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No. 822,931. PATENTED JUNE 12, 1906.

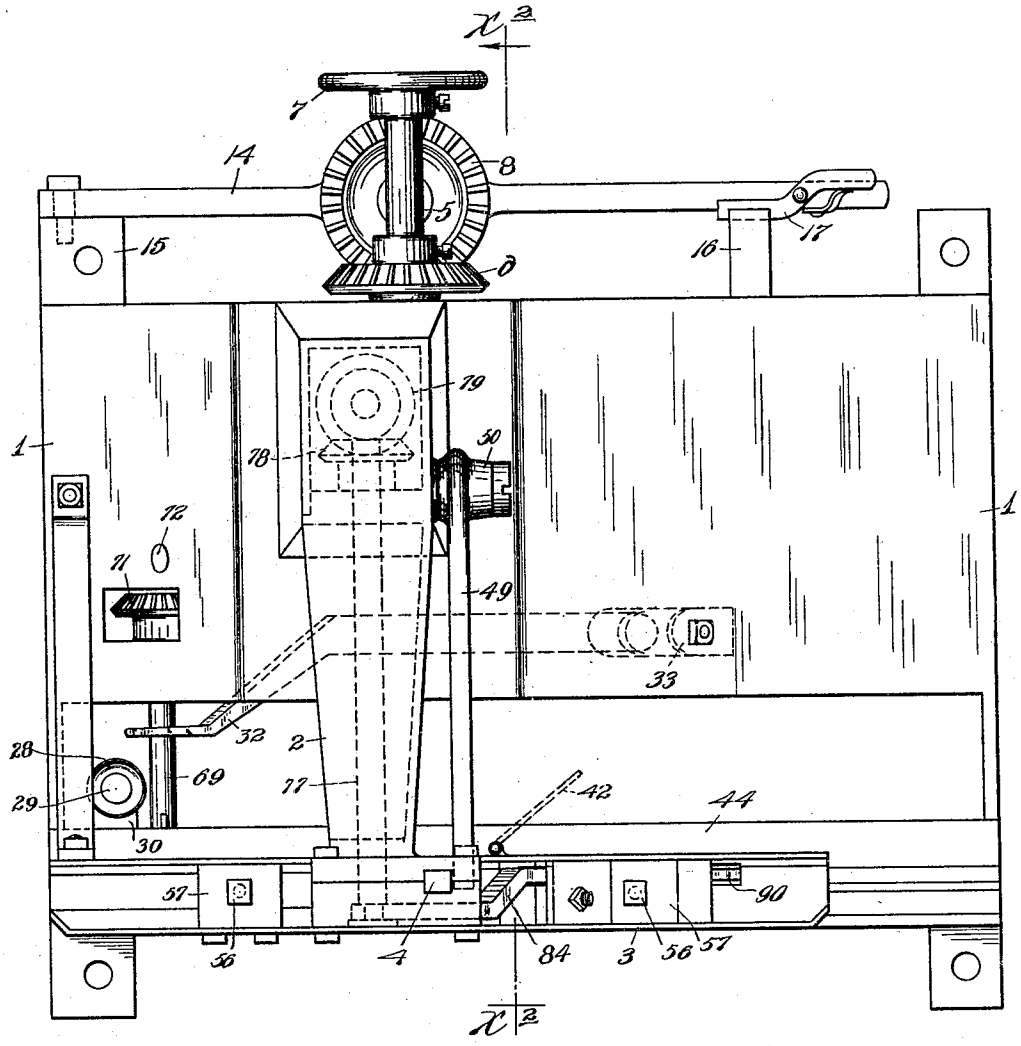
M. C. ELLISON.

FILLED SACK SEWING MACHINE.

APPLICATION FILED SEPT. 23, 1904.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
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Inventor.
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By his Attorneys.
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ANDREW, B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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Fig. 2.

