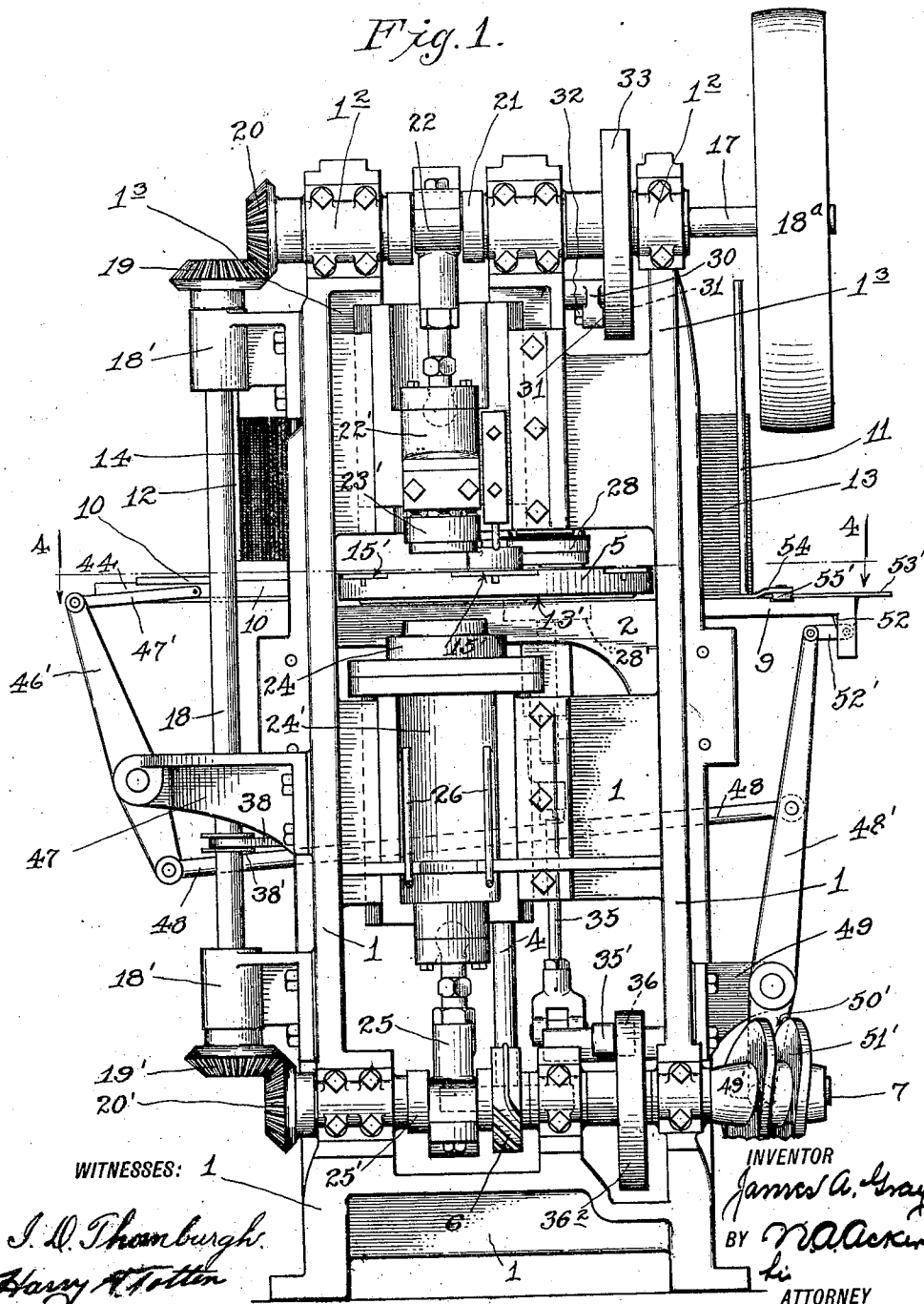


J. A. GRAY.
 APPARATUS FOR CUTTING AND APPLYING TO CAN ENDS RING LINERS.
 APPLICATION FILED MAY 28, 1914.

1,162,234.

Patented Nov. 30, 1915.

7 SHEETS—SHEET 1.



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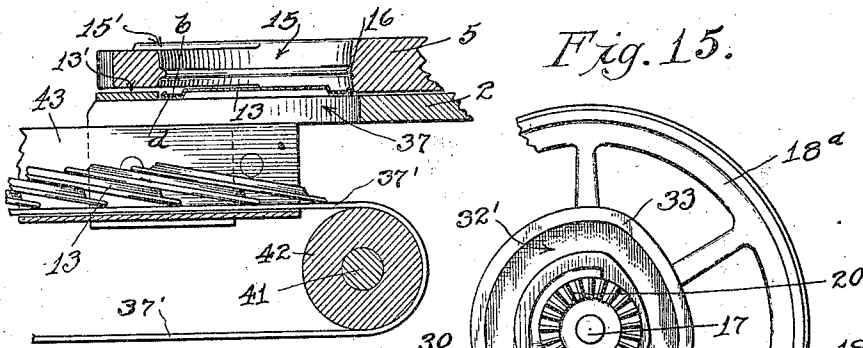


Fig. 15.

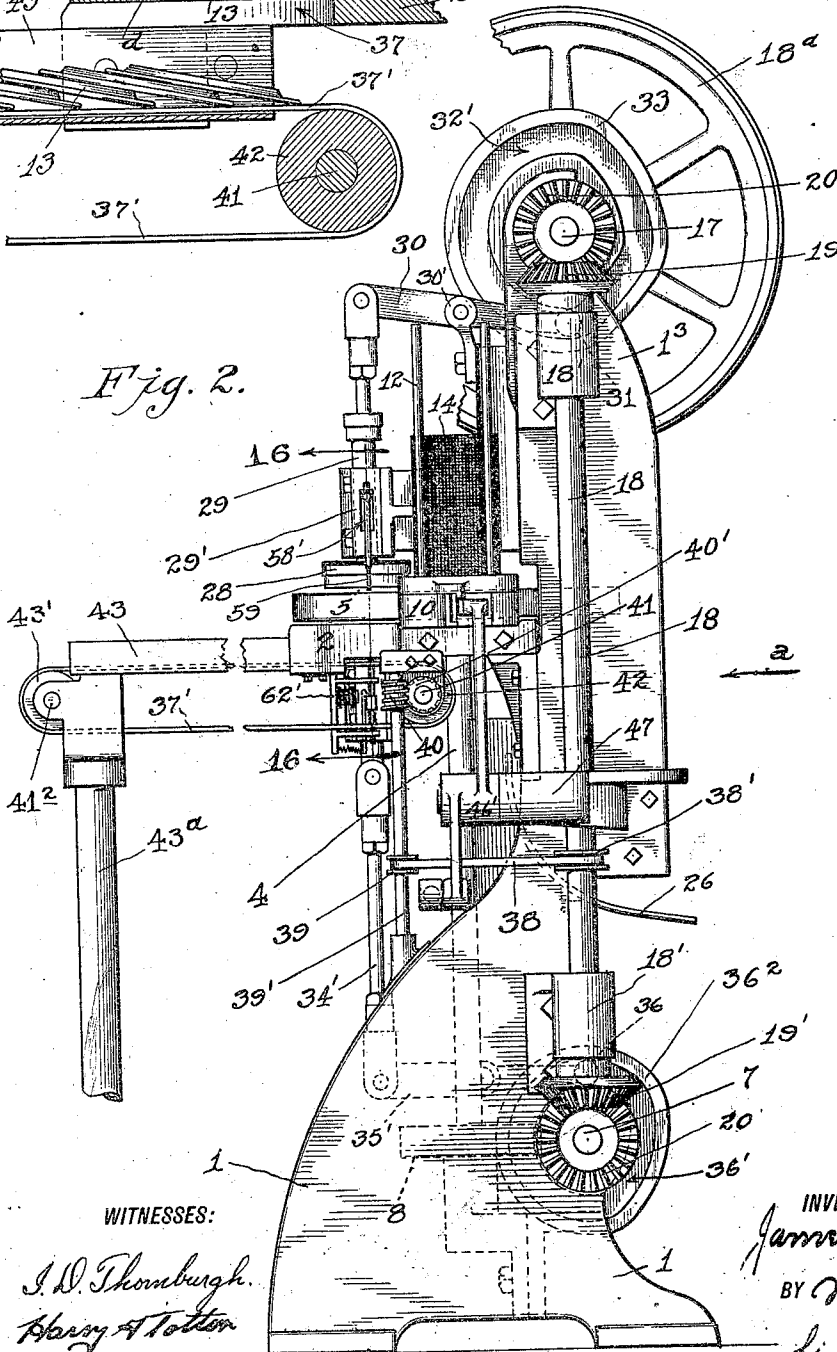


Fig. 2.

