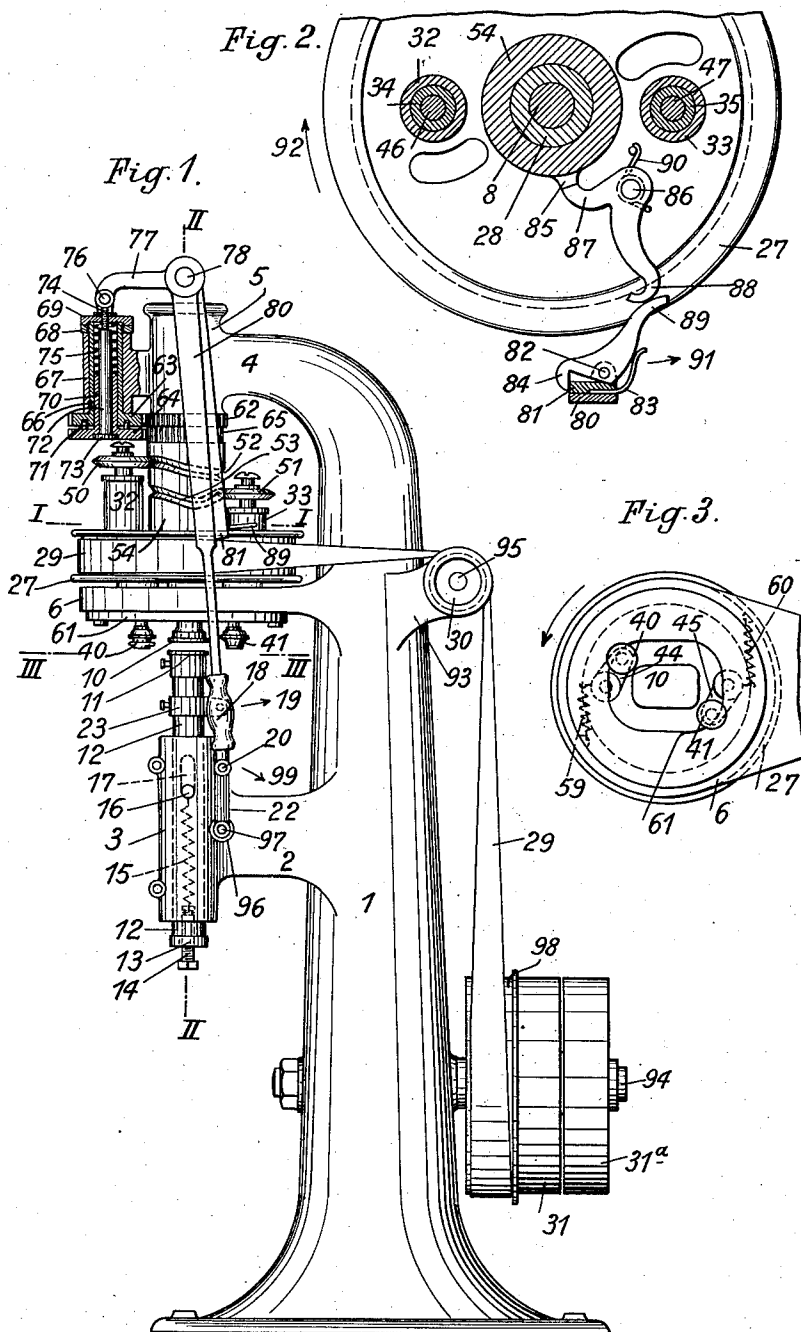


A. JENSSEN.
TIN CAN SEAMING MACHINE.
APPLICATION FILED FEB. 14, 1913.

1,079,558.

Patented Nov. 25, 1913.

