

May 3, 1949.

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CUTTING AND/OR MARKING APPARATUS

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2 Sheets-Sheet 1

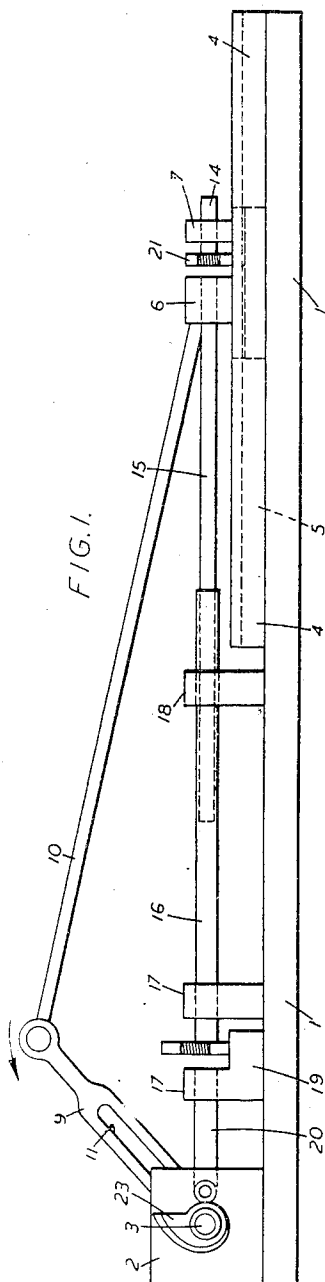


FIG. 1.

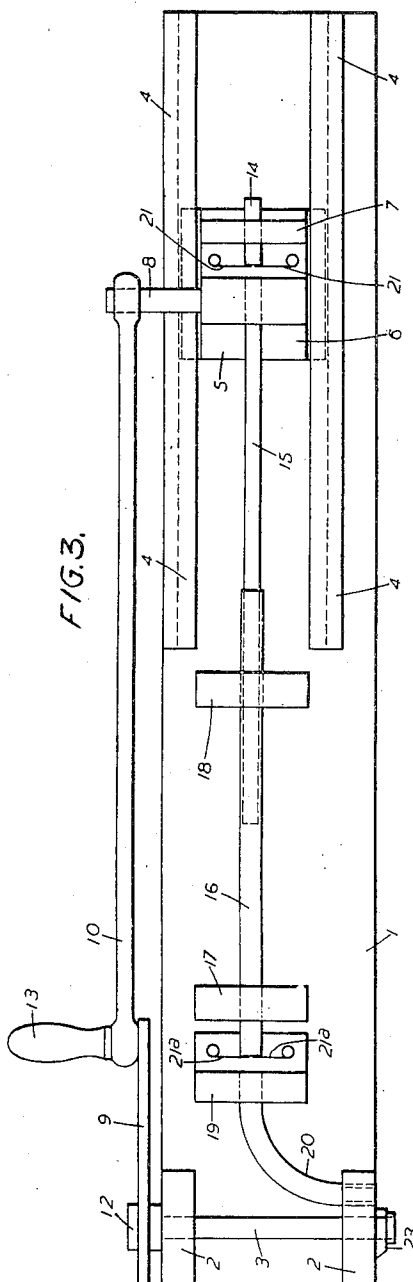


FIG. 3.

