July 24, 1956 L. F. GLOWEN ET AL 2,755,762

MAGNETICALLY OPERATED NO-CAN-NO-COVER FEED CONTROL

Filed June 29, 1951 5 Sheets-Sheet 1

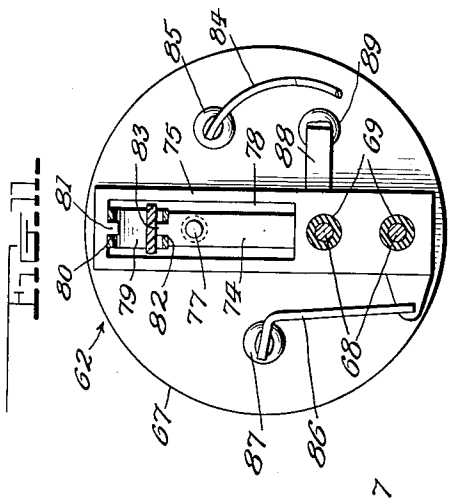


FIG. 11

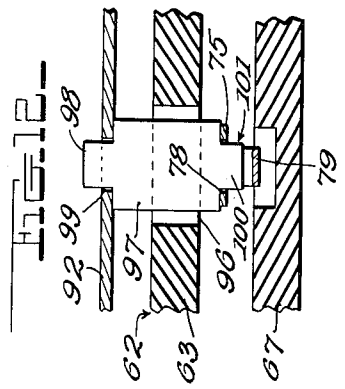


FIG. 12

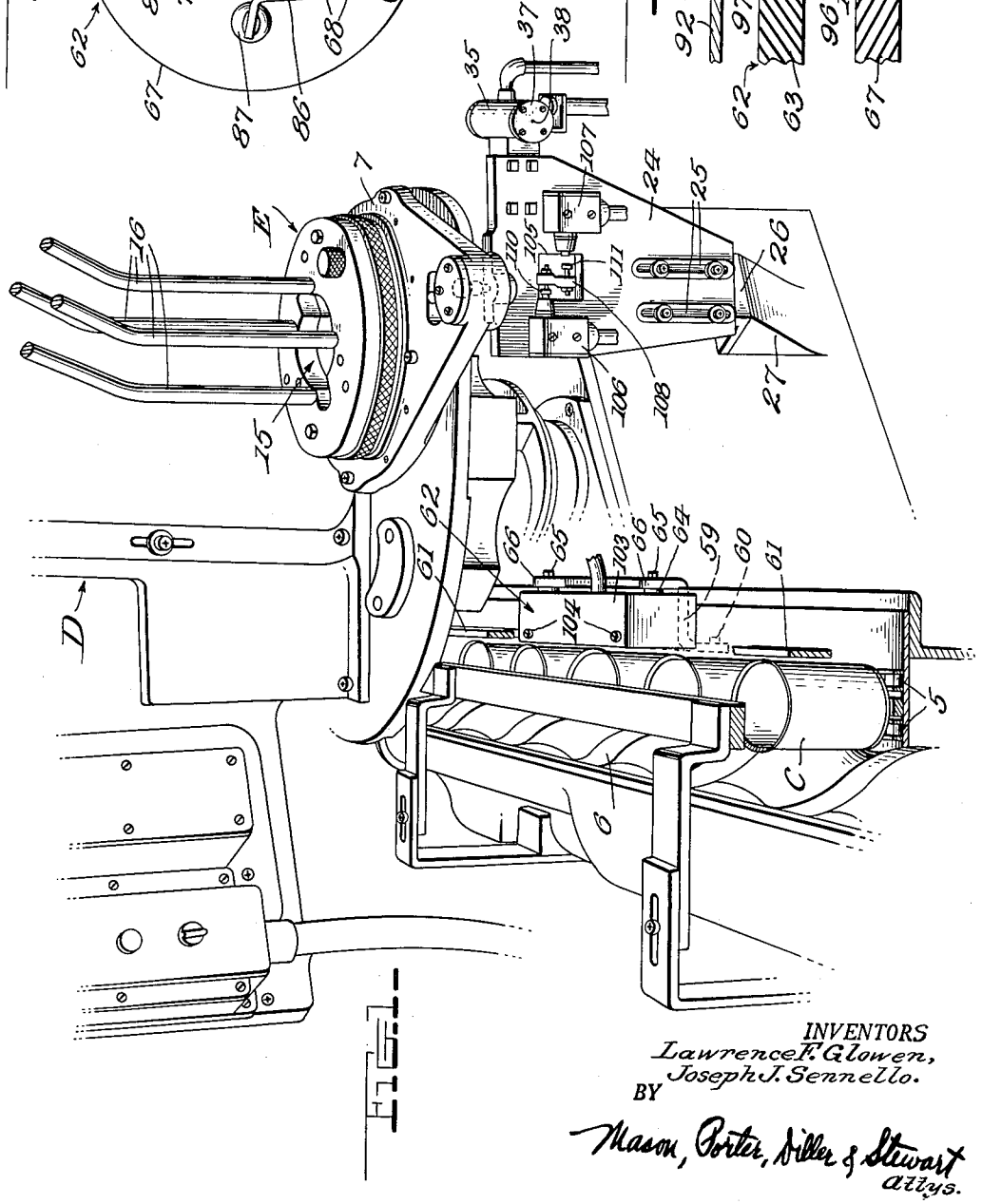


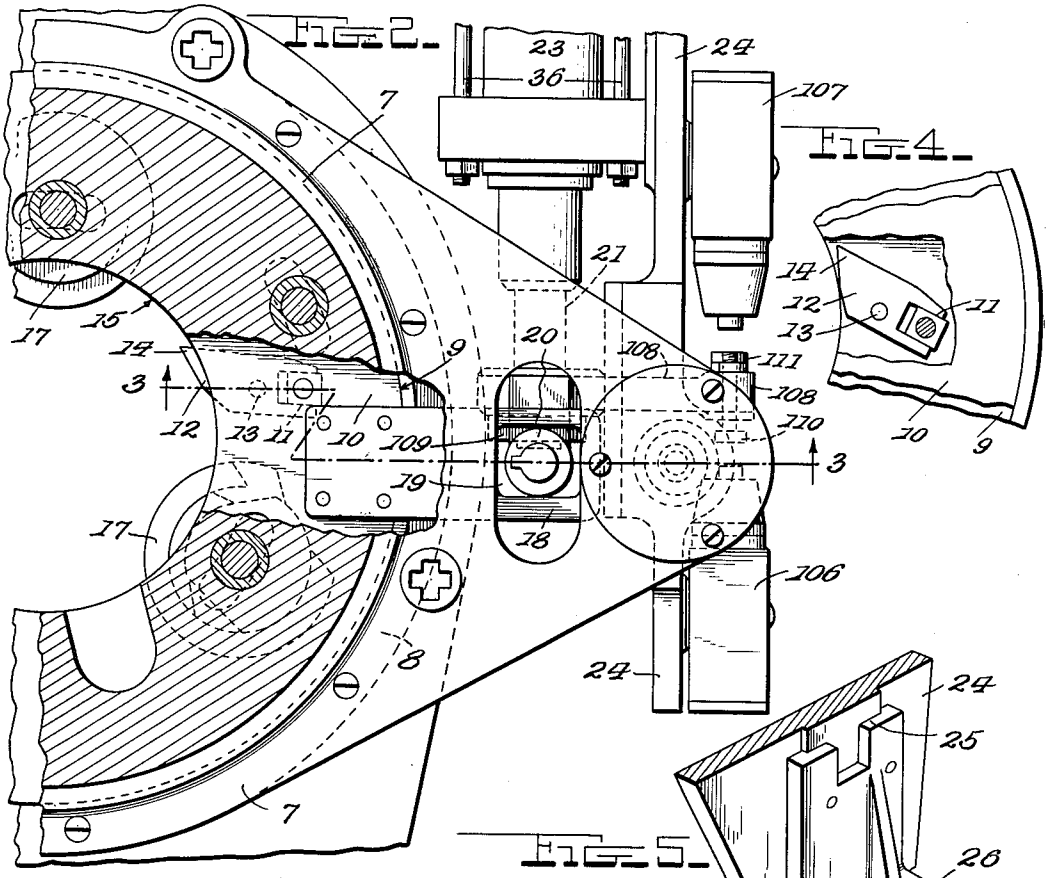
FIG. 1

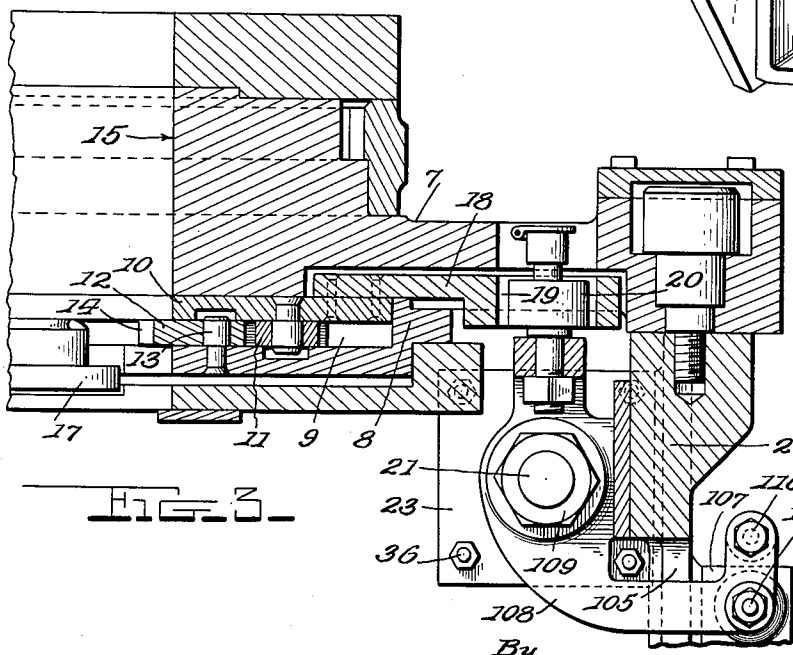