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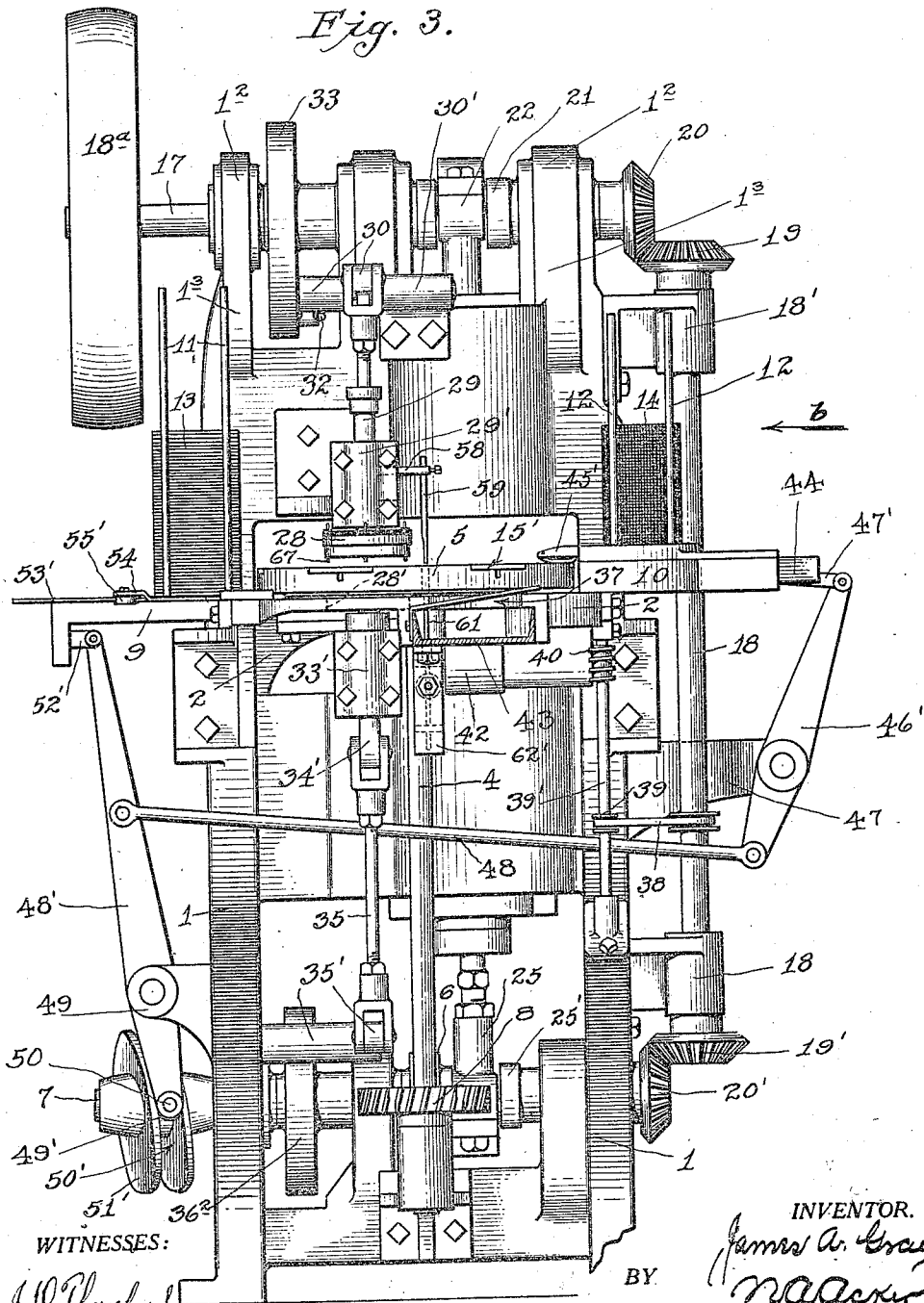
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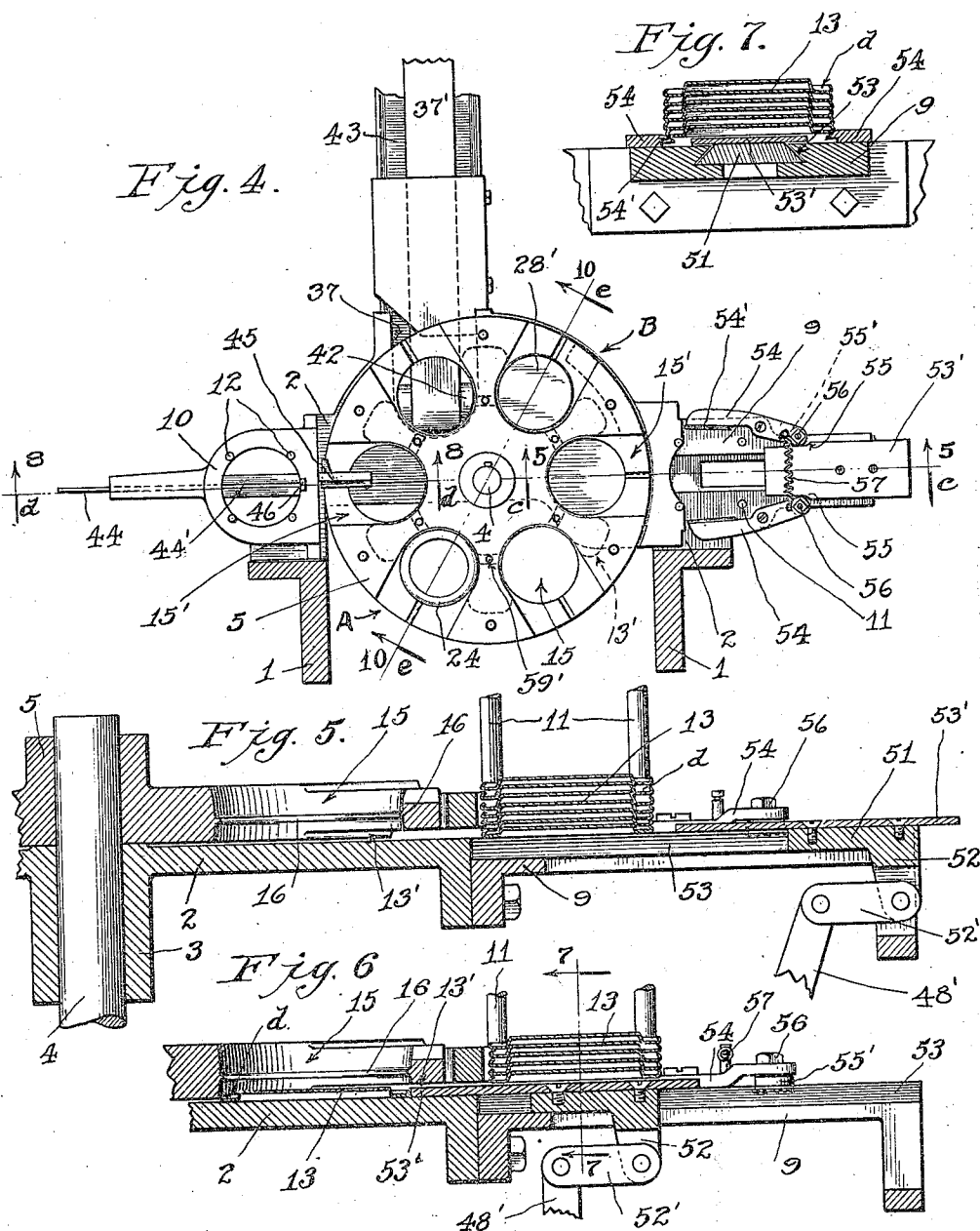


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7 SHEETS—SHEET 4.



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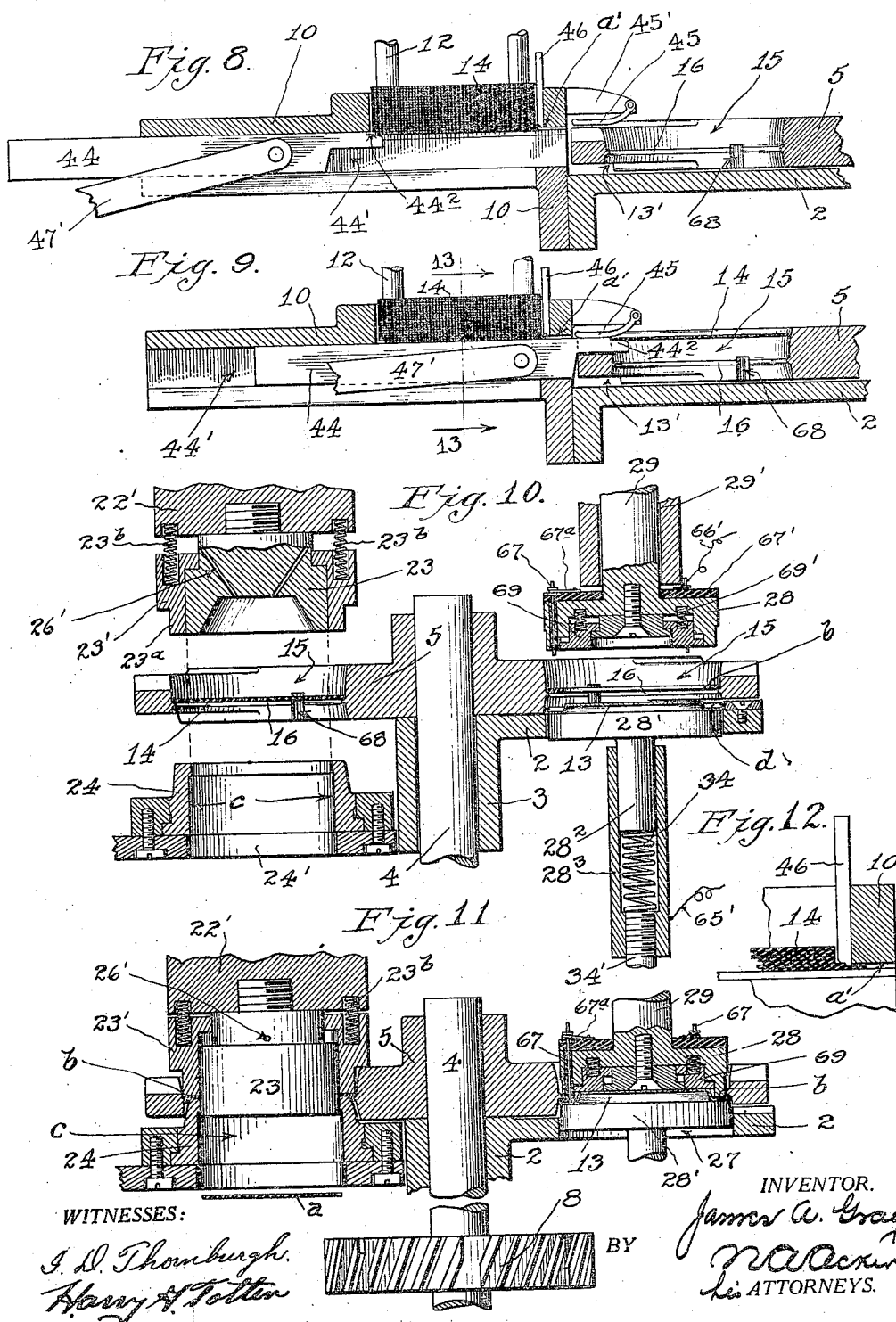
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7 SHEETS—SHEET 5.

