

March 6, 1928.

W. P. OSGOOD

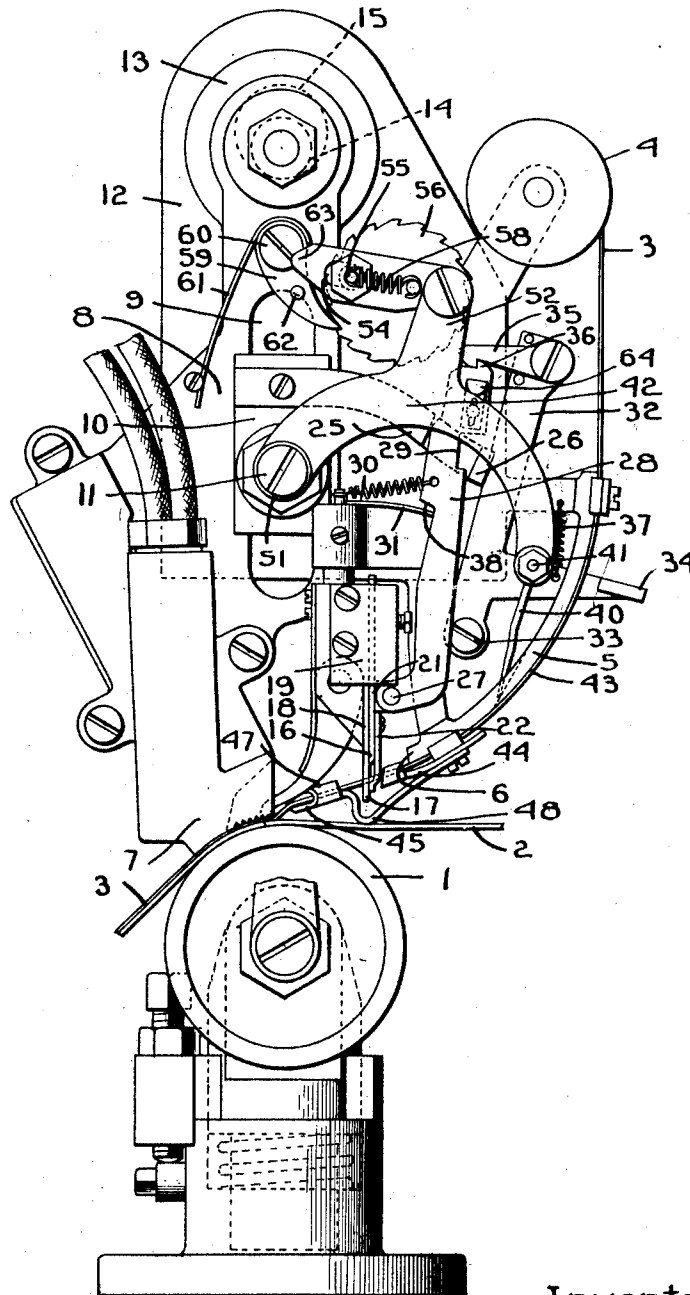
1,661,383

TAPING MACHINE

Filed May 26, 1924

3 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

