Dec. 26, 1922.

1,440,143

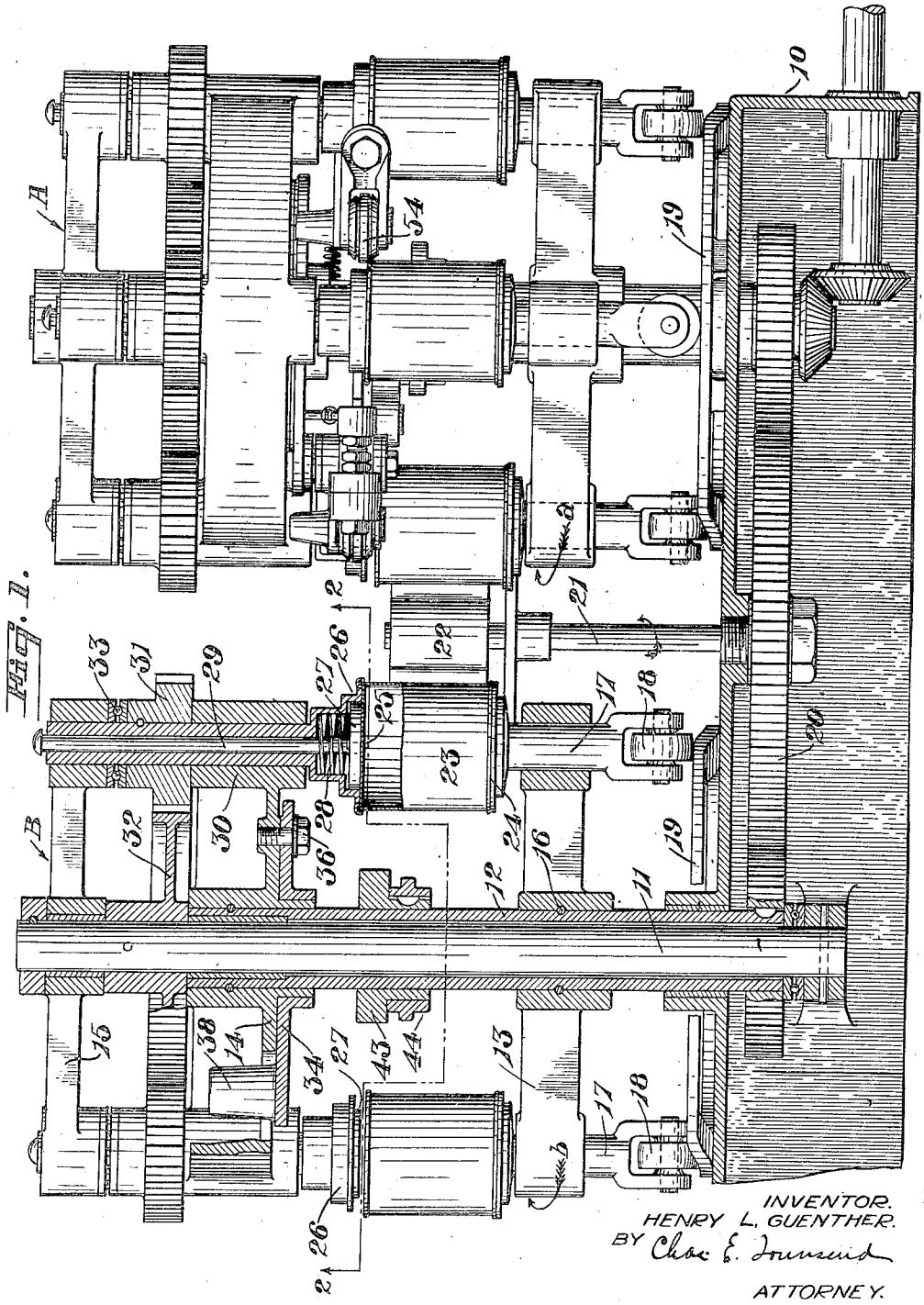
H. L. GUENTHER.

SEAMING HEAD FOR DOUBLE SEAMING MACHINES.

FILED APR. 20, 1921.

2 SHEETS-SHEET 1

Fig. 1.