3 SHEETS-SHEET 1.



Witnesses:
Katharina Koch
Daniel Holmgren

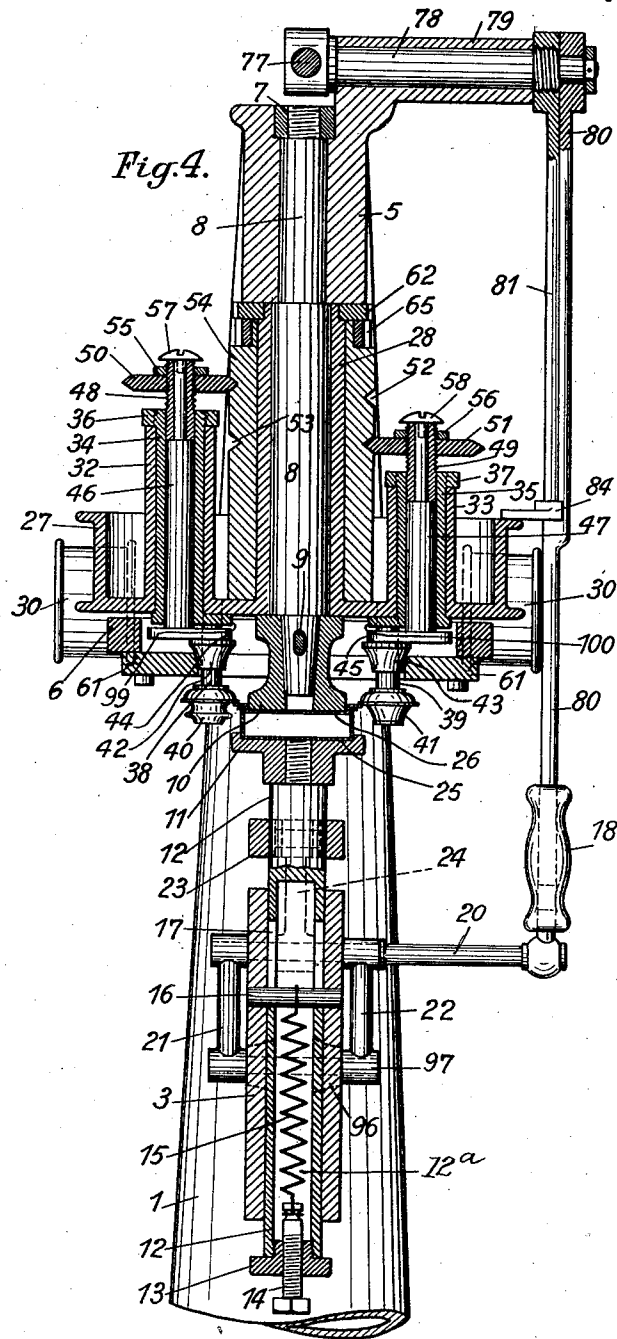
Inventor:
Andreas Jensen
by his attorneys
Brisson & Gunnar

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3 SHEETS-SHEET 2.



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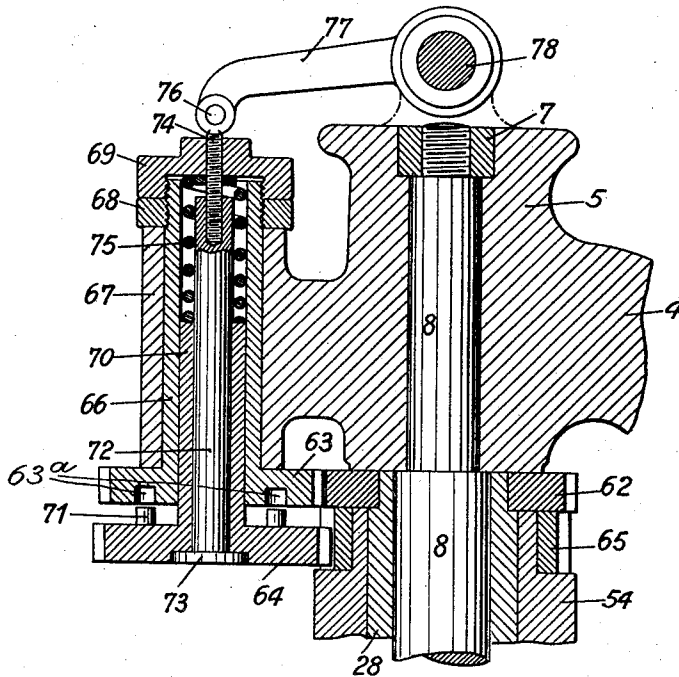
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3 SHEETS—SHEET 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

ANDREAS JENSSEN, OF STAVANGER, NORWAY, ASSIGNOR TO AKTIESELSKABET
RECORD, OF STAVANGER, NORWAY.

