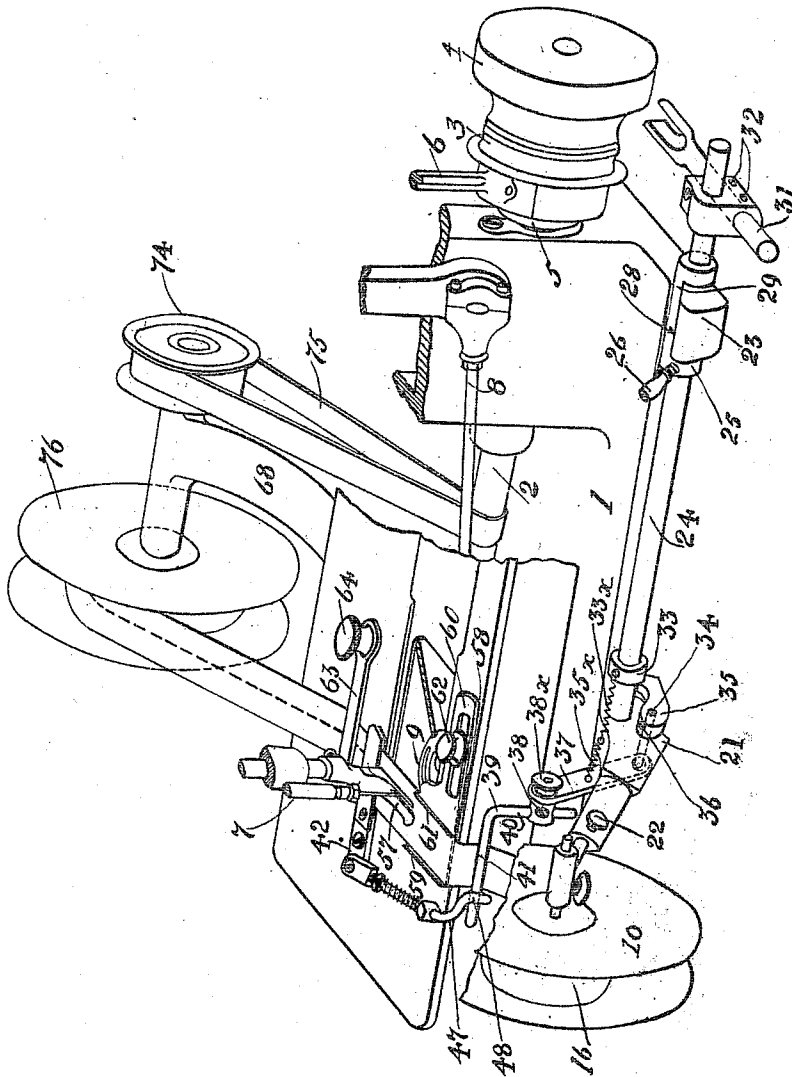


J. P. WEIS.
MACHINE FOR MAKING EDGINGS.
APPLICATION FILED APR. 1, 1903.

1,018,796.

Patented Feb. 27, 1912.
3 SHEETS—SHEET 1.

Fig 1.



WITNESSES:

M. B. Hoare
W. B. Hoare

INVENTOR

John P. Weis

BY

Chas. H. Chapman
ATTORNEY

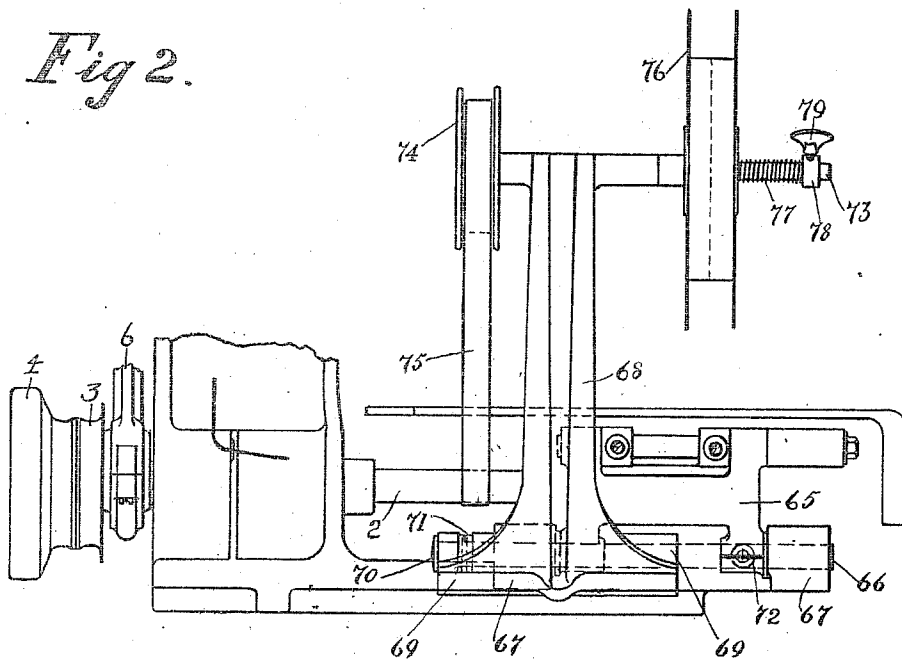
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3 SHEETS—SHEET 2.

