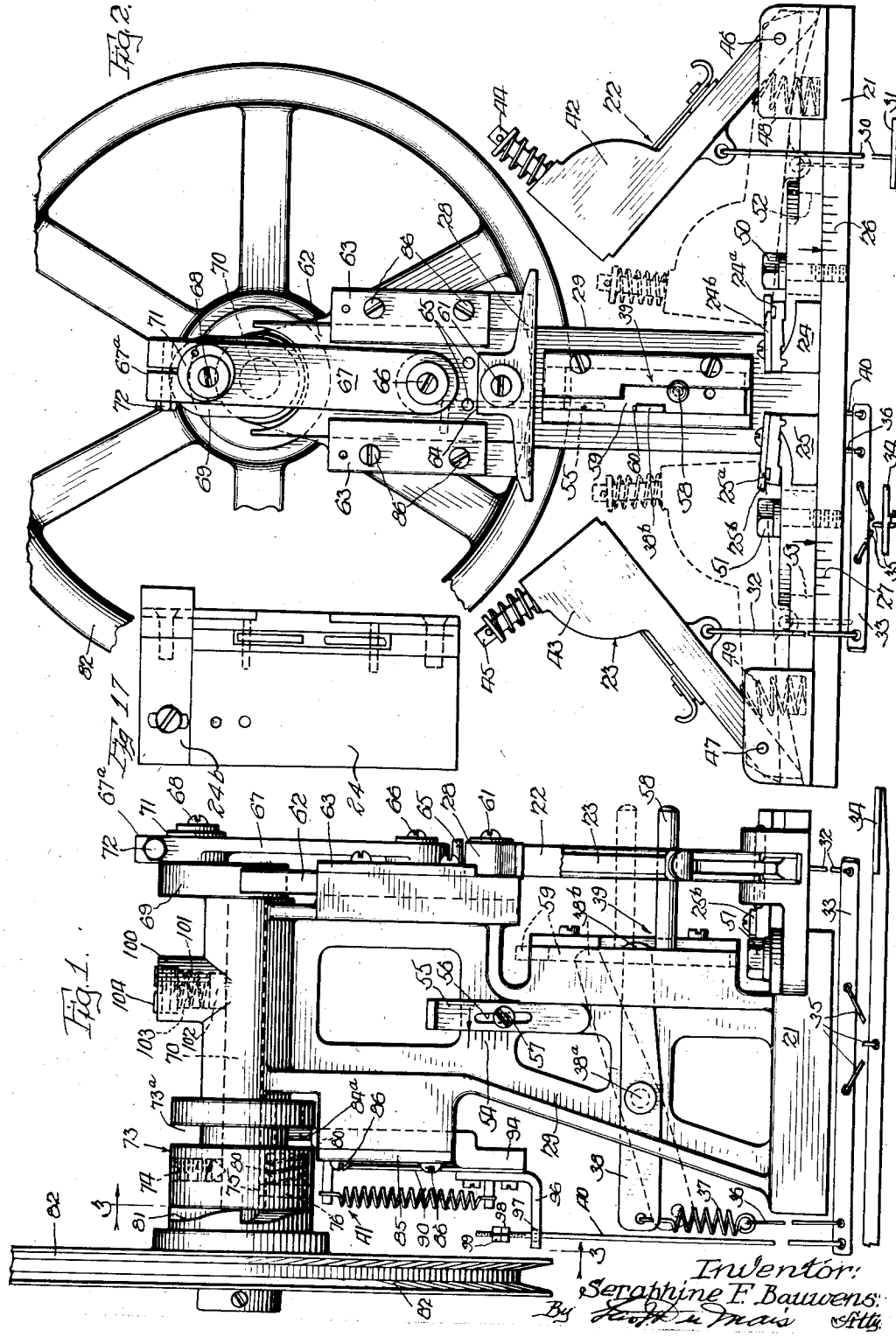
July 7, 1942. S. F. BAUWENS 2,288,881

RIBBON FORMING AND STAPLING MACHINE

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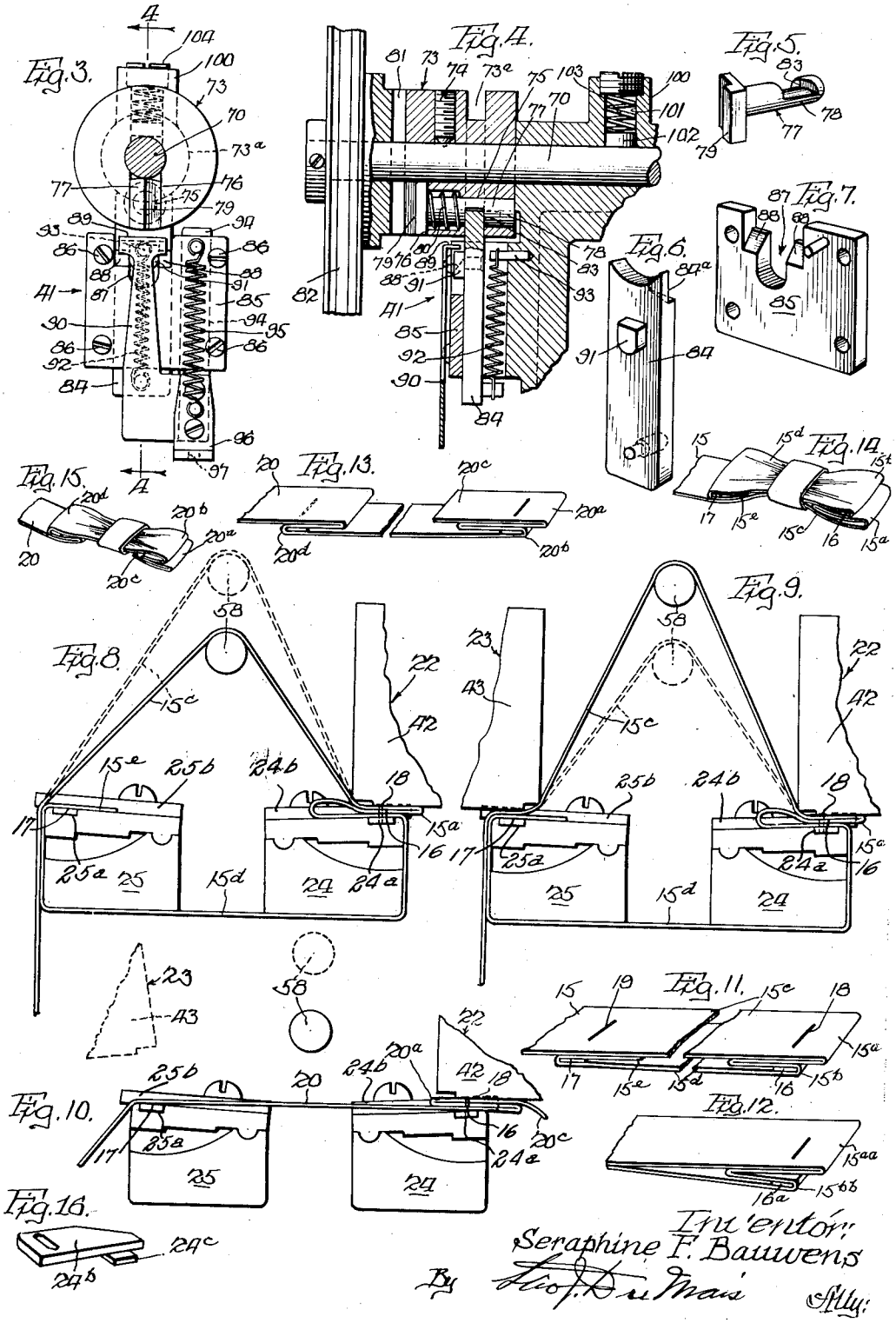


Inventor:
Seraphine F. Bauwens:
By Scott & Mais Attys.

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RIBBON FORMING AND STAPLING MACHINE

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RIBBON FORMING AND STAPLING MACHINE

Seraphine F. Bauwens, Chicago, Ill.

Application April 21, 1941, Serial No. 389,492

14 Claims. (Cl. 1—3)

The present invention relates to a ribbon forming and stapling machine, and is more particularly directed to an improved power-driven machine for operating on bands of ribbon material for forming accurately dimensioned bows of the single or double type and for stapling the same in permanent form.