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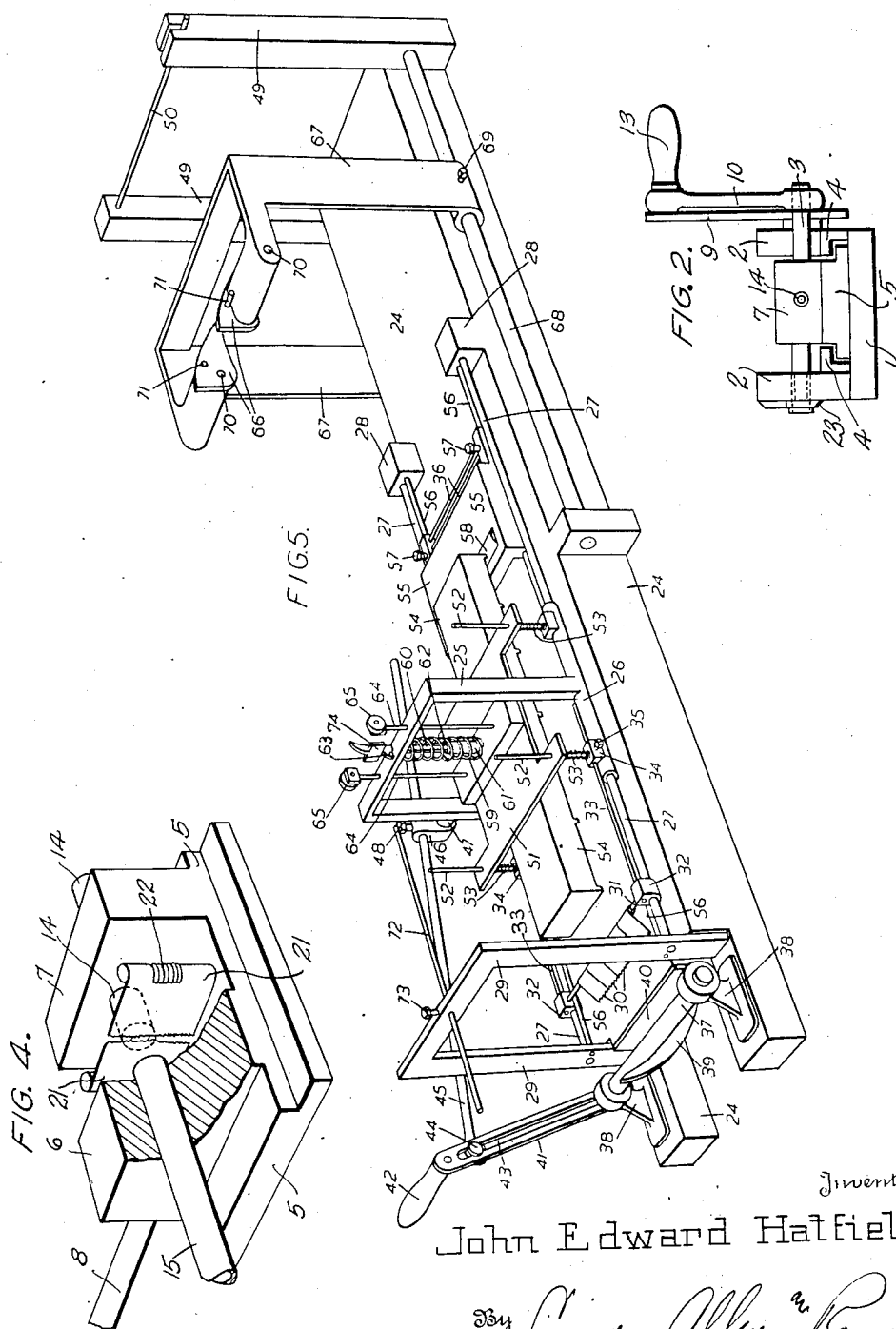
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,469,299

CUTTING AND/OR MARKING APPARATUS

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19 Claims. (Cl. 164—42)

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This invention relates to improvements in or relating to cuttings and/or marking apparatus and more particularly, but not necessarily exclusively, to apparatus for cutting and/or marking flexible material of strip or rod-like form, e. g. tape, elastic, wire or cord.

For the purpose of cutting narrow flexible material into particular lengths and/or applying markings to such material at particular points therealong the usual procedure is to apply one end of the strip material or a marking thereon to one part of a measuring device and then to cut and/or mark such material at a point of alignment with a marking on such measuring device denoting the requisite length to be severed and/or marked. This procedure is obviously very slow in operation and its accuracy is entirely dependent upon the operator exercising appropriate care in carrying out the operation.

One of the objects of the present invention is to provide apparatus with the aid of which operations involving the cutting and/or marking of strip or rod-like material for instance of a flexible and especially of an extensible nature, can be easily, quickly and accurately carried out.

According to the present invention there is provided apparatus for cutting strip or rod-like material into lengths of a particular value and/or for applying markings to such material at particular points therealong, said apparatus comprising means for guiding said material, feeding means for causing said material to move with respect to said guiding means and means for cutting and/or marking said material, said feeding means and cutting and/or marking means being associated with common operating means.

In the use of apparatus according to the present invention the feeding of the material and the cutting and/or marking of such material, after it has been fed through a predetermined distance, is automatically effected by operation of the above mentioned common operating means.

Apparatus according to the present invention preferably includes provision whereby the distance through which the feeding means move between successive cutting and/or marking operations may be varied, so enabling lengths of variable value to be severed and/or markings to be applied with any desired distances of separation therebetween.

The aforesaid feeding means are preferably of a reciprocatory nature and in such cases they preferably include gripping means which automatically grip the material concerned when such feeding means move in a feeding direction and

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automatically release such material during the return movement. Such gripping means may for instance consist of a spring operated trap carried by a reciprocable head or they may consist of gripping fingers adapted to slide over the bed of the machine and suitably mounted for gripping the material to be fed when they move in a feeding direction but to slide freely over such material when they move in the opposite direction. It is also within the scope of the present invention to provide means for preventing or opposing return movement of the material to be cut and/or marked when the feeding means make their return movement, such provision usually being desirable in the application of the present invention to a machine for cutting elastic or like material. Thus for instance we may provide a spring trap, fingers or the like mounted on a fixed part of the machine adjacent to the delivery end thereof and adapted to allow the material concerned to pass thereby in a feeding direction but to prevent or oppose its passage in the reverse direction.

