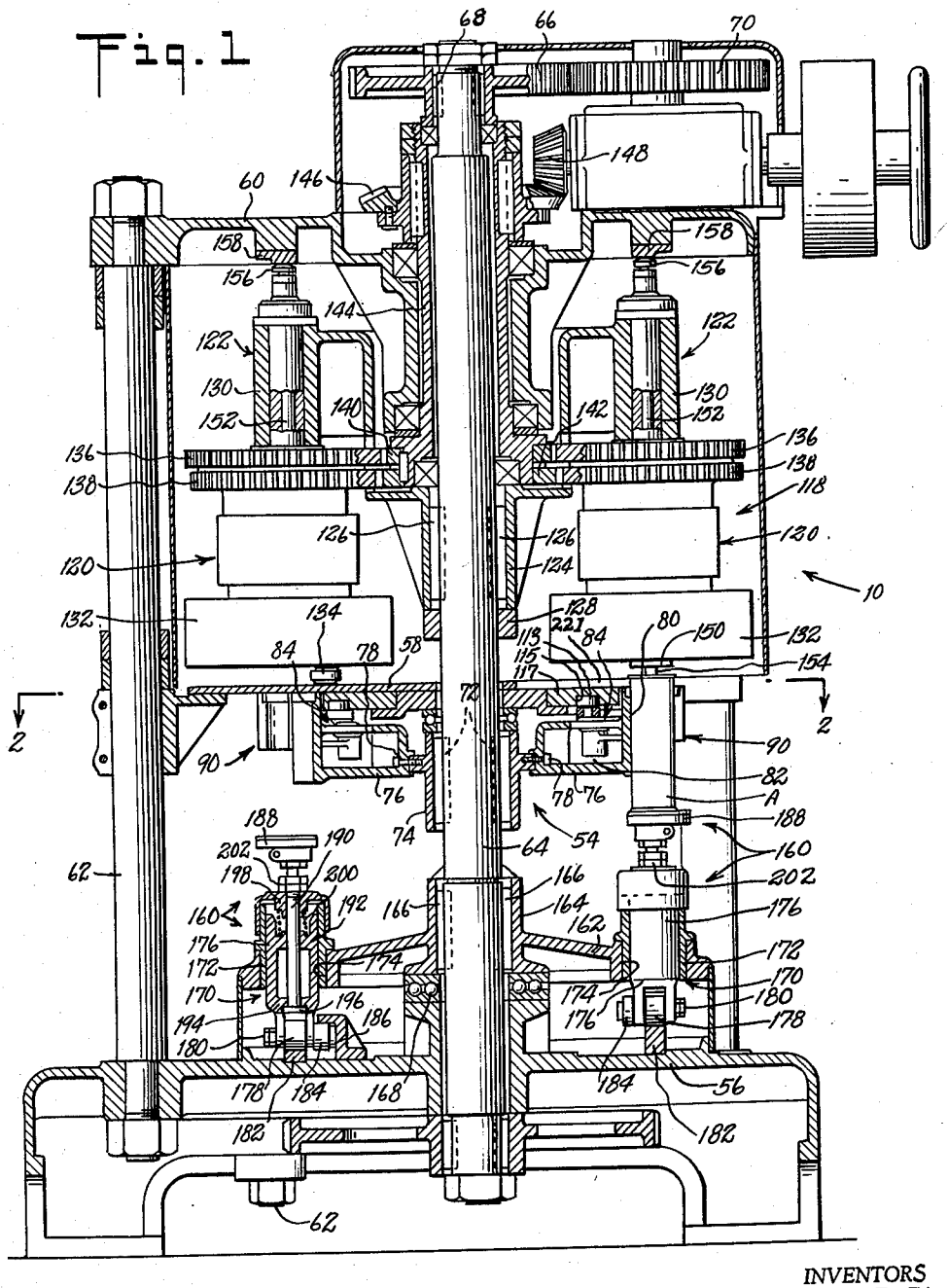
Feb. 23, 1960 W. H. DIEZEL ET AL 2,925,797