1,162,234.



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Patented Nov. 30, 1915.
 7 SHEETS—SHEET 6.

1,162,234.

Fig. 13.

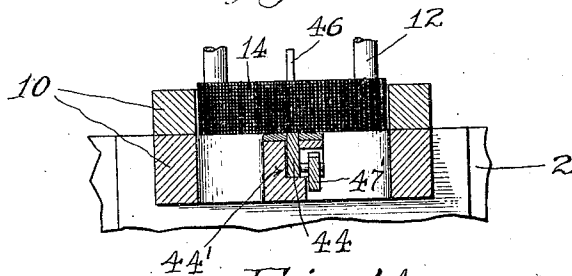
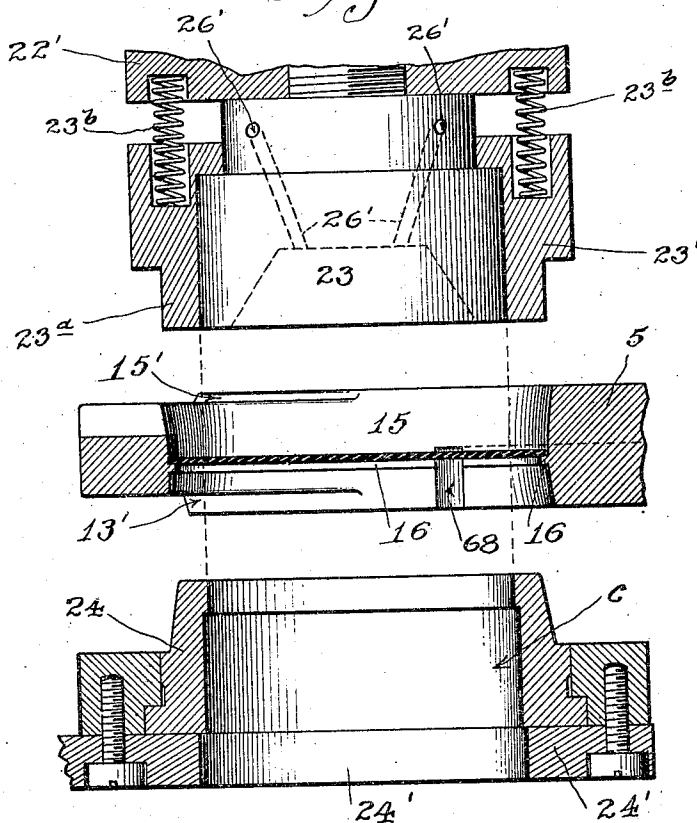


Fig. 14.



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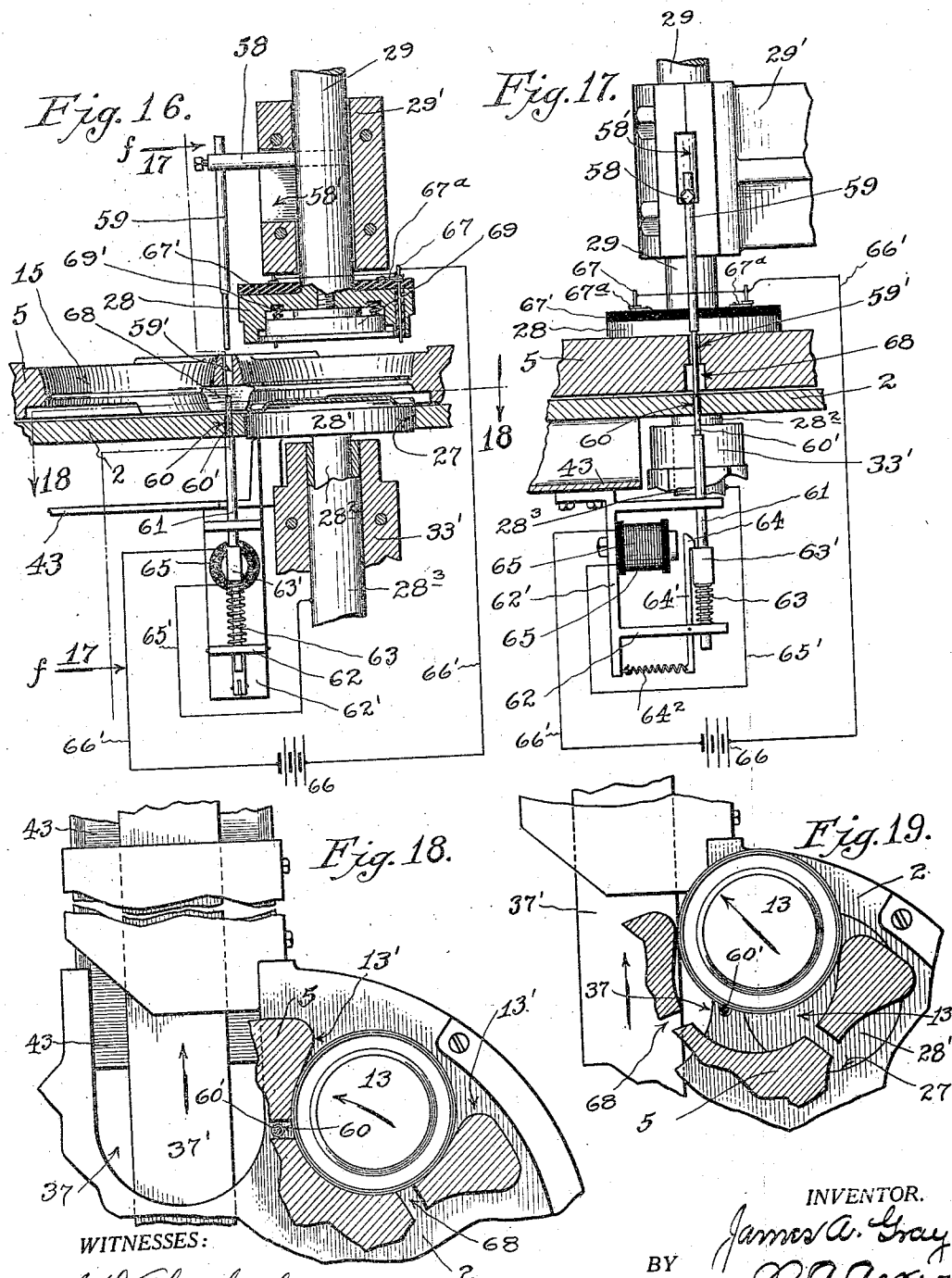
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 APPLICATION FILED MAY 28, 1914.

Patented Nov. 30, 1915.
 7 SHEETS—SHEET 7.

1,162,234.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CUTTING AND APPLYING TO CAN ENDS RING-LINERS.

1,162,234.

Specification of Letters Patent.

Patented Nov. 30, 1915.

Application filed May 28, 1914. Serial No. 841,565.

To all whom it may concern:

Be it known that I, JAMES A. GRAY, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Apparatus for Cutting and Applying to Can Ends Ring-Liners, of which the following is a specification.

The hereinafter described invention relates to an organized apparatus for cutting and applying ring liners to can ends or covers, the same comprising a series of inter-related working instrumentalities, which receive a fibrous disk or disk blank of predetermined diameter, convey the said disk to means for cutting therefrom a core blank and removing the said blank to a suitable place of deposit, thence removing the ring liner so formed by the cutting out of the core blank from the said disk and depositing the same within the line of movement of assembling means, thence positioning within the path of movement of such assembling means a flanged can end or cover to receive the cut ring liner, forcing the ring liner onto the flange of said positioned can end or cover, and finally discharging from within the apparatus the can end or cover with its ring liner applied thereto, the apparatus being automatic in the action of its working parts and the movements of the said parts being so timed as to come into action successively.

Briefly stated, the invention resides in means for cutting and applying ring liners to can ends, which consists in placing the liner material in the form of a disk or blank of proper size and from which the liner ring is to be formed, within an orifice of a carrier member, conveying the disk or blank to a station where co-acting oppositely reciprocating cutting dies enter the said orifice of the conveying member from opposite sides thereof and cut a central core from said blank so as to leave a ring liner within said orifice, thence conveying the cut ring liner to a station where it is positioned immediately above a positioned can end or cover and in alinement with the flange thereof, conveying the alined ring liner and can end or cover to a station where assembling means are situated for forcing the ring liner onto the flange of the held can cover and so applying the cut ring liner, and finally discharging the can end or cover

with its assembled ring liner from within the machine.

