May 10, 1960 F. C. MOELLER 2,935,933

CAN MARKING MACHINE

Filed Aug. 16, 1957 6 Sheets-Sheet 1

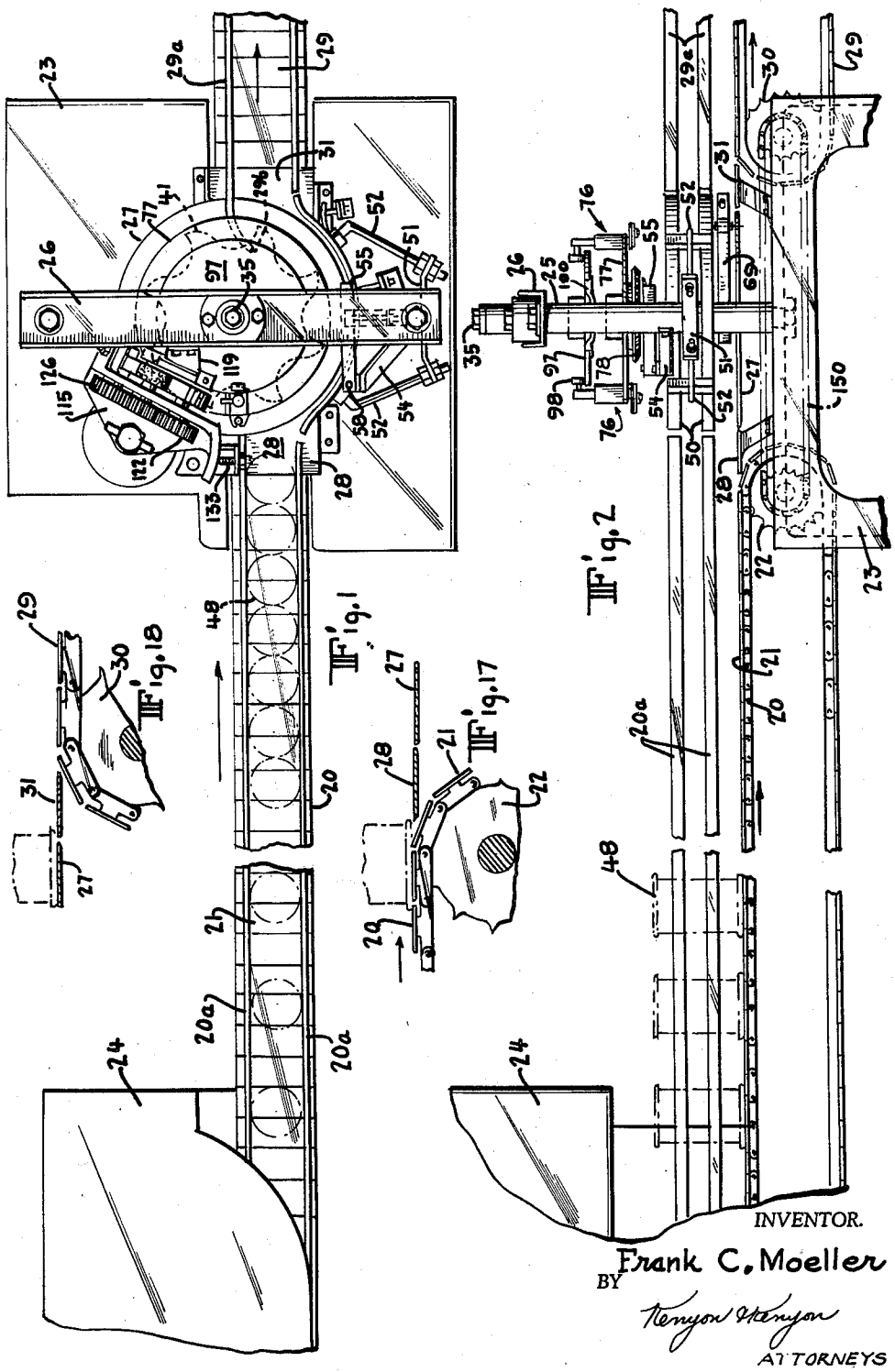


Fig. 2

Fig. 1

Fig. 18

Fig. 17

INVENTOR.
Frank C. Moeller
BY
Kenyon & Kenyon
ATTORNEYS

May 10, 1960 F. C. MOELLER 2,935,933

CAN MARKING MACHINE

Filed Aug. 16, 1957 6 Sheets-Sheet 2

