Oct. 18, 1938. W. MORTON 2,133,868

TAPE MACHINE

Filed May 13, 1937 5 Sheets-Sheet 1

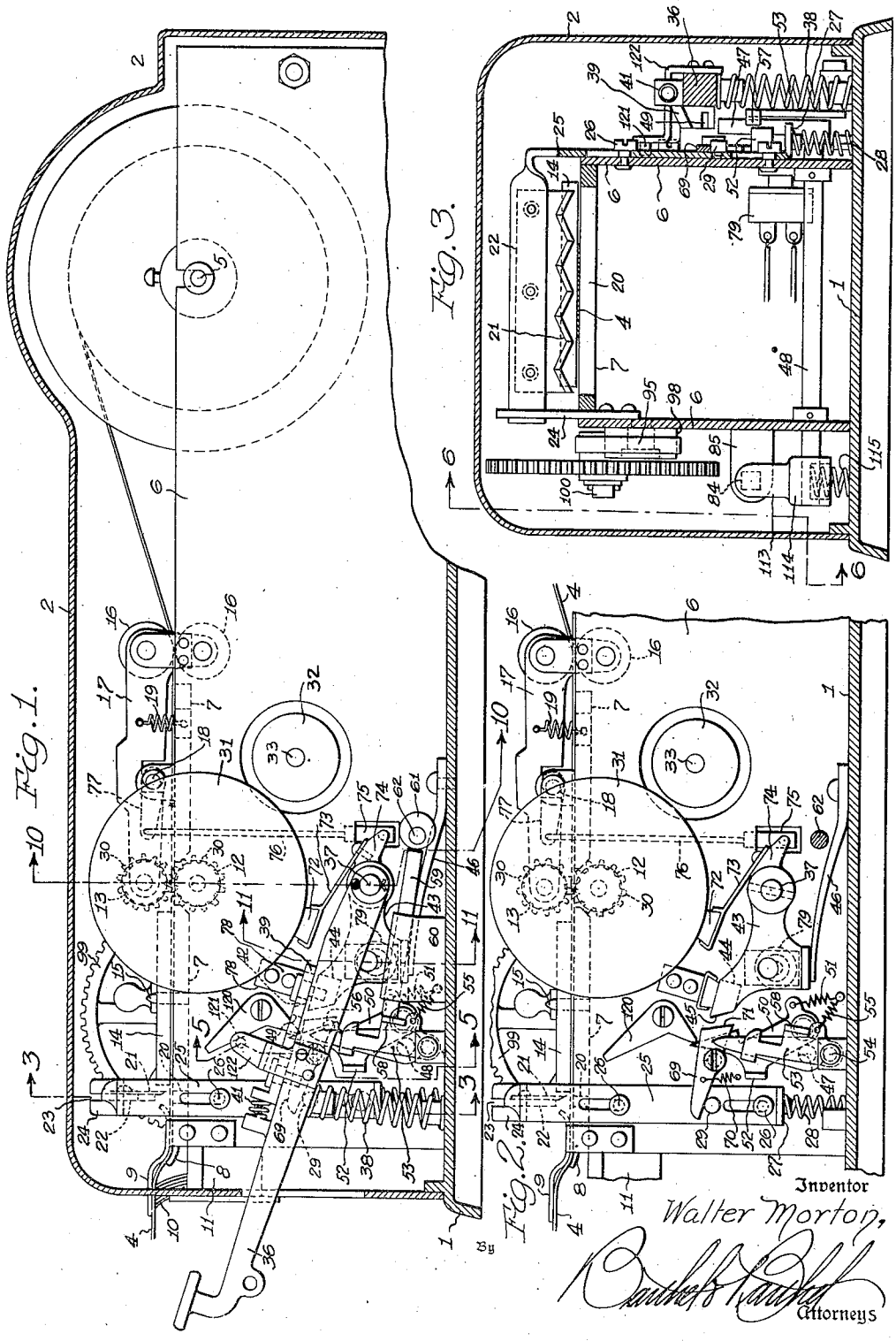


Fig. 1.

Fig. 3.

Fig. 2.

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TAPE MACHINE

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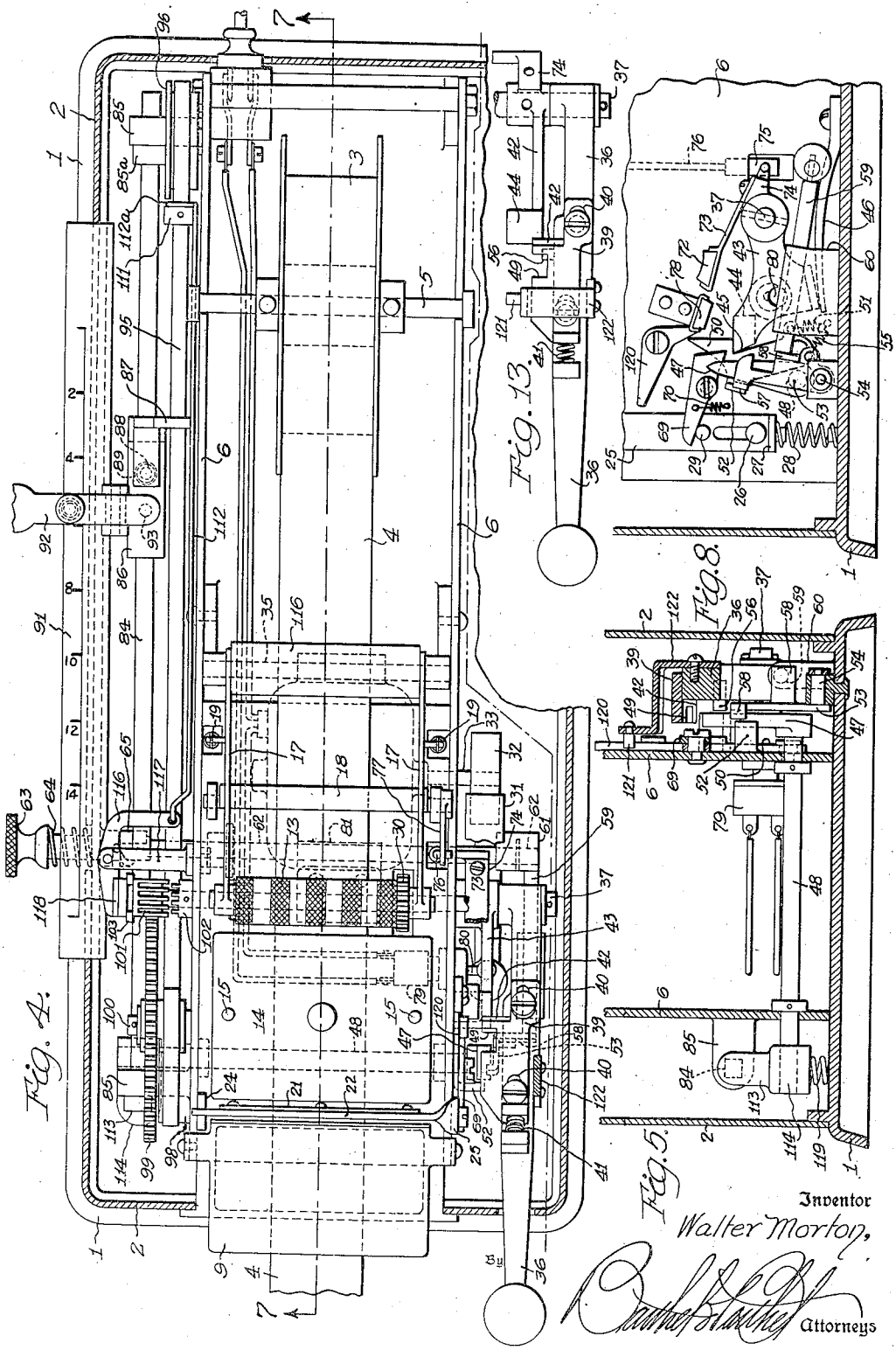


Fig. 4.

Fig. 13.

Fig. 8.

Fig. 5.