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MAGNETICALLY OPERATED NO-CAN-NO-COVER FEED CONTROL

Filed June 29, 1951 5 Sheets-Sheet 2





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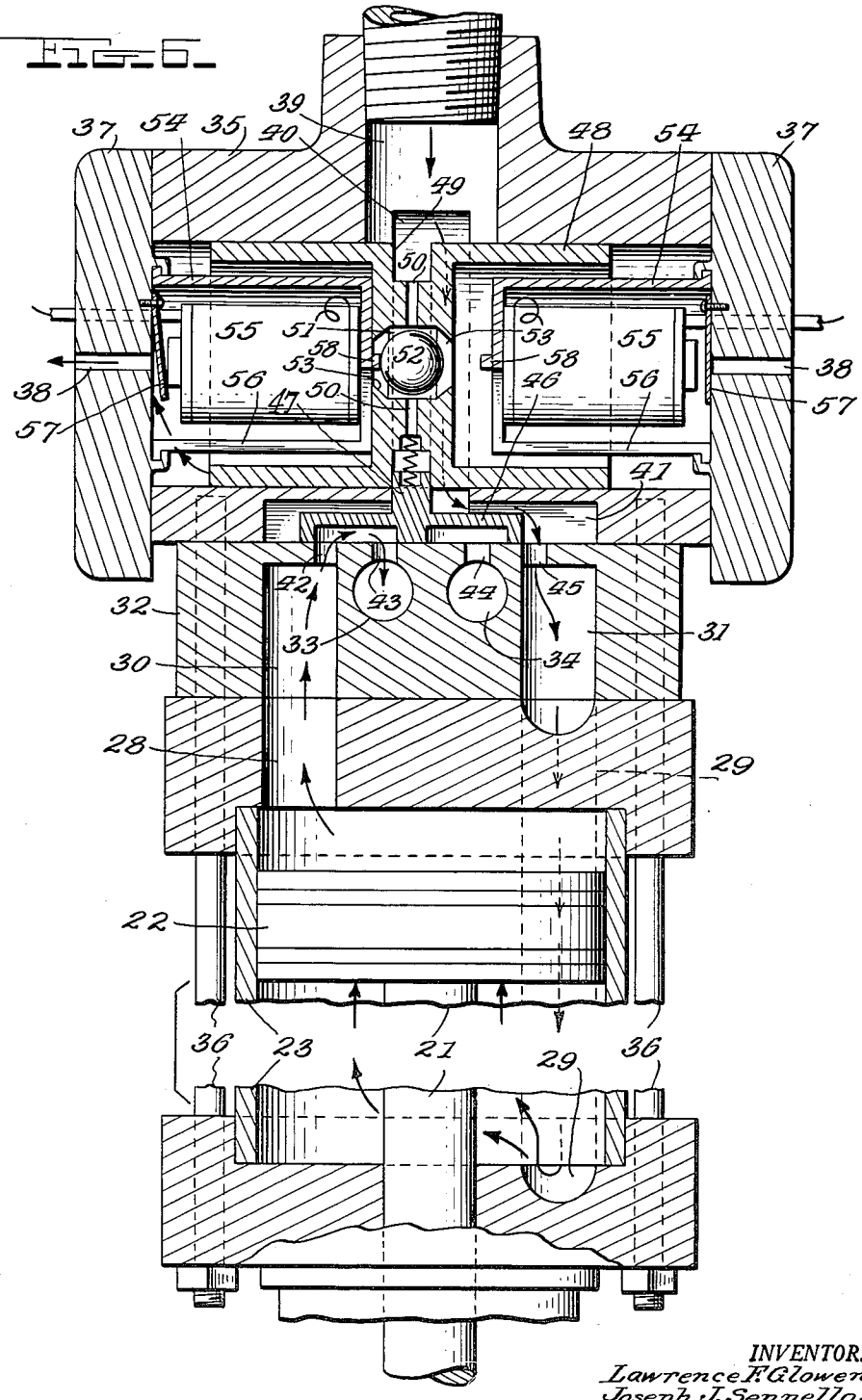
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MAGNETICALLY OPERATED NO-CAN-NO-COVER FEED CONTROL