TIN-CAN-SEAMING MACHINE.

1,079,558.

Specification of Letters Patent.

Patented Nov. 25, 1913.

Application filed February 14, 1913. Serial No. 748,274.

To all whom it may concern:

Be it known that I, ANDREAS JENSSEN, a subject of the King of Norway, residing at Stavanger, Norway, have invented certain new and useful Improvements in Tin-Can-Seaming Machines, of which the following is a specification.

In known tin can seaming machines the seaming rollers are usually disposed on the free ends of levers and by them connected to guide rollers, which latter are controlled by a vertically movable guide ring and serve for gradually pressing the seaming rollers against the joint of the tin can. A mechanism serves for automatically reciprocating the said guide ring during the seaming of the can. This mechanism however, is comparatively complicated and requires the constant attention of the attendant.

My invention relates to a new or improved mechanism in such machines, which is essentially simpler and renders the service easy, while the various parts of the machine are readily accessible for repair and replacement.

In the accompanying drawing: Figure 1 is an elevation of the novel tin can seaming machine, parts being shown in section; Fig. 2 is a horizontal section on an enlarged scale through the line I—I in Fig. 1, seen from above; Fig. 3 is a horizontal section through the line III—III in Fig. 1, seen from below; Fig. 4 is a vertical cross section on an enlarged scale through the line II—II in Fig. 1, seen from left to right, and Fig. 5 is a vertical longitudinal section on an enlarged scale through an upper part of Fig. 1.

The frame of the machine consists of a pillar 1 with a lower arm 2 (Fig. 1), an upper arm 4, an annular projection 6 between them and a rear bracket 93. In a vertical sleeve 3 made integral with the lower arm 2, a spindle 12 is mounted to move longitudinally. This spindle 12 has a lower bore 12^a (Fig. 4) and two opposite slots 17, through which passes a pin 16 fast in sleeve 3, whereby the spindle is prevented from turning. Into bore 12^a is tapped a cover 13, through which passes an adjusting screw 14. To this screw is secured one end of a spring 15, the other end of which is connected to pin 16, whereby spindle 12 is pulled upward, so that pin 16 normally bears against the lower ends of slots 17, as shown in Fig. 4. To the upper end of the spindle

12, is fitted an exchangeable support 11 which is recessed for the reception of a filled can 25, the lid 26 of which is to be secured thereto.

In a sleeve 5 coaxial with sleeve 3 and made integral with arm 4, the upper reduced section of a stem 8 is fastened by means of a nut 7, so that said stem is prevented from turning. The lower end of stem 8 is reduced in diameter and made to taper so as to be received within a corresponding bore of an exchangeable head 10 which is fastened to said stem by means of a wedge 9. The head 10 is adapted to engage in a recess of the lid 26 as shown and the parts 10, 11 serve for holding cover 26 firmly to can 25. On stem 8 is rotatably mounted the sleeve 28 of a pulley or carrier 27. The latter may be rotated by a belt 29 running over idlers 30 that are carried by spindle 95 and over pulleys 98. This pulley turns loosely on shaft 94 and is made integral with a driving pulley 31 co-operating with a loose pulley 31^a as usual.

The pulley 27 has two diametrically opposed upwardly projecting bearings 32 and 33 (Fig. 4) of different lengths, in which the sleeves 34, 35 of two arms 99, 100 are oscillatively mounted, said sleeves being held against longitudinal displacement by nuts 36, 37. From arms 99, 100 depend spindles 38, 39 carrying upper longitudinally movable guide rollers 42, 43. Below the latter, there are fast on spindles 38, 39, two seaming rollers 40, 41. To the lower face of annulus 6 is secured a guide ring 61 (Fig. 3), the inner working edge of which is concentric with can 25. Within sleeves 34, 35 are longitudinally movable shafts 46, 47 of different lengths. These shafts are provided with arms 44, 45 which are apertured at their free ends for the free passage of pins 38, 39. Arms 44, 45 are adapted to press from above on the guiding rollers 42, 43 and are connected by springs 59, 60 (Fig. 3) to pulley 27. In this way, the guiding rollers 42, 43 are held in contact with the rounded inner edge of ring 61, so as to move the seaming rollers 40, 41 along the edges of can 25 and lid 26. To the upper end of sleeve 28 is fastened a gear wheel 62 which is thus rigidly connected to pulley 27. Between the gear wheel 62 and the web of the pulley 27, there is rotatably mounted on sleeve 28, a tubular member 54 provided with a pair of angular cam grooves 52, 53 and with an upper rela-