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TAPE MACHINE

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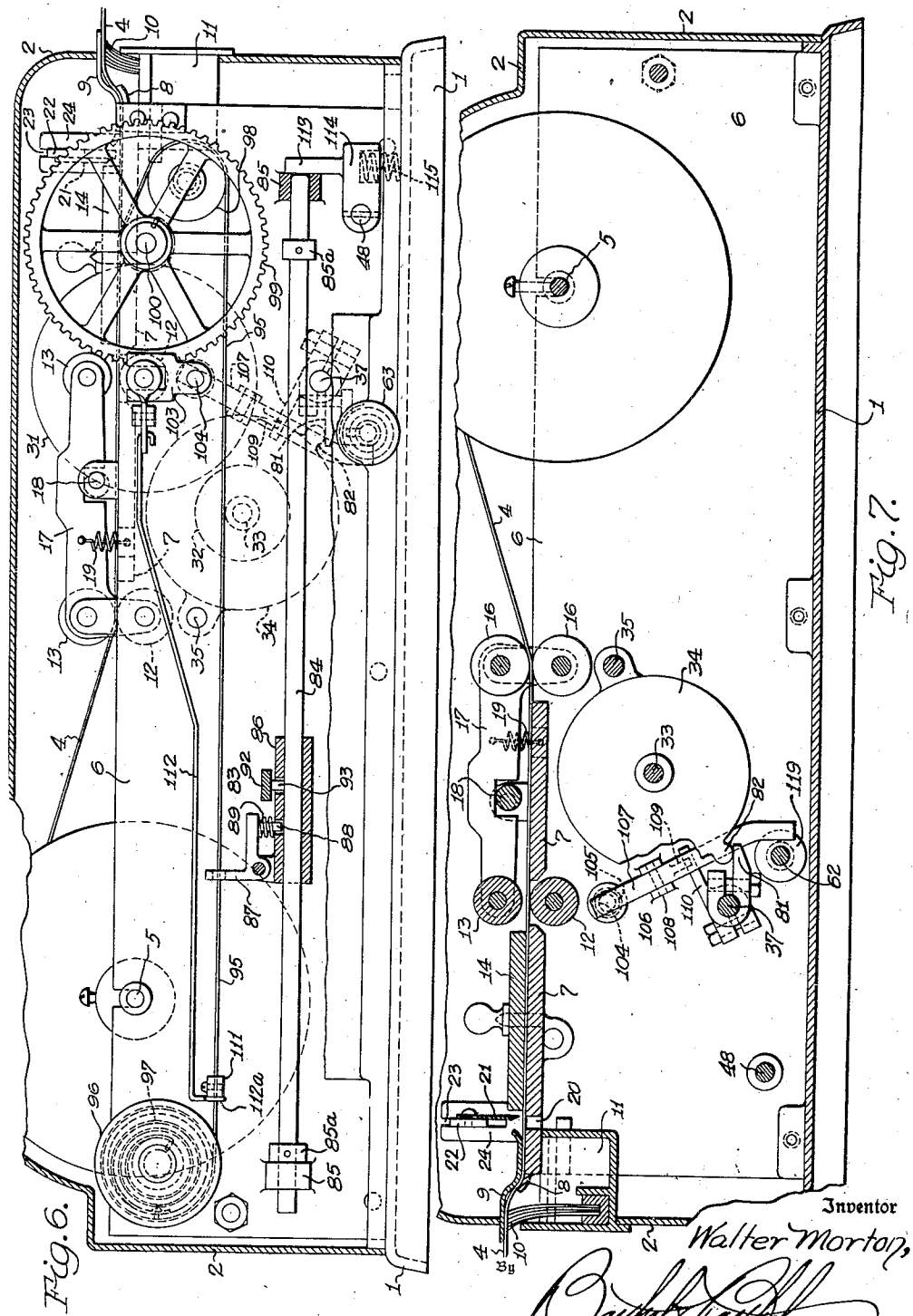


Fig. 6.

Fig. 7.

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TAPE MACHINE

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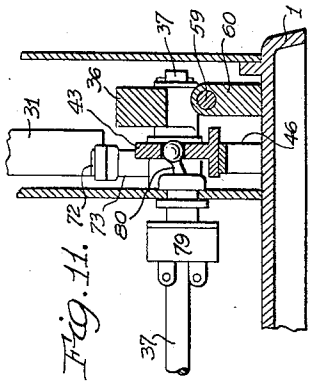


Fig. 11.

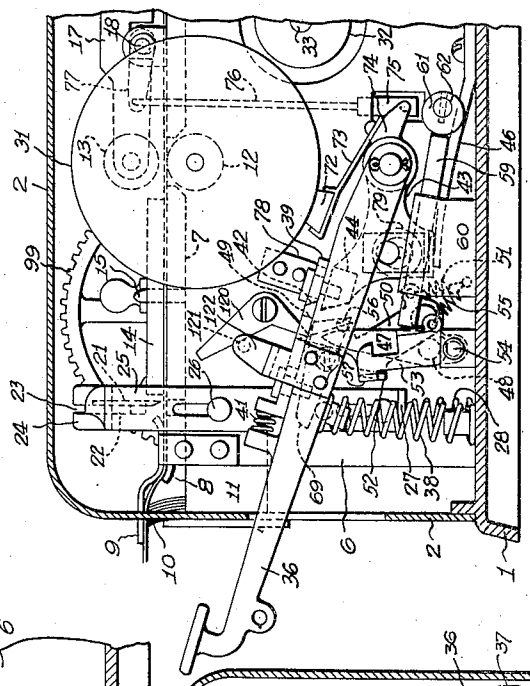


Fig. 12.

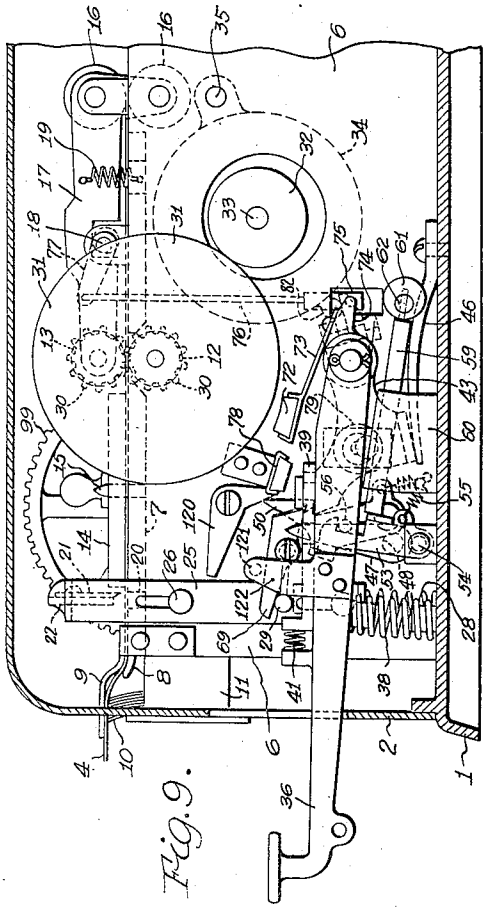


Fig. 9.

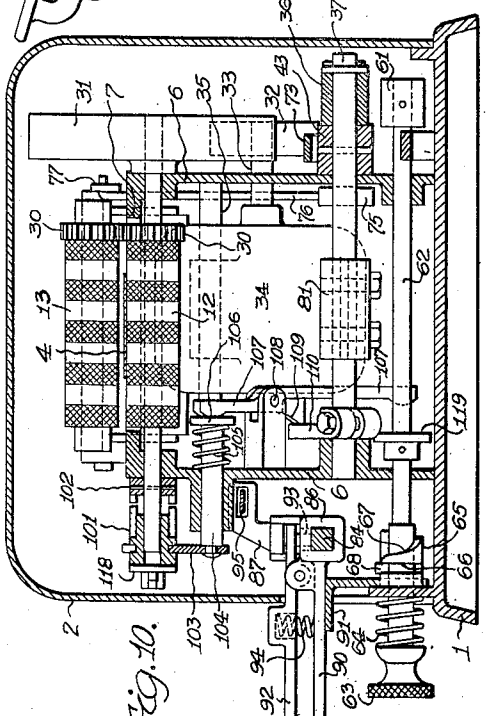


Fig. 10.

