

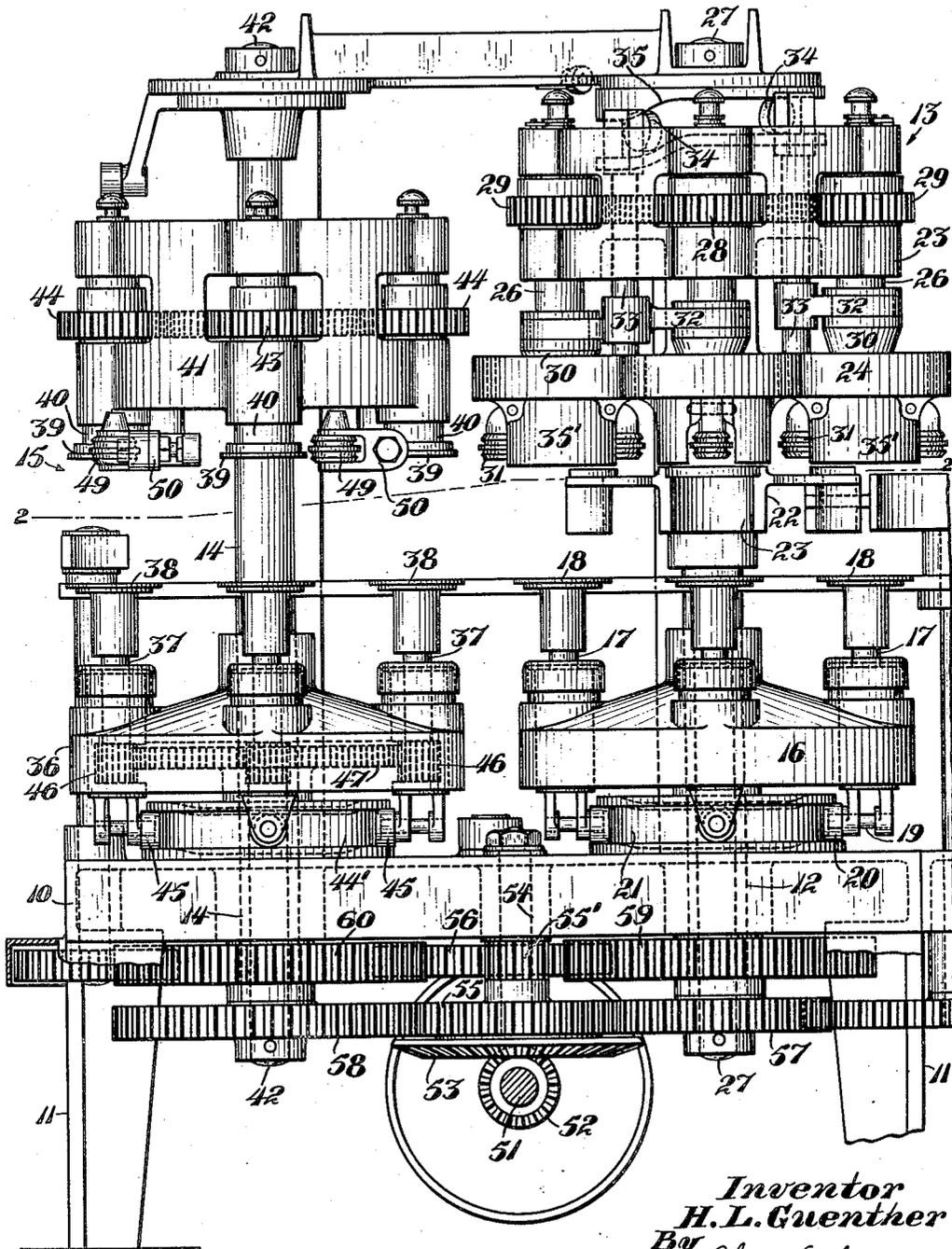
Jan. 2, 1923.

H. L. GUENTHER.
CAN DOUBLE SEAMING MACHINE.
FILED DEC. 21, 1921.

1,441,195.

2 SHEETS—SHEET 1.

Fig. 1.