CAN CLOSING MACHINE

Filed July 19, 1957 5 Sheets-Sheet 1

Fig. 1



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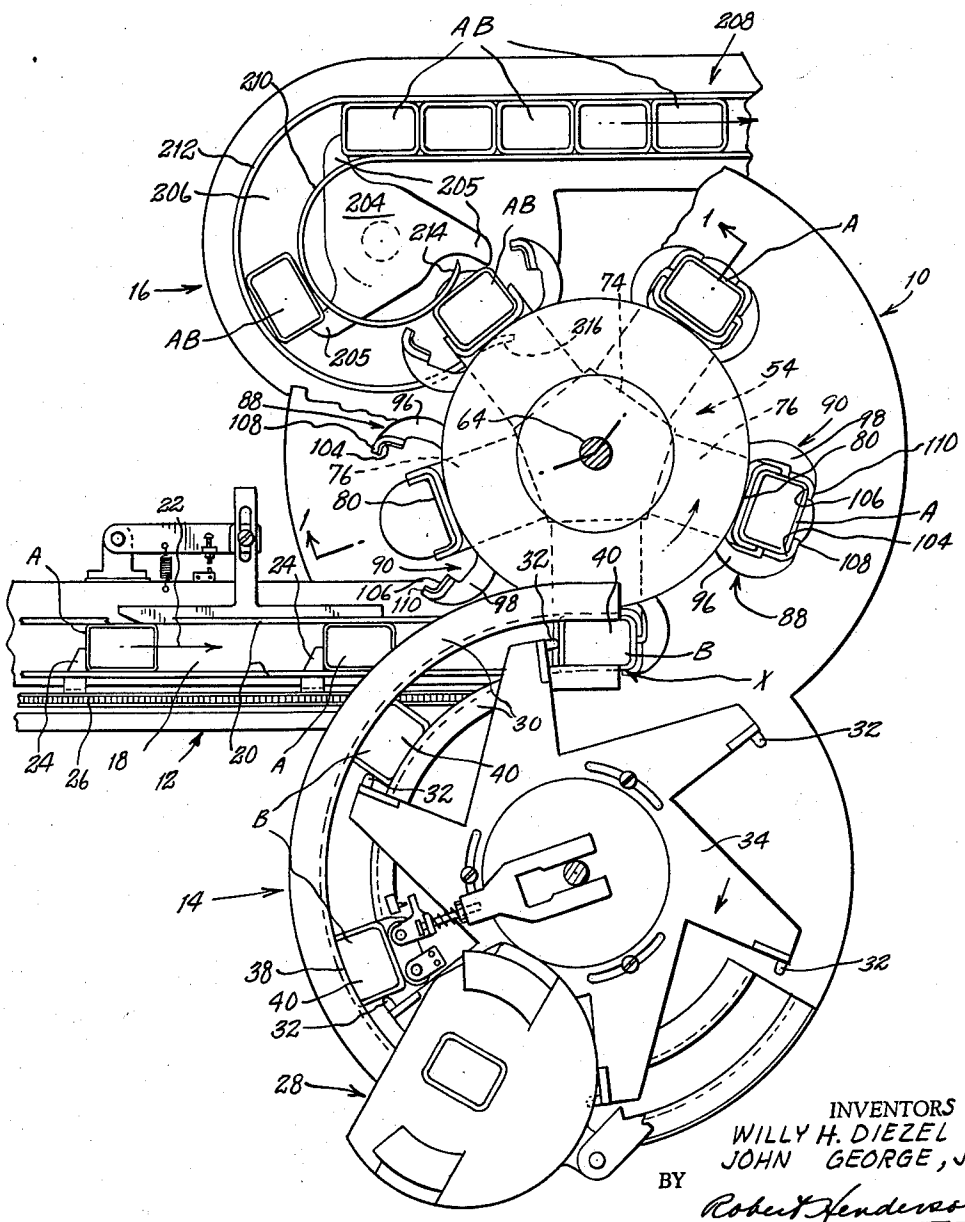
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CAN CLOSING MACHINE

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Fig. 2.



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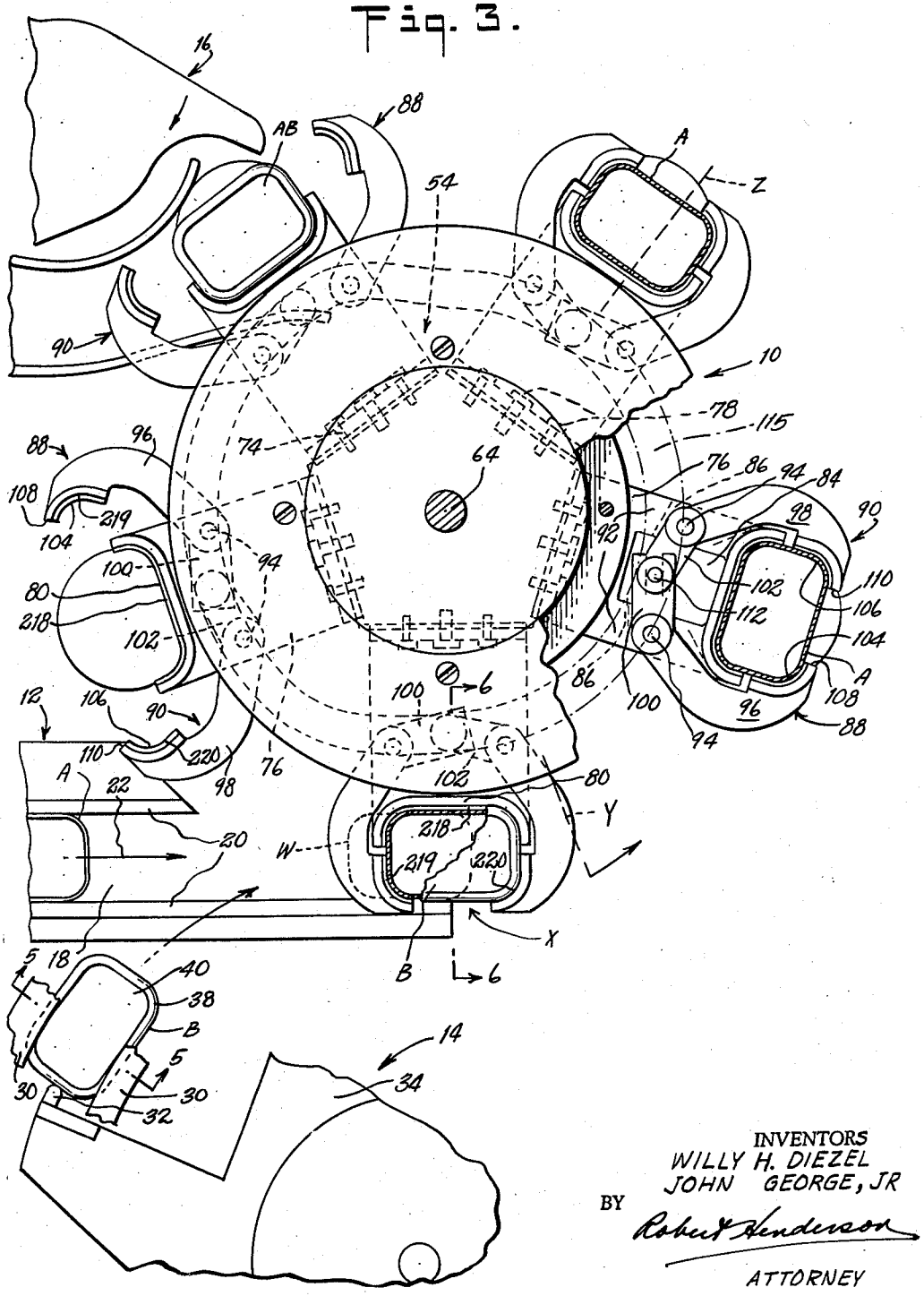
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Fig. 3.



