J. BRENZINGER.

CAN HEADING MACHINE.

APPLICATION FILED JUNE 8, 1911.

1,167,348.

Patented Jan. 4, 1916.

Fig. 1.

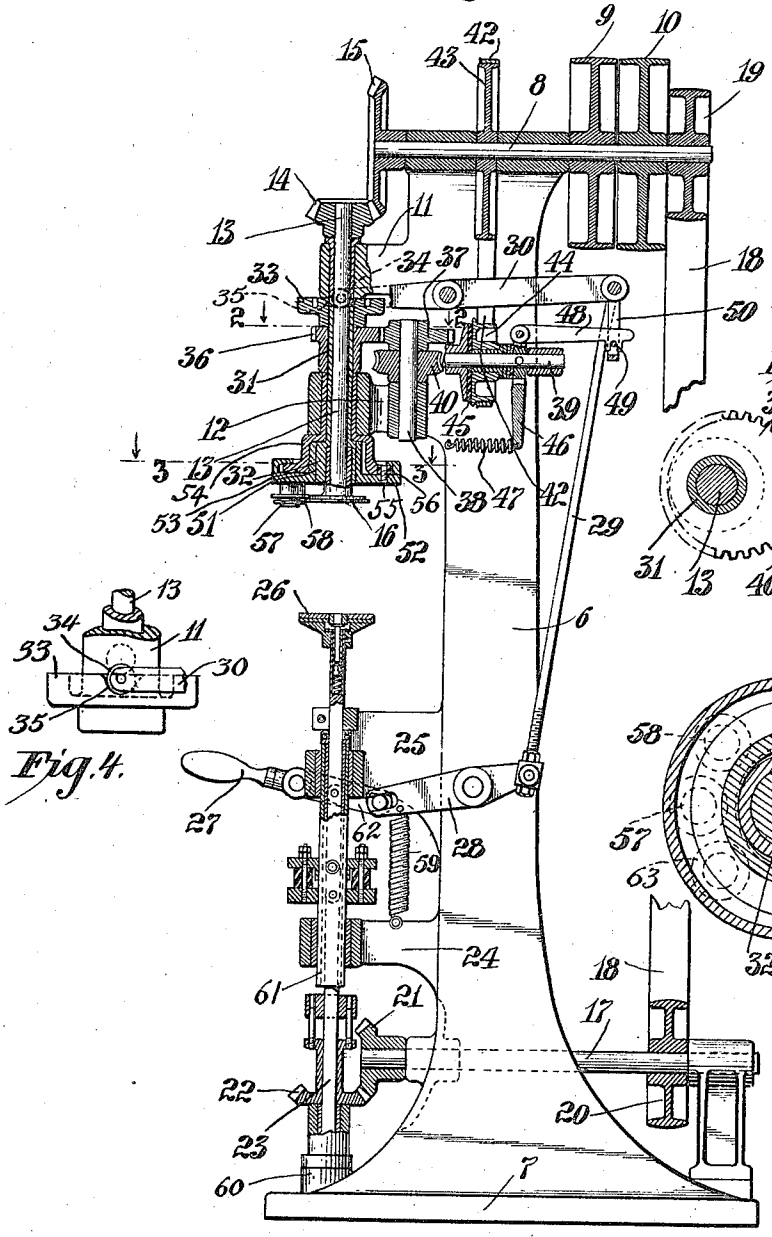


Fig. 2.

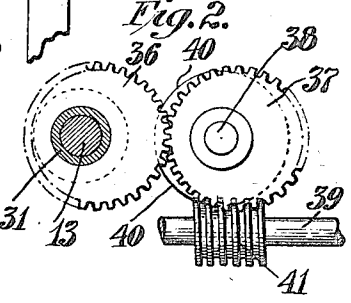
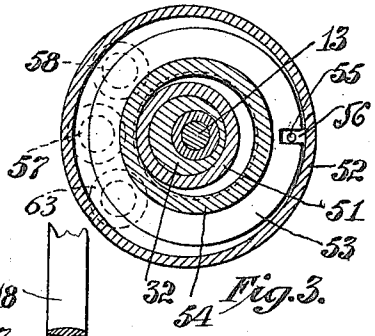


Fig. 4.