Filed June 29, 1951 5 Sheets-Sheet 3

FIG. 6



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MAGNETICALLY OPERATED NO-CAN-NO-COVER FEED CONTROL

Filed June 29, 1951 5 Sheets-Sheet 4

FIG. 1

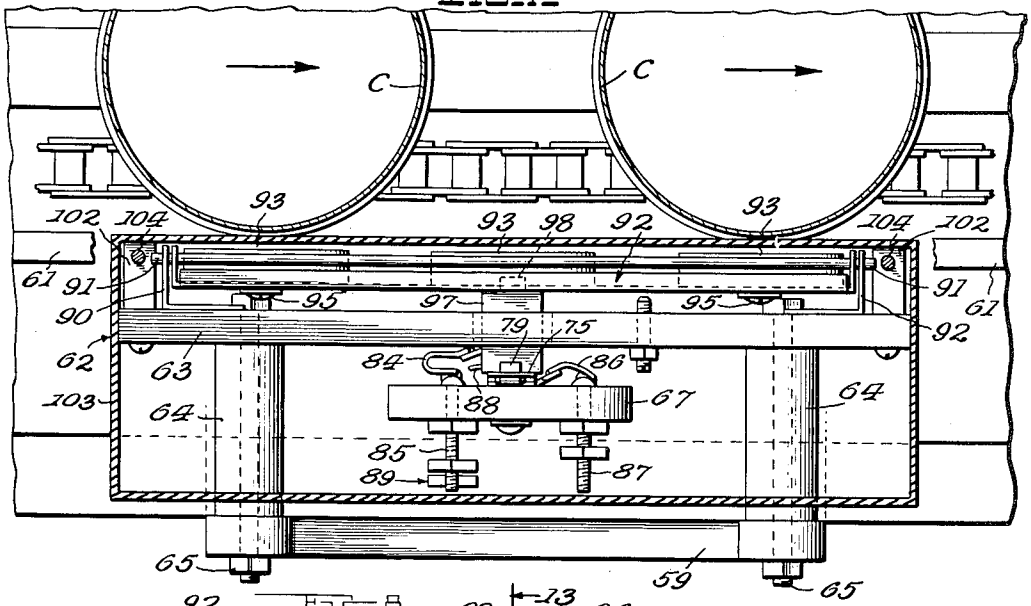


FIG. 8

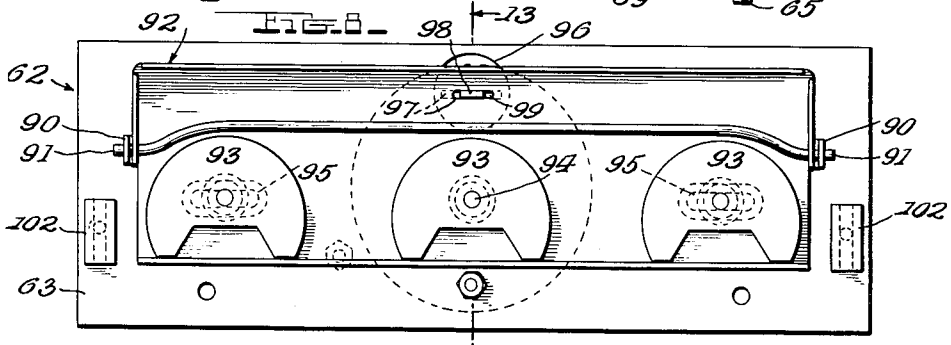


FIG. 9

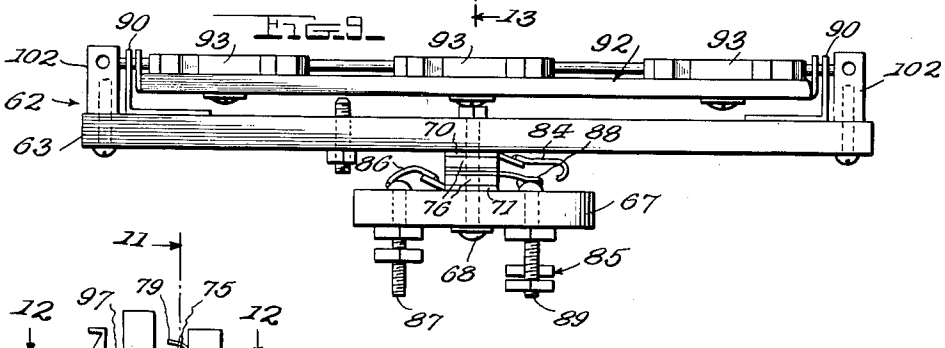
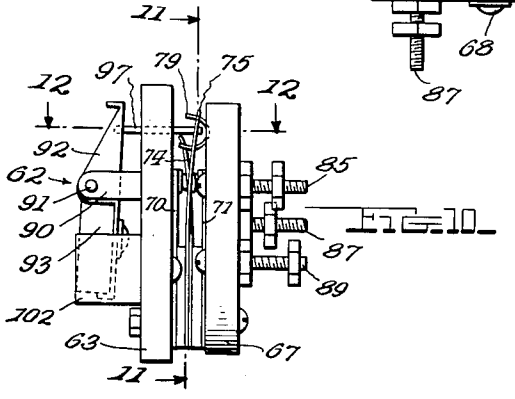


