United States Patent [19]

Penaluna

[11] **3,902,952**

[45] **Sept. 2, 1975**

[54] **HAND OPERATED LABELER**

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[73] Assignee: **Dymo Industries, Inc.,** San Francisco, Calif.

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[21] Appl. No.: **355,909**

[52] **U.S. Cl.** **156/384;** 101/295; 101/320; 101/324; 150/277

[51] **Int. Cl.**[2] **B32B 31/00**

[58] **Field of Search** ..... 156/277, 384, 541, 542, 156/579, DIG. 33, DIG. 49, 584; 29/453; 101/288, 291, 292, 293, 295, 320, 324, 362, 82

[56] **References Cited**

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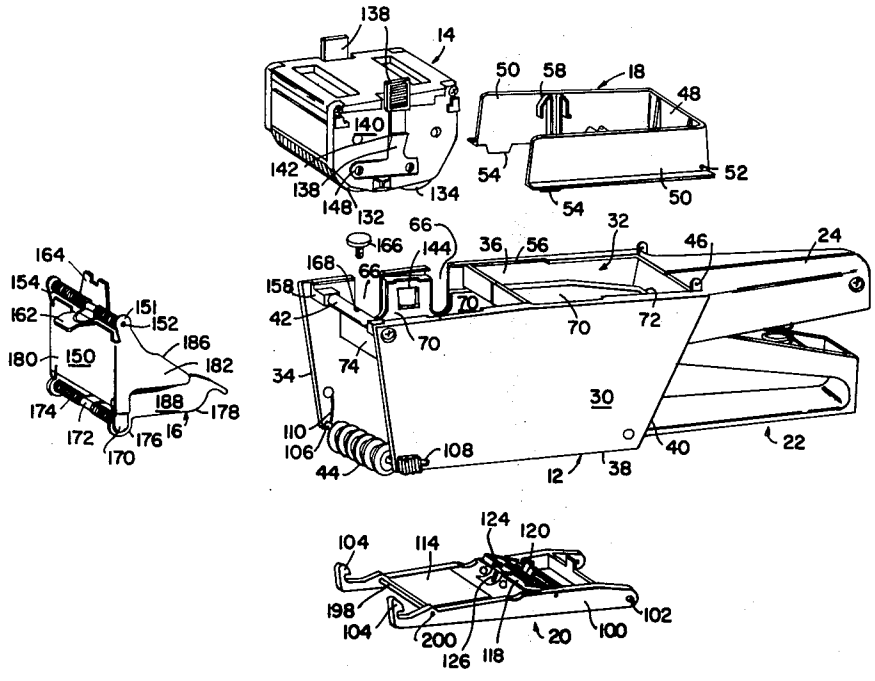
Primary Examiner—Caleb Weston
Attorney, Agent, or Firm—Harris Zimmerman

[57] **ABSTRACT**

A manually held and manually operated labeler for printing and dispensing pressure sensitive labels. The labeler is provided with a multi-line print head which may be readily placed in or removed from the tool, permitting different heads to be interchanged in a single tool. A plurality of pre-inked rollers bearing the same or different colors of ink are carried on a simple assembly which likewise is readily installed on and removed from the tool. Actuation of the tool effects an ink transfer engagement between a selected roller and a selected type line carried by the print tool.

The labels are dispensed from a continuous supply roll which is threaded through the tool. A label brake mechanism is carried on the tool to stop further advance during a label applying operation.

