of said spreader over said tongue, and means for actuating the spreader, the looper and the needle.

7. A spreader mechanism having, in combination, a suitable support, a stationary bracket inclined relatively to said support, a link pivoted to said bracket, and extending vertically, a spreader-carrier extending hori-

zontally and pivoted to the link, a spreader supported by said carrier, and means for actuating the carrier.

8. A spreader mechanism having, in combination, a suitable support, a stationary bracket inclined relatively to said support, a link pivoted to said bracket and extending vertically, a spreader-carrier extending horizontally and pivoted between its ends to said link, a spreader supported by said carrier, and means for actuating said carrier.

9. A spreader mechanism having, in combination, a suitable support, a stationary bracket inclined relatively to said support, a link pivoted to said bracket and extending vertically, a spreader-carrier extending horizontally and pivoted between its ends to said link, a spreader supported in one end of said carrier, and means cooperating with the other end of said carrier for actuating the latter.

10. An overedging machine comprising a needle, a looper, and a spreader, means for actuating the same, a stationary support for the spreader, and means for adjusting said support laterally whereby the spreader may be adjusted bodily laterally and arranged at the proper inclination to the needle and looper to secure the proper cooperation of the parts for overedge stitching.

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

JOHN P. WEIS.

Witnesses:

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M. B. HOARE.