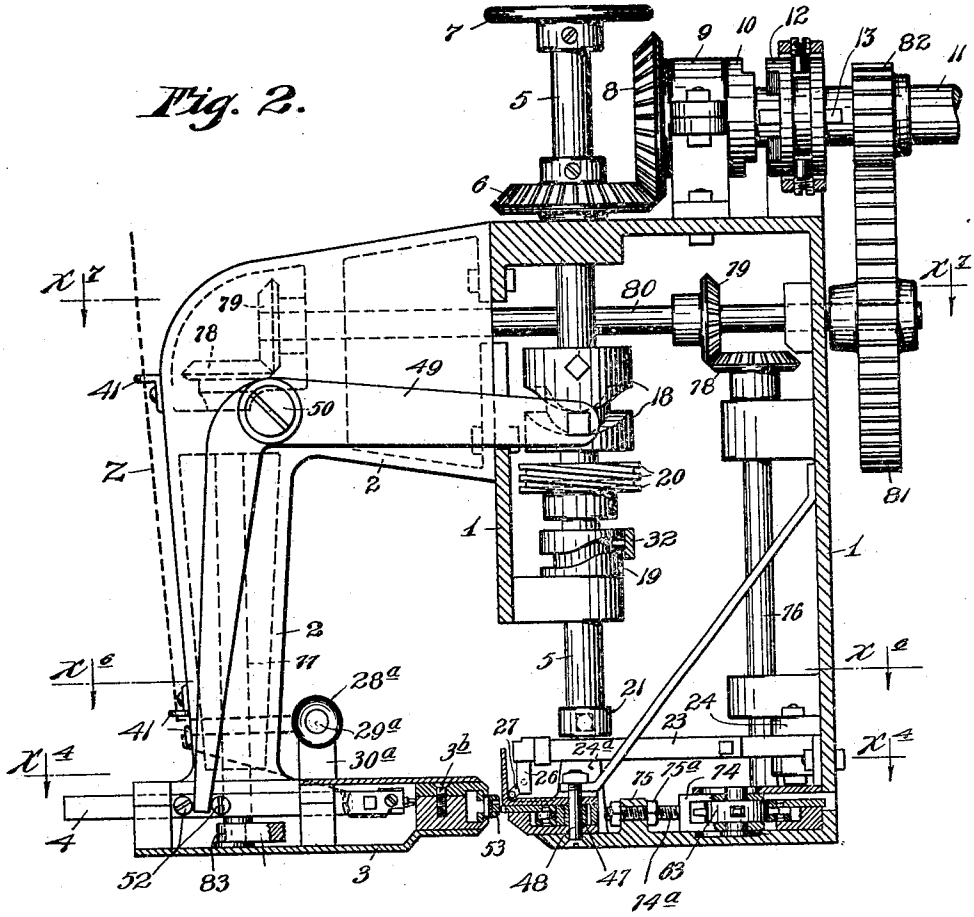
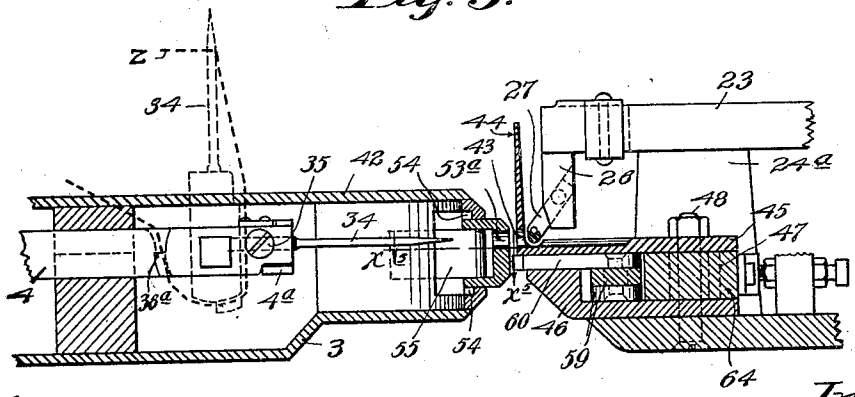


Fig. 3.



Witnesses.