22 Claims, 13 Drawing Figures



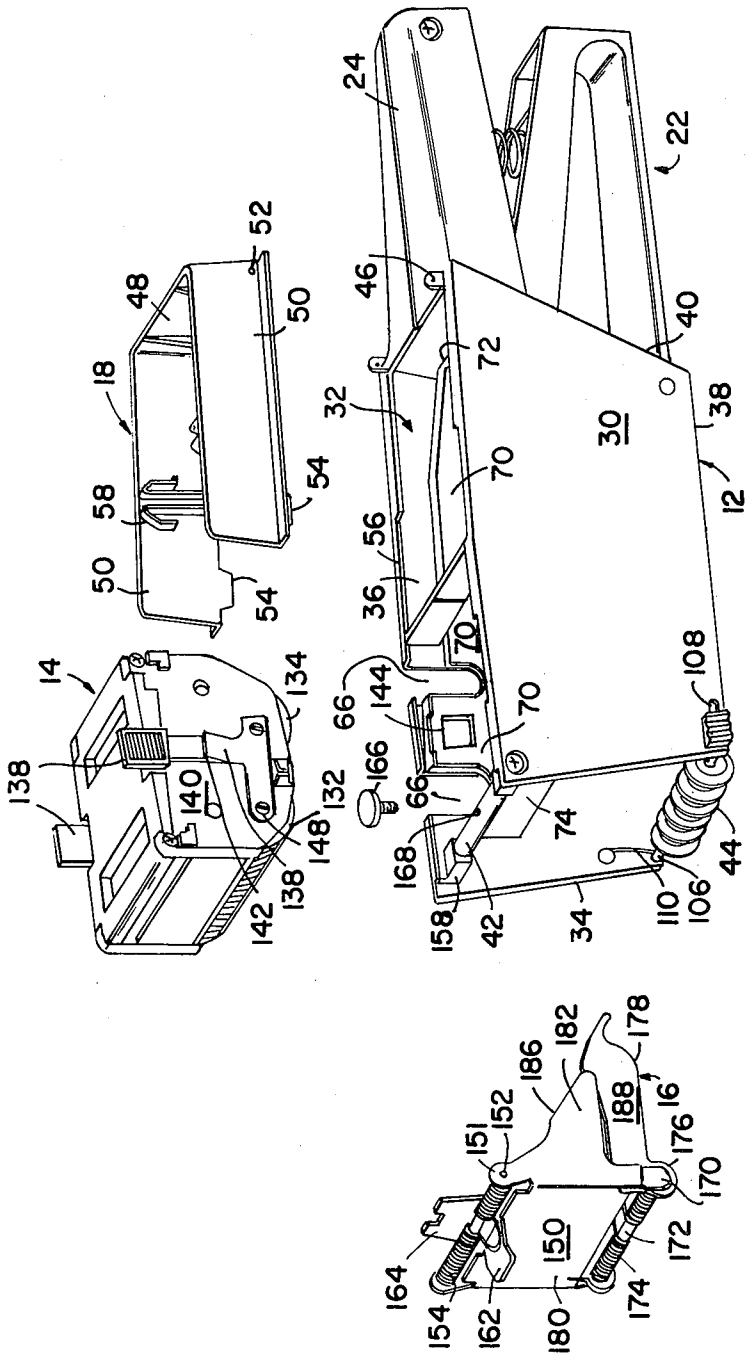

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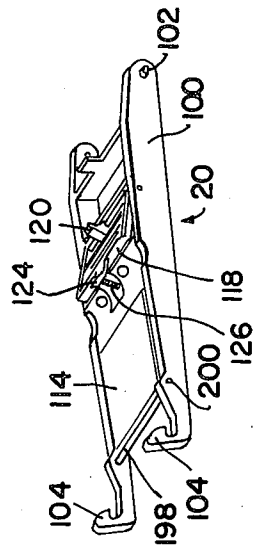
FIG_1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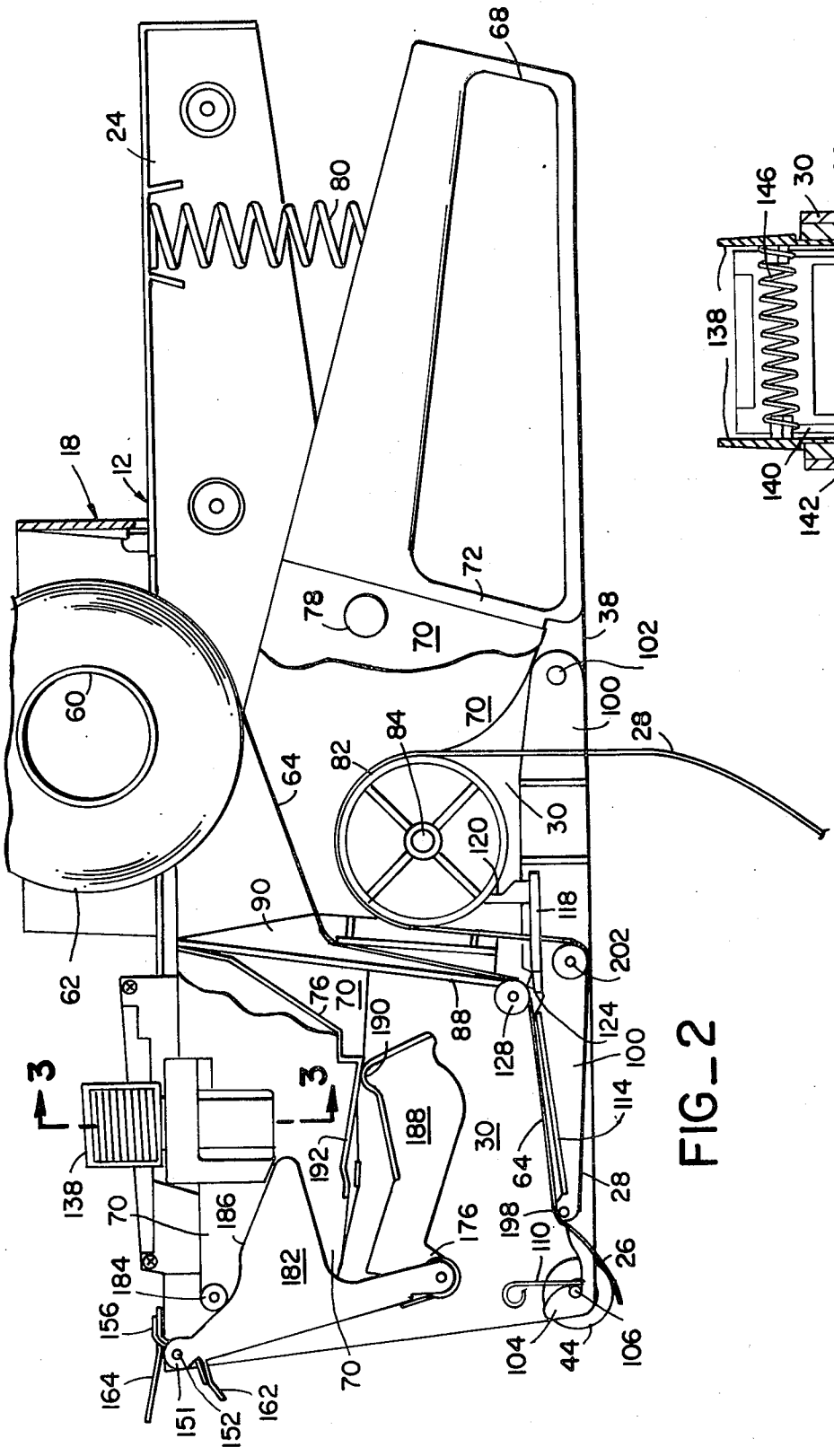
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114
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FIG_2

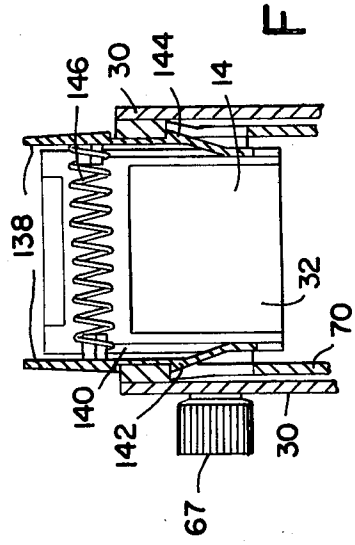
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FIG_3