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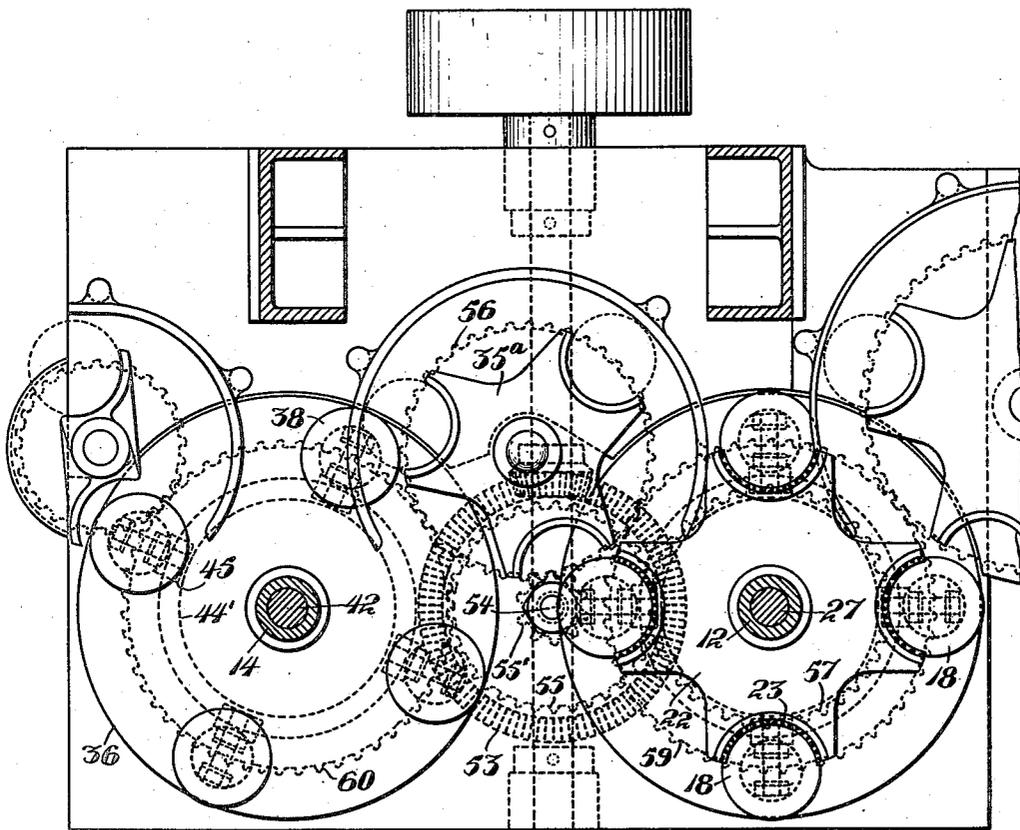
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Fig. 2.



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UNITED STATES PATENT OFFICE.

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CAN DOUBLE-SEAMING MACHINE.

Application filed December 21, 1921. Serial No. 523,822.

To all whom it may concern:

Be it known that I, HENRY L. GUENTHER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Can Double-Seaming Machines, of which the following is a specification.

This invention relates to double seaming machines and particularly pertains to multiple spindle machines of the revolving turret type.

It is the principal object of the present invention to provide a double seaming machine for use in forming the seams between can bodies and their caps, which machine is so constructed as to rapidly and accurately operate upon the cans as they are passed through the machine and at the same time to insure that a double seam will be formed in a workman-like manner, the structure being decidedly simple in its arrangement of parts and the various elements operating in synchronism to insure that the machine will function continuously and rapidly without possibility of mutilating the cans or of making undesirable seams.

The present invention contemplates the use of a seaming machine having two vertical turrets disposed parallel to each other, each of said turrets being equipped with multiple spindles whereby the can and its cap will be initially seamed when standing still or in a slow operation and will thereafter be rapidly spun to complete and thoroughly form the double seam.

The invention is illustrated, by way of example, in the accompanying drawing in which;

Figure 1 is a view in front elevation showing the complete machine with which the present invention is concerned.

Fig. 2 is a view in plan showing the machine in section and elevation as viewed on the line 2—2 of Fig. 1.

Referring more particularly to the drawings 10 indicates a base which is here shown as supported on legs 11. This base is formed with a plurality of vertical bearings disposed in parallel alignment. One of these bearings is provided to receive the spindle 12 of a first operation turret 13 and another bearing receives the spindle 14 of a second operation turret 15. The exact construc-

tion and operation of the first turret is described and claimed in my co-pending application Serial No. 523,823 filed concurrently herewith and entitled "Double seaming mechanism."

The structure of the second operation turret has been disclosed in the drawings and specifications of my co-pending application entitled "Seaming head for double seaming machines", Serial Number 462,845, filed April 20th, 1921.