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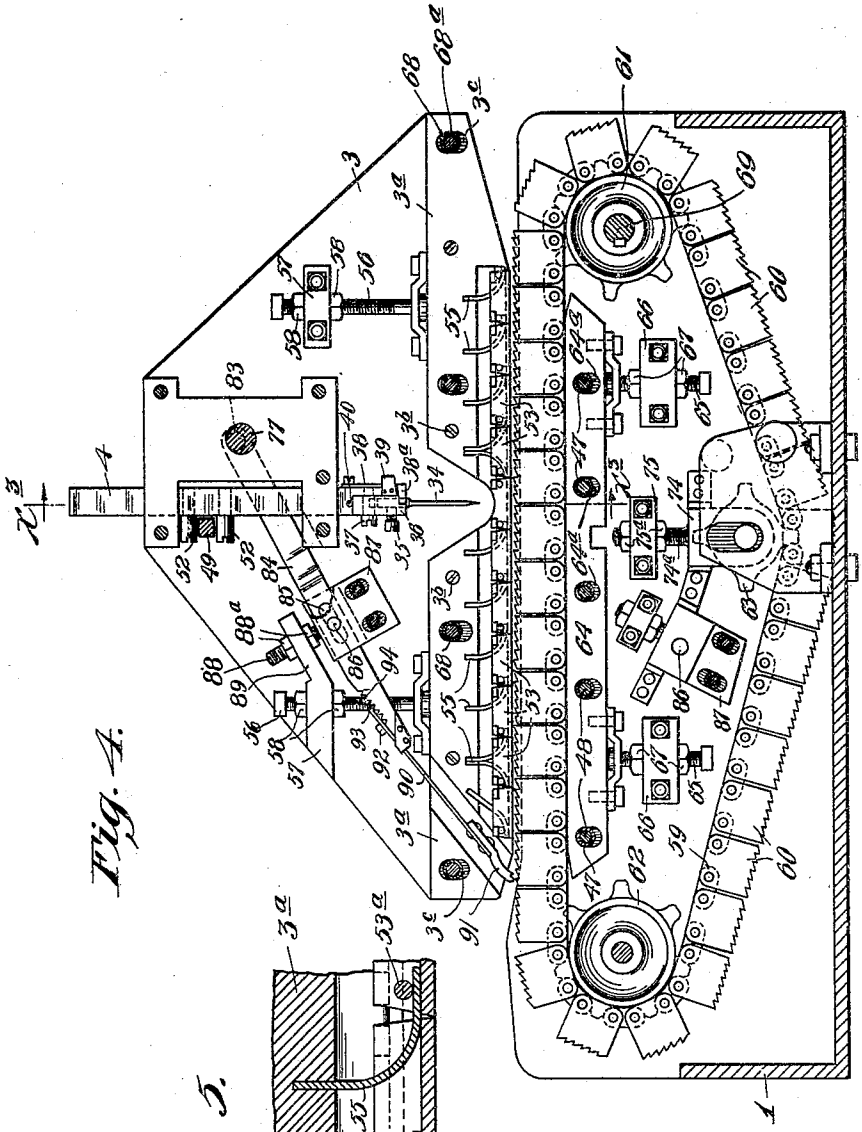


Fig. 4.

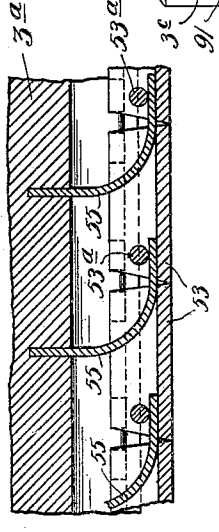


Fig. 5.

