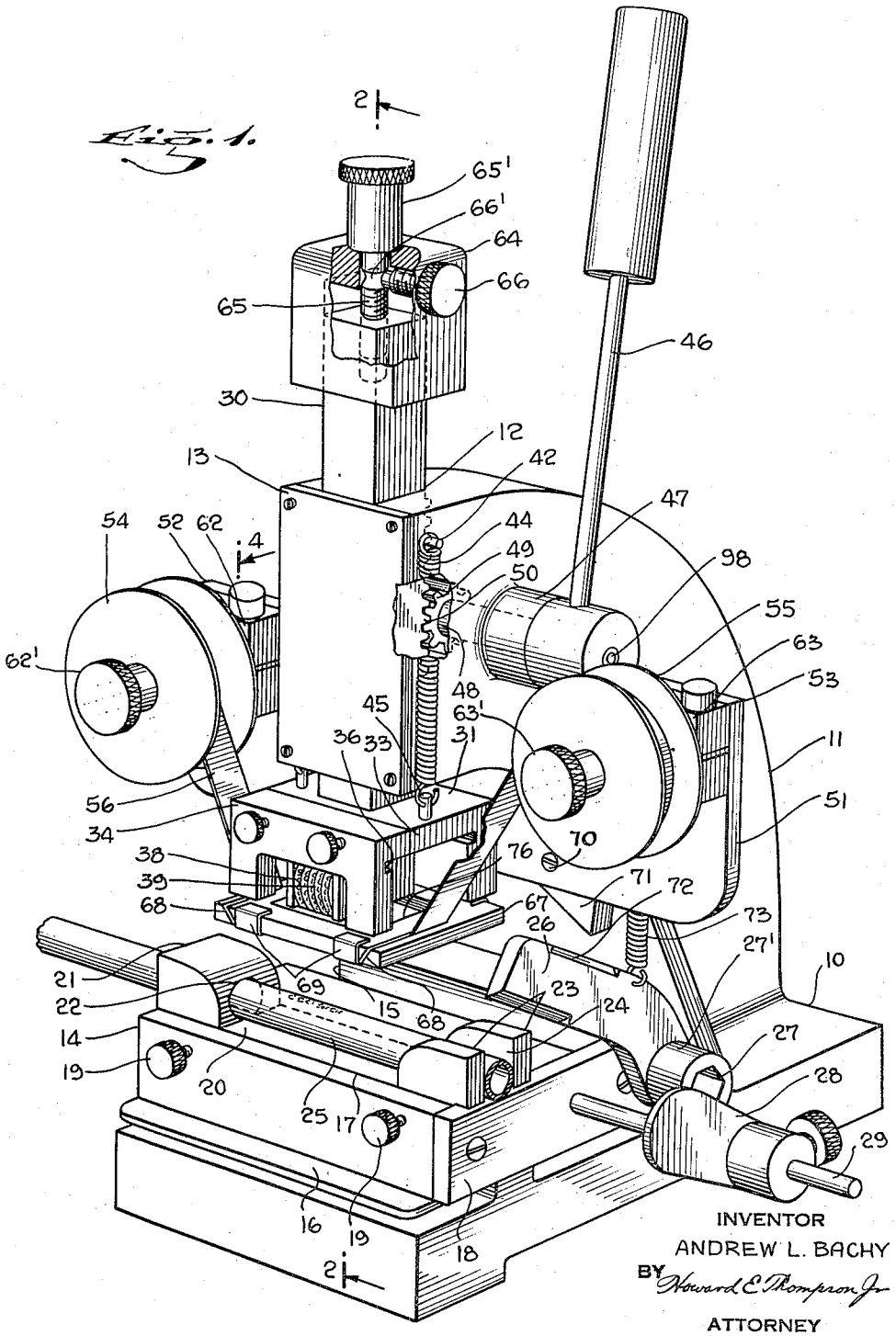
Jan. 15, 1957 A. L. BACHY 2,777,385

INTERMITTENT MARKING DEVICES

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Fig. 1.