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CAN CLOSING MACHINE

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Fig. 4.

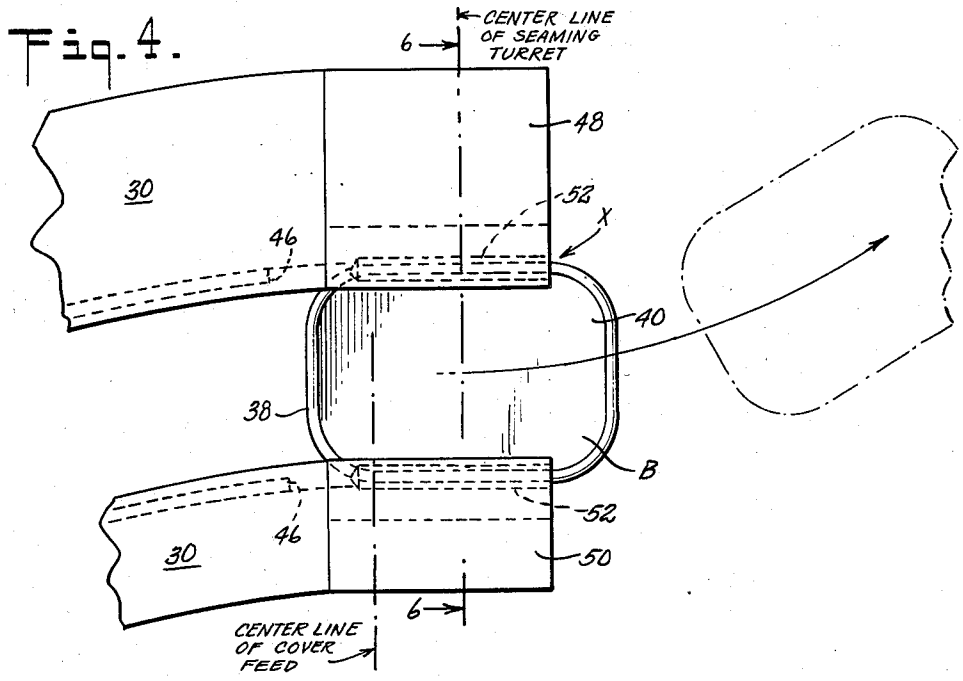


Fig. 6.

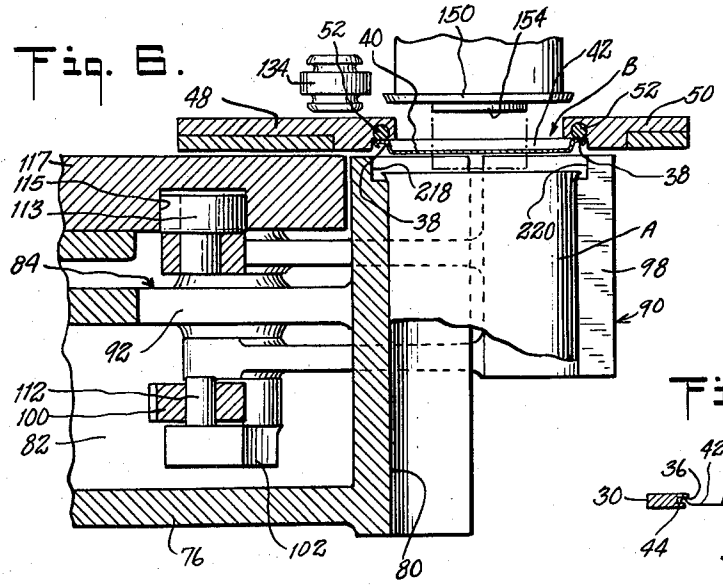
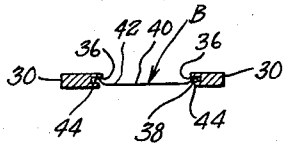


Fig. 5.



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CAN CLOSING MACHINE

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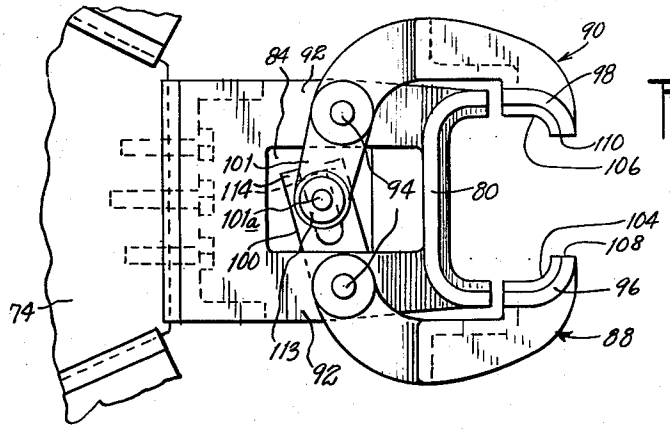


Fig. 7.