tively fixed gear wheel 65. On the upper reduced ends of shafts 46, 47 are rotatably mounted sleeves 48, 49 held against axial movement by screws 57, 58. Sleeves 48, 49 are threaded for engagement with correspondingly threaded disks 50, 51 and jam nuts 55, 56. Disks 50, 51 respectively engage with their sharpened edges grooves 52, 53 of member 54 so as to vertically reciprocate shafts 46, 47 while following said grooves.

The sleeve 5 is provided with a vertically disposed bearing 67 (Fig. 5), in which the hub 66 of a gear wheel 63 is free to rotate, such hub being held against longitudinal motion by a nut 68 and a threaded cap 69. The gear wheel 63 meshes with the gear wheel 62 above mentioned, so that gear wheel 63 is continuously rotated from pulley 27. Within hub 66 is rotatably mounted the longitudinally movable hub 70 of another gear wheel 64. The latter meshes with the wheel 65 and has two diametrically opposed pins 71 adapted to engage corresponding sockets 63^a of wheel 63 for coupling the wheels. In hub 70 is free to rotate a shaft 72 provided at the lower end with a head 73 that supports the gear wheel 64. At its upper end, there is tapped into shaft 72, a screw 74 which loosely passes through a corresponding aperture of cap 69. The hub 70 is shorter than hub 66 to accommodate a spring 75 that tends to lower wheel 64 out of engagement with wheel 63.

The sleeve 5 is provided with a bracket 79 (Fig. 4), in which a shaft 78 is mounted to rock. To the inner end of this shaft is fastened an arm 77 (Figs. 1 and 5), the free forked end of which straddles an eye formed on screw 74 to which it is secured by a pin 76. The outer end of shaft 78 carries a fast arm 81 and a loose hand lever 80. In a boss 96 formed on the lower arm 2, a shaft 97 is mounted to rock, said shaft having a pair of relatively fixed arms 21, 22 (Fig. 4). These arms carry at their free ends, a horizontal shaft 20, which is pivotally connected by means of a link 24 (Fig. 4) to a collar 23 that is longitudinally adjustable on spindle 12. A tubular handle 18 is loosely mounted on the outer end of the shaft 20, and in the bore of this handle 18, the lower end of hand lever 80 is longitudinally movable. To arm 81 is pivoted at its lower end, a latch 84 (Fig. 2) by means of a pin 82. The latch 84 is adapted to engage the hand lever 80 under the action of a spring 83 and is provided with an arm 89 arranged in the path of a tappet 88. The latter is formed on a lever 87 mounted to rock on a pin 86 carried by pulley 27. Lever 87 is by means of a spring 90 pressed against the periphery of tubular member 54 and is adapted to be engaged by a lug 85 provided on said member.

The four wheels 62, 63, 64, 65 form a differential gear for normally causing member 54 to rotate with a slow speed relatively to pulley 27. Assuming the two upper wheels 62, 63 to be alike in diameter and the lower wheels 64, 65 to be in the proportion of 10:9, in other words assuming the wheels 62, 63 to have 45 teeth each and the wheels 64, 65 to have 50 and 45 teeth respectively, then the member 54 will make

$$\frac{50}{45} = \frac{10}{9}$$

revolution on every revolution of pulley 27, that is $\frac{1}{9}$ revolution in advance of the pulley, so that after nine revolutions of the pulley, the operating member 54 will have made 1 revolution relatively to the pulley.

