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Norwood

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[45] **Sept. 4, 1973**

[54] **IMPRINTER**

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[21] Appl. No.: **135,593**

[52] **U.S. Cl.** **101/44,** 101/103, 101/333

[51] **Int. Cl.** **B41f 17/00**

[58] **Field of Search** 101/103, 104, 105, 101/41, 44, 333, 334; 74/625

[56] **References Cited**

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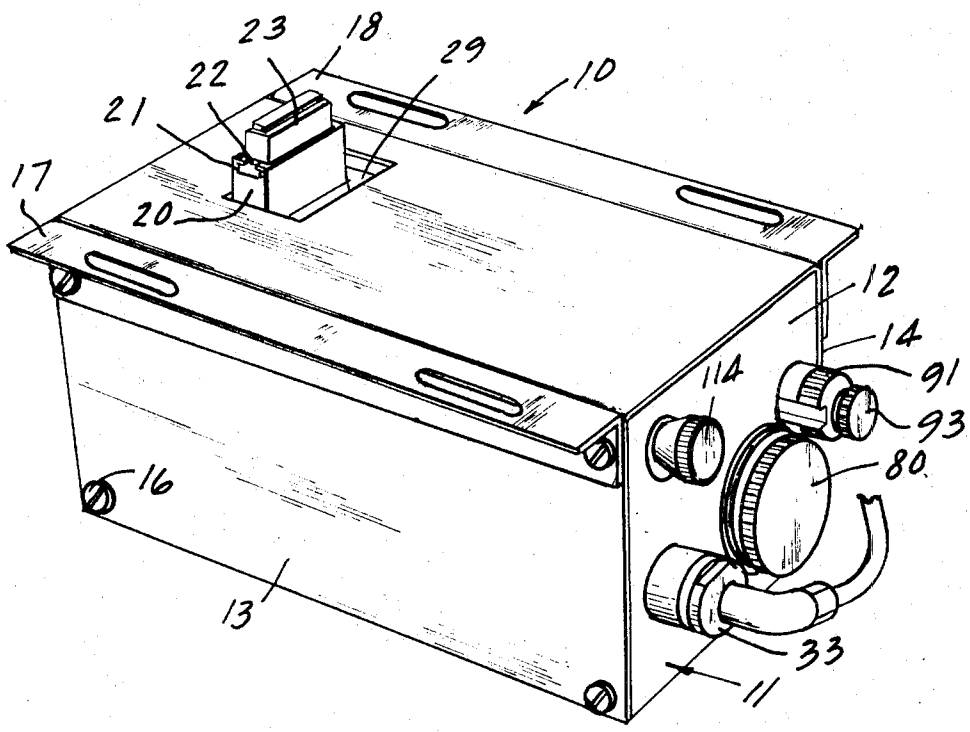
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[57] **ABSTRACT**

An imprinter stamping machine having a vertical stamping movement and a horizontal inking movement, the stamp being positioned at the end of a pivotable linkage member connected to a horizontal moving drive member through a cam linkage, the cam comprising a horizontally pivoted linkage member having a roller slidably received in a groove in a horizontally moving member attached to the horizontally moving ram. The imprinter has a manual screw and axially movable follower for selective abutment against the horizontally movable member to cycle the device.