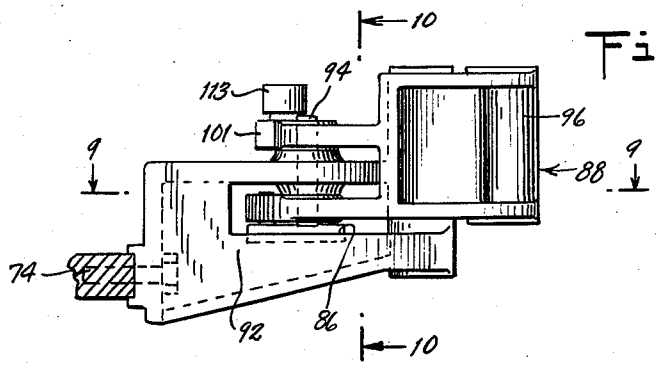


Fig. 8.

Fig. 9.

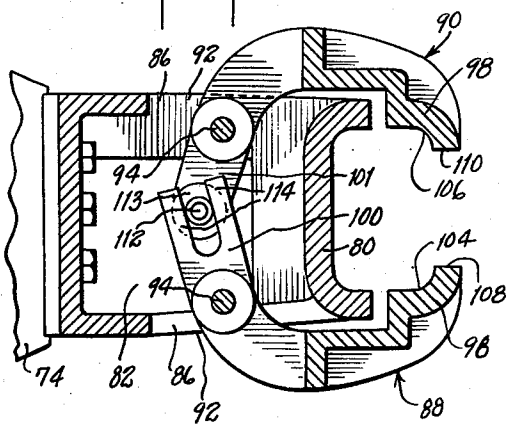
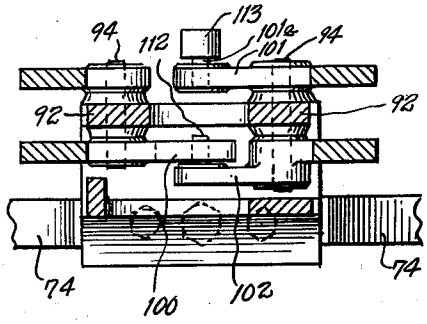


Fig. 10.



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United States Patent Office 2,925,797
Patented Feb. 23, 1960

2,925,797

CAN CLOSING MACHINE

Willy H. Diezel and John George, Jr., Fairfield, Conn., assignors to The Max Ams Machine Company, Bridgeport, Conn., a corporation of New York

Application July 19, 1957, Serial No. 673,038

6 Claims. (Cl. 113—28)

This invention relates to an improved machine for applying and seaming ends to can bodies. Although the mechanisms hereinafter described are intended primarily for use in applying tops or covers to filled cans, it will be understood that the disclosed inventive concepts may be utilized in machines for applying bottoms to can bodies; hence, it is intended that all references herein to a "can closing machine" or to "tops" or "covers" shall be understood respectively as being of such breadth as to include can-end applying machines and bottoms or bottom ends of cans.

An important object of this invention is the provision, as a part of the seaming turret of a can closing machine, of can pockets which will pick up a can body from a conveyor and bring the can body positively into alignment with an above corresponding cover, after which the cover is pushed down into the partially open pocket, the pocket then closing and positively engaging about both a filled can and its intended cover to hold them in proper alignment while the two are brought together to preliminarily close the can and to hold them thus while the rolling-seaming of the edge of the cover to the can body is being accomplished.

Another important object is the provision of means, in a can closing machine, for causing a can and its cover, being guided together tangentially, to move together for a short time and distance in the same straight line in which the filled cans have been guided into the machine, and to cause the cover to be applied to the can during such straight line movement whereby to avoid spilling of the can's contents.

Another important object is the provision of improved means, in such a machine, for guiding a can cover into alignment with a filled can preliminary to the closing of the latter.

The foregoing and other more or less obvious objects are accomplished through the use of this invention of which only one of various possible embodiments is disclosed for illustrative purposes in the accompanying drawings without, however, limiting the invention to the particular disclosed embodiment.

In the drawings:

Figure 1 is an approximately central, vertical, sectional view of a seaming turret of a can closing machine according to a preferred embodiment of this invention, omitting details of some parts not directly related to this invention, the section being substantially on the irregular line 1—1 of Fig. 2.

Fig. 2 is a horizontal, sectional view substantially on the line 2—2 of Fig. 1, additionally including related plan views of can and cover feeding means and means for carrying away closed cans.

Fig. 3 is a considerably enlarged view of portions of Fig. 2, partly broken away to show additional details.

Fig. 4 is a further enlarged view of a detail of Fig. 2.

Fig. 5 is a sectional view of a detail substantially on line 5—5 of Fig. 3.

Fig. 6 is an enlarged, vertical, sectional view of the can pocket structure of the seaming turret, substantially on the lines 6—6 of Figs. 3 and 4.

Fig. 7 is a top plan view of wing members shown in Fig. 3, but to a somewhat larger scale.

Fig. 8 is a side elevational view of said wing members as viewed from the bottom of Fig. 7.

Fig. 9 is a horizontal sectional view substantially on the line 9—9 of Fig. 8.

Fig. 10 is a vertical sectional view substantially on the line 10—10 of Fig. 8.