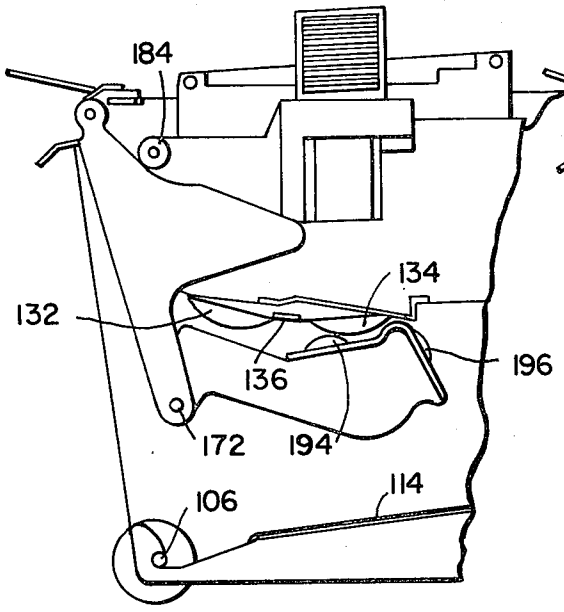

FIG_4

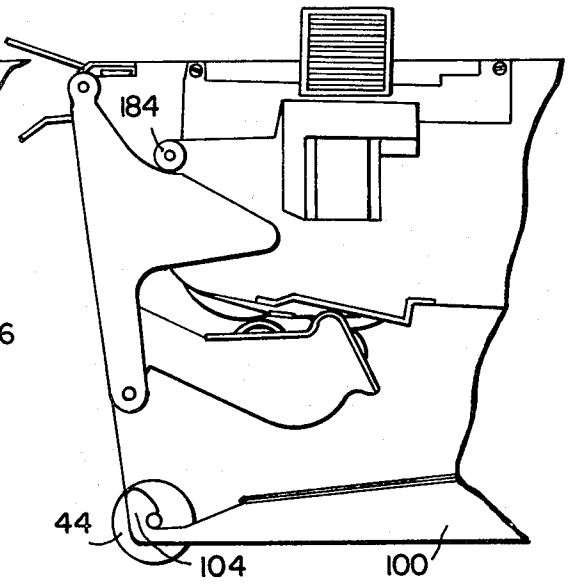

FIG_5

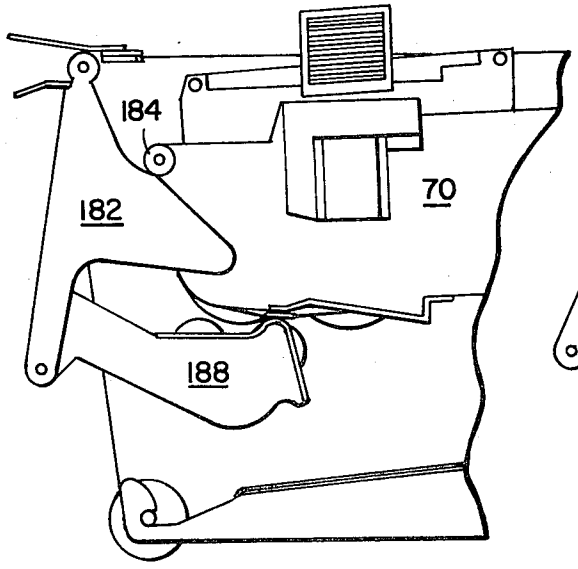

FIG_6

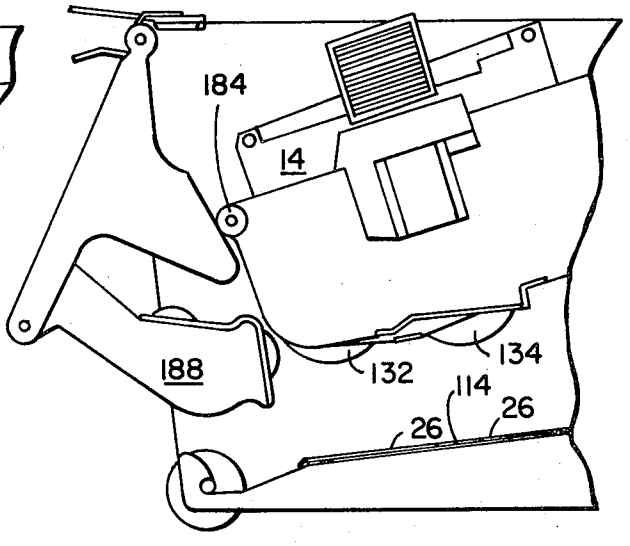

FIG_7

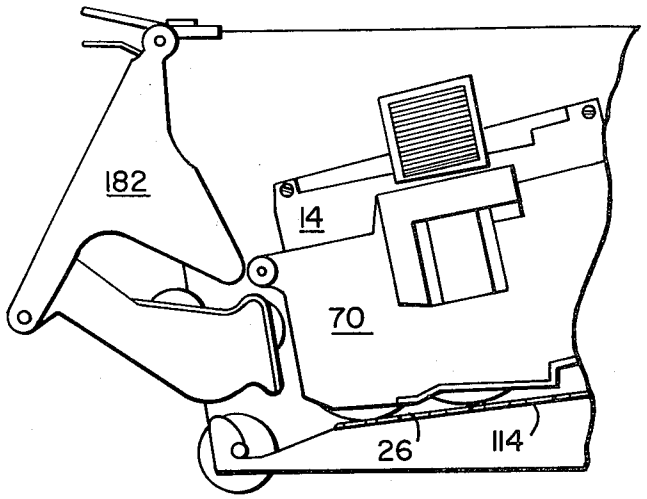

FIG_8

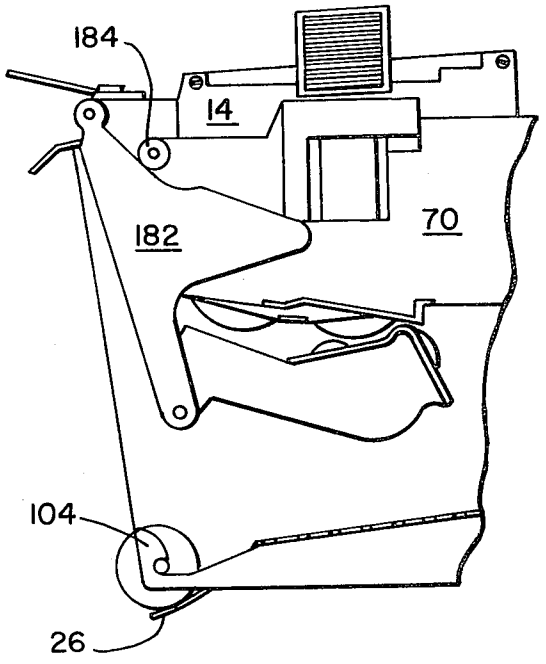

FIG_9

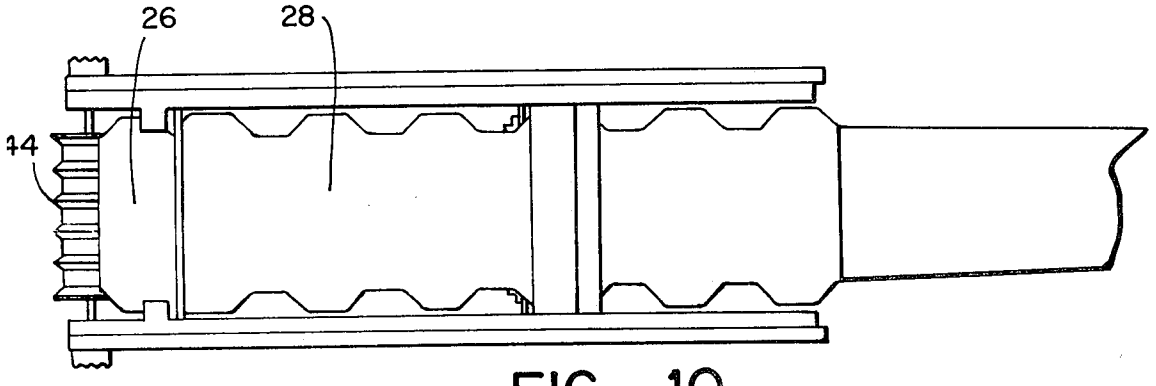

FIG_ 10

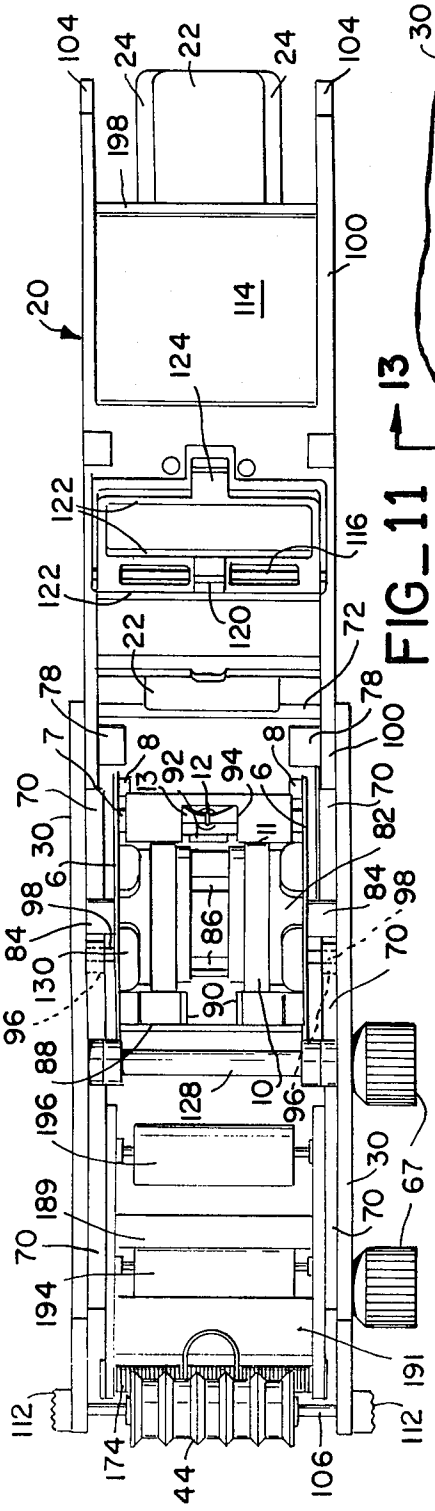

FIG_11

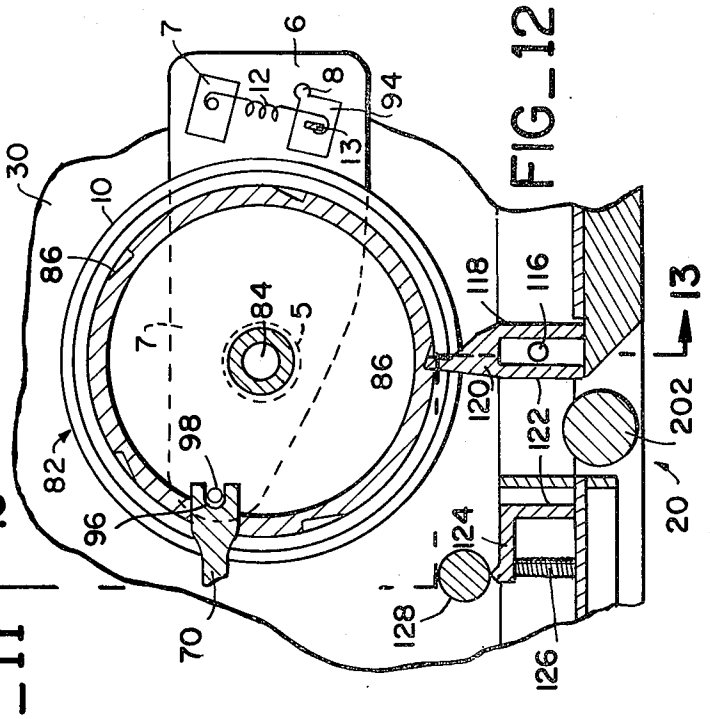

FIG_12

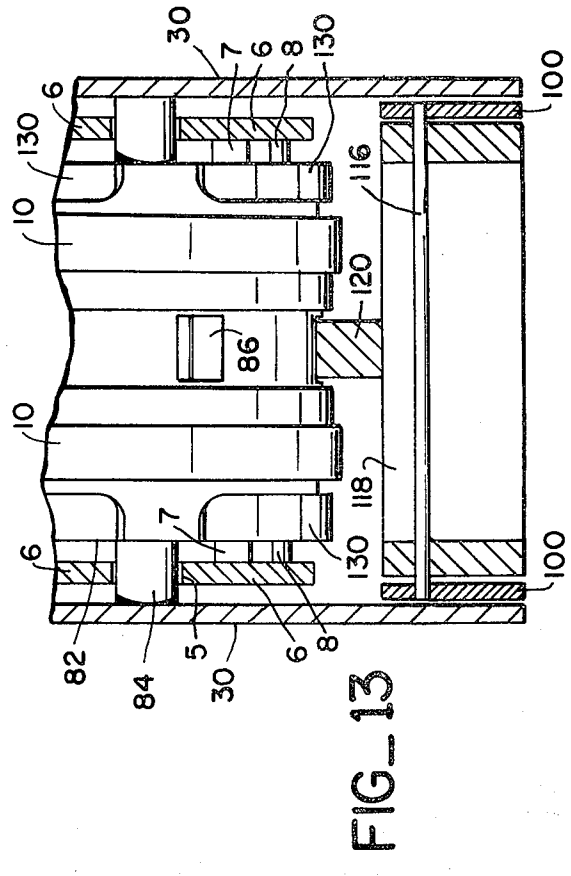

FIG_13

HAND OPERATED LABELER

BACKGROUND OF THE INVENTION

A wide variety of labelling devices have heretofore been the subject of patent protection, and many of such devices are likewise commercially available. In broad terms, such devices may be provided with such features as means for supporting a roll or spool of labels, feeding the same through the tool, causing a selected distal portion of the label stock to be printed, and then cutting off, severing or otherwise removing that portion of the stock on which data, such as price information, has been printed. Where the stock is provided with a pressure sensitive adhesive or other gummed coating on its undersurface, the roll is usually formed as a laminate, with a carrier strip of release paper engageable with the labels.

During operation of the tool, the carrier strip is removed from the adhesive-coated label stock so that the cut printed label may be readily affixed to an article, such as merchandise in a store.

Typical of prior art references general disclosing such an arrangement is U.S. Pat. No. 3,265,553 of Aug. 9, 1966.

While the tool of the present invention likewise utilizes some or all of the foregoing features, it also possesses certain novel features of advantage which overcome certain negative aspects of prior art devices.