The first operation turret comprises a base portion, 16, carrying a plurality of vertical spindles 17. These spindles are disposed at equal intervals to each other around the member 16 and are reciprocal relative thereto. The upper ends of the spindles carry circular platforms 18 on to which cans may be delivered while the lower end of each spindle is fitted with a transverse pin 19 and a roller 20. The roller 20 projects inwardly and engages the circular eccentric track of a cam structure 21. The cam is fixed to the base 16 and is so designed as to reciprocate the spindles 17 as the turret revolves. Disposed above the portion 16 and mounted upon the shaft 12 is a spider 22. This spider is formed with four arms as more clearly shown in Fig. 2 of the drawings.

Each of these arms is provided with a semi-circular recess 23 which will conform to the circumferential face of a can body and by which the cans will be held in alignment with the platform 18 as the turret rotates.

Attention is directed to the fact that no provision is made on the first turret for rotation of the can.

On the other end of the sleeve 12 is a seaming head structure comprising a frame 23 and a roller support 24. The frame is suitably fixed to the upper end of the sleeve 12 and provides bearings for a plurality of revolving spindles 26. These spindles are held in longitudinal alignment with the lower spindle 17 of the platform and are complementary thereto.

The sleeves 12 receive a central shaft 27 which carries a gear 28 at its upper end. This gear is in mesh with a plurality of planetary gears 29 which move around the central gear 28 and which are secured upon the respective spindles 26. The lower ends of each of the spindles 26 are fitted with cones 30 which operate against arms to force

the seaming roller 31 inwardly against the can and its top.

These cones are operated by means of shifting yokes 32 which are carried by shaft 33. These shafts extend upwardly and are fitted at their upper ends with rollers 34. Rollers 34 pass along a circular track cam 35 by which they are given a reciprocating movement with the pins 33. It will therefore be evident that when a can is delivered to the first operation turret it is gripped within the bell member 35' and thus held by the platform 18 after which it is carried around the turret for substantially three-quarters of its revolution and is then delivered to a star wheel 35^a. During this travel of the can it is acted upon by circumferentially moving seaming rolls 31 which are pressed in against the can turning its seams while the can itself stands relatively stationary to the turret.

The star wheel 35^a delivers the can to the second operation turret 15. The mode of operation of this turret is different than that of the preceding one as the cans in this instance are rapidly spun while the seaming rollers are fixed relative to the seaming head. This is more clearly shown in the application previously mentioned.

The second turret comprises the base portion 36 carrying a plurality of spindles 37 similar in design and function to the spindles 17 previously described. These spindles carry the can platforms 38 by which the cans are forced separately against pressure plates 39. The pressure plates are so formed as to fit within the recess in the top of the can cap and to hold the can in alignment while it is being rapidly rotated. The plates 39 are secured at the lower ends of spindles 40. These spindles are rotatably supported within a head 41 which head is keyed to a sleeve 14. Extending upwardly through the sleeve is a shaft 42. The upper end of the shaft 42 carries a gear 43. This gear is in mesh with a plurality of planetary gears 44 secured to the respective spindles 40 and by which these spindles are rotated. The platforms 38 are vertically reciprocated by the spindles 37 as they are actuated by track cam 44 which cam engages rollers 45 of the various spindles. This action is similar to that of the platforms 18. Attention is however directed to the fact that in this spindle structure gears 46 are secured to the various spindles and are in mesh with a master gear 47 housed within the base 36 by which the spindles may be rotated.

Seaming means of the second turret comprises seaming rollers 49 mounted upon lever structures 50 by which they may be swung in and out and toward and away from the seam of the can and the centering and pressure plates 39.

The driving structure of the device com-

prises a jack-shaft 51 carrying a beveled gear 52. This gear is in mesh with a large beveled gear 53 secured to the lower end of an intermediate drive shaft 54. The drive shaft 54 carries gears 55 and 55'. The lowermost gear 55 is in mesh with gears 57 and 58. These gears are secured to the vertical shafts 27 and 42 respectively. The gear 55' is in mesh with a gear 56 on an idler shaft, said gear 56 in turn meshing with gears 59 and 60, secured to the spindles 12 and 14 respectively.