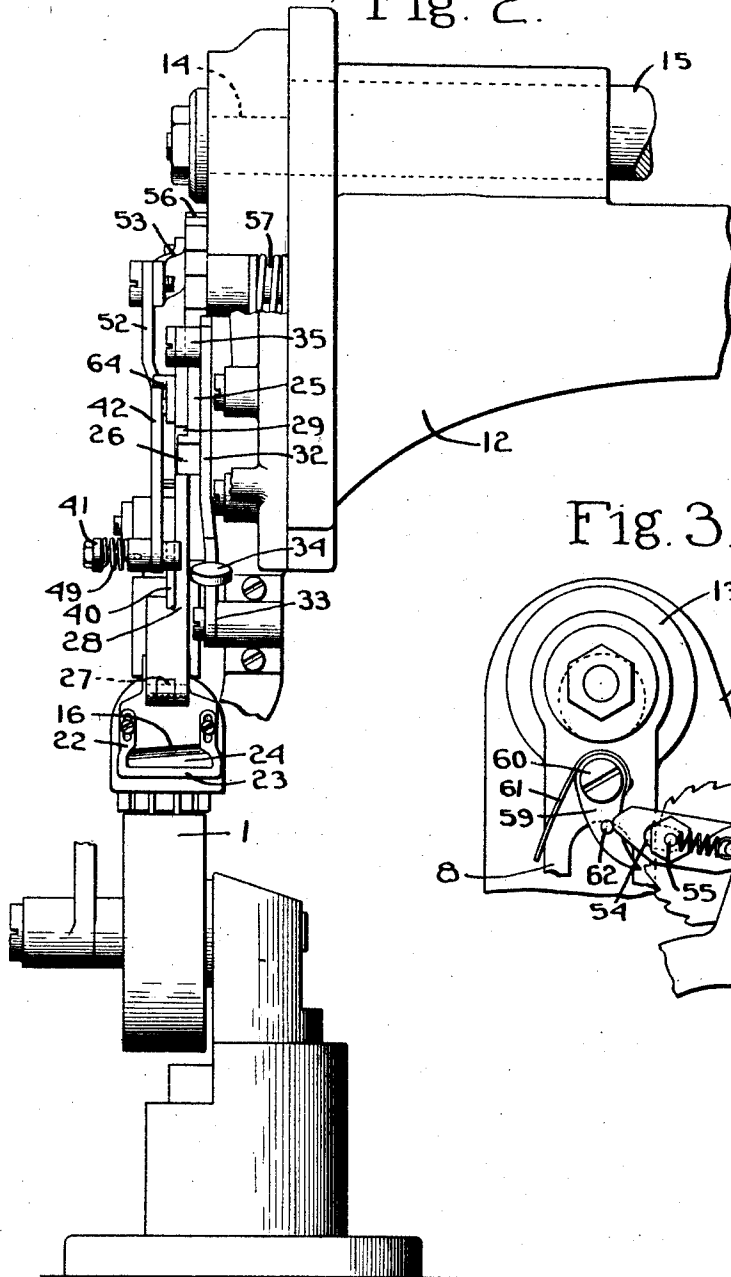
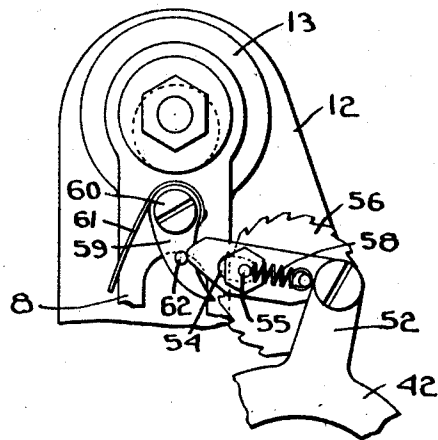


Fig. 3.



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Fig. 4.