This application is a continuation in part of my copending application, Ser. No. 340,710, filed June 15, 1940, and relates more particularly to a pair of manually adjustable stapling units and to a ribbon tensioning and take-up means which is also manually adjusted with respect to the stapling units for accurately producing bows of predetermined dimensions, and it also relates to a single cycle clutch which is automatically disengaged in timed relation with a complete cycle of operation.

It is an object of the present invention to provide a strong, durable and compact power machine of the above general character for operating on prearranged bands of ribbon material for forming accurately dimensioned bows of the single or double type, and to locate a stiffening member in proper relation to the ends of the bow, and to staple the parts together in a single operation.

Another object is to provide a pair of adjustable stapling units each having dies on which the band of ribbon material is positioned in prearranged form, and with one of the stapling devices independently operable for holding the prearranged portion of the ribbon while another portion of the ribbon is being positioned with respect to the other stapling unit which is thereafter brought into position with the ribbon preparatory to a simultaneous stapling operation of both stapling units effected by a single cycle of operation of the machine.

Another object is the provision of a single cycle clutch engageable to effect a single operation of the machine when released for operation after the positioning of the stapling units and at the limit of operation of the ribbon tensioning means; to provide a graduated scale for the stapling units and on the adjustable stop of the tensioning and take-up means to facilitate their proper adjustments to produce an accurately dimensioned bow.

Other objects and advantages of the invention will become apparent from the following detailed description and accompanying drawings in which:

Figure 1 is a view in side elevation of a ribbon bow forming and stapling machine embodying the features of my invention.

Figure 2 is a front view of Figure 1.

Figure 3 is a detail cross-sectional view of the single cycle clutch taken substantially on the line 3—3 of Figure 1.

Figure 4 is a partial detail longitudinal sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a detail perspective view of the clutch dog.

Figure 6 is a detail perspective view of the clutch dog throw-out slide.

Figure 7 is a perspective view of the clutch throw-out slide cam plate.

Figure 8 is an enlarged partially diagrammatic view showing the die elements of the stapling units and the position assumed by the ribbon when forming a double type of bow and being held by one of the stapling devices of the unit preparatory to being drawn in taut position, as indicated in dotted lines.

Figure 9 is an enlarged partially diagrammatic view similar to Figure 8, illustrating the ribbon as drawn taut over the die elements and with the two stapling devices of the stapling units in position on the ribbon.

Figure 10 is an enlarged partially diagrammatic view showing the die elements of the stapling units and the position assumed by the ribbon when forming a single type of bow and held by one of the stapling devices preparatory to the positioning of the second stapling device shown in dotted lines.

Figure 11 is a detail perspective view partially broken away illustrating a double ribbon bow with stiffening members stapled thereto.

Figure 12 is a partial detail perspective view of a double ribbon bow with the looped ends thereof staggered to simulate a spread bow.

Figure 13 is a detail perspective view partially broken away illustrating a single bow with stiffening members stapled thereto.

Figure 14 is a perspective view of a finished double bow formed on a length of ribbon material.

Figure 15 is a perspective view of a single bow formed on a length of ribbon material.

Figure 16 is a perspective view of the gauge plate adjustably fixed to each of the die members.

Figure 17 is an enlarged top plan view of one of the die members illustrating the adjustable gauge carried thereby.

The invention has been shown and described herein for purposes of illustration, as embodied

in a power driven machine (Figs. 1 and 2) particularly adapted to form in a band of ribbon material, a double bow like that shown in Figs. 11, 12 and 14, or a single bow as shown in Figs. 13 and 15, which bows are used extensively for hat bands and similar articles. Referring to Fig. 11, the band or strip of ribbon material 15 has one end twice folded back upon itself to form a pair of closed loops 15*a* and 15*b* consisting of inner and outer layers 15*c* and 15*d*, respectively. The inner end 15*e* of the strip is turned in so that the raw end is hidden between the inner and outer layers of the loop, and stiffening members 16 and 17 inserted in the ends of the loop serve to hold it against sagging. The stiffening member 16 is positioned in the second loop 15*b* and secured to the inner layer 15*c* by a staple 18, and the other stiffening member 17 is secured to the inner layer 15*c* and the end 15*e* of the bow by a staple 19. In each instance, the staples 18 and 19 extend only through the inner layer 15*c* of material and through the stiffening members to be hidden from view by the outer layer 15*d*.