The machine operates as follows: Assuming the seaming operation of a can to be completed and the parts to occupy the position shown in Fig. 5 in which wheel 64 is out of engagement with wheel 63. The operating member 54 is thus taken along by pulley 27 owing to the frictional contact therebetween and as the pulley 27 takes along with it the seaming rollers 40, 41, which now occupy their highest position, the attendant will be enabled to remove the seamed can. For this purpose, he grasps handle 18 and turns the hand lever 80 back in the direction of arrow 19 (Fig. 1), so that the arms 21, 22 are swung downward in the direction of arrow 99. During this movement, the hand lever 80 slides on latch 84 (Fig. 2) and thus releases the same, the latch now falling in behind the hand lever, whereby the arm 81 is coupled to the same. Spindle 12 is thus moved downward by link 24, thereby placing spring 15 under tension and lowering support 11, so that the seamed can may be removed and replaced by a can to be seamed. The attendant now releases handle 18 to cause spindle 12 to be raised by spring 15, so that the fresh can 25 and its lid 26 are forced against head 10. At the same time, the collar 23 of spindle 12 will by means of link 24 have swung arms 21, 22 upward, so that by means of shaft 20 and handle 18, the hand lever 80 is returned to the position shown in Fig. 1. During the forward movement of the hand lever 80, it has taken along arm 81 by latch 84, so that arm 77 will raise lower wheel 64 until its pins 71 engage the sockets 63^a of the upper gear wheel 63. In this way, these wheels are coupled, so that the operating member 54 commences to turn in the direction of the arrow 92 (Fig. 2) in advance of pulley 27. During this movement of member 54, the conical guide rollers 42, 43 are, by disks 50, 51 gradually lowered while traveling along the inner edge of guide ring 61, whereby the seaming rollers 40, 41 are gradually swung toward the can cover to

properly perform the work. It is obvious that during operation the seaming rollers 40, 41 are independently moved inward for a certain distance, and that with the example stated, they are returned to their initial position after nine revolutions of pulley 27. Shortly before the end of this period, the lug 85 will encounter lever 87 (Fig. 2) and swing the latter outward, so that tappet 88 will swing the arm 89 of latch 84 outward. Thus arm 81 will be released, so that spring 75 is free to return arm 81 to the position shown in Fig. 1, while upon the subsequent disengagement of lug 85 and lever 87, spring 90 will return said arm to its original position. At the same time, the spring 75 will lower gear wheel 64 to disconnect it from gear wheel 63, so that the rotation of the operating member 54 relatively to pulley 27 will cease and both of said parts will rotate in unison. The attendant thus ascertains that the seaming operation is completed, whereupon the can is removed by him in the manner previously described.

It is obvious that the attendant is enabled to stop the device for automatically pressing the seaming rollers 40, 41 against the can at any moment without stopping the machine by properly manipulating hand lever 80.

I wish it to be understood that my seaming machine may be varied in many respects without departing from the spirit of my invention.

I claim:

1. In a can seaming machine, the combination with a stationary guide ring, of a pair of oscillative arms, spindles depending therefrom, conical rollers slidable on said spindles and adapted to engage said guide ring, seaming rollers carried by the lower ends of said spindles, and means for axially moving the conical rollers.

2. In a can seaming machine, the combination with a can support, of a stationary stem, a sleeve rotatable thereon, a carrier integral with the sleeve, a seaming device carried by said carrier, a tubular member loosely surrounding the sleeve, a differential gear intermediate the sleeve and member that effects a relative movement between said sleeve and member, and means actuated by said member for rendering the differential gear inactive after the tubular member has completed one rotation around the sleeve.

3. In a can seaming machine, the combination with a spring-influenced can support, a hand lever operatively connected thereto, a stem, a carrier having a sleeve that is rotatably mounted on the stem, a tubular member rotatable on the sleeve, a seaming device carried by the carrier, a differential gear intermediate said sleeve and member, and means operated by said member for

rendering said differential gear inactive upon the completion of one rotation of said member around the sleeve.

4. In a can seaming machine, the combination with a frame, of a guide ring secured in said frame, a carrier parallel to said guide ring and turnable in said frame, arms on said carrier, spindles depending from the arms, conical rollers movable on said spindles and adapted to engage the inner edge of said guide ring, seaming rollers fast on said spindles, springs for moving said levers outward and thereby forcing the conical rollers against the inner edge of said guide ring, and means for turning said carrier and axially shifting said conical rollers on said spindles whereby said seaming rollers are moved toward and away from the axis of said carrier.

