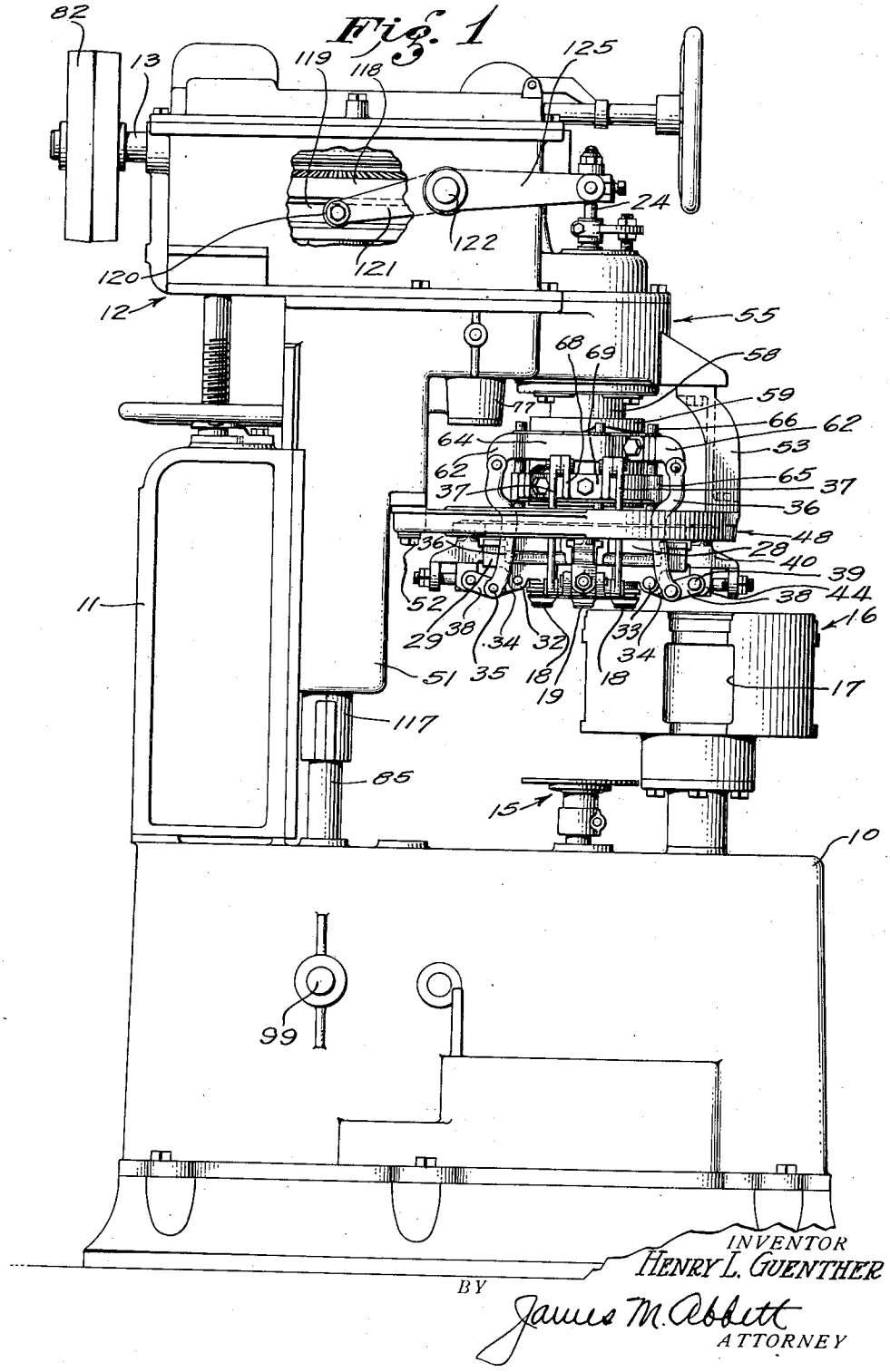
Nov. 24, 1936. H. L. GUENTHER 2,062,024

NONCIRCULAR CAN DOUBLE SEAMING MACHINE

Filed March 28, 1934 5 Sheets-Sheet 1

Fig. 1



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NONCIRCULAR CAN DOUBLE SEAMING MACHINE