FIG. 10



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July 24, 1956 L. F. GLOWEN ET AL 2,755,762

MAGNETICALLY OPERATED NO-CAN-NO-COVER FEED CONTROL

Filed June 29, 1951 5 Sheets-Sheet 5

FIG. 13

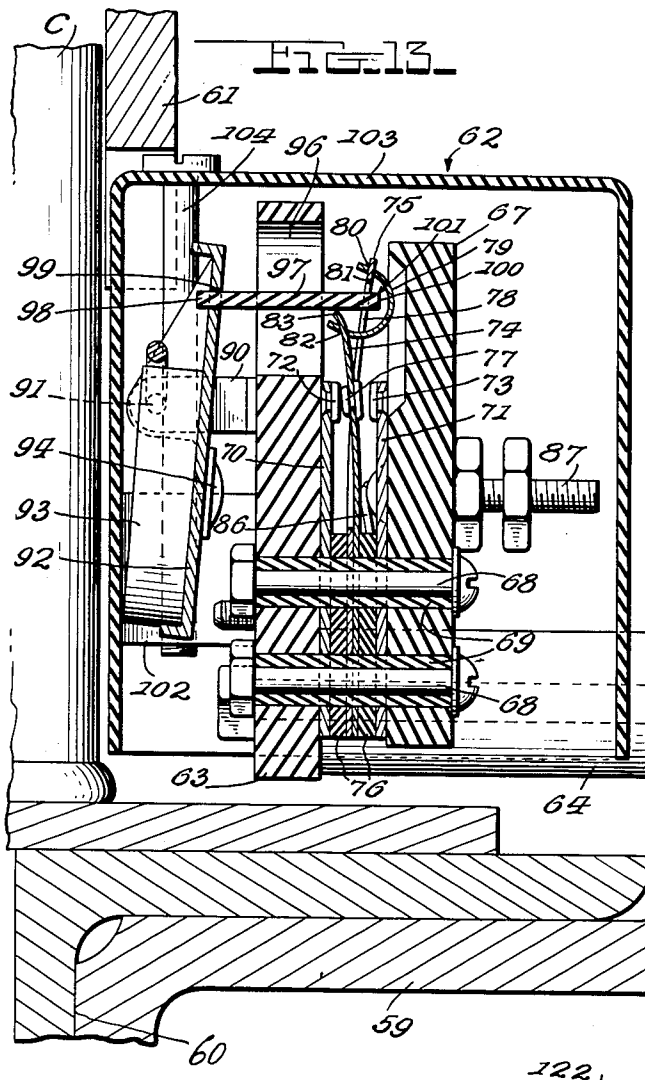
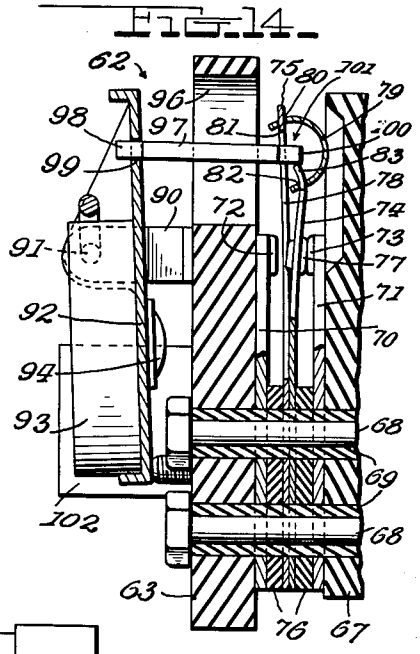


FIG. 14



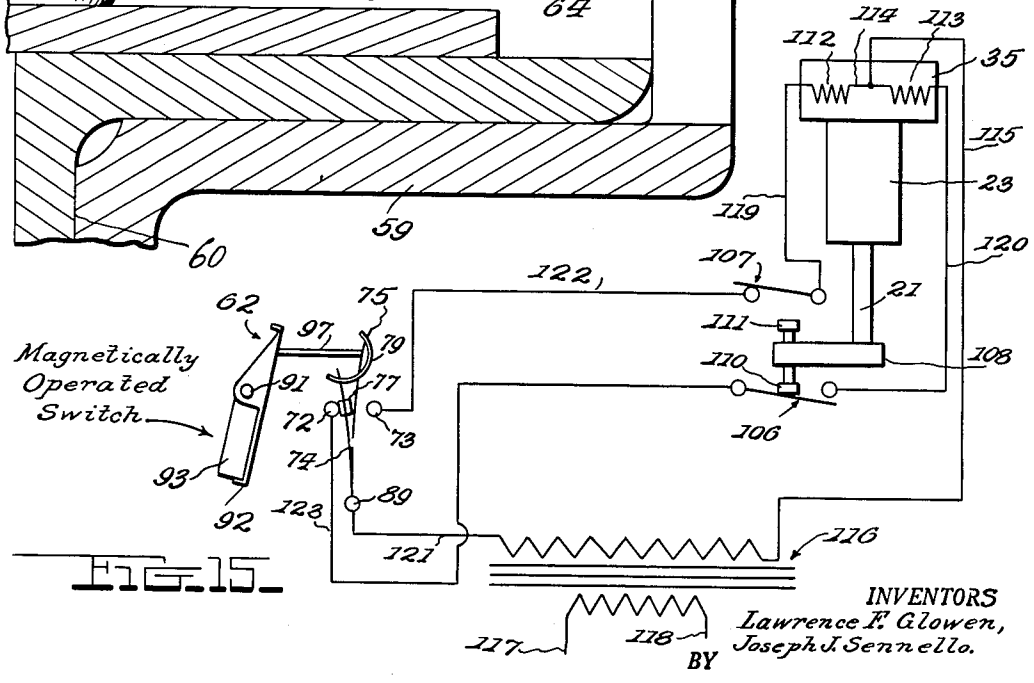


FIG. 15

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United States Patent Office 2,755,762 Patented July 24, 1956

2,755,762

MAGNETICALLY OPERATED NO-CAN-NO-COVER FEED CONTROL

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Application June 29, 1951, Serial No. 234,306

8 Claims. (Cl. 113—114)

The invention relates generally to cover feeders effective to feed covers for individual assembly upon cans being fed along in processional order and in equidistantly spaced relation, and it primarily seeks to provide a novel no-can-no-cover feed control including control devices actuated responsive to movement of passing cans and without contact by said passing cans.