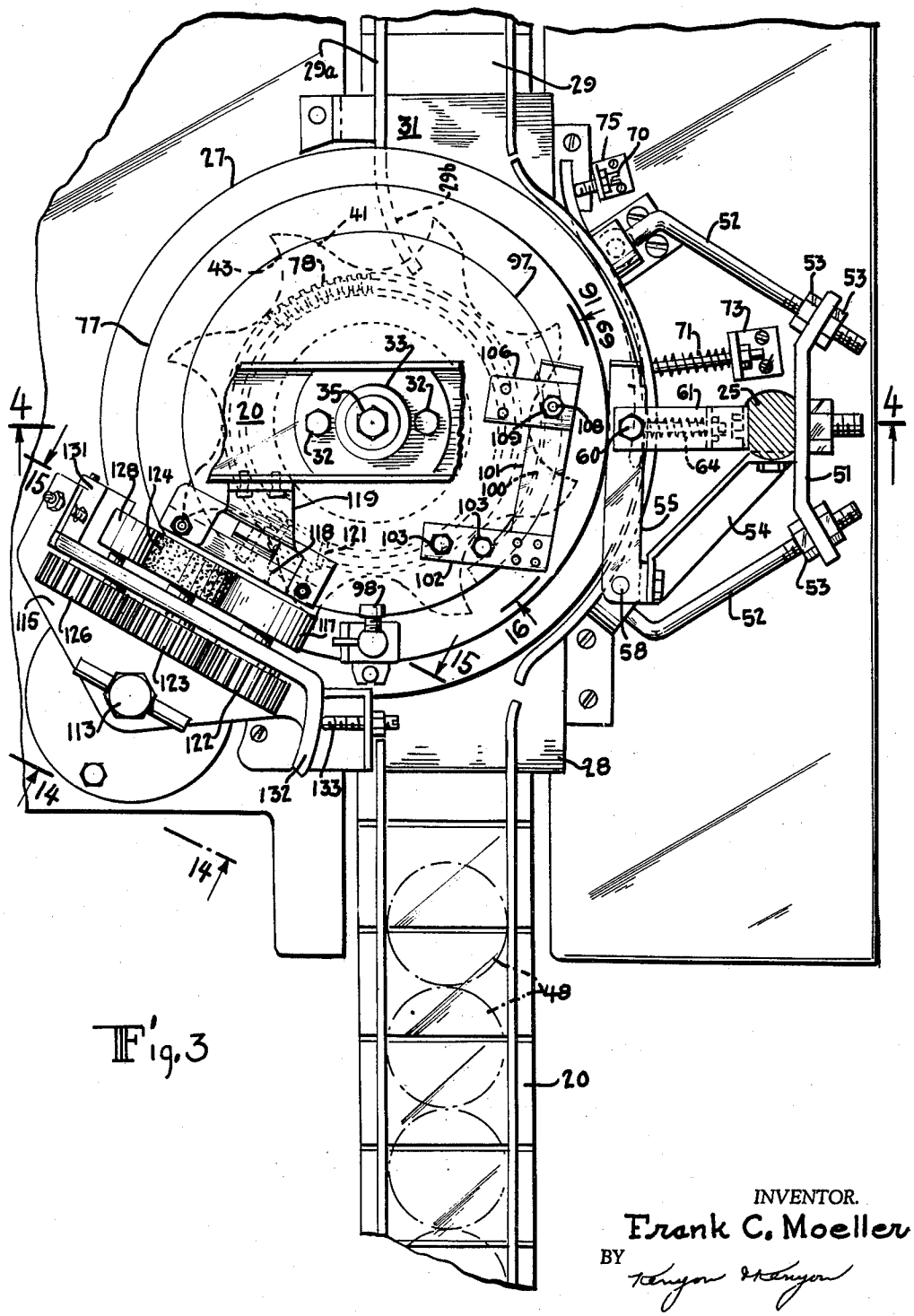


Fig. 3

INVENTOR.
Frank C. Moeller
BY Kenyon & Kenyon
ATTORNEYS

May 10, 1960 F. C. MOELLER 2,935,933

CAN MARKING MACHINE

Filed Aug. 16, 1957 6 Sheets-Sheet 3

Fig. 4

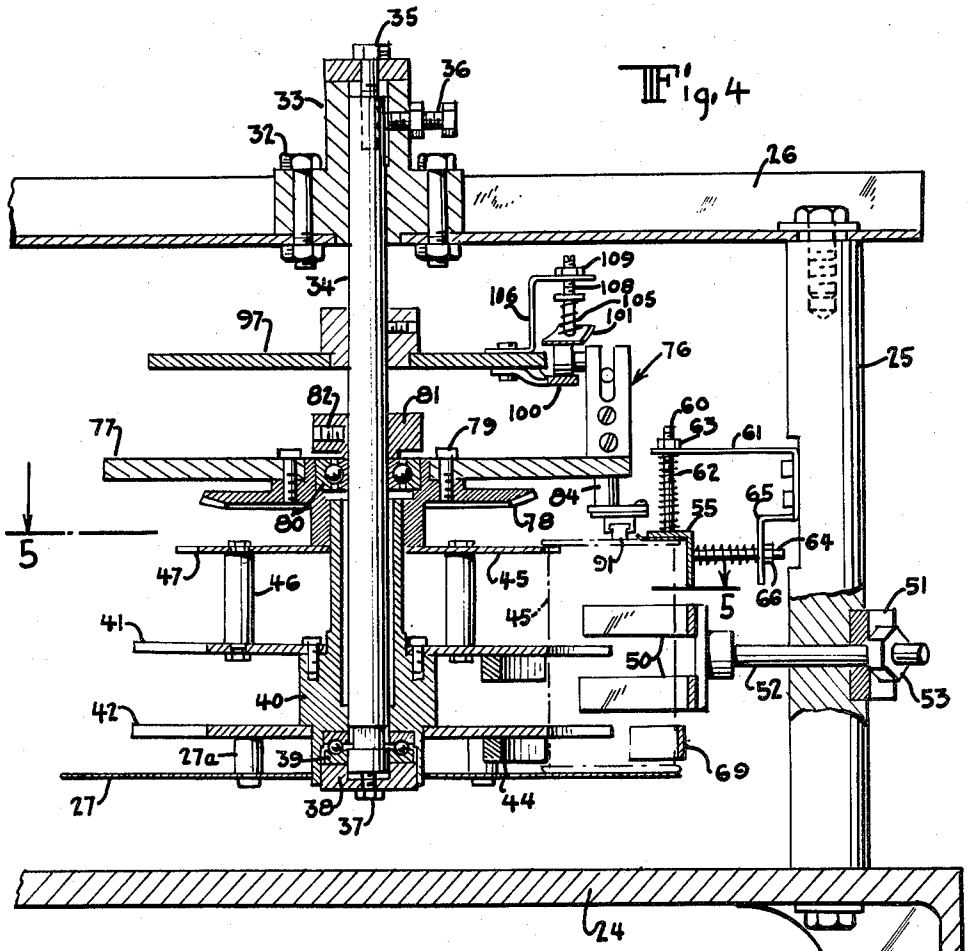
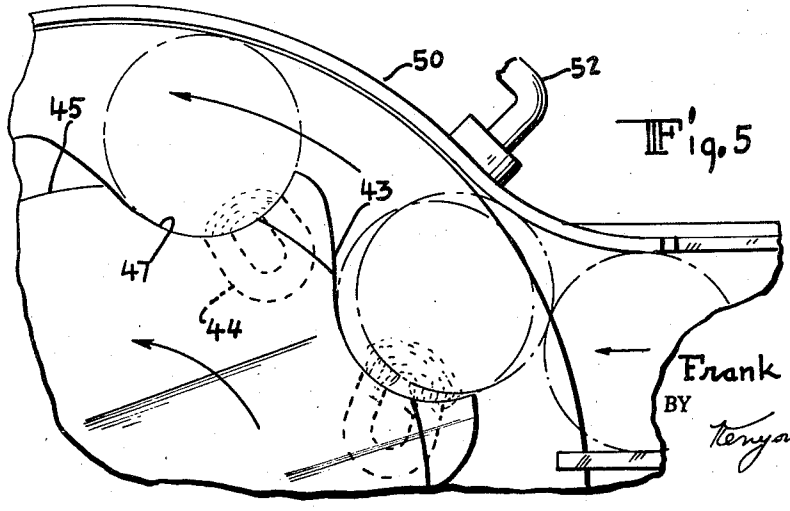