Fig. 3.



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JULIUS BRENZINGER, OF MOUNT VERNON, NEW YORK, ASSIGNOR TO MAX AMS MACHINE COMPANY, OF MOUNT VERNON, NEW YORK, A CORPORATION OF NEW YORK.

CAN-HEADING MACHINE.

1,167,348. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed June 8, 1911. Serial No. 631,889.

To all whom it may concern:

Be it known that I, JULIUS BRENZINGER, a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented certain new and uesful Improvements in Can-Heading Machines, of which the following is a specification.

This invention relates to can heading machines, in which the top or end portion of the can is secured to the body portion thereof by what is known as the double-seaming process.

The present invention more particularly contemplates additional improvements in the construction and operation of the machine shown and described by me in a co-pending application filed June 7, 1911, Serial No. 631,752. In this co-pending application, I have shown and described a machine in which the parts to be seamed were rotated and supported by a rotating chuck, with novel means for bringing the seaming rollers into coöperative relation to said chuck at the proper times and only when the can parts were properly positioned in the machine, the seaming rollers being withdrawn from the work immediately after effective operations thereof and held in their comparatively remote and non-coöperative positions at all other times.

In addition to a retention of the improvements set forth in said co-pending application, the principal object of the present invention is to provide means whereby the machine may be more rapidly operated and the capacity thereof materially increased without to the slightest extent detracting from its simplicity, efficiency and dependability.

To properly perform the seaming operation, it is necessary that each seaming roller remain in contact with the parts which are being seamed for from three to five relative revolutions thereof when two rollers only are employed, and from two to four revolutions when three or more rollers are employed, and that the superposed flanges be bent and intercurled by very slight gradations. Where the seaming rollers are being reciprocated to bring them from non-coöperative to coöperative positions with relation to the chuck, and vice versa, if this bodily movement of the rollers is substantially uniform, the velocity must be very slow in order that the seaming operation may be properly performed, thus necessitating a loss of time in advancing the rollers to and retracting the same from their effectively operative positions.

While the mechanism shown and described both in this application and in my co-pending application aforesaid in itself provides for a certain variance in the velocity of the moving rollers in advancing to and receding from the work, whereby the same move relatively rapidly during the periods of advancement and recession and relatively slowly during effective operations, the present invention contemplates the provision of additional means for varying to a still greater degree this variance of velocity in order to save time and minimize the wear and tear due to non-effective or idle operations.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a central sectional side elevation of a machine embodying my invention; Fig. 2 is an enlarged horizontal section taken substantially on the line 2—2 of Fig. 1, and Fig. 3 is an enlarged section taken substantially on the line 3—3 of Fig. 1. Fig. 4 is a detail view in side elevation of the mechanism for checking movement of the eccentric head, as hereinafter described.

Referring now to the drawings in detail, numeral 6 refers to the usual heavy frame supported upon the base 7. In the upper portion of this frame is journaled the main driving shaft 8 provided with the usual fast and loose pulleys 9 and 10, respectively, to which the power may be transmitted in the usual manner from any suitable source. In the arms 11 and 12, projecting forwardly from the frame, is journaled the vertical shaft 13, at the upper end of which is provided the bevel gear 14 in mesh with the similar gear 15 on the shaft 8. At the lower end of the shaft 13 is mounted the chuck 16, of a size and configuration which adapts it to fit snugly within the correspondingly shaped depression in the can top or cover and support the latter against the forces of the seaming operation.

In the lower portion of the frame 6 is journaled the shaft 17, driven from the shaft 8 by means of the belt 18 connecting the pulley 19 on the shaft 8 with the pulley 20

on the shaft 17. At the other end of the shaft 17 is provided the bevel gear 21 in mesh with the similar gear 22 at the lower end of the vertical shaft 23, suitably journaled in the socket 60 on the base of the frame and the sleeve 61 carried by the arms 24 and 25 projecting forwardly from the frame of the machine. This shaft 23 is vertically slidable in its bearings, and at the upper end thereof is provided a can-supporting platform 26 which is adapted to be yieldingly rotated by the shaft 23 and which is moved vertically with said shaft to raise the unseamed can parts until the latter are engaged between said platform and the chuck 16.