10 Claims, 7 Drawing Figures



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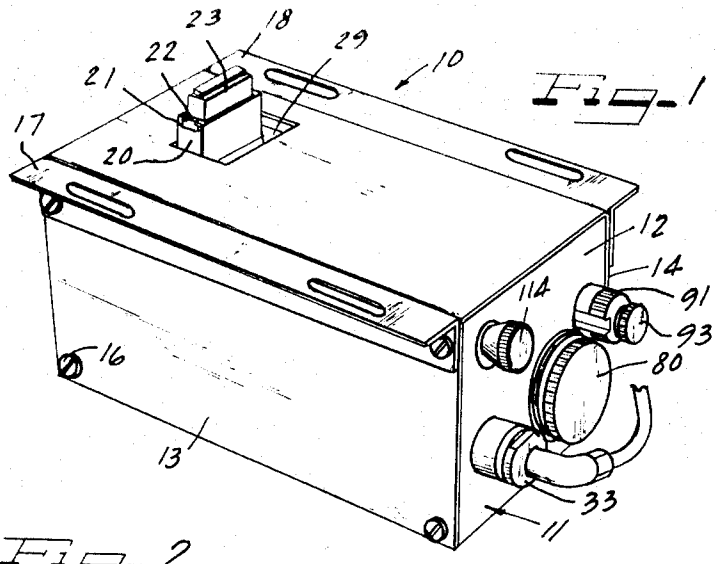
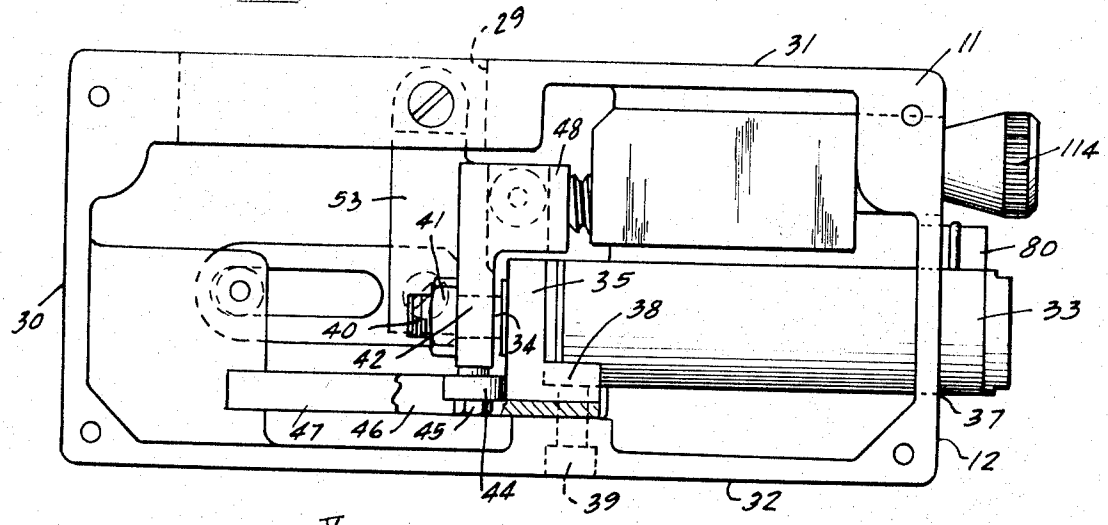