Fig 2.



WITNESSES:

W. B. Hoare
W. B. Hoare

INVENTOR:

John P. Weis
John P. Weis

BY

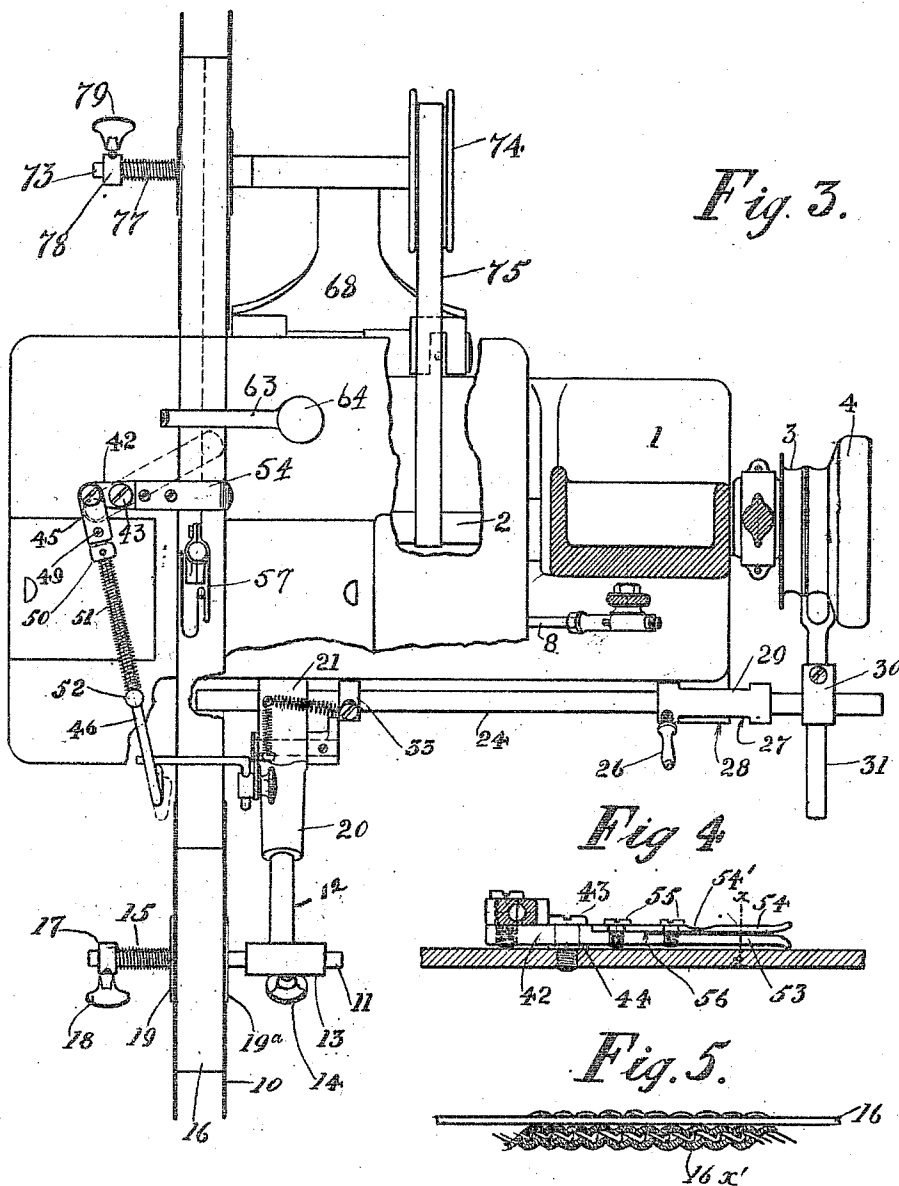
Chas. M. C. Chapman
Chas. M. C. Chapman
ATTORNEY

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3 SHEETS—SHEET 3.