It sometimes happens during the working of the apparatus, that for one reason or another, a disk blank fails to be fed at proper time to the carrier member for the delivery of a ring liner to be cut therefrom onto the flange of a can end positioned to receive the same. In such case, it is essential that the discharge of the non-lined can end with the lined can ends be prevented, for, if not, it will be conveyed with the lined ends to the point of discharge therefor and thus provide for the delivery to the can end applying means a defective can end, producing when applied to a filled can, a leaky joint union. To prevent the discharge of any such non-lined end with properly lined can ends, I have provided a simple attachment in connection with the assembling means for the ring liner and can end, the same being of such construction as to come into action for automatically cutting out such a can end in case a cut ring liner is not received to be applied to the flange thereof, thereby providing for a non-discharge of a non-lined can end. Inasmuch as during the operation of the machine the cycle of movement of the working parts takes place irrespective as to whether a disk blank is fed or placed into one of the orifices provided therefor in the carrier member for conveying the same to the cutting dies and assembling means respectively, it is apparent that unless means be provided to prevent the improper discharge of non-lined can ends, that the same will be delivered from the machine with the lined can ends.

The object of the present invention is to dispense with the employment of the complex mechanism heretofore utilized for cutting ring liners from traveling webs and applying the same to can ends, thereby materially simplifying the construction and operation of liner applying mechanism for can ends, and providing a more efficient, positive acting and expeditious apparatus than the ones in use at the present time, while at the same time producing an apparatus wherein the cutting of the ring liners and the applying of the same direct to the flange of can ends takes place within a single machine, and one wherein the carrier member for receiving the disk blanks from a stack of such blanks delivers the same successively

to the action of the cutting dies for severing therefrom a ring liner, conveying the said ring liner to assembling means and serving to convey the can end with its applied liner ring to the discharge station therefor.

So far as I am aware, the hereinafter described invention comprises the first automatically operated machine which permits of blank disks of substantially uniform diameter to be fed from a stack successively to a carrier member, the cutting directly therefrom by a single movement of cutting dies a liner ring, conveying the cut liner ring to an assembling station for the said cut liner and a can end, assembling the said parts by forcing the liner onto the flange of the can end, and finally discharging the lined can end.

To comprehend the present invention reference should be had to the accompanying sheets of drawings which illustrate one form of an apparatus in practical operation for the successful carrying out of the invention, and wherein:—

25 Figure 1 is a front elevation of the apparatus viewed in the direction of the arrow *a*—Fig. 2 of the drawings, disclosing in general the respective positions of the oppositely operating cutting dies, the horizontally rotatable turret or carrier member provided with circumferentially disposed orifices for the reception of disk blanks and can ends and into which orifices the opposing cutting dies move from opposite faces thereof, the vertically disposed holders for stacks of disk blanks and can ends, the feed means for successively delivering at timed intervals the disk blanks and the can ends, the assembling means for forcing the cut ring liner onto the flange of the can end, and the inter-connected power driven means for imparting timed movements to the respective parts. Fig. 2 is a side elevation viewed in the direction of the arrow *b*—Fig. 3 of the drawings, said view illustrating the position of the holder containing a stack of disk blanks, the controlling means for actuating the feed slide for delivering said blanks successively to the intermittently horizontally rotating turret or carrier member for the disk blanks, the position of the assembling means for the cut ring liners and can ends, in part, the electrical means for controlling the discharge of non-lined can ends, and the means for receiving and conveying the discharged lined ends to a suitable place of deposit. Fig. 3 is a rear elevation of the apparatus disclosing the various co-acting parts thereof and the means for imparting motion thereto, said view illustrating more clearly than appears in Fig. 2 of the drawings, the position of the reciprocating means for assembling the cut ring liners and the can ends, the drive means for discharge conveyer, the feed slides for the disk blanks

and the can ends, the connected actuating devices for operating said respective feed slides, and the means for imparting movements to the cutting dies for severing a ring liner from the disk blanks, the assembling means for placing the cut ring liners onto the flange of the can ends, and means for imparting intermittent movement to the horizontally rotatable turret or carrier member for the disk blanks. Fig. 4 is a horizontal sectional view taken on line 4—4 of Fig. 1 of the drawings, viewed in the direction of the arrows, illustrating the horizontally rotatable turret or carrier member provided with vertically disposed spaced orifices for receiving the disk blanks and the can ends, the reciprocating feed means for the delivering disk blanks and the can ends, from the holders containing the same, and the discharge conveyer for receiving and removing the lined can ends. Fig. 5 is a part sectional view taken on line 5—5 Fig. 4 of the drawings, and viewed in the direction of the arrows *c*, disclosing the can end feed means in unoperated position. Fig. 6 is a similar view illustrating the can end feed means in operated position and a can end as having been delivered relative to the horizontally rotatable turret or carrier member for the disk blank and can ends. Fig. 7 is a vertical sectional view taken on line 7—7—Fig. 6 of the drawings, viewed in the direction of the arrows. Fig. 8 is a part sectional view similar to Fig. 5, taken on line 8—8—Fig. 4 of the drawings, and viewed in the direction of the arrows *d*, said view illustrating the reciprocating feed slide for the disk blanks in unoperated position. Fig. 9 is a similar view disclosing the reciprocating feed slide for the disk blanks in operated position and a disk blank positioned relative to the horizontally rotatable turret or carrier member. Fig. 10 is a vertical sectional view taken on line 10—10 of Fig. 4 of the drawings and viewed in the direction of the arrows *e*, said section being through the cutting station for the disk blanks and the assembling station for the cut ring liner and a can end, there being disclosed by said view—a disk blank in position relative to the horizontally rotatable turret or carrier and a can end positioned relative to a cut ring liner for assembling purposes; also in part broken vertical section, the cutting dies for the disk blank and the reciprocating plungers for assembling the cut liner and the can end, said cutting and assembling means being disclosed in an open or unoperated position. Fig. 11 is a view similar to Fig. 10 of the drawings, illustrating the cutting members for the disk blank and the assembling members for the cut ring liner and the can end in closed or operated position. Fig. 12 is an enlarged detail view of the disk blank feed control. Fig. 13 is a vertical sec-

tional view taken on line 13—13 of Fig. 9 of the drawings, viewed in the direction of the arrows, illustrating the disk blank holder with a stack of blanks therein, and the reciprocating slide for successively removing the blanks from the bottom of said holder and delivering the same to the horizontally rotatable turret or carrier member. Fig. 14 is an enlarged detail sectional view of the cutting dies for the disk blank illustrated in open or unoperated position relative to the horizontally rotatable turret or carrier member, a disk blank being disclosed seated within the orifice of said horizontally rotatable member. Fig. 15 (Sheet 2 of the drawings) is a broken detail longitudinal sectional view of the discharge conveyer for the lined can ends, illustrated in connection with a portion of the horizontally rotatable turret or carrier member. Fig. 16 is an enlarged detail sectional view in front elevation, taken on line 16—16 of Fig. 2 of the drawings, illustrating the means for controlling the discharge of the lined can ends and preventing the discharge with the lined ends of an unlined can end, the assembling plunger for the cut ring liner being disclosed in raised position. Fig. 17 is a vertical view in elevation taken on the irregular line 17—17 of Fig. 16 of the drawings, viewed in the direction of the arrows *f*, certain of the parts being shown in section and the assembling plunger for the cut liner being disclosed in lowered position. Fig. 18 is a broken horizontal sectional top plan view of the horizontally rotatable turret or carrier member taken on line 18—18—Fig. 16 of the drawings, disclosing the normal travel of the lined can end toward the discharge conveyer for the ends, said conveyer being illustrated in connection with the horizontally rotatable turret or carrier member and the fixed support over which the lined ends are moved. Fig. 19 is a similar view disclosing a non-lined can end in line of discharge from the supporting table or platform deposited onto the discharge conveyer at a point in advance of the discharge for the lined can end.

Referring more particularly to Figs. 1, 2, 3 and 5, of the drawings, the numeral 1 is used to designate any suitable form of a supporting frame capable of sustaining the working parts of the apparatus, and within which frame is secured a stationary supporting table or disk 2, through a bearing 3 depending therefrom extends a vertically disposed driven shaft 4. To the upper end of this vertical shaft is keyed or otherwise secured a horizontally disposed turret or carrier member 5, which is held a slight distance above the stationary table member 2. An intermittent or step rotation is imparted to the centrally disposed shaft 4 and the horizontally disposed turret or carrier mem-

ber 5 by any suitably driven mechanism, preferably by means of a mutilated worm 6 on a horizontally disposed shaft 7 meshing with a worm gear 8 secured to the lower end of the said vertically disposed shaft 4—Figs. 1, 2 and 3 of the drawings. the said shaft 7 working in suitable bearings located in the base portion of the frame structure 1.

From the sides of the machine frame and in substantial alinement with the upper face of the stationary table 2 and the upper face of the turret or carrier 5 respectively, project the brackets 9 and 10, which support respectively the holder 11 adapted to hold a stack of can ends 13 and the holder 12 adapted to hold a stack of disk blanks 14. The disk blanks 14 are successively delivered from the holder 12 into one of the circumferentially disposed vertical openings 15 of the turret or carrier 5 and onto the circumferentially disposed seat or shoulder 16 of the said opening for receiving and supporting the said disk blank, by the hereinafter described feed mechanism.—Figs. 1, 2, 8, 9 and 10 of the drawings, the said blanks being guided into the positioned opening 15 of the turret or carrier member 5 by means of the lateral guide-way 15' formed in the upper face of the said turret or carrier member there being one guide way 15' which communicates with each of the said openings 15—Fig. 4 of the drawings. The can ends 13 to be lined are successively removed from the holder 11 and positioned onto the stationary carrier 2 immediately beneath one of the series of the vertically disposed circumferential openings 15 of the turret or carrier 5 (Fig. 6 of the drawings) by the hereinafter described feed means, the said can end as fed onto the said table or platform 2 moving within one of the series of lateral guide cut outs 13' formed in the under face of the turret or carrier 5 and which communicate respectively with the circumferentially disposed vertical openings 15 thereof, so that the vertical wall of the flange of the can end 13 will be embraced thereby and held against displacement.