First, as an important feature of this invention, the print head, i.e., the mechanism which carries one or more lines of variable or fixed printing type indicia, and which is inked by the passage of one or more rollers along the type face, can be easily removed from the tool and conversely snapped into operative position within the tool. The ready removal of the print head gives a number of beneficial results. By way of example, removal of the head results in easier and more efficient cleaning and servicing of the print head as well as other portions of the tool. Equally important is the fact that the user may possess a single tool and a plurality of print heads, using, for example, a first head in one appropriate department of a store and another head in another department. Such an arrangement will obviously result in a financial benefit to the owner of the tool.

In connection with the print head removal, a novel snap-in-place mechanism is provided which insures proper alignment and replacement of the head in the tool. Such mechanism further provides an added benefit by acting as an impact or shock absorbing element which dampens the impact created during the printing cycle.

A further feature of the present invention relates to a spring loaded and cam actuated unitary inking mechanism which carries a pair of pre-inked rollers which may be of different colors. The respective rollers engage a selective line or lines of the type indicia to transfer ink thereto upon actuation of the tool. Similar to the print head, this assembly is likewise readily inserted in and removed from the tool for cleaning and servicing, and for substantially opening up the tool for the same purpose.

Another feature of advantage found in the tool of this invention is in connection with a simple mechanism which serves as a brake to prevent forward movement of the carrier strip and labels during the label applying

operation and which further acts as an anti back-up member to maintain the printing operation and feeding operation in proper time relation.