WITNESSES:
W. B. Coase.

INVENTOR:
John P. Weis.
BY
Chas. M. C. Chapman.
ATTORNEY

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.

MACHINE FOR MAKING EDGINGS.

1,018,796.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed April 1, 1903. Serial No. 150,534.

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 Machines for Making Edgings, of which the following is a description.

This invention relates to machines for producing edgings suitable for binding or trimming the unfinished edges of garments and other fabrics.

An object of this invention is to provide means whereby the edging-material may have applied thereto the edging-stitch and be simultaneously wound upon a reel.

Another object of this invention is to provide means whereby the machine may be instantly stopped when the thread breaks, or for any other reason the machine fails to produce the work intended.

Another object of my invention is to provide means, controlled by the work itself, to stop the machine when said work is not being properly performed. And another object of my invention is to provide means whereby a strip of material may be automatically handled in passing to and from the machine and properly taken care of without the aid of the operator.

With these objects in view, and others which will hereafter appear, this invention consists in the elements, combinations and mechanism hereinafter described and claimed.

In the drawings: Figure 1 is a perspective view of so much of a sewing machine as is deemed necessary to illustrate the application of the invention, and showing said invention applied thereto, parts being broken away in order to clearly illustrate certain important parts of the invention; Fig. 2 is a rear elevation of a portion of the bed and cloth plates of a sewing machine, and showing the receiving-reel and its actuating mechanism; Fig. 3 is a top plan view of the parts shown in Fig. 1; Fig. 4 is a detail of a portion of the tripping-mechanism, showing the manner in which the same is carried by the cloth-plate of the machine, which plate is shown in section; and Fig. 5 is an edge view of a portion of the edging-material or strip with the stitch applied thereto, such parts being greatly magnified in order to give a clear understanding of the invention.

Primarily, it should be understood that the article, produced by this machine, is used as an edge binding for garments and fabrics, with a view to covering the raw or unfinished edges thereof and also with a view to producing an ornate finish. To this end a strip of tape, or braid, or other narrow material of the character desired, is usually held on a reel and located in some convenient position upon a stand or table which supports the sewing-machine, and after being passed through the machine is usually allowed to fall in mass into a receptacle, on to a stand, or otherwise pile up in rear of the machine. This results in the mass becoming entangled, mussed, and very much impaired for commercial purposes. Moreover, the character of the work has rendered it difficult to wind the same upon a reel automatically because of the heavy rib produced thereon along the center, or body thereof, such rib, when the binding is applied, usually lying along the edge of the garment or fabric. My invention, now to be described, successfully takes care of the material before, during and after the stitching operation, without any attention from the operator, as will be hereinafter explained.

In the figures, 1, indicates the bed-plate; 2, the driving-shaft suitably journaled thereon; 3, the loose driving-pulley carried by the driving-shaft 2; and 4, the fixed driving-pulley also carried by said shaft. An eccentric 5, actuating an eccentric strap, gives motion to the needle-bar 7, through the usual train of mechanism. The looper-rod 8, derives its motion, as is usual in this class of machines, and imparts to the looper 9, its necessary movement to cooperate with the needle. These parts have not been illustrated, however, because not essential to the operation of my invention, and may be of any usual form.

The delivery-reel is indicated by 10, and may be of any suitable character, consisting generally of two large separable disks arranged on opposite sides of the spool, roll, or mass of tape, or other binding material. Said reel is supported upon the spindle 11, which passes through central apertures in the disks of the reel, and is supported in a T-shaped bracket 12, in the transverse tubular portion 13, of which said spindle is longitudinally adjustable by means of a set-screw 14. This adjustment is for the pur-

pose of properly and accurately positioning the reel with reference to the line of feed of the tape through the machine. On the outer end of the spindle 11, a spring 15, is coiled, which bears against the adjacent disk of the reel 10, and creates pressure thereon to provide the necessary tension or friction upon the tape 16. Pressure of the spring 15, may be regulated by the collar 17, held in place by the thumb-screw 18, tapped through said collar and engaging the spindle 11. This means combined with the collar 19 and 19^a, on opposite sides of the reel 10, the collar 19^a being suitably fixed to spindle 11, holds the latter in an upright position and prevents wabbling of the same on the spindle. The bracket 12, slides longitudinally in the socket 20, of a bracket-piece 21, fixed to the bed-plate 1, of the machine, said bracket being adjustable in said socket by means of a set-screw 22. This adjustment also provides means contributing to the proper positioning of the delivery-reel relatively to the line of feed of the tape through the machine.

