This invention relates to seaming machines, and more particularly to can double-seaming machines.

In the canning industry, particularly in canning of perishable food products, such as fresh fruit, vegetables, fish, etc., it is essential to seal the cans as soon as possible after the product is processed and packed. In some instances, a few hours' delay in sealing the cans causes the spoilage and total loss of the product. Therefore, successful canning is greatly dependent on the efficiency of the closing machine.

The output of a closing machine is limited by the ability in handling cans filled with liquid without spilling, as any spilled liquid is a waste and very objectionable in the canning of syrups, fruit juices, or condensed milk; the sticky liquid adhering to the outside of the can, requiring additional operations to clean the can after closing.

There are two types of closing machines in general use, the intermittent motion feed, and continuous motion feed machines. In the intermittent motion feed machines, the cans are fed closely spaced into the machine and the necessary time for seaming is provided by the dwell of the feed. This type machine is of very low capacity, as it is impossible to operate it at high speed without spilling.

In the continuous feed closing machine, the cans are gradually separated to a considerable distance, this wide can spacing being necessary to accommodate the location of seaming heads, as on this type of closing machine, the seaming heads are located in a circle that revolves, as an integral part of the can feeding mechanism. This type of machine is superior to the intermittent motion machine, but it has its limitations due to the necessity of wide can spacing. In spacing cans filled with liquid, it is very difficult to accelerate the can velocity without spilling, as even a slight jerk is sufficient to agitate the liquid and cause it to flow over. On present machines, the cans are generally delivered to the seaming station by means of prongs or turrets simply by dragging the can on a stationary support. The friction between the moving can and stationary support vibrates the can, causing agitation of the liquid and consequently the spill.

The seaming station of a closing machine is the most important mechanism, and it must always function perfectly as the least defect due to wear or accident, ties up the entire canning operation. This is particularly true with present machines in use, as the construction is such that it is impossible to eliminate one or more seaming stations and continue the operation of the machine. Therefore, every canner whose output is limited to the capacity of one machine is obliged to carry another machine in reserve for emergency.

My invention relates in general to multi-station double-seaming machines and, while from certain aspects has more particular application to double-seaming the filled cans, it will be manifest as the invention is better understood that from other aspects it has valuable uses in the can factory for seaming of the can bottoms as well.

A principal object of my invention is the provision of a wholly automatic, highly efficient double-seaming machine for circular cans, and of new and improved construction.

Another highly important object of my invention is the provision of an apparatus of this character which will insure the continued operation of the machine when one or more seaming stations become disabled.

Another important object of the invention is to provide a novel electro-magnetic can spacing and can retaining means while the cans are being carried to seaming stations. Another object of the invention is the provision of a machine of the kind which, by changing of a small number of parts, may be adapted for the seaming of cans of varying height and diameter.

In the accompanying drawings, I have shown several embodiments of the invention. In this showing:

Figure 1 is a central vertical sectional view, Figure 2 is a horizontal sectional view on line 2—2 of Figure 1, Figure 3 is a diagrammatic illustration of a modified form of the invention, Figure 4 is an enlarged view of the seaming head in cross section on line 4—4 of Figure 7, Figure 5 is a diagrammatic plan view of seaming roll adjusting sleeves, Figure 6 is a diagrammatic plan view of the seaming links and arms, Figure 7 is a horizontal sectional view on line 7—7 of Figure 4.
Figure 8 is a detail perspective view of a pair of knives forming a part of the cover feeding mechanism.

Figure 9 is a vertical sectional view of the cover marker.

Figure 10 is a detail sectional view on line 10—10 of Figure 2.

Figure 11 is a vertical sectional view along the center of the path of the cover at right angles to section line 10—10.

Figure 12 is a detail view of a member forming a part of the can lifting mechanism.

Figure 13 is a vertical sectional view in substantially the same plane as Figure 1, showing part of the mechanism on an enlarged scale, and,

Figures 14, 15, and 16 are sectional details indicating the operation of the seaming rolls in forming the double seam.

Reverting to Figure 2 of the drawings, there is provided a number of seaming stations 1, 2, and 3, arranged concentric to the center of the machine and so positioned with respect to a revolving turret 4 that each seaming station makes one complete revolution to a quarter turn of the turret. The seaming stations are provided with pockets 5, 6, and 7, of a proper size to receive the can and the turret is provided with a number of pockets 8.

In this instance, twelve pockets are provided on the turret. As the seaming stations make a complete revolution to each quarter revolution of the turret, the pockets 5, 6, and 7 are aligned with every fourth pocket of the turret.