Cover feeds of the general character referred to are well known, and it is also quite common to provide no-can-no-cover feed control means for discontinuing the feeding of covers whenever there is a break in continuity of the feeding of cans. Various forms of no-can-no-cover feed controls are known, but these controls have been mechanically actuated through devices including can engaged actuator arms which must be displaced and held displaced by the passing cans. It has been found that from twelve to twenty pounds pressure must be applied to such actuator arms to displace them and hold them in position for maintaining the normal cover feeding operation. It will be quite apparent that this necessity for applying such arm displacing and holding pressures by moving can engagement is quite objectionable and can result in damage to the delicate decorative coverings on the cans. It is a purpose of the present invention to provide a novel cover feed control of the character stated wherein all pressure actuation by can engagement is avoided.

While the improved control devices herein disclosed are adapted for more general use, they are particularly adapted for use in combination with cover feeding means such as are disclosed in the copending application for U. S. Letters Patent Serial Number 72,328, filed by Justin Simpson on January 24, 1949, now Patent No. 2,579,976 of December 25, 1951. In the disclosed cover feeding means there are included members normally operable to support a stack of covers and for feeding them one by one off the bottom of the stack, and supplementary supporting devices movable into and out of position for taking over the support of the stack and silencing the feeding of covers, and the present invention resides in combining with such means, a member magnetically attracted by passing cans and controlled as to position by passing cans or the absence thereof, electrically controlled, fluid pressure actuated means for shifting the supplementary supporting devices into their stack supporting position each time there is a break in the feeding of cans, and for again moving said devices away from said stack supporting position as proper feeding of cans is resumed so as to permit the cover supporting and feeding members to resume their normal cover supporting and feeding function.

An object of the invention is to provide control means of the character stated wherein the switch actuator comprises a carrier extending along one side of and adjacent the path of travel of the cans, and wherein are provided means supporting the carrier for movement toward and from the can travel path, magnet means mounted on the carrier in position for being attracted toward passing

ferrous metal cans without contacting the same and extending along said can travel path a sufficient distance to project magnetic fluxes into said path for a distance along the same at least as great as the spacing between the centers of two travelling cans, contact making and breaking means, and means movable with the carrier for actuating the contact making and breaking means.

Another object of the invention is to provide control means of the character stated wherein the magnet means is adjustably supported on the carrier so that the extent of the magnetic flux along the can travel path can be varied.

Another object of the invention is to provide control means of the character stated wherein the carrier and the magnet means thereon are mounted to swing freely as a pendulum toward and from the travelling cans, and wherein there is included means for limiting movement of the carrier toward the cans so as to prevent contact of the carrier and the magnet means with the travelling cans.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a perspective view illustrating the invention.

Figure 2 is a fragmentary plan view and part horizontal section illustrating the oscillatable lug projecting and retracting ring and its connection with the control devices, one of the stack supporting lugs being shown in its partially projected position.

Figure 3 is a vertical cross section taken on the line 3—3 of Figure 2.

Figure 4 is a fragmentary plan view illustrating one of the stack supporting lugs in its fully retracted position.

Figure 5 is a fragmentary perspective view illustrating the adjustable mounting at the lower end of the switch and cylinder supporting plate.

Figure 6 is a horizontal longitudinal section taken through the switch actuator cylinder and the control devices therefor.

Figure 7 is an enlarged fragmentary plan view illustrating the magnetic switch and adjacent parts.

Figure 8 is an enlarged face view of the magnetic switch per se.

Figure 9 is an enlarged inverted plan view of the magnetic switch structure shown in Figure 8.

Figure 10 is an enlarged end elevation of the magnetic switch.

Figure 11 is a vertical longitudinal section taken on the line 11—11 on Figure 10.

Figure 12 is a fragmentary horizontal section taken on the line 12—12 on Figure 10.

Figure 13 is an enlarged vertical cross section taken on the line 13—13 on Figure 8, the switch being in its normal, magnet attracted, cover feed control position.

Figure 14 is a view similar to Figure 13, the switch being in the position in which it brings about a cover feed cut-off.

Figure 15 is a diagrammatic view illustrating the electrical controls through which the shifting of the lug projecting and retracting ring is effected.

In the preferred embodiment of the invention herein disclosed, the cans C are shown as being fed in processional order toward a closing machine generally designated D by feeding means 5 under control of the usual timing screw 6. Covers for assembly on the cans are to be fed on-by-one from the bottom of a stack by the cover feed means generally designated E in Figure 1. While this cover feeding means may take various forms,

it is preferred that the herein disclosed invention be applied to cover feed means such as is disclosed in the Justin Simpson patent hereinbefore referred to.

Fragments of a cover feeding means of the type referred to are best shown in Figures 2 and 3 of the drawings from which it will be apparent that the same includes a body 7 and a base portion 8 in which is provided an annular seat 9. Within the seat 9 a lug positioning ring 10 is oscillatably mounted. The ring 10 is fork and pivot block connected as at 11 to the stack supporting lugs 12 which are pivotally mounted at 13 on the base 8. Each lug has a cover stack supporting inner end extremely 14 which is projected into and retracted from the center opening 15 through which the covers fall from the upstanding guides 16. The projectable and retractable lugs cooperate with the continuously rotated screws 17 in controlling the feeding of covers from the bottom of the stack for assembly on the cans.

During normal feeding of the covers the stack rests upon upper surface portions of the screws, and the screws serve to remove the covers one at a time from the bottom of the stack and drop them into position for being transferred for assembly onto the cans. During normal operation of the cover feeding means, the lugs 14 are retracted in the manner illustrated in Figure 4 so that they will not interfere with the feeding of the covers. However, whenever a break in the continuous feeding of cans occurs, the lugs 14 are projected into the opening 15 so as to take over the support of the stack and prevent feeding of the covers by the continuously rotating screws. It is to be understood that the top or cover supporting surfaces of the lugs 14 are at the same level as the cover stack supporting surfaces of the screws so that when the lugs are projected in the manner illustrated in Figures 2 and 3 they can take over the supporting of the cover stack while permitting continued, ineffectual rotation of the screws 17.