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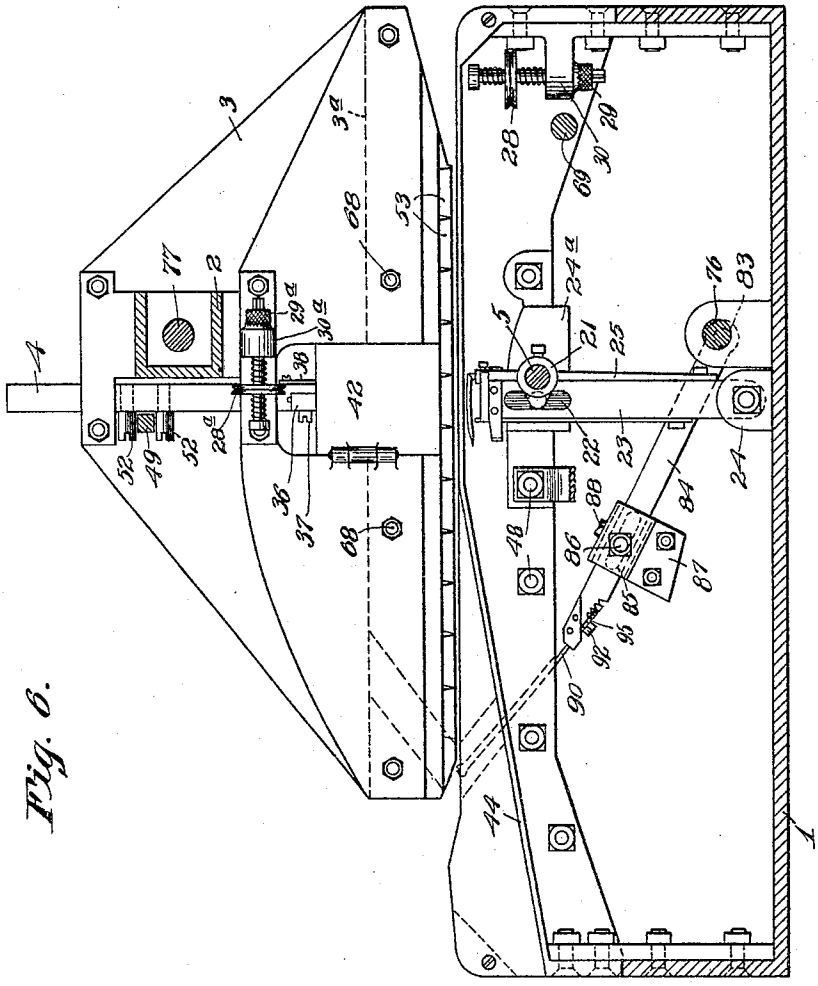


Fig. 6.

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5 SHEETS—SHEET 5.

Fig. 7.

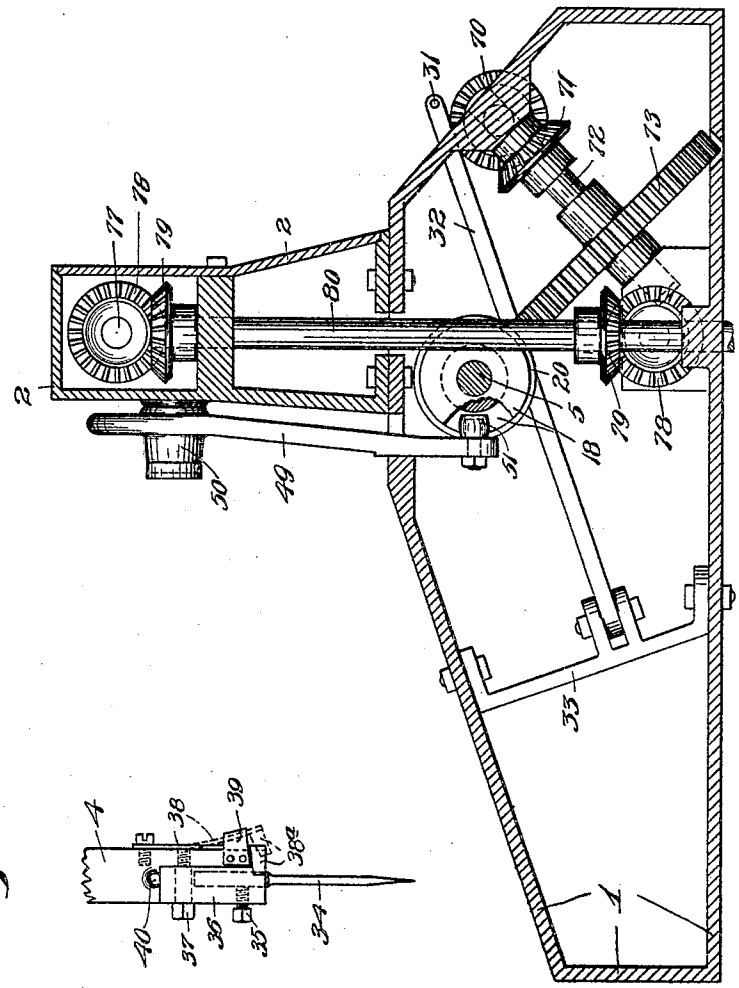


Fig. 8.