Cans 9 are arranged in the pockets of the turret, and are adapted to be received in the pockets 5, 6, and 7. Covers 10 are brought into vertical alinement with the can by means to be described. As shown, the can and cover are spaced a considerable distance from each other (see Figure 1), when the can first enters the seaming station. A pressing pad 11 is arranged above the cover, and a rod 12 is secured to this pad. This rod engages a stationary cam 13 (see Figures 1 and 13) to assemble a can and cover, as indicated in Figure 4 of the drawings. After this action has taken place, the can and cover are adapted to be lifted by a lifting member 14 arranged beneath the seaming station. A tubular lever 15 is connected to the lifting member and a lever 16 (see Figure 12) is pivotally mounted on a suitable support 17 and is provided with a forked end 18 having pins 19 engaging the opposite sides of the lever. A cam 20 is provided with a groove 21 adapted to receive a roller 22, carried by the pivoted lever 16 to raise the lifting member and the can. This raises the can and cover into a position immediately below a sealing chuck 23. A hollow shaft 24 is arranged within the tubular lever 15 and this shaft is provided with a pinion 25, keyed thereto. A spindle 26 is arranged within the hollow shaft and keyed thereto. The seaming station continuously revolves on the axis of this spindle. The lower portion of the seaming station is driven through the pinion 25 from a gear 27 and the upper portion of the seaming station is driven through a pinion 28 from a central gear 29. After the can has been raised to a position immediately below the chuck 23, the seaming operation is performed. The performance of the seaming operation takes place during the greater part of the revolution of the seaming station on its axis. When the lifter starts downwardly with a finished can, the can is ejected by a revolving ejector arm 30, (see Figure 2) and the station is ready to repeat the operation on the next can.

The cans are delivered from a suitable conveyor (not shown) to a rotating disk 31 (see Figures 1 and 2) in unrestricted position as regards spacing from can to can. It is, therefore, necessary to space and accelerate the can velocity before delivering the cans to the turret 4. A selecting disk 32 is arranged between the disk 31 and the turret. A plurality of electromagnets 33 equal in number to the number of pockets on the turret, are arranged around the periphery of the selecting disk. Vanes 34 are arranged beneath the disk substantially in horizontal alinement with the feeding disk 31 (see Figure 1). The selecting mechanism is driven at the same speed as the turret. Each of the vanes 34 is provided with a lug 35, adapted to engage the edge of the can. The vanes 34 are pivotally mounted on a turn-table 36. As shown, the turn-table is provided with bearings 37 adapted to receive pins 38 carried by the vanes. An arm 39 is secured to each of these pins and these arms ride in a cam groove formed in a stationary disk 40. The selecting disk 32 is eccentrically mounted and is driven through a sliding coupling 41.

As shown in Figure 2 of the drawings, the feeding disk 31 delivers the cans to the position indicated by the reference numerals 42 and 43, and the cans are then attracted by the magnets 33 of the selecting disk 32 and follow the path of this disk. If the can is delivered too late to be attracted by the magnet, it remains on the feeding disk 31, as indicated at 44, and returns to the delivery point merging with the incoming cans to repeat its travel toward the selecting disk. To avoid any jamming of the cans, the machine is operated at a slightly greater speed than the conveyor or filling machine, providing ample space for unselected cans to merge into the lines of cans being fed. The lugs 35 on the vanes 34 are arranged inwardly of the edge of the selecting disk 32 at the point where the cans are delivered to the selecting disk, permitting the magnets to attract the cans, but as the can advances to the position indicated by the reference numeral 45, the lugs protrude due to the eccentric arrangement of the selecting disk, and separate the
cans from the magnets to permit them to be delivered to the turret. This arrangement permits a continuous current to be maintained in the magnets. As the can is advanced by the vane 34, due to the cam 40, the can velocity in a radial path is accelerated to the same as the turret so that when the can is transferred to the turret at the position 46, its velocity is the same as the turret speed, eliminating the possibility of spill during the transfer. Each turret pocket is provided with a depending arm 47 and a lower horizontal arm 48, forming a can support. Electro-magnets 49 are arranged adjacent the can supports to maintain the cans in the pockets. Particular attention is called to the fact that from the time the can is delivered to the feeding disk 31, it is carried without any sliding or dragging motion, eliminating the possibility of spilling the contents and insuring a smooth action.

Current is delivered to the magnets on the turret by lead wires 50 and 51, connected to suitable terminals 52. The magnets 33 are supplied with current through leads 54, connected to terminals 53 on the selecting disk. The magnets 33 are connected in parallel and each magnet is provided with a suitable control switch (not shown).