THE DRAWINGS

FIG. **1** is an exploded perspective view of the labeling tool of the present invention;

FIG. **2** is a side elevational view of the tool, with portions broken away to better illustrate internal mechanism;

FIG. **3** is a cross-sectional view taken substantially in the plane indicated by line **3—3** of FIG. **2**;

FIG. **4** through FIG. **9** are partial side elevational views of the tool, illustrating the position of certain operating parts during actuation of the tool;

FIG. **10** is a bottom plan view of a portion of the tool with the carrier strip and a label being shown;

FIG. **11** is another bottom plan view with the strip and label removed, and with the brake supporting plate likewise removed to illustrate features of internal construction;

FIG. **12** is an enlarged longitudinal sectional view of the braking mechanism; and

FIG. **13** is a partial cross-sectional view taken along line **13—13** of FIG. **12.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

In broad terms, the tool of the present invention includes a body **12,** a print head **14,** an inking mechanism **16,** a spool support **18,** a braking mechanism **20,** and an actuating member or trigger **22.** The tool may generally be referred to as a labeler which is hand held and hand operated. As will later be explained in more detail, a squeezing of member **22** towards a grip **24** extending rearwardly from an upper portion of the body causes mechanism **16** to ink the type indicia on the print head **14** and then causes the print head to move into printing engagement with labels **26** carried on a carrier strip **28** for a printing operation. Release of the trigger member **22** then causes the strip to be advanced and the printed label separated from the strip and in position to be applied to some article or other surface.