Witnesses.
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UNITED STATES PATENT OFFICE.

MILTON C. ELLISON, OF ST. PAUL, MINNESOTA.

FILLED-SACK-SEWING MACHINE.

No. 822,931. Specification of Letters Patent. Patented June 12, 1906.

Application filed September 23, 1904. Serial No. 225,594.

To all whom it may concern:

Be it known that I, MILTON C. ELLISON, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Filled-Sack-Sewing 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.

My present invention relates to what are known as "filled-sack-sewing machines," and has for its object to improve the same in the several particulars hereinafter noted.

The invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

This invention is designed especially as an improvement on the machine set forth and claimed in my Letters Patent No. 773,631, issued of date November 1, 1904, entitled "Filled-bag-sewing machine."

In the accompanying drawings, which illustrate my invention, like characters indicate like parts throughout the several views.

Figure 1 shows the complete sewing-machine in side elevation. Fig. 2 is a transverse vertical section on the line x^2 x^2 of Fig. 1. Fig. 3 is a detail in transverse vertical section approximately on the line x^3 x^3 of Fig. 4. Fig. 4 is a horizontal section on the line x^4 x^4 of Fig. 2. Fig. 5 is a detail approximately on the line x^5 x^5 of Fig. 3. Fig. 6 is a horizontal section on the line x^6 x^6 of Fig. 2, some parts being removed. Fig. 7 is a horizontal section taken approximately on the line x^7 x^7 of Fig. 2, some parts being broken away; and Fig. 8 is a detail in plan illustrating the manner in which the needle-holder is pivotally attached to the needle-operating plunger, some parts being broken away.

The frame of the machine is, as shown, made up of a box-like housing 1, which is rigidly supported in any suitable way and is provided at one side with an outwardly and downwardly turned hollow supporting-bracket 2, having at its depending end a transversely-elongated bearing-head 3, in which is mounted a reciprocating needle-carrying plunger 4. Mounted in suitable bearings within the frame or casing 1 is a vertically-disposed counter-shaft 5, which at its upwardly-projecting end above said casing is provided with a miter-gear 6 and a hand-wheel 7. The miter-gear 6 meshes with a miter-gear 8, the hub of which is loosely journaled in a bearing 9 on the upper portion of the frame 1 and is provided with a half-clutch 10. A driving-shaft 11 is journaled in the hub of the gear 8 and in other suitable bearings. (Not shown.) On the shaft 11 is a sliding half-clutch 12, which coöperates with the half-clutch 10, being held to rotate with said shaft by a key 13. The sliding half-clutch 12 is subject to a shipper-lever 14, which lever, as shown, is pivoted at one end to a lug 15 and is adapted to be locked at its free end to a lug 16 by means of a spring-latch 17. The two lugs 15 and 16 are shown as cast integral with the casing 1. The counter-shaft 5 carries two peripheral cams 18 and 19 and a worm 20, the purposes of which will presently appear. At its extreme lower end the shaft 5 is provided with a short throw-crank 21, the crank-pin of which works in a longitudinal slot 22 of an oscillating loop or bar 23, which loop or bar is, as shown, pivoted at one end to a lug 24 on the interior of the casing 1, as best shown in Figs. 1, 2, and 6. The loop or bar 23 oscillates in a horizontal plane and, as shown, carries a supplemental pivotally-attached bar 25, (more fully shown in my said Letters Patent No. 773,631, of date November 1, 1904,) which at its free end is provided with a depending foot 26, in which is secured the laterally bent shank of a looper 27. (See Figs. 2, 3, and 6.) The free end of the loop or bar 23 rests upon and vibrates over a rest-plate 24^a.

The thread which passes through the looper 27 on its way from the spool to said looper passes between the clamping-disks 28 of a tension device 29, which tension device is, as shown, supported by a lug 30 on the casing 1. This tension device may be of any suitable construction, but is shown and preferred in the form set forth and claimed in my United States Patent No. 772,140, of date October 11, 1904, entitled "Thread and twine tension device." Furthermore, the thread on its way to the looper 27 passes through an eye 31 in the free end of an oscillating slack-arm 32, which, as shown, is pivoted to a bearing 33 within the casing 1 and is subject to the cam 19, carried by the shaft 5.