Fig. 5



INVENTOR.
Frank C. Moeller
BY
Kenyon & Kenyon
ATTORNEYS

May 10, 1960 F. C. MOELLER 2,935,933

CAN MARKING MACHINE

Filed Aug. 16, 1957 6 Sheets-Sheet 4

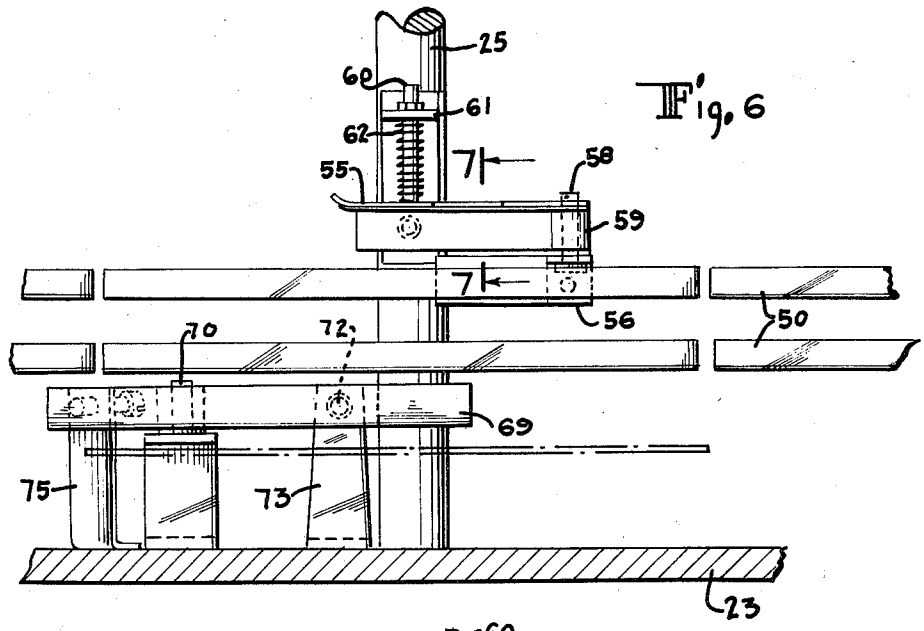


Fig. 6

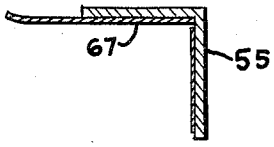


Fig. 7

Fig. 8

INVENTOR.
Frank C. Moeller
BY
Kenyon & Kenyon
ATTORNEYS

May 10, 1960 F. C. MOELLER 2,935,933

CAN MARKING MACHINE

Filed Aug. 16, 1957 6 Sheets-Sheet 5

Fig. 9

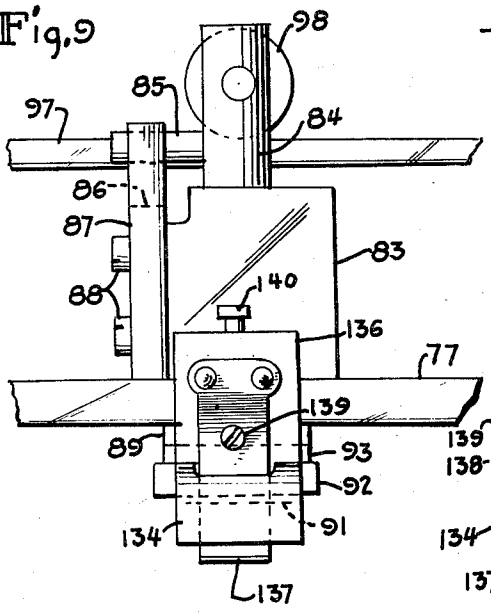


Fig. 10

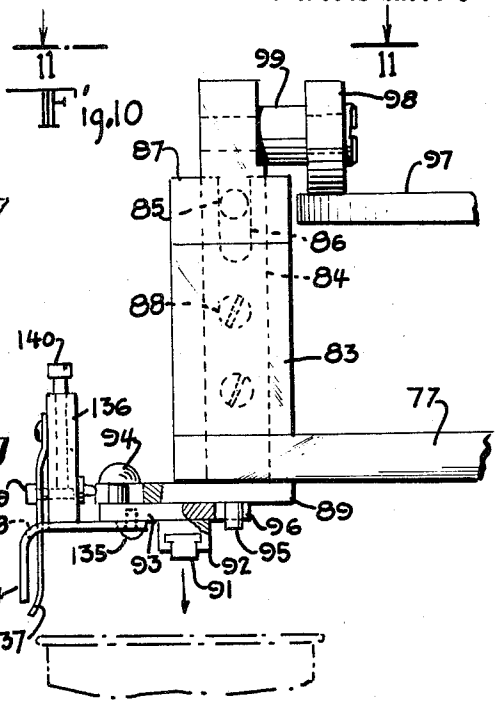
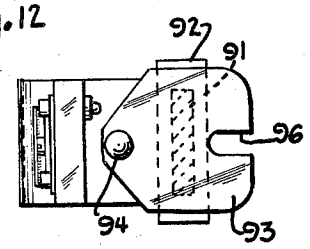


Fig. 12



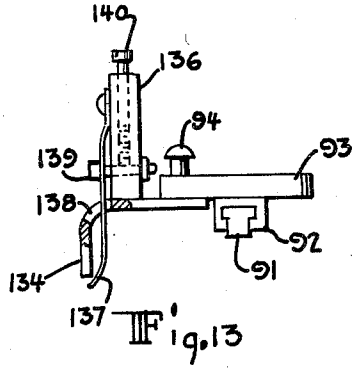


Fig. 13

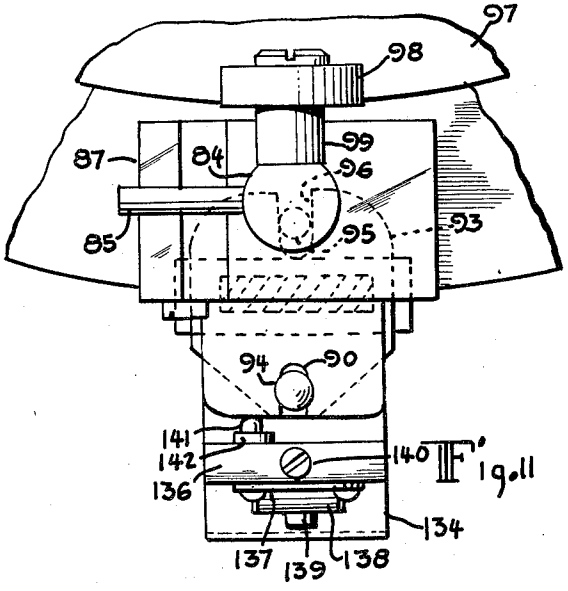


Fig. 11

INVENTOR.
Frank C. Moeller
BY
Kenyon & Kenyon
ATTORNEYS

May 10, 1960 F. C. MOELLER 2,935,933

CAN MARKING MACHINE

Filed Aug. 16, 1957 6 Sheets-Sheet 6

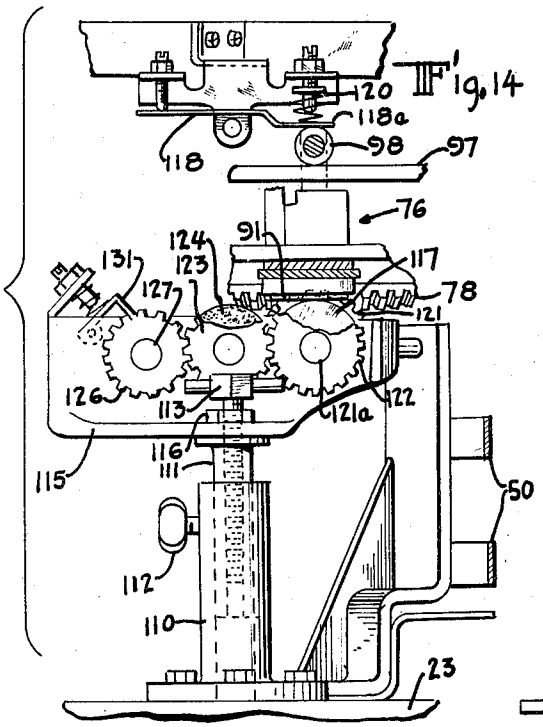


Fig. 14

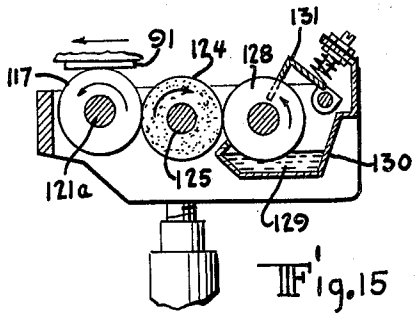
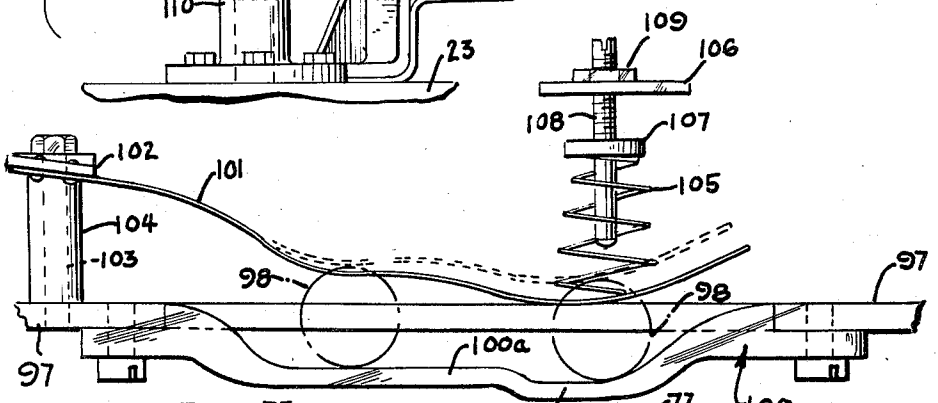