In the present case, rotary motion is imparted to the shaft 7 from the drive shaft 17, working in bearings 12 secured to the extension side pieces 13 of the frame structure 1—Figs. 1, 2 and 3 of the drawings. The said drive shaft 17 is driven by a power belt (not shown) working over a belt pulley 18 secured to one end of the said shaft, and the rotation of the drive shaft 17 is transmitted to the shaft 7 through the medium of the vertically disposed shaft 18 working in guide bearings 18' attached to the outer face of one of the side extension pieces 13 and the frame structure 1. This shaft 18 has secured to its upper and lower ends respectively the pinions 19 and 19', which mesh with the pinions 20 and 20' secured respec-

tively to one end of the shafts 17 and 7, so that the rotary movement of the shaft 17 is transmitted to the shaft 7.

To a crank 21 on the drive shaft 17 is connected through a pitman 22, a vertically reciprocating cross head 22', Fig. 1 of the drawings. This cross head carries at its lower end a ring die punch 23, which is surrounded by a spring held stripper ring 23',—Figs. 10, 11 and 14 of the drawings. The said die punch 23 is of a diameter equal to the interior diameter of the ring liner to be cut from a disk blank 14, and the said punch is in vertical alinement with a ring die 24 secured to a hollow reciprocating cross-head 24'—Figs. 1 and 14 of the drawings, which said cross-head is connected by a pitman 25 to a crank 25' on the shaft 7, the timed movements of the cranks 21 and 25' of the shaft 17 and 7 respectively being such that the ring die punch 23 and the opposing die ring 24 are moved toward and from each other simultaneously. The said reciprocating members as moved together pass from opposite faces into and part way through one of the positioned openings 15 of the rotatable turret or carrier member 5—Fig. 11 of the drawings, the said opening of the carrier member at such time being in vertical alinement with the reciprocating members 23 and 24, during which movement of the said members the rotatable turret or carrier member 5 is held stationary. At this time or step in the operation of the machine, there is positioned within the said opening 15 of the horizontally rotatable turret or carrier member 5, a disk blank 14, the same being supported therein by the circumferentially disposed shoulder or shelf 16. This disk blank is held to its seat by the face of the reduced section 23^a of the stripper ring 23', which first enters the positioned opening 15 of the rotatable turret or carrier member 5 and bears against the upper surface of the positioned disk blank 14, the die ring 24 at which time reaches the completion of its inward stroke and thus clamps the said disk blank circumferentially between the faces of the stripper ring 23' and the said die ring 24. The die ring punch 23 then continuing its downward stroke for a short distance, due to the yield of the springs 23^b for the stripper ring 23', cuts from the held disk 14 a central core piece *a*, leaving a ring liner *b* of proper size held between the face of the lower reduced end of the stripper ring 23' and the upper face of the ring die 24, the said movement of the die punch 23 carrying the cut core piece *a* into the enlarged portion *c* of the ring die 24, from which it falls by gravity into the hollow open cross head 24'—Fig. 11 of the drawings, being deflected therefrom by means of the inclined guide rods 26, Figs. 1 and 2 of the drawings, to a suit-

able place of deposit. On the return or separating stroke of the die punch 23 and the die ring 24, the stripper ring 23' serves to remove or strip the cut ring liner *b* from the punch 23 and leave the same deposited on the circumferential shoulder or shelf 16 of the opening 15 of the horizontally rotatable turret or carrier member 5. To prevent the cut fibrous central core piece *a* of the disk blank 14 adhering to the face of the die punch 23, there is provided in said punch one or more air ducts 26' (Figs. 10, 11 and 14 of the drawings), which said ducts are open to the atmosphere and admit air to break or destroy on the return stroke of the said die punch such air suction or vacuum as may have formed and by so doing causing the cut core piece *a* to fall from the punch 23 into the hollow cross head 24'.

On the die punch 23 with its stripper ring 23' and the ring die 24 moving out of the opening 15, a plurality of step movements are imparted to the horizontally rotatable turret or carrier member 5 to place the said opening thereof with the cut ring liner *b* therein in vertical alinement with reciprocating assembling means for placing the cut ring liner *b* onto the flange *d* of a can end or cover plate 13. These step or intermittent rotations of the said turret or carrier member is accomplished by the part rotation imparted to the vertical shaft 4 through the medium of the hereinbefore described worm gear 8 thereon, meshing with the mutilated worm gear 6 on the driven cross shaft 7, the step rotations so imparted to the turret or carrier member 5 being such as to place the opening 15 with the cut ring liner therein in alinement with a vertical opening 27 in the stationary table 2—Fig. 16 of the drawings, and in alinement with the vertically reciprocating assembling means for placing the cut ring liner *b* onto the flange *d* of a positioned can end or cover plate 13. In the present case, the assembling means comprise opposing vertically reciprocating plungers 28 and 28'—Figs. 2, 3, 10, 11 and 16 of the drawings, which plungers are movable into and out of the opening 15 of the horizontally rotatable turret or carrier member 5 containing the ring liner *b* to be applied. The plunger 28 forces the cut ring liner *b* from its shouldered seat 16 of the opening 15 onto the flange *d* of the positioned can end 13, the stem 29 of such plunger working through a guide 29', (Figs. 10, 11, 16 and 17 of the drawings) and being connected at its upper end to a lever 30—Figs. 1, 2 and 3 of the drawings. This lever 30 is fulcrumed to a bracket 30' and carries at its inner end a roll 31 mounted on a laterally projecting stud 32, the said roll 31 working within an irregular groove 32', cut in one face of a cam 33 secured to the drive shaft 17, so that during the rotary motion of the said

shaft reciprocating motion is imparted through the medium of the lever 30 and the stem 29 to the plunger 28.

The companion plunger 28' lifts the can end 13 from its seat into the opening 15 and holds the same while the cut ring liner *b* is being forced onto the flange *d* thereof, the stem 28² for the plunger 28' seating within a socketed connecting member 28³, which works within a vertically disposed guide sleeve 33'—Figs. 3, 10 and 16 of the drawings.

Within the socketed connecting member 28³ is seated a spring 34 for action against the stem 28² to hold the plunger 28' normally outwardly pressed, and said member 28³ has connected to a stud 34' projecting therefrom, the upper end of a lift or actuating rod 35, which said rod in turn is connected at its lower end to the outer end of a fulcrumed lever 35', shown in dotted lines in Fig. 2 of the drawings. At its inner end the said lever carries a roll 36, which roll is mounted on a stud (not shown) laterally projecting from the inner end portion of the lever 35' and works within an irregular shaped groove 36' formed in one face of a cam 36² secured to the driven shaft 7. By such form of connection the rotary motion of the shaft 7 is transmitted for imparting vertical reciprocating motion to the plunger 28'.

The plunger 28' works through a vertical opening 27 in the fixed table 2 and on its upward movement or stroke lifts the positioned can end 13 into the aligned vertical opening 15 of the horizontally rotatable turret or carrier member 5 until it reaches a position therein immediately beneath the supporting shoulder, shelf or ledge 16 on which rests the positioned cut ring liner *b*. During the upward movement of the plunger 28', the opposing plunger 28 is descending, so that by the time the can end 13 has been lifted into proper position within the opening 15 of the carrier member 5, the plunger 28 is acting on the cut ring liner *b* to force the same from its circumferential seat 16 onto the flange *d* of the can end 13—Figs. 10 and 11 of the drawings.

The lined can ends 13 discharge through a cut out section 37 of the stationary table or platform 2 onto an endless conveyer 37'—Figs. 15, 18 and 19 of the drawings, the said lined can ends being moved from the assembling station B of the machine—Fig. 4 of the drawings, by means of the rotatable turret or carrier member 5. By means of the endless conveyer 37', the lined ends are delivered to a suitable place of deposit, motion being imparted to the said conveyer from the vertically disposed driven shaft 18 through the medium of the drive belt 38 working over the belt pulleys 38' and 39 secured respectively to the shaft 18 and a

short vertical shaft 39'—Figs. 1, 2 and 3 of the drawings. The said vertical shaft 39' has secured to its upper end portion a worm 40, which meshes with a worm pinion 40' on one end of the shaft 41 for the drive roll 42 for the conveyer 37'—Fig. 2 of the drawings, the upper run of said conveyer working within the runway 43 laterally projected from the frame of the machine, and which is supported at its outer end by the standard 43^a—Figs. 2, 4 and 15 of the drawings. It will be understood that the shafts 41 and 41² for the rolls 42 and 43' over which the discharge conveyer 37' moves, work in suitable bearings located at each end portion of the runway 43.

As hereinbefore stated, the disk blanks 14 are successively delivered to the rotatable turret or carrier member 5 from a stack of such disks contained within the holder 12 situated at one side of the machine, while the can ends 13 to be lined are delivered onto the table 2 and within the sphere of a properly positioned orifice 15 of the said turret or carrier 5 from a stack of such ends contained within a holder 11 situated at the opposite side of the machine—Figs. 1 and 3 of the drawings. The disk blanks 14 are successively delivered into a properly positioned orifice 15 of the turret or carrier 5 when at rest with its guide-way 15' in line with the lowermost disk of the stack contained within the holder 12, by means of the reciprocating feed slide 44, which works within a guide-way 44' of the bracket 10. During the inward stroke of the feed slide 44, the shouldered end portion 44² thereof engages with the edge of the lowermost disk 14 of the stack of disk blanks and forces the same inwardly through the guide-way 15' into the positioned opening 15 of the turret or carrier 5—Figs. 8 and 9 of the drawings. During the inward feed movement of the slide 44, the disk blank 14 is held in horizontal position by means of the spring clamp 45, secured to the bracket arm 45' projecting from the bracket 10 and beneath which said spring clamp the disk blank 14 moves as conveyed toward the orifice 15 of the rotatable turret or carrier member 5, and which holds the blank against adhering to the slide on the return or outward stroke thereof. On the return or outward stroke of the feed slide 44, the released disk blank 14 (held against outward movement by the spring clamp 45) seats itself onto the circumferential shoulder 16 of the orifice 15, it being understood that during the inward movement of said feed slide the entire stack of disk blanks within the holder 12 is supported by the feed slide 44, so that on the said feed slide reaching the limit of its outward stroke, the entire stack of disks within the holder 12 is lowered a distance equal to the thickness of the removed disk blank so

as to place the lowermost one of the stack in position for removal on the next inward stroke of the said feed slide. The tendency of the disk blank to curl or bend upwardly as being moved from beneath the stack and by so doing clog against the edge *a'* of the guide-way 44'—Figs. 8 and 9 of the drawings, and for more than a single disk blank to move from beneath the stack of blanks, is overcome by providing a controlling plate 46, which so limits or restricts the guide-way 44' as to permit of only a single disk blank passing therethrough with the inward movement of the feed slide.