5. In a can seaming machine, the combination with a frame, of a carrier turnable in said frame and having a sleeve, means for driving said carrier, arms rocking on said carrier, spindles depending from the arms, seaming rollers fast on said spindles, a guide ring secured to said frame at right angles to the axis of said carrier, conical rollers movable on said spindles and adapted to engage the inner edge of said guide ring, means for moving said arms outward and thereby pressing said conical rollers against the inner edge of said guide ring, a tubular member adapted to turn on the sleeve and having peripheral grooves, means for turning said member relatively to said carrier, and means engaging the grooves for axially moving said conical rollers, whereby said seaming rollers are moved toward and away from the axis of said carrier.

6. In a can seaming machine, the combination with a frame, of a carrier turnable in said frame and having a sleeve, a guide ring secured to said frame at right angles to the axis of said carrier, arms having sleeves parallel to the axis of said carrier which sleeves are mounted to rock in the carrier, spindles depending from said arms, seaming rollers fast on said spindles, conical rollers movable on said spindles and adapted to engage the inner edge of said guide ring, springs for moving said arms outward and thereby pressing said conical rollers against the inner edge of said guide ring, a tubular member turnable on the sleeve of said carrier and having peripheral grooves, longitudinally movable shafts mounted in the sleeves of said arms, operating disks turnable on said shafts and adapted to engage the grooves, a differential gear adapted to rotate said member relatively to said carrier, and means on said shafts for axially shifting said conical rollers, whereby said seaming rollers are moved toward and away from the axis of said carrier.

7. In a can seaming machine, the combi-

5 motion with a frame, of a carrier turnable
 in said frame and having a sleeve, a first
 gear wheel fast on said carrier, a first
 counter gear wheel turnable in said frame
 10 and meshing with said first gear wheel, a
 second gear wheel adapted to be connected
 with said first counter gear wheel, a tubular
 member turnable on the sleeve of said car-
 15 rier, a second counter gear wheel fast on the
 sleeve of said member and meshing with said
 second gear wheel, said four gear wheels
 forming a differential gear adapted to turn
 said tubular member relatively to said car-
 20 rier, seaming rollers on the carrier, and
 means operated from the tubular member
 for moving said rollers toward and away
 from the axis of said carrier.

20 8. In a can seaming machine, the combi-
 nation with a frame, of a support adapted
 to receive a can, a spring for raising said
 support, a hand lever operatively connected
 to said support, a carrier turnable in said
 frame and having a sleeve, means for driv-
 25 ing said carrier, a seaming device depending
 from the carrier, a tubular member turnable
 on the sleeve of said carrier, a differential
 gear adapted to turn said member relatively
 to said carrier, an additional lever pivoted
 30 to the frame, means connected to said lever
 for rendering said differential gear active,
 a second spring adapted to render said dif-

ferential gear inactive, a spring-pressed
 latch on said lever adapted to engage said
 hand lever, and means operated from the
 tubular member for releasing said latch after
 35 said member has completed one revolution
 relatively to said carrier.

9. In a can seaming machine, the combi-
 nation with a frame, of a carrier turnable
 in said frame and having a sleeve, a tubular
 40 member turnable on said sleeve, a differ-
 ential gear adapted to turn the tubular mem-
 ber relatively to said carrier, coupling means
 adapted to render said differential gear ac-
 tive, a first spring adapted to render said
 45 differential gear inactive, a lever fulcrumed
 to the frame and adapted to actuate said
 coupling means, a can support, a hand lever
 operatively connected thereto, a second
 spring for raising said support, a spring-
 50 pressed latch on the first named lever and
 adapted to engage said hand lever, and
 means operated from the tubular member
 for releasing said latch after said member
 55 has completed one revolution relatively to
 said carrier.

In testimony whereof I affix my signature
 in presence of two witnesses.

ANDREAS JENSSEN.

Witnesses:

JAKOB HIDLE,
 A. C. SIGMUND.