The manner in which the platform 26 is raised and lowered by the constantly rotating shaft 23, through the operation of the hand lever 27, is fully shown and described in detail in my co-pending application aforesaid, and this description need not be repeated here further than to reiterate that the depression of the handle of the lever 27, in addition to raising the rotating shaft 23 and the platform 26, operates through the arm 62 of said lever to actuate the lever 28 and correspondingly actuate the lever 30 through depression of the connecting-rod 29.

On the shaft 13 is mounted the independently rotatable sleeve 31 which terminates at its lower extremity in the eccentric head 32. At the upper free end of this sleeve is mounted the disk 33, along the outer edge of the upper face of which is adapted to travel the roller 34 at the end of the lever 30. In the path of travel of this roller 34 on said disk 33, is provided the seat or pocket 35 into which said roller is forced to check rotation of said disk 33 and, consequently, rotation of the sleeve 31 and the eccentric head 32.

The sleeve 31 is rotated by means of the gear 36 thereon in mesh with the gear 37 on the short shaft 38 journaled in the arm 12 of the frame. The shaft 38 is rotated from the horizontal shaft 39, suitably journaled in the frame, by means of the gear 40 in mesh with the worm 41 on said shaft 39 The shaft 39 is rotated from the shaft 8 by means of the belt 42 connecting the pulley 43 on the shaft 8 with the pulley 44 on the shaft 39. In order that the shaft 39 may be rotated intermittently from the constanty rotating shaft 8, the pulley 44 is loosely mounted on the former, and is provided with a smooth face adapted to contact and coöperate with the contiguous face of the disk 45 fixed on said shaft 39, in the manner of the well-known friction clutch, rendered effective by means of the lever 46 which, when free to move under action of the tension spring 47, is adapted to force the friction face of the pulley 44 against the friction disk 45 and yieldingly effect rotation of the shaft 39.

The lever 46 forms one arm of a bell-crank lever the other arm 48 of which is normally held in a raised position by means of the pin 49 in the end of the arm 50 depending from the lever 30. It will be apparent, therefore, that when this end of the lever 30 is depressed by the connecting-rod 29, the pin 49 will be lowered to permit the action of the spring 47 and make the friction clutch effective. When the longer arm of the lever 30 is in its raised position, however, the pin 49 will have raised the arm 48 and withdrawn the pulley 44 from contact with the friction disk 45, and the shaft 39 will not be rotated, this end of the lever 30 being raised under action of the more powerful tension spring 59 at the instant the seat or pocket 35 in the upper face of the disk 33 reaches the roller 34 at the other end of said lever 30 and said roller is forced therein to check rotation of said disk and of the sleeve 31, as more clearly shown in Fig. 4 and all as more fully described in my copending application aforesaid.

Journaled upon the eccentric head 32, at the end of the sleeve 31, is the carrying or supporting member for the seaming rollers, this member preferably comprising a cylindrical portion 51, rotatively mounted on said eccentric head 32, and a disk portion 52 the edge of which is first upwardly and then inwardly turned to slidably engage the flange 53 at the end of the supporting sleeve 54 which is fixed in the arm 12 of the frame. The upwardly and inwardly turned edge of the disk portion 52 of the carrying member may be said to provide an internal annular groove, and this groove is circumferentially of greater diameter than the diameter of the edge of the flange 53 at the end of the supporting sleeve 54. The supported carrying member, therefore, has a bodily movement laterally with relation to the flange 53 on the fixed sleeve 54, such movement being limited, first, by the difference between the diameters of the flange and the groove and, second, by a pin 55 projecting upwardly from the disk portion 52 of said carrying member and into a substantially radially directed slot 56 in the stationary flange 53.