Referring first to the body **12,** the same will be seen to include a pair of spaced side walls **30** defining a chamber **32** therebetween. The front end **34** of the body is generally open, as is the upper edge portion **36,** the bottom edge portion **38** and the rear end portion **40** from which the grip **24** extends. A rigid bridge element **42** interconnects walls **30** adjacent the upper front end portion, and journalled between the walls adjacent the lower front end portion is a ribbed label applicator roller **44.**

Disposed on the upper edge portion of the body adjacent the grip **24** are a pair of outwardly directed fixed pins **46** which are adapted to engage the spool support **18.** More particularly, member **18** is formed of a single piece of plastic or the like with a back wall **48** and forwardly extending side walls **50,** which normally diverge from wall **48.** Side walls **50** include small apertures **52** which engage pins **46** and permit a rocking connection between the spool support and the body. The lower edge of each wall **50** adjacent the front end are provided with detents **54** which resiliently snap into engagement under lips **56** provided on the body side walls. The opposed surfaces of the walls **50** have in-

wardly extending projections 58 over which the core 60 of a label supply spool 62 may be mounted.

As will be understood, and while not constituting a part of the invention, the spool 62 carries a continuous laminated strip 64, one portion of the laminate comprising the continuous carrier strip 28 formed of a suitable release paper, and the other portion of the laminate comprising the transversely pre-cut labels 26 whose adhesive surface is releasably attached to strip 28. As the strip 64 passes through the tool, the exposed surfaces of the labels 26 are sequentially positioned subjacent the print head whereat they are printed, separated from strip 28, and advanced to a position subjacent the roller 44 for subsequent attachment to the article being labeled.

To provide for external selection of desired type indicia on the print head, one of the body side walls 30 is provided with a pair of generally vertical parallel slots 66 extending downwardly from the upper edge of the wall 30 and receiving manually actuable knobs 67. These knobs are secured to shafts received within the print head 14 which are rotatable to vary the indicia presented by indicia wheels secured about the shafts.

Before discussing the details of strip advance and printing, an explanation should first be given regarding the construction of the trigger or actuating member 22, and the manner in which the laminated strip 64 passes from spool 62 through the machine.

Trigger 22 is of unitary consruction, and has a rear hand grip portion 68 disposed subjacent the body grip 24 and a forward portion consisting of spaced vertical side walls 70, a transverse wall 72 at the front end of the grip portion, a front transverse wall 74 joining walls 70, (FIG. 1), and an intermediate transverse wall 76 likewise spanning the side walls. The trigger is pivotally attached to the body by means of a pivot 78 interconnecting the respective walls. The trigger is open at the top and bottom, and a spring 80 interposed between the body and trigger normally maintains the trigger in the position illustrated in FIG. 2., i.e., with the front end of the trigger in a raised or elevated position.

The trigger walls 70 are disposed immediately inwardly of the body walls 30 and are adapted to pass by the same as the trigger is rocked about the pivot 78.

Also journalled between the body walls 30 is a roller member 82, the trigger walls being notched to clear stub shafts 84 which support such member. The central portion of the roller is provided with a plurality of circumferentially spaced ratchet teeth 86, and positioned intermediate the roller 82 and the trigger wall 76 is a transverse wall 88 having a pair of vertically extending flanges 90. These flanges serve as a guide for a flat tongue element 92 which is carried on a block 94. The block 94 is mounted by bearings 8 on arms 6 for pivoting movement toward and away from engagement at 11 with raised ring portions 10 of the roller 82 for clamping the carrier 28 therebetween. A crosspiece 7 fixedly extends between the parallel arms 6 and a tension spring 12 has one end fixed to the crosspiece 7 and its opposite end fixed to the mounting 13 of the block 94 for biasing the block 94 about its bearings 8 toward the roller 82. The arms 6 have bearing holes 5 surrounding stub shafts 84, respectively to be pivotally mounted on the roller for rotation therewith clockwise and for rotation counterclockwise independently of the roller 82, which roller 82 is prevented from rotating counterclockwise by the teeth 86. As generally indicated in FIG. 12, rocking movement or partial rotation back and forth of the arms 6 and clockwise rotation of the roller is caused by trigger movement, and more particularly by means of slots 96 provided in the trigger walls 70 and engageable with pins 98 extending laterally outwardly from the roller arms 6. The above described roller 82 and feed mechanism 5-13 forms no part of the present invention per se, and it is of conventional construction as shown, for example, in the patent to Schrotz et al., U.S. Pat. No. 3,674,609, issued July 4, 1972.

In order to complete the description of additional portions of the apparatus comprising additional portions of the strip feed, reference must also be made to the braking mechanism 20. This latter mechanism comprises a pair of longitudinally extending arms 100 pivotally connected to walls 30 by pins 102. The forward ends of the arms are provided with hooks 104 which engage shaft 106 on which the applicator roller 44 is carried. Such shaft is normally urged forwardly in slots 108 provided in walls 30 by means of springs 110 carried on each of the walls. To permit opening of the brake mechanism, manually engageable knobs 112 may be actuated to move the shaft 106 rearwardly in slots 108 and release the hooks 104 from the shaft.

A platen 114 extends between the arms and serves as a base for the laminated strip in opposition to the print head. A shaft 116 traverses the arms 100 and pivotally supports a bracket 118 which includes a detent 120 extending upwardly and in engagement with the ratchet teeth 86 of the roller 82. The bracket 118 also includes a pair of transverse webs 122, the forward one of which has a projection 124 which engages a spring 126 urging the bracket in a clockwise direction as viewed in FIG. 12. Projection 124 normally engages shaft 128, as shown in FIG. 2, the shaft being secured in suitable apertures in the walls 30. The laminated strip 64, pinched between the shaft 128 and projection 124, is prevented from moving during the printing operation or backing up and fouling in the feed mechanism. Spring compression between the shaft 128 and the arms 100 due to spring 126 biases the arms to disengage shaft 106, ensuring easy opening of the arms and access to the apparatus.