As stated above, each feeding station registers with every fourth pocket on the turret. As the selecting disk is provided with the same number of magnets as the number of pockets in the turret, the delivery of cans to any feeding station may be discontinued by disconnecting every fourth magnetic unit of the selecting disk, corresponding to the particular station. The importance of this feature will be apparent when it is considered that any of the feeding stations may be put out of operation for repair or similar purposes and the remainder of the machine employed in its normal manner. The generator may be run by the machine to furnish the current to energize the magnets 33 and 49.

As shown, the machine is driven from any suitable source of power by means of a pulley 56 and a gear 57 may be mounted on the pulley hub. The generator (not shown) is provided with a shaft 58, having a gear 59 meshing with the pinion 57 on the pulley. By arranging the generator drive on the hub of the pulley, the generator will continue to operate as long as the pulley is in motion, irrespective of whether the clutch is in engagement or is disconnected from the drive shaft 60.

The cover feed mechanism is driven by a gear 61 (see Figure 10), which meshes with the main drive gear 27 of the lower portion of the feeding station (see Figure 1). A turret 62 is mounted on the upper end of a shaft 63 to which the gear 61 is secured and this turret is provided with pockets 65, adapted to receive the covers. The covers are arranged in a magazine 66 and a pair of knives 67 and 68 are arranged at the bottom of the magazine and are adapted to separate the bottom cover from the remainder of the stack of covers in the magazine. The detail construction of these knives is shown in Figure 8 of the drawings. As shown, the knives are carried at the ends of a substantially semi-circular yoke 69, having an arm 70 arranged between the knives, and the end of this arm is provided with a sleeve 71. Adjacent each of the pockets 65, the turret is provided with a lug 72 adapted to engage the bottom cover as it is separated from the stack by one of the knives and carry it toward the marking station.

During the movement of the cover toward the marking station, it engages an inclined guide 73, which is so arranged that it depresses the cover far enough to clear the lug 72 when it reaches a position beneath the marking station, as shown at 74 in Figure 11 of the drawings. The lug continues its forward travel and the cover remains stationary until pocket 63 comes in contact with the cover and the cover is then carried forward.

When the turret 62 and turret 74 register at the point indicated by the numeral 75 in Figure 9 of the drawings, the cover is picked up by the electro-magnets in the pockets of turret 74 and carried forward with the can to the proper feeding station.

During the period that the cover is stationary in the marking station, that is, after the lug 72 passes over the cover and until the pocket 63 comes in position to receive the cover, marker jaws 76 and 77 perform the marking operation, which will be described later. These jaws carry suitable dies 78 and 79 for embossing the cover. The knives 67 and 68 are reciprocated through the medium of a cam 80, mounted on the shaft 63. A lever 81 is connected to the cam by means of a pin 82 which rides in the groove of the cam and the other end of this lever is connected to an arm 83 by a link 84. The arm 83 is provided with a sleeve 85 on its other end, adapted to surround a shaft 86. Springs 87 and 88 are mounted on the shaft on opposite sides of the sleeve. The ends of the spring are connected to the shaft and to the arm 83 respectively. It will, therefore, be evident that when resistance is applied to the shaft 86, greater than the tension of spring 87 or 88, the arm 83 will travel forwardly twisting either spring and the shaft will remain stationary. This construction serves as a safety means to prevent damage to the cover and separating mechanism and also acts as a positive control for separating the covers when the machine is in motion. The shaft 86 is normally retained in locked position by a latch 89. A lug 90 is carried on the lower end of this shaft, and this lug is either in the position shown in Figure 10 of the drawings or in the position 91.
The covers in the magazine 66 are retained in an inclined position by the knives. As the advancing knife enters the magazine, the receding knife still retains the covers in an inclined position. As the separated cover is removed by the lug 72 and knife 67, the stack of covers rests on a support 92 on the opposite side of the magazine and the knife 67. A similar support 93 is arranged on the opposite side of the magazine to cooperate with the knife 68. The pawl 89 which locks the shaft 86 is controlled by a solenoid 94, and a trip lever 20', Figure 2. This trip lever is provided with suitable contact points so that when a passing can comes in contact with the lever, a circuit is closed and solenoid 94 depresses the pawl 89 through a plunger 95, releasing the cover separating mechanism to cut off one cover, which is finally delivered at the point 75 in Figure 2 of the drawings to meet a can in the pocket of the turret 4. As soon as the can passes the trip lever, the circuit in the solenoid is opened and the pawl 89 is returned to engagement with the latch 90 by a spring 86, thus stopping the movement of the cover separating mechanism until the next can comes into engagement with the trip lever 20'.