It will be apparent, therefore, as fully set forth and described in my co-pending application, aforesaid, that when the sleeve 31 is rotated, the eccentric 32 will operate to impart a movement to the carrying member 52 which is a combination of reciprocation thereof in the direction of the slot 56 and oscillation about the pin 55 as a varying center. While the double-seaming operation may ofttimes be completed through the employment of two seaming rollers only, I have shown in the drawings three rollers, 63, 57 and 58—the former indicated in dotted lines in Fig. 3, and each thereof being of common and well-known construction and

configuration and coöperating with the chuck 16 in the usual manner to intercurl and compress the superposed flanges of can body and top. These rollers are rotatively mounted in circular arrangement on the face of the carrier 52 at sustantially equal distances from a common center, and by the movement described of the carrier 52 are successively or in turn advanced to and retracted from coöperative position with reference to the chuck 16. Under in what may be termed normal conditions, with the platform 26 depressed, the roller 34 is in the seat or pocket 35 and the disk 33 is checked against rotation, in which position all of the rollers are held in positions most remote from the chuck 16. When the lever 27 is depressed to raise the platform 26 and engage the assembled can parts between said platform and the chuck 16, the roller 34 is withdrawn from the pocket 35 in the manner described, permitting rotation of the disk 33 and the sleeve 31, which is then slowly rotated by the shaft 39 through the worm 41 in mesh with the gear 40 and the intermeshed gears 37 and 36, the friction clutch having been made operative by the releasing operation.

As set forth in my co-pending application aforesaid, and as will even more clearly appear from the drawings and specification of another co-pending application, filed July 5, 1910, Serial No. 570,343, in which a corresponding construction and arrangement of parts of the seaming mechanism is shown and described in greater detail, the movement of each seaming roller, mounted and actuated in the manner herein shown and described, in advancing to and receding from the work, is at a variable speed which is at a maximum when the roller is halfway between a position in which it is in actual contact with the work and its relative position most remote therefrom, and at a minimum when in each of said relative positions. However, the degree of eccentricity of the head 32 is necessarily so comparatively slight that this inherent speed variation may be materially augmented with resultant economy in time and consequent increase in the capacity of the machine without too greatly reducing the time during which the manual operations of removing a headed can and adjusting in the mechanism the assembled parts of a can to be headed must be performed in making the operation of the machine as nearly continuous as possible. Therefore, in order to obtain the augmented variation in speed referred to, I mount the gears 36 and 37 eccentrically upon the shafts 31 and 38, respectively, as is clearly shown in Fig. 2. From this figure, it will be apparent that when these eccentrically mounted gears are in the position shown, the gear 36 being driven by the gear 37, movement of the sleeve 31 will be relatively slow, while when these gears have been rotated through an arc of 180°, the conditions will be reversed, and the sleeve 31 will be rotated at relatively much greater velocity. These eccentric gears are so mounted upon their respective shafts, that they are in the position indicated in Fig. 2 when the seaming rollers are in rapid succession contacting with the chuck 16, under which conditions the seaming operation is being performed and a relatively slow movement is required. When the seaming operation has been completed, and the rollers are being withdrawn from the chuck 16, the speed of rotation of the sleeve 31, and consequently on the eccentric head 32, is rapidly increasing, reaching a maximum when the rollers have been withdrawn to their positions of rest and at the start of the next succeeding operation. Similarly, the rollers will be returned to coöperative positions relative to the chuck 16 at initially maximum and gradually decreasing velocities.

The spring 59, in tension between the end of the lever 28 and the arm 24, normally retains the platform 26 in its depressed position and the roller 34 in the seat or pocket 35 in the disk 33, where it checks the sleeve 31 against rotation with the seaming rollers 63, 57 and 58 at their maximum distance from the chuck 16. In this position, they are held until another unseamed can is placed upon the platform 26, and the lever 27 is again depressed to engage the can parts between said platform and the chuck 16, this operation releasing the sleeve 32 for rotation and operating the friction clutch to rotate the same through one revolution, as explained. It will be noted that the lever 27 may be released immediately after depression thereof, all of the parts being retained in position by the roller 34 which has been elevated to its track upon the upper face of the disk 33. When the seat or pocket 35 again comes under the roller 34, the latter is forced therein by operation of the spring 59, the clutch is released and rotation of the sleeve 31 is checked, and the platform 26 is lowered to position where the seamed can may be removed and an unseamed can placed thereon.