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Fig. 1

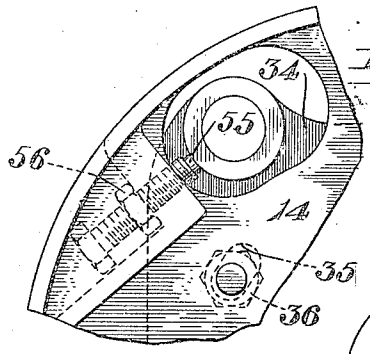
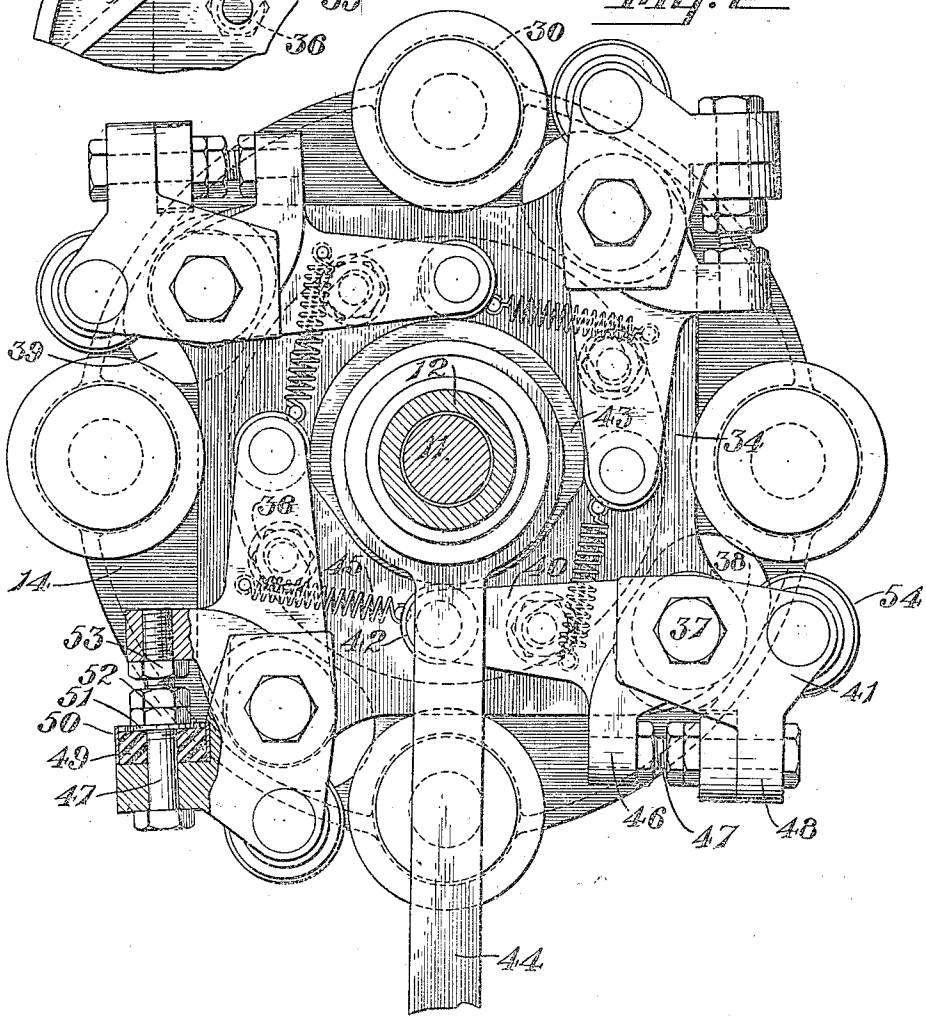


Fig. 2



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UNITED STATES PATENT OFFICE.

HENRY L. GUENTHER, OF LOS ANGELES, CALIFORNIA.

SEAMING HEAD FOR DOUBLE-SEAMING MACHINES.

Application filed April 20, 1921. Serial No. 462,845.

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 Seaming Heads for Double-Seaming Machines, of which the following is a specification.

This invention relates to double seaming machines and particularly pertains to a seaming head therefor.

It is the principal object of the present invention to provide novel means whereby a double seam may be formed between a can and its cap while the can is rotating, said mechanism embodying means whereby inequalities in the thickness of the stock and irregularities in the contour of the cans and their caps may be taken care of without affecting the operation of the machines, further means being provided for suitable adjustment of the rolls and the associated parts.

The invention contemplates the use of a turret carrying rotatable spindles between which a can body and its cap may be gripped to produce rotation thereof, seaming rolls being provided to form a seamed joint between the can and its cap, said rollers being yieldably held, adjustably supported and positively actuated to produce pressure against the can.

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

Figure 1 is a fragmentary view in vertical section and elevation showing a double seaming machine and the present invention applied thereto.

Fig. 2 is a view in section and elevation as seen on the line 2—2 and viewed in the direction of the arrows as indicated in Fig. 1.

Fig. 3 is a fragmentary view showing the manner in which the roller support is adjusted relative to the turret spider.