The cover marker (see Figure 9) is operated by a pair of eccentrics 97 and 98, mounted on a shaft 99. This shaft is provided with a bevel gear 100, meshing with a bevel gear 101 to drive the marker. The upper jaw 76 is reciprocated and the lower jaw 77 is made in the form of a plunger and is also reciprocated. The eccentric 98 is provided with a strap 102, the upper end of which is connected to a threaded rod 103. This rod is received within a tubular member 104 and the tubular member is provided with a pin 105, adapted to be received in a slot 106 formed in a head 107. A nut 108 is arranged on the tubular member and a spring 109 is arranged between the nut and the head 107. The lower end of the jaw 77 is provided with a slot 109, adapted to receive a portion 110 of the head 107. The head is secured to the jaw by a pin 111. The jaw 76 is mounted on a substantially U-shaped member 112, provided with a depending portion 113, which receives the lower jaw and the lower jaw operating mechanism. This depending portion is connected to a strap 114 carried by the eccentric 97 by arms (not shown). An adjustable stop 115 is arranged within the depending member 113. This member is provided for the purpose of controlling the depth of the impression in the cover and also acts as a safety means to avoid scoring the cover when the dies are of uneven depth. It is adapted to be adjusted so that on the upstroke of the plunger 77, it is engaged by an abutment 116, formed on the lower end of the plunger. This stops the movement of the plunger and the excessive stroke of the eccentric 98 is taken up by the spring 109.

Referring to Figures 1 and 13 of the drawings, the seaming station is provided with a head frame 117, which is supported in suitable bearings 118 and 119. This frame revolves on the axis of the shaft 26 and carries the entire seaming mechanism. When a can is delivered to the seaming station, the can and cover are assembled as shown in Figure 4 of the drawings, and are brought in contact with the chuck 23. The seaming operation extends through the greater part of the revolution of the seaming station on its axis.

Referring to Figures 14, 15 and 16 of the drawings, the seaming is a spinning operation performed in a gradual way to insure a smooth and tight joint between the can and the cover. The seaming operation is performed in two steps. With the can and cover in position beneath the chuck, as shown in Figure 14 of the drawings, seaming rolls 119 located on diametrically opposite sides advance toward the can, curling the cover as indicated at 120 in Figure 15 of the drawings. After the curling or first operation, another pair of rolls 121 are brought in contact with the curled edge of the cover and the flange of the can and the curled seam is flattened out to produce the double seam 122 shown in Figure 16 of the drawings. At the completion of this operation, the lifter or can support 14 starts on the downward stroke and the can is carried away by the arm 30.

The chuck is supported on a chuck spindle 126 rigidly mounted in the head frame 117. The chuck is arranged within a seaming head 124 and this head and a sleeve 125 are revolved on the vertical axis of the chuck spindle through gears 126 and 127, carried by the head and the sleeve respectively (see Figures 1 and 13). The head gear 126 is driven by an internal gear 123 so proportioned that when the seaming station completes a revolution on its axis, the head gear completes ten revolutions. The sleeve 125 in the meantime completes eleven revolutions. The gear 127 meshes with an internal gear 129 arranged above the internal gear 128.

Referring to Figure 4 of the drawings, the seaming sleeve 125 is provided with eccentrics 130 and 131 located on diametrically opposite sides. Each eccentric operates an adjacent pair of seaming rolls through links 132, 133, 134, and 135, diagrammatically illustrated in Figure 6 of the drawings. The reciprocating movement is imparted to the seaming rolls, due to the differential speed between the seaming head 124 and the seaming sleeve 125, as previously described, their respective speeds being ten and eleven revolutions. A similar result may be obtained at any other speed as long as there is a difference in speed between the seaming head.
and the seaming sleeve. It will be noted in Figure 6 of the drawings that adjacent rolls operated from the same eccentric complete their cycles at relatively different times. For example, if the point 136 is the first operation roll, it will complete the seam and retract before 137, representing the second operation roll, is brought in contact with the can. The rolls 119 are mounted on spindles 138 and these spindles are provided with adjustable means consisting of eccentric sleeves 139 and 140.

Referring to Figure 5 of the drawings, it will be noted that when sleeves 139 and 140 are turned in opposite directions, the spindle 138 will advance in a straight line as indicated. This permits adjustment of the seaming roll 119 toward and away from the axis of the seaming station, permitting the use of the apparatus with cans of varying diameters without displacing the seaming roll from its fixed radial location which is very important on account of head timing.