Reciprocating timed movement is imparted to the feed slide 44 by means of a lever 46' fulcrumed to a bracket 47 projecting from the frame of the machine. At its upper end this lever is connected to an arm 47' hinged to the feed slide 44 and projecting therefrom,—Figs. 1, 8 and 9 of the drawings. The lower end of the fulcrumed lever 46' is connected by a link rod 48 to an operating lever 48' fulcrumed to a bracket 49 secured to the opposite side of the machine from bracket 47—Fig. 3 of the drawings. At its lower end this lever 48' carries a roll 49' mounted on a stud 50 projecting from the lever 48', so that the said roll will work within an irregular groove 50' of a cam 51' secured to one end of the drive shaft 7. The rotary motion of the said shaft is thus transmitted for imparting reciprocating motion to the feed slide 44 and to the feed slide 51, to a depending extension 52 to which slide 51 the upper end of the fulcrumed lever 48' is connected by a short link 52'—Figs. 1, 5 and 6 of the drawings. The said slide 51 works within a guide-way 53 of the bracket 9—Fig. 7 of the drawings, and to the upper face thereof is attached a feed blade 53', which blade on the inward movement of the slide 51 engages with the flanged edge of the lowermost can end 13 of the stack of ends contained within the holder 11 and moves the same therefrom onto the table or platform 2 to a position immediately beneath and in alinement with the positioned opening 15 of the turret or carrier member 5, the can end as forced inwardly moving within the guide cut out 13' in the under face of the said turret or carrier member leading to the positioned opening 15, the circumferential flange of the can end when so positioned being partly embraced by the wall of such guide cut out.

For the removal of the lowermost end of the stack of can ends 13 within the holder 11 and which end rests on the bracket 9, it is required that the entire stack of ends with the exception of the lowermost or bottom one thereof be raised a slight distance, and for this purpose a pair of spaced spring held cut out arms 54 are fulcrumed to the upper face

of the bracket 9—Figs. 1, 3, 4, 5, 6 and 7 of the drawings. At the inner end of each arm is provided an inwardly projected inclined blade 54', which on said ends of the arms being forced together or swung inwardly, move between the two lowermost ends of the stack of ends within the holder 11 and by so doing raise the entire stack a slight distance above the lowermost end—Fig. 6 of the drawings. These arms are forced together for a lifting of the stack of ends, by means of the inclines 55 on the longitudinally reciprocating feed blade 53'—(Fig. 4 of the drawings), during the inward movement of the slide 51, acting against the rolls 55' mounted on a stud 56 depending from the inner end portion of each fulcrumed arm 54 and by so doing swinging outward or separating such outer end portion of the arms and forcing together or closing the inner end portions thereof, which causes the blades 54' to enter between the lowermost two ends of the stack of ends contained within the holder 11 and raise the entire stack with the exception of the lowermost one thereof. With the continued inward movement of the blade 53', the cut out or released can end is removed from within the holder 11 and moved onto the table or platform 2 into a position immediately beneath the positioned opening 15 of the turret or carrier member 5. On the outward movement of the blade 53' the laterally swinging arms 54 remain in their closed position until the inclines 55 of the said slide are carried beyond the rolls 55', when the tension of the spring 57 draws together the inner end portions of the laterally swinging arms 54, separating the outer portions and withdrawing the blades 54' from beneath the stack of can ends and by so doing lowering the said stack within the holder to position the bottom one thereof for removal on the next inward stroke of the blade 53'.

To prevent a non-lined can end being conveyed to the discharge conveyer 37, there is provided electrically controlled means associated with the assembling means for cutting out or removing the non-lined end from the table or support 2 prior to the same reaching the discharge outlet 37 of the table or platform 2 for a properly lined can end. For this controlling means reference should be had to Figs. 2, 4, 10, 11, 16, 17 and 18 of the drawings. It will be noted that on the stem 29 of the plunger 28 a laterally projecting stud 58 is secured, which stud works within a vertical slotted section 58' formed in the guide 29' for the stem 29 of the plunger 28, and from said stud depends a rod 59 which on the downward movement of the stem 29 works through a guide opening 59' in the turret or carrier 5 adjacent each of the vertical openings 15 thereof. When one of the openings 15 stands in alinement with

the plunger opening 27 of the table or platform 2 for the plunger 28', the said opening 59' is in vertical alinement with a small opening 60 in the said table or platform 2. In this opening 60 is positioned the upper reduced end portion 60' of a spring actuated rod 61, the upper end of said rod being normally flush with the upper face of the table or platform 2. Said rod works through guide arms 62 extended from a bracket 62', and the same is held in tension by a spring 63 on the rod interposed between the lower guide arm 62 and a collar 63' secured on the rod 61. The collar 63' is engaged by a catch end 64 of a rod 64', pivoted to the lower guide arm 62, and the lower end thereof is connected to the bracket 62' by a spring 64², the pressure of which holds the catch end 64 of the rod 64' in engagement with the collar 63' and by so doing holding the rod 61 locked against upward movement by the spring 63.

On the bracket 62' is secured an electromagnet 65, one pole of which is connected by the wire 65' to the stem 28² of the plunger 28', and the opposite pole through the battery 66 is connected by the wire 66' to the spring held contact posts 67 carried by the plunger 28 and insulated therefrom by the insulator 67', the said parts being held down to project a short distance beyond the face of the plunger 28 by means of the leaf springs 67^a.—Fig. 16 of the drawings. The electrical circuit is normally an open one and is not closed to release the rod 61 until the posts 67 are brought into contact with metal and as these posts during the downward movement of the plunger 28 bear onto the cut ring liner *b* seated on the shoulder 16 within the orifice 15 of the turret or carrier 5, (which cut ring liner is of insulating material) there can be no closed contact so long as a cut ring liner is positioned within the orifice 15 brought into vertical alinement with the assembling means for the cut ring liner and the can end. However, in case a cut ring liner is not within the opening 15 for placing onto the flange of a positioned can end 13, then on the downward movement of the plunger 28, the posts 67 come into contact with the flange of the metallic can end and a closed circuit is made, causing the magnet 65 to withdraw the rod or armature 64' to release the catch end 64 thereof from engagement with the collar 63' of the rod 61, the spring 63 then acting to raise the said rod to place its end 60' a slight distance above the face of the table or platform 2 and into the circumferential groove 68 formed in the under face of the turret or carrier 5. In this position the said projected end 60' of the rod 61 acts as a barrier to the movement of the unlined can end 13, against which the unlined end bears during

the rotary movement of the turret or carrier 5, and owing to the resistance offered by the said projecting end of the rod 61 to the movement of the unlined can end 13 and the pressure exerted by the side wall of the recess opening within which the said end rests, the said end is gradually forced outwardly from within the recess 13' toward the outer periphery of the table or platform 2 until it reaches a point beyond the sphere of the can end recess or openings of the rotating turret or carrier 5, the said unlined end 13 being thus prevented from being propelled along the table or platform 2 until it reaches the discharge section or outlet 37 thereof. In this manner the unlined can end is prevented from being discharged with the lined can ends. The unlined can end as forced outwardly from within the sphere of the can head recess will, by reason of its overhanging, either fall from off the table or platform 2 or be shoved therefrom by the outward movement of a succeeding non-lined can end. The moment the plunger 28 begins its upward movement the contacts 67 move away from the can end 13 and the electrical circuit is broken, the tension of the spring 64² swinging the upper end of the armature rod 64' away from the magnet 65 to place the catch end 64 thereof in position for engagement with the collar 63' on the rod 61 being restored to normal position. On the next downward stroke of the plunger 28, the lower end of the rod 59 bears onto the upper end of the rod 61 and forces the said rod downward until the collar 63' thereon is carried below the catch end 64 of the rod 64', when the said catch end through the action of the spring 64² moves into engagement with the collar 63' and holds the rod 61 locked in such position with its upper end flush with or slightly below the upper surface of the table or platform 2, which position is maintained just so long as the electrical circuit is an open one and it will so remain whenever a fibrous cut ring liner is within the positioned opening or orifice 15 to be applied to a can end.

During the applying of the cut ring liner to the flange of a can end, the said end is held to the plunger 28' by means of the spring actuated clamp disk 69 carried by the ring plunger 28, the same giving slightly by reason of the spring 69' under strain of the said ring plunger, and which spring on the return movement of the plungers 28 and 28' serves to force the said clamp outwardly to separate the can end with its assembled ring liner from the face of the plunger 28, while at the same time the spring 34 for the stem 28² of the plunger 28' permits of said plunger giving slightly to any irregularity as to thickness in material.