The aforesaid feeding means may be carried by a reciprocatory head and the latter may be operated by means of an angularly movable lever, handwheel or the like coupled thereto by means of a connecting rod or the like and in such cases the movement imparted to said head pursuant to movement of said lever, hand wheel or the like though its full range of movement may be varied by varying the distance of radial separation between the point of pivotal connection of the said connecting rod or the like and the axis about which said lever, hand wheel or the like turns. In another arrangement the working stroke may be varied by providing adjustable stops for limiting the angle through which the said lever, hand wheel or the like can be turned.

The cutting and/or marking means employed in apparatus according to the present invention may be of any suitable kind and they may for instance be mounted on or otherwise operated by the shaft on which the above mentioned lever, handwheel or the like for controlling the feeding mechanism is mounted.

The guiding means employed in apparatus according to the present invention are preferably such as to support and/or guide the whole length of the material being fed therethrough in cases where such material consists of elastic or other very flexible material. Such means may for instance comprise two or more telescopically disposed tube-like members and the cross-section of the hollow interiors of such members prefer-

ably conforms with the cross-section of the material to be fed therethrough, e. g. in the case of strip material of rectangular cross-section the said tube-like members have rectangular bores and in the case of material of rod-like form the members have circular bores. In other arrangements the guiding means may consist of a single tubular member and slots may be provided for enabling gripping means to engage the material located inside said member and feed it therealong.

In cases however where the material to be cut and/or marked is of a more rigid nature, e. g. fabric or the like, it may not be necessary to have guides which surround such material, e. g. the bed of the machine may form the only guide or one or more guiding strips, rollers or the like may be associated with said bed.

If desired, apparatus according to the present invention may include a plurality of guiding, feeding and severing and/or marking means so as to permit of a plurality of lengths of material being treated simultaneously and any desired spools or the like may be provided for holding the material to be treated and any desired take-up spool or container or the like may be provided for receiving the marked and/or severed material as the case may be.

Apparatus according to the present invention may be operated by hand or it may be operated by any suitable motor, e. g. an electric motor.

In order that the present invention may be well understood I will now describe by way of examples some embodiments thereof with reference to the accompanying drawings in which—

Figure 1 is a side elevation of one form of machine suitable for severing lengths of elastic of circular cross-section,

Figure 2 is an end elevation of the machine shown in Figure 1,

Figure 3 is a plan view of the machine shown in Figure 1,

Figure 4 is a broken perspective view, drawn to an enlarged scale, of a detail of the machine shown in Figures 1 to 3, and

Figure 5 is a perspective view of a modified form of machine suitable for instance for cutting and/or marking tape.

Referring to Figures 1 to 4, the machine comprises a base 1 having brackets 2, 2, at one end thereof for receiving a shaft 3, and guides 4, 4 at the other end thereof for slidably receiving a cross-head 5, the said cross head being slidable longitudinally with respect to the base 1.

The cross head 5 is provided with two brackets 6 and 7 extending upwardly therefrom and a pin 8 extends laterally from the bracket 6.

A crank arm 9 is secured to the above mentioned shaft 3 and coupled to the pin 8 by means of a connecting rod 10, the mounting of said crank arm being such as to enable adjustments to be made in its throw. Thus for instance as indicated in the drawings the said arm may have a slot 11 adapted to slide over a reduced end of the said shaft, and a nut 12 making screw-threaded engagement with said reduced end may be provided for locking the arm in any desired position within its range of radial adjustment.

Any suitable motor, e. g. an electric motor, or any suitable form of handle, such as the handle designated 13 in the drawings, is provided for rotating the crank arm 9 and it will be understood that rotation of such arm causes the cross-head 10 to reciprocate through a stroke the length of which is determined by the effective length of the crank arm 9.

A tube 14 having a bore corresponding to the cross-section of the elastic or material to be cut extends through the above mentioned bracket 7 and constitutes the inlet aperture of the machine. A further tube 15 is similarly mounted in the bracket 6, the two tubes being coaxially disposed and having similar bores.

The end of the tube 15 remote from the entry end of the machine is slidably received within a tube 16, the latter tube extending through brackets 17 and 18 mounted on the bed 1 of the machine. During reciprocation of the head comprising the cross-head 5 and brackets 6 and 7 the tubes 15 and 16 accordingly move telescopically, the tube 15 supporting the elastic and assisting in conveying the latter through its feeding movement and the tube 16 functioning as a guide for such elastic.

A bracket 19 is mounted on the bed 1 in alignment with but spaced from the bracket 17 and a curved tube 20 having a bore corresponding with the bore of the tube 16 extends through said bracket and through one of the brackets 2, said tube being carried by said brackets and constituting the delivery outlet of the machine.