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Fig. 2.

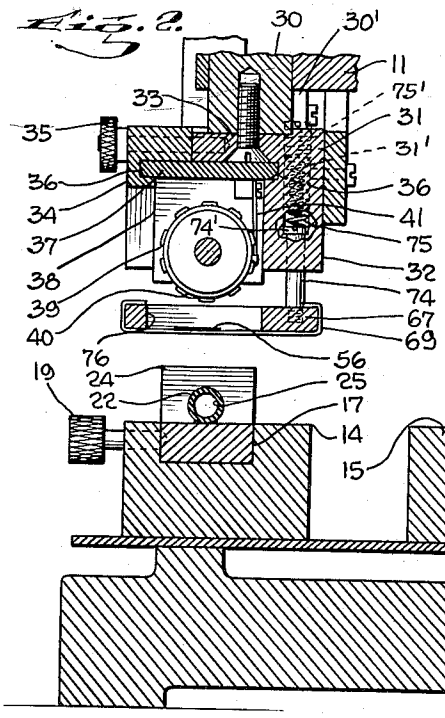


Fig. 4.

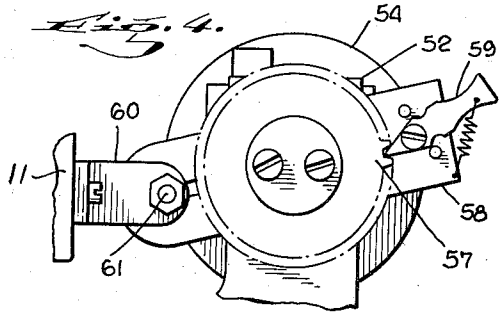


Fig. 3.

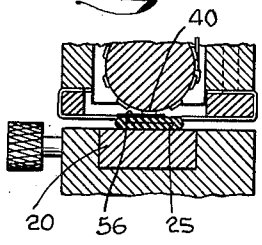


Fig. 5.

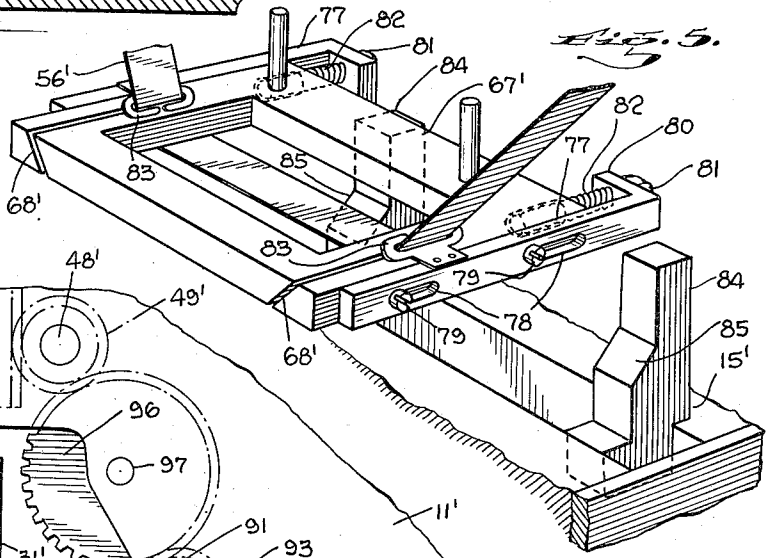


Fig. 6.

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INTERMITTENT MARKING DEVICES

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Application March 4, 1952, Serial No. 274,783

7 Claims. (Cl. 101—42)

This invention relates to machines or apparatus for use in what I term type marking of strip material of various types and kinds such, for example, as plastic or other flexible tubing. More particularly, the invention deals with an apparatus of the character described employing an intermittently actuated ribbon fed through different positions beneath a plunger having at its lower end an adjustable type head whereby in the operation of the machine a series of characters of the type head can be applied to strip material supported beneath the head, means being provided for severing the marked strip material into predetermined lengths. Still more particularly, the invention deals with an apparatus of the character described having means whereby the line of type of said head may be inked by the ribbon prior to movement of the type into engagement with the strip to be marked.