As shown in Fig. 12, the loops 15*aa* and 15*bb* may be arranged out of line while the stiffening member 16*a* is positioned and secured therewith in the manner as described for Fig. 11.

In Fig. 13 is shown a single type of bow formed of a band or strip of ribbon material 20 which has one end twice folded back upon itself to form a pair of loops 20*a* and 20*b*, respectively, and with the raw end 20*c* of the loop 20*a* directed inwardly. The other end of the bow is formed by folding the ribbon material back upon itself to form a loop 20*d* and the free end of the ribbon extends outwardly of this loop.

The bows when formed as above described, each have a cross-bar fitted thereto, as illustrated in Figs. 14 and 15.

A preferred embodiment of the invention has been shown in which the machine is a compact power driven unit arranged to be positioned on a stand, table or bench, and controlled by a pair of foot pedals, one of which 31 is attached to one of the stapling units for effecting independent movement thereof toward its companion die for holding the ribbon material in position preparatory to the depression of the other pedal 34 which is attached to the other stapling unit, a ribbon take-up and tensioning means, and to a clutch.

The depression of this latter pedal 34 simultaneously moves the ribbon take-up and tensioning means and the stapling unit in position prior to effecting the engagement of the clutch.

The machine comprises a base 21 upon which is adjustably mounted in face to face relation, a pair of spaced apart stapling units 22 and 23 each of which has a forwardly projecting staple clinching die member 24—25 arranged to permit the strip of ribbon material to be placed thereon or to be wound thereabout in loop formation. The die members each are arranged with a pocket formation 24*a* and 25*a*, respectively, to receive the stiffening members 16 and 17 therein to be attached to the ribbon material by means of the staples 18 and 19. Gauge plates 24*b* and 25*b* (Fig. 16) are adjustably fixed to the die members 24—25, respectively, and serve to guide the stiffening members for properly positioning them on ribbon material of different widths. A graduated scale 26 and 27 (Fig. 2) is provided on the base 21 and arranged to cooperate with the stapling units 22 and 23, respectively, for properly adjusting them for the size of bow desired, and a common actuator 28 for effecting the operation of the stapling units within range of their adjusted positions, is slidably mounted for vertical movements on an upright portion 29 of the base 21.

The gauge plates, one of which is shown in Fig. 16, have a transversely extending portion 24*c* that enters the pocket formation in the die member and extends forwardly of the plate 24*b* to serve as an end stop for the stiffening member while the plate serves as a guide for the ribbon.

As the stapling units are of the type embodied in my above-referred to application, a brief description thereof and the sequences of their operation is believed to suffice. The stapling unit 22 has a connecting link 30 which is attached to a pedal 31 to be independently operated, while the stapling unit 23 has a connecting link 32 which is attached to an equalizer 33 that is operatively connected to a pedal 34 by means of a link 35 which is arranged in V-formation to exert an even pull on the equalizer. A link 36 and spring 37 connect the equalizer with a rocker arm 38 pivoted at 38*a* on the upright 29 for effecting simultaneous movement of the take-up and tensioning means 39 of the ribbon, during the downward swinging movement of the stapling unit 23. The equalizer also has a link 40 which extends to the clutch mechanism designated as a whole as 41.

Each of the stapling units have an arm 42 and 43, respectively, in which a plunger 44 and 45, respectively, is carried, and the arms 42—43 are pivotally mounted at 46—47 for swinging movements into engagement with the die members 24—25, and a spring 48 and 49 coacts with each of the arms for yieldingly urging them and their plungers 44 and 45 to inactive position (full lines Fig. 2).

When making bows of the double or single type, (Figs. 11 and 13), the stapling units 22 and 23 are adjusted on the base 21 to the size of bow desired, and the graduated scales 26 and 27 insure the proper adjustment of the units. When adjusted, the screws 50 and 51 serve to hold the units in adjusted position. These screws extend through a slot 52 and 53 in the units and are threaded in the base 21. The take-up and tensioning means 39 is also adjusted when the stapling units are adjusted, and a graduated scale 54 provided on the upright 29 insures the proper positioning of a stop 55 having a slot 56 and a screw 57 threaded in the upright. This stop limits the movement of the rocker arm 38 to limit the movement of the take-up and tensioning means 39 that carries a horizontally and forwardly projecting gauge pin 58. The take-up and tensioning means 39 comprises a slide 59 carried on the upright 29 and is provided with an opening 60 through which the free end 36*b* of the rocker arm 38 extends.