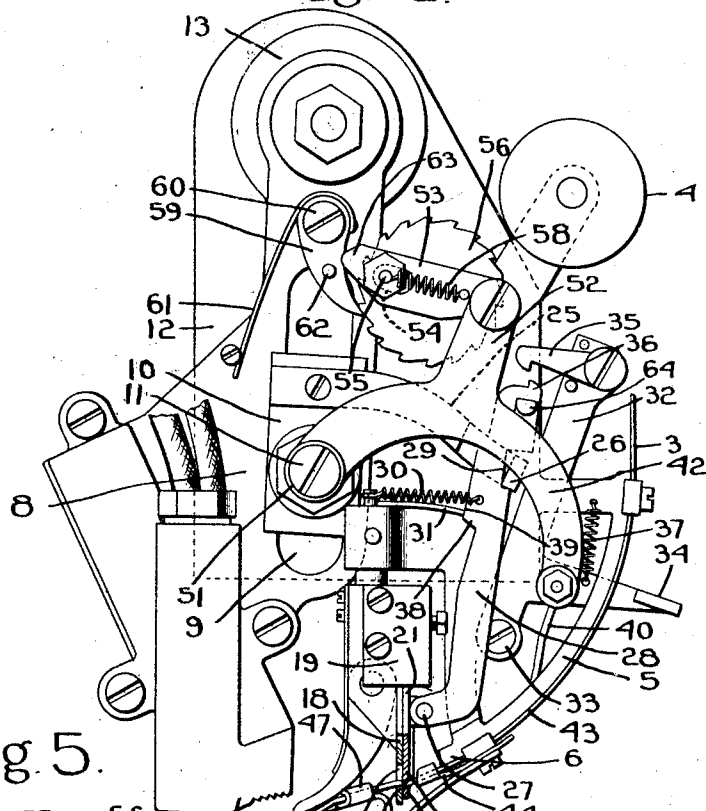


Fig. 5.

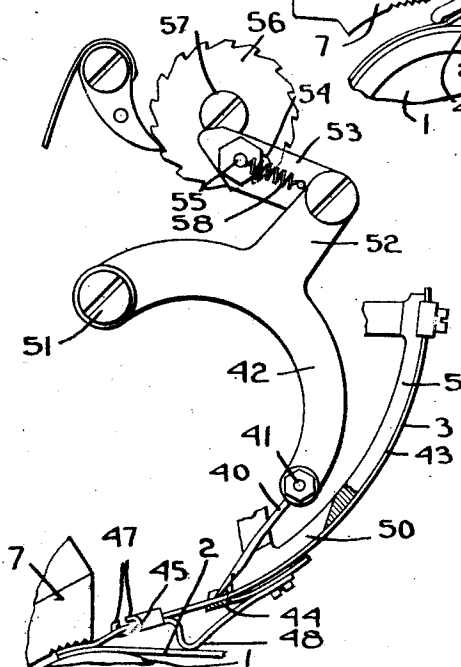
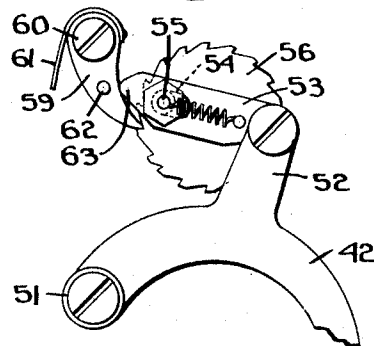


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TAPING MACHINE.

Application filed May 26, 1924. Serial No. 716,042.

This invention relates to taping machines such as are intended to apply tape to sheet material and it has particular reference to means for severing the tape at the end of a taping operation. In applying tape to sheet material it is often desirable that the tape should be applied in relatively short lengths. The tape which is applied is fed into the machine from a reel or spool and in a continuous length, and heretofore it has been the practice for the operator to manually sever the tape at the end of each taping operation.

As stated above one of the objects of my invention is to provide novel means for automatically cutting the tape at the end of the taping operation.

Another object of the invention is to provide a novel tape-severing device which is normally inactive but which can be rendered active thereby to automatically sever the tape at the will of the operator.

In the preferred form of my invention the tape is cut in the rear of the tape-applying member and another feature of my invention relates to a novel means for feeding the severed end of the tape forward from the spool into position to be acted on by the tape-applying member for the next taping operation.

These and other objects of my invention will be more fully set forth in the following description of a selected embodiment of my invention which I have chosen to illustrate the principle thereon.

In the drawings;

Fig. 1 is a front view of a taping machine embodying my invention;

Fig. 2 is a side view of the head portion of a taping machine having my improvements applied thereto, the tape-guiding member being omitted from said figure;

Fig. 3 is a fragmentary view of the actuating pawl and ratchet for the tape-feeding mechanism showing it in its normal position;

Fig. 4 is a view similar to Fig. 1 but illustrating the tape-cutting member operatively connected to the head;

Figs. 5 and 6 show the operation of the tape-feeding member.

I have herein illustrated my invention as applied to a taping machine of the type

illustrated in my co-pending application Serial No. 528,727, filed January 12th, 1922.