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Fig. 2

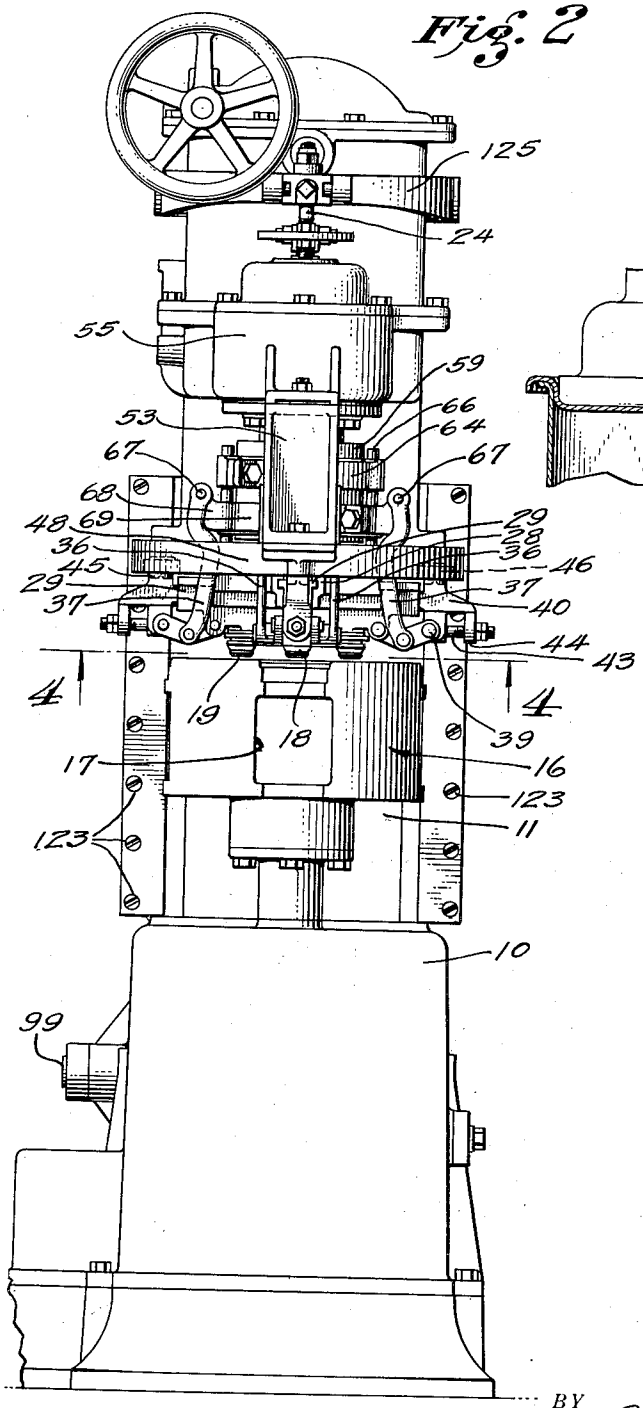
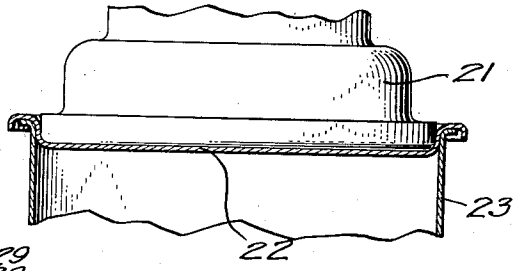


Fig. 7



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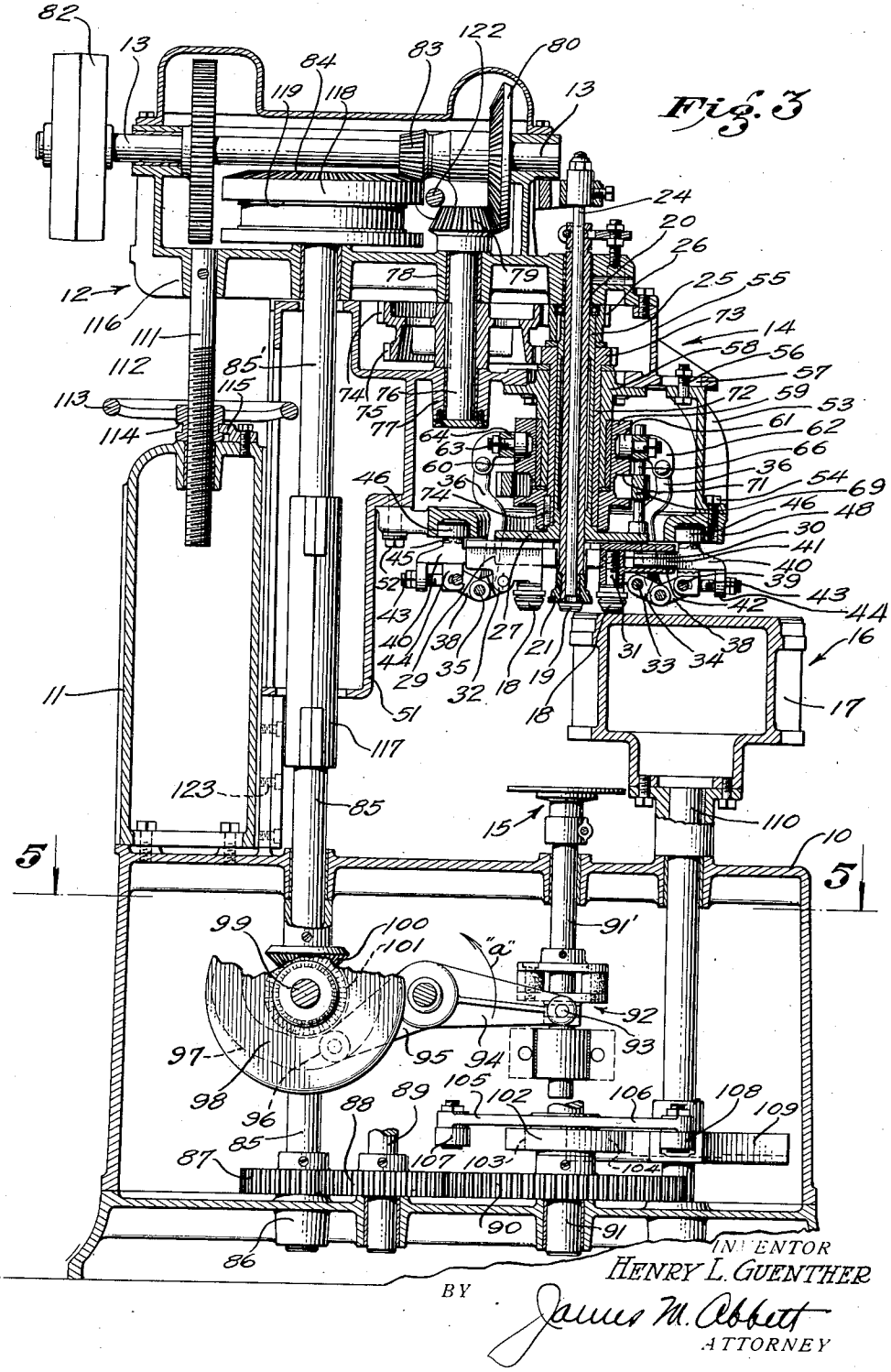
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NONCIRCULAR CAN DOUBLE SEAMING MACHINE