It may be considered that the seaming turret 10 includes the principal parts of a can closing machine according to this invention. The machine also includes, as parts associated with and cooperating with the seaming turret, a can conveyor 12 having suitable driving means (not shown) for moving filled cans, in series, in a straight line to the seaming turret, a cover conveyor 14 having suitable operating means (not fully shown) for moving covers in an arcuate line to the seaming turret, and closed-can removing apparatus 16 having suitable operating means (not fully shown) for removing closed cans from the seaming turret and away from the machine.

Those familiar with this art will understand that the mentioned parts have driving means so interrelated as to cause said parts to operate in timed relationship to achieve closing of cans as hereinafter explained.

The can conveyor 12 has a narrow, horizontal, can-supporting, can-feed table 18, provided with straight side rails 20 which guide filled cans A in a straight line in the direction indicated by arrows 22 in Figs. 2 and 3 to a cover applying station X at the seaming turret 10. The cans are slid along the table 18, toward the turret, by pusher lugs 24 fixed to the upper run of an endless chain 26 which, preferably, is continuously driven to move the cans continuously toward the seaming turret.

The cover conveyor 14 has a cover supply device, generally indicated at 28, arranged to feed the lowermost of stacked covers B to a horizontal, arcuate set of rails 30 along which the covers are pushed in series by pushing fingers 32 on the ends of arms of a preferably continuously rotated spider 34, to move the covers B arcuately to station X at a level slightly above the tops of the cans A, the actuating means for said spider being so timed to the operation of the can conveyor 12 that a can and a cover to be applied thereto will arrive approximately together at station X in approximate but not necessarily perfect vertical alignment.

It may be seen, from Fig. 5, that the rails 30 have opposed, inner, horizontal grooves 36 which receive therein opposite portions of a peripheral flange 38 of a cover B, which flange, in the manufacture of the cover, was formed to extend upwardly, outwardly and downwardly from the main or central portion 40 of the cover, thereby defining a recess 42 in the cover. The spacing of the rails 30 and the size of grooves 36 in relation to cover flange 38 are such that the cover is suspended between said rails with a free sliding fit enabling them to be moved freely to station X.

The lower lips 44, defining the grooves 36, extend throughout the greater portion of the lengths of rails 30 between the cover supply device 28 and station X, but terminate approximately at points indicated as 46 in Fig. 4, somewhat in advance of said station. According to one feature of the present invention, said rails, in the vicinity of said station, are provided with rigid magnet holders 48, 50 of bronze, brass or other suitable non-magnetizable material, and within said magnet holders are securely embedded permanent magnets 52 which hold up the covers B as and after they pass from the lips 44 and until they are pushed downwardly from said magnets as hereinafter explained.

A further feature of this invention, and one of importance, resides in a simple, novel and highly advantageous series of similar mechanisms disposed about the circum-

ference of a can-holding rotor 54 of the seaming turret 10 which receive related cans and covers from the conveyors 12 and 14, positively and perfectly align the covers with the cans as they are applied to the latter, and firmly hold each can while its applied cover is being seamed to the top edge of the can during the turning of said rotor.

It may be seen that the seaming turret 10, illustrated in Fig. 1, has a stationary frame, the principal parts of which are a base 56, a central plate 58 and a head or top plate 60, all these principal parts being rigidly interconnected by suitable tie bolts 62 of which only two appear in the drawings. A central, vertical shaft 64 is rotated continuously by a spur gear 66 which is fixed by a key 68 on the upper end of said shaft and meshes with a suitably actuated driving gear 70.

Immediately below the central plate 58 is the can-holding rotor 54, fixed by a key or keys 72 to the shaft 64 and thereby constrained to turn continuously with the latter. The rotor 54 comprises a five-sided hub 74 to which five similar, radially extending, wing support brackets 76 are suitably secure, as, for example, by screws 78. As may best be understood from Figs. 1 and 6, the outer end of each bracket 76 is of substantial height, sufficient to engage a substantial portion of the height of a related can A and (as hereinafter explained) a cover B being applied thereto. Also, as viewed from above, the outer end of the bracket 76 is formed as a semi-pocket 80 adapted to fit very accurately about approximately one half (preferably slightly less) of the side wall of a can to be closed by the machine.

Each bracket 76 is formed with an interior space 82, a top opening 84 from said space, and side openings 86 from said space. Somewhat similar wing members 88, 90 are similarly pivoted to opposite side walls 92 of said bracket to pivot about vertical axis points 94. At these points the wing members extend through the side openings 86, can-holding portions 96, 98 of said members being outside the bracket 76 and actuating arms 100, 102 of said members being in the interior space 82 of said bracket.

The can-holding portions 96, 98 of the wing members are in the nature of jaws which pivot between open positions as with such wing members as shown at the left of Fig. 3 and closed positions as with such wing members as viewed at the bottom of rotor 54 in Fig. 3. The outer ends of the wing members are formed with inwardly facing concavities 104, 106 which, in said closed positions fit very accurately about substantial portions of the outer half of the side wall of a can to be closed by the machine.

It should be noted that the semi-pocket 80 and the concavities 104, 106, which, together, define a complete can-and-cover pocket, are very accurately machined so that, when the wing members are closed, a can A therebetween, which the machine is designed to seam, will be held closely enough to afford precise alignment of the can and a cover to be applied thereto, but will not be held so tightly as to cause any damage to the can when the latter with its cover is slid upwardly within said wings for seaming of the cover as hereinafter explained.