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TAPE MACHINE

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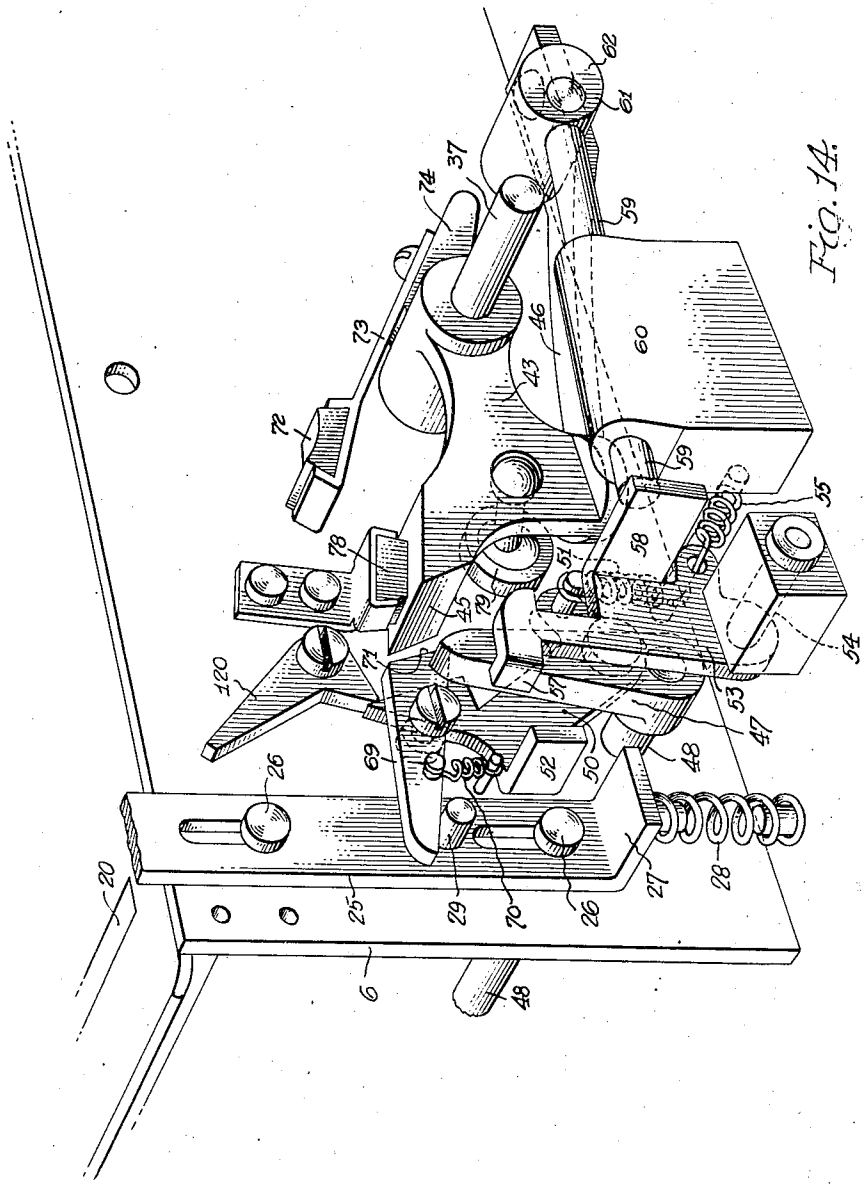


FIG. 14.

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Patented Oct. 18, 1938 2,133,868

UNITED STATES PATENT OFFICE

2,133,868

TAPE MACHINE

Walter Morton, Windsor, Ontario, Canada, assignor of one-half to Ernest D. Lane, Windsor, Ontario, Canada

Application May 13, 1937, Serial No. 142,458

30 Claims. (Cl. 164—49)

This invention relates to a machine for feeding and cutting off tape, particularly gummed paper tape, used in holding and sealing the wrappings of boxes, packages, and the like, and for other uses to which such tape is adaptable.

An object of the present invention is to provide a machine of simple construction which may be set to feed and cut off accurately measured lengths of gummed tape or may be adjusted to automatically and continuously feed any desired length of such tape, said measuring means being also adjustable to change the lengths of measured portions within the range of the machine.

A further object is to provide motor driven means for feeding gummed tape and arranged to be automatically stopped by the measuring means, means being also provided to automatically sever the strip when the measured length has been fed out, and braking means being provided to stop rotation of rolls for feeding the tape, immediately upon the discontinuance of the application of power to rotate said rolls and prevent over feeding of the tape and movement thereof while being severed.

It is also an object to provide means which may be set to discontinue the operation of the measuring means when it is desired to feed an indefinite length of tape or may be set to prevent the control lever from being locked in an inoperative position when the machine is set to feed and cut off measured lengths.

It is a further object to provide such a machine with a single hand operated control lever for starting the operation of the machine, together with mechanism the operation of which is dependent upon the actuation of the control lever, for automatically severing the tape when the desired length has been fed out and for automatically operating a switch to cut off the current from the motor.

A further object of the invention is to provide a completely automatically operating machine for the purpose having certain other new and useful features in the construction, arrangement and combination of parts all as hereinafter more fully described, reference being had to the accompanying drawings in which

Figure 1 is a longitudinal section through the detachable casing or cover of a machine illustrative of an embodiment of the invention and showing the mechanism in side elevation and in normal raised position;

Fig. 2 is a detail showing the operating mechanism adjacent the front end of the machine, in elevation and with the control lever thereof removed;

Fig. 3 is a transverse section substantially upon the line 3—3 of Fig. 1;

Fig. 4 is a plan view of the machine with the removable casing or cover in longitudinal section;

Fig. 5 is a transverse section substantially upon the line 5—5 of Fig. 1;

Fig. 6 is a longitudinal vertical section through the cover substantially upon the line 6—6 of Fig. 3;

Fig. 7 is a longitudinal section substantially upon the line 7—7 of Fig. 4;

Fig. 8 is a sectional detail similar to that of Fig. 2 and showing the operating mechanism in mid position;

Fig. 9 is a longitudinal section of a forward end portion of the machine showing the operating mechanism in a position shown in Fig. 8 with the control lever at the lower end of its stroke;

Fig. 10 is a transverse section substantially upon the line 10—10 of Fig. 1;

Fig. 11 is a sectional detail substantially upon the line 11—11 of Fig. 1;

Fig. 12 is a section substantially the same as that of Fig. 9 with the control lever at the upper end of its stroke as shown in Fig. 1 and also showing means in operative position to prevent the locking down means for said lever from operating;

Fig. 13 is a detail plan view of the control lever and parts mounted thereon, and also of the adjacent lever lock; and

Fig. 14 is a perspective detail of the operating lever mechanism.

As shown in the drawings, 1 indicates the base of the machine upon which rests a detachable sheet metal casing or cover 2 adapted to enclose the operating mechanism of the machine and to be removed or lifted off whenever it is desired to get at the operating mechanism or to place in position, a roll of tape 3 from which roll the tape 4 is adapted to be drawn and fed out through an opening in the front end of the casing, by the operating of the machine, said roll being mounted upon a shaft 5, which shaft is mounted for free rotation within bearings upon parallel plates 6 forming the sides of a supporting frame mounted upon the base 1 within the casing 2.

Supported by these plates 6 adjacent the forward end of the machine, is a table 7 and an upwardly curved guide 8 projects from the forward end of the table toward an opening in the cover

2, this guide comprising spaced apart members of plates, the upper member 9 being curved similarly to that of the lower member 8 and this upper member extends through the opening in the end of the cover and above a brush 10, the lower end of which is supported in any suitable manner within a water pan 11 to keep the brush dampened so that the strip 4 as it is fed out of the machine will be dampened just as it leaves the opening in the casing 2 and be ready for application to the work to which it is to be applied. The strip 4 extends over the upper surface of the table 7 with its forward end extended between the curved guides 8 and 9 so that it will be projected out of the machine over the brush 10 as the strip is fed forwardly by a pair of feed rolls 12 and 13, a weight member or plate 14 being loosely set upon the table 7 between the feed rolls and the forward end of the table to hold the strip down upon the table so that it will not buckle as it is fed forward by the rolls, said weight plate being free to rise but being held against movement longitudinally of the paper strip, by pins 15 set in the table 7 and extending through openings in the plate.