Fig. 1

Fig. 2



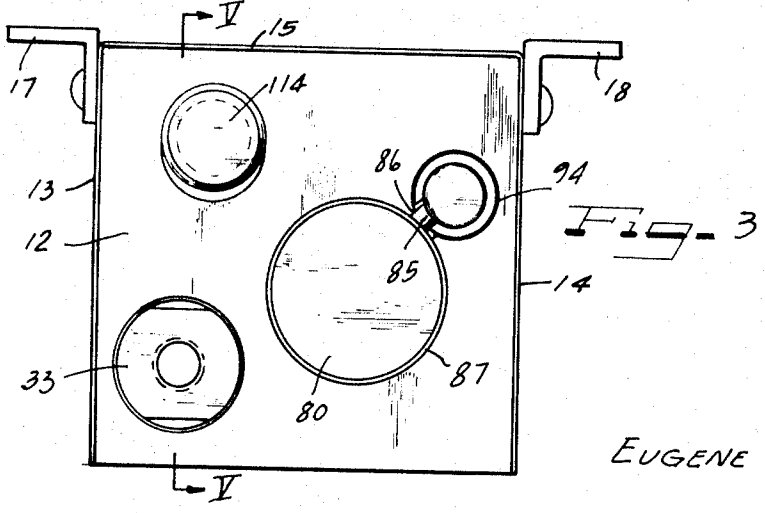
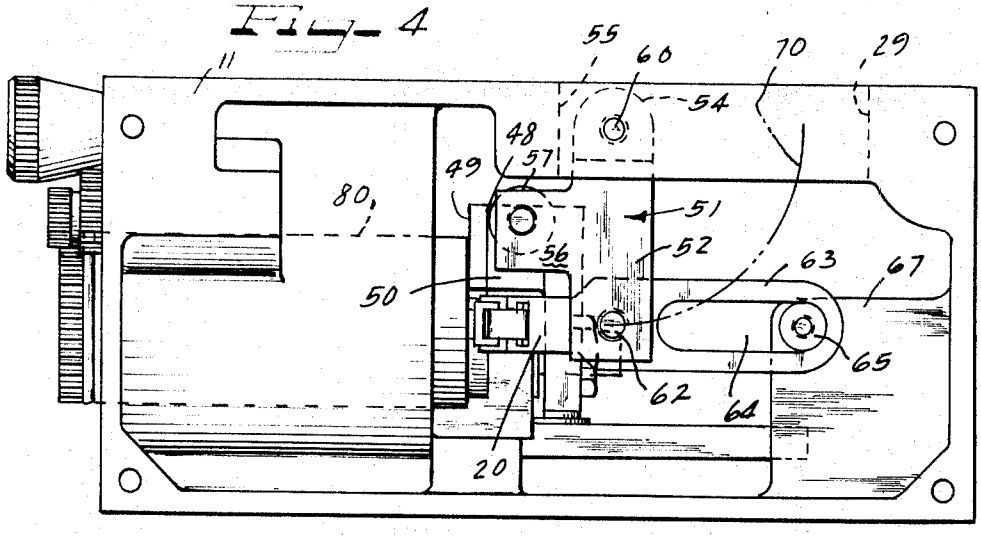


Fig. 3

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Fig. 4



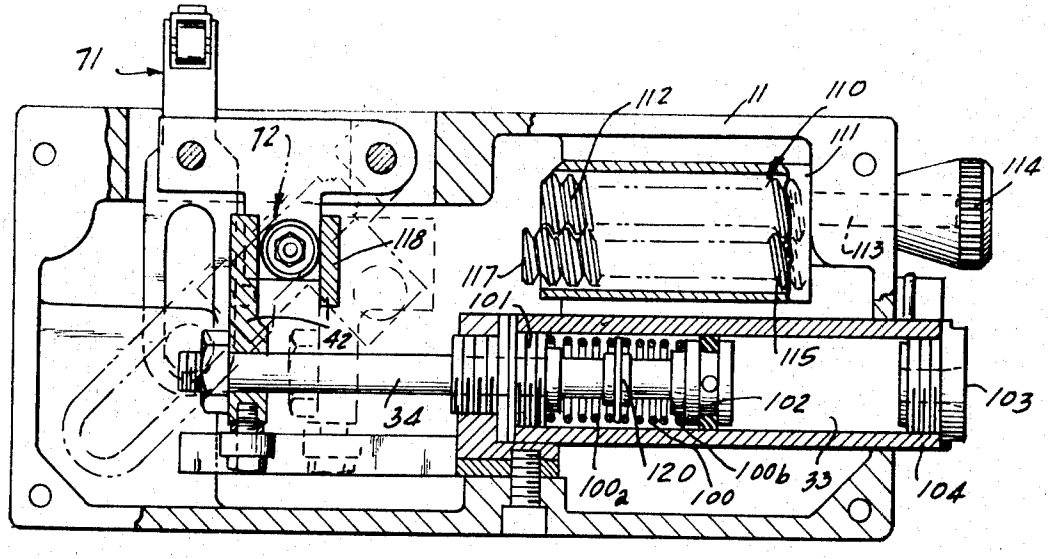
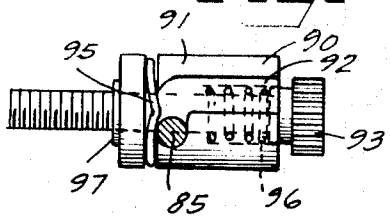