Broadly considered, the present invention is applicable to a double seaming machine having rotatable spindles between which a can and its cap may be secured and at which time a seam may be formed by a roller. The machine disclosed in the drawings comprises turrets A and B, mounted upon a main frame 10. The turret A is designed to produce a first seaming operation, and the turret B a final rolling operation to produce a complete double seam. These turrets rotate around central vertical shafts 11, extending upwardly from the base 10. Disposed centrally around these shafts are sleeves 12 carrying a lower spider 13, an upper spider 14 and a top supporting spider 15. These members all rotate with the sleeve, and are preferably pinned thereto as indicated at 16. The lower spider 13 carries four reciprocating spindles 17. These spindles are spaced equal distance from each other and extend vertically through bearings of the spider.

Rollers 18 are mounted at the bottom of these spindles and rest upon a cam track 19 which circumscribes the shaft 11 and is mounted upon the base 10. By this means the spindle 17 may be vertically reciprocated as the spider 13 rotates, and as here shown the upward reciprocal movement takes place upon the half circle of rotation of both turrets on the forward side of the machine, turret A rotating in the direction of the arrow —*a*— and turret B rotating in a similar direction, as indicated by the arrow —*b*—.

The drive for these turrets comprises a train of gears 20 secured to the lower end of the sleeves 12 and to a spindle 21. This spindle carries a transfer member 22, by which the cans may be transferred from turret A to turret B.

Cans 22 are intended to rest upon circular supports 24, formed at the upper ends of the spindles 17. The upper end of the can is supplied with a cap 25 before it is delivered to the first turret A and as shown in Fig. 1, this cap is recessed. A clamping head 26 extends into the recessed portion of the cap, while a stripper plate 27 is mounted within the clamping head and rests upon the cap, so that the head may be readily separated from the cap when withdrawn. An expansion spring 28 acts between a shoulder within the cap and the upper face of the stripper plate. It will be understood that the vertical axes of the clamping heads and the spindles 17 are in longitudinal alignment. The heads 26 are secured to the lower ends of driving spindles 29. These spindles are rotatably supported through vertical bearings 30 of the upper spider 14.

The spindles 29 are driven by means of spur pinions 31 which are arranged around a fixed gear 32. This gear is pinned to the

vertical shaft 11 and as the spiders 13 and 14 rotate, a planetary action will take place between the fixed gear 32 and the pinions moving therearound. This will cause the spindles 29 to simultaneously rotate during their travel. The upper ends of the spindles 29 are journaled within bearings of the spider 15, it being desirable to place thrust bearings 33 between the pinions 31 and the bearings of the spiders to take up end thrust of the spindles 29.

The present invention is more particularly concerned with the structure of the spider 14 and the mechanism supported thereupon. Reference being had to Fig. 2, it will be seen that this spider has a substantially circular web, with which the bearings 30 are formed. Disposed beneath the web portion of the spider is a substantially square adjusting plate 34. This plate is formed with slotted openings 35 disposed on a circle concentric with the axis of the spider. These openings receive bolts 36, which are fixed relative to the web of the spider as shown in Fig. 1, and extend downwardly through the slotted openings of the adjusting plate.

It will therefore be seen that by loosening the bolts 36 the plate may be rotated around the central axis of the turret and the positions of its corners changed relative to the spider 14.

The corners of the adjusting plate 34 carry pivot bolts 37. These bolts are secured in bosses 38 formed as a part of the plate 34 and extending upwardly therefrom, slotted openings 39 being formed in the web of the spider 14 to accommodate these extensions. Bolts 37 pass through cam levers 40 and roller levers 41. The roller levers are provided with forked portions between which the cam lever extends, the bolts 37 passing through the forked portions of the roller levers and the intervening portion of the cam levers. The cam levers extend substantially at right angles to each other, and are provided at their inner ends with rollers 42, which rest against a cam 43. This cam circumscribes the sleeve 12 and is fixed to a support bearing 44 secured to the main frame of the machine. The sleeve 12 freely rotates through the center of the cam. Springs 45 are secured to the cam levers and to the spider 14 in a manner to constantly hold the rollers of the levers against the face of the cam.

It is intended that movement of the cam lever 40 shall be imparted to a complementary roller lever 41. This is brought about by an adjustable connection between two levers. A threaded lug 46 extends outwardly from the side of each cam lever 40 and substantially at right angles to the longitudinal axis thereof. This lug receives an adjusting bolt 47 which passes through a lug 48 extending from the side of the roller lever 41. The lugs 46 and 48 are substantially parallel. Mounted upon the face of the lug 48 adjacent the lug 46 is a resilient washer 49. This washer is here shown as of rubber and is inclosed within a metal sleeve 50. The bolt 47 passes through this resilient member and carries a washer 51, adapted to bear against the face thereof. Lock nuts 52 adjustably hold the washer in place. It will therefore be evident that permanent angular adjustment of a cam lever 40 and a roller lever 41 may be made by manipulation of the bolt 47 in its threaded seat on the lug 46, after which it may be fixed by the lock nut 53. Yieldable adjustment may be made by the lock nuts 52 as they press against the resilient washer 49 and regulate the amount of resiliency which may be obtained from the member 49.