The needle 34 is directly secured, as shown, by means of a set-screw 35 to a head 36, which in turn is pivoted at 37 to the forward end of the needle-carrying plunger 4, as best shown in Figs. 2, 3, 4, and 8. The needle head or holder 36 is adapted to be pivotally turned

upward into a vertical position, as shown by dotted lines in Fig. 3, thereby throwing the needle into a position in which it may be easily threaded. This feature is therefore important. The downward pivotal movement of the head 36 is limited to a straight line with the plunger 4 by coöperating stop-shoulders 36^a on the said head and plunger. The plunger 4 at its extreme forward end and at its lower portion is formed with a lip 4^a, which underlies the free end of the head 36, operates as a stop therefor, and prevents the thread from sagging or dropping down too low when the machine is in action, (see Figs. 2 and 3,) at which time the needle is turned down, as best shown in said Fig. 3. To lock the head or holder 36 in an operative position, a spring-latch 38 is secured at the forward end to the plunger 4 and at its free end is provided with a lock-lip 38^a, that normally overlies the free end of said head 36. The numeral 39 indicates a guard-clip on the forward end of the needle-plunger 4, which overlies the spring-latch 38. In the plunger 4, just at the rear of the rear end of the head 36, is a vertical thread-guiding perforation or passage 40, through which the thread is passed. (See Figs. 2, 3, and 8.)

The thread which passes through the eye of the needle 34 is indicated by the dotted lines marked *z*. This thread, as shown, passes through guide-eyes 41 on the supporting-bracket 2 and between the clamping-disks 28^a of a tension device 29^a, shown as supported by a lug 30^a on the head 3 of the bearing-bracket 2. This tension device is preferably of the same character as the one previously described and designated by the numerals 28 29. When the head 36 and the needle 34 are in operative positions, they are below the upper plate of the hollow bearing-head 3, and to permit the said parts to be moved pivotally upward a small hinged plate or trap-door 42 is provided in the upper wall of said bearing-head 3, just above the said needle and its holder. Under its outward movement the needle 34 works through a perforation 43 of a work-guiding flange 44, which flange, as shown, is cast integral with a plate 45. The plate 45 is spaced apart from a lower plate 46 by spacing-thimbles 47, and the said two plates are rigidly connected to and supported from the lower plate of the casing 1 by nutted bolts 48, passed through said three plates and said thimbles. (See Figs. 2, 3, and 6.) The needle-plunger 4 receives its reciprocating movements through a bell-crank lever 49, the elbow of which is pivoted at 50 to the bearing-bracket 2 and one arm of which is provided with a roller-equipped stud 51, that works in the groove of the cam 18. The depending end of the bell-crank 49, as shown, works between a pair of studs 52 on the needle-plunger 4.

The gathered ends of the filled sacks are fed to the stitching mechanism by a feed-chain, presently to be described, and they are caused to travel through a straight and very narrow guide-channel formed between the guide flange or plate 44 and an opposing yielding presser-bar made up of a plurality of sections or blocks 53, located with their ends in close contact and mounted in suitable seats formed in a bar 3^a, which bar is mounted in the inner edge of the hollow bearing-head 3. (See particularly Figs. 2, 3, 4, and 5.) These sections 53 are formed with stop-lugs 54, (see Figs 3 and 4,) which engage with the bar 3^a to limit their outward movements. The bar 3^a is, as shown, formed in two parts, said parts being rigidly united by screws 3^b. The sections 53 are yieldingly pressed outward by curved springs 55, which are seated at one end in the bar 3^a and at their outer ends press against the said sections and overlap the joints between the same, as best shown in Fig. 5. Each section 53 is provided with a pin 53^a, so positioned as to be engaged by the free end of the spring 55. As each section of the chain is pressed inward against the spring by the travel of the sack the free end of said spring will engage the pin in the next adjacent section, thereby moving said section inward, so that the chain will always present a smooth surface to the sack. The bar 3^a is adapted to be adjusted transversely of the guide-channel formed between the guide-flange 44 and the yielding bar made up of the sections 53 under the action of screws 56, which work through and are clamped to bearings 57 on the lower plate of the bearing-head 3 by means of lock-nuts 58. At its central portion the bar 3^a is cut away to afford clearance for the needle 34 and the end of the needle-plunger 4, as best shown in Fig. 4, and one of the sections 53 is perforated at 53^a (see Fig. 3) to afford a passage for the needle 34.