The outer eccentric sleeve 139 is supported in rocking arms 141 and 142. These arms are pivoted on a bearing 143 and may be adjusted by means of a worm 144 (see Figure 7). The eccentric sleeves 139 and 140 are provided with suitable markings on their upper ends, as indicated at 145 and 146 to facilitate quick setting of the roll 119 to accommodate cans of different diameters. The arm 145 is connected to a link 149 by a pin 150, and this link is pivotally mounted on a stud 151 extending through the bearing 143.

After the seaming rolls have been set, the arm 145 and the link 149 will occupy the position 152 in Figure 7 of the drawings. By swinging the arm and link to the position 153, the seaming roll is thrown out of engagement with the can due to the eccentricity of the sleeve 140. This permits any roll to be disengaged from the can and rendered inoperative without losing the correct setting positions, for example, three rolls may be disengaged to examine the function of the fourth roll and by simply resetting each arm and link, the entire mechanism is again in proper alignment. The stud 151 extends through a sleeve 154. A spring 155 is arranged within the sleeve to normally force the stud upwardly. The lower end of the stud is provided with a handle 156 by means of which it may be moved downwardly against the tension of the spring 155 to release the link 149.

The connecting links 134 of the second operation rolls 121 are provided with springs 157, as shown in Figure 7 of the drawings. These springs are mounted on bolts 158 and retained in position by nuts 159. In completing the second operation, it is necessary to exert considerable pressure on the can and cover to insure a tight joint, but due to the variations in commercial tin and also to the additional thickness on the side seam of the can body, it is almost impossible to make a perfect seam without some cushioning means. Stops 160 are placed between the seaming rolls and these stops serve to prevent curling of the can over the chuck if, for any reason, a can is delivered to the seaming station without a cover. The apparatus is provided with a housing 161 and this housing and the seaming mechanism are supported on a stationary column 162. This housing may be adjusted by means of a screw 163 to any desired height. A pinion 164 is slidable mounted on the main shaft 165 and this pinion transmits power to an intermediate gear 166 freely mounted on a sleeve 167. The gears 164 and 166 are connected through a train of gears 168, 169 and 170, as shown. The gear 166 meshes with an internal gear 171 to operate the seaming heads, as previously described. A pinion 172 is arranged on the lower end of the main shaft 165 and this pinion drives the lower mechanism of the machine through a gear 173, gear 174, and gear 175, which is loosely mounted on the column, and drives gear 176. The gear 176 is mounted on an intermediate shaft 177, which carries the bevel gear 101, and this shaft operates the gear 27 through a pinion 178. The turret is carried by a sleeve 179, and the turret and gear 29, which are slidably connected to the gear 27, revolve on the stationary column 182. It will be noted that gears 27 and 28 are identical to gears 29 and 28 and both trains revolve as a single unit, operating the seaming station on the axis of the shaft 26. The lifter cam 20 is carried by the gear 175 and revolves at the same speed as the seaming station. The intermediate shaft 177 is provided with a worm 180 which drives the horizontal shaft 181 through a worm gear 182. The shaft 181 carries bevel gears 183 and 184, meshing with a bevel gear 185 to drive a shaft 186 on which the turn-table 30 and the selecting disk 32 are mounted. The feeding disk 31 is carried by a shaft 187 which carries a bevel gear 188, meshing with a bevel gear 189 on the shaft 181. The main shaft 165 is connected to the pulley shaft 60 through gears 190 and 191. A clutch control lever 192 is adapted to connect a worm wheel 193 to the gear 169. This permits manual operation of the machine by means of a worm 194, meshing with the worm wheel 193 and mounted on a shaft 195. The shaft 195 may be provided with a suitable hand wheel (not shown) to permit manual operation of the machine through the worm.

The pulley clutch is of a friction disk type, as shown in Figure 1 of the drawings. A spring 196 engages the pulley 56 and connects it to a driving plate 197, through floating disks 198. This provides a safe clutch action with gradual pick-up, and even if the clutch is thrown into engagement very rapidly, the floating friction disks will engage...
the driving plate gradually eliminating grabbiness, action and damage to the machine.

In Figure 3 of the drawings, I have shown a modified form of the invention in which

the cans designated by the reference numeral 199 are carried in pockets on an endless con-
veyor (not shown) and the seaming stations 200 are arranged beside the conveyor func-
tioning in the same manner as the tangen-
tially arranged seaming stations shown in

Figure 2 of the drawings.