Fig. 15



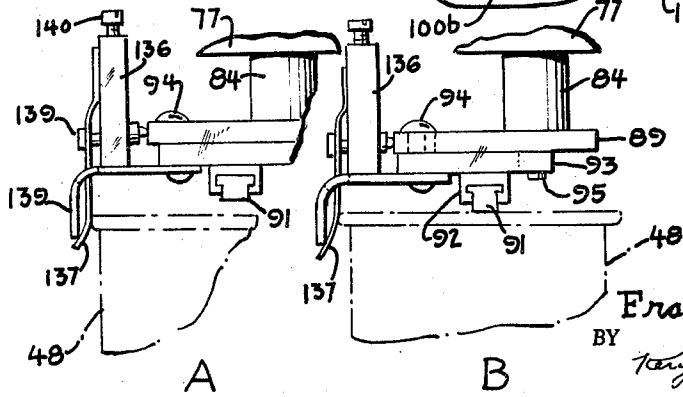


Fig. 16

INVENTOR.
Frank C. Moeller
BY
Kenyon & Kenyon
ATTORNEYS

United States Patent Office 2,935,933 Patented May 10, 1960

2,935,933

CAN MARKING MACHINE

Frank C. Moeller, Mountainside, N.J., assignor to Adolph Gottscho, Inc., Hillside, N.J., a corporation of New York

Application August 16, 1957, Serial No. 678,555

10 Claims. (Cl. 101—44)

This invention relates to can marking machines and relates more particularly to machines for automatically marking cans with a serial number or other identifying indicia.

It is common practice, particularly in the production of canned beverages or foods, to mark a particular batch or day's output with a serial number or other identifying mark so that if necessary at some later date a particular can, which may have found its way into a retail store or to a consumer, may be positively identified with records kept by the manufacturer as having been produced at a particular date or from a particular batch. Various proposals have been made for facilitating the marking of cans in the manner referred to. However, serious difficulties have been encountered in the operation in a way that is commercially satisfactory. The principal difficulty that has been encountered is that in attempting the marking with sufficient rapidity to be practical commercially the resulting mark is so smudged as to be either completely illegible or of very doubtful legibility. Moreover, even when legibility is sacrificed, marking with sufficient rapidity to meet the demands of large scale production of canned goods has not been attained.

It is a principal object of this invention to provide a can marking machine which is capable of operating at very high speed and which at the same time applies a very clear and legible serial number or other mark on the can.

Features of this invention relate to the provision of a horizontally disposed rotatable can support in relation to first and second conveyor means, means being provided for transfer of rapidly moving cans from the first conveyor means onto the rotating support and means being provided for transferring the cans from the support to the second conveyor means.

Further features of this invention relate to the means for receiving the cans onto the rotating support and for cooperating with the exterior of each can whereby when the marking stamp is applied the motion of the marking stamp and of the can surface to which the stamp is applied are so synchronized that there is virtually no relative movement between them. The result is a clear mark which is readily legible and is free of the very severe smudging which characterizes the markings on cans as conventionally produced at the present time.

Further features of this invention relate to the employment of magnetic holding means in conjunction with the mechanical holding means whereby the objectives of clear, unsmudged marking are attained.

Other features of this invention relate to the actuation of the marking member in such a way in relation to the can movement as to minimize or totally prevent smudging.

Other features of this invention relate to the facility with which the marking stamp may be removed and replaced by another stamp as is necessary between different batches or different days' runs as the case may be.

Other features of this invention relate to the means employed for inking the stamping members with the proper amount of ink and with facility for maintaining ink supply whereby the provision of clear, unsmudged markings may be afforded.

Other objects, features and advantages of this invention will become apparent from the following description of certain typical and preferred embodiments of this invention which have been shown for illustrative and exemplary purposes in the accompanying drawings, wherein:

Fig. 1 is a plan view, partly schematic, of a can marking machine embodying this invention;

Fig. 2 is a side elevation, largely schematic, of the machine shown in Fig. 1;

Fig. 3 is an enlarged plan view of the turret portion of the can marking machine with certain parts of the frame removed for more clearly showing the parts;

Fig. 4 is a sectional elevation taken on the line 4—4 of Fig. 3;

Fig. 5 is a diagrammatic plan view on an enlarged scale showing a portion of the turret in relation to the means for causing the cans to be located thereon upon transfer from the can feeding conveyor;

Fig. 6 is a largely schematic elevational view of preferred means coacting with the exterior surface of each can while the can is moving relative thereto past the marking station during travel on the turret;

Fig. 7 is a detail sectional view taken on the line 7—7 of Fig. 6;

Fig. 8 is a perspective view of the mechanism shown in Figs. 6 and 7;

Fig. 9 is a front view of one of the marking units carried by the turret and showing means alternative with the means shown in Figs. 6, 7 and 8 for cooperating with the exterior surface of the can during its travel on the turret;

Fig. 10 is a side view of the marking unit shown in Fig. 9;

Fig. 11 is a plan view of the unit shown in Figs. 9 and 10;

Fig. 12 is a top detail view of the readily detachable holder for the marking stamp having associated therewith the alternative can holding means shown in Figs. 9, 10 and 11;

Fig. 13 is a side view of the parts shown in Fig. 12;

Fig. 14 is a detail side view of the means employed for inking the marking stamp and of the mounting means therefor;

Fig. 15 is a section of the inking means taken on the line 15—15 of Fig. 3;

Fig. 16 is a sectional view of the cam and cam follower means taken on the arcuate line 16—16 of Fig. 3, the parts between the roller and the lever end of the pusher rod being omitted and the latter parts being displaced 90° so both show the relationship of the parts;

Fig. 17 is a detail elevation, largely diagrammatic, of the means employed whereby cans fed to the turret by the can feeding conveyor become transferred to the disc-shaped can support of the turret; and

Fig. 18 is a view similar to Fig. 17 of means for transferring cans from the turret to a conveyor means for conveying the cans away after they have been marked.