In the operation of the machine, the stiffening members 16 and 17 are placed in the pocket formations 24*a* and 25*a* of the die members and when making the double type of bow, the ribbon is prearranged in a loop 15*a* (Fig. 8) which is placed on die 24 and the pedal 31 is then depressed to bring the arm 42 in engagement with this portion of the ribbon. The ribbon is then wound about the die and gauge pin 58 with the ends of the ribbon overlapping on die 25. That portion of the ribbon forming the outer layer 15*d* of the bow is wound underneath the dies 24 and 25, while that portion constituting the inner layer 15*c* of the bow is wound over die 24 and gauge pin 58

and overlaps the raw end 15e of the ribbon on die 25. The operator will normally exert a slight pull on the extended end of the ribbon which forms the loop 15c while depressing the pedal 34 which effects a pull on the equalizer 33 and link 32 to swing the arm 43 into engagement with the ribbon, and the link 36 and spring 37 effect a movement of the rocker arm 38 to raise the slide 59 and carry the gauge pin 58 therewith (Fig. 9). This upward movement of the gauge pin 58 pulls out the portion 15c of the ribbon which effects a frictional pull on the portion 15e to draw taut the portion 15d of the ribbon while the gage pin 58 is carried to the limit of its movement. The movement of the gauge pin 58 will draw out an amount of ribbon to compensate for the difference in length of the ribbon material passing around the under side of the die members.

As the gauge pin 58 reaches the limit of its upward movement, the arm 43 which is being swung downwardly during this time, will engage the ribbon over die 25 (Fig. 9) and exert additional tension thereon preparatory to the stapling operation of the pair of stapling units. After the arm 43 is in position and at the final movement of the pedal 34, the clutch mechanism 41 is actuated which connects the machine for a power drive to carry the common actuator 28 in engagement with and to simultaneously depress the plungers 44 and 45 to drive the staples through the ribbon material and the stiffening members 16 and 17 positioned on the respective die members. After the ribbon is removed from the machine, that portion adjacent the die 24 is bent over the stiffening member 16 and forms loop 15b (Figs. 11 and 14).

When a single bow is to be made, the stapling units and the take-up and tensioning means are adjusted as above described, and the ribbon material 20 is prearranged at one end thereof to form a loop 20a directed inwardly when placed on the die 24 and the ribbon is turned back on itself to extend over die 25. The arm 42 is brought in position to hold the prearranged end of the ribbon material and the operator will exert a slight pull on the ribbon overlying die 25 to hold the ribbon in position until the arm 43 is brought into engagement therewith. When a different size of bow is desired, the ribbon 20 may be placed over the gauge pin 58 and its upward movement will draw out the ribbon material to the extent of its movement which may be adjusted as desired by the positioning of the stop 55. The spring 37 permits of a yield between the rocker arm 38 effecting the movement of the gauge pin 58 and the equalizer 33, so that with the same amount of movement of the equalizer, a variation in the amount of movement of the take-up and tensioning means may be had.

The bows, when completed, are each provided with a crossbar (Figs. 14 and 15) which is attached thereto and is an operation independent of the machine herein described, and is shown merely to convey a better idea of the completed bows.

In order to exert an even pressure on the plungers 44—45 of the stapling units, the actuator 28 is pivoted intermediate its length at 61 on a slide plate 62 mounted for vertical sliding movements in guides 63 fixed to the upright 29. The top portion 64 of the actuator is flattened and a pair of pins 65 fixed to the slide plate 62 are in close proximity with the flattened portion 64 to permit of a given amount of rocking movement of the actuator 28 on its pivot 61. The slide plate 62 has fixed thereto, a stud 66 to which one end of a connecting link 67 is pivoted, and which link has its other end pivotally connected at 68 to a crank arm 69 which extends outwardly on one end of a shaft 70 journaled horizontally in the upright 29. The pivot connection 68 extends into an eccentric 71 which may be manually turned to adjust the throw of the link 67 with respect to the crank arm 69, and when adjusted, is securely clamped by a screw 72 threaded into one of the legs of the bifurcated end 67a of the link.