The gathered ends of the filled sack are fed to the stitching mechanism and through the shallow guide-channel already noted by means of endless feed-chains 59, to the links of which are secured serrated feed-clips 60. This chain runs over three sprockets 61, 62, and 63, and it is passed between the plates 45 and 46, heretofore noted, as clearly shown in Figs. 2 and 3. The feed-clips project at their serrated edges into the guide-channel formed between the guide-flange 44 and the yielding sectional presser-bar 53, as best shown in Figs. 3 and 4. That portion of the chain which is running from the sprocket 62 to the sprocket 61 bears at its back against a guide-bar 64, which works between the plates 45 and 46 and is adapted to be adjusted transversely of the chain by screws 65, swiveled thereto and working through bearing-blocks 66 on the lower plate of the casing 1 and locked to said blocks by nuts 67. Said bar 64 is provided with transverse slots 64^a, through

which are passed the spacing-thimbles 47, above described. The bearing-bar 3^a is also provided with transverse slots 3^c, through which are passed spacing-thimbles 68. Short nutted bolts 68^a are passed through the thimbles 68 and through the upper and lower plates of the bearing-head 3.

The sprocket 61, which drives the feed-chain 59, is carried by a short vertical shaft 69, which is mounted in suitable bearings within the casing 1 and is provided with a miter-gear 70, that meshes with a miter-gear 71 of a short horizontally-disposed shaft 72, (see Figs. 4 and 7,) which shaft has a large worm-gear 73, that meshes with the worm 20 on the vertical shaft 5. In this way motion is imparted from the driving-shaft 11 to the vertical shaft 5 and from thence through the connections just described to the feed-chain 59. The sprocket 62 is loosely journaled on the lower plate of the casing 1. The sprocket 63 is loosely journaled in an adjustable bearing 74, which, as shown, has a threaded stem 74^a, (see Figs. 2 and 4,) that works through a fixed bearing 75 on the base-flange of the casing 1 and is locked thereto by nuts 75^a. By adjustments of the sprocket 63 the slack of the chain 59 may be taken up.

The gathering device, which is very similar to that set forth and claimed in my said Letters Patent No. 773,631, of date November 1, 1904, but which involves novel features of improvement, is constructed as follows: A pair of vertically-disposed shafts 76 and 77 are mounted the former in internal bearings on the casing 1 and the latter in bearings within the vertical portion of the bearing-bracket 2. At their upper ends these shafts are provided with miter-gears 78, (see Figs. 2 and 7,) that mesh with miter-gears 79 on a horizontal counter-shaft 80, mounted in suitable bearings on the casing 1 and bearing-bracket 2. One end of the shaft 80 projects through the casing 1 and is provided with spur-gear 81, that meshes with a spur-pinion 82, carried by the driving-shaft 11. At their extreme lower ends the vertical shafts 76 and 77 are provided with short-throw eccentrics 83. (See Figs. 2, 4, and 6.) These eccentrics operate on the ends of so-called "gathering-pawls" 84, which pawls at their intermediate portions are slotted at 85 and are fulcrumed on pins 86, carried by fulcrum-blocks 87, which fulcrum-blocks, as shown, have threaded stems 88, that work through bearings 89 on the lower flange of the bearing-head 3 and are clamped thereto by nuts 88^a. The gathering-pawls 84 are provided with supplemental spring-extensions 90, which at their free ends carry gathering-heads 91. The spring-sections 90 are adjustably secured to the bodies of the pawls 84 by set-screws 92, and each pawl is provided with a tooth 93, that engages with teeth or serrations 94 on the corresponding pawl 84. The set-screws 92 work through slots 95 in the said spring-sections 90 and are screwed into the ends of the pawls 84. As is evident, under the rotary movements of the eccentrics 83 rotary movements will be imparted to the ends of the gathering-heads 91, and the two heads will act simultaneously to gather the mouth of the sack and to feed the same into the guide-channel between the guide-flange 44 and yielding bar 53, where the same will be taken up and acted upon by the serrated clips of the feed-chain. Under the above gathering action the yielding sections 90 of the gathering-pawls yieldingly press the engaged portion of the sack, the longitudinal adjustments of the spring-sections 91 on the pawl-bodies 84. The pawl-heads 91 may be set for action on the work at the proper points, and by shifting the fulcrum-blocks 87 the arc of operative movement of the said heads 91 may be changed so as to vary the amount of gather which will be given to the mouth of the sack. When the gathered portion of the sack is fed through the guide-channel by the serrated clips of the feed-chain, the sections of the yielding presser-bar 53 will yield to adapt themselves to the varying thickness of the gathered mouth of the sack, and it is important to note that this yielding action does not move laterally the feed-chain, and hence does not decrease or vary the "bite" which the serrated edges of the clips normally have upon the gathered portion of the sack. Otherwise stated, the serrated edges of the feed-clips always have a maximum bite on the sack, which is due to the fact that the presser-bar instead of the feed-chain is mounted to yield. The pressure under which the yielding sectional presser-bar 53 will engage the sack may be varied by adjustments of the bearing-bar 3^a, and the normal projection of the serrated edges of the feed-clips of the feed-chain into the guide-channel may be varied by adjustments of the bar 64.