23, is a bracket fixed to the bed-plate of the machine, and in said bracket 23, and bracket-piece 21, the rod 24, is loosely journaled so as to slide longitudinally. The rod 24, has fixed thereto an adjustable collar 25, by means of a set-screw 26, provided with an elongated manipulating handle. As shown, the collar is grooved at 27, so as to provide the end abutments which engage the opposite ends of the bracket 23, the latter being also extended at 28, providing an abutment against which the bridge-piece 29, of the collar 25, may engage to prevent axial movement of the rod 24. At its inner end the rod 24, is provided with a clamp-collar 30, through the bottom of which is extended an aperture in which freely slides a belt shifting arm 31, held or set in proper position by means of the screws 32. The construction shown permits the belt-shifting arm to be properly positioned with reference to the pulleys so as to engage the driving belt and shift the same from the one to the other of said pulleys. The outer end of said rod 24, slides freely in the bracket 21, and is provided, between said bracket 21, and the bracket 23, but nearer the former, with an adjustable collar 33. The bracket 21, has a short shaft 34, freely journaled therein so as to rock, and the inner end of said shaft is provided with a cam-finger 35, adjustable upon said shaft by means of a set-screw 36, which holds said finger in proper operative position, as hereinafter described. The outer end of the rock-shaft 34, has fixed thereto an arm 37, to the upper end of which is secured a socket-piece 38, in which is adjustable an angular arm 39. The adjustment is secured by any suitable means, such as a set-screw passing through the socket-piece 38, and engaging the stem 40, of the

arm 39, while the socket-piece 38, is held in any suitable position by means of the binding screw 38^x, which drives the body of the socket-piece 38, against the arm 37, and securely clamps the same to said arm. The extension 41 of the arm 39, is positioned so as to extend substantially parallel with the front edge of the cloth-plate, slightly below the latter, and between the same and the reel 10. This places the extension 41, in position to cause the tape, which passes thereunder from the reel 10, to describe two angles, one at the extension and the other at the cloth-plate, in passing to the stitch-forming mechanism.

On the cloth-plate of the machine,—Figs. 1, 3 and 4,—is supported a lever 42, the pivot thereof being indicated by 43, which extends through the lever, screws into the cloth-plate, and is provided between said plate and the lever with a collar or washer 44, on which the lever rests, turns, and by which it is prevented from engaging the cloth-plate. The rear end of the lever 42, has pivotally connected thereto, the socket-piece 45, in the socket of which is adjustably connected a rod 46, having its front end suitably extended beyond the cloth-plate and then bent down below the latter at 47, and then backwardly at 48, toward the extension 41, and into position to engage the same as hereinafter described. The rod 46, is adjustable in the socket 45, by means of a set-screw 49, and said rod is provided beyond the socket with an adjustable collar 50, which engages and regulates the pressure of a spring 51, coiled about said rod and having its other end held by a fixed stop 52, secured to the cloth-plate and through which said rod slides. The free end of the lever 42, is extended at 53, to provide the lower jaw of the tape or strip guide, the upper jaw of which is formed of a spring-plate 54, adjustably secured to the lower jaw 53, by means of the set-screws 55. The distance between the two jaws 53 and 54, may be fixed and regulated in any suitable manner, as by providing a shoulder 56, on the lower jaw, or by inserting washers between the two jaws encircling the adjusting screws. As before stated the upper jaw 54, is a spring and is sufficiently light to render it sensitive to variations in the thickness of the work passing under the same; that is to say, after the jaw 54, has been set to allow a given thickness of work to pass thereunder, and between it and the lower jaw 53, with the requisite amount of friction, or tension, should the thickness of the work increase for any reason, the spring-jaw 54, would yield vertically and not impede the travel or feed of the work nor objectionably affect the guide. The jaw 54, for the purpose, may be made of a light, steel spring, or may be made thin at the point 54', so

as to provide the requisite amount of elasticity, and allow the jaw to yield from a point beyond the adjacent adjusting-screw 55. The rib of the work passes through the guide along approximately the line $x-x$ Fig. 4.