Fig. 5

Fig. 6



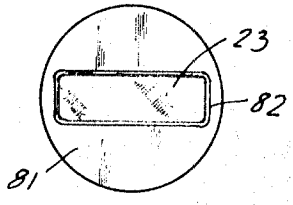


Fig. 7

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IMPRINTER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to marking machinery, and more particularly to a cyclic imprint marker.

2. Prior Art

Marking machines utilizing rubber or die cut stamps for imprint marking of items on a conveyor line are known to the art. Many such markers are vertical action type, where the type bar or carrier is cyclically moved vertically into imprinting contact with the item on the conveyor belt. The marking is normally done with an ink or dye which is applied to the type face by abutment between it and an ink carrying member such as an ink pad.

Many types of such machines have been designed, all of them having in common the features of a moving type carrying member for abutment with the product to be marked and an ink source and means of coating the type bar. Some devices use a rotating type carrier which rotates into contact with an ink roller or the like. Others use a vertically moving type carrier which oscillates vertically in connection with an ink ribbon or roller which moves horizontally to coat the type bar when the type bar is in its non-stamping position of vertical movement.

Another type has been suggested which utilizes a pivotable connection whereby the type bar can be moved both vertically and horizontally. In this manner, the type bar can be moved into imprinting position in its vertical movement and be abutted against an ink pad in its horizontal movement. Such horizontal and vertically movable markers have heretofore required complex linkages utilizing drag links and the like members. Additionally, they have been difficult to adjust and inconvenient for purposes of type changing.

SUMMARY OF THE INVENTION

This invention overcomes the deficiencies of the prior art by providing a vertically and horizontally movable type marker. The type bar is mounted at the end of a pivotable arm which has a double pivot whereby it is pivotable around a fixed pivot and pivotable around a moving point so that the type bar at the end of the arm can be moved both horizontally and vertically. A horizontally movable ram drives the movable pivot through a sliding contact point. Means are provided to adjust the position of the ink pad and further means are provided to manually cycle the marker to raise it to its vertical point and hold it there for type changing. The contact between the moving pivot member and the horizontally moving ram includes a roller attached to the moving pivot which is free to move in a groove in a horizontally moving member thereby providing a cam driven marker.

It is therefore an object of this invention to provide an improved imprint marker.

It is a further object to provide an improved imprint marker where the type bar has both vertical and horizontal movements striking the product to be marked at the end of one movement and striking an ink pad at the end of the other movement.

It is yet another and more specific object of this invention to provide an improved imprint marker wherein the type bar is moved by a cam and follower arrangement in both vertical and horizontal planes by a hydraulic ram or other means, the marker including a manually actuatable mechanism for moving the type marker.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of the invention will be readily apparent from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure, and in which:

FIG. **1** is a perspective view of the marker of this invention;

FIG. **2** is a side plan view of the marker with the outer housing removed;

FIG. **3** is an end plan view of the marker of this invention;

FIG. **4** is a side plan view similar to FIG. **2**, illustrating the opposite side;

FIG. **5** is a cross-sectional view taken along the lines V—V of FIG. **3**;

FIG. **6** is a partially fragmentary view of the ink pad adjusting member of this invention; and