Roller 82 includes circumferentially spaced stub teeth 130 for engaging the scalloped edge of the laminated strip 64, carrier strip 28, which is depicted in FIG. 10, and drawing the strip from the feed spool 62 through the brake mechanism 20, past the printing head and separation roller, and out of the machine. Manual actuation of the trigger against spring 80 causes the portion outside of roller 82, that is, the arms 6, and the block 94 carried thereon, to rotate about pins 84 due to the eccentric action of pins 98 in slots 96, while central roller 82 remains motionless due to the action of detent 120 in a ratchet tooth 86. As will be explained in the following, during this portion of the operation two labels on the laminated strip are printed by print head 14. As the trigger is released, the block 94 comes to rest with its ends between adjoining stub teeth 130, clasping the strip 64 to the roller. As the portion outside of the roller, that is, the arms 6 and the block 94 carried thereon, returns to the unactuated position, the block 94 and central roller rotate clockwise as seen in FIG. 2 and advance the strip through the tool. Return rotation of the roller 82 clockwise causes the detent 120 to rock counterclockwise on shaft 116,

disengaging the projection **124** from the shaft **128** and releasing the braking action to allow the strip to advance unimpeded.

Printing of the labels on the laminated strip is accomplished by the printing head **14**, which has two rows **132** and **134** of indicia wheels disposed transverse to the walls **70**, and a fixed indicia plate **136** positioned therebetween. The printing head extends between walls **70** forward of transverse wall **76**, and is releasably secured to walls **70** by means of flexible tabs **138** secured to the sides **140** of the print head with screws **148**. Each tab includes a detent **142** which extends into a cooperating slot **144** in the walls **70**, with spring **146** secured between and biasing the tabs so that the detents engage the slots and retain the printing head in the trigger. A unique and novel feature of the present invention is that the printing head may be quickly removed and replaced with a like instrument by urging the tabs **138** toward each other and lifting up manually to remove the printing head, and inserting another printing head in place. Pushing the replacement printing head into place causes the detents to snap into the slots, locking the head in place.

The indicia of the print head presented for printing are inked prior to each printing operation by means of inking assembly **16**, which includes bail **150** with upper arms **151**. Secured between the upper arms is a shaft **152** which pivotally supports torsional spring **154** and clip **156**, both secured thereon. The clip is adapted to grasp squared shoulders **158**, preferably formed integrally with walls **30**, and in which the shaft **42** shapping the walls **30** is fixed. The torsional effect of the spring **154** urges the bail toward the print head **14**. Tabs **162** and **164** formed as part of the bail and the clip respectively may be manually rotated toward each other to release the spring tension and remove the inking assembly from the tool. Clip **156** also includes a suitable hole therein to receive screw **166**, which is secured in threaded hole **168** to more permanently secure the inking assembly to the tool. The bail **150** also includes lower arms **170** between which is secured a transverse shaft **172** which pivotally supports torsional spring **174** and the support arms **176** of ink roller carrier **178**. The spring **174** biases the roller carrier counterclockwise, as seen in the drawing.

The bail **150** includes a transverse portion **180** which is substantially perpendicular to side walls **30**, and longitudinally extending cams **182** secured to transverse portion **180** and disposed parallel to and within side walls **30** and outside of trigger walls **70**. Extending from the forward extremity of the walls **70** are cam pins **184** which are adapted to engage the cam surfaces **186** of cams **182**, the bias of spring **154** maintaining the engagement. Roller carrier **178** includes spaced apart arms **188** secured to arms **176**, which are coplanar and subjacent the walls **70**, and within cams **182**, and are secured together by webs **189** and **191**. Flanged edges **190** impinge on the flanged edges **192** of the walls **70** due to the bias of spring **174**, the edge **192** acting as a cam surface and the edge **190** as a cam rider. The arms **188** are adapted to releasably support the pivot shafts of two ink impregnated rollers **194** and **196**, which may be of differing colors, such as black and red.

Actuation of the trigger causes the cam pins **184** to arc downward, impinging on the cam surfaces **186** and forcing the bail to rotate clockwise on shaft **152**. This action simultaneously causes the roller carrier to translate in a forward direction, the edges **190** of the roller carrier riding on the edges **192** of the walls **70**, as shown sequentially in FIG. 4 – FIG. 8. The bias of spring **174** maintains the engagement of edge **190** and cam surface **192** as translation procedes. The cam surfaces are formed so that the sum of the motions imparted to the roller carrier causes the ink roller **194** to impinge on and roll over fixed indicia **136** as ink roller **196** impinges on indicia **134** with a similar rolling motion. Further translation of the roller carrier causes roller **194** to ink indicia **132**, while the cam configuration and angular relationship of the carrier and indicia prevent the roller **196** from impinging on indicia **136** and **132**. Thus it may be appreciated that indicia **136** and **132** will be inked with the color of the ink impregnated in roller **194**, and indicia **134** will have deposited on it the ink impregnated in roller **196**.

The interaction of cam **182** and cam pin **184** causes the bail **150** to rotate further clockwise as the trigger arcs downward, the roller carrier translating forward sufficiently to create an unrestricted trajectory for the printing head, as shown in FIG. 7. The indicia **132**, **134** and **136** simultaneously strike two consecutive labels **26** presented on the platen **114**, imprinting the indicia characters thereon in the corresponding two colors, as shown in FIG. 8. It should be noted that the ink rollers **194** and **196** are releasably secured to the roller carrier and may be easily removed and replaced to facilitate both changing of ink colors and servicing by unclipping the clip **156** from the shoulders **158** and removing the entire inking assembly.

Subsequent to completion of the printing operation the trigger **22** is released by the operator, the compression of spring **80** pivotting the trigger clockwise to the rest position as shown in FIG. 9 and causing the laminated strip **64** to be advanced through the tool a distance of one label length, as previously described, as the inking assembly returns to rest position. The strip passes over the platen **114** and around separation roller **198** that is a small diameter transverse roller received in holes **200** of arms **100** around shaft **202** that is also secured between arms **100**, and to the roller **82**. As the strip **64** advances around the roller **198** and describes an acute angle, the less flexible adhesive label **26** peels from the carrier **28** and is disposed below roller **44**, as shown in FIG. **10**, where it is positioned to be applied to a suitable object by virtue of the contact adhesive.