Rearwardly of the feed rolls 12 and 13, is a pair of guide rolls 16 between which the strip 4 is guided in its forward movement, these rolls being mounted in suitable bearings upon the side walls or plates 6 of the supporting frame. Pivotally mounted upon the bearing shaft for the upper of the rolls 16 is a pair of forwardly extending arms 17 between which the feed roll 13 is mounted upon a shaft having bearings at its ends on the ends of the arms 17, and therefore by an upward swing of the arms 17, the roll 13 is moved away from the roll 12 and out of contact with the tape 4 passing between these feed rolls. This upward swing of the arms 17 is effected by means of a cam shaft 18 extending across the supporting frame and having bearings at its ends upon the plates or side walls 6 of the frame, said arms 17 being provided with notches intermediate their ends to receive said cam shaft 18 so that upon rotation of the shaft its cam side will be brought into engagement with the upper end of the notches in the arms 17 and swing said arms upwardly against the action of a coiled spring or springs 19 and thus stop the feeding of the tape by a separation of the feed rolls, one or both of which rolls may be knurled to prevent slippage of the rolls in engagement with the tape. A transverse opening is provided in the table 7 to provide for the lower roll 12 so that its upper side will engage the lower side of the tape as the tape passes over the table and between the rolls 12 and 13.

A second slot or opening 20 is provided adjacent the forward end of the table to receive a cut-off plate or knife 21 for severing the tape when the proper length has been fed out of the machine between the guides 8 and 9 and this knife 21 is secured to a cross bar 22, one end of which is guided within a vertical slot 23 in a post 24 secured to one of the walls 6 of the frame, and the opposite end of this bar 22 is formed integral with the upper end of a slide 25 which is mounted against the outer side of the other wall 6 in any suitable manner, as by screws 26 passing through longitudinal slots in the slide. The lower end of this slide 25 is formed with an outturned foot 27 forming a seat for a coiled spring 28 so that the spring will normally exert a force to move the slide upwardly and thus raise the knife 21 and hold the same in up position. The downward movement of the slide and knife is effected by operating mechanism hereinafter described, the slide 25 being provided with an outstanding pin 29 to be engaged by a member of the operating mechanism.

To drive the feed rolls 12 and 13, to one end of the shaft of each roll is secured a pinion or gear 30, which pinions are adapted to intermesh when the upper roll is lowered by the downward swinging movement of the arms 17 upon which the upper roll carrying the upper pinion, is mounted, and secured to the opposite end of the shaft of the roll 12, is secured a large pulley 31 adapted to be frictionally engaged and driven by means of a friction wheel 32 fixed upon the outer end of the drive shaft 33 of an electric motor 34, which motor is pivotally supported at one side by means of a pivot shaft 35 mounted in the walls 6 of the supporting frame and extending thereacross through a suitable bearing therefor at one side of the casing of the motor so that the motor together with the friction pulley 32 upon its shaft, may swing a limited amount to bring the pulley into frictional contact with the friction wheel 31 on the end of the shaft of the lower driving roll 12 and thus transmit driving motion from the motor shaft to the lower feed roll 12 and when the gears 30 on these feed rolls are brought into mesh, both rolls will be positively driven to feed the strip forwardly over the table 7 and between it and the weight plate 14, and thence beneath the cutting blade 21 and out through the slot in the forward end of the casing in contact with the moistening brush 10.

The operating mechanism shown in elevation in Figs. 1, 2, 8, 9, and 12, includes a control lever 36 which is pivotally mounted at its inner end upon a shaft 37 for free up and down movement and extends forwardly through a vertical slot in the end of the casing 2 and is provided upon its outer end with a handle portion by means of which said lever may be depressed against the action of a coiled spring 38 interposed between the base 1 of the machine and the lower side of the lever 36 to exert a force for normally holding said lever in an up position, said lever turning freely upon the shaft 37. Mounted upon the upper side of this lever 36, is a slide 39 provided with longitudinal slots 40 to receive screws extending through these slots and into the screw threaded openings in the upper side of the lever so that this slide may move longitudinally of the lever in one direction against the action of a coiled spring 41 interposed between the end of the slide and a lug extending upwardly from the upper side of the lever. This slide is formed with a lateral projection having a beveled end edge 42 which is adapted to be engaged by a lever dog 43 secured at one end to the shaft 37 adjacent the control lever 36 to turn with said shaft and this dog has a lateral projection 44 and the forward edge of this projection is beveled to provide a comparatively sharp angle 45 to engage beneath the beveled rear side 42 of the projection or lug on the slide 39 so that upon depression of the control lever 36, this projection of the beveled side 42 of the lug on the side of the slide, will depress the lever dog 43 against the action of a spring 46 beneath the dog one end of which is secured to the base of the machine. This depression of the control lever 36 which depresses or swings the lever dog 43 downwardly, also turns the shaft 37 by reason of said dog being secured to said shaft, and to release the control lever, said slide 39 is moved endwise from engagement with the sharp end of the dog 43, by means of a pointed lever

47 secured upon the end of a transverse shaft 48 which is mounted in bearings on the side walls 6 of the supporting frame and extends through these walls at each end and this pointed lever 47 is normally held in a substantially vertical position with its pointed upper end in a position to engage within a notch 49 in the inner side of the slide 39 when the control lever 36 is depressed a certain distance and by engagement with one side of the notch will move the slide longitudinally against the action of its spring 41 when the shaft 48 on which the lever is secured, is rotated to swing said lever 47 toward the forward end of the machine, thus moving the slide forwardly and releasing its projection 42 from engagement with the pointed end 45 of the lever dog 43

To hold the lever dog 43 swung downwardly to the limit of its movement, a latch lever 50 is pivotally attached at its lower end to the adjacent wall 6 of the supporting frame and this latch lever is normally swung toward the projection 44 on the lever dog, by means of a coiled spring 51 so that upon the lever dog 43 reaching the lower end of its swinging movement, this latch lever 50 will engage over the projection on the lever dog and hold it in its down position. This latch lever 50 is also formed with a laterally extending lug 52 on its forward edge and this lug 52 projects into the path of swinging movement of the pointed lever 47 so that upon forward swinging movement of said pointed lever 47, it will come into engagement with this lug 52 and swing the latch lever 50 forwardly to disengage it from engagement with the projecting end portion 44 on the lever dog 43, thereby permitting said lever dog to turn upwardly.

There is also provided a swinging latch or dog 53 which is pivotally mounted at its lower end as at 54 within a bearing upon the base of the machine for swinging movement parallel with the lever 47, it being positioned between said lever 47 and the inner side of the control lever 36, said latch 53 being normally held swung rearwardly toward the lever dog 43 by means of a coiled spring 55, said dog 53 being adapted to swing rearwardly and engage over a pin 56 projecting from the inner side of the control lever 36 when said lever has reached the lower end of its downward swinging movement and thus hold said control lever in that position. To release the latch 53 from over the pin 56, said latch is provided with a laterally extending lug 57 at its upper end and forward edge to project into the path of swinging movement of the pointed lever 47 when said lever is swung forwardly and thus engaging said lug 57, swinging said latch 53 out of engagement with the pin 56 to permit quick upward movement of the control lever 36.

This latch 53 is also provided with a lug 58 projecting from its rear side and laterally of the latch and is adapted to be engaged by a longitudinally movable pin 59 which is mounted for sliding movement within a suitable bearing 60 mounted upon the base of the machine. This pin 59 is provided to swing the latch 53 forwardly and out of the path of movement of the pin 56 on the control lever so that said control lever will not be held at the lower end of its movement by the engagement of said latch with said pin, and to move this pin 59 endwise and hold the latch in inoperative position, a cam member 61 is mounted upon the end of a shaft 62 extending through bearing openings in the walls 6 of the frame transversely of said frame and out through an opening in a lug on the base at the side thereof opposite that at which said cam is positioned, and this shaft 62 is provided upon its outer end with a knurled head 63 by means of which the shaft may be rotated by hand. Sleeved upon the shaft 62 between the head 63 and the lug on the base through which the shaft extends, is a coiled spring 64 which spring normally exerts a force to hold the shaft moved endwise with a sleeve 65 secured upon the shaft inwardly of the bearing lug for the shaft, which sleeve will thus be normally held in frictional contact with said bearing lug and resist rotation of the shaft 62 to hold said shaft in the position to which it is turned. This sleeve is formed with an annular groove 66 to receive a fixed pin or member 68 on the shaft 62 when the shaft is turned without being pressed inwardly against the action of the spring 64, or will follow the cam 67 by pressing inwardly on the shaft and then by turning the shaft, said shaft will be moved endwise by reason of the engagement of the member 68 with the cam surface 67.