FIG. **7** is an end plan view of the ink pad, taken along the lines VII—VII of FIG. **4**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** illustrates the marker **10** of this invention. The marker includes a primary housing member **11** having an end face **12** with attachments and controls mounted thereon. The side faces **13, 14** and the top face **15** are provided by a U-shaped cross section cap which is attached by means such as screws **16** and which is removable from the housing **11**. The marker includes mounting flanges **17** and **18** for attachment of the marker to production machinery. In the following description, it will be assumed that the marker is attached under a product carrying line in a horizontal position so that the type bar carrying member moves in a vertical position to imprint on the underside of the product carried by the conveyor machinery. It is to be understood, however, that this is for purposes of description and that the marker can be mounted in a vertical position if so desired or at any desired angle thereto. It will therefore be understood that when the movement of the type bar is described as being vertical or horizontal, it is so described in relation to a horizontally mounted housing and that if the housing be mounted with its end face **12** at the top or the bottom thereof, thereby providing a vertically mounted housing, the motion of the type bar carrying member will be the opposite of that described and that when the marker is mounted at an angle to the vertical, the motion of the type bar will not be horizontal or vertical except with respect to the housing.

The marker includes a member **20** which terminates in an inturned flanged groove **21** which receives the T-slot **22** on the underside of a type carrying bar **23**. The type bar **23** is insertable and removable from the type carrying member **20** and is maintained therein by a friction spring member.

The top of the housing **11** has an opening **29** therein through which the type carrying member **20** may project, thereby projecting the type bar **23** above the housing for abutment imprinting of a product moving across the top of the housing. The type carrying member **20**

is cyclically moved so that it intermittently projects above the marker to come into contact with the product. The movement of the end of the type carrying member **20** as hereinafter described is both horizontal and vertical and pivotable so that the type bar moves vertically up into contact with the product to be marked and moves horizontally as a part of its cycle into contact with an ink pad so that the type is inked.

As best illustrated in FIG. **2**, the housing **11** includes the front wall **12**, a rear wall **30**, a top **31** and a bottom **32** and a substantially hollow interior with walls as hereinafter described. The opening **29** extends through the top wall.

A hydraulic cylinder **33** is mounted through the front wall **12**. The cylinder contains an axially movable ram **34** which is forced out of the end **35** of the cylinder into the interior of the housing axially of the cylinder. The cylinder is mounted in an opening **37** through the front wall **12** and on a mounting block **38** interior of the housing and may be retained in place as by means of a nut **39** extending through the bottom wall of the housing. The free end **40** of the ram **34** is attached as by means of a nut **41** to a horizontally moving member **42**. The horizontally moving member has a free rotating roller wheel **44** attached to the bottom thereof as by means of a nut **45**. The roller wheel **44** is received in the central slot **46** of a horizontally disposed slotted guide member **47** which is attached to the housing interiorly thereof. The guide member **47** may be attached by the same nut **39** which attaches the mounting block **38** of the air cylinder. When the hydraulic cylinder is actuated, the axially moving ram **34** will carry with it the horizontally moving member **42** which is guided by contact between the roller **44** and the side walls of the central slot **46** of the guide member **47**.

The horizontally moving member **42** has an upper portion **48** which may partially overlie the end of the hydraulic cylinder **33**. The upper portion **48** is retained for movement in a given plane by the guiding action of the roller **44** in the groove **46**.

As best illustrated in FIG. **4**, the inside face **49** of the upper portion **48** has a vertical groove **50** therein.

A horizontally pivoted member **51** is provided. The member **51** is substantially U-shaped, having two legs **52** and **53** with a bight section **54**. The bight section **54** is pivotably attached to the housing in the opening **29** adjacent the front end **55** thereof. The pivotable attachment is across the width of the opening **29** transverse of the housing. The two leg sections **52** and **53** depend therefrom. The opening **29** is positioned off-center of the housing whereby one of the legs **52** is positioned interiorly of the horizontally moving member **42**. That leg **52** has a projection **56** thereon intermediate the ends of the leg. The projection **56** has a roller wheel **57** rotatably attached to the projection **56**. The roller wheel rides in the groove **50**. In this manner, when the ram **34** of the hyraulic cylinder moves the horizontally movable block **42**, that motion will be imparted to the horizontally pivoted member **51** through the rotatable wheel **57**. This will cause the member **51** to pivot in a first arc about its hinged connection **60** to the housing **11**. During the pivoting of the member **51**, the roller wheel **57** will move up and down in the groove **50**. This movement is in the manner of a cam and follower and is herein so described. It will therefore be understood that when reference is made to a cam and follower connection between a horizontally moving member and a horizontally pivoted member, that this refers to the connection between the member **51** and the member **42** through the roller wheel **57** received in the groove **50**. It is the provision of the roller wheel and groove arrangement which eliminates heretofore-used drag linkages and the like. Preferably, the roller wheel has a dimension just slightly less than the width of the groove so as to minimize free play in the movement of the horizontally pivoted member **51**.