In operation of the present invention, cans are delivered by a suitable feed mechanism to the first turret 13. Here they are received by the various platforms 18. As received by the platforms 18 will move upwardly by the action of the rollers 20, traveling along the track cam 21. This will cause the cans and their associated caps to be forced into the bell shaped member 35. At the same time the cans and caps will be moved forwardly by the rotation of the spider 20 and the complete turret. During this operation the spindles 26 will be revolving at a considerable rate of speed and will cause the rollers 31 to travel around the top of the cans. At the same time the rollers 34 traveling along the upper cam track 35 will be forced downwardly. The cones 30 will be simultaneously forced downwardly between the free swinging ends of the support for the rollers 31. The various rollers will thus be simultaneously moved inwardly against the can while they are moving around the can. After the can has traveled approximately three-quarters of the circumference of the turret, it will be transferred to the star wheel 35^a and will thereafter be transmitted to the second operation turret 15. On this turret the spindles 37 will move upwardly causing the platform 38 to grip the can and hold it between the platform 38 and the pressure plate 39. These members are both rotating at a very high rate of speed and when engaging the cans will rapidly spin them. At the same time the levers 50 of the final seaming rollers 49 will cause these rollers to swing inwardly against the circumferential edge of the seam and will complete the seam. After the can has traveled approximately half the circumference of the second turret it will be released and will then be carried on to suitable conveying mechanisms by which it may be withdrawn from the machine.

In studying the structure and operation of the present invention it will be noted that filled cans may be delivered to the machine with the least possible agitation and that they will be gripped between the platforms 18 and within the recesses of the bell shaped canopies 35 without great danger of "slopping" after which they will be held in this steady position and the first seam formed by

rotation of the seaming rollers. When the seam has thus been initially made the can may be spun without difficulty and when carried to the second turret the seam will be rapidly completed. It will thus be seen that due to this structure the filled cans may be rapidly passed through the machine and thoroughly double seamed, in fact operation of the machine has proven that cans may be passed through the machine and filled at the rate of 200 a minute.

While I have shown the preferred form of my invention as now known to me it will be understood that various changes in the combination, construction, and arrangement of parts might be made 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 comprising a pair of continuously rotating turrets, seam forming devices carried thereby, means whereby the first of said seam forming devices will move around the can while the latter is stationary with respect to the turret, means for rotating the can relative to the second turret, and means whereby the second of said seam forming devices operates as the can is thus rotated.

2. A double seaming machine comprising first and second continuously rotating turrets, means for successively transferring cans from one turret to the other, a seaming device on the first turret, means for moving said device around the can as the can is carried by the turret in a stationary condition with respect to the said turret, a seaming device on the second turret adapted to operate against the can, and means for revolving the can as it is carried by the second turret.

3. A double seaming machine comprising first and second continuously rotating turrets, means forming a part of the first turret by which a can may be gripped and held against rotation with respect to the turret as the turret revolves, means traveling around the can and its cap while thus held stationary to partially form a seam between the can and the cap, means for transferring the partially seamed cans to the second turret, means forming a part of the second turret for gripping the cans and

rotating them around their central axes, and can-seaming means for completing the seam between the can and its cap.

4. A double seaming machine comprising first and second continuously rotating turrets, an intermediate transferring means for carrying cans from one turret to the other, the first turret being formed with vertically reciprocable platforms onto which cans may be disposed, complementary centering devices disposed above said platforms and into which the upper ends of the cans and their caps are projected, whereby the cans are held stationary with respect to the turret can-seaming means encircling said upper ends of the cans for partially forming a double seam between the can and its cap, while the can is carried by the turret in a stationary condition to the transferring means, said second turret being provided with a plurality of vertically reciprocable platforms onto which the cans may be delivered from the transfer means, upper plates cooperating with said platforms to grip the cans therebetween, means for rotating the cans thus gripped, and double seaming means acting against the rotating can to complete the seam between the cap and the can body.

5. A double seaming machine comprising a pair of parallel rotating vertical turrets continuously rotating in opposite directions, an intermediate transfer means for transferring cans from the first turret to the second turret, the first turret being formed with a plurality of separate vertically reciprocating platforms on which cans and their associated caps may be disposed, superposed cups into which the can and cap may be projected as the platforms rise to cause the cans to be held stationary with respect to the first turret, circularly travelling seaming means acting upon the can and its cap as the first turret advances the can, the second turret comprising vertically moving receiving platforms onto which cans are delivered by the transfer means, said platforms cooperating with pressure plates between the platforms and which a can may be clamped, means for rotating the can around its central axis while so clamped, and while being carried forward by the turret, and seaming means acting against the rotating cans.

HENRY L. GUENTHER.