When the control lever 36 is moved to the lower end of its stroke, that is, when the machine is set to sever measured lengths of tape, and the slide 39 has been moved endwise by the pointed lever 47, the operator may perhaps not release the control lever 36 immediately upon its reaching the lower end of its stroke and if he does not do so the pin 56 will be released from and then immediately reengaged therewith by the latch 53 before the control lever 36 is released by the operator and starts its upward movement, and therefore said control lever will be locked in its down position and cannot be again operated until released by the turning of the cam shaft 62 and the longitudinal movement of the pin 59, which will swing the latch 53 and release the control lever. Therefore when the machine is being operated to cut off short measured lengths of tape it is advisable to throw the latch member 53 out of operative position by means of the turning of the cam 61 so that the control lever will not be locked in down position.

To move the slide 25 which carries the knife 21 with a quick downward movement in severing the tape, a suitable pawl 69 is pivotally attached or mounted intermediate its ends upon the adjacent wall 6, with the long end of said pawl projecting across the outer face of the slide 25 where it is held normally in contact with the pin 29 on said slide by means of a spring 70. The opposite or short end of this lever pawl extends into the path of movement of the sharp forward edge or corner of the lever dog 43 and therefore when said lever dog is swung downwardly as previously described, this sharp angle 45 will snap past the lower angular end 71 of the lever pawl 69 and when said lever dog is released by the latch lever 59 it will be swung upwardly by its spring 46 and its sharp forward end 45 will engage beneath the end 71, and rock said lever pawl upon its pivot forcing its long end downwardly against the pin 29 on the slide 25 and thus move the slide and the knife 21 with a very quick stroke to sever the tape.

With the parts in rest position as shown in Fig. 1, the friction wheel 31 is held against rotation, by means of a brake shoe 72 carried by an arm 73 which arm is attached to a lug 74 projecting rearwardly from the rear end of the lever dog 43 with said arm extending longitudinally of said dog and forwardly in a position to bring the brake shoe carried thereby into contact with the periphery of the friction pulley 31 when said

lever dog is in its upwardly swung position and therefore whenever the control lever is operated to start the operation of the machine and the parts have operated to feed a length of tape and cut it off, the rotation of the friction disk 31 due to inertia, will be immediately stopped by the friction shoe 72 coming into contact with its periphery and therefore there will be no overrunning movement to cause a feeding of the tape beyond the desired length, thus insuring the cutting off of accurately measured lengths.

Pivotally attached to the rear end of the lug 74 is a block 75 on the lower end of a rod 76, the upper end of which rod is pivotally connected to the free end of an arm 77 secured at its opposite end to the end of the cam shaft 18 which as before described is arranged to extend across the table 7 beneath the two arms 17 which carry the feed roll 13 upon their forward ends and, therefore whenever the lever dog 43 is released and swings upwardly into contact with a suitable stop or buffer 78, this swinging movement will exert a downward pull upon the rod and through the arm 77 will rock the cam shaft 18 and lift the feed roll 13 out of engagement with the tape.

At the same time, this upward swinging of the lever dog 43 will operate an electric switch indicated at 79 and shut off the current from the motor 34, said switch as shown in Fig. 11 being provided with a snap lever 80 having a ball head on its outer end to engage within an opening in the lever dog 43 so that upon swinging movement of the lever dog upwardly, the current to the motor will be cut off and when said lever dog is swung downwardly by the operation of the control lever 36 as previously described, said arm of the switch 79 will be swung downwardly and connect the motor to the current supply lines (not shown). Therefore the movements of the lever dog operate to turn the current on and off to start and stop the motor automatically.

To automatically swing the motor 34 upon its pivotal support 35, a clamp member 81 is clamped firmly to the shaft 37 opposite the side of the motor body and this clamp is adapted to engage a projection 82 on the side of the motor body opposite that at which the pivot therefor is located, and therefore, when the shaft 37 is rotated in one direction by the downward swinging movement of the lever dog 43, the projecting end of this clamp will engage beneath the lug 82 and swing the motor upwardly together with the friction pulley or wheel 32 which is mounted upon the end of the motor shaft, to bring this friction pulley into frictional engagement with the large friction pulley 31 and thus transmit driving power from the motor shaft to the shaft of the lower feed roll 12 which, in turn, will through the intermeshing of the gears 30 upon the ends of the feed rolls 12 and 13 drive these rolls in contact with the tape and feed the same forwardly with a rapid movement depending upon the proportional diameter of the two friction pulleys and the speed of the motor, the two gears 30 being brought into meshing engagement at the proper time through the operation of the cam shaft 18 which is rotated by means of the connecting rod 76 attached at its lower end to the rear end of the lever dog 43.

The mechanism for accurately measuring the lengths of tape to be fed out of the machine and cut off, comprises an adjustable stop device indicated as a whole by the numeral 83 which is mounted for longitudinal adjustment upon a rod 84 and which rod is preferably of rectangular form in cross section, and this rod is mounted in bearings 85 projecting laterally from the wall 6 of the supporting frame at the side of said frame opposite that at which the control lever and operating mechanism are located. This rod 84 has a free limited longitudinal movement in said bearings. Said stop device which is adjustable along the rod 84 consists of a sleeve 86 slidable upon the rod and adapted to be held in adjusted position by means of an angle lever 87, this sleeve carrying said angle lever 87 pivotally mounted thereon between upwardly extending ears on said sleeve with its horizontal arm provided with a pin 88 extending downwardly through an opening in the sleeve to engage the upper side of the rod 84 whenever said lever 87 is swung against the action of a coiled spring 89 interposed between said horizontal arm and said sleeve.

As shown in Figs. 4 and 10, the sleeve 86 is provided with an outwardly extending integral handle 90 which extends outwardly through the longitudinal slot in the wall of the casing 2 and over a scale 91 extending the full length of said slot, and there is an upper pivotally supported handle 92 extending parallel with the handle 90 and carrying a pin 93 on its inner end to project through an opening in the upper side of the sleeve and frictionally engage the upper side of the rod 84, a coiled spring 94 being interposed between the outer ends of said handles to normally hold said pin 93 in firm frictional engagement with the rod 84. Therefore by pressing the outer ends of the two handles toward each other, the pin 93 is lifted out of engagement with the rod 84 and the sleeve 86 may then be shifted to any desired position along the rod 84, the scale 91 indicating the position of the sliding sleeve 86 which through the medium of the upwardly extending arm of the right angle lever 87 determines the length of the tape which is to be fed out and cut off, said upwardly extending arm of said lever 87 having a slot therein through which a flexible steel tape or strip 95 extends, said steel tape being adapted to be wound upon a pulley 96 in one direction by means of a coiled spring 97 within the pulley for turning it in one direction and winding up the tape. From the pulley 96 this steel tape 95 extends in a straight horizontal run extending parallel with the rod 84 with the forward end of the tape extending beneath and partly around an idler wheel 98, with this end of said steel tape secured to the projecting hub of a large gear 99, to be wound thereon which gear is mounted for rotation upon a stud 100, said stud projecting outwardly from the adjacent wall 6 of the supporting frame, and this large gear 99 is in permanent mesh with a pinion 101 of extended length mounted for sliding movement upon the outer end of the shaft of the lower feed roll 12.