Gripping means comprising two plates 21, 21 pivotally mounted on spindles extending upwardly from the cross-head 5, are provided between the above mentioned brackets 6 and 7, the said plates being so disposed with respect to the adjacent end of the tube 14 that when abutting thereagainst they lie substantially in alignment with one another. The aforesaid plates, which may be provided with either straight or serrated edges, are so disposed that when they abut against the said tube 14 the said edges are spaced apart by a distance somewhat less than the thickness of the elastic. Said plates thus operate as one-way gripping devices, i. e. movement of the slidable head in a feeding direction causes the plates to swing towards the tube 14 into positions in which they tightly grip the elastic thus causing the latter to move with said head but reverse movement of the head results in said plates swinging away from one another and they accordingly slide along the elastic.

Light springs 22 or other suitable means are associated with the plates 21, 21 so that the latter are always urged into contact with the elastic when the machine is loaded, such contact being necessary in order to achieve the automatic gripping action immediately the slidable head moves in a feeding direction.

Gripping means comprising plates 21a, 21a are mounted on the bracket 19, i. e. adjacent to the delivery end of the machine, and cooperate with the adjacent end of the tube 16 in the same manner in which the plates 21 cooperate with the tube 14. The said gripping means at the delivery end of the machine are similar to those at the entry end and further description thereof is accordingly unnecessary.

A knife 23 is mounted on the end of the shaft 3 and cooperates with the delivery opening in the adjacent face of the bracket 2 in forming means for severing any elastic which projects from said opening, said blade advantageously being of the curved form shown in Figure 1.

The above mentioned knife 23 is so mounted that it moves across the delivery aperture of the machine during the return stroke of the slidable head, i. e. when no elastic is being fed.

Assuming that it is desired to cut certain lengths from elastic stock the throw of the crank arm 9 is adjusted to the appropriate value and the stock

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is threaded through the feeding and guiding tubes 14, 15, 16 and 20. The crank handle is then turned in the direction indicated by the arrow in Figure 1 and during movement of the slidable head to its innermost position, i. e. to the end of its return stroke any elastic projecting from the tube 20 will be severed, i. e. the initial cutting movement of the crank handle merely constitutes a trimming operation upon the elastic, so the next cutting movement will sever an elastic of correct length. As soon as the slidable head moves forwards however the trap formed by the plates 21, 21 will cause the elastic to be gripped and this will be fed forwards during the telescoping of the tubes 15 and 16 by a distance equal to twice the effective length of the crank, the tubes 14 and 15 functioning as a feeding and guiding means and the tubes 16 and 20 functioning as guiding means. The elastic is therefore prevented from buckling or stretching during the feeding operation and the extent of the feed can accordingly be set very accurately.

During the feeding movement the plates 21a, 21a of the trap at the delivery end open under the influence of the elastic sliding thereby, so offering no material opposition to the feeding movement. During the return movement of the sliding head however when there may be a tendency for the elastic to be drawn rearwardly by the frictional engagement between such elastic and the tubes 3 and 14 and the gripper plates 21, 21, the plates 21a, 21a will immediately move into positions preventing any such return movement of the elastic.

During the return movement of the sliding head the knife blade 23 severs the projecting length of elastic and at the end of the said movement and assuming that rotation of the crank handle is maintained a new feeding cycle is started. The severing of accurate length can therefore be continued until the desired number of lengths has been severed or until the stock has been exhausted.

The machine shown in Figure 5 is intended for dealing with flat tape or like material in which there is less tendency for stretching or buckling than in the case of elastic and the guiding and feeding means employed are accordingly of a simplified construction. The machine also includes provision for marking a tape at determined intervals.

The machine shown in Figure 5 includes a base 24 and a sliding head assembly consisting of a frame 25 and base tubes 26, 26. The said tubes 26, 26 are slidably mounted on rods 27, 27, the inner ends of said rods being secured in lugs 28, 28 extending from the base 1 and the outer ends being secured in the side members of a frame 29 located adjacent to the delivery end of the machine.

Gripping fingers 30, the edges of which may, if desired, be serrated as shown, are caused to reciprocate with the sliding head, such fingers being pivotally mounted on a spindle 31 extending transversely across the base of the machine. It is sometimes desirable to provide for adjusting the position of the said spindle 31 with respect to the sliding head and this may for instance be done by mounting said spindle in fittings 32 which are slidable on the rods 27 and coupling such fittings to the tubes 26 by means of rods 33, the rods 33 passing through holes in parts 34 projecting from said tubes and being secured in any desired position of adjustment by means of set screws, one of which is shown in the drawings and designed

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35. In this way it is possible to move the fingers 30 longitudinally to any desired position with respect to the sliding head.

The above mentioned fingers 30 are of such a length that when resting on the upper surface of the base or bed 24 they are inclined in the direction of feed of the material to be cut and/or marked, movement of the sliding head in a feeding direction accordingly urging the fingers 30 towards the bed of the machine so gripping the material passing between such fingers and the bed. The aforesaid fingers may be provided with serrated edges as shown in the drawing with the result that the material engaged by said fingers is positively fed during the feeding movement of the sliding head. In the return movement of the said head however the fingers 30 tend to swing away from the material and ride freely thereover. The very light contact exerted by the fingers during the said return movement will in general be sufficient to prevent any rearward movement of the tape during the return movement of the sliding head particularly if, as is desirable, means are provided for offering slight resistance to rearward movement of the tape at the inlet end of the machine. Such means may for instance consist of a plurality of bars such as the bars 36, 36 which extend transversely across the machine, the tape being threaded between such bars. In this way any desired degree of tension may be established in the tape and rearward movement of such tape is opposed. If desired lateral guides may also be provided for the tape as a further preventative against buckling, such guides being for instance associated with the bars 36, 36.