The clutch mechanism 41 is arranged on the back portion of the upright 29 and consists of a collar 73 fixed to the shaft 70 by a set screw 74, and is provided with a longitudinal bore 75 and a radially milled opening 76. This bore 75 and opening 76 receive a clutch dog 77 (Fig. 5) which has a shank 78 that fits the bore 75 and a clutch-engaging head 79 that is received in the opening 76. The bore 75 adjacent the opening 76 is somewhat larger than the remaining part of the bore and receives a spring 80 therein which surrounds the shank 78 of the clutch dog 77, and exerts a constant pressure against the head 79 to urge the clutch dog toward a clutch jaw 81 fixed to a belt-driven wheel 82 freely carried on the shaft 70. The collar 73 has an annular groove 73a therein and the shank 78 of the clutch dog 77 is provided with a cam formation 83 that registers with this annular groove when the clutch dog is free of the clutch jaw 81. In order to hold the clutch dog out of engagement with the clutch jaw, a throw-out slide 84 extends into the groove 73a of the collar 73 and is carried for vertical sliding movements on the upright 29 and held in position thereon by a guide plate 85 secured at 86 to the upright. This guide plate 85 has a U-shaped opening 87 at its top edge that is formed to provide cams 88—88 on each side of the opening 87. These cams 88—88 are for the purpose of deflecting the engaging end 89 of a spring arm 90, and which end 89 is arranged to engage a lug 91 on the slide 84 for pulling the same downwardly out of the groove 73a and away from the clutch dog 77. During this downward movement, the end 89 of the spring arm 90 rides on the cams 88—88 which causes the disengagement of the end 89 with the lug 91 and permits the slide 84 to be returned by a spring 92 which has one end attached to the slide and its other end attached to a pin 93 fixed in the upright 29. The spring arm 90 is carried on a slidable member 94 which is also guided on the upright 29 by the guide plate 85, and is urged upwardly by a spring 95 secured to the plate 85 and to the member 94. The member 94 has an L-shaped member 96 fixed thereto which is provided with an opening 97 through which the link 40 extends and which link has its upper end threaded to receive a nut 98 and a jam nut 99 for adjusting the link with the clutch mechanism. The slide 84 has one upper side edge thereof milled at an angle to provide a cam 84a which engages the cam formation of the clutch dog and restores it to normal out of engagement position.

The link 40 is adjusted by means of the nuts 98 and 99 to permit the pedal 34 to effect the movements and positioning of the take-up and tensioning means 39 and of the stapling unit 23 during its movement, and to effect movement of the clutch mechanism 41 for engagement of the clutch to drive the machine for a single cycle

of operation when the pedal has been depressed to near the limit of its movement.

When the clutch mechanism 41 is operated, the slidable member 94 is pulled downwardly against the tension of spring 95 and the spring arm 90 is carried therewith and its end 89 engages lug 91 and pulls the throw-out slide plate 84 therewith. This movement of slide plate 84 permits the clutch dog 77 to be impelled by its spring 80 into engagement with the clutch jaw 81 which is constantly driven by the wheel 82. During this downward movement of spring arm 90, the end 89 thereof is riding on cams 88—88 which effects disengagement of the end 89 with the lug 91 and permits the slide plate 84 to be immediately restored by its spring 92 with the cam edge 84*a* thereof in the path of the clutch dog 77 to restore it out of engagement with the clutch jaw 81 upon the completion of the cycle of operation. Then when the pedal 34 is released, the slidable member 94 and spring arm 90 are restored to normal position by spring 95.

The upright 29 has a boss 100 provided with a vertical bore 101 which receives a member 102 and spring 103 which is retained therein by a threaded plug 104. The member 102 is constantly urged against the shaft 70 and frictionally resists its movements and serves to retain the shaft in normal at rest position as soon as the clutch dog 77 is thrown out of engagement with the clutch jaw 81.