The action of the respective coöperat-

ing mechanism of the machine is such that a disk blank is first fed from a stack of blanks within the holder 12 into a positioned vertical opening or orifice of the horizontally rotatable turret or carrier member 5, and a step rotation then imparted to the said carrier member to place the orifice with its disk blank positioned therein in alignment with the cutting means situated at the cutting station A. Reciprocating motion is then imparted to the opposing co-acting cutting plunger 23 and 24 for the cutting of a central core piece *a* from the blank and leaving a cut ring liner *b* on the seat 16 of the orifice or opening 15 of the turret or carrier member 5. The said carrier member with the positioned cut ring liner is then advanced by a step or intermittent rotation until the orifice containing the ring liner is in longitudinal alinement with the feed mechanism for the can end, when the lowermost end 13 from a stack of ends contained within the holder 11 is fed onto the stationary table or platform and placed into a position in vertical alinement with the orifice 15 containing the cut ring liner, the flange of the end at such time being partly embraced by the wall of the cut out portion in the under face of the turret or carrier member leading to said orifice. The turret or carrier member with the properly positioned cut ring liner and can end is then advanced to the assembling station B to place the positioned cut ring liner and can end in vertical alinement with the assembling means, motion being imparted to means at such time to cause the plunger 28' to first raise or lift the can end 13 into a position immediately beneath the shouldered seat 16 for the cut ring liner, the plunger 28 then causing the plate 69 to clamp the can end and the ring liner to be forced from its seat onto the flange of the held can end. Thereafter, the assembling means separate and the turret or carrier member moves the lined can end over the surface of the table or platform 2 toward the discharge outlet 37, where the same is deposited onto the conveyer 37' for conveying the discharged lined end toward a suitable place of deposit.

The foregoing is in brief the cycle of action of the apparatus during the cutting and applying of a single ring liner to the flange of a can end, but it will be understood that these actions repeat during the lining of each can end and that a number of ring liners are cut and applied to can ends during one rotation of the horizontally rotatable turret or carrier member.

While the detailed working parts of an apparatus in practical operation at this time have been illustrated and described, still, it is obvious that the various described working parts may be changed and varied without creating a departure from the nature

and scope of the present invention and therefore it is not the wish to be understood as limiting or confining the invention to such details of construction.

Having thus described the invention what is claimed as new and desired to be protected by Letters Patent is:—

1. An organized apparatus for the cutting of ring liners and applying the same to the flange of can ends, the same comprising a rotatable carrier member provided with a series of circumferentially disposed open seats, means for supplying disk blanks to said seats, opposing plungers situated within the path of movement of said carrier and in vertical alinement with a positioned opening thereof, devices for moving said plungers into and out of the positioned opening for the cutting of a ring liner from a disk blank seated therein, devices for supplying a can end in alinement with the cut ring liner seated within said opening, means for assembling the said cut liner ring and can end, and mechanism for imparting a step rotation to the rotatable carrier member.

2. An apparatus for the described purpose, the same comprising a frame structure, a horizontally rotatable carrier member provided with a series of circumferentially vertically disposed open seats, devices for successively supplying disk blanks to said seats, means for cutting a central core from said positioned disks to leave a cut ring liner therein, devices for positioning a can end in alinement with a positioned seat containing a cut ring liner, means for assembling the said ring liner and positioned can end, mechanism for imparting step rotation to the carrier member for successively positioning an open seat thereof with respect to said mentioned instrumentalities, and means for receiving the lined can end.

3. Apparatus for the described purpose, the same comprising a suitable frame structure having a cutting station and an assembling station embraced therein, a rotatable carrier member provided with a series of circumferentially disposed open seats, feed devices for supplying disk blanks to said seats, means situated at the cutting station for removing a central core piece from said blank and leaving a cut ring liner therein, feed devices for positioning a can end in alinement with the seat containing such cut ring liner, means situated at the assembling station for assembling the cut ring liner and can end, spring held means normally out of the path of the rotatable carrier member for removing a non-lined can end prior to the same reaching the discharge means therefor, devices thrown into action by the assembling means for actuating the spring held means on the absence of a cut ring liner from within the ring liner seat during the movement of the assembling means, mechanism for

imparting step rotation to the carrier member and actuating successively the respective mentioned working instrumentalities, and means for receiving the discharged lined can ends.

4. An apparatus for the described purpose, the same comprising a suitable frame structure, a carrier member provided with a series of open holding orifices, a plurality of reciprocating means for supplying disk blanks to said orifices and positioning a can end in alinement therewith, cutting devices interposed between said means for cutting a ring liner from said positioned disks, assembling means situated beyond the can end feed means for assembling the cut ring liner relative to the flange of the positioned can end, and mechanism for imparting step movement to the carrier member for positioning the holding orifices to the mentioned working instrumentalities and for actuating the said instrumentalities for the work required.

5. In an apparatus for the described purpose, the same comprising means for successively feeding disk blanks, a rotatable carrier provided with orifices for receiving said blanks and transporting the same, intermittently acting means for cutting ring liners from said disks, means for feeding can ends into position relative to the orifice of the carrier containing the cut ring liner, coacting means for placing the ring liner onto the flange of the can end, mechanism for imparting intermittent motion to the carrier for transporting the disk blanks from the cutting means to the assembling means, and actuating means for the mentioned feeding, cutting and assembling instrumentalities timed for placing the same into operation during a period of rest of the carrier member.

6. In an apparatus for the described purpose, the combination with a rotatable carrier provided with a plurality of orifices for receiving disk blanks, of means for positioning disk blanks within said orifices, reciprocating devices for cutting a ring liner from said positioned blanks, mechanism for positioning a can end relative to a cut ring liner, and means for applying the said cut ring liner to the flange of the positioned can end.

7. In an apparatus for the described purpose, the combination with a horizontally rotatable carrier provided with a series of circumferentially vertically disposed orifices, instrumentalities associated therewith for automatically and successively positioning disk blanks within said orifices, means for cutting a ring liner from said positioned blanks, devices for positioning a can end relative to the cut ring liner, means for applying the said ring liner to the flange of the can end, and mechanism for imparting

step rotation to the carrier and reciprocating motion to the mentioned instrumentalities.

8. In an apparatus for the described purpose, a horizontally rotatable carrier member provided with a series of circumferentially disposed open seats or orifices, horizontally reciprocating means for delivering disk blanks, successively to said orifices, vertically reciprocating co-acting means for cutting a ring liner from said disk blanks, horizontally reciprocating means for positioning can ends with respect to said cut ring liners, vertically reciprocating co-acting means for applying the cut ring liners to the positioned can ends, and mechanism for imparting step rotation to the horizontally rotatable carrier for positioning the orifices thereof with respect to the mentioned reciprocating means and for actuating said reciprocating means in timed relation to the movement of the carrier.

9. In an apparatus for the described purpose, a horizontally rotatable carrier member for receiving and transporting disk blanks, means for delivering blank disks to said carrier, reciprocating co-acting means for cutting ring liners from said disk blanks, associated instrumentalities for delivering can ends into assembling position and applying the cut ring liners to the flange thereof, and mechanism for imparting step rotation to the said carrier and actuating the mentioned feeding, cutting and assembling instrumentalities in timed relation with respect to the movement of the carrier.

10. In an apparatus for the described purpose, the combination with an intermittently movable carrier provided with a series of vertically disposed orifices, of means for feeding disk blanks successively to said orifices, devices for cutting ring liners from said disks, means for positioning a can end relative to a cut ring liner, and devices for applying the cut ring liner to the flange of a positioned can end.

11. An apparatus for the described purpose, the combination with a rotatable carrier member provided with a series of circumferentially disposed open seats, of means for feeding disk blanks successively to said seats of the carrier, devices for cutting a ring liner from a positioned disk blank, means for positioning a can end with respect to said cut ring liner, devices for applying the ring liner to the flange of the positioned can end, and associated instrumentalities for imparting step rotation to the carrier member and actuating the cutting and assembling means in timed relation with respect to the said carrier.

12. In an apparatus for the described purpose, a rotatable carrier provided with orifices for receiving disk blanks, horizontally reciprocating means for delivering disk

blanks to said orifices, vertically reciprocating means for cutting a ring liner from said disk blanks, and associated instrumentalities for positioning can ends with respect to the cut ring liners and applying the same to the flange of the can ends.

13. In an apparatus for the described purpose, means for feeding disk blanks, a carrier member for receiving said blanks and transporting the same, means for cutting a ring liner from said disks, feed means for can ends, means for applying the cut ring liners to the flange of the can ends, and devices controlled by the movement of said last mentioned means for regulating the position of discharge for the can ends in accordance as to whether the same is lined or non-lined.

14. In an apparatus for the described purpose, the combination with means for applying a cut ring liner to the flange of a positioned can end, of devices associated with said means and thrown into action by the movement thereof for regulating the discharge of the can ends in accordance as to whether the same is a lined or a non-lined end.

15. In an apparatus for the described purpose, the combination with transporting means for disk blanks, of reciprocating means for cutting ring liners from said blanks, and associated means for applying the cut ring liners to the flange of can ends.

16. In an apparatus for the described purpose, a horizontally rotatable carrier for disk blanks, reciprocating means for cutting ring liners from said blanks, associating reciprocating means for applying the cut ring liner to the flange of the can ends, and devices controlling the position of discharge for said ends in accordance as to whether the same is a lined or a non-lined end.

17. In an apparatus for the described purpose, the combination with a carrier member for disk blanks, of means for delivering disk blanks thereto, means for cutting a ring liner from said disks, and associated means for applying the cut ring liners to the flange of can ends.

18. In an apparatus for the described purpose, the combination with means for assembling ring liners and can ends and applying the liners to the flange of said ends, of means for controlling the point of discharge for said ends in accordance as to whether the same are lined or non-lined.

19. In an apparatus for the described purpose, the combination with the assembling means for ring liners and can ends, of a spring actuating discharge control device for the can ends, of electrical means for releasing the control device in accordance as to whether a can end is lined or non-lined, and means for restoring the control device to normal position after a release thereof.