A shaft 37 is located on the delivery end of the bed 24 of the machine, in a position at right angles to the longitudinal axis of the machine, such shaft being mounted for instance in pedestals 38, 38. The said shaft 37 carries a helical cutter blade 39 which cooperates with a fixed blade 40 somewhat in the manner of a mowing machine cutter, the blade 40 being mounted vertically at the end of the surface over which the tape is fed.

The above mentioned shaft 37 is fitted with a crank arm 41, the said shaft and arm being manually operated for instance by means of a handle 42 fitted to said arm or being power driven for instance by means of an electric motor. The said arm is further provided with a slot 43 in which a stud 44 making pivotal engagement with one end of a connecting rod 45 is slidably mounted. The stud 44 can be locked in any desired position along the slot 43 so enabling the throw of the crank to be varied.

The end of the connecting rod 45 remote from the crank arm 41 is passed through a hole in a coupling member 46, said member being pivotally mounted on a pin 47 projecting from the adjacent side member of the frame 25. A set screw 48 is provided for locking the connecting rod 45 to the member 46 and it will be appreciated that this mode of connection provides for variations being made in the particular part of the bed over which the sliding head moves pursuant to rotation of the crank arm 41.

If desired a bracket 49 having a removable rod 50 may be provided at the inlet end of the machine for carrying a spool of tape, the tape being led from such spool, between the bars 36 and then along the upper surface of the bed of the machine to the blade 40.

The parts so far described enable lengths of tape to be cut to accurate dimensions. Thus assuming that the machine is loaded as above de-

scribed the first time the blade 39 passes the blade 40 any projecting part of the tape will be severed and a properly trimmed end will be formed. This first cutting operation takes place whilst the head 25 is moving rearwardly, i. e. through its return stroke, and the fingers 30 will accordingly move freely over the tape without imparting any movement thereto. During the subsequent forward movement of the head 25 the fingers 30 will grip the tape so feeding the latter forwardly through a distance determined by the throw of the crank 41 and as such throw is adjustable it will be appreciated that the length of tape fed during each feeding cycle can be set to any desired value within the range provided. At the end of the feeding stroke the head 25 begins its return stroke and the blades 39 and 40 are then in position to sever the projecting portion of the tape, i. e. the portion of accurately determined length. Continued rotation of the crank 41 will cause further lengths of tape to be cut and the operation can be continued until the required number of lengths have been obtained or until the stock has been exhausted.

The machine shown in Figure 5 also includes means for marking a tape and these will now be described.

A plate 51 is mounted for vertical sliding movement on four rods 52 (only three of which appear in the drawings), such rods extending upwardly from the above mentioned tubes 26 and accordingly forming parts of the sliding head assembly of the machine. The plate 51 is supported at the required vertical height above the bed of the machine by light compression springs 53 and a printing die 54 is mounted on the underside of such plate, such die bearing any desired letters, numerals or other markings.

An inking device 55 is provided for cooperation with the die 54, such device preferably being mounted in such a way that its position can be adjusted along the bed of the machine. Thus for instance it may be mounted on rods 56 extending from the frame 29 to the lugs 28 and set screws 57 may be provided for locking it in any desired position of adjustment.

The die 54 when supported by the springs 53 is at such a height that during its passage over the inking device 55 its face makes rubbing contact with an inking pad or roller 58 incorporated in the said device.

A strong compression spring 59 is located between the plate 51 and the upper member of the frame 25 such spring normally preventing the die from moving upwardly beyond the position determined by the springs 53, i. e. a position in which it is spaced from the bed of the machine and appropriately disposed for cooperation with the inking device.

A trigger 60 is pivotally mounted in a socket 61 extending upwardly from the plate 51, the mounting being such that the trigger can swing towards and away from the delivery end of the machine. A leaf spring 62 is provided for urging the said trigger in a direction towards the delivery end of the machine and the upper end of the trigger is provided with a slotted or hook-like portion 63 adapted to make engagement with the upper member of the frame 25 when the plate 51 is raised upwardly against the action of the spring 59, i. e. to a height above that at which it is supported by the springs 53 alone.