It will of course be understood that the mechanism above described is capable of many modifications within the scope of my invention as herein set forth and claimed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a machine of the character described, the combination with a guide-channel for the work, said channel having at one side a yielding flexible bearing-surface, of an endless feed connection having serrated feed clips or parts that press the work against said yielding bearing-surface and feed the same through said guide-channel an unyielding guide-bar operating on said chain to hold the clips against the work in said guide-channels, and stitch-forming mechanism for action on the work while in said guide-channel, substantially as described.

2. In a machine of the character described, the combination with stitch-forming mechanism, of a guide-channel leading thereto, said channel having at one side a yielding sectional bearing-surface, a supporting-bar to which the sections of said yielding bearing-surfaces are yieldingly connected, said supporting-bar being adjustable transversely of said guide-channel, an endless chain having serrated clips projecting into said guide-channel for engagement with the work, sprocket-wheels for guiding and driving said chain, and a relatively fixed guide-bar extending parallel to said yielding bearing-surface, and hold the operative clips to their work, substantially as described.

3. In a machine of the character described, the combination with stitch-forming mechanism, and a guide-channel leading thereto, of an endless chain having serrated feed-clips projecting into said guide-channel, and a yielding flexible presser-bar coöperating with the serrated edges of said feed-clips, to press the work, the said bar comprising a plurality of sections 53 placed end to end and having limited movements into said guide-channel, and the spring-sections 55 yieldingly connecting said sections 53 to a fixed support, and overlapping the joints between the same, substantially as described.

4. In a machine of the character described, the combination with stitching mechanism and feeding mechanism, involving an endless chain having serrated clips, of a gathering device comprising a pair of pawls, adjustably and slidably fulcrumed at their intermediate portions and provided with longitudinally-adjustable spring free end sections, and a pair of simultaneously-driven eccentrics operating on said pawls to simultaneously vibrate the same, substantially as described.

5. In a machine of the character described the combination with stitching mechanism and feeding mechanism a gathering device, comprising a pair of pawls adjustably and slidably fulcrumed at their intermediate portions, and a pair of simultaneously-driven eccentrics operating on the ends of said pawls to vibrate the same, substantially as described.

6. In a machine of the character described the combination with an endless chain having serrated feed-clips, of a presser-bar coöperating with the serrated edges of said clips to press the work as it is fed forward, which presser-bar is formed by a plurality of spring-mounted sections, placed end to end, an unyielding guide-bar extended parallel with said presser-bar, against which the said chain runs, a stitch-forming mechanism acting on the work while subject to said clips and presser-bar, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MILTON C. ELLISON.

Witnesses:

ROBERT C. MABEY,

H. D. KILGORE.