To drive the large gear 99 and thereby wind the steel tape 95 about its hub against the action of the coiled spring 97 and produce a longitudinal traveling movement of the steel tape between the winding roll 96 and the idler roll 98, a clutch member 102 is pinned to the shaft of the lower driving roll 12 in opposed relation to the small gear 101, said clutch member and gear being formed with teeth adapted to intermesh when the small gear is slid longitudinally toward the clutch member. When so intermeshed, power is transmitted to the small gear 101 and from this gear to the large gear 99 to wind the steel tape about its hub, and to disconnect the small gear from the clutch member, said small gear is formed

with a circumferential groove to receive the end of a fork 103 which is secured to the outer end of a longitudinally shiftable shaft 104, which is mounted within a long bearing upon the adjacent side wall 6 of the supporting frame with a coiled spring 105 interposed between the wall and a head 106 on the inner end of this shaft. A cam lever 107 is pivoted intermediate its ends upon a stud 108 projecting inwardly from the wall 6 and the lever 107 is adapted to engage the head 106 of the shaft 104 at its upper end. The long lower end portion of said lever 107 extends downwardly with its lower end adjacent the shaft 62 and projecting from the outer side of said lever is a lug 109 having a cam surface or inclined edge portion adapted to be engaged by an arm 110 secured in any suitable manner to the shaft 37 upon which the control lever 36 and the lever dog 43 are mounted. Therefore when the shaft 37 is rotated by an upward movement of the lever dog 43 upon release thereof at the lower end of the downward movement of the control lever 36, the arm 110 on said shaft 37 will be brought into engagement with the inclined or cam surface of the projection 109 on the lever 107 and said lever will be swung upon its pivot to force the shifting shaft 104 longitudinally against the action of the spring 105 and thus move the pinion 101 out of engagement with the clutch member 102 and thus disconnect said pinion from driving engagement with the clutch member to stop the winding of the steel tape 95 about the hub of the large gear 99. Therefore the longitudinal movement of the steel tape is stopped and started in timed relation to the stopping and starting of the motor 34 and also in timed relation to the operation of the feed rolls 12 and 13 for feeding the tape, and also in timed relation to the cutting off movement of the knife 21 to sever that portion of the gummed tape which has been fed out and the length of which portion is determined by the setting of the stop device 83 along the rod 84, said steel tape 95 being threaded through the slot in the upwardly extending arm of the bell crank lever 87 and secured to this steel tape 95 in any suitable manner is a head 111. Said head 111 is adapted to engage a loop or eye 112a on one end of a rod 112 so that as said steel tape is moved longitudinally by winding it upon the hub of the large gear 99, said head 111 will move away from said eye 112a and come into engagement with the upwardly extending arm of the bell crank 87, tilting the bell crank to bring its pin 88 into firm engagement with the rod 84 and through further movement of the tape 95, will move said rod 84 longitudinally in its bearings 85 a distance limited by stop collars 85a on said rod, the forward end of said rod being brought by such longitudinal movement, into engagement with an upwardly extending arm 113 on a block 114 which is pinned at one end to the shaft 48 upon the opposite end of which the pointed lever 47 is secured. The block 114 is thus rocked downwardly against the action of a coiled spring 115 interposed between its lower side and the base 1 of the machine, thus rocking the shaft 48 and its pointed lever 47 in a direction to swing the latch lever 50 and also the latch dog 53 and release the lever dog 43 so that said lever dog will fly up quickly, operating the lever pawl 69 and the slide 25 to sever the tape and operate the switch 79 to stop the motor 34. Therefore the lengths of gummed tape 4 which are to be fed out and cut off, are accurately determined in length by the length of the movement of the steel tape 95 which is determined by the head 111 coming into contact with the stop device 83 which moves the rod 84 longitudinally to rock the shaft 48 and immediately stop the operation of the machine.

The rod 112 which is provided with the loop 112a at its rear end and through which loop said tape 95 freely passes, is connected at its forward end to a bell crank brake lever 116 which is pivotally supported intermediate its ends upon a supporting stud 117 with its short arm provided with a brake pad 118 in opposed relation to the outer end of the pinion 101, and therefore, when said pinion is released from clutching engagement with the clutch member 102 as hereinbefore described, and the transmission of motion from the shaft of the feed roll 12 to the large gear 99 is stopped, any further continuance of the rotation of said gear and pinion is resisted by said brake 118 when the end of the measured distance of travel of the steel tape 95 is reached and the gear 99 then released to permit the spring 97 to wind it back upon the winding pulley 96 and from the hub of the gear 99, this return travel of the tape 95 will move the head 111 back into contact with said loop 112a on the rod 112 exerting a pull by reason of such travel, upon the brake lever 116 to bring the brake pad 118 into braking engagement with the pinion 101, thus resisting the travel of the steel tape caused by the spring 97 and prevent any slack being formed in said tape.

As before described, when the shaft 62 is rotated by hand, the cam 61 will operate through the pin 59 to hold the latch or dog 53 in inoperative position, this being for the purpose of preventing the control lever 36 from being locked at the lower end of its stroke should the control lever not be released immediately upon its reaching the lower end of its stroke; and when it is desired to continuously feed a strip of gummed tape of uncertain length or of a length greater than that provided for by the operation of the measuring means hereinbefore described, the operator will press inwardly upon the shaft 62 to move the pin 68 into engagement with the cam surface 67 and he will then turn the shaft, thus moving the shaft endwise to move a collar 119 fixed on the shaft 62 into engagement with the lower end of the shifting lever 107, thus preventing said lever from swinging to permit the pinion 101 to engage its driving clutch member 102, and therefore the measuring mechanism including the steel tape, travel of which is effected by rotation of the gear 99, will be prevented from operating. However, the feed rolls 12 and 13 will be operated as usual by the motor to feed out the gummed tape, as long as the control lever is held at the downward end of its stroke.

When the desired length of gummed tape has been fed out, the operator will release said control lever but such movement will not release the latch lever 50 from engagement with the lever dog 43 and permit said dog to fly upwardly to operate the lever pawl 69 to effect a downward movement of the slide 25 and cut off the tape or to operate the switch and stop the motor. Therefore a double pawl 120 is pivotally supported above said latch lever 50 with one arm arranged to engage the upper pointed end of said latch and its other arm in position to be engaged from beneath by a pin 121 projecting from a bracket 122 secured to the control lever 36 so that when said lever 36 is released by the operator and flies up under the urge of its spring 46, said pin 121 will

tilt the said double pawl, bringing its short arm into engagement with the upper end of the latch **50** and release said latch from engagement with said lever dog **43**, permitting it to fly up and turn the lever pawl **69** into engagement with the pin **29** on the knife slide **25**, operating the knife to quickly and automatically sever the extended length of gummed tape which has been fed out.

With the elements of the machine in the position shown in Figs. 1 and 2, the machine is at rest and ready to be operated by pressing downwardly upon the control lever **36**. The first portion of the downward swinging movement of this control lever, brings the slide **39** into engagement with the forward end of the lever dog **43**, thus swinging said dog downwardly and rotating the shaft **37** to which the dog is secured. This rotation of the shaft **37** brings the clamp member **81** on said shaft into engagement with the projection **82** on the casing of the electric motor **34** and said motor is swung upwardly thereby to bring the friction wheel **32** on the outer end of its shaft into frictional engagement with the large friction pulley **31** mounted upon the shaft of the lower feed roll **12**. In timed relation to this engagement of the friction wheels to transmit motion from the motor shaft to the lower feed roll, the lever dog **43** by its downward movement, operates the control switch lever **80** to start the motor.

This downward swing of the control lever **36** disengages the brake shoe **72** from engagement with the periphery of the large pulley **31** to permit free rotation of said pulley when driven by its engagement with the pulley **32**, which is driven by the motor and in timed relation to the bringing of the friction pulleys into contact, the downward movement of the lever dog **43** operates through the connecting rod **76** to permit the upper feed roll **13** to swing downwardly and thereby engage its gear **30** with a like gear on the shaft of the lower feed roll **12** so that as soon as the motor starts to rotate the lower feed roll, motion will be transmitted to the upper feed roll and the feeding of the gummed tape **4** forwardly, will begin.

This forward feeding of the gummed tape is quite rapid due to the rapid rotation of the feed rolls and therefore if the measuring mechanism be set at this time to feed out comparatively short lengths of gummed tape, the mechanism controlling the operation of the release of the lever dog **43** and the latch lever **50** by means of the operation of swinging movement of the lever **47**, may operate so rapidly that the dog **53** will be released from engagement with the pin **56** on the control lever and reengaged therewith before the lever **36** has started its upward swing, in which case the control lever would be locked at the lower end of its stroke. To prevent this the operator may turn the shaft **62** to bring its cam **61** into engagement with the pin **55** which in turn will hold the dog **53** out of operative position so that the control lever will be immediately returned to the upper end of its swinging movement for a second operation.

If the operator desires to feed out a length of gummed tape of a length greater than that provided for by the measuring mechanism, he will move the shaft **62** longitudinally to engage the pin **68** with the cam surface **67** and then by turning the shaft **62** will move the shaft longitudinally and bring the collar **119** on said shaft into engagement with the lower end of the shifting lever **107**, thus holding said lever in a position to hold the pinion **101** out of clutch engagement with the clutch **102** and thus prevent the transmission of motion from the lower roll shaft to the large gear **99** for winding the steel tape **95**. Therefore the measuring mechanism is thus made inoperative and as long as the operator holds the control lever **36** down, the motor will continue to drive the feed rolls **12** and **13** and feed out gummed tape. Immediately upon his release of the control lever, the upward movement thereof will release the latch lever **50** from engagement with the lever dog **43** and said dog will come into contact with the lever pawl **69** and operate the knife to automatically cut off the length of gummed tape which has been fed out.