The novel features of the invention will be best understood from the following descriptions, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a diagrammatic, perspective view of a machine or apparatus made according to my invention illustrating the parts in raised position and indicating part of a tube to be marked in operative position.

Fig. 2 is a central vertical section through the lower portion of the apparatus and omitting part of the background showing, the section being substantially on the line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 2 showing only a part of the construction and with parts in a different position.

Fig. 4 is a view looking in the direction of the arrow 4 of the left side of the apparatus as indicated in Fig. 1.

Fig. 5 is a perspective view of a modified form of ribbon guide and operating slide which I employ; and

Fig. 6 is a diagrammatic side and sectional view as viewed from the right side of Fig. 1 showing the modified structure of Fig. 5 as well as a movable tape backing element for inking the type preparatory to forming a mark on a workpiece strip, the tape backing being shown in operative position in full lines and in inoperative position in dot-dash lines.

In Fig. 1 of the drawing, I have diagrammatically shown a strip marking device employing a base plate **10** having at the rear portion thereof an upwardly and forwardly directed arm **11**, the forward portion of which has a rectangular aperture **12** extending vertically therethrough, the aperture being partially formed by closure plate **13**. Mounted on the bed plate **10** is a pair of blocks or bars, the front one of which is indicated at **14** and the rear one at **15**, these blocks or bars being shown in section 2 of the drawing, and as indicated, they are disposed on a plate **16** arranged upon and suitably secured to the base plate **10**. The block **14** has a

longitudinal groove **17** therein which is closed at one end by a plate **18**, and in the groove **17** is adjustably fixed by screws **19** a workpiece guide member **20**. The member **20** has at one end a raised block **21** with an aperture **22** therein, and at the other end a pair of raised flanges **23** forming a guide channel **24** for the work strip **25**. The work strip **25** in the construction shown is in the form of a plastic or other flexible tubing, and the plate **18** extends slightly beyond the flanges **23** and forms part of a shearing or cutting tool. The blade **26** of this tool is pivoted as at **27** to one end portion of the block **15**. The blade **26** serves to shear the workpiece strip **25** into predetermined lengths, these lengths being determined by an adjustable stop finger or arm **28** adjustable on a rod **29**.

At **30** I have shown a vertically movable plunger mounted in the aperture **12** of the arm **11**, the plunger supporting at its lower end a casing **31** of a type head and the casing having a depending rear portion **32** and a forwardly extending horizontal portion **33**. The casing **31** is also partially formed by an inverted U-shaped front plate **34** held in position by nuts **35**. The plate **34** and the vertical portion **32** of the casing have on adjacent surfaces grooves **36** for receiving protruding ends of the top plate **37** of a type wheel holder **38**, the type wheels of which are indicated at **39**. The separate wheels are relatively adjustable to dispose one line or row of predetermined type in marking position as is indicated at **40** of Fig. 2 of the drawing. The type can comprise a series of numbers, alphabetic characters or other markings of any type or kind to apply to the workpiece code symbols or other markings to distinguish characters and/or uses thereof.

A series of spring fingers **41** are employed in the holder **38** to support the type wheels in predetermined positions of adjustment. It will be understood that the holder **38** can be adjusted lengthwise of the grooves **36** to position the type in any desired location between the members **21** and **23** of the bar **20**. The plate **34** serves to retain the member **38** in different positions of adjustment. Coupled with the side of the forward portion of the arm **11**, as at **42**, is a coil spring **44** which also couples with the head **31** as seen at **45**. This spring normally serves to support the head **31** in raised position. The plunger **30** is moved downwardly against the action of the spring **44** by any suitable drive or action as, for example, a hand operated lever **46**. The lever **46** is pivoted in a suitable bearing **47** on one side of the arm **11**, and on the shaft **48** of the lever is a pinion **49** operatively engaging a rack **50** on the rear surface of the plunger **30**.