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Fig. 3



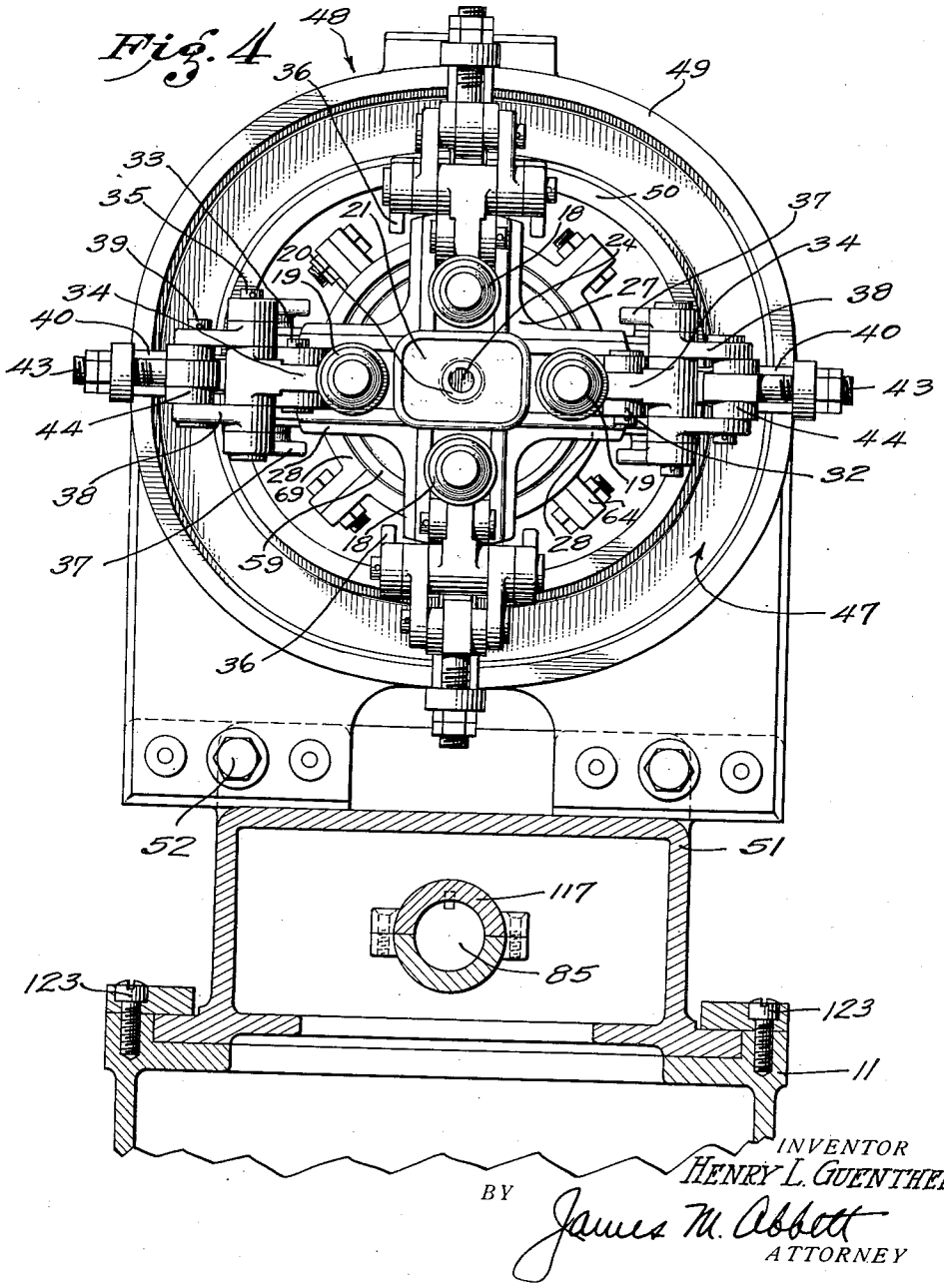
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NONCIRCULAR CAN DOUBLE SEAMING MACHINE

Filed March 28, 1934 5 Sheets-Sheet 4

Fig. 4



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NONCIRCULAR CAN DOUBLE SEAMING MACHINE

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Fig. 5

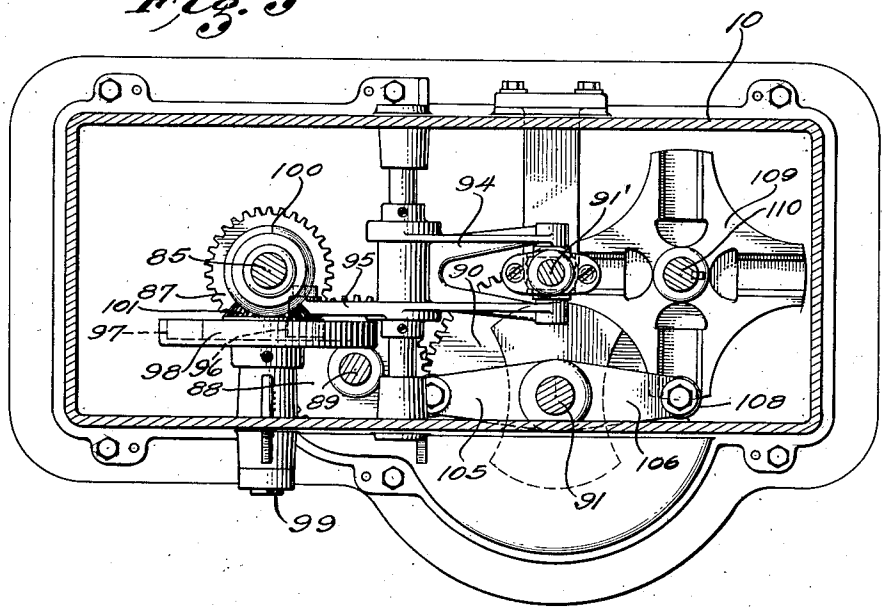
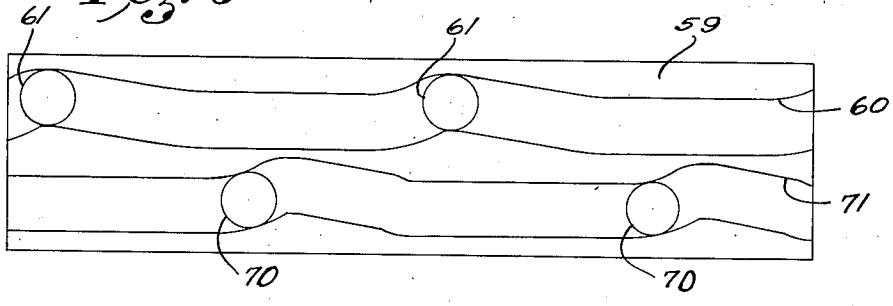