Rods 64 extending upwardly from the above mentioned plate 51 extend through the top member of the frame 25 and rollers 65 are mounted

at the upper ends of these rods for rotation about pins extending horizontally and transversely with respect to the machine. These rollers function as followers for cam plates 66, 66 mounted on a bracket 67, the said bracket being slidably mounted on rods (one of which appears in Figure 5 and is designated 68) extending along the side of the bed of the machine. The said bracket can be locked in any desired position along the said rods by means of set screws, one of which is shown in Figure 5 and designated 69. In use the bracket 67 is located so that the rollers 65 pass the cams 66 before the sliding head reaches the end of its return stroke but for clarity in the drawings such bracket is shown in a position beyond the range of movement of the said head.

The cam plates 66 are pivotally mounted on pins 70 and stop pins 71 are provided for limiting the extent to which the cam plates can turn in a clockwise direction as viewed in Figure 5.

A striking rod 72 serving a purpose hereinafter described, extends through the frame 29 and a set screw 73 is provided for locking said rod in any desired position, the horizontal level of said rod being slightly above that of the upper part of the frame 25 so that its end is in alignment with the plate-like part 74 of the trigger 60 assuming that such trigger is in engagement with the said frame.

Assuming that it is desired to print markings on the tape, a die 54 bearing the appropriate pattern is fitted to the plate 51, the fingers 30 are adjusted to lie in positions just in front of the die, the inking device 55 is adjusted to lie in a position just behind the die and the bracket 67 is adjusted to a position in which the rollers 65 pass the cam plates 66 before they reach the end of the return movement of the sliding head. The throw of the crank arm 41 is adjusted to give the desired length of feed between successive markings and if it is desired to mark one long length of tape without cutting the latter one or both of the blades 39 and 40 is or are removed or a guard placed thereover but if it is also desired to cut the tape the blades are allowed to operate in the manner already described. Finally the rod 72 is adjusted so that it strikes the trigger 60 when the sliding head is in the particular position of its stroke which corresponds to the desired positioning of the markings, this usually being at the moment when the head reaches the end of its feeding stroke.

Rotation of the crank arm 41 then causes the sliding head to reciprocate and any movement prior to the first complete feeding movement will merely set the various parts for automatic operation and a full cycle will now be described from that point.

As the head advances from its rearmost position the rollers 65 ride over the upper faces of cam plates so lifting the plate 51 and die 54 against the action of the spring 59 to a position in which the trigger 60 under the action of the spring 62 snaps into engagement with the horizontal bar of the frame 25, the plate and die assembly being thus held above the level of the inking device 55. During the feeding movement of the sliding head the fingers 30 feed the tape through a feeding stroke of a length determined by the throw of the crank arm 41 and at the desired point in such feeding stroke, e. g. at the end of such stroke, the rod 72 strikes the trigger 60 so freeing such trigger from its engagement with the frame 25. The spring 59 thereupon urges the plate 51 and die 54 downwardly with sufficient

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momentum to overcome the resistance offered by the light springs 53 and results in the die making printing impact with the tape. Immediately after such impact the springs 53 raise the plate 51 and die 54 into a position in which the underside of the die is disposed on a horizontal level appropriate for making rubbing engagement with the inking device.

On the return movement of the sliding head the fingers 30 ride smoothly over the tape in the manner already described and the die 54 brushes over the inking device so being coated with ink in readiness for the next printing operation. After the inking operation has been completed and during the continued return movement of the sliding head the rollers 65 engage the under surfaces of the cam plates 66 which plates turn freely on their pivot pins 70 during the passage of the rollers and as soon as such rollers have moved beyond the said cam plates the latter swing back into positions where the stop pins 71 bring them to rest. At the end of the return movement of the sliding head a new cycle is initiated and marking operations can be continued until the desired length or number of lengths has been marked or the stock exhausted.

If it is desired merely to sever lengths of tape with the machine shown in Figure 5 without marking such tape the trigger 60 is hooked onto the frame 25 so raising the plate 51 to its uppermost position, the frame 67 is moved beyond the rearward limit position of the sliding head and the rod 72 is withdrawn to a position in which it does not make contact with the trigger during reciprocation of the sliding head.

The machine shown in Figure 5 can be adjusted to accommodate dies of various lengths and the gripping fingers 30 may be spaced at variable distances apart or the number in use may be varied in order to adapt such machine for efficiently feeding tapes of various widths.

In a modification of the machine described with reference to Figure 5 the blades 39 and 40 may be omitted so providing a machine for carrying out marking operations only.

Whilst I have hereinbefore described some specific embodiments of the present invention I wish it to be understood that the details may be varied or modified without departing from the scope thereof. Thus for instance various kinds of feeding means may be employed and instead of mounting a sliding head on bars carried on the base of the machine such head may be provided with slippers adapted to slide in grooves or slots in the said base. Moreover in cases where there is provision for varying the length of material fed by the apparatus such variation may extend over any desired range. It is also to be understood that the apparatus may be used for cutting and/or marking various kinds of tape or rod-like material, e. g. metal strip or wire although it is particularly suitable for dealing with flexible or extensible material such as tape, cord, or elastic.