I claim:

1. In a machine of the class described comprising, in combination, a pair of aligned stapling units having their staple-driving heads and die members directed toward each other and adjustably positioned on the machine, a gauge pin shiftable away from the said dies to determine the over-all length of a portion of a strip of ribbon material placed over said gauge pin and dies, means for separately operating the stapling units to position them on the said portion of ribbon, means operatively connecting said gauge pin for movement with one of said stapling units, and means for operating said staple-driving heads simultaneously to insert staples in the ribbon material at the ends of the portion defined between the dies.

2. In a machine of the class described comprising, in combination, a pair of stapling units having their staple-driving heads and die members directed toward each other in spaced-apart aligned relation on the machine, a gauge pin mounted intermediate said die members for movement away from the said dies to determine the over-all length of a portion of a strip of ribbon material placed over said gauge pin and dies, means for separably operating the stapling units for holding each end of said portion of the strip of ribbon material on the die members, means operatively connecting said gauge pin for movement with one of said stapling units, and means including a single cycle clutch operatively connected with said gauge pin and stapling unit and engageable at the limit of their movement for operating said staple-driving heads simultaneously to insert staples in the ribbon material at the ends of the portion defined between the dies.

3. A machine of the class described comprising, in combination, a pair of stapling units having staple-driving heads and clinching die members therefor and each adjustably mounted on the machine, a shiftable member, said shiftable and die members being arranged to support a strip of prearranged ribbon material thereon, means for individually moving one of said stapling units for clamping a prearranged portion of the ribbon on its coacting clinching die member, and means for moving the other of said stapling units in position on the ribbon and simultaneously operating the staple-driving heads to insert staples in the ribbon at the ends of the prearranged portion thereof.

4. A machine of the class described comprising, in combination, a pair of adjustably mounted stapling units having swingable staple-driving heads and clinching die members therefor, a shiftable member supported intermediate the die members, said shiftable and die members being arranged to support a strip of ribbon material thereon, means for individually swinging one of said staple-driving heads for clamping a prearranged portion of the ribbon on th coacting die member, means for swinging the other of said staple-driving heads in position on the ribbon, and means for simultaneously operating said pair of staple-driving heads to insert staples in the ribbon at each end of the prearranged portion thereof.

5. In a machine of the class described comprising, in combination, a pair of aligned stapling units having swingable staple-driving heads and die members therefor, a gauge pin shiftable away from the said die members to determine the over-all length of a portion of a strip of ribbon material placed over said gauge pin and die members, means separately operated to swing the staple-driving heads to selectively position them on the said portion of the ribbon material, means operatively connecting said gauge pin for movement with one of said staple-driving heads, and means including a single cycle clutch for operating said staple-driving heads simultaneously to insert staples in each end of the portion of the ribbon material extending between the dies.

6. A machine of the class described comprising, in combination, a pair of stapling units having swingable staple-driving heads and clinching die members therefor, a gauge pin shiftably supported in spaced relation with said die members, said gauge pin and die members being arranged to receive a prearranged portion of a strip of ribbon material wound thereabout in loop formation and also to receive said portion when placed thereover, means for separately swinging one of said staple-driving heads for clamping one end of the prearranged portion of the ribbon material on the coacting clinching die member, means for shifting the gauge pin away from its normal position to pull out the ribbon material and thereby determine the length of the prearranged portion and for swinging to position the other of said staple-driving heads on the other end of said portion of the ribbon, and a clutch having operative connections with said last-mentioned means for effecting its engagement including means operable thereby for simultaneously driving staples at opposite ends of said prearranged portion of the ribbon.

7. A machine of the class described comprising, in combination, a pair of stapling units having swingable staple-driving heads and die members therefor, a gauge pin mounted intermediate said die members for movement transversely of the plane of the dies, said pin and said dies being formed to receive a strip of ribbon material wound thereabout in loop formation with the end of the under portion of the loop brought

around to overlie one of said dies and with the top portion of the loop overlying said end, means for shifting said gauge pin to pull out the top portion of the ribbon and thereby frictionally exert a pull on the overlapped end of the ribbon to take up the slack in the under portion of the ribbon, means for separately swinging the staple-driving heads for holding each end of said loop of ribbon material clamped on the die members, and means including a single cycle clutch and actuator driven thereby by movement of one of said pair of stapling units for operating the pair of staple-driving heads simultaneously to insert staples in the ribbon material at the ends of the loop.