Many modifications of minor details of my improved can heading machine will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not limit my invention to the specific construction herein shown and described.

I claim as new and desire to secure by Letters Patent:

1. In a can heading machine, the combination, with means for supporting the assembled parts of the can to be headed, the seaming mechanism, and rotative means

actuated from a constant source of power to advance and retract said seaming mechanism to and from work-engaging position, of means for accelerating rotative movement of said advancing and retracting means when the seaming mechanism is not in the work-engaging position.

2. In a can heading machine, the combination of a chuck, a seaming roller, rotative means for periodically bringing said elements into work-engaging position, and means for accelerating rotation of said rotative means when said elements are not in work-engaging position.

3. In a can heading machine, the combination, with a chuck, a seaming-roller support having a seaming roller mounted thereon, and rotative means for intermittently bringing said elements into work-engaging position, of means for accelerating the speed of said rotative means to accelerate the speed of relative movement of said elements toward and away from each other when not in work-engaging position.

4. In a can heading machine, the combination, with a chuck, a seaming roller, and rotative means for advancing and retracting said roller to and from work-engaging position with relation to said chuck, of means for varying the speed of rotation of said rotative means and thus the speed of the advancing and retracting movements of said roller.

5. In a can heading machine, the combination, with a chuck, a seaming roller, and rotative means actuated from a constant source of power to advance and retract said roller to and from work-engaging position with relation to said chuck, of means for accelerating rotative movement of said advancing and retracting means when said roller is not in the work-engaging position.

6. In a can heading machine, the combination, with means for supporting and rotating the assembled parts of the can to be headed, of a seaming roller initially not in work-engaging position with relation to said supporting means, rotative means for periodically advancing said roller to and retracting the same from the work-engaging position, and variable-speed means for imparting rotative motion to said advancing and retracting means.

7. In a can heading machine, the combination, with means for supporting and rotating the assembled parts of the can to be headed, of a plurality of seaming rollers initially not in work-engaging positions with relation to said supporting means, initially inert rotative means for advancing and retracting said rollers to and from work-engaging positions, and variable-speed means for rotating said advancing and retracting means.

8. In a can heading machine, the combination, with means for supporting and rotating the assembled parts of the can to be headed, of a seaming-roller-carrying member, a rotatable seaming roller thereon and initially held thereby out of work-engaging position with relation to said supporting means, normally inert rotative means for advancing and retracting said carrying member whereby said roller is moved to and from work-engaging position, and variable-speed means for imparting rotative movement to said advancing and retracting means.

9. In a can heading machine, the combination, with means for supporting and rotating the assembled parts of the can to be headed, of a seaming-roller support and a seaming roller thereon, means for checking movement of said support with said roller when withdrawn to the farthest extent from work-engaging position, rotative means for advancing and retracting said support to move said roller to and from the work-engaging position, initially inert variable-speed means for actuating said advancing and retracting means, and means for simultaneously releasing said checking means and rendering operative said actuating means.

10. In a can heading machine, the combination, with a chuck and a support for the assembled parts of the can, of means for engaging said parts between said chuck and said support, a seaming roller initially not in the work-engaging position, initially inert rotatable means for advancing and retracting said roller to and from the work-engaging position, and initially inoperative means, rendered operative by operation of said engaging means, for rotating said advancing and retracting means at a variable speed.

11. In a can heading machine, the combination, with a chuck and a support for the assembled parts of the can, of means for engaging said parts between said chuck and said support, a seaming roller support and a seaming roller thereon initially checked with said roller out of work-engaging position, initially inert rotatable means for advancing and retracting said seaming-roller support to move said roller to and from said work-engaging position, and initially inoperative variable speed means, rendered operative by operation of said engaging means, for simultaneously releasing said checking means and rendering operative said advancing and retracting means.