Fig. 6



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Patented Nov. 24, 1936 2,062,024

UNITED STATES PATENT OFFICE

2,062,024

NONCIRCULAR CAN DOUBLE SEAMING MACHINE

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Application March 28, 1934, Serial No. 717,726

11 Claims. (Cl. 113—24)

This invention relates to can making machinery and particularly pertains to a machine for applying sanitary caps to cans of non-circular section. In the canning industry it is common practice to can products in a type of can known as sanitary cans. These cans are characterized by the fact that the bottom and cap are secured in position by an interlocking double seam which hermetically secures the can end to the can body without the use of solder. Cans of this type most commonly employed are cans of circular section due to the fact that seaming rollers may more readily travel around the flange of the can in a circular path of travel in forming the seam. Such machines are entirely automatic in their operation, both as to can and cap feed and as to the various seaming operations. It has been difficult, however, to obtain a double seaming machine which would act automatically in forming a lock seam between the can body and a can end in which the can body is of non-circular section. This is particularly for the reason that it is difficult to provide a seaming roll mechanism which would uniformly roll the seam along a non-circular path of travel and would uniformly work the metal of the seaming parts and close the seam satisfactorily. It is the principal object of the present invention to provide an automatic double seaming machine which will act upon the seam elements of a non-circular can and its cap and which will form a tight and leakproof seam while acting upon said elements.

The present invention contemplates the provision of can feed means and cap feeding means by which cans and caps are delivered to a double seaming station and at which station seaming rolls act automatically to follow a course of a travel agreeing with the configuration of the perimeter of the mouth of the can and to cause the seaming operations to automatically and successively take place in curling the seam members of the can body and the can end and in thereafter applying pressure to form a completely tight lock seam.

The invention is illustrated by way of example in the accompanying drawings in which:

Figure 1 is a view in side elevation showing the double seaming machine with which the present invention is concerned.

Fig. 2 is a view in front elevation showing the machine disclosed in Fig. 1.

Fig. 3 is a view in central vertical section through the machine as seen in side elevation disclosing the drive mechanism for the double seaming head and the can feed.

Fig. 4 is an enlarged view in plan showing the seaming head and its operating mechanism as viewed in a horizontal plane indicated by the line 4—4 of Fig. 2 and in the direction of the arrows associated with that line.

Fig. 5 is a view in transverse section showing the lower driving mechanism as seen on the line 5—5 of Fig. 3.

Fig. 6 is a view in diagram indicating the developed circumferential length of the roller actuating cam.

Fig. 7 is an enlarged fragmentary view in section and elevation showing the manner in which the upper chuck fits within the cap and mouth of a can to be seamed.

Referring more particularly to the drawings 10 indicates the base of a double seaming machine having an upright 11 extending vertically therefrom and providing an overhanging arm 12 for a drive shaft 13. Adjustably mounted with relation to the upright 11 is a seaming head unit 14 which may be vertically moved in a manner to be hereinafter explained to make it possible for the machine to be readily adjusted to accommodate cans of various heighths. The base 10 is provided with a lower chuck 15 to receive a can to be seamed, the can having been delivered to this chuck by a star wheel 16 formed with can receiving recesses or pockets 17 at equally spaced points around its periphery. In vertical alignment with the chuck 15 and disposed in a plane above the upper face of the star wheel 16 is a group of seaming rollers. These rollers as shown in Fig. 4 are in pairs, the rollers of one pair being designated by the numeral 18 and the rollers of the other pair being designated by the numeral 19. The pair of rollers 18 are designed to form the first seaming operation between the can and its cap, which operation is that of curling the marginal flange of a cap over and under the marginal flange of the mouth of the can. The set of rollers 19 are designed to perform the second double seaming operation by which the curled flanges of a can and cap are compressed with relation to each other and the body of the can to form the usual lock double seam of a sanitary can. The double seaming head which includes the two sets of rollers is mounted to rotate upon a vertical axis longitudinally aligned with the rotating axis of the chuck 15 and the central rotating axis of a non-circular can which is supported on the chuck 15 during a double seaming operation. It will be evident that since the peripheral edge of the cap of the can to be acted upon is non-circular that means must be provided to insure that the

seaming rolls will pursue paths of travel substantially agreeing with the contour of the flange of the can and its cap and that the rolls will apply pressure to the flanging members of the can and cap in a manner to insure that metal of the can and cap will be uniformly worked and that the resulting seam will be properly rolled and compressed.