This machine comprises a work support in the form of a roll 1 over which is fed the sheet material 2 onto which the tape 3 is to be applied. This tape is fed over a guide roll 4 and thence to a curved tape-guiding member indicated generally at 5, the lower end 6 of which is adjacent the work.

This tape-guiding member comprises a convexly-curved guiding surface 43 around which the tape is fed and two plates or supports 44, 45, the plate 44 being situated at the delivery end of the surface 43 and spaced therefrom to form a throat through which the tape is fed and the plate 45 having hold-down lips 47 at its edges to embrace the edge of the tape. The plate 45 is shown as having the depressed portion 48 to accommodate the tape-cutting instrumentalities as will be presently described.

The tape is applied to the work as it passes over the roll 1 by means of a presser member or tape-applying member 7 which has a movement toward and from the work support 1 and also an oscillatory work-feeding movement. This tape-applying member 7 is secured to a head 8 that is formed with a slot 9 in which is received a block 10 that is pivoted at 11 to the frame 12 which carries the operative parts. The upper end 13 of this head 8 is connected to a crank pin 14 on a drive shaft 15.

With this construction the eccentric 14 will not only give the head 8 a rising and falling movement but will also give it an oscillating movement about the pivotal point 11 so that the presser member 7 has both an up and down movement and an oscillating movement. Each downward movement of the presser serves to press the tape against the work and the oscillating movement serves to give the taped work a feeding movement over the roll 1.

The parts thus far described are or may be all as illustrated in my above-mentioned co-pending application Serial No. 528,727 and form no part of my present invention, which, as stated above, relates to a means for severing the tape at the end of a taping operation. The tape-severing means is located in the rear of the tape-applying

member 7 and adjacent the delivery end of the tape guide and it is so constructed that normally it is inoperative or inactive but can be rendered operative thereby to automatically sever the tape at the will of the operator.

The tape-severing means herein illustrated is in the form of two co-operating shear members 16 and 17 which are movable relative to each other and between which the tape 3 is fed. The member 17 is herein illustrated as a stationary member and it is formed on a plate 18 which is rigidly secured to the stationary block 19, said plate having an opening 20 therein through which the tape 3 passes, the lower edge of the opening constituting the shearing member 17.

The shearing member 16 is in the form of a cutting blade which is vertically movable, said blade having a shank 21 which slides vertically in a slot formed in the block 19. This shearing blade 16 has secured to it a U-shaped member 22, the bridge portion 23 of which is situated below the shearing edge 16 and forms therewith an opening 24 through which the tape is fed. The bridge portion 23 constitutes a support for the end of the tape as it is severed as will be presently described.

The movable cutting blade 16 is normally in elevated position shown in Fig. 1 in which position the cutting edge is above the tape and the openings 24 and 20 are in alignment so that the tape may be freely fed therethrough. Whenever the tape is to be cut mechanism is set in operation which gives the blade 16 a downward movement into the position shown in Fig. 4 thereby severing the tape and then an upward movement back into its normal position where it remains until the next cutting operation is desired.

While various devices may be employed to give the tape cutter its tape-cutting movement I have herein shown a construction by which this movement is secured from the oscillating movement of the head 8. The knife 16 is normally disconnected from the head but means are provided whereby the operator can at will operatively connect said knife to the head so that movement of the head will give the knife its tape-cutting movement.

The head 8 is shown as having rigid therewith a cutter-actuating arm 25, the end 26 of which is extended laterally. Pivotaly connected to the knife 16 at 27 is an arm or lever 28 which extends up beyond the arm 25 and which is normally disconnected from the arm 25 so that the oscillation of said arm due to the oscillatory movement of the head 8 has no effect on the member 28. This member 28, however, can be connected to the arm 25 at the will of the operator and when so connected the oscillatory movement

of the arm will operate through the member 28 to give the cutter its tape-cutting movement.