In operation, the cans are delivered to the
turret 4 by the feeding disk 31 and the se-
lecting mechanism. As previously described,

the cans may be fed to the feeding disk with-
out spacing them and the selecting mecha-
nism delivers the cans in proper order to the
pockets 8 of the turret. The seaming sta-
tions 1, 2, and 3 receive the cans from the
turret in the pockets 5, 6, and 7. The seam-
ing stations make a complete revolution to

each quarter revolution of the turret and
when the turret is provided with twelve
pockets, as shown, each seaming station re-

ceives the cans from every third pocket of
the turret. If one of the seaming stations is
out of order, the magnets 33 of the select-
ing mechanism corresponding thereto may
be disconnected and the machine operated
with the seaming station out of service. This
is important as it permits any seaming sta-
tion to be repaired without interfering with
the operation of the rest of the machine.

Each seaming station continuously revolves
on its own axis, being driven by the gears
27 and 29 through the pinions 25 and 28.
The cam 20 raises the lower half of the seam-
ing station, after the cover has been placed in position and the seaming operation is per-
formed by the rolls 119 and 121. Particular
attention is called to the adjusting means
which permits the rolls to be adjusted radi-
ally of the seaming station for use with cans
of different diameters.

It is to be understood that the form of my
invention herewith shown and described is
to be taken as a preferred example of the
same, and that various changes in the shape,
size, and arrangement of parts may be re-
sorted to without departing from the spirit
of the invention or the scope of the subjoined
claims.

I claim:

1. A can seaming machine comprising a
turret, can receiving pockets arranged on
the periphery of said turret, and revolving
seaming means arranged adjacent said turret,
each of said seaming means being provided
with a seaming pocket adapted to register
with predetermined pockets of the turret to
receive cans therefrom, and each of said
seaming pockets being adapted to revolve on
its own axis at a predetermined rate of speed
with respect to said turret to cooperate with
selected pockets of said turret.

2. A can seaming machine comprising a

 conveyor, can receiving pockets arranged on

 one side of said conveyor, and revolving

 seaming means arranged adjacent said con-

 veryor, said seaming means being provided

 with seaming pockets adapted to register

 with the pockets of said conveyor to receive

 cans therefrom, and each of said seaming

 pockets being adapted to revolve on its own

 axis at a predetermined rate of speed with

 respect to said turret to cooperate with

 selected pockets of said turret.

3. A can seaming machine comprising a

turret, seaming means arranged adjacent

 said turret, a selecting disk to deliver cans
to said turret, magnets carried by said disk
to attract the cans and deliver them to said

 turret, and means for releasing said cans from

 said magnet.

4. A can seaming machine comprising a

 turret, pockets arranged on the periphery of

 said turret, seaming means arranged tangen-

 tallly of said turret, to receive cans from said

 pockets, feeding mechanism to deliver cans
to said turret, and magnets carried by said

 feeding mechanism to attract the cans and

deliver them.

5. A can seaming machine comprising a

 turret, pockets arranged on the periphery of

 said turret, means for delivering cans to said

 pockets, means for feeding covers to said

 cans, and seaming means arranged adjacent

 said turret and adapted to receive cans and
covers from said pocket, said seaming means
including seaming pockets, each of said seam-

 ing pockets being adapted to revolve on its

 own axis at a predetermined rate of speed

 with respect to said turret to cooperate with

 selected pockets of said turret.

6. A can seaming machine comprising a

turret, can receiving pockets formed on the

 periphery of said turret, and seaming means

 arranged adjacent said turret, said seaming

 means being provided with pockets to re-

 ceive the cans from said turret pockets, each

 seaming means being adapted to receive cans

 from predetermined turret pockets whereby

 any one of said seaming means may be placed

 out of operation and the remaining seaming

 means receive cans from their corresponding

 turret pockets.

7. A can seaming machine comprising a

turret, can receiving pockets arranged on the

 periphery of said turret, and revolving seam-

 ing means arranged tangentially of said turre-

 t, said seaming means being provided with

 seaming pockets, each of said seaming

 pockets being adapted to revolve about its

 own axis at a predetermined rate of speed

 and to register with certain of the turret

 pockets to receive cans therefrom.

8. A can seaming machine comprising a

turret, seaming means arranged adjacent said
turret, a rotating feeding disk to deliver cans
to said turret, a selecting disk arranged be-
between said feeding disk and said turret, vanes carried by said selecting disk, and magnets associated with said vanes to attract cans on said selecting disk.

9. A can seaming machine comprising a turret, seaming means arranged adjacent said turret, a rotating feeding disk to deliver cans to said turret, a selecting disk arranged between said feeding disk and said turret, vanes carried by said selecting disk, and magnets associated with said vanes to attract cans on said selecting disk, said selecting disk being eccentrically mounted to separate cans from said magnet as they approach the turret.