Figs. 1 and 2 show the general organization of the can marking machine of this invention. A first conveyor means 20, the can feeding conveyor, is adapted to convey a succession of vertically disposed cans to the portion of the can marking machine comprising the rotatably mounted turret whereon the actual marking of the cans occurs. The conveyor means 20 may be in the form of an endless conveyor provided with a succession of contiguous, transversely disposed supporting strips 21 which permit the endless carrier to pass over the drum or pulley mechanism 22 which is mounted on the base member 23 for rotatably carrying one end of the conveyor 20,

The cans may be supplied in immediate succession at any desired rate from any suitable source **24**. The guide rails **20***a* serve to keep the cans in alignment and cause them to be fed to the rotating turret at the desired point or station.

With further reference particularly to Figs. 3 and 4, the base member **23** has secured thereto the upstanding post **25** which carries one end of the transverse cross frame **26** which is supported at its other end by another post (not shown) similar to post **25**. The cross frame **26** carries suspended therefrom the rotatably mounted turret mechanisms which will be described more in detail hereinbelow. However, at this point reference is made to the fact that the turret comprises the horizontally disposed disc-shaped can support **27**. As shown in detail in Fig. 17, when a can carried by the conveyor **20** is brought into proximity to the disc-shaped can support **27** of the rotatable turret the can moves from the conveyor **20** and passes over the plate **28** which provides temporary support during movement of the can from the conveyor **20** to the disc-shaped can support **27**. The friction supplied by the succession of cans carried by the conveyor **20** causes each can as it approaches the rotatably mounted disc-shaped can support **27** to move from the conveyor **20** over the plate **28** and onto the support **27**.

For removing the marked cans away, a second conveyor **29** is employed which is similar to conveyor **20** and has one end that passes over the drum or pulley means **30** which is mounted for rotation on the base member **23**. As shown particularly in Fig. 18, each can is temporarily supported by the plate **31** as it leaves the rotatably mounted disc-shaped can support **27** and prior to its complete reception on the upper surface of the conveyor **29**. The guide rails **29***a* keep the cans in alignment on the conveyor **29**, and the fingers **29***b* deflect the cans onto the conveyor **29**.

At this point attention is called to the fact that for the can marking operation each can is transferred to and becomes fully supported by a rotatably mounted horizontal disc-shaped can support. The can support cooperates with the can feeding and can removing conveyor means so that continuous travel of cans is permitted as though the can marking mechanisms including the mechanisms of the rotating turret were not present. Greatly superior results have been obtained in this way as compared with attempts to mark a can while it is being carried by a continuous linear conveyor. The conveyors **20** and **29** preferably are mechanically linked as by the sprocket chain **150**.

Secured to the transverse frame member **26**, as by the bolts **32** there is a spindle holder **33** which holds the spindle or shaft **34** firmly in vertical position depending from the frame member **26**. Preferably the spindle **34** is vertically slideable and also is rotatable about its longitudinal axis relative to the holder **33**. The vertical position of the spindle **34** is controlled by the adjusting bolt **35** and the rotational position of the spindle **34** is controlled by the set bolt **36**. There is secured to the lower end of the spindle **34**, as by the bolt **37**, the disc-shaped support member **38** upon which rests the thrust bearing **39**. Resting on the thrust bearing **39** for rotation relative to the spindle **34** there is the hollow turret axle **40**. The disc-shaped can support plate **27** is secured to the axle **40** adjacent the bottom thereof for rotation therewith. Also secured to the axle **40** and spaced substantially above support **27** and from each other are the disc means **41** and **42** which have a succession of forwardly inclined recesses **43** therein that are in registration one above the other in the discs **41** and **42**. The term "forwardly inclined" is used herein and in the claims with reference to the general configuration shown best in Figs. 3 and 5. In these figures the direction of rotation is shown by the arrows and the trailing margin of each recess follows the circular contour of the can periphery more completely than the leading margin. Each of the discs **41** and **42** has secured thereto a permanent magnet **44** in the region of the base of each of the recesses **43** for urging a can which has been received by the recesses **43** to become more firmly lodged therein against vibrational or other displacement. For more firmly holding the support disc **27** the discs **27** and **42** are secured to each other in spaced relation by the spacer posts **27***a*.

There also is provided for rotation with the axle **40** the positioning disc **45** which, in the embodiment shown, is secured to the disc **41** in spaced relation thereto by means of the posts **46**. The disc **45** has shallow recesses **47** therein which are in registration with corresponding portions of the larger recesses **43** in the peripheral portions of the discs **41** and **42**. The recesses **47** in the disc **45** are in opposed confining relation with respect to a can **48** adjacent the top thereof, and preferably just under the upper rim **49** of the can **48**, as best shown in Fig. 4.

As the succession of cans **48** is fed toward the turret parts above described, namely, across the plate **28** and onto the disc-shaped rotatably mounted can support **27**, they strike the leading edges of the recesses **43** in the discs **41** and **42** substantially offset with respect to the axis of rotation of the support **27**, thus causing these discs, and in turn the axle **40** and the support **27**, to rotate, whereupon each can enters fully into each recess **43** and becomes positioned therein, such positioning being aided by the aforesaid magnets **44**. The full entry of each can into each recess **43** and its retention therein during travel while supported on the support **27** is assured by the arcuate guide rails **50**, these rails being held in place by securement to the post **25**. Preferably the securement is adjustable and the preferred adjustable securing means is best shown in Figs. 3 and 4. The plate **51** is rigidly secured to the post **25**. The bracket rods **52** are secured to the rails **50** and have their major longitudinal extent disposed angularly and in slideable relation with the ends of the plate **51**. By means of the nuts **53** on the opposite sides of the plate **51** the position of the bracket bars **52** and in turn the guide rails **50** may be adjusted so as to provide just enough clearance for ready reception of the cans into the recesses **43** with, however, a very slight clearance.

Preferably supplemental guide and confining means is employed for resiliently holding each can as it passes through the station that it occupies when being marked. Preferred means for this purpose has been shown in Figs. 1 to 8. A bracket **54** is rigidly secured to the post **25** and at the end thereof has secured thereto by a universal joint connection the confining member **55**. The universal joint connection is provided by pivotally connecting the elbow part **56** to the bracket **54** for rocking movement about the horizontally disposed pin **57**. The confining part **55** in turn is pivotally connected to the vertically disposed pin **58** that is secured to the horizontal portion of the elbow part **56**, the spacer **59** being interposed between these two parts. For resiliently urging the confining member **55** both downwardly on the can top and inwardly toward the axis of the turret, the member **55** has a pin **60** upstanding therefrom that passes through an opening in a bracket **61** which is secured to the post **25**. Interposed between the member **55** and the bracket **61** there is a compression spring **62** which normally urges the trailing end of the member **55** downwardly against the can top so as to hold each can firmly against possible vertical displacement from its desired position resting on the support **27** The normal position of the trailing end of the member **55** is adjustable by means of the adjusting nut **63** which is in threaded engagement with the pin **60**. In like fashion, there is a horizontally disposed pin **64** secured to the member **55** which passes through an opening in the vertical portion of bracket **65**. A compression spring **66** is interposed between the member **55** and the bracket **65** for urging the trailing end

of the member 55 so as to confine the upper end of the can between the member 55 and the shallow recesses 47 in the disc 45. The normal lateral position of the trailing end of the member 55 is controlled by the nut 66. The vertical and lateral normal positions of the trailing end of the member 55 are such that as each can approaches the member 55 the trailing end of the member 55 is pushed upwardly against the spring 52 and outwardly against the spring 66. In order to provide greater resistance to wear, the inner surfaces of the member 55 are surfaced with a hardened metal sheet material 67, as shown in Figs. 7 and 8. To facilitate reception of each can, the forward end of the metal sheet 67 is provided with the inclined portion 68.