The lever or strut member 28 is formed in its rear edge with a notch 29 of a size to receive the end 26 of the arm 25. This strut 28, however, is acted on by a spring 30 which normally holds it in the forward position shown in Fig. 1 against the stop 31, in which position the notch 29 is free from the end 26 of the arm 25 so that during the oscillating movement of the head 8 said end 26 will oscillate in the rear of the strut member 28. When the cutter is to be actuated the strut member 28 is moved to the right Fig. 1 into a position where the end 26 of the cutter-actuating arm 25 enters the notch 29 as shown in Fig. 4 and when in this position the knife will be given a downward movement by the downward swinging movement of the arm 25 thereby to cut the tape 3 and will then be given an upward movement to restore the parts to normal position at which time the strut 28 is automatically disconnected from the arm 25.

Means are provided whereby the operator can, at will, and while the machine is running, swing the strut 28 into a position to operatively connect it to the arm 25. In the construction herein shown this is accomplished by means of a swinging arm 32 pivoted to the frame at 33 and having rigid therewith a finger piece 34 arranged so that when the operator presses downwardly on the finger piece the arm 32 will be swung to the right. Said arm has pivotally connected to its upper end a pawl 35 which is adapted to engage a tooth 36 formed on the upper end of the member 28. The arm 32 is acted on by a spring 37 which normally holds it in the position shown in Fig. 1, in which position the pawl 35 is in engagement with the tooth 36.

Whenever the operator wishes to sever the tape he presses downwardly on the finger piece 34 thereby swinging the arm 32 to the right Fig. 1, and since said arm is coupled to the strut member 28 by the pawl 35 this movement swings the strut member to the right and into position to bring the end 26 of the lever 25 into the notch 29 thus coupling the knife to said oscillating arm.

It will be remembered that the head 8 is continuously oscillating while the machine is running and, therefore, as soon as the strut 28 is coupled to the arm 26 the downward movement of the arm will move the strut member and knife downwardly thereby severing the tape and the next upward movement of the arm 25 will elevate the knife. The strut member 28 will become automatically disengaged from the end 26 of the arm after it has returned to its normal position so that the continued oscillatory movement of the head 8 does not cause any

further actuation of the knife until the finger piece 34 is again depressed.

The strut member 28 is formed with a shoulder 38 which is normally situated just above the stop 31. When the strut member is moved downwardly by the arm 25 thereby giving the knife 16 its tape-cutting movement, the shoulder 38 is carried below the stop 31 and the engagement of the stop with the portion 39 of the strut member holds the strut member in operative engagement with the arm 25 until the strut member has been elevated sufficiently to carry the shoulder 38 above the stop 31 at which time the spring 30 will move the strut member to the left and disengage it automatically from the end 26 of the arm 25.

It will be noted that the cutting of the tape is performed at a distance in the rear of the tape-applying member and, therefore, in order to perform the next taping operation it is necessary to feed the tape 3 forwardly over the tape guide 5 to a point where it will be acted on by the tape-applying member 7.

My invention comprehends a tape-feeding device operative for this purpose which is normally inactive but which is set in operation automatically by the operation of the tape-severing means. This tape-feeding member is herein shown as a tape-feeding finger 40 which is situated inside of the tape guide 5 and the pointed end of which rests on the tape. This tape-feeding finger is yieldingly supported, it being rigidly secured to a shaft 41 which is journaled in the end of a swinging carrier 42 and is acted on by a suitable spring 49 that yieldingly presses the end of the finger against the tape.

The portion of the tape-guiding member having the convex surface 43 is slotted at 50 to receive the tape-feeding member 40 and the latter acts against the portion of the tape which is supported by the plate 44 as seen in Fig. 5.

The carrier 42 is pivotally mounted at 51 on the stud 11 about which the block 10 oscillates. This carrier 42 normally has the position shown in Fig. 1 and is idle or inactive. Means are provided, however, for swinging the carrier downwardly about its pivot 51 immediately after the tape has been severed, such downward movement operating through the tape-feeding finger 40 to feed the tape forwardly from the knife into a position in which the end of the tape is located beneath the tape-applying member 7.