The present invention is particularly concerned with the mechanism of the seaming machine by which the cans will be automatically fed to the machine and will thereafter be acted upon to automatically form a double seam between a can and its cap irrespective of the sectional configuration of the can. The head by which this seaming operation is accomplished comprises a central tubular mandrel **20** at the lower end of which a chuck plate **21** is mounted. This chuck plate is of a peripheral configuration to fit snugly within the depressed central portion of a can cap **22** which cap is intended to seat over the mouth of a can **23**. Vertically reciprocating within the tubular mandrel **20** is a stripper rod **24** by which the can cap may be loosened from the chuck plate **21** after the seaming operation. The tubular mandrel **20** extends downwardly through a sleeve **25** which sleeve is fitted at its upper end with a gear **26** for driving the same. The lower end of the sleeve **25** carries a plate **27** which rotates with it around the axis of the tubular mandrel **20**. A set of guide ways **28** are secured to the under face of this plate and are disposed at right angles to each other and in pairs diametrically disposed with relation to the rotating axis of the seaming head. These guide rails provide T-slots in which T-shaped sliding or roller supporting blocks **29** are mounted for sliding movement along paths of travel radial to the rotating axis of the seaming head. The T-shaped sliding blocks **29** are each formed at their inner ends with a bearing **30** to receive the spindle **31** of one of the seaming rolls **18** and **19**. An ear **32** is formed on each of the sliding blocks **29** and receives a pin **33**. This pin is connected with a shackle **34** which carries a pin **35**. The pins **35** also pass through the lower free ends of the suspending arms **36**. In Fig. 3 it will be seen that there are two sets of suspending arms and that these arms are associated with the mechanism concerned with the set of seaming rollers **18**. By reference to Fig. 2, of the drawings it will be seen that a shorter set of suspending arms **37** is provided which is associated with the seaming mechanism of seaming rolls **19**. The pins **35** connect with outer shackles **38**, the outer ends of which are provided with pivot pins **39** secured to cam roller blocks **40**, which blocks are formed with a square bar **41** reciprocating horizontally in a square opening **42** of the T-shaped blocks **29**. The cam blocks are provided one for each of the T-blocks. Each of the cam blocks carries a shackle bolt **43** to which the shackle pin **39** is pivotally connected. This bolt passes through an ear **44** on the cam block and permits horizontal and longitudinal adjustment of the bolt and thus horizontal adjustment of the pin **39** for a purpose which will be hereinafter described. Each of the cam blocks **40** is provided with a vertical spindle **45** which carries a cam roller **46**. The cam rollers extend in a cam track **47** of a cam structure **48**. The track is defined by parallel rails **49** and **50** which are spaced from each other and between and along which said cam rollers move. The configuration of the track **47** is determined by the sectional contour of the cam and cap and thus insures that the double seaming rollers **18** and **19** will properly contact with the portions of the can and cap to be seamed and will properly curl and finish the seam.

The cam structure **48** is rigidly secured to the machine and is disposed in a horizontal plane above the plane of the seaming rollers. The inner edge of the cam structure is secured to housing member **51** by a cap screw **52** and the outer edge is secured to a bracket **53** by a cap screw **54**. The bracket **53** extends upwardly and is fastened to a gear housing **55** by a bolt **56** which passes through a slotted opening **57** in a lug on the housing **55**. It will be understood that while the same seaming head may be used with cans of different sizes and configuration that it is possible to readily adapt the machine for different sizes and shapes of cans by interchanging the cam track structure **48**, and these may be readily removed by loosening the cap screws **52** and **54** when desired. The housing **55** carries a depending bearing sleeve **58** upon which is mounted an upper cam drum **59**. This drum has a cam groove **60** in its outer face and receives cam rollers **61**, one of which is associated with each of the operating levers **36** by means of a hanger **62**. It will therefore be seen that as the cam rollers **61** travel along the cam groove **60** the rolls will move vertically and will simultaneously raise and lower the suspending arms **36**. These rolls are mounted on pins **63** which are carried directly in a ring member **64** circumscribing the cam **59** and to which the members **62** are rigidly fastened. The ring is formed at its opposite side with bosses **65** through which guide standards **66** extend. These standards are disposed upon opposite sides of the ring and are fixed at their lower ends in plate **27**. In this manner the ring **64** may move vertically without getting out of horizontal alignment, and will at the same time insure that the ring may move bodily around the cam and that the cam rollers **61** will travel along the cam groove **60** in the manner and for a purpose hereinafter set forth.

The supporting levers **37** are mounted upon pivot pins **67** which are carried by arms **68** formed as a part of a ring **69** which is disposed in an encircling position around the lower portion of the cam drum **59**. This ring **69** carries a pair of cam rollers **70** which engage the cam groove **71** which is the second operation double seaming groove. The developed length of the cam **59** is shown in Fig. 6 of the drawings where it will be seen that cam grooves **60** and **71** are each formed with a rise which will cause the levers associated with cam rollers **70** to move vertically and tend to move the shackle members **34** and **38** with relation to each other and toward a straight line. The ring **69** is mounted to move vertically on the standards **66** previously described. Extending downwardly within the bearing sleeve **58** is a gear sleeve **72** carrying a gear **73** which gear sleeve is keyed to the lower end of the cam drum **59** by a key **74**. Through this means a differential driving action will be set up between the cam structure **59** and the seaming roll mechanism whereby while the cam and seaming head are both rotating a seaming action will be taking place to cause the seaming rolls **18** and **19** to move in and out with relation to the can and form the seam.

The driving mechanism for the gears **26** and **73** comprise gears **74** and **75** respectively. These gears are mounted upon a jack shaft **76** carried