The type-carrying member **20** is connected to the member **51** by a pivotable connection **62** adjacent the ends of the legs **52–53**. Therefore, the type-carrying member **20** moves with the pivotable member **51**. An extension **63** of the type-carrying member **20** projects beyond the pivot point **62** and has a central slot **64**. A roller wheel **65** is received in the slot **64** and is attached to an internal wall **67** of the housing to form a lost motion connection between the housing and member **20**. In this manner as the type holding member **20** is carried by the member **51**, it is caused to pivot in a second arc about the pivotable connection **62** and the roller wheel **65**. When the ram **34** is fully withdrawn into the cylinder, the legs **52–53** of the member **51** will be vertically disposed and the type-carrying member will be horizontally disposed within the housing. As the ram **34** extends outwardly of the cylinder, the pivot point **62** between the type-carrying member **20** and the member **51** will follow the broken line **70** of the first arc illustrated in FIG. **4**. Because of the sliding pivot point connection between the roller wheel **65** and the slot **64**, the type bar carrying member **20** will pivot to change the disposition of the member **20** from a horizontal to a vertical disposition as illustrated at **71** in FIG. **5**. The broken lines **72** in FIG. **5** illustrate the midpoint where the type bar is aligned with the legs **52–53**. Due to the arcuate nature of the movement of the member **51**, the type bar will have a movement approaching horizontal when in the position illustrated in FIG. **4** and approaching vertical when in the position illustrated at **71**. Thus, the type bar can be said to have both a horizontal and a vertical movement even though the movement is not pure horizontal and pure vertical. Because the roller wheel **65** is positioned directly below the furthest reach of the pivot point **62** when the ram is fully extended and in the same horizontal plane as the furthest reach of the pivot point **62** when the ram is fully withdrawn, the face of the type bar will be lying in a plane normal to either the vertical or the horizontal at the respective end movements of the ram. Thus, at the end of the travel of the ram, the type bar will project out of the opening **29** in the top of the housing and be positioned to strike a product with a movement approaching vertical. At the other extreme with the ram fully withdrawn, the type bar will be projecting in a plane normal to the vertical plane interiorly of the housing and be in position to strike the pad of an ink container **80** positioned in the housing.

The ink container **80** is a cylindrical member which is positioned in the housing through an opening in the end face **12** thereof. One end of the ink container terminates in a circular plate **81** having a rectangular slot **82** therein. The slot opens to a fabric pad. The slot **82** is dimensioned just slightly greater than the type bar **23** so that when the type bar is in its position as illustrated in FIG. **4**, it will substantially cover the face of the pad to reduce evaporation of the ink. The striking of the type face against the pad will coat the tape with ink.

A mechanism is provided to adjust the level of extension of the cylinder **80** into the housing to control the depth of penetration of the type face into the pad, thereby controlling the amount of ink applied to the type face so as to allow adjustments for lightness and darkness in the imprint. To accomplish this, a pin **85** projects from the outer diameter of the cylinder. The pin **85** is received in a groove **86** in the housing extending into the housing from the front wall. Therefore, alignment of the pin with the groove will assure the alignment of the slot **82** to prevent it from becoming angled with respect to the type face.