The means which I have herein provided for thus operating the carrier 42 are actuated by the oscillatory motion of the head 8 and are rendered operative by the downward movement of the knife.

The carrier 42 is shown as having an extension 52 to which is pivotally connected a

link 53, the latter having a slot 54 therein which receives a crank pin 55 carried by a ratchet member 56 that is journaled to the frame at 57. The crank pin 55 is connected to the link 53 by means of a spring 58 which normally holds the link in its forward position so that the crank pin engages the right hand end of the slot 54 as seen in Fig. 1.

The oscillating head 8 has a pawl 59 pivotally connected thereto at 60, said pawl being acted on by a suitable spring 61 and adapted to co-operate with the ratchet member 56 as the head oscillates thereby to rotate said member. Means are provided, however, for rendering this pawl inoperative so long as the carrier 52 occupies its elevated position and the means herein provided for this comprises a pin 62 extending from the pawl and with which the end 63 of the link engages each time that the head 8 passes its upper dead center as seen in Fig. 3. The engagement of the pin with the end 63 retracts the pawl out of engagement with the ratchet teeth so that said pawl is ineffective so far as feeding the ratchet forward is concerned. This is the normal condition when the tape is being applied.

Means are provided whereby when the cutting knife moves downwardly to cut the tape the link 53 will be drawn to the right Fig. 1 thus taking the end 63 thereof out of the path of movement of the pin 62, with the result that the pawl 59 is then operative and co-operates with the ratchet member 56 to feed the ratchet member forwardly as shown in Fig. 6.

The turning of the ratchet member 56 through one complete revolution operates through the crank pin 55 and link 53 to swing the carrier 42 downwardly thus feeding the tape forwardly and then to return said carrier 42 to its normal position shown in Fig. 1 in which position the end 63 of the link 53 again becomes operative to render the pawl 59 inoperative. To accomplish this the strut member 28 is shown as having a lug 64 extending therefrom and overlying the carrier 42. When the strut 28 is coupled to the arm 25 and receives its downward tape-cutting movement the lug 64 acts on the carrier 42 and swings the latter downwardly slightly about its pivot 51, this downward movement moving the extension 52 and link 53 to the right into the position shown in Fig. 6 and thus withdrawing the nose or end 63 of the link from its operative engagement with the pin 62. This allows the pawl 59 to become operative to start the feeding movement of the ratchet member and as the ratchet member starts to turn the crank pin 55 will swing the left hand end of the link 53 downwardly.

The parts are so proportioned that during the first step forward of the ratchet mem-

ber the angular position of the link 53 is changed so that the end 63 thereof is withdrawn from operative engagement with the pin 62 and, therefore, the pawl 59 will continue in operation turning the ratchet 56 as the head 8 oscillates until the lever has made one complete revolution and has again returned to the position shown in Fig. 1 at which time the end 63 of the link again engages the pin 62 and holds the pawl out of operation.

It will thus be seen that as soon as the tape is cut the tape leading to the supply will be fed forward automatically until the end of the tape is in position to be acted on by the tape-applying member 7 at which time the tape-feeding means becomes inoperative and remains inoperative until it is again set in operation by the tape-cutting movement of the tape-cutting means.

From the above it will be seen that the structure herein illustrated comprises normally inactive tape-cutting means and normally inactive tape-feeding means together with means for coupling the tape-cutting means to a driving member thereby to cut the tape and means actuated by the tape-cutting movement of the tape-cutting member to connect the tape-feeding means to the driving member so that the end of the tape will be fed automatically into position to be applied to the material.

I claim:

1. In a taping machine, the combination with means for progressively applying tape to the work, of means operable at the will of the operator but actuated by the tape-applying means to sever the tape, normally inactive tape-feeding means, means to actuate the tape-feeding means by the tape-applying means, and means to control the time of operation of the tape-feeding means by the tape-severing means.

2. In a taping machine, the combination with means for progressively applying tape to the work, of means operable at the will of the operator but actuated by the tape-applying means to sever the tape, means actuated by the tape-applying means but controlled as to its time of operation by the tape-severing means to feed tape into position to be engaged by the tape-applying means.