In the operation of the control mechanism, the lever dog **43** is swung downwardly by its engagement with the slide **39** carried by the control lever **36** but is released from such engagement in timed relation to the downward movement of the control lever, by the engagement of the pointed lever **47** with one side of the notch **49** in said slide, moving said slide longitudinally a sufficient distance to disconnect it from the lever dog **43**. However this downward movement of the control lever has at this time brought the end of the lever dog **43** into engagement with the latch lever **50** which immediately operates to hold said dog in its lowered position and at the same time this downward movement of the latch lever has brought its pin **56** into engagement with the dog **53** so that both said dog and said lever dog **43** is held against upward movement until the pointed lever **47** is swung by rotation of its shaft **48** which rotation is caused by the longitudinal movement of the rod **84** effected by the travel of the tape **95**, which travel brings the head **111** secured thereto, into engagement with the stop device **83** mounted thereon, thus swinging the pointed lever to operate the latch lever **50** and the dog **53** to release both the control lever **36** and the lever dog **43**, permitting them to return to rest position and stopping the operation of the motor and the feed rolls.

With this described arrangement and operation of elements, the machine is operated by a single hand control lever and the mechanism controlled thereby is automatically operative to feed out short measured lengths of gummed tape or indefinite lengths depending upon the setting of the hand operated shaft **62**, and all of the parts of the machine are arranged to operate in certain timed relation so that all the operator needs to do is to compress the control lever and the machine will operate to feed out short continuous or measured lengths of gummed tape and cut it off at the proper time.

Obviously changes may be made in the particular construction of operating mechanism and in the measuring and feeding mechanism without departing from the spirit of the invention which consists in the feeding out of lengths of gummed tape automatically and automatically cut off these lengths at the proper time; therefore I do not wish to limit myself to the particular construction shown and described.

Having thus fully described my invention what I claim is:

1. A machine for the purpose described including means for feeding strip material from its roll, measuring means for measuring the length of the strip fed by said feeding means, means for severing the strip in timed relation to the operation of the feeding means, and means operated by said measuring means to effect the stopping

the operation of the feeding means and to operate said severing means when a predetermined length of strip material has been fed by said feeding means.

2. A machine for the purpose described including means for feeding strip material from its roll, measuring means for determining the lengths of strip material to be fed, a control lever, and means operated by said control lever for stopping said feeding means when a predetermined length of strip material has been fed out, said means operated by said control lever being controlled by said measuring means to stop said feeding means upon the feeding out of a predetermined length of strip material.

3. A machine for the purpose described including means for feeding strip material from its roll, means for operating said feeding means, a motor, means for transmitting motion from said motor to said feeding means including friction pulleys, a control lever, means operated by said control lever for starting the operation of said motor, means operative independently of said control lever for stopping the operation of said motor, and brake means operative in timed relation to the stopping of said motor for stopping the further feeding of said strip.

4. A machine for the purpose described including feeding means for feeding strip material from its roll, measuring means for measuring lengths of material fed out by said feeding means, means for severing said strip material when a predetermined length of material has been fed out, a control lever for controlling the operation of said feeding means, and means controlled by said measuring means for operating said severing means and severing the strip when a predetermined length has been fed out by said feeding means.

5. A machine for the purpose described including a pair of feed rolls for feeding strip material from its roll, means for moving said rolls relatively into and out of engagement with the strip material positioned therebetween, a control lever operative to start said feeding means including said rolls, a member operated by the downward movement of said control lever, means operative at the lower end of the stroke of said control lever for releasing said member, and means connected to said member for moving said feed rolls relatively to bring said rolls into engagement with said strip material and to separate the same upon upward movement of said member.

6. A machine for the purpose described including means for feeding strip material from its roll, a control lever, means for severing the strip, measuring means for determining the length of strip material to be fed, and means operated by said control lever and said measuring means for discontinuing the operation of said feeding means and operating said severing means in timed relation thereto.

7. A machine for the purpose described including means for feeding strip material from its roll, a single control lever having a vertical swinging movement, a lever dog for swinging movement adjacent said control lever, means carried by said control lever for engaging and swinging said dog, measuring means for determining the lengths of strip material to be fed out, means operated by said lever dog for controlling the operation of said feeding means, and means operated by said measuring means for releasing said dog when a predetermined length of strip material has been fed out and to stop said feeding means.

8. A machine for the purpose described including means for feeding strip material from its roll, means for severing said strip, a control lever to start the operation of said feeding means, measuring means for determining lengths of strips of material fed out by said feeding means, and control means controlled by the operation of said measuring means to operate said severing means and sever the strip when a predetermined length has been fed out.

9. A machine for the purpose described including means for feeding strip material from its roll, a control lever having a downward swinging movement, a lever dog adjacent said control lever for swinging movement independent of said control lever, means carried by said control lever for engaging and swinging said dog, measuring means for determining the length of strips to be fed out, strip severing means to sever the strip when the length of strip determined by said measuring means has been fed out, and means operated by said measuring means for releasing said dog to operate said severing means when the length of strip determined by said measuring means has been fed out and sever a strip of predetermined length.

10. A machine for the purpose described including means for feeding strip material from its roll, a motor for operating said feeding means, a single control lever, a lever dog, means for severing said strip, means operated by said lever dog for operating said severing means, and means operated by said lever dog for controlling the operation of said motor, said severing means being operated in timed relation to said feeding means.

11. A machine for the purpose described including feeding means for feeding strip material from its roll, a single control lever, a lever dog swingable adjacent said control lever, means on said control lever for engaging and swinging said dog downwardly upon a downward movement of said control lever, a motor for operating said feeding means, means operated by said lever dog for starting said motor upon downward swinging movement of said dog, severing means for said strip, a member operated by the upward movement of said dog for operating said severing means, and means for releasing said lever dog to permit a quick upward swinging movement thereof into engagement with said member for operating said severing means to quickly sever the strip.

12. A machine for the purpose described including means for feeding strip material from its roll including a pair of opposed feed rolls and a motor for rotating said rolls, means for severing said strip at the end of its forward movement, a control lever, a lever dog supported for swinging movement adjacent said control lever, spring means for swinging said dog upwardly, means carried by said control lever and arranged to engage and swing said lever dog against the action of its spring upon downward movement of said control lever through the first portion of its swinging movement, latch means for engaging said lever dog to hold the same at the lower end of its swinging movement, a member to be engaged by said lever dog upon upward movement thereof for operating said severing means, and means for releasing said latch means from said lever dog to permit a quick upward movement of said dog independently of said control lever and operate said severing means to sever said strip.

13. A machine for the purpose described including means for feeding strip material from a roll of said material, measuring means for measuring the length of material to be fed out of the machine, a control lever, a lever member arranged for swinging movement, means carried by said control lever for engaging said lever member, latch means for engaging and holding said lever member at the lower end of its stroke, spring means for swinging said lever member in a direction opposite to that in which it is swung by said control lever, means for severing the strip material at the end of its feeding movement determined by said measuring means and operated by movement of said lever member when swung by said spring means, and means operated by said measuring means for releasing said lever member when a measured length of strip material has been fed out to the desired length, to sever said strip.

14. A machine as characterized in claim 13, and including a latch member for holding said control lever at the lower end of its stroke, said latch member being adapted to be released from said control lever by said means operated by said measuring means, simultaneously with the release of said lever member.

15. A machine of the character described including means for feeding a strip of material from a roll of that material, measuring means for measuring lengths of said strip to be fed out and severed, said measuring means including a travelling member, the travel of which is synchronized with said feeding means, stop means for stopping the travel of said member at the end of the travel the length of which is determined by said measuring means, means for operating said feeding means and said travelling member of said measuring means, means for severing the strip of material, and means operated by said travelling member for operating said severing means.