It should also be observed that, when the machine is designed for closing rectangular cans as illustrated, the extremities 108, 110 of the wing members preferably extend sufficiently about the outer half of the can to exert a light pressure thereon, such as will operate, before application of a cover, to rectify any bulging or deformation theretofore present in the can. Even where the can being closed is circular or of some other shape, the shape and fit of the semi-pocket 80 and the concavities 104, 106, with respect to the can, may and preferably would be such as to rectify any deformation of the can before application of a cover thereto.

The actuating arms 100, 102 of the wing members are slidably interconnected to cause them to work oppositely in unison, one being actuated by the other. Thus, as may best be understood from Figs. 9 and 10, arm 102 has a stud 112 rigidly fixed therein and extending vertically upwardly between and in sliding association with spaced fingers 114 of arm 100. A cam-actuated arm 101, rigidly associated with wing member 90, has an upstanding stud 101*a*, bearing a cam roller 113 which extends upwardly into and works in a continuous cam track 115 extending about and in the underside of a stationary circular plate 117 suitably fixed to the underside of central plate 58. The just-described arrangement is such that horizontal, radial, reciprocatory movement of stud 101*a* by said cam track causes the wing members 88, 90 and, more particularly, their can-holding portions 96, 98 to open and close as hereinafter more fully described.

Directly above the central plate 58 is a rotary can top seaming assembly 118 which, as it constitutes no essential part of the present invention and is similar to seaming assemblies heretofore employed in can closing machines, will be described only to the extent necessary to show the manner in which it coacts with other parts of the machine in yielding the objects of this invention. The mentioned assembly comprises a plurality of similar radially and equidistantly arranged seaming mechanisms 120, main body portions 122 of which are rigidly integral with a hub 124 suitably keyed to shaft 64 by one or more keys 126, and suitably supported upon a collar 128 which, by any suitable means such as, for example, one or more pins or set screws, is rigidly locked upon said shaft.

Suspended from an outer upper part 130 of body portion 122, for rotation relatively to the latter and about a vertical axis, is a seaming head 132 about the lower portion of which are suitably mounted a plurality of seaming-rollers 134, of which one is shown in Fig. 1 and also in Fig. 6, to show the approximate location thereof and, more particularly, to indicate the approximate level at which such rollers are mounted. As the seaming head and the seaming-rollers are substantially similar to corresponding parts of prior machines, it should suffice, for present purposes, to say that the seaming-roller arrangement is such that as the can-holding rotor 54 and the seaming mechanism 120 turn in unison about the axis of shaft 64, the seaming head 132 turns about its own axis to cause the rollers 134 to seam a cover upon the top of a can.

The mentioned rotation of the head 132 about its own axis and the operation of the seaming-rollers result from the fact that, as in prior structures, said head has ring gears 136 and 138 associated therewith, meshing with ring gears 140 and 142 which are rigidly fixed to and turn with a sleeve 144 extending upwardly about shaft 64. On the upper end of sleeve 144 is keyed a bevel ring gear 146 which meshes with and is driven by a bevel driving gear 148. By the just-described gear arrangement, the sleeve 144, rotating independently of the rotation of shaft 64, causes operation of the seaming head independently of the rotation of the seaming assembly 118 as a whole.

Centrally located in the bottom of each of the seaming mechanisms 120, and approximately at the level of the seaming-rollers 134, is suitably mounted a seaming chuck 150 (Figs. 1 and 6) which is constrained to turn with the body portion 122 of its related seaming mechanism about the axis of the shaft 64, but it is so mounted that it does not turn relatively to said shaft but, rather, turns with said shaft. The mentioned seaming chuck 150 in each of the seaming mechanisms 120 is directly above and in vertical alignment with the can pocket area within and defined by a semi-pocket 80 and concavities 104 and 106 of underlying can-holding mechanisms of the can-holding rotor 54 and, of course, remains in such alignment at all times during the operation of the machine. The chuck 150 is of the exact shape and size of the recess 42 in a cover to be seamed to a can.

Mounted slidably within the seaming chuck 150 and extending upwardly through and beyond the upper end of main body portion 122 of a related seaming mechanism 120 is a knockout rod 152 having rigidly fixed to its lower end a knockout pad 154 which is of such shape and size that it may freely enter the recess 42 in a cover B and engage central portion 40 of such a cover for a purpose hereinafter explained.

The knockout rod 152 is normally held yieldably in an upper position by suitable means as, for example, by a coil spring which could be compressed between a shoulder on body portion 122 of the related seaming mechanism and a shoulder or collar at a somewhat higher point on said knockout rod, the said arrangement not being illustrated as it is not an essential part of this invention. Thus, by some suitable means, as just explained, the upper end of rod 152, or, more particularly, a button-head 156, or equivalent means such as a cam roller at the upper end of the rod 152, is continuously in engagement with the bottom surface of a cam ring 158 suitably fixed to the under or inner face of top plate 60 of the machine. The mentioned cam surface, in a manner well understood in the art, is formed with high areas so located circumferentially about the cam ring 158 as to cooperate with a knockout rod 152 of each of the seaming mechanisms 120 to cause such rods, and particularly the knockout pads 154 thereon, to operate in a manner hereinafter described.