8. A machine of the class described comprising, in combination, a pair of staple clinching dies mounted in spaced relation, a gauge pin mounted intermediate of and for movement transversely of the plane of the dies, said dies and said pin being formed to receive a prearranged strip of ribbon material wound thereabout in loop formation with the overlapped portions resting on one of said dies, means for clamping the prearranged portion of the ribbon material on one of said dies, means for shifting said gauge pin away from the plane of the dies to pull out the ribbon material and thereby frictionally tensioning the under portion of the loop while determining the length of the loop, and staple-driving means cooperating with said dies for securing the ends of the loop together.

9. A machine of the class described comprising, in combination, a pair of stapling units having die members and adjustably mounted on the machine, a member shiftably supported intermediate said stapling units, said members being formed to permit a prearranged strip of ribbon material to be wound about them in loop formation, means for moving one of the pair of stapling units to clamp the prearranged portion of the ribbon material on its coacting member, means for moving the shiftable member to pull out the ribbon material and thereby determine the length of the loop, and means for moving the other of said pair of stapling units for clamping the overlapping portions of the ribbon material together and for causing actuation of the pair of stapling units to insert staples in the ribbon at the ends of the loop.

10. A machine of the class described comprising, in combination, a pair of swingable stapling units each having a coacting die member, an adjustable gauge pin shiftably supported in spaced relation with said die members, said gauge pin and die members being arranged to receive a strip of ribbon material either wound thereabout in loop formation or when placed thereacross, means for separately swinging said stapling units to clamp a prearranged portion of the ribbon material on the die members, means for shifting said gauge pin to pull out the ribbon material an amount predetermined by the adjustments of said gauge pin and to simultaneously swing the other of said stapling units in position on the ribbon, a single cycle clutch mechanism, an actuator for said stapling units under the control of said clutch mechanism, and connections between said clutch mechanism and last-mentioned means for effecting engagement of said clutch mechanism and operation of said actuator to drive staples at predetermined positions on the ribbon.

11. A machine of the class described comprising, in combination, a pair of swingable and adjustable stapling units each having a coacting die member, an adjustable gauge pin shiftable away from said dies to determine the over-all length of a strip of ribbon material either wound thereabout in loop formation or when placed thereacross, means for separately swinging one of said stapling units to clamp a prearranged portion of the ribbon material on its die, means for shifting said gauge pin and to simultaneously swing the other of said stapling units in position on the ribbon, a single cycle clutch mechanism, an actuator for said stapling units under the control of said clutch mechanism, and connections between said last-mentioned means and clutch mechanism for effecting engagement of said clutch mechanism and operation of said actuator to drive staples at predetermined positions on the ribbon.

12. A machine of the class described comprising, in combination, a pair of stapling units having staple-driving heads and clinching die members therefor each having pocket formations to receive a stiffening member therein, a shiftable member, said shiftable and die members being arranged to support a strip of ribbon material thereon, means for individually moving one of said stapling units for clamping a prearranged portion of the ribbon on its coacting clinching die member, and means for moving the other of said stapling units in position on the ribbon and simultaneously operating the staple-driving heads for stapling the ribbon material to the stiffening member held thereby.

13. The combination of claim 12 hereof in which said die members are each provided with pocket formations therein and arranged to receive a gauge plate adjustably attached thereto, said gauge plate being provided with an outwardly and downwardly projecting portion to depend in the pocket formation of the die member to determine the positioning of the stiffening member on the die and in proper position with respect to the ribbon material guided by the gauge plate.

14. A machine for forming bows of ribbon material with stiffening members at each end of the bow, said machine comprising, a plurality of adjustable stapling units each having clinching die members provided with pocket formations therein, a shiftable gauge pin to determine the length of a portion of a strip of ribbon material placed thereover and said die members, a gauge plate mounted on each of said die members and engageable with one edge of the ribbon material and having an outwardly and downwardly projecting portion depending in the pocket formation of said die member for guiding a stiffening member in predetermined relation to the ribbon material, and means for operating said stapling units to staple the stiffening members with the ribbon.

SERAPHINE F. BAUWENS.