3. In a taping machine, the combination with means for applying tape progressively to the work and feeding the work, of tape-severing means, tape-feeding means which is inactive while the tape is being applied to the work and the work is being fed, means to render the tape-feeding means operative by the cutting of the tape and means to actuate the tape-feeding means by the tape-applying means thereby to feed fresh tape to the tape-applying means.

4. In a taping machine, the combination with means for applying tape progressively

to the work and for feeding the work, of tape-severing means, manually-controlled means to render the tape-severing means operative, tape-feeding means to feed a fresh supply of tape into position to be acted on by the tape-applying means, means to actuate the tape-feeding means from the tape-applying means and to render said tape-feeding means operative by the tape-cutting means.

5. In a taping machine, the combination with tape-applying means to apply tape progressively to the work and to feed the work, said tape-applying means including a reciprocating pressing member and means to reciprocate it, of means to sever the tape in the rear of the tape-applying means, tape-feeding means normally inactive while the tape is being applied, and means controlled as to its time of operation by the tape-cutting means but actuated by the pressing member to feed fresh tape to the tape-applying means.

6. In a taping machine, the combination with tape-applying means, of severing means, tape-feeding means normally in a retracted position while the tape is being applied, and means set in operation by the tape-severing means to give the tape-feeding means a forward tape-feeding movement and then a backward movement to its initial position.

7. In a taping machine, the combination with tape-applying means, of tape-severing means operating to sever the tape in the rear of the tape-applying means, normally inactive tape-feeding means for feeding fresh tape to the tape-applying means after the tape is severed, means to actuate the tape-feeding means by the tape-applying means and to control the time of operation of the tape-feeding means by the tape-severing means.

8. In a taping machine, the combination with tape-applying means, of means to cut the tape, a normally inactive tape-feeding means to feed fresh tape to the tape-applying means after the tape is cut, and means rendered operative by the tape-cutting means to operatively connect the tape-feeding means to the tape-applying means whereby continued operation of the latter will give the tape-feeding means its feeding movement.

9. In a taping machine, the combination with tape-applying means including an oscillatory member, of a normally inactive tape-cutting device, means under the control of the operator for operatively connecting the tape-cutting device to the oscillatory member thereby to cut the tape, and means rendered operative by the tape-cutting means but actuated by the oscillatory member to feed fresh tape to the tape-applying means after the tape has been severed.

10. In a taping machine, the combination with tape-applying means including an oscillatory member, of normally-inactive tape-severing means, means under the control of the operator for operatively connecting the tape-severing means to the oscillatory member, a normally inactive tape-feeding device for feeding fresh tape to the tape-applying means, and actuating means for the tape-feeding means rendered operative by the tape-severing means but deriving its movement from the oscillatory member.

11. In a taping machine, the combination with tape-applying means for applying tape progressively to the work, said means including an oscillatory member, of normally-inactive tape-severing means, and means under the control of the operator for operatively connecting the tape-severing means to the oscillatory actuator, normally-inactive tape-feeding means for feeding fresh tape to the tape-applying means, means rendered operative by the tape-severing means but actuated by the oscillatory member to give the tape-feeding means its feeding movement, and means to render the tape-feeding means inoperative after the tape has been so fed.

12. In a taping machine, the combination with means for progressively applying tape to the work, of means operable at the will of the operator but actuated by the tape-applying means to cut the tape, a tape-feeding member normally in retracted position while the tape is being applied, and means set in operation by the tape-cutting means but actuated by the tape-applying means to give the feeding member its forward feeding movement and then to retract said member to its initial position.

13. In a taping machine, the combination with tape-applying means including an oscillatory member, of means to cut the tape, a tape-feeding member normally in retracted position while the tape is being applied, means rendered operative by the tapecutting means but actuated by the oscillatory member to give the tape-feeding member its forward movement to feed fresh tape to the tape-applying means and then to retract said member.

In testimony whereof, I have signed my name to this specification.

WALTER P. OSGOOD.