Between the base 56 and the cam-holding rotor 54 is a rotary can-supporting assembly 160 comprising a can-supporting disc or plate 162, the hub 164 of which is keyed by keys 166 to shaft 64 and is supported in a thrust bearing 168. Toward the outer margin of the plate 162, are circumferentially and equidistantly disposed similar, can-supporting and actuating assemblies 170, each of which comprises a guide sleeve 172, suitably fixed rigidly within openings 174 in the plate 162; and within said sleeve is disposed a vertical, reciprocable slide 176 having a bifurcated lower end between the parts of which is mounted a cam roller 178 on a pin 180. The slide 176 is prevented by any suitable means such as, for example, a tongue and groove arrangement (not shown), from turning in the guide sleeve 172; thus, the pin 180 is at all times radial with respect to the shaft 64. The roller 178 rides upon a cam ring 182 fixed upon the upper face of base 56 and said cam ring is formed with suitable low, high and intervening cam surfaces so arranged or disposed about said cam ring as to cause the slide 176 to rise and fall at proper points in its circular travel with disc 162 to yield operation as hereinafter described.

On the protruding inner end of pin 180 is a second cam roller 184 which, in a part of the circular travel of the slide 176, rides along the underside of an arcuate cam track 186 suitably secured rigidly upon the upper surface of base 56, thereby providing positive means by which the slide 176 may be pulled or forced downwardly approximately from a point following the completion of the seaming of a top on a can to a point prior to the cooperation of the slide 176 with an unfilled can to which the cover is about to be applied.

Associated with each of the slides 176 is a can-supporting table 188 rigidly fixed to the upper end of a vertical guide rod 190 which extends centrally and slidably through internal webs 192, 194 of slide 176. The lower end of rod 190 is formed with a head 196 which abuts the underside of web 194 to limit the upward movement of said rod relatively to the sleeve 176. Toward the upper end of rod 190, below the table 188, is a spring seat element 198 between which and web 192 is compressed a coil spring 200. The spring seat element 198 is held in a downward position in relation to the guide rod 190 to compress said spring by means of a set of adjustable lock nuts 202, the adjustment of which may be changed to modify the expansive force of said spring. A shield may be provided for the upper end of the slide 176 by forming the spring seat element 198 with an outwardly and downwardly extending skirt that extends slidably about the upper end of the sleeve 172.

The tables 188 and, indeed, the entire assemblies 170, are disposed about the plate 162 in vertical alignment with the can pockets provided by the semi-pockets 80 and related concavities 104, 106 in the rotatable can-holding structure of the machine.

The closed can removing apparatus 16 comprises a rotary spider 204 having fingers 205 which engage the trailing sides of closed cans AB at about the time, in the rotation of the seaming turret 10, when the can-holding portions 96, 98 of wing member 88, 90 open after completion of the seaming of a cover upon a can. The apparatus 16 also comprises a semi-circular can slide 206, which receives closed cans from the seaming turret, and is interconnected with a straight can slide 208 from which closed cans move to other apparatus for packing in cartons or for further processing.

The can slides 206 and 208 include side walls or guides 210, 212, which, at the points where closed cans are received, are flared somewhat as at 214, 216, the flared portion 216 being in position to intercept closed cans still in the seaming turret and guide them from the latter into the semi-circular can slide 206.

Insofar as this invention is concerned, the operation of the machine is of interest principally from the time when a can and its cover, moving in or on their respective conveyors 12 and 14, approach vertical alignment with each other, to the time when a closed can passes from the seaming turret 10 to the can slide 206.

The can conveyor 12 is at approximately the same level as a can-supporting table 188 when the latter is at its lowest level corresponding to a low area of the cam surface of cam 182 so that a filled can A moves, without impediment, from the conveyor 12 onto a table 188 approaching station X; meanwhile, a cover B for said can is moving along cover conveyor 14 and, also, is approaching station X.

During a first part of the approach of a can to station X, the wing members 88 and 90 are open, as at the left side of Fig. 3, and the semi-pocket 80 moves apace with the approaching can which clears the open can-holding portion 98 of wing member 90 and enters into a pre-covering position, as shown in broken lines at W in Fig. 3, said wing members, meanwhile, closing to a substantial extent because of the inward course of cam track 115 at that point. At position W, when parts are approximately as shown in Fig. 6, the outwardly flared upper edge of the can A is below the level of the top surfaces of the semi-pocket 80 and of the can-holding portions 96, 98, the interiors of which are rabbeted at their upper margins as at 218, 219 and 220 to receive therewithin the flared upper edge of the can and the flange 38 of the cover to be applied thereto.

At said pre-covering position W, the cover B is above but not in perfect alignment with the can, being still partially held within the grooves 36 in rails 30 and held up above and clear of the can A and of the semi-pocket 80 and wing members 88, 90, by the magnets 52, as may be understood from Fig. 6.

As the can and cover are moved by their respective conveyors, from position W to station X, the cover passes beyond the ends of lower lips 44 of grooves 36, and knockout pad 154 is pushed down by rod 152 coacting with cam 158 to push cover B downwardly, clear of the magnetic influence of magnets 52, and onto the can A. In this downward movement of the cover, the latter goes below the level of the tops of the semi-pocket 80 and the wing members 88 and 90 just before or at about the time that the latter reach their closed positions in response to the coaction of cam roller 113 with cam track 115. Thus, as the cover is pushed down and held firmly upon the can, the semi-pocket 80 and the can-holding

portions 96, 98 of the wing members 88, 90 extend about both the can and its cover to assure that the cover will be applied in perfect vertical alingment with the can and without any distortion of either the can or the cover.

The described application of the cover to the can occurs approximately at station X at which point the cam track 115 is at the innermost part of its course so that the wing members 88, 90 are in their fully closed positions in which, because of the further course of cam track 115, said wings are held during the following rolling-in of the cover's flange 38. By the time the can and cover have reached station X, they have become completely disassociated from their respective conveyors 12 and 14 and are constrained, for a time thereafter, to travel with the seaming turret 10 about the latter's vertical axis.