I claim:

1. In apparatus for cutting into a plurality of sections of desired length such materials as tape, elastic, cord, wire and the like, the combination of a frame, a slidable carriage upon the frame, material gripping means on the carriage, a crank having an axle rotatably supported upon the frame on a predetermined rotary axis, a connecting rod mechanism attached to said carriage and connected to said crank remote from its axis, and a material severing knife operatively connected with the axle of the crank.

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2. In apparatus for cutting into a plurality of sections of desired length, such materials as tape, elastic, cord, wire and the like, the combination of a frame, a slidable carriage upon the frame, material gripping means on the carriage a crank having an axle rotatably supported upon the frame on a predetermined rotary axis, a connecting rod mechanism attached to said carriage and connected to said crank remote from its axis, a material severing knife operatively connected with the axle of the crank, and material guiding means mounted upon said carriage and upon said frame for delivering the material in accurate lengths directly to said knife.

3. In apparatus of the class described the combination of a frame, a slidable carriage upon the frame, material gripping means upon the frame comprising a pair of spring actuated members normally movable into engagement with the material to be fed to prevent movement of the material with respect to said carriage in reverse direction to normal feed, means for moving said carriage along said frame, cutting means including a knife and a shaft upon which the knife is connected for operation, a crank upon said shaft, and a connecting rod between said crank and said carriage for cooperative movement of the carriage and the operation of the knife.

4. In apparatus for feeding and cutting continuous length material such as tape, cord and the like, the combination of an elongated frame, a slidable carriage upon the frame, a material guiding tube upon the carriage, a second material guiding tube upon the carriage in cooperative alignment with the first mentioned guiding means, and material gripping means upon the carriage between the said two guiding means for preventing the return feed of the material being fed, in one direction.

5. In apparatus for feeding and cutting continuous length material such as tape, cord and the like, the combination of an elongated frame, a slidable carriage upon the frame, a material guiding tube upon the carriage, a second material guiding tube upon the carriage in cooperative alignment with the first mentioned guiding means, material gripping means upon the carriage between the said two guiding means for preventing the return feed of the material being fed, in one direction, a stationary guiding means upon the frame at the delivery end thereof, a second stationary guiding means upon said frame in cooperative alignment with the first mentioned stationary guiding means, the second mentioned guiding means upon the carriage being telescopically received in the second mentioned stationary guiding means, and gripping means upon said frame between the first and second stationary guiding means upon the frame for preventing return movement of the material counter to the normal feeding movement.

6. In apparatus for feeding and cutting continuous length material such as tape, cord and the like, the combination of an elongated frame, a slidable carriage upon the frame, a material guiding tube upon the carriage, a second material guiding tube upon the carriage in cooperative alignment with the first mentioned guiding means, material gripping means upon the carriage between the said two guiding means for preventing the return feed of the material being fed, in one direction, a stationary guiding means upon the frame at the delivery end thereof, a second stationary guiding means upon said frame in cooperative alignment with the first mentioned

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stationary guiding means, the second mentioned guiding means upon the carriage being telescopically received in the second mentioned stationary guiding means, gripping means upon said frame between the first and second stationary guiding means upon the frame for preventing return movement of the material counter to the feeding movement, a rotary cutter at the delivery end of said first mentioned stationary guiding means, and a common operating means for said rotary cutter and said carriage.

7. In apparatus for feeding and cutting flexible material of continuous length such as cord and the like, the combination of a base, feeding means movably mounted upon the base, tubular guiding means upon the feeding means and movable therewith for non-buckling guiding of the material as it is fed, and other tubular guiding means upon said base stationary therewith telescoped complementary with the guiding means of said feeding means for delivered feeding of said material against buckling.

8. In apparatus for feeding and cutting flexible material of continuous length such as cord and the like, the combination of a base, feeding means movably mounted upon the base, tubular guiding means upon the feeding means and movable therewith for non-buckling guiding of the material as it is fed, other tubular guiding means upon said base stationary therewith telescoped complementary with the guiding means of said feeding means for delivered feeding of said material against buckling, and cutting means at the delivery end of that guiding means which is mounted upon said base.

9. In apparatus for feeding and cutting flexible material of continuous length such as cord and the like, the combination of a base, feeding means movably mounted upon the base, tubular guiding means upon the feeding means and movable therewith for non-buckling guiding of the material as it is fed, other tubular guiding means upon said base stationary therewith telescoped complementary with the guiding means of said feeding means for delivered feeding of said material against buckling, cutting means at the delivery end of that guiding means which is mounted upon said base, gripping means upon said base associated with said stationary guiding means thereon to prevent counter-movement of the material, and gripping means upon said feeding means to prevent counter-movement of said material.

10. In apparatus for feeding and cutting flexible material of continuous length such as cord and the like, the combination of a base, feeding means movably mounted upon the base, tubular guiding means upon the feeding means and movable therewith for non-buckling guiding of the material as it is fed, other tubular guiding means upon said base stationary therewith telescoped complementary with the guiding means of said feeding means for delivered feeding of said material against buckling, cutting means at the delivery end of that guiding means which is mounted upon said base, gripping means upon said base associated with said stationary guiding means thereon to prevent counter-movement of the material, gripping means upon said feeding means to prevent counter-movement of said material, and means connecting said cutting means and said feeding means for synchronized operation.