The cloth-plate of the machine, between its front edge and the presser-foot 57, is provided with an adjustable strip-guide, or gage, consisting of the lower plate 58, having at one end a vertical flange 59, and an elongated slot at its other end; and a second plate 60, also provided with an elongated slot, and at its other end with a vertical flange 61, said flanges 59, and 61, providing the guides between which the strip is carried to the stitching mechanism, and also providing adjustable means to accommodate the different widths of strips or braid. The upper plate 60, is adjustable on the lower plate 58, and the two are held in relative position and securely fastened to the cloth-plate by means of the clamping-screw 62, passing through the slots of the said plates 60, and 58, and into the cloth-plate. In rear of the presser-foot and also in rear of the guide 53-54 is provided a holding-plate 63, suitably fixed to the cloth-plate by clamping-screw 64, and extending across the path of travel of the tape 16, and forming between it and the cloth-plate a passage for said tape 16. Said plate is thus located for the purpose of leading and holding the tape in a plane parallel with the surface of the cloth-plate after leaving the stitching position and after passing through the guide 53-54, and also for relieving the stitching mechanism of direct strain resulting from the weight of the reel 76 and its supporting parts; that is to say, the tape, after leaving the stitching position, passes under the holding-plate 63, which keeps the tape down to the surface of the work-plate and removes the lifting strain upon the heel of the presser-foot and drag upon the needle, as well as upon the guide 53-54. This is important, since, if the reel-frame 68 and reel 76 were to impose their weight and drag directly upon the needle and foot, substantially at the stitching position, the tendency would be for the work to drag upon the needle and strain and break the same, as well as lift the foot from the work and release its hold on the work. As will herein-after appear, the guide 53-54 is in effect a feeler which engages the stitch, or rib made by the stitch, upon the surface of the strip or braid, and this feeler is so adjusted as to become very sensible to the presence or absence of said stitch, or rib, upon the tape or braid. For the above reason, said guide will be hereinafter referred to as a "feeler". Secured to the rear of the bed-plate 1, of the machine, is the usual feed-rocking frame 65, the shaft 66, of which is jour-

naled in the bracket 67. Loosely journaled upon said shaft 66, is the tape-receiving reel-frame 68, by means of the tubular sleeves or bushings 69. One end of the shaft 66, is headed at 70, and is provided with a fixed collar 71, located in a split in the outer bearing 69. This provides a means by which the shaft 66, when moved or adjusted longitudinally in its bearings will carry with it the frame 68 and thus properly position the receiving-reel relatively to the line of travel of the tape. The shaft 66, may be securely held in place by means of the thumb-screw 72. In the upper end of the frame 68, a spindle 73, is journaled, carrying at one end a fixed belt pulley 74, around which runs a belt 75, passing around and frictionally engaging the driving shaft 2. At its other end the spindle 73, is provided with the receiving-reel 76, substantially identical with the said reel 10, and said spindle is provided with a spring 77, a collar 78, and a thumb-screw 79, substantially identical with, and for the same purpose as, the similar elements which cooperate with the reel 10.

Attention is directed to Fig. 1 of the drawings wherein the position of the frame 68, is clearly portrayed, its weight and its pivotal bearing causing the same to have a tendency to fall away from the cloth-plate of the machine and create tension on the driving band 75, and friction of the latter on the driving-shaft 2. This position of the frame also causes the reel 76, to take up the slack between itself and the holding-plate 63.

It will be observed that the belt-shifting rod 24, is normally held in an inoperative position by means of the spring 33*, secured to the collar 33, and the bracket 21, viz., with the belt running on the loose pulley; and that the cam finger 35, is normally held from contact with the collar 33, by means of the spring 35*, connected to the arm 37, and to the bracket 21, this position of the arm 37, also holding the angular arm 39, out of contact with the tripping-mechanism which is actuated by the feeler.