Preferably resilient confining means also is employed for contact with the lower end of each can as it travels into and through the station at which actual marking occurs, thereby providing auxiliary means for confining each of the successive cans against and within the recesses 43 in the discs 41 and 42. As best shown in Figs. 6 and 7, this resilient confining means may be in the form of an arm 69 which is mounted for pivotal movement about the vertically disposed pin 70 that is secured in upstanding relation with reference to the base member 23. For resiliently urging the arm 69 against the can 48, the compression spring 71 is employed which surrounds the pin 72 and is disposed between the arm 69 and the stop member 73 which is secured to the base member 23. For adjusting the normal position of the arm 69 a set screw 74 may be employed which is in threaded engagement with the member 75, that likewise is secured to the base member 23.

A marking unit is disposed above each of the recesses 43 in the discs 41 and 42 and above the recesses 47 in the disc 45. The marking unit as a whole is indicated generally by the reference character 76 and these units travel with the support 27 and the discs 41 and 42 and 45 by virtue of their being mounted at the periphery of the marker supporting disc 77 which rotates with the axle 40 in fixed relation therewith. In the particular embodiment shown the bevel gear 78 is directly affixed to the axle 40 and the disc 77 is affixed to the bevel gear 78 by the bolts 79. A bearing 80 is employed for rotatably mounting the upper end of the axle 40 and the bearing 80 is restrained from upward movement relative to the spindle 34 by the collar 81, whose position may be adjustably fixed with reference to the longitudinal extent of the spindle 34 by the set screw 82

A typical construction for the marking unit has been shown in Figs. 9 to 13 in conjunction with alternative means for frictionally confining the upper end of the cans 48 during their travel while supported by the support disc 27. Accordingly, the construction of the marking unit shown in Figs. 9 to 13 will first be described without regard to the alternative means for resiliently confining the upper ends of the cans.

Each unit in the embodiment shown comprises a block 83 secured to the upper side of the disc 77 adjacent the periphery thereof. There is a plunger 84 disposed for vertical reciprocation in the block 83. Any suitable means may be used for preventing rotation of the plunger 84 about its longitudinal axis relative to the block 83. In the embodiment shown the plunger 84 is provided with a pin 85 that protrudes laterally therefrom and is longitudinally slideable in the slot 86 in the upper end of the plate 87 that is secured to the block 83, as by the screws 88. A small plate 89 is secured to the lower end of the plunger 84 and the portion thereof protruding from the periphery of the disc 87 is provided with the notch 90.

The stamping member 91 presents the numbers or other indicia and preferably is made of some material such as vulcanized rubber. The stamping member is held in a suitable frame 92 that is secured to the lower face of plate 93. The plate 93 has a locking screw 94 which is adapted to be received in the recess 90 in the plate 89. To assist in positioning the plate 93 relative to the plate 89 the plate 89 is preferably provided with the downwardly projecting pin 95 which is adapted to be received in the recess 96 in the plate 93. By loosening the locking screw 94 the plate 93 and the stamp 91 may be quickly separated from the plate 89 and replaced by another plate presenting a different number or other differing mark. The stamp member 91 is adapted to be pushed out of the frame 92 and replaced whenever desired.

The stamping member 91 is normally maintained retracted during its entire travel with the disc 77 except momentarily at the predetermined position where the can is to have the mark applied thereto. For this purpose a cam disc 97 is employed which supports the cam follower roller 98 that is rotatably mounted on the horizontally disposed pin 99 which is secured to the upper end of the plunger 84. The stamping member 91 is shown in retracted position in Figs. 9 and 10.

In order to provide for the controlled depression of the pusher rods 84 of the marking units for bringing the marking members 91 into contact successively with the cans 48 passing through the machine, the cam disc 97 has a marginal portion thereof cut away and replaced by the cam guide member 100 that is best shown in Fig. 16. When the rollers 98 of the units reach the location of the cam guide 100 they first are permitted to fall to the position determined by the upper surface of the portion 100*a* of the cam guide 100. The portion 100*a* of the cam guide 100 is of substantial length so that the marking member 91 may assume a stable position only slightly separated from the top of the can 48 over which it is positioned. Immediately following the portion 100*a* the cam guide 100 is provided with the portion 100*b* which permits the roller 98 to drop until the marking member 91 comes into contact with the top of the can 48, thereby placing the mark on the can. Improved clarity in high-speed operation is afforded by causing the depression of the stamp member to occur in two steps with a substantial dwell between them because the final movement of the marking member into contact with the can may be accomplished with less shock than if the over-all movement of the marker were to be effected in a single step. Thereafter the roller 98 is guided by the cam guide 100 so as to be in the normally retracted position determined by the upper surface of the cam disc 97.

It is noteworthy that the pusher rods 84 tend to fall by gravity. However, for causing the rollers 98 to more positively follow the different portions of the cam guide 100 a strip 101 of resilient spring metal overlies the cam guide 100 in spaced relation thereto, the spacing corresponding to the diameter of the rollers 98 and the contour of the strip 101 following the general contour of the cam guide 100. The forward end of the strip 101 may be carried in any suitable way, as by being secured to the bracket 102 which in turn may be secured to the cam disc 97 by means of the bolts 103 and the spacer collars 104. To augment and control the spring action of the strip 101, a compression spring 105, is preferably employed which is held in position at the end of the bracket 106 that is secured to the cam disc 97. So that the force exerted on the strip 101 by the spring 105 may be adjusted, the upper end of the spring abuts against the collar 107 which is secured to the pin 108. The pin 108 is in threaded engagement with the bracket 106 and may be locked so as to provide any desired vertical position of the collar 107 by the lock nut 109, which also is in threaded engagement therewith. As the rollers pass under the strip 101 the trailing end of the strip is deformed from its normal position shown in solid lines to the position shown in dotted lines in Fig. 16.

In order to provide means for supplying the indicia bearing surface presented by the member 91 with ink, the members 91 successively pass into light pressure con-

tact with an ink bearing roller during the rotation of the turret portion of the machine. The inking means is employed as best shown in Figs. 3, 14 and 15. The inking unit as a whole is carried from the base member **23** so that it may be swung out for filling the ink reservoir and swung into operating position again in a very convenient manner. For this purpose the hollow post **110** is bolted to the base member **23**. Within the hollow post **110** there is the shaft **111** which is rotatable within the post **110** but can be locked in position when desired by the set screw **112**. The elevation of the unit as a whole can be controlled by the manually actuatable head **113** of the shaft **114** which is threaded through the length of the shaft **111**, the shaft **111** being interiorly threaded for the purpose, so that by rotation of the shaft **114** the tray **115** of the inking unit may be raised and lowered. The position of the shaft **114** may be held in position by the lock nut **116**. The vertical position of the inking unit is thus adjustable so that the ink bearing roller **117** comes into contact with the marking member **91** when the marking member **91** is in retracted position as determined by the cam follower roller **98** being in contact with the upper surface of the cam disc **97**. In order that the pressure may be uniform during passage of the marking member **91** over the ink bearing roller **117**, means is provided for imposing resilient pressure on the roller **98** during the interval of passage of the member **91** over the ink bearing roller **117**. For this purpose a strip of spring metal **118** is attached to the bracket **119** which in turn is secured to the horizontal frame member **26**. The trailing portion **118***a* of the strip **118** is positioned for resiliently holding the roller **98** at or immediately adjacent the upper surface of the cam disc **97** so as to maintain the member **91** uniformly in contact with the ink bearing roller **117**. The amount of resilient force supplied at the portion **118***a* of the strip **118** is controllable by the compression spring **120**, whose tension may be adjusted and whose function and manner of mounting is essentially the same as that of the spring **105** hereinabove described.