The oscillatable ring 10 is provided with a radial arm projection 18 which is longitudinally slotted as at 19 to receive an actuator roller 20 in the manner clearly illustrated in Figures 2 and 3. The roller 20 is carried at the end of a reciprocable piston rod 21 which is equipped with a piston 22 operable within the cylinder 23 which is supported on the mounting plate 24. The plate 24, best shown in Figures 1 to 3 and 5 of the drawings is vertically-adjustably mounted as at 25 on a bracket 26 which is in turn mounted at 27 on the machine frame.

It will be apparent by reference to Figure 6 of the drawings that the cylinder 23 is equipped with an air duct 28 opening into one end thereof, and an air duct 29 opening into the other end thereof so that said ducts can operate alternately to admit air into and exhaust air from the cylinder 23 so as to bring about reciprocation of the piston 22 in the cylinder. The cylinder ducts 28 and 29 communicate with duct extensions 30 and 31 respectively formed in a valve block 32, and said block also is equipped with exhaust ports 33 and 34, one thereof being associated with each of the duct sets 28, 30 and 29, 31. The control unit shown in part in Figures 1, 2 and 3, and in detail in Figure 6, also includes a control cylinder 35, and this cylinder, the block 32 and the cylinder 23 are held in assembly as shown in Figure 6 by bolts 36.

The cylinder 35 is closed at its ends by removable caps 37 each having a central bleed port 38 therein, the purpose of which will become apparent as this description progresses. The cylinder 35 also has a centrally disposed air inlet port 39 which communicates through an annular chamber enlargement 40 with a valve chamber 41 extending along the face of the cylinder opposed to the block 32. Equidistantly spaced ports 42, 43, 44 and 45 open through the face of the block 32 which opposes the valve chamber 41, the ports 42 and 43 communicating with the ducts 30 and 33 respectively, and the ports 44 and 45 communicating with the ducts 34 and 31 respectively in the manner clearly illustrated in Figure 6. An E-valve 46 is slidably mounted in the valve chamber 41 and is connected as at 47 to move with the free piston 48 reciprocable in the cylinder 35 for properly controlling the ports.

In the position of the valve illustrated in Figure 6, the ports 42 and 43 are connected to allow air to exhaust from the ducts 28, 30 into the exhaust duct 33, and pressure fluid is directed through the port 45 and duct 31, 29 for driving the piston 22 upwardly as viewed in Figure 6. It will be apparent that when the valve 46 is shifted to the right the direction of flow of pressure fluid will be reversed so as to drive the piston 22 downwardly.

The free piston 48 reciprocable in the cylinder 35 is cup-shaped at its opposite ends, and its central wall has an annular air groove 49 therein which forms a part of the connection 47 between the piston and the reciprocable valve 46. The central wall of the free piston also is equipped with radial ports 50 communicating between the groove 49 and a central chamber 51 in which a free ball valve 52 is mounted for alternate seating engagement with end seats 53 opening into the end cups of the piston in the manner clearly illustrated in Figure 6.

Each cylinder cap 37 carries a cup-like shell 54 receivable in spaced relation in the respective cupped piston end, and each shell is equipped with an electromagnet 55 and a wall opening 56 permitting ingress of air into the interior of the shell. It will be noted that a reed valve 57 cooperates with each of the bleed ports 38 provided in the caps 37, and it is to be understood that when the coil of one of the magnets 55 is energized the effect will be to retract the respective reed 57 from its position in closing relation over the respective port 38 in the manner illustrated at the left in Figure 6.

With the parts in the position illustrated in Figure 6, it is to be understood that the piston 22 is about to complete its movement of retraction and that immediately upon completion of this retraction the electromagnet at the left will be de-energized to permit the reed shown in the attracted, open position at the left of the figure to seat and close the port 38. It is to be noted that at each travel limit of the piston 48 the respective central shell projection 58 will engage with and unseat the valve ball 52 in the manner illustrated at the left in Fig. 6. This will permit an equalization of pressure at opposite ends of the piston 48. Assuming the piston 48 to be at rest at either of its travel limits, pressure at opposite ends thereof will be equalized, and an energizing of the magnet 55 at the end from which the last movement occurred will result in a displacement of the respective reed 57 and an escapement of air through the port 38. This reduction of pressure at the respective end of the piston 48 will cause the pressure at the opposite end of the piston to be dominant and bring about a shifting of the piston 48 toward the end cap 37 through which the exhausting of air occurred. In the particular arrangement disclosed herein, and the detailed arrangement in Figure 6 it is to be understood that the energizing of the magnet 55 at the left will bring about a retraction of the piston 22 whereas an energizing of the magnet 55 at the right will bring about a projection of said piston.

A horizontal support bracket 59 is secured at 60 to the machine frame along the can feedway at the side of the can guide 61. This bracket serves to support the main magnetic control switch generally designated 62 which serves to control the cover feeding means so that covers will be fed for assembly on cans so long as the continuous processional order feeding of cans progresses, will be discontinued whenever there is a break in this continuous feeding, and will be resumed whenever the continuous processional order feeding of the cans is resumed.

The magnetic control switch generally designated **62** includes a mounting plate **63** of insulating material and supported in any approved manner on the bracket **59**, as by the spacers **64** and bolts **65** engaging the mounting lugs **66** of the bracket **59** clearly illustrated in Figure 13 of the drawings.