The cylinder **80** is freely movable in the opening **87** in the front wall **12.** An adjustment member **90** illustrated in FIG. **6** has a cylindrical member **91** with a J-groove **92** in the outer diameter thereof. The J-groove receives the pin **85** of the cylinder. A threaded knurl-ended bolt **93** extends through the cylinder **91** and is received in a threaded opening in the housing **11.** Therefore, threading and unthreading of the bolt **93** will cause the cylinder **91** to move inwardly and outwardly of the housing **11.** The opening **94** in the housing which receives the member **90** is adjacent the opening **87** which receives the ink cylinder with the slot **86** communicating the two openings. The pin **85** extends through the slot **86** and into the J-slot **92** where it is retained in the short leg by a spring means **95.** Thus, as the cylinder **91** is moved inwardly and outwardly of the housing by threading and unthreading of the bolt **93,** the cylinder **80** is moved therewith. A spring **96** is entrapped interiorly of the cylinder **91** between an inturned end and a radial abutment on the bolt. Thus, the cylinder **91** is continually urged by the spring away from the knurled end of the bolt to a point where it abuts with a snap ring **97** around the threaded portion of the bolt. In this manner, the cylinder **91** has shock-absorbing capacities in that when the type face strikes the pad of the ink cylinder, the ink cylinder is able to move axially to the limited extent allowed by the movability of the cylinder **91** between the abutment point against the snap ring **97** and an abutment point against the knurled end of the bolt **93.** The spring **96** also serves the function of continually urging the ink cylinder **80** towards the interior of the housing.

In order to return the type bar to the ink pad, the hydraulic cylinder **33** has a spring means **100** positioned therein. The spring is entrapped between the end **101** of the cylinder through which the ram **34** projects and a piston **102** end on the ram. As pressure is supplied to the cylinder through the exterior opening **103** thereof, the piston is forced towards the other end of the cylinder, thereby compressing the spring and moving the ram **34** out of the cylinder. When the pressure is released, the spring **100** urges the piston **102** back towards the end **104** exterior of the housing. The urging of the spring **100** moving the piston **102** moves the horizontally moving member **42** back towards the face **12** of the housing, thereby carrying the horizontally pivoted member **51** and type-carrying member **20** back to the position illustrated in FIG. **4,** where the type face will strike the pad of the ink cylinder.

In order to manually cycle the marker in the absence of continued pressure for the purposes of maintenance, repair or changing of the type face from the top, a manual cycling actuator **110** is provided. The actuator **110** includes a housing **11** positioned interiorly of the marker housing **11** above the cylinder **33.** The housing **111** has a pair of axially extending circular bores therein which are positioned one atop the other and which overlap to provide a communication therebetween. In one of the bores, an idler screw **112** is provided which has an extension **113** projecting through the front wall **12** of the housing **11** and terminating in a control knob **114.** The idler screw has a helix tooth thereon. A follower or actuator screw **115** is received in the other bore. The actuator screw is freely received in the bore, and has a helix tooth meshed with the tooth of the idler screw **112.** Therefore, rotating the idler screw **112** will cause the follower screw to be moved axially of the housing **111.** The end **117** of the follower screw which is projectable beyond the inner end of the housing **111** lies in a plane which intersects with a face **118** of the horizontally movable member **42.** Therefore, rotation of the idler screw **112** will cause the follower screw to move outwardly of the housing **111** into abutting relation with the horizontally movable member **42** to force it to move away from the end **12** of the housing **11,** thus cycling the marker. When the manual actuator is not in use, the idler screw is rotated to withdraw the follower screw entirely within the housing **111** of the actuator where it will not interfere with the operation of the marker. However, use of the actuator when desired can result in the maintaining of the type-carrying member in its full vertical position as illustrated at **71,** when desired.

In the preferred embodiment illustrated, in order to reduce the length of the spring **100** in the air cylinder and thereby reduce the tendency of the spring to bow when compressed, a pair of springs **100***a* and **100***b* are provided around the ram **34.** Each of the springs bottoms against a floating abutment **120** received around the ram intermediate the springs.