It should be noted that during application of the label **26**, when still partially adhered to the release strip **28**, tension on the strip due to the application stroke would tend to partially advance the strip **64** and place the labels **26** carried thereon out of register with the print indicia. The label brake formed by projection **124** and shaft **128** prevents this undesirable motion.

No detailed explanation has been given regarding the selection of the desired type indicia by rotation of the knob **67**, since this does not comprise any independent part of the present invention.

Thus it may be appreciated that the present invention reveals a novel removable print head system which facilitates servicing of the head as well as interchanging of type style and preset indicia. Furthermore, the preinked roller system disclosed herein is a novel means of combining easy servicability with two-color printing and a choice of colors.

I claim:

1. A labeling tool including a body, a manually engageable actuating member pivotally attached to said body, a print head including type characters, inking means carried in said body for inking said type characters, means operatively connecting said actuating member to said inking means to effect inking of said type characters with the pivoting of said actuating member, said actuating member including spaced side walls with opposed detent receiving notches therein, said print head including a pair of opposed parallel arms each including a detent extending therefrom to cooperatively engage respectively one of said notches, resilient means for biasing each arm to engage each detent in the respective notch, and tabular means joined to the distal ends of said arms for effecting manual disengagement of said detents.

2. A labeling tool including a body, a manually engageable actuating member pivotally attached to said body, printing means secured to said actuating member and including a pair of separated indicia producing members, and inking means removably and resiliently secured to said body, said inking means including a pair of inking rollers, and means guiding each of said rollers for respectively engaging only a selected one of said indicia producing members, said inking means further including a bail member operatively connected to said actuating member for engaging said inking rollers and said printing means upon movement of said actuating member.

3. The labeling tool of claim 2, further including a clip bracket pivotally secured to said bail member and engaging clip receiving means on said body to releasably retain said bail member on said body.

4. The labeling tool of claim 3, said inking means further including first resilient means secured between said bail member and said clip bracket to urge said bail member toward said printing means.

5. The labeling tool of claim 3, further including manual tab means extending from said clip bracket and said bail member to facilitate removal and replacement of said inking means on said body.

6. The labeling tool of claim 3, said inking means further including a roller carrier pivotally secured to said bail member with a pivot axis parallel to the pivot axis of said clip bracket, said inking rollers releasably secured to said roller carrier.

7. The labeling tool of claim 6, said inking means including second resilient means secured between said bail member and said roller carrier to urge said roller carrier toward said printing means.

8. The labeling tool of claim 6, said bail member including a pair of cam arms extending therefrom, and at least one cam actuating pin secured to said actuating member and engaging said cam arms upon pivotting of said actuating member in a first direction to rotate said bail member away from said printing means.

9. The labeling tool of claim 8, said bail member including a web parallel to said pivot axis of said clip bracket, and said cam arms extend normal to said web.

10. The labeling tool of claim 9, wherein said cam arms are medial to said clip bracket and said roller carrier.

11. The labeling tool of claim 8, wherein said roller carrier includes spaced apart carrier arms parallel to said cam arms, each of said carrier arms including a projection extending therefrom.

12. The labeling tool of claim 11, wherein said actuating member includes spaced apart side walls coplanar with said carrier arms, and said printing means is secured within said side walls.

13. The labeling tool of claim 12, wherein the lower edges of said side walls are contoured in cam-like fashion, said carrier arm projections slidably engaging said lower edges of said side walls.

14. The labeling tool of claim 13, wherein sliding engagement of said carrier arm projections and said side wall lower edges causes selected rollers to engage predetermined portions of said printing means.

15. A labeling tool comprising a body, an actuating member pivotally attached to said body, printing means for imprinting a continuous strip, rotary means for sequentially advancing said strip through said tool, said rotary means including a wheel pivotally secured within said body and having circumferentially spaced ratchet teeth therein, and brake means operatively connected to said rotary means for selectively and sequentially immobilizing said continuous strip, said brake means including a first roller engaging said continuous strip, a brake member pivotally secured in said body for engaging said first roller and clasping said continuous strip therebetween, said brake member including a detent extending normally therefrom to operatively engage said ratchet teeth in said wheel and disengage said first roller.

16. The labeling tool of claim 15, further including resilient means urging said brake member to engage said first roller.

17. The labeling tool of claim 16, wherein said brake member is secured to a panel pivotally secured to said body with a latch, said resilient means also urging said panel away from said body to facilitate operation of said latch.

18. A labeling tool comprising a body, an actuating member pivotally attached to said body, printing means for imprinting a continuous strip, rotary means for sequentially advancing said strip through said tool, said rotary means including a wheel pivotally secured within said body and having circumferentially spaced ratchet teeth therein, brake means operatively connected to said rotary means for selectively and sequentially immobilizing said continuous strip, said brake means including a first roller engaging said continuous strip, a brake member pivotally secured in said body for engaging said first roller and clasping said continuous strip therebetween, said brake member including a detent extending normally therefrom to operatively engage said ratchet teeth in said wheel and disengage said first roller, and resilient means urging said brake member, said detent operatively engaging said rotary means to pivot said brake member and disengage said first roller, said rotary means including a wheel pivotally secured within said body and having circumferentially spaced ratchet teeth therein for engaging said detent, and said first roller is parallel to the pivot axis of said wheel.

19. The labeling tool of claim 18, wherein said continuous strip passes from said first roller to said printing means, thence to said wheel, said wheel operatively drawing said strip through said tool and releasing said brake means upon pivotal motion of said actuating member in a first direction.

20. The labeling tool of claim 19 wherein said printing means is secured to said actuating member, said printing means striking and imprinting said continuous

strip upon pivotal motion of said actuating member in a second direction.

21. The labeling tool of claim **20** wherein said detent prevents rotation of said wheel upon pivotal motion of said actuating member in said second direction.

22. The labeling tool of claim **21,** wherein the pivot axis of said actuating member is parallel to said pivot axis of said wheel.

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