in bearings 77 and 78. The upper end of the shaft 76 is provided with a mitre pinion 79 in mesh with a gear 80 on the drive shaft 13. The gear 80 extends horizontally and is driven by suitable means, such as a pulley 82. A pinion 83 is mounted on the drive shaft 13 and is in mesh with a beveled gear 84 carried at the upper end of a timing shaft 85'. This shaft extends vertically and parallel to the longitudinal axis of the seaming head. Its lower end 85 is rotatably supported in a journal 86 formed as a part of the bottom of the base 10. Mounted upon the timing shaft 85 adjacent its lower end is a gear 87 which is in mesh with a gear 88 upon a shaft 89. The gear 88 is in turn in mesh with a gear 90 carried upon a shaft 91. Another shaft 91' is fitted with a lifting member 92 engaged by lifting rollers 93 of an oscillating arm 94. The opposite end of this arm indicated at 95 carries a roller 96 which engages a groove 97 in a disc cam 98. The cam is mounted on a shaft 99 disposed at right angles to the timing shaft 85 and is driven therefrom through gears 100 and 101. By this arrangement the chuck 15 upon which cans are deposited may be elevated in synchronism with the feeding action of the star wheel 16. Mounted upon the shaft 91 is also a cam 102 which is keyed to the shaft and which is formed with a pair of diametrically opposite arcuate recesses 103 and 104. Disposed above the member 102 and extending diametrically across the cam in symmetrical relation to the recesses 103 and 104 are Geneva movement arms 105 and 106 at the ends of which rollers 107 and 108 are mounted. These rollers are adapted to cooperate with a Maltese cam 109 which is rigidly mounted upon a shaft 110 carrying the star wheel 16. By this arrangement the star wheel 16 will be intermittently moved a predetermined increment of its rotation, here designed to be a one-fourth rotation so that the four pockets of the star wheel will be successively brought into alignment with the seaming station and a can delivered thereto. As has previously been stated the interchange of cams in the adjustment of rollers makes it possible to accommodate cans of various sizes and sectional configuration. It may also be necessary to accommodate cans of various heights. Heretofore it has been common practice to provide interchangeable heads or to radially rearrange the parts of the machine and the position of the seaming head to accommodate cans of various heights. In the present instances, however, means have been provided to insure direct adjustment of the parts without requiring their removal or that they be interchanged. This includes an adjusting shaft 111 which is threaded to receive a nut 112 passing to an adjusting wheel 113. The nut is formed with an annular groove 114 engaged by a finger 115. The nut rests directly upon the upper face of the vertical upright 11. The upper end of the shaft 111 is fastened to the transverse frame member 116 of the frame structure 51. The frame structure 51 and the upright 11 are dovetailed together so that vertical adjustment of the structure 11 and the head which is carried with it may be made by manipulation of the hand wheel 113 and the nut 112. The shaft 85—85' is provided intermediate its ends with a splined coupling 117 which permits relative vertical movement of the member 51 with the upright 11 without interrupting the driving action. The member 51 may be set with relation to the upright 11 by adjustment of the set screws 123.

Adjacent the upper end of the shaft 85 is a drum cam 118 having a cam groove 119 to receive a roller 120. The roller 120 is carried at the free end of a rocker arm 121 which is mounted upon a horizontally extending pivot 122. The opposite end of the rocker arm connects with the stripper rod 24 and causes this rod to reciprocate so that the can cap will be stripped from the upper chuck plate at the conclusion of a seaming operation, and in which event it might occur that the seaming rollers would work a portion of metal from the seam over the upper edge of the chuck which would without the aid of the stripper and the downward movement of the member 24 add difficulty to the automatic action of the machine and removal of the can from the seaming station in a continuous sequence of operation.

In operation of the present invention cans 23 with their associated caps are delivered to the lower chuck 15. It is to be understood that the caps may be supplied by any suitable mechanism and that it is not necessary to disclose this mechanism in connection with the present invention. The star wheel 16 is intermittently driven from the shaft 85 through gears 87, 88 and 90, which last gear operates a shaft 91. The shaft 91 continuously rotates and the rollers 108 of the arms 106 carried by this shaft will consecutively engage the radial slots of the Maltese cam 109. This will cause shaft 110 to move one-fourth of a revolution during each engagement of the roller 108 with the groove of the cam 109 and will successively present can pockets 17 into register with a seaming station so that a can will be deposited on the lower chuck 15. When in this position the star wheel 16 will stand stationary and the cam 98 will cause the chuck lifting lever 94 to swing upwardly in the direction of the arrow "a" as indicated in Fig. 3, so that its rollers 93 may engage the block 92 on the chuck shaft 91' and lift the chuck. This lifting movement will continue until the upper chuck plate 21 seats within the recessed top of the can cap 22. It will be understood that the upper chuck 21 does not rotate and that the can will thus be held in a fixed position between the upper and lower chucks and around which can the seaming rollers 18 and 19 may travel. The supporting structure 27 for the seaming rollers as driven through the sleeve 25 and the gear 26 from gear 74 will carry the two sets of rollers around the can and at the same time will cause the blocks 40 to move with the rollers since they are mounted in the slotted guideways 28. As the blocks move around the rotary axis of the seaming head they will move radially of their support due to the fact that the cam rollers 46 will be caused to travel along the cam track 47 and will traverse a path of travel which will insure that the circumferential face of the seaming rollers will conform to and contact with the peripheral surface of the marginal flange of the can cap 22. As has been previously explained, the set of seaming rollers 18 will first contact the flange of the cap and perform the initial seaming operation which curls the flange of the cap and the flange of the mouth of the can into interlocked relation with each other and that following this operation the seaming rollers 19 will act upon the curled seam thus formed to compress the parts of the seam and hermetically seal the can. The sequence of operation of these two sets of rollers is controlled by the cam grooves 60 and 69 and the manner in which these cams are driven from gears 75 through gears 73 to the sleeve 55. It will be understood that due to the difference in gear ratio between gears 74 and 26 and gears 75 and 73 the cylinder cam 59 will move

at a different rate of speed from the speed of rotation of the seaming head and that therefore this difference will cause an action of the cam rollers 61 and 70 which will move the levers 36 and 37 appropriately to produce first and second seaming operations as the rollers 61 and 70 follow the configuration of the cam grooves 60 and 71. The upward movement of the suspending levers 36 and 37 will act upon the toggle links 33 and 38 to move the set of seaming rollers associated therewith inwardly an appropriate distance to exert the desired pressure and curling action upon the flange of the cap and the can. This operation may be readily adjusted by manipulation of the shackle bolt 43 to move the fulcrum pins 39 horizontally and to thereby determine the amount of action to be performed by the seaming rollers. At the conclusion of the seaming operation as performed by both sets of seaming rollers the shaft 89 will operate through the cam 98 to lower the supporting chuck 15 which should in turn lower the seamed can resting thereupon. In order to insure that this does take place the stripper rod 24 is moved downwardly to a lever 125 associated therewith and which in turn is actuated by a suitable cam 119.