20. In an apparatus for cutting ring liners from disk blanks and applying the same to the flange of can ends, of automatically operated means for varying the discharge position for the can ends in accordance as to whether or not the same have had a ring liner applied thereto.

21. In an apparatus for the described purpose, a rotatable carrier for receiving and transporting disk blanks, means for feeding blanks thereto, means for cutting ring liners from said disks, a holder adapted to contain a stack of can ends, devices for delivering can ends successively from said holder and positioning the same with respect to the cut ring liners, means for assembling the positioned can ends and cut ring liners and applying the latter to the flange of the can ends, and mechanism for imparting intermittent rotation to the carrier and actuating the mentioned feeding and cutting and assembling means in timed relation to the movement of the said carrier.

22. In an apparatus for the described purpose, the combination with a carrier member, of means for feeding disk blanks thereto, means for cutting a ring liner from said disks comprising a reciprocating plunger die and an opposing reciprocating cutting plunger, a stripper for the cut ring liner carried by the cutting plunger, and associated means for assembling can ends relative to the cut ring liner and applying the same to the flange of the can ends.

23. In an apparatus for the described purpose, a carrier member for disk blanks and cut ring liners, a holder adapted to contain a stack of disk blanks, an intermittently movable member for successively feeding blanks from the holder to the carrier member, means for cutting ring liners from said disks, a holder adapted to contain a stack of can ends, means for releasing said ends and feeding the same successively into position relative to the cut ring liners, means for assembling the ends and ring liners and applying the latter to the flange of the can ends, and mechanism for imparting timed movement to the respective mentioned instrumentalities.

24. In an apparatus for the described purpose, a rotatable carrier provided with a series of circumferential open interiorly shouldered passages or orifices, means for feeding and positioning disk blanks in said passages, devices working therein for cutting ring liners from said disk blanks, means for feeding and positioning can ends with respect to said passages of the carrier, co-operating devices for moving the can ends toward the ring liners and applying the liners to the flange of the can ends, and interconnected mechanism for imparting timed movement to the respective mentioned instrumentalities.

25. In an apparatus for the described purpose, the combination with a rotatable carrier provided with a series of circumferential open interiorly shouldered passages, reciprocating means for feeding and positioning disk blanks in said passages, opposing reciprocating devices working within said passages from opposite faces of the carrier for cutting ring liners from said disks, a stripper for the cut ring liner carried by the cutting member of said devices, and means for assembling can ends and the cut ring liners and applying the latter to the flange of the can ends.
26. In an apparatus for the described purpose, the combination with a rotatable carrier provided with a series of circumferentially disposed open interiorly shouldered passages, mechanism for imparting intermittent movement to the carrier for successively positioning the passages thereof to a disk blank feed station, a cutting station, a can end feed station, and an assembling station for the cut ring liners and can ends, reciprocating means located at the said stations for respectively feeding disk blanks to the passages of the carrier, cutting a ring liner therefrom, positioning can ends relative to the ring liners, assembling the liners and can ends and applying the former to the flange of said ends, and interconnected mechanisms for imparting time movement to the said reciprocating means relative to the movement of the carrier.
27. In an apparatus for the described purpose, a rotatable carrier provided with a series of circumferentially disposed open interiorly shouldered passages, a holder adapted to contain a stack of disk blanks, a reciprocating member for removing the lowermost blank from a stack within the holder and delivering the same to a positioned passage of the carrier, means associated with said member to hold the blank against movement on the return stroke of said member, means for cutting a ring liner from said positioned blank, devices for applying the cut liner ring to the flange of a can end, and mechanism for imparting timed movement to the mentioned associated instrumentalities.
28. In an apparatus for the described purpose, the combination with reciprocating means for feeding disk blanks, cooperating members for cutting ring liners therefrom, means for receiving and transporting the disk blanks from the feed means to the cutting means, devices for removing the core piece of the blank, means associated with one of the cutting members for stripping therefrom the cut ring liner, means for assembling the ring liner and a can end and applying the said liner to the flange of the can end, and interconnected mechanism for imparting timed movement to the respective mentioned inter-related instrumentalities.
29. In an apparatus for the described purpose, a rotatable carrier member provided with a series of interiorly shouldered circumferentially disposed passages, devices for placing a disk blank within one of the passages, means for cutting from said disk blank while seated in said passage and removing therefrom a core piece to leave a ring liner seated on the shoulder in the passage, and means for assembling and applying the ring liner thus formed with a can end while the ring liner is within the said passage of the carrier member.
30. In an apparatus for the described purpose, a carrier member provided with interiorly shouldered passages, means for feeding disk blanks successively to said passages, and associated instrumentalities for cutting a ring liner from said positioned disk blank and assembling and applying the cut ring liner to a can end while the liner is within the said passage, and interconnected mechanism for imparting timed movement to said mentioned instrumentalities.
31. In an apparatus for the described purpose, the combination with a carrier means provided with an orifice for receiving a disk blank, of reciprocating instrumentalities for cutting a ring liner from a disk blank while so seated, removing the waste material of the blank and leaving the cut ring liner in its seat, and reciprocating devices for assembling and applying the ring liner to a can end while the ring liner is within the orifice of the carrier means.
32. In an apparatus for the described purpose, the combination with a rotatable carrier member provided with orifices for receiving and holding disk blanks, opposing reciprocating devices for cutting a ring liner from said blanks and removing the waste material while leaving the cut ring liner within its orifice, means for positioning can ends with respect to said orifices, reciprocating assembling devices for moving a can end with respect to the seated ring liner and applying the liner thereto while the liner is within the said orifice, a spring held member carried by one of said assembling devices for forcing the lined can end from within such orifice of the carrier member, and interconnected mechanism for imparting movement to the mentioned instrumentalities.
33. In an apparatus for the described purpose, a rotatable carrier member provided with an interiorly shouldered orifice for the reception of a disk blank, a reciprocating device for feeding disk blanks singly to said orifice, and opposing reciprocating instrumentalities co-acting with said carrier member for cutting a ring liner from said disk

while in the orifice of the carrier member, removing the waste cut from the disk and leaving the cut ring liner seated in said orifice, and a spring actuated device co-acting with one of the cutting instrumentalities for stripping the cut ring liner therefrom.

34. In an apparatus for the described purpose, the combination with a rotatable carrier member provided with an interiorly shouldered passage or orifice for receiving a disk blank, transporting the same to means for cutting a ring liner therefrom and conveying the ring liner seated within said orifice to an assembling station, opposing reciprocating members for moving a can end within said orifice of the carrier and applying the cut ring liner thereto while the ring is within the orifice, and spring held means associated with one of said reciprocating members for forcing the lined can end from within the orifice of the carrier member.

35. In an apparatus for the described purpose, a horizontally rotatable carrier member provided with a series of circumferentially vertically disposed interiorly shouldered orifices or passages, radially extended guide cut-outs in the upper and lower faces of said carrier member intercepting each of the orifices, a fixed plate situated beneath the carrier member and provided with a discharge outlet for lined can ends, a reciprocating device for supplying a disk blank to an orifice of the carrier through the guide cut-outs in the upper face thereof, opposing reciprocating plungers for cutting a ring liner from the disk blank while seated within the orifice of the carrier, removing the waste of the blank and leaving the cut ring liner seated within said orifice, means for feeding a can end through a guide cut-out in the lower face of the carrier into position relative to the cut ring liner, opposing reciprocating plungers for moving the can end into the orifice and applying the cut ring liner thereto while the ring is in the said orifice, a spring held member associated with one of said plungers for forcing the lined can end from within the orifice, and means associated with the carrier member for controlling the discharge of the can ends in accordance as to whether the same is a lined or non-lined end.

36. In an apparatus for the described purpose, the combination with a rotatable carrier member provided with circumferentially disposed interiorly shouldered orifices for the reception of disk blanks, cutting means co-acting with the carrier member for cutting a ring liner from a disk while in an orifice of the carrier, removing the waste and leaving the cut ring liner in said orifice,

assembling means for moving a can end into said orifice and applying the ring liner to the end while the ring liner is in said orifice, devices for forcing the lined can end from within the orifice, and electrically actuated means for controlling the discharge of the can end in accordance as to whether a ring liner has been applied thereto.

37. In an apparatus for the described purpose, the combination with a rotatable turret for transporting a disk blank to cutting instrumentalities and a ring liner cut from said blank to means for applying the same to a can end, of automatically operated means for varying the point of discharge for the can end in accordance as to whether the end to be discharged is a lined or a non-lined end.

38. In an apparatus for the described purpose, the combination with a rotatable carrier member provided with an open interiorly shouldered passage for the reception of a disk blank, of cutting means comprising opposing reciprocating plungers co-acting with said carrier for cutting a ring liner from the blank while seated within said passage, removing the waste material and leaving the cut ring liner within the passage, an air passage extended through one of the plungers, a stripper ring associated with such plunger for stripping the cut ring liner therefrom, and mechanisms for actuating the carrier to transport the seated disk blank to the cutting means and imparting timed reciprocating motion to said means.

39. In an apparatus for the described purpose, the combination with an intermittent movable carrier member provided with a seat for disk blanks, of cutting means for cutting a ring liner from a presented blank while held within its seat of the carrier member, said cutting means comprising opposing reciprocating plungers of different diameters, an air passage extended through the plunger of less diameter, and mechanisms for imparting intermittent rotation to the carrier member and timed reciprocating movement to the said plungers.

40. In can machinery, the combination with mechanism for assembling cut ring liners relative to the flange of can ends, of means associated with said mechanism for controlling the discharge of the ends in accordance as to whether the same are lined or non-lined ends.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES A. GRAY.

Witnesses:

N. A. ACKER,
D. B. RICHARDS.