The operation of my invention is as follows: It should be primarily understood that the stitch-forming mechanism produces a line of stitching upon both sides of the work, that on top being of ordinary, straight-ahead stitches, and that on the bottom being in the nature of a rib, such as produced by a single or a double chain-stitch. Such a stitch is diagrammatically illustrated in Fig. 5, merely to portray graphically the difference in thickness between the tape 16, before the stitch 16*, is applied and after the same has been applied. This difference is the feature upon which the tripping of the stopping mechanism depends, and the absence of the stitching is

what causes the stop mechanism to be tripped. In Fig. 3 the solid lines indicate the parts in tripped position, while the dotted lines represent the parts as they would appear during the operation of the machine. The delivery-reel is placed upon its spindle in proper position and the requisite amount of tension is applied thereto to allow the strip or braid 16, to pass to the stitch-forming mechanism under the desired tension. Said braid 16, passes from the reel under the extension 41, of the arm 39, over the edge of the cloth-plate, between the strip-guides to the stitch-forming mechanism, thence through the jaws of the feeler, under the arm 63, and on to the receiving reel 76. The machine is started by pushing the rod 24, to the right and causing the belt to be shifted from the loose to the fast pulley. This operation distends the spring 33*. Then the arm 37, is pressed outwardly toward the operator causing the finger 35, to engage the side of the collar 33, and hold the rod 34 in its operative position, with the spring 33* distended. Thus moving the arm 37, distends the spring 35*, the strength of which, however, is less than that of the spring 33*. The strength of the spring 33*, is such that the finger 35, will be thus held in engagement with the collar notwithstanding the tension of the spring 35*, the tension of the tape 16, and the tension of the spring 51, on the tripping-rod 46. The machine is now operating and the friction of its driving-shaft 2, drives the band 75, which rotates the pulley 74, and turns the receiving-reel 76, thus winding the tape 16, on the latter. The instant the stitching, applied to the tape 16, engages the jaws of the feeler, the latter is caused to move to substantially the dotted line position shown in Fig. 3, the friction of the line of stitching, or the rib thereof, being sufficient to carry said feeler to said dotted line position and constantly maintain the same in such position during the application of the stitch and so long as such stitch is present on the tape. This operation compresses the spring 51, and forces the rod 46, away from the extension 41, of the angular arm 39. If the thread of the machine should break, or for any reason the stitch should not be applied to the tape,—as by the skipping of stitches,—the absence of the stitch would be immediately detected by the feeler and the latter would instantly assume the solid line position of Fig. 3, by reason of the expansion of the spring 51, and which would cause the end 48, of the rod 46, to forcibly engage the extension 41, of the arm 39, and remove the finger 35, from engagement with the collar 33, and allow the spring 33*, to draw the rod 24, longitudinally in its bearings and carry the belt-shifting arm 31, across the pulleys and carry the driving-belt from the fixed to the loose pulley, thus

stopping the machine. This same belt-shifting operation would be performed in the event of the tape 16, being exhausted from the reel 10, because the parts are so sensitive and the adjustments and tensions are so nicely regulated that the moment the tape leaves the reel, when exhausted, the difference in the tension on the arm 39, is materially felt, and the spring 35*, will instantly free the finger 35, from engagement with the side of the collar 33, thus allowing the driving belt to be shifted from the fixed to the loose pulley as previously stated.

It will be obvious that as the tape is wound upon the reel 76, the tension on the tape will gradually increase by reason of the bulk of material on the reel. This would ordinarily be objectionable because of the constant driving of the reel by the main-shaft 2; but, this objection is overcome by reason of the particular driving connection between the shaft 2, and the driving pulley 74, shown and described. As the material on the reel 76, increases in bulk or diameter, the tension on the tape is naturally increased, resulting in drawing the reel 76, toward the machine and the stitching point, this being permitted by the loose, pivotal connection of the frame 68, on the bed-plate of the machine. Being thus drawn toward the machine, the driving-band 75, is instantly loosened, decreasing thereby the driving power of the shaft 2, upon said band 75, and also decreasing the speed with which the tape is being wound upon the reel. Hence, as the tension increases on the tape, during the process of winding the same upon the reel 76, the speed with which the reel 76, is driven is decreased, the one counterbalancing the other, or compensating each other, and providing a practically automatic reeling device, requiring no attention from the operator. The same change in tension is caused by a variation in the length of feed; that is to say, if, during the operation of the machine, the feed should be changed,—as from sixteen stitches to eight stitches to the inch,—the tension on the reel would be instantly decreased and the speed of the reel increased. This will be clear when it is considered that, with eight stitches to the inch, the feed is rapid, and material is supplied to the reel more rapidly, decreasing tension, and allowing the reel to fall back from the cloth-plate and create greater friction between the driving-shaft and the driving band. A reverse action takes place when the number of stitches to the inch is increased. Hence, in all cases, the speed with which the receiving-reel is driven is commensurate with, and in proportion to, the tension on the work, and the variation is automatic.