In the event that the machine is to be used with cans of another heighth and shape than that for which the machine has been adjusted it is possible to readily readjust the machine by loosening the set screws 123 and then manipulating the hand wheel 113 to raise or lower the entire head of the machine appropriately. If different sizes or shapes of cans are to be seamed the track cam structure 48 may be removed and another substituted therefor which will insure that the seaming rollers 18 and 19 will properly conform to the perimeter of the flange of the particular cap being seamed.

It will thus be seen that the machine here disclosed makes it possible to readily accommodate cans of various heighths and sizes and to rapidly double seam the can and cap together by a complete automatic operation and at high speed.

While I have shown the preferred form of my invention as now known to me, it will be understood that various changes may be made in the combination, construction, and arrangement of parts, by those skilled in the art, without departing from the spirit of the invention as claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A double seaming machine for non-circular cans comprising a pair of chucks between which a can and its cap may be held, a pair of double seaming rol ers designed to act upon diametrically opposite sides of the can, a pair of double seaming rollers designed to operate upon diametrically opposite sides of the can at right angles to the first mentioned set of seaming rollers, means supporting said rollers to cause them to move in a plane around the longitudinal axis of the can, said means providing for independent radial movement of the rollers with relation to said axis, means for causing said rollers to be moved radially in said plane to cause them to contact with and move along the marginal edge of the can cap to be seamed including a single readily removable and interchangeable cam member, and roller blocks coacting with said cam member and having toggle connections with the seaming rollers, and separate means acting in cooperation with said toggle connections to move said rollers radially in said plane to cause said rollers to exert a desired pressure against the marginal flange of the cap and to thereby form a double seam between the can and its cap.

2. A seaming head for non-circular double seaming machines, which comprises an upper chuck adapted to fit in the recessed top of a can cap to be seamed, a rotary spindle disposed in longitudinal alignment with the central axis of said cap and a can to which it is applied, a seaming head supporting structure carried by said rotary spindle and adapted to revolve around said axis, a cylinder cam disposed to rotate around the axis of the rotary spindle, driving means for the spindle and driving means operating at a different speed from that of the spindle for the cylinder cam whereby said spindle and cam will simultaneously rotate around the same axis at different rates of speed, roller supporting blocks slidably mounted upon said seaming head supporting structure and adapted to move in a common plane and radially of the axis thereof, a seaming roller carried by each of said blocks, cam blocks one slidably associated with each of said seaming roller blocks, cam rollers one for each of the cam blocks, a cam fixed in an encircling position around the axis of the seaming head and carrying a track along which said cam rollers move and by which the respective cam blocks are shifted radially of the axis of the seaming head, link members articulately connected, a cam block with a roller supporting block whereby radial movement of a cam block will produce radial movement of a corresponding roller supporting block and will cause the rollers to conform to the flange of a can cap being seamed thereby, and means actuated by said cylinder cam whereby an additional movement is imposed upon the links connecting each cam block and the supporting roller block to increase the movement of a supporting roller block with relation to the movement of the corresponding cam block to form and complete a seam between the aforesaid can and cap.

3. A double seaming machine for non-circular cans comprising a pair of chucks between which a can and its cap may be held, a pair of double seaming rollers designed to act upon diametrically opposite sides of the can, a pair of double seaming rollers designed to operate upon diametrically opposite sides of the can at right angles to the first mentioned set of seaming rollers, means supporting said rollers to cause them to move in a plane around the longitudinal axis of the can and providing for independent radial movement of the rollers with relation to said axis, means for causing said rollers to be positively moved radially in a plane to cause them to contact with and move along the marginal edge of the can cap to be seamed including a single cam member attached to the head and roller blocks coacting with said cam member and having toggle connections with the seaming rollers, and cam controlled suspending arms in conjunction with and controlling said toggle connections to move said rollers relative to the roller blocks radially in their plane of movement whereby to cause the rollers to exert a desired pressure against the marginal flange of the cap.

4. A can double seaming machine comprising a base, an upright carried by the base, can feeding and supporting means associated with and upstanding from the base, a double seaming head having a drive mechanism, a housing member depending from the head and having a vertically sliding connection with the said upright, a shaft

connecting the drive mechanism of the head with the can supporting means of the base to insure their synchronism in operation, said shaft extending through the housing member of the head and in sections having a splined coupling, and means depending from the head and having movable connection with and supported upon said upright for adjusting the housing member vertically with respect to the upright to thus accommodate cans of different heights between the can supporting means of the base and the seaming head.

5. A can double seaming machine comprising a base, a rigid upright carried by the base and having a vertically extending guide way therealong, a housing structure interlocking with said guide way and vertically slidable with relation thereto, a can double seaming head supported by the housing structure, a can receiving member mounted with relation to the base, power means carried by the housing structure to drive the seaming head and to operate the can support, extensible power transmission means from the power means to the can supporting means within the base, and adjustable means for setting the housing structure with relation to the upright whereby cans of different heights may be accommodated.

6. A can double seaming machine comprising a base, a rigid upright carried by the base and having a vertically extending guide way therealong, a housing structure interlocking with said guide way and vertically slidable with relation thereto, a can double seaming head supported by the housing structure, a can receiving member mounted with relation to the base, power means carried by the housing structure to drive the seaming head and to operate the can support, extensible power transmission means from the power means to the can supporting means within the base, and adjustable means for setting the housing structure with relation to the upright whereby cans of different heights may be accommodated, said adjusting means comprising a threaded shaft extending downwardly from an overhanging portion of the housing structure and into a bearing of the upright and carrying an operating nut acting against the upright to advance and retract the threaded shaft as it rotates.