As the seaming turret moves the can and cover past station X, table 188 is pushed upwardly by a portion of cam ring 182, thereby sliding the can upwardly within semi-pocket 80 and wing portions 96, 98, this being possible because, at that point and throughout the following segment, central plate 58 is cut away as at 221 (Fig. 1); also, because the cam 158 is so shaped as to permit rod 152 and knockout pad 154 to rise while, nevertheless, enabling said pad to continue to hold the cover firmly upon the can during the seaming thereof which is about to occur.

After the can, with its cover held thereon by knockout pad 154, has been pushed upwardly by table 188 after leaving station X, with the seaming chuck 150 seated firmly within the can cover, the seaming-rollers 134, operated in a manner well known in this art, roll in the cover's flange 38 tightly to complete the closing of the can. During this rolling or seaming operation, the chuck 150 serves as a back-up member or anvil to hold the inner portion of flange 38 rigidly while the outer portion of said flange is rolled in. The described rolling operation takes place during rotation of the can and cover with the seaming turret approximately from the point indicated at Y in Fig. 3 to the point marked Z.

Following completion of the seaming-on of the cover, the course of cam track 115 beyond point Z is such as to cause the wing members 88, 90 to open whereupon one of the fingers 205 of can-removing spider pushes the closed can along can slides 206, 208 to a station at which the cans may be packed or further processed.

It may be observed that, because of the slight offsetting of the axes of rotation of the seaming turret 10 and the cover-feed spider 34 (observable by projecting vertical lines from said axes in Figs. 2 and 3), the can A and its intended cover B move in unison in a straight line from position W (Fig. 3) to station X, thereby avoiding spilling of the can's contents until, at said station X and thereafter, the cover is held so tightly upon the can as to foreclose any possibility of such spilling.

It will be realized that the provision of the cam-operated wing members 88, 90 and their cooperation with other parts, as described, impart to the machine such a measure of precision in the can-closing operation as to cause proper and perfectly alinged assembly of the can and its cover and thereby assure a tight closure and avoidance of any deformation of the can or its cover.

Although only a preferred form of this invention is disclosed herein, it should be apparent that the inventive concept may be utilized in various other ways without, however, departing from the invention as set forth in the following claims.

We claim:

1. A machine for closing irregularly shaped cans having major and minor transverse diameters, comprising a can-holding rotor having a peripheral semi-pocket of an internal shape conforming approximately to the shape of substantial external side portions of such a can and an unseamed cover on said can, a pair of interacting, can-and-cover holding wing members pivotally mounted on said rotor adjacent to said semi-pocket and having opposed concavities with shapes which, when said wing members are in closed positions, supplement the shape of said semi-pocket to conform approximately to the shape of a major circumferential portion of such a can and a cover, thereby adapting said semi-pocket and wing members to embrace such a can and cover intimately and hold them in vertical alignment in a desired final shape with their major and minor diameters interaligned and in predetermined angular relation to said rotor, means for rotating said rotor, and cam means coacting with said wing members during such rotation for moving the latter between their opened and closed positions.

2. A can closing machine according to claim 1, portions of said semi-pocket and wing members being shaped to conform to the desired final shape of a can and thereby being adapted to correct deformation of the can.

3. A can closing machine according to claim 1, further including a cover guide adapted to guide a cover to a cover-applying station at one point of the path of movement of said semi-pocket, magnetic means adjacent to said guide at said station for magnetically holding a cover against dropping, and a plunger mounted for rotation with said rotor and adapted to push a cover downwardly, clear of the influence of said magnetic means and onto an underlying can in engagement with said semi-pocket and wing members.

4. A can closing machine according to claim 1, further including a straight-line can guide adapted to guide a can in a straight line tangentially to a cover-applying station adjacent to the path of travel of said semi-pocket, and an arcuate cover guide so positioned as to guide a cover into at least approximate alignment with a can moving along said straight line at a point in advance of said cover-applying station; said cam means being timed to close said wing members upon and interalign said can and cover, upon the can and cover reaching a condition of such approximate alignment.

5. A can closing machine according to claim 4, further including magnetic means, adjacent to the path of such straight-line movement of the can and cover, for magnetically holding the cover above the can, and a vertically disposed plunger constrained to turn with the can-holding rotor in vertical alignment with a can and cover disposed between said semi-pocket and said wing members and adapted, during such straight-line movement of the can and cover, to push the cover downwardly substantially clear of the magnetic influence of said magnetic means and into closing position upon said can.

6. A machine for closing irregularly shaped cans having major and minor transverse diameters, comprising a can-holding rotor, a pair of interacting, can-and-cover holding wing members pivotally mounted on said rotor adjacent to the latter's periphery and having opposed concavities extending outwardly beyond said periphery and shaped to conform substantially to the shapes of opposite side portions of such a can and an unseamed cover thereon and to adapt said members to engage and hold such a can and cover in vertical alignment in a desired final shape with their major and minor diameters interaligned and in predetermined angular relation to said rotor, means for rotating said rotor, and cam means coacting with said wing members during such rotation for moving the latter between their opened and closed positions.

References Cited in the file of this patent

UNITED STATES PATENTS

816,001	Brenzinger	Mar. 27, 1906
1,052,032	Bowers et al.	Feb. 4, 1913
1,111,581	Heybach	Sept. 22, 1914
1,605,565	Rooney	Nov. 2, 1926
2,363,248	Hopkins	Nov. 21, 1944
2,539,427	Jakob	Jan. 30, 1951
2,660,968	Livacich	Dec. 1, 1953