Secured to the rear surface of the head **31** is an upwardly extending widespread yoke **51** to the upwardly extending arms **52** and **53** on which are rotably supported ribbon spools **54** and **55**, respectively, these spools being substantially similar to the typewriter ribbon spools, and the ribbon of such spools is indicated at **56**. The spool **55** will have a suitable tension mounting so as to maintain the ribbon reasonably taut whereas the spool **54** has a positive intermittent drive in each stroke motion of the plunger **30**.

In Fig. 4 of the drawing I have shown a rear view of the arm **52** with the spool **54** mounted thereon, and at **57** I have shown a gear or sprocket fixed to the axis of the spool **54**, and rotatable on this axis is a lever **58** supporting at its outer end a spring actuated pawl **59** for operatively engaging the tooth wheel or ratchet **57**. The inner end of the lever **58** is freely pivoted in a pair of bearings one of which is seen at **60**, the pivot being shown at **61**.

In Fig. 4 of the drawing the parts are shown in the normal or raised position as indicated in Fig. 1 of the

drawing. However, as the lever 46 is swung forwardly to move the plunger 30 downwardly, the lever 58 or the outer end portion thereof is also swung downwardly, the pawl 59 engaging the tooth wheel 57 in this operation to partially rotate the spool 54 to an extent equal to the arc of travel of the lever 58, and in the upward movement of the plunger, the pawl will glide freely over the teeth, the ratchet 57 being held stationary by its frictional support during this operation. At 62 and 63, I have shown adjustable split blocks for tensionally controlling the spools 54 and 55. Milled nuts 62' and 63' are employed to control detachable mounting of the spools 54 and 55.

At the upper portion of the plunger 30, I have shown a stop member 64 adjustably supported with respect to the plunger by means of a screw 65 having an enlarged head 65' engaging the upper surface of said stop member, and a set screw 66 operatively engaging a groove 66' in the screw 65. In the downward movement of the plunger 30, the stop member 64 engages the upper surface of the arm 11 and, in so doing, limits the downward movement of the type head 31. The adjustment provided in the stop member 64 therefore permits regulation of the fully depressed position of the type head 31.

Carried by the head 31 is a ribbon guide and pressure plate 67 having a pair of angular slots 68 opening through the forward end thereof to facilitate attachment and detachment of the ribbon 56. At 69 is shown a pair of clips which are positioned on the plate 67 to border the row of type defined by the discs 39 forming pressure bars disposed below the ribbon 56 to engage and press the tube 25 downwardly, thus presenting a relatively flat surface to receive the imprint of the type in the manner diagrammatically shown in Fig. 3 of the drawing.

Adjustably supported on the yoke 51 through the medium of a screw 70 is a cam element 71 protruding from the lower surface of the yoke 51 as clearly seen in Fig. 1 of the drawing. The cam operates on a bevelled surface 72 on the upper edge of the cutter blade 26 in the operation of moving the cutter blade downwardly in the descent of the plunger 30, and this serves to maintain the surface of the blade 26 against the outer surface of the plate 18 to produce a perfect shear operation upon the workpiece in cutting off predetermined lengths governed by the adjustment of the stop finger 28. A coil spring 73 is coupled with the finger 26 and with the yoke 51 and serves to normally maintain the blade in raised position in Fig. 1 of the drawing.