16. A machine of the character described including means for feeding strip material from its roll, measuring means for determining the length of said strip material fed out by said feeding means, severing means operated at the end of the portion of the strip material fed out and the length of which is determined by said measuring means, means for transmitting motion to said feeding means, means for transmitting motion from said feeding means to said measuring means, a control lever, and control mechanism for controlling the operation of said feeding means and said severing means to cause said severing means to be operated and sever the strip material at the end of the portion of said strip fed out by said feeding means and the length of which is determined by said measuring means.

17. A machine for the purpose described and as characterized in claim 16, and including means operated by said control lever for starting said feeding means and controlling the operation of said control mechanism, whereby long strips of material may be fed out and then severed by said severing means upon release of said control lever.

18. A machine of the character described including means for feeding strip material from a roll of that material, means for driving said feeding means, a control lever, a lever dog swingable adjacent said control lever and operative to stop and start said driving means for said feeding means, severing means for severing said strip material, means carried by said control lever for engaging and swinging said lever dog, and means operated by swinging movement of said lever dog for operating said severing means.

19. A device of the character described, including means for feeding strip material from the machine, a motor for driving said feeding means, a control lever, a lever dog pivotally supported for swinging independently of said control lever, means operated by said lever dog for stopping and starting said motor, means for locking said control lever at the lower end of its stroke, means for locking said lever dog at the lower end of its stroke, means for severing the strip material, and a member for operating said severing means and arranged to be operated by an upward swinging movement of said lever dog, whereby said severing means is operated to sever the strip material in timed relation to the discontinuance of the operation of the feeding means.

20. A machine of the character described, including feed rolls for feeding strip material out of the machine, means for measuring lengths of portions of the strip fed from the machine, means for severing the strip material when a predetermined length of the strip has been fed out of the machine, a control lever, a lever dog swingable adjacent said control lever and independently thereof in one direction of movement of said control lever, means operated by said lever dog for stopping and starting said feeding means, means carried by said control lever for swinging said lever dog during downward movement of said control lever, means operated by said lever dog for operating said severing means upon upward swinging movement of said lever dog, spring means for swinging said lever dog inwardly, means for locking said lever dog at the lower end of its swinging movement, and means for releasing said locking means to permit upward swinging movement of said lever dog, said last named means being operated by said measuring means when a length of strip material predetermined by said measuring means has been fed forwardly.

21. A machine of the character described including feeding means for feeding strip material from a roll of that material, means for applying power to said feeding means to operate the same, severing means for severing the strip material, a single control lever and control mechanism controlled by said control lever and including locking means for locking said control lever at the lower end of its stroke and including a spring actuated lever dog, locking means for locking said dog at the lower end of its stroke, and means operated by said measuring means for operating said locking means to release said control lever and said lever dog, and means operated by the upward swinging movement of said lever dog for operating said severing means.

22. A machine as characterized in claim 21, and hand operated means for holding said locking means for said control lever and for said lever dog out of operative position.

23. In a machine of the character described, the combination of feed rolls for engaging opposite sides of strip material to feed said material, power means for operating said feed rolls, severing means for severing said strip material, a control lever, a lever dog pivotally supported for swinging movement independently of said control lever, means carried by said control lever for engaging and swinging said lever dog down-

wardly upon downward movement of said control lever, means for locking said lever dog at the lower end of its stroke, means operated by said lever dog for controlling the application of power to drive said feed rolls, measuring means for determining the lengths of strip material fed forwardly and severed by said severing means, said measuring means including means for operating said locking means for said lever dog and releasing said dog when a length of strip material determined by said measuring means has been fed forwardly, said measuring means including power transmitting means operated by said feeding means, a flexible strip having a straight run and adapted to be moved endwise by said motion transmitting means, adjustable stop means, and a head carried by said flexible strip member adapted to engage said stop means and operate said means for operating said locking means for said lever dog.

24. A machine for the purpose described and including means for feeding strip material from its roll, means for severing said strip, a control lever and control mechanism for stopping and starting said feeding means and operating said severing means; of measuring means comprising a flexible metal strip, members upon which the ends of said strips may be wound to cause a travelling movement of said strip, means for transmitting motion from said feeding means to one of said members on which said flexible strip may be wound, yieldable means for rotating the other of said members for winding said strip thereon, a bar extending parallel with the intermediate portion of said travelling strip, a stop member adjustable along said bar, means carried by said travelling strip for engaging said stop member, and means operated by longitudinal movement of said bar for operating said control mechanism and releasing said lever dog to operate said severing means in timed relation to said feeding means and stop the feeding of said strip material when the length thereof determined by said measuring means has been fed out.

25. In a machine of the character described, the combination of a pair of feed rolls for feeding strip material passed between said rolls, a motor for driving said rolls, gears upon the ends of said rolls adapted to intermesh, a clutch upon the shaft of one of said rolls, measuring means for measuring lengths of strip material to be fed by said feeding means and severed, motion transmitting means for transmitting motion from said shaft of said feed roll and carrying said clutch, said clutch being operative to stop the transmission of motion by said motion transmitting means, measuring means for measuring the length of portions of said strip material to be severed therefrom, said measuring means including a flexible strip adapted to be wound upon spaced apart winding members, one of which is rotated by said motion transmitting means to wind said strip thereon, the other of said winding members being actuated by spring means to wind the strip thereon upon release of said clutch and the stopping of the transmission of power to said motion transmitting means, a bar extending parallel with the intermediate straight run of said flexible strip, stop means adjustable along said bar, a head fixed to said flexible strip and adapted to engage said stop means when said strip is wound upon said winding member actuated by said motion transmitting means, a transverse shaft to be rotated by the engagement of said head with said stop means, means for driving said rolls of said feeding means, means for controlling the operation of said driving means, severing means for severing the strip material, a control lever, a lever dog pivotally supported for swinging movement adjacent said control lever, a latch lever for locking said dog at the lower end of its stroke, a member for locking said control lever at the lower end of its stroke, and means upon said transverse shaft for disconnecting said latch lever from said dog and said member from engagement with said control lever.

26. A machine as characterized in claim 25, and including hand operated means for operating said clutch member and holding the same in inoperative position to stop the transmission of motion by said motion transmitting means and render said measuring means inoperative.

27. A machine as characterized in claim 25, and including brake means for stopping the operation of said motion transmitting means, said brake means being operated by said measuring means in timed relation to the operation of said clutch.

28. In a machine of the character described, the combination of means for feeding strip material from its roll, said feeding means including a pair of rolls, a swinging arm upon the free end of which one of said rolls is mounted, gears upon the ends of said rolls adapted to intermesh when the roll mounted upon said arm is moved by swinging of said arm toward the other roll to bring said gears into intermeshing relation and said rolls into contact with said strip material, cam means for swinging said arm, a motor, friction means for transmitting motion from said motor to one of said feed rolls, a control lever, a lever dog pivotally supported for swinging movement adjacent said control lever, means carried by said control lever for engaging and swinging said lever dog upon downward movement of said control lever, means connecting said lever dog with said cam for operating said arm and swinging said arm to bring said feed rolls into contact with said strip material upon downward swinging movement of said lever dog, means for locking said lever dog at the end of its downward swinging movement, and means operated in timed relation to the movement of said strip material to operate said locking means and release said lever dog, means for severing said strip, and means operated by an upward movement of said lever dog for operating said severing means.

29. A machine as characterized in claim 28, and further characterized by said control lever being pivotally mounted upon a transverse shaft extending adjacent said motor and free to swing upon said shaft, said lever dog being secured to said shaft to turn said shaft when said lever dog is swung by a swinging movement of said control lever, and means upon said shaft for swinging said motor to bring said friction means into operative position.

30. A machine of the character described including means for feeding strip material from its roll and including a pair of opposed feed rolls between which said strip is passed, a motor, means for transmitting motion from said motor to one of said feed rolls, a control lever, a lever dog adjacent said control lever and pivotally supported for swinging movement, means operated by the swinging movement of said lever dog for starting and stopping said motor, a latch lever for engaging and locking said lever dog at the lower end of its stroke, means carried by said control lever for engaging and swinging said

lever dog, a pawl pivotally supported and arranged to be swung by upward movement of said control lever to release said latch lever from engagement with said lever dog, strip severing means, and means operated by upward swinging movement of said lever dog for operating said severing means, whereby a continuous strip may be fed out of the machine by holding said control lever at the lower end of its stroke and then by releasing said control lever, operating said severing means to sever the strip.

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