10. A can seaming machine comprising a conveyor, can receiving pockets arranged on said conveyor, electro-magnets arranged in said pockets, to retain cans and covers therein, and revolving seaming means arranged adjacent said conveyor, each of said seaming means being provided with a pocket adapted to register with certain of the conveyor pockets to receive cans and covers therefrom.

11. A can seaming machine comprising a turret, can receiving pockets arranged on the periphery of said turret, seaming means arranged adjacent said turret and provided with pockets to receive cans, a rotating feeding disk to deliver cans to said turret, a selecting disk arranged between said feeding disk and said turret, and magnets carried by said selecting disk to attract cans from said feeding disk, whereby the delivery of cans to any seaming means may be discontinued by disconnecting the corresponding magnets.

12. A can seaming machine comprising a turret, can receiving pockets arranged on the periphery of said turret, means for feeding covers to cans in said pockets, seaming means arranged adjacent said turret, each of said seaming means being provided with a can receiving pocket, a pressing pad in each of said seaming means to assemble a can and cover, a chuck arranged in said seaming means, means for raising a can and cover to engage said chuck, and seaming rollers to seam said cover to the upper edge of said can.

13. A can seaming machine comprising a turret, a seaming means, means for delivering cans from said turret to said seaming means, and cover feeding mechanism, said cover feeding mechanism comprising a magazine, separator knives arranged at the bottom of said magazine, a cover feeding turret, a lug carried by said turret to engage a separated cover, and a pocket in said turret to receive said cover and convey it to assembling position.

14. A cover feeding mechanism for can seaming machines, comprising a magazine, oppositely arranged separating knives arranged at the bottom of said magazine, a rack shaft to which said knives are connected, a ratchet tooth formed on said shaft, a pawl adapted to engage said ratchet tooth, and a magnet controlling said pawl.

15. In a cover feeding mechanism for can seaming machines, a magazine, a pair of oppositely arranged alternately operating separating knives arranged beneath said magazine, a yoke connecting said knives, a sleeve carried by said yoke, a shaft in which said sleeve is mounted, and means for oscillating said shaft.

16. In a can seaming machine, a cover marker comprising a pair of jaws, dies mounted in said jaws, and eccentricities connected by means of straps to said jaws to reciprocate them.

17. In a can seaming machine, a seaming head, a sleeve arranged in said head, eccentrics mounted on said sleeve, links connected to said eccentrics, and seaming rollers connected to said links.

18. In a can seaming machine, a seaming head, a sleeve arranged in said head, eccentrics mounted on said sleeve, diametrically opposed seaming rolls carried by said head, and links connecting said rolls to said eccentrics.

19. In a can seaming machine, a seaming head, a sleeve arranged in said head, eccentrics mounted on said sleeves, a preliminary seaming roller arranged in said head, a finishing roller arranged in said head, and links connecting said rollers to said eccentrics.

20. A can seaming machine comprising a turret, can receiving pockets arranged on said turret, electro-magnets arranged in said pockets to retain cans and covers therein, and revolving seaming means arranged adjacent said turret, each of said seaming means being provided with a pocket adapted to register with certain of the turret pockets to receive cans and covers therefrom.

21. A can seaming machine comprising a turret, seaming means arranged adjacent said turret, a rotating feeding disk to deliver cans to said turret, a selecting disk arranged between said feeding disk and said turret, vanes carried by said selecting disk, and cans connected to said vanes to accelerate the can velocity as it is delivered to the turret.

22. In a can seaming means, a seaming roller, a spindle connected to said roller, an eccentric sleeve surrounding said spindle, an arm connected to said sleeve, and a pivoted link connected to said arm whereby said seaming roller may be moved to an inoperative position by swinging said arm and said link on their pivots.

23. A can seaming machine comprising a conveyor simultaneously movable past a plurality of revolving seaming means each of said seaming means comprising a seaming mechanism, can receiving means and lifting means arranged in permanently intergeared relation and adapted to revolve in a fixed orbit, means for continuously revolving said.
seaming means tangentially to said conveyor in parallel orbits, means for delivering cans and covers to each seaming means from certain conveyor pockets, means for positioning cans and covers in said seaming means and subsequently acting means in said seaming means for performing a seaming operation during each revolution of said seaming means in their respective orbits.

24. A can seaming machine comprising a conveyor simultaneously movable past a plurality of revolving seaming means, means for continuously revolving said seaming means tangentially to said conveyor in parallel orbits, a rotary seaming head associated with each of said seaming means, a seaming chuck arranged coaxially with said seaming head, means for rotating said seaming head a prescribed number of revolutions during each revolution of said seaming means, means for imparting to said seaming head a coaxial rotary movement in operating relation around said seaming chuck and simultaneously carrying said seaming head in the respective orbit of its seaming means.