7. A can double seaming machine comprising a base, a rigid upright fastened thereto and extending vertically from the upper face thereof, said upright being formed with a vertical guide way, a housing structure having a portion interengaging with the guide way whereby the housing structure may slide vertically with relation thereto, said housing structure having overhanging parts at its upper end, a double seaming head carried by one of said overhanging parts and normally terminating in a horizontal plane lower than the upper end of the guide way, a threaded shaft extending downwardly from the other overhanging portion of the housing structure and into an opening of the upright, and an adjusting nut by which said threaded shaft may be vertically adjusted to cause the housing structure with the seaming head to be raised and lowered to accommodate cans of different heights.

8. A can double seaming machine comprising a base, a rigid upright fastened thereto and extending vertically from the upper face thereof, said upright being formed with a vertical guide way, a housing structure having a portion interengaging with the guide way whereby the housing structure may slide vertically with relation thereto, said housing structure having overhanging parts at its upper end, a double seaming head carried by one of said overhanging parts and normally terminating in a horizontal plane lower than the upper end of the guide way, a threaded shaft extending downwardly from the other overhanging portion of the housing structure and into an opening of the upright, an adjusting nut by which said threaded shaft may be vertically adjusted to cause the housing structure with the seaming head to be raised and lowered to accommodate cans of different heights, driving means carried in the housing structure, driven means carried in the base, and an extensible shaft connecting said driving and driven means whereby power will be transmitted irrespective of the adjustment of the housing structure with relation to the upright and the base.

9. In a can double seaming machine for noncircular cans a double seaming head comprising a driving sleeve, means driving the same at a predetermined rate of speed, a plate carried at the lower end thereof and being formed with four radial ways spaced equidistant around the axis thereof, a roller block radially slidable in each of said ways, a seaming roller carried adjacent the inner ends of each of said blocks, a cam block slidably mounted within each of the roller blocks for radial movement, a fixed cam having a configuration substantially agreeing in shape with that of the perimeter of the can to be seamed, a cam carried by each of said cam blocks and adapted to travel along said fixed cam, pairs of toggle links, one pair being interposed between the complementary cam block and roller block whereby said complementary blocks may move radially in unison as travelling around the radial axis of the seaming head, a sleeve cam through which the driving sleeve extends, said cam being formed with cam grooves in its outer face, rollers in said cam grooves, levers pivotally mounted to carry the rollers and to move with the seaming head as it rotates, and connections between the lower ends of said levers and the intermediate pivot of the toggle links whereby movement of the levers as produced by the rollers in the grooves of the sleeve cam will act to move the elements of the corresponding toggle links to impart an additional movement to the roller blocks than that imparted by movement of the complementary cam block.

10. In a can double seaming machine for noncircular cans a double seaming head comprising a driving sleeve, means driving the same at a predetermined rate of speed, a plate carried at the lower end thereof and being formed with four radial ways spaced equidistant around the axis thereof, a roller block radially slidable in each of said ways, a seaming roller carried adjacent the inner ends of each of said blocks, a cam block slidably mounted within each of the roller blocks for radial movement, a fixed cam having a configuration substantially agreeing in shape with that of the perimeter of the can to be seamed, a cam carried by each of said cam blocks and adapted to travel along said fixed cam, pairs of toggle links, one pair being interposed between the complementary cam block and roller block whereby said complementary blocks may move radially in unison as travelling around the radial axis of the seaming head, a sleeve cam through which the driving sleeve extends, said cam being formed with cam grooves in its outer face, rollers in said cam grooves, levers pivotally mounted to carry the rollers and to move with

the seaming head as it rotates, connections between the lower ends of said levers and the intermediate pivot of the toggle links whereby movement of the levers as produced by the rollers in the grooves of the sleeve cam will act to move the elements of the corresponding toggle links to impart an additional movement to the roller blocks than that imparted by movement of the complementary cam block, and separate means for driving the cam sleeve at a rate of speed differential to that of the driving sleeve of the seaming head whereby the mechanism effected by the rotary sleeve cam and the fixed guide cam will act in cooperation to cause the seaming rollers to follow the contour of the mouth of the can and to perform a seaming operation between the non-circular can and its cap.

11. In a can double seaming machine for non-circular cans a double seaming head comprising a driving sleeve, means driving the same at a predetermined rate of speed, a plate carried at the lower end thereof and being formed with four radial ways spaced equidistant around the axis thereof, a roller block radially slidable in each of said ways, a seaming roller carried adjacent the inner ends of each of said blocks, a cam block slidably mounted within each of the roller blocks for radial movement, a fixed cam having a configuration substantially agreeing in shape with that of the perimeter of the can to be seamed, a cam carried by each of said cam blocks and adapted to travel along said fixed cam, pairs of toggle links, one pair being interposed between the complementary cam block and roller block whereby said complementary blocks may move radially in unison as travelling around the radial axis of the seaming head, a sleeve cam through which the driving sleeve extends, said cam being formed with cam grooves in its outer face, rollers in said cam grooves, levers pivotally mounted to carry the rollers and to move with the seaming head as it rotates, connections between the lower ends of said levers and the intermediate pivot of the toggle links whereby movement of the levers as produced by the rollers in the grooves of the sleeve cam will act to move the elements of the corresponding toggle links to impart an additional movement to the roller blocks than that imparted by movement of the complementary cam block, separate means for driving the cam sleeve at a rate of speed differential to that of the driving sleeve of the seaming head whereby the mechanism effected by the rotary sleeve cam and the fixed guide cam will act in cooperation to cause the seaming rollers to follow the contour of the mouth of the can and to perform a seaming operation between the non-circular can and its cap, and means for individually adjusting pairs of toggle links with relation to the complementary cam and roller blocks whereby the action of the seaming rollers will be varied.

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