12. In a can heading machine, the combination, with a constantly rotating chuck, a can-body supporting platform, and means for effecting the engagement therebetween of the assembled parts of the can to be headed, of a seaming roller out of work-engaging position with relation to said chuck, and means having variable-speed ac-

tuating means for advancing said roller to said work-engaging position, operation of said advancing means being timed in common with operation of said engaging means.

13. In a can heading machine, the combination, with a constantly rotating chuck, a can-body supporting platform, and means for effecting the engagement therebetween of the assembled parts of the can to be headed, of a seaming-roller-carrying member, a seaming roller thereon and initially held thereby out of work-engaging position with relation to said chuck, rotative means for moving said carrying member to advance and retract said roller to and from said work-engaging position, and variable-speed means for actuating said rotative means, operation of said advancing and retracting means being timed in common with operation of said engaging means.

14. In a machine of the character described, the combination, with a chuck, an eccentric, and a tool carrier journaled on said eccentric, of means for rotating one of said two last-mentioned elements relative to the other at a variable speed.

15. In a can heading machine, the combination, with a constantly rotating chuck, of a rotatable eccentric, a seaming roller support journaled upon said eccentric and held against rotation, and means for rotating said eccentric at a variable speed.

16. In a machine of the character described, the combination, with a constantly rotating chuck, an eccentric, and a tool carrier journaled on said eccentric, of intermittently operating means for rotating one of said two last-mentioned elements relative to the other at a variable speed.

17. In a can heading machine, the combination, with a constantly rotating chuck, of a rotatable eccentric, a seaming-roller support journaled upon said eccentric and held against rotation, means for intermittently rotating said eccentric at a variable speed.

18. In a can heading machine, the combination, with a constantly rotating chuck, of a rotatable eccentric, a seaming-roller support journaled upon said eccentric and held against rotation, initially inert means for rotating said eccentric at a variable speed, means for checking said eccentric at the end of each rotation thereof, and means for releasing said checking means and thereby rendering operative said rotating means.

19. In a can heading machine, the combination, of a rotating shaft, a chuck carried thereby, a sleeve on said shaft and provided with an eccentric head, a seaming-roller support journaled on said eccentric and held against rotation, a seaming roller carried by said support, and means for rotating said sleeve at a variable speed.

20. In a can heading machine, the combination, of a rotating shaft, a chuck carried thereby, a normally stationary sleeve on said shaft and provided with an eccentric head, a seaming-roller support journaled on said eccentric and held against rotation, a seaming roller carried by said support, and means for intermittently rotating said sleeve at a variable speed.

21. In a can heading machine, the combination of a rotating shaft, a chuck carried thereby, a sleeve on said shaft and provided with an eccentric head, a seaming-roller support journaled on said eccentric and held against rotation, initially inert means for rotating said sleeve at a variable speed, a seaming roller carried by said support, means for checking said sleeve and eccentric at the end of each rotation thereof, and means for releasing said checking means and thereby rendering operative said rotating means.

22. In a can heading machine, the combination of a rotating shaft, a chuck carried thereby, a movable platform adapted to cooperate with said chuck to engage and support the assembled parts of the can to be headed, an initially stationary sleeve on said shaft and provided with an eccentric head, a seaming-roller support journaled on said eccentric and held against rotation, a seaming roller carried by said support, and initially inert means rendered operable by operation of the can-part-engaging means for rotating said sleeve at a variable speed.

23. In a can heading machine, the combination of a rotating shaft, a chuck carried thereby, a movable platform adapted to cooperate with said chuck to engage and support the assembled parts of the can to be headed, a sleeve on said shaft and provided with an eccentric head, said sleeve being initially checked against rotation, a seaming roller support journaled on said eccentric, means for holding said support against rotation, a seaming roller carried by said support, and initially inert means rendered operable by operation of the can-part engaging means both for releasing said sleeve and for rotating the same at a variable speed.

In testimony of the foregoing, I have hereunto set my hand in the presence of two witnesses.

JULIUS BRENZINGER.

Witnesses:
W. L. MANN,
GEORGE GEHRUN.