25. A can seaming machine comprising a conveyor simultaneously movable past a plurality of revolving seaming means in parallel orbits, means for moving said conveyor simultaneously past each seaming means at uniform velocity and equal to the peripheral speed of said seaming means, a plurality of relatively closely spaced can and cover carrying pockets arranged in said conveyor, means to register each group of adjacent pockets in said conveyor equal in number to the number of said seaming means in consecutive order with said seaming means and deliver cans and covers thereto in operating relation, and retaining means associated with said conveyor pockets for retaining cans and covers during the period when said cans and covers remain in said pockets.

26. A can seaming machine comprising a conveyor simultaneously movable past a plurality of revolving seaming means in parallel orbits, means for moving said conveyor simultaneously past each seaming means at uniform velocity and equal to the peripheral speed of said seaming means, a seaming mechanism associated with said seaming means and adapted to perform a complete seaming operation while a can remains relatively stationary therein, means for rotating said seaming means in unison with said conveyor, a can and cover receiving pocket associated with each seaming means and adapted to register with a predetermined conveyor pocket during each revolution and embrace a can and cover for truing the same and assembling them, means for lifting said can and cover in said seaming means to the seaming position, and mechanism for seaming said can.

27. A can seaming machine comprising a conveyor simultaneously movable past a plurality of revolving seaming means in parallel orbits, seaming means arranged adjacent said conveyor, a rotating feeding disc to deliver cans to said conveyor, a selecting disc arranged between said feeding disc and said conveyor, vanes carried by said selecting disc, magnets associated with said vanes and selecting disc to attract and position incoming cans carried by said feeding disc in unrestricted relation, can guides associated with said feeding disc and adapted to direct said cans toward selecting disc, means for returning unslected cans and merging same at incoming path on said feeding disc to repeat the cycle toward said selecting disc until positioned on said selecting disc for subsequent operation, and means for bodily carrying said cans from said feeding disc to said seaming means.

28. A can seaming machine comprising a turret simultaneously movable past a plurality of revolving seaming means arranged tangentially of said turret and revolving in parallel orbits, a supporting column arranged adjacent said turret, a stationary housing slidably mounted on said supporting column and adapted to retain the upper mechanism of said seaming means, adjusting means associated with said housing and said upper mechanism for manual setting to seam cans of varying height, a sleeve carrying said turret journalled on said supporting column and provided with a gear at each end, said sleeve gears intermeshing with corresponding gears of the upper and lower mechanism of said seaming means and adapted to impart a simultaneous rotary movement to said upper and lower mechanism of each seaming means in unison with said turret, and means for imparting a continuous rotary movement to said turret sleeve and said seaming means.

29. A cover feeding mechanism for can closing machines comprising a cover magazine, a cover feeding turret, an oscillating yoke, a pair of oppositely mounted cover separating knives arranged at the bottom of said magazine and carried by said yoke, said oscillating yoke having means for alternately advancing each cover separating knife to said magazine for singly separating the bottom cover in the magazine during each forward and return movement, and means for oscillating said yoke in operating relation with said cover feeding turret and incoming cans.

30. In a can seaming machine, a rotary seaming head, freely revolving spindles arranged in said head, seaming rollers rigidly mounted on said freely revolving spindles, a pair of eccentric sleeves, said spindles being mounted in said sleeves, said sleeves being adapted for manual adjustment of said seaming rollers, and locking means associated with said sleeves to retain said sleeves and said rollers in fixed relation.

31. In a can seaming machine, a seaming
head, a sleeve coaxially arranged in said head, eccentrics mounted on said sleeve, links connected to said eccentrics, seaming rollers connected to said links, and a stationary seaming chuck, means for revolving said sleeve one revolution during a predetermined number of revolutions of the seaming head, said eccentrics having means for imparting a simultaneous movement toward and away from the chuck to each pair of diametrically opposed seaming rolls in operating relation.

In a can seaming machine, a seaming head, a sleeve coaxially arranged in said head, eccentrics mounted on said sleeve, a plurality of diametrically opposed seaming rolls carried by said head, rocking arms pivoted within said head, said rolls being mounted in said arms, links connecting said arms to said eccentrics, a stationary seaming chuck, and means for revolving said sleeve one revolution during a predetermined number of revolutions of the seaming head, said sleeve having means for imparting a simultaneous movement toward and away from the chuck to each pair of diametrically opposed seaming rolls in operating relation.

In testimony whereof, I affix my signature.

FELIX HUNTAR.