A round porcelain switch base **67** is held in assembly relation with the mounting plate **63** by bolts **68** passing through spacer sleeves **69** of insulating material, a terminal bar **70** being provided against the plate **63**, and a similar terminal bar **71** being provided against the switch base **67**. A contact **72** is provided on the terminal bar **70** and opposes a similar contact **73** on the terminal bar **71**. A flexible switch arm **74** and a flexible actuator arm **75** are arranged in face to face relation between the terminal bars **70** and **71** and are spaced therefrom by spacers **76** of insulating material. A contact **77** is mounted on the switch arm **74** in position for engaging alternately with the previously mentioned contacts **72** and **73**, and a center opening **78** is provided in the actuator arm **75** in order to allow free movement of the switch arm **74** with relation to said arm **75**. A flexible arm connector **79** is provided and has an aperture **80** for receiving a tongue **81** extending downwardly into the opening **78** of the arm **75**, and at its other end, said connector **79** has an aperture **82** to receive a shouldered tongue **83** projecting upwardly from the upper end of the arm **74**. It is to be understood that the arm **74** is biased to the position illustrated in Figure 14 and is movable to the position illustrated in Figure 13 only when the control member to be described hereinafter is magnetically attracted by the line of passing cans. The arrangement of the arms **74** and **75** and the C-shaped connector **79** is such that as the arm **75** moves to its biased position of Figure 4 the arm **74** will be snapped to the right thereof as viewed in said figure, and when the arm **75** is shifted to the Figure 13 position by magnetic attraction as aforesaid, the arm **74** will be snapped to the left thereof as indicated in said Figure 13.

The terminal bar **70** is connected at **84** with a binding post **85**. The terminal bar **71** is connected as at **86** with a binding post **87**, and the switch arm **74** is connected as at **88** with a binding post **89**. The binding posts **85**, **87** and **89** are adapted for connection in the control circuit in a manner which will become apparent as this description progresses.

A pair of brackets **90** are mounted on the plate **63** in parallel spaced relation and serve to provide a pivotal mounting at **91** for a magnet carrier **92** on which a plurality of permanent magnets **93** are supported in the manner clearly illustrated in Figure 8 of the drawings, all north poles of said magnets being placed in like direction. In this example disclosure three such permanent magnets are shown, the center one being secured at **94** to the carrier **92** and each magnet to one side or the other of said center magnet being adjustably secured as at **95** to said carrier. The magnets are arranged so that they will collectively project a magnetic flux across the path of travel of the cans and extending along said can travel a distance at least as great as the spacing between centers of two adjacent travelling cans. The adjustable mounting of the magnets at **95** will permit variation in the spacing of the magnets and the extent of the magnetic flux along the path of travel of the cans.

An opening **96** is provided through the mounting plate **63**, and an actuator **97** is movable through this opening and has a reduced and shouldered end **98** extending through the aperture **99** in the magnet carrier **92**, and a reduced and shouldered end **100** extending at **101** through the center opening in the actuator arm **75**, the tongue **83** of said arm **74** serving to slidably support the actuator **97** in the manner clearly illustrated in Figures 13 and 14.

The mounting plate **63** may be provided with support lugs **102** on which a switch casing **103** can be removably secured at **104**. It is to be understood that the casing **103** may be mounted in any approved manner and may

be so placed as to form a stop limiting movement of the magnets **93** on their pivotal support **91** toward the travelling cans in the manner clearly illustrated in Figure 13.

An opening **105** is provided through the plate **24**, and at each side thereof is mounted a single throw, normally closed micro-switch, one said switch being designated **106** and the other **107** as will be apparent by reference to Figures 1 and 2 of the drawings. The piston plunger **21** has a switch actuator **108** secured thereon as at **109**, and the actuator carries an adjustable actuator plunger **110** projecting toward the switch **106** for actuating the plunger thereof, and an adjustable actuator plunger **111** projecting toward the other switch **107** for actuating the plunger of the same. The control connections are such that whenever the piston plunger **21** is projected, the cover feeding means will be in its normal, cover feeding condition with the stack supporting lugs **14** retracted in the manner illustrated in Figure 4, the switch **106** will be open and the switch **107** will be closed. Whenever the plunger **21** is in its retracted position, the stack supporting lugs **14** will be projected and the cover feeding means will be in the no-feeding condition, the switch **107** will be open and the switch **106** will be closed.

In Figure 15, one manner of electrically connecting the control devices is diagrammatically illustrated. In this illustration, the coil within the magnet **55** at the left as viewed in Figure 6 is indicated at **112**, and the coil of the magnet **55** at the right in said Figure 6 is indicated at **113**. The coils are connected at their proximate ends at **114**, and said connection **114** is connected by a conductor **115** with the step-down transformer generally designated **116** and which is connected with the power in-put lines **117** and **118** in the manner indicated. It is preferred that the step-down transformer shall function to reduce the service current to eight volts in the control system now being described.

At its remote end the left coil **112** is connected by a conductor **119** with one contact of the switch **107**, and at its remote end the right coil is connected by a conductor **120** with one contact of the switch **106**. The power in-put binding post **89** connected with the swingable switch arm **74** of the double throw magnetically operated micro-switch **62** is connected by a conductor **121** with the transformer **116**, the binding post **87** connected with the bar **71** and contact **73** is connected by the conductor **122** with the switch **107** and the binding post **85** connected with the bar **70** and contact **72** is connected by the conductor **123** with the other switch **106**.

The diagram in Figure 15 illustrates the condition of the control circuits during the normal operation of the cover feeding means. In this condition the piston and rod **22**, **21** are projected, and both magnet coils **112**, **113** are deenergized because of the open condition of the switch **62** with respect to the contact **73**, and the open condition of the switch **106**. This was brought about by a momentary energizing of the coil **113** at the right of Figure 6 which effected a shifting of the valve **46** to the position opposite that shown in Figure 6 and which would be effective to bring about a projection of the piston, which piston projection has brought about an opening of the switch **106** in the manner indicated in the diagrammatic Figure 15. The movement of the piston **22** also permitted the switch **107** to move to the closed position to condition the control circuit through **122**, **119**, **112**, **115** for energizing the coil **112** on the next shift of the main control switch **62** resulting from a break in continuity of the feeding of cans C and a swinging away of the magnets **93** from the Figure 13 position to the position shown in Figure 14. It is to be understood that the span of the magnets **93** is such that they cooperate in projecting a magnetic flux across the can travel path and along the same a distance at least as great as the spacing between centers of two normally travelling cans, and therefore one such can will have moved into said flux before the immediately preceding can will have

moved out of said flux. So long as this normal procession of cans continues, the magnet carrier **92** will be held magnetically in the position shown in Figure 13, and this will result in a conditioning of the switch arm **74** in the manner illustrated in the diagrammatic Figure 15. Whenever there is a break in the procession of cans, however, the carrier will swing over to the Figure 14 position and cause the switch arm 74 to engage the contact **73** and bring about an energizing of the coil **112**. This will result in an attraction of the reed **57** as shown in Figure 6, and the bleeding of air through the port 38 as indicated by the arrow will reduce pressure in the cylinder **35** at the left hand end of the free piston **48** and cause the now dominant pressure at the right hand end of the free piston to shift the same toward the left as illustrated in Figure 6. Placement of the valve **46** in the position illustrated in Figure 6 will direct the pressure fluid and exhaust in the manner previously described for bringing about a retraction of the piston **22**. The retraction of the piston will cause the tappet **111** to open the switch **107** and de-energize the coil **112**. The retraction of the plunger **21** will also project the lugs **14** and stop the feeding of covers until the normal continuous feeding of cans is resumed.