It will therefore be appreciated that my above-described invention provides a device for intermittent imprint marking which has a type carrying member which moves in one plane for marking and in a second plane normal to the forced plane for inking the type. The movement of the type carrying member is actuated by movement of a hydraulic ram which is attached to a first member which in turn is attached to a second pivotable member through a cam and follower, the pivotable member carrying the type carrying member. Additionally, a means is described for manual actuation of the marker, the means including mating tooth screws, one of which is restrained against axial movement and the other of which is free to move axially to force movement of the said first member.

Although I have herein set forth my invention with respect to certain specific principles and details thereof, it will be understood that these may be varied without departing from the spirit and scope of the invention as set forth in the hereunto appended claims.

I claim as my invention:

1. An intermittent imprint marker comprising: a housing, an air cylinder attached to said housing having a ram disposed for movement in said housing, said ram attached to a first member whereby said first member is moved with said ram in a first direction, a pivotable member attached to said housing, said pivotable member pivotable through an arc, the arc lying in a plane parallel to the movement of the ram, said pivotable member having a projection extending therefrom, said first member having a groove in a surface thereof, said projection extending into said groove, and said projec-

tion in said groove providing a cam and follower connection between the said first member and the said pivotable member, whereby movement of the said first member by the said ram imparts movement to the said pivotable member through the said cam and follower connection, and a type bar carrying member being mounted for pivotal movement on said pivotable member and being attached to the housing by a pivotal, lost motion connection so that as the pivotable member is pivoted by the ram, the type bar carrying members pivots relatively to both the housing and pivotable members.

2. The marker of claim **1** wherein said projection includes a roller wheel riding in said groove.

3. An intermittent imprint marker according to claim **1**, which includes manual means mounted in the housing for moving the pivotable member independent of actuation of the ram.

4. A marker according to claim **3**, wherein said manual means includes a manually actuated rod having a helix tooth thereon, said tooth indexing with a second rod having a cooperating helix tooth thereon, said second rod free to move axially in dependent response to rotation of said first rod, and said first rod being restrained against axial movement, said second rod being positioned in the housing to abut said first member to move the pivotable member.

5. An imprint marker comprising a housing having a top wall and a side wall, a ram attached to the housing having a movable arm, movable only longitudinally of the housing towards and away from the side wall, a type carrying member having a type bar on one end thereof, a linkage for transmitting motion from the ram arm to the type carrying member, the linkage including a pivoted member pivotably attached to the housing for movement through a first arc, the arc lying in a plane parallel to the movement of the arm, the type carrying member pivotably attached to, and carried by the pivoted member, the type carrying member having an extension thereon projecting away from the connection of the type carrying member to the pivoted member, a fixed pivot on said housing, a slidable and pivotable connection between the fixed pivot and the extension, a cam carried by said arm, and a cam follower carried by said pivoted member riding against the surface of the cam whereby when the said arm moves longitudinally of the housing, the cam moves longitudinally of the housing, and motion of the cam is transmitted to the pivoted member through the cam follower causing the pivoted member to move through the arc carrying the type carrying member therewith, the type carrying member being pivoted through a second arc by means of the slidable and pivotable connection to the fixed pivot.

6. The marker of claim **5** wherein the said cam and follower connection includes a roller wheel riding in a groove.

7. The marker of claim **6** wherein an ink supply is disposed within said housing through a wall of said housing, the said ink supply having an ink pad face positioned within the said housing to be struck by the type portions of the said type bar when the said type carrier is at a horizontal position within the housing.

8. The marker of claim **7** wherein means are provided to adjustably position the ink pad within the said housing.

9. The marker of claim **8** wherein the means for adjusting includes a shock absorber means to absorb the shock to the ink container when the pad is struck by the type bar.

10. The marker of claim **6** wherein manual means are provided to index the pivotable member through an approximately 90° pivot cycle manually in the absence of pressure acting on the ram.

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