11. In apparatus for feeding and marking continuous length materials, the combination of a base, a carriage movable along the base, means

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for moving said carriage back and forth along the base, spring actuated marking means mounted upon the carriage and transversely movable thereon for marking material moved thereby, gripping means associated with said carriage for gripping materials and feeding the same with the movement of the carriage, means for automatically tripping the marking means, and means for automatically resetting the marking means.

12. In apparatus for the marking of continuous length materials in predetermined lengths and places, the combination of an elongated frame, a feeding carriage movable along the frame, a marking member, means movably mounting the marking member for movement transversely to movement of the feeding means, spring means normally supporting the marker out of marking position, other spring means normally urging the marker in marking direction, detent means for holding the marker with the last mentioned spring means compressed, and means for tripping said detent means at a desired position of movement of the carriage.

13. In apparatus for the marking of continuous length materials in predetermined lengths and places, the combination of an elongated frame, a feeding carriage movable along the frame, a marking member, means movably mounting the marking member for movement transversely to movement of the feeding means, spring means normally supporting the marker out of marking position, other spring means normally urging the marker in marking direction, detent means for holding the marker with the last mentioned spring means compressed, means for tripping said detent means at a desired position of movement of the carriage, and means associated with said frame and said carriage for resetting the position of the detent means at the desired position of the carriage in its movement along the frame.

14. In apparatus for the marking of continuous length materials in predetermined lengths and places, the combination of an elongated frame, a feeding carriage movable along the frame, a marking member, means movably mounting the marking member for movement transversely to movement of the feeding means, spring means normally supporting the marker out of marking position, other spring means normally urging the marker in marking direction, detent means for holding the marker with the last mentioned spring means compressed, means for tripping said detent means at a desired position of movement of the carriage, means associated with said frame and said carriage for resetting the position of the detent means at the desired position of the carriage in its movement along the frame, cutting means for severing the material, and means synchronously connecting the cutting means with said carriage for operation of both of them.

15. In apparatus for advancing and cutting continuous length materials such as tape, elastic, cord, wire and the like, the combination of an elongated supporting frame, a feeding carriage longitudinally slidable upon the frame, material gripping means upon the carriage, a drive shaft mounted on the frame at the delivery end of the frame, a blade directly carried by said drive shaft for severing materials as they are fed by the carriage to the delivery end of the frame, a crank arm connected to said shaft, and a connecting rod pivotally connected to said crank arm remote from the shaft axis and having a

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connection with the carriage to advance the carriage as the shaft is rotated.

16. In apparatus for advancing and cutting continuous length materials such as tape, elastic, cord, wire and the like, the combination of an elongated supporting frame, a feeding carriage longitudinally slidable upon the frame, material gripping means upon the carriage, a drive shaft mounted on the frame at the delivery end of the frame, a blade directly carried by said drive shaft for severing materials as they are fed by carriage to the delivery end of the frame, a crank arm connected to said shaft, a connecting rod pivotally connected to said crank arm remote from the shaft axis and having a connection with the carriage to advance the carriage as the shaft is rotated, and means for adjusting the throw length of the crank arm between the pivotal connection of the connecting rod therewith and the axis of said drive shaft.

17. In a feeding and cutting device for handling lengths of flexible material the combination of an elongated base, a slidable carriage mounted upon said base, tubular guide means carried by and movable with said carriage through which the material is fed, gripping means on the carriage for holding said material stationary in said tubular means as the carriage is fed forwardly along the base, stationary tubular means mounted on the base for movably receiving the material as it is fed by the carriage and the tubular means of said carriage, and cutting means for severing lengths of material as it is fed from the base tubular means.

18. In a feeding and cutting device for handling lengths of flexible material the combination of an elongated base, a slidable carriage mounted upon said base, tubular guide means carried by and movable with said carriage through which the material is fed, gripping means on the carriage for holding said material stationary in said tubular means as the carriage

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is fed forwardly along the base, stationary tubular means mounted on the base for movably receiving the material as it is fed by the carriage and the tubular means of said carriage, cutting means for severing lengths of material as it is fed from the base tubular means, the tubular means of the carriage and the tubular means of the base being telescopically related to insure an accurate non-buckling feed of the flexible material from the carriage tubular means through the base tubular means to the cutting means.

19. In strip feeding, marking and cutting means the combination of an elongated base, a feeding carriage having strip engaging means thereon for feeding a strip along the base as the carriage is moved, cutting means upon the base, means operatively connecting the carriage and the cutting means for synchronous operation, marking means carried by the carriage, means to automatically trip the marking means and impress printed matter upon the strip at a predetermined position of the carriage upon the base, and means upon the base for resetting the marking means at a predetermined position of movement of the carriage along the base.

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