The plate 67 is supported in the head 31 by upwardly extending rods or pins 74 having a threaded engagement with the plate 67 and a sliding bearing engagement with the head 31. The head 31 is provided with enlarged bores 31' receiving springs 75 engaging enlarged heads 74' of said pins to normally urge the same in a downward direction. Springs 75 are retained in the bores 31' by screw-plugs 75' permitting adjustment of the tension of the springs 75. It will be understood that in the downward movement of the plunger 30 the plate 67, together with the clips 69, will first engage the tube 25 and move the same into the flattened condition, this operation being performed under the tension of the springs 75, and the head 31 proceeds to move downwardly on the rods or pins 74 in moving the row of type 40 from a position substantially as noted in Fig. 2 to the position illustrated in Fig. 3.

In Figs. 5 and 6 of the drawing, I have shown a slight modification of the structure shown in Figs. 1 to 4, inclusive, wherein I provide means for inking the exposed line of type when the plunger of the machine is in the raised position, and then I move the ribbon into an inoperative position, and then bring the inked line of type in direct contact with the workpiece to be marked. In marking, tubing and other flexible types of workpieces, there is a tendency to create a slight blur or spreading of the impression, which blur or spreading is obviated by first inking the characters and then directly moving the inked characters into engagement with the workpiece.

In accomplishing the foregoing, I provide an apertured plate 67' generally similar to the plate shown at 67 in Figs. 1 to 4, inclusive, on which is supported a pair of sliding rods 77 (note Fig. 5), the rods having elongated apertures as at 78 engaging screws 79 fixed to the plate 67'. The rods have inner cross-head ends 80, preferably with anti-friction rollers or other outer members as at 81, and springs 82 are employed to normally support the rod 77 in what may be termed an operative position. The springs 82 fit in sockets in the plate 67' as will be apparent. Fixed to the upper surface of the rod 77 are ribbon engaging yokes 83 through which the ribbon, as at 56', is adapted to pass in entering the slots 68', similar to the slots 68. With this construction I suitably support on the block 15', similar to the block 15, a pair of upwardly extended cams 84 having cam surfaces 85 adapted to be engaged by the rollers 81 to move the rod 77 as well as the ribbon 56' forwardly out of registering position with the row of type as at 40' (note Fig. 6) as the plunger of the machine moves downwardly. In other words, the plunger 30' of Fig. 6 moves downwardly in bringing the row of type 40' into direct marking engagement with a flattened workpiece tube indicated in dot and dash lines at 25' in Fig. 6.

In order to facilitate marking I provide a ribbon backing block 86 (note Fig. 6). This block is supported upon a spring arm 87 tensioned to support the ribbon 56' normally in engagement with the exposed row of type 40' to constantly ink the same when the machine is in its inoperative position.

The spring arm 87 is supported at the free end of a lever 88 and pivoted to the arm 11' of the machine, similar to the arm 11, the pivot being indicated at 89, and this pivot operates in an elongated slot 90 in the arm 11'. At 91 I have shown a drive link or crank pivoted to the forward end portion of the lever 88, as at 92. The link 91 is mounted on a shaft 93 supported on the arm 11' or an extension 94 on said arm, the shaft having a gear 95 fixed thereto. The gear 95 meshes with a large diameter gear 96 pivoted to 94, as seen at 97. The gear 96 meshes with the pinion 49', similar to the pinion 49 and arranged upon the shaft 48' to which an operating lever similar to the lever 46 is secured.

With the construction as shown in Fig. 6, it will be understood that as the plunger 30' is moved downwardly the rotation of the pinion 49' will cause the drive link 91 to be actuated to swing the backing block 86 in the downward and rearward path generally indicated by the dot and dash line 98 in Fig. 6 to move into the position indicated in dot and dash lines of said figure so as to clear the head 31' as it moves in the direction of the workpiece 25', the latter being supported on a structure identical with that shown in Figs. 1 to 4, inclusive. For this reason, no further detailed description of the machine is deemed to be necessary. In the aforesaid downward movement of the plunger 30', the cams 84 will be engaged to move the rod 77 forwardly, thus swinging the ribbon 56' forwardly to clear the workpiece and the aligned type 40'. Thus the inked type will directly engage the workpiece 25' in forming a clear imprint or mark on the workpiece.