The rollers of the inking mechanism are positively driven from the bevel gear **78** which rotates with the axle **40** of the turret, the bevel gear **78** cooperating with the bevel gear **121** which is secured to the inner end of the shaft **121***a* on which the ink bearing roller **117** is mounted so that the peripheral speed of the ink bearing roller **117** will be at least approximately synchronized with the rate of travel of the inking member **91**. The outer end of the shaft **121***a* carries the gear **122** which meshes with the gear **123** for positively driving the transfer roller **124** through the rotatably mounted shaft **125**, the gear **123** in turn driving the gear **126** which, through the shaft **127**, serves to drive the roller **128** whose periphery is partially immersed in the bath **129** of ink contained in the ink reservoir **130**. The desired amount of ink is controllable by the adjustable doctor blade **131**. When the inking unit is swung to position with the plate **132** in contact with the adjustable stop **133**, the bevel gear **121** meshes with the bevel gear **78**. Whenever it is desired to fill the ink reservoir **130** all that is required is to loosen the set screw **112** and swing the unit outwardly from the turret. The inking unit can then rapidly be restored to its desired operative position merely by rotating the unit until its position is controlled by the stop **133** and then tightening the set screw **112**. If desired, the transfer roller **124** may be omitted.

The preferred means for stabilizing the cans **48** as they pass through the machine have been shown and described hereinabove. Alternative means for stabilizing the position of the upper ends of the cans is illustrated in Figs. 9 to 13, the means for this purpose shown in these figures necessarily being omitted when the means shown and described hereinabove are employed.

The alternative means for stabilizing the upper ends of the cans as they pass through the machine shown in Figs. 9 to 13 comprise a resiliently mounted finger which instead of being essentially stationary moves with the disc **77**. Moreover, the positioning means is readily detachable from the machine since it is attached to the readily removable plate **93** which carries the inking member **91**. For the purposes just mentioned, the plate **134** is secured adjacent the outer margin of the underside of the plate **93** as by means of the screws **135**. Upstanding from the plate **134** there is a block **136** having a piece of spring metal **137** secured to the front thereof which passes through a slot **138** in the plate **134**. The lateral position of the lower free end of the piece of spring metal **137** is adjustable by the bolt **139** which is threaded into the block **136** and which may be locked by the set screw **140**. The positioning of the plate **93** relative to the plate **89** which is affixed to the lower end of the plunger rod **84** is adjustable by the adjustable stop member **141** which may be locked in position by the lock nut **142**. Thus in replacing the marking member **91** all that is necessary is to move the plate **93** into position until the stop **141** strikes the outer margin of the plate **89**, whereupon the lock screw **94** may be tightened. Fig. 16 illustrates how when the pusher rod **89** is moved downwardly the piece of spring metal **137** is moved yieldably into contact with the rim **49** at the top of each of the cans **48** as they move through the machine for confining the can tops against the recesses in the positioning disc **45**.

The machine hereinabove described is capable of high-speed operation and, notwithstanding the high speeds employed, each can and the marking stamp therefor are moved together with such accuracy and precision that the marking produced is very clear and legible. Utilizing the mechanisms hereinabove described, operation at the rate of 600 cans a minute represents a good operating speed, although considerably higher speeds have been employed without substantial adverse effect on the clarity of the marking.

The machine hereinabove described is suitable for marking cans of conventional size such as those employed for canning beverages, fruits, vegetables, etc., and for such purposes a turret provided with eight can receiving recesses has been found to be very desirable. However, a greater or lesser number may be employed. A machine of the type hereinabove described ordinarily is employed in marking cans during prolonged production of cans of a given diameter. If a can of different diameter is employed, usually it is most convenient to replace the turret assembly with another turret assembly having can receiving recesses whose size is suitable for the different can diameter to be accommodated. As regards cans of different height, it is normally better practice to substitute one turret assembly for another. However, the structure hereinabove described permits substantial variation in accommodating cans of different height.

In normal operation the machine of this invention is set up for operation for a particular batch or day's run. The machine is then operated continuously for the batch or day's run in question. For the next succeeding batch the plates **93** to which the members **91** bearing the stamping indicia are secured are readily removed and replaced with a new set bearing a different number or other mark. As soon as this has been done and the ink supply has been replenished, if necessary, the machine is operable for the next succeeding batch or day's run.

One of the advantages of the machine of this invention is that no motive power for rotating the turret is required other than that incident to the operation of the conveyor **20** in feeding the cans **48** onto the turret. When the cans strike against the extremities of the recesses in the discs **41** and **42**, this causes the turret to rotate at a speed which positions the cans in the can receiving recesses as fast as the cans are supplied by the conveyor. However, it is within the scope of this invention to employ a positive drive for the turret as by causing the bevel gear **78** to be connected with a suitable source of power.

In such case, however, suitable synchronization of turret speed with conveyor speed is required for effecting the transfer of the cans from can feeding conveyor to the rotating turret.

While this invention has been described in connection with certain specific embodiments thereof, it is to be understood that this has been done merely for purposes of illustration and that the coaction of the element may be accomplished using component parts differing substantially from those hereinabove described.

I claim:

1. A machine for stamp marking cans which comprises a vertical stationary shaft, a hollow axle mounted for rotation about said shaft, a horizontally disposed disc-shaped can support secured to said axle for rotation therewith, a plurality of horizontally disposed can receiving discs coaxially secured to said axle above said support and substantially spaced from each other, said discs having a succession of can receiving recesses therein adapted for receiving a succession of vertically disposed cans carried by said support adjacent the margin thereof, a magnet adjacent the base of each of said can receiving recesses, a positioning disc coaxially secured to said axle above said can receiving disc having recesses therein registering with the periphery of cans received in said recesses, a marker supporting disc coaxially secured to said axle above said positioning disc, a succession of marking units carried by said marker supporting disc, each of which comprises a member that presents a marking stamp and that is actuatable by a cam follower for movement into and away from position contacting the top of a can supported on said support, a stationary cam secured to said shaft presenting a cam surface adapted to coact with said cam follower for effecting said movement responsive to rotation of said marker supporting disc, an ink bearing roll disposed for contacting said stamp during rotation of said marker supporting disc, gear means interposed between said ink bearing roll and said axle for causing rotation thereof at a peripheral speed synchronized with the rate of travel of said stamp with said marker supporting disc, a can feeding conveyor for feeding a succession of vertically disposed cans to said support, means for transferring cans from said can feeding conveyor to said support, a can removing conveyor, means for transferring said cans from said support to said can removing conveyor, and resilient means for urging cans carried by said support toward said can receiving and positioning discs during travel of the cans carried by said support while said stamp is in contact therewith.