It will thus be seen that I have provided

a machine for producing edgings which is absolutely automatic in its operation and requires no attention, after once being started, from the operator. It will also be seen that I have provided a mechanism whereby the machine may be automatically stopped upon occurrence of either of two events, viz., the absence of the stitching on the tape or the exhaustion of the latter from the delivery reel. When the tape is exhausted from the delivery-reel, and the machine is stopped, the loose end will hang or dangle from the edge of the cloth-plate, which will be of sufficient length for the operator to take hold of and attach the end of another reel of tape preparatory to starting the same through the machine. Obviously, when this has been done the tape is loose between the reel and the stitching-point, and the machine is started again by merely placing the finger upon the tape-reel and winding the same back upon the reel until the same is drawn taut, the extension 41, being drawn back so as to depress the arm 37, and lift the finger 35, into proper position for engagement with the side of the collar 33, as previously explained. Instantly the machine is started and the stitching engages the feeler, the latter will be carried into the dotted line position of Fig. 3, as previously described. When the connected ends of the tape have reached a position between the arm 63, and the reel 76, said ends may be disconnected, the full reel removed from its spindle, an empty reel substituted, and the end of the new tape properly secured to the new reel, which tape is immediately wound upon the receiving reel and the operation of the machine continues as before.

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

1. In combination, a stitch-forming mechanism for producing a line of stitches upon the work; a stop-mechanism; and means cooperating with the work for actuating the stop-mechanism in the event of a cessation of the stitches upon the work during the passage of the latter through the machine.

2. In combination, a stitch-forming mechanism for depositing upon a foundation an ornamental rib; a stop-mechanism; and means cooperating with said foundation for actuating the stop-mechanism when the rib fails during the passage of the work through the machine.

3. In combination, a stitch-forming mechanism for producing a line of stitches upon the work; a stop-mechanism; a device engaging the stitches; and means between said device and stop-mechanism for actuating the latter when said device is disengaged from the stitches.

4. In combination, a stitch-forming mechanism for producing a line of stitches upon the work; a stop-mechanism; a device engaging the stitches; means placing said device under tension and means between the said device and stop-mechanism for actuating the latter when said device is disengaged from the stitches.

5. In combination, a stitch-forming mechanism for producing a line of stitches upon the work; a stop-mechanism; a device engaging the stitches on the work during the passage of the latter through the machine; and means for actuating the stop-mechanism from the said device upon the failure of stitches.

6. An edging machine, comprising a stitch-forming mechanism; a work delivery reel in advance of said mechanism; a work receiving reel pivotally supported in rear of said mechanism; and tension means applied to each of said reels.

7. An edging machine, comprising a stitch-forming mechanism; a work delivery reel; a work receiving reel pivotally supported in rear of said mechanism; and means for rotating the receiving reel to wind up the finished work.

8. An edging machine, comprising a stitch-forming mechanism; a reel for receiving the finished work; means for actuating the reel engaging frictionally the driving shaft of the machine; and means whereby the friction between the actuating means and said shaft may be reduced as the bulk of work on the reel increases.

9. An edging machine, comprising a stitch-forming mechanism; a reel for receiving the finished work; means whereby said reel will create tension upon the work; and means to prevent said work from dragging on the stitching mechanism.

10. An edging machine, comprising a stitch-forming mechanism; a stop-mechanism; means engaging the work at two points; and connections between said means and the stop mechanism whereby the latter may be actuated should the engagement between the work and said means cease at either point.

11. In combination, a stitch-forming mechanism for producing a line of stitches on the work; a stop-mechanism; a trip for actuating the stop-mechanism; and means between the work and the trip and engaging the stitches for actuating the trip.

12. In combination, a stitch-forming mechanism; a stop-mechanism; a trip for actuating the stop-mechanism; means embracing and engaging the finished work in rear of the stitch-forming mechanism; and a device between said means and the stop-mechanism for actuating the trip.

13. In combination, a stitch-forming mechanism for depositing a line of stitches upon the work; a stop-mechanism compris-

ing a belt-shifter normally under tension; a trip for holding said shifter in operative position; and means in engagement with the stitches for actuating said trip, whereby
5 when the stitches fail for any reason the shifter will be actuated and the machine be stopped.

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

JOHN P. WEIS.

Witnesses:

CHAS. MCC. CHAPMAN,
M. B. HOARE.