In the construction shown, it will be noted that one edge portion only of the ribbon is utilized. Thus, when a ribbon end has been reached, the spools as at 54, 55 of Fig. 1 of the drawing, can simply be reversed in their mountings which will automatically position the other edge portion of the ribbon in position to be utilized. In this way, long life of the ribbon will be experienced. I found in practice that in marking certain types and kinds of workpieces and particularly plastic workpieces, that typewriter ribbons having a penetrating ink are desirable, and further, an ink that dries quickly; and by utilizing ribbons of this type and kind, more or less permanent markings are provided in the plastics, that is to say, markings which cannot be rubbed off or scraped off

with light scraping. It will also be understood that in utilizing the machine for marking other types and kinds of workpieces, that different inks or differently inked ribbons can be employed, and in colors which will suit the intended purpose. In some instances special colored inking ribbons will be provided. It will also be apparent in some uses of the machine or apparatus, that long or more or less endless workpieces can be marked at predetermined intervals in which case an intermittent feed of the workpiece will be provided so as to position predetermined, spaced sections of the workpiece in position to receive successive markings.

It will also be understood that from time to time the markings may be changed by adjustment of the respective wheels or discs **39**. On the other hand, a completely new marking unit having different characterizations thereon can be quickly and easily assembled in the machine by simply removing the plate **34** and pulling the unit outwardly through the machine. By employing the yoke-shaped structure of the plate **34**, the type wheels of each unit are accessible through the front of the machine for adjustment or setting from time to time.

It will be understood that when the machine is utilized for marking long lengths of workpieces, the cutter knife **26** is simply detached by removal of the retaining nut **27'** (note Fig. 1). It will further be noted that in the apparatus, as shown in Fig. 1, the operating lever **46** is slidably adjustable with respect to the pivotal axis thereof and can be retained in different positions of adjustment by means of a set screw **98**. This adjustment which has the effect of varying the degree of movement and the pressure required at the end of the lever **46** to actuate the plunger **30**, is advantageous both in hand operated machines and in devices wherein the lever **46** forms part of an automatic drive mechanism.

As a means for preventing damage to the device on sudden release of the operating lever **46**, I preferably employ a resilient bumper or stop member **30'** at the lower portion of the plunger **30** and adapted to engage the undersurface of the arm **11** as shown in Fig. 2 of the drawing.

Various changes and modifications in the apparatus as herein disclosed will occur to those versed in the art, and to the extent that such changes and modification are embraced by the appended claims, it is to be understood that they constitute part of my invention.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An apparatus of the character described comprising a base plate, an upwardly and forwardly extended arm on said plate, means on the base plate for supporting and guiding a strip, a plunger mounted for vertically reciprocating movement in said arm toward and from said first named means, a marking unit, means at the lower end of the plunger for detachably and adjustably supporting said unit in different positions transversely with respect to said plunger, said unit comprising a plurality of adjustable elements to present at the lower surface of the unit a row of predetermined characters for marking a strip supported on said first named means, means coupled with the plunger and extending to opposed sides of the apparatus for supporting a pair of ribbon spools, means supported on said second named means and movable with respect thereto for guiding a ribbon from said spools in predetermined position beneath said marking unit, tensional means normally supporting said plunger in raised position, means for actuating said plunger to move the same downwardly to bring the row of characters of said marking unit in pressure engagement with the strip supported in said first named means, said ribbon guide means including means for laterally shifting the position of the ribbon, means on said base plate for actuating said last named means in the descent of the plunger to move the ribbon out of the path of said row of characters on said marking unit, and pivotal means actuated by said plunger for pressing the ribbon against said row of characters for inking the same in the upper position of said plunger.