Resumption of the normal feeding of cans will result in a magnetic attraction of the carrier **92** to the left as shown in Figure 13 and a shifting of the switch arm **74** into engagement with the contact **72**, and since the switch **106** will now be closed, the coil **113** will be energized and projection of the plunger **21** and immediate resumption of cover feeding will follow.

From the foregoing it will be apparent that the force necessary to be applied for shifting the cover stack supporting lug positioning ring is applied pneumatically and entirely under electrical control. This novel control arrangement makes it wholly unnecessary for the traveling cans to engage any control devices in bringing about a discontinuance of the cover feeding or a resumption thereof.

While one form of the invention has been shown for purposes of illustration, it is to be clearly understood that various changes in the details of construction and arrangement of parts may be made without departing from the spirit and scope of the invention as defined in the appended claims.

We claim:

1. In apparatus of the character described, in combination, means for feeding cans in processional order and in equidistantly spaced relation, electric circuit controlling means responsive to a gap in the order of cans and comprising a magnetically operable switch, said switch including a carrier extending along one side of and adjacent the path of travel of the cans, means supporting the carrier for movement toward and from said can travel path between two circuit controlling positions, magnet means mounted on said carrier in position for being attracted toward passing ferrous metal cans without contacting the same and extending along said can travel path a sufficient distance to project magnetic fluxes into said path for a distance along the same at least as great as the spacing between the centers of two consecutive traveling cans, contact making and breaking means, and means movable with the carrier for actuating said contact making and breaking means, cover feed means, and devices including an electric circuit operable under control of the contact making and breaking means for rendering the cover feed means effective to feed covers while cans are passing in regular processional order and attracting said magnet means and ineffective to feed covers whenever a gap occurs in the procession of cans permitting movement of the magnet means away from the can travel path.

2. In apparatus of the character described, in combination, means for feeding cans in processional order and in equidistantly spaced relation, electric circuit controlling means responsive to a gap in the order of cans and comprising a magnetically operable switch, said switch including a carrier extending along one side of and adjacent the path of travel of the cans, means supporting the carrier for movement toward and from said can travel path between two circuit controlling positions, magnet means mounted on said carrier in position for being attracted toward passing ferrous metal cans without contacting the same and extending along said can travel path a sufficient distance to project magnetic fluxes into said path for a distance along the same at least as great as the spacing between the centers of two consecutive traveling cans, fixedly mounted contact making and breaking means, and means movable with the carrier for actuating said contact making and breaking means, said magnet means comprising a plurality of permanent magnets spaced along the carrier to provide a series of closed magnetic circuits, and being adjustably mounted on said carrier so that the spacing thereof and the extent of the magnetic fluxes along the can travel path can be varied, cover feed means, and devices including an electric circuit operable under control of the contact making and breaking means for rendering the cover feed means effective to feed covers while cans are passing in regular processional order and attracting said magnet means and ineffective to feed covers whenever a gap occurs in the procession of cans permitting movement of the magnet means away from the can travel path.

3. In apparatus as defined in claim 2 in which the carrier and the magnets supported thereon are mounted to swing freely as a pendulum toward and from the traveling cans, and in which there is included means for preventing the carrier or the magnets from contacting the traveling cans.

4. In apparatus of the character described, in combination; means for feeding cans in processional order and in equidistantly spaced relation; electric circuit controlling means responsive to a gap in the order of cans and comprising a magnetically operable switch, said switch including a carrier extending along one side of and adjacent the path of travel of the cans, means supporting the carrier for movement toward and from said can travel path between two circuit controlling positions, magnet means mounted on said carrier in position for being attracted toward passing ferrous metal cans without contacting the same and extending along said can travel path a sufficient distance to project magnetic fluxes into said path for a distance along the same at least as great as the spacing between the centers of two consecutive travelling cans, contact making and breaking means, and means movable with the carrier for actuating said contact making and breaking means; cover feeding means including a plurality of rotary members normally operable to support a stack of covers and feed them one by one off the bottom of the stack, means for continuously rotating said rotary members, supplementary cover stack supporting devices movable into and out of position for taking over support of the stack and arresting the feeding of covers; and electrically operated fluid-pressure actuated means operatively connected with the contact making and breaking means of said switch and said supplementary supporting devices and controlled by the switch to retract the supplementry supporting devices when passing cans are attracting the magnet means and for projecting said devices into stack supporting position each time there is a gap in the processional order of the cans.

5. Apparatus as defined in claim 4 in which the electrically operated fluid-pressure actuated means includes a fluid-pressure operated actuator piston, a valve means for directing fluid pressure to and from the opposite ends of said piston, and electrically controlled valve positioning means controlled by the switch.

6. Apparatus as defined in claim 4 in which the electrically operated fluid-pressure actuated means includes

a fluid-pressure operated actuator piston, a valve means for directing fluid pressure to and from the opposite ends of said piston, valve shifting means comprising a floating piston connected with the valve, means for directing fluid pressure against said floating piston, and electrically operated means controlled by the switch for bringing about an unbalanced pressure condition at the opposite ends of the floating piston alternately to cause it to move first one way and then the other.

7. Apparatus as defined in claim 4 in which the carrier and the magnet means supported thereon are mounted to swing freely as a pendulum toward and from the travelling cans, and in which there is included means for preventing the carrier or the magnets from contacting the travelling cans.

8. Apparatus as defined in claim 4 in which the carrier and the magnet means supported thereon are mounted to swing freely as a pendulum toward and from the travelling cans, and in which there is included means for preventing the carrier or the magnets from contacting the travelling cans, said magnet means being spaced along the carrier and adjustable therealong to vary the extent of the magnetic flux along the path of travel of the cans.

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