2. A machine for stamp marking cans which comprises a horizontally disposed disc-shaped can support, means for mounting said can support for rotation about a vertical axis, disc means horizontally disposed above said support that is coaxially rotatable therewith and has a succession of forwardly inclined marginal can receiving recesses therein, a marking unit disposed above each of said recesses and mounted for rotation with said support, each said unit comprising a vertically disposed pusher rod mounted for vertical reciprocatory movement and having a marking stamp secured thereto adjacent the lower end thereof, and cam follower means adjacent the upper end thereof, stationary cam means presenting a cam surface disposed above said cam follower means and adapted for advancing said pusher rod at a predetermined position of rotation for bringing said marking stamp into contact with the top of a can whose bottom rests on said support, said stationary cam means further presenting a cam surface underlying said cam follower means for retracting said pusher rod from advanced position and holding same in normally retracted position, first conveyor means for continuously conveying a succession of vertically disposed cans to position adjacent said support and for transferring them therefrom onto said support for reception in said recesses and travel therewith through said predetermined position of rotation, second conveyor means for continuously conveying a succession of vertically disposed cans away from said support, and means for transferring cans after travel through said predetermined position of rotation from said support onto said second conveyor means.

3. A machine for stamp marking cans which comprises a horizontally disposed disc-shaped can support, means for mounting said support for rotation about a vertical axis, a plurality of horizontally disposed discs that are spaced above said support and from each other, said discs being coaxially rotatable with said support and having a succession of marginal can receiving recesses therein for registration with a succession of vertically disposed cans carried by said support adjacent the margin thereof, means for feeding at a can feeding station a succession of vertically disposed cans onto said support and into said recesses, means for removing cans from said support at a can removing station substantially spaced from said can feeding station, marking means mounted to move with said can support about said vertical axis of rotation of the latter and operative to mark the top of each can as the latter is carried by said support between said can feeding and can removing stations, and resilient means disposed radially outward with respect to the periphery of said discs and yieldably urged toward said vertical axis for confining said cans between said resilient means and said can receiving recesses during the marking of each can.

4. A machine according to claim 3 which comprises further resilient means disposed adjacent the periphery of said discs at a level above the latter and yieldably urged downwardly for applying pressure to the tops of successive cans during marking of the latter for pressing them against said support.

5. A machine according to claim 3 wherein one of said discs is horizontally disposed in a plane adjacent the tops of cans supported by said support, and wherein said resilient confining means comprises confining means substantially at the level of said one disc and adapted to contact the periphery of said can in substantially the same horizontal plane as that of said one disc.

6. A machine according to claim 3 wherein said resilient confining means includes resilient members urged radially toward said vertical axis of the support and disposed adjacent the top and the bottom, respectively, of cans supported on said support.

7. A machine for stamp marking cans which comprises a horizontally disposed disc-shaped can support, means for mounting said support for rotation about a vertical axis, at least two discs disposed above said support and spaced from each other, said discs being coaxially rotatable with said support and having a succession of forwardly inclined marginal can receiving recesses therein adapted for registration with a succession of cans carried on said support adjacent the margin thereof, a positioning disc coaxially rotatable with said support and horizontally disposed above said discs in a plane adjacent the plane of can tops resting on said support, the margin of said positioning disc having recesses therein disposed for contact with cans resting on said support and received in said can receiving recesses of said discs, means for feeding a succession of vertically disposed cans onto said support at a can feeding station, means for removing cans from said support at a can removing station, marking means mounted to move with said support about said vertical axis of rotation of the latter and operative to stamp mark the top of each can as the latter is carried by said support between said can feeding and can removing stations, and resilient confining means disposed radially outward from the periphery of said positioning disc and yieldably urged inward toward said vertical axis to apply pressure contact to the peripheral surface of each can adjacent the top of the latter during travel of each can on said support, and thereby confine the top of said can between said confining means and said recesses in said positioning disc.

8. A machine for stamp marking cans which comprises a horizontally disposed disc-shaped can support, means for mounting said support for rotation about a vertical axis, disc means horizontally disposed above said support that is coaxially rotatable therewith and has a succession of can receiving recesses therein, can feeding means for feeding a succession of vertically disposed cans onto said support for reception in said can receiving recesses, can removing means substantially spaced from said can feeding means for removing cans from said support, a horizontally disposed marker supporting disc above said disc means and coaxially rotatable with said support, a succession of marking units secured to said marker supporting disc over said can receiving recesses, each unit comprising a marker presenting member and a movable member which carries said marker presenting member and is actuatable responsive to a cam follower for movement into and out of position for stamping the top of a can carried by said support by contact of said marker member therewith, and stationary cam means coacting with said cam follower for effecting movement of said movable member as aforesaid responsive to rotation of said marker supporting disc, said cam means presenting two successive cam surface portions coacting in succession with said cam follower to effect movement of said movable member responsive to rotation of said marker supporting disc and thereby bring said marker presenting member into position for marking said can in two steps with a dwell of substantial duration between them.

9. A machine for stamp marking cans which comprises a vertical stationary shaft, a hollow axle mounted for rotation about said shaft, a horizontally disposed disc-shaped can support secured to said axle for rotation therewith, a plurality of horizontally disposed can receiving discs coaxially secured to said axle above said support and substantially spaced from each other, said discs having a succession of can receiving recesses therein adapted for receiving a succession of vertically disposed cans carried by said support means adjacent the margin thereof, a marker supporting disc coaxially secured to said axle above said can receiving discs, a succession of marking units secured to said marker supporting disc adjacent the periphery thereof above said can receiving discs, each of said units comprising a member presenting a marking stamp and movable for moving said stamp into and away from contact with a can carried by said support and received by said can receiving recesses, means comprising a stationary cam secured to said shaft and a cam follower connected to said member for actuating said member responsive to rotation of said axle for effecting said movement of said stamp, means for continuously feeding a succession of vertically disposed cans onto said support to be stamped, and means for removing said cans from said support after having been stamped.

10. A machine for stamp marking cans which comprises a vertical stationary shaft, a hollow axle mounted for rotation about said shaft, a horizontally disposed disc-shaped can support secured to said axle for rotation therewith, a plurality of horizontally disposed can receiving discs coaxially secured to said axle above said support and substantially spaced from each other, said discs having a succession of can receiving recesses therein adapted for receiving a succession of vertically disposed cans carried by said support adjacent the margin thereof, means for feeding a succession of vertically disposed cans onto said support, means for removing cans from said support, a marker supporting disc coaxially secured to said axle, a succession of marker units, each presenting an inking stamp, means for actuating said marker units for stamping said cans responsive to rotation of said marker supporting disc, an inking device comprising a rotatably mounted inking roller disposed for peripheral contact with said inking stamp during rotation of said marker supporting disc, a gear secured to said axle, and gear means mechanically connected to said inking roller adapted to coact with said gear for rotation of said ink bearing roller responsive to rotation of said marker supporting disc.

References Cited in the file of this patent

UNITED STATES PATENTS

1,223,610	Pittaluga	Apr. 24, 1917
1,420,187	Douglas	June 20, 1922
2,195,173	Jackson	Mar. 26, 1940
2,629,482	De Back	Feb. 24, 1953
2,630,903	Currivan	Mar. 10, 1953
2,687,202	Nordquist et al.	Aug. 24, 1954
2,787,950	Dorsch	Apr. 9, 1957
2,796,827	Vantlander	June 25, 1957
2,829,589	Alessi et al.	Apr. 8, 1958