2. In a machine of the character described employing a workpiece support and guide member and a marking head movable toward and from a workpiece supported on said member, said head including a marking unit having a plurality of adjustable marking elements to present on a surface thereof an aligned row of characters of said elements to apply a predetermined mark on a workpiece, means movable with said mounting head carrying inked ribbon for inking the aligned row of characters, means for actuating said unit to move said row of characters thereon linearly toward and from a workpiece supported in said member in the operation of marking said workpiece, means comprising a detachable side portion on said head for adjustably and detachably supporting said marking unit in different positions longitudinally with respect to said workpiece support, and means yieldably supported in said head adjacent the marking unit for engaging a workpiece and supporting the same in flattened condition in the operation of marking the same.

3. In a machine of the character described employing a workpiece support and guide member and a marking head movable toward and from a workpiece supported on said member, said head including a marking unit having a plurality of adjustable marking elements to present on a surface thereof an aligned row of characters of said elements to apply a predetermined mark on a workpiece, means comprising inked ribbon for inking the aligned row of characters, means for actuating said unit to move said row of characters thereon toward and from a workpiece supported in said member in the operation of marking said workpiece, means for intermittently feeding the ribbon in each operation of the machine to bring a new section of the ribbon in position for inking said aligned row of characters, yieldable means normally supporting the ribbon in pressure engagement with the aligned row of characters, and means for actuating said last named means to clear said ribbon and said row of characters in movement of the row of characters into marking engagement with the workpiece.

4. In a marking machine of the character described, a marking head supported for movement between an upper inoperative position and a lower marking position, means adjustably and detachably supporting marking elements in said head, a workpiece engaging and compressing member supported in said head for upward and downward movement with respect thereto, the lower portion of said workpiece engaging member in the upper position thereof being in substantial alignment with said marking elements, resilient means yieldably supporting said workpiece engaging member in a lower position below said marking elements, yoke means carried by said marking head providing support for a ribbon member movable transversely with respect to said head, slotted means in said workpiece engaging member for aligning said ribbon with said marking elements, and a plurality of adjustable clip bars carried by said work-piece engaging member providing article engaging surfaces thereof below said ribbon.

5. In a marking apparatus of the character described comprising a base plate, and upwardly and forwardly extended arm on said base plate, means on the base plate for supporting and guiding a strip, a plunger mounted for vertically reciprocating movement in said arm toward and from said strip guiding means, said plunger carrying a marking unit comprising a plurality of adjustable elements to present at the lower portion of said unit a row of predetermined characters for marking a strip supported in said strip guiding means, means normally supporting said plunger in raised position, and means for actuating said plunger to bring the row of characters of said marking unit into pressure engagement with a strip supported in said strip guiding means,

the improvements that comprise means coupled with the plunger and extending to opposed sides thereof for supporting a pair of ribbon spools, means at the lower end of said plunger for detachably mounting said marking unit in a manner to provide transverse adjustment thereof, and means mounted in said last named means and having yieldable vertical movement with respect thereto for guiding said ribbon beneath said marking unit and for engaging said strip in advance of the marking characters of said unit.

6. A marking apparatus as defined in claim 5 wherein the ribbon guide means includes detachable and transversely adjustable members for engaging a strip adjacent the area thereof to be marked and for supporting the ribbon in spaced relation to said strip until engaged by said marking characters.

7. In a machine of the character described employing a workpiece support and guide member and a marking head movable toward and from a workpiece supported on said member, said head including a marking unit having a plurality of adjustable marking elements to present on a surface thereof an aligned row of characters of said elements to apply a predetermined mark on a workpiece, means movable with said mounting head carrying inked ribbon for inking the aligned row of characters, means for actuating said unit to move said row of characters

thereon linearly toward and from a workpiece supported in said member in the operation of marking said workpiece, means synchronized with the movement of said marking head and ribbon carrying means for shifting said ribbon from a pressure engagement with said characters for inking the same in the upper position of said head to a location out of alignment with said characters in the lower position of said head during marking engagement of said characters with said workpiece.

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