It is to be understood that the roller levers 41 carry seaming rollers 54. These rollers extend downwardly and may be swung inwardly and outwardly relative to the clamping heads 26 of the driving spindles as controlled by the actuation of the cam arms 40 by the cam 43.

In operation of the invention the approximate positions of the seaming rollers 54 relative to the clamping heads 26 and an intervening can seam may be determined by loosening the bolts 36, after which the adjusting plate 34 may be moved by a set screw 55 extending through a lug 56 on the web of spider 14. When the desired adjustment has been made, this screw may be locked by a nut 56 and the screws 36 may then be tightened to rigidly hold the adjusting plate relative to the spider. More minute adjustment may then be made between the various rollers and the face of the cam 43 by the angular disposition of the cam levers with the corresponding roller levers. This is done by movement of the bolt 47. Any irregularities in the contour of the can, such as those produced by the vertical seam of the can body or inequalities in the thickness of the metal or the seam as rolled may be accommodated by the resilient member 49. This member will permit the rolls to have a slight yield when desired, without interfering with the effectiveness of the seaming operation. The amount of yield permitted and the pressure required to produce this movement can be determined by adjustment of the lock nuts 52 against the washer 51 and the resilient member.

It will thus be seen that by the provision of articulate actuating means interposed between the seaming cam and the seaming rolls will produce a desired minute adjustment of these members and that by interposing yieldable means in the adjusting mechanism thereof a more perfect seam may be formed than is at present obtainable on most machines, due to the fact that a maximum con-

stant pressure is produced against the seam without reference to irregularities or inequalities of the stock being worked upon.

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

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

1. In a can capping machine a plurality of seaming rollers adapted to act upon revolving cans, a cam by which movement of the rollers toward and away from the cam is produced, articulate means interposed between the rollers and the cam for imparting swinging movement from the cam to the rollers, and means for simultaneously adjusting the articulate means to adjust the rollers toward and from the cans.

2. In a can capping machine a plurality of seaming rollers adapted to act upon revolving cans, a cam by which movement of the rollers toward and away from the cam is produced, articulate means interposed between the rollers and the cam for imparting swinging movement from the cam to the rollers, a plurality of pivots on which the articulate means are mounted, and means for simultaneously adjusting the pivots with the articulate means thereon for adjusting the rollers toward and from the cans.

3. In a can capping machine a plurality of seaming rollers adapted to act upon revolving cans, a cam by which movement of the rollers toward and away from the cam is produced, articulate means interposed between the rollers and the cam for imparting swinging movement from the cam to the rollers, a plurality of pivots on which the articulate means are mounted, a support carrying the said pivots, and means for adjusting the support for simultaneously adjusting the articulate means and the rollers toward and from the cans.

4. In a can capping machine a plurality of seaming rollers adapted to act upon revolving cans, a cam by which movement of the rollers toward and away from the cam is produced, articulate means interposed between the rollers and the cam for imparting swinging movement from the cam to the rollers, a plurality of pivots on which the articulate means are mounted, and means for simultaneously adjusting the pivots, including an adjusting screw and means for locking the screw in its adjustment.

5. In a can capping machine, a seaming roller adapted to act upon a revolving can, a cam by which movement of the roller toward and away from the can is produced, articulate means interposed between the roller and the cam for imparting swinging movement from the cam to the roller, means for adjusting the articulated members relative to each other to vary the relative positions of the roller to the can, and means for adjusting the articulated members and the cam roller relative to the can and the cam.

6. In a can capping machine, a seaming roller adapted to act upon a revolving can, a cam by which movement of the roller toward and away from the can is produced, articulate means interposed between the roller and the cam for imparting swinging movement from the cam to the roller, means for adjusting the articulated members relative to each other to vary the relative positions of the roller to the can, means for adjusting the articulated members and the cam roller relative to the can and the cam, and yieldably means interposed between the articulated members for permitting a desired yieldable action by the roller irrespective of the aforesaid adjustments.

7. In a can capping machine, a seaming roller, a roller lever mounted on a relatively fixed pivot, a cam lever mounted on said pivot, a cam adapted to act against the free end of the cam lever to produce swinging movement thereof, adjustable means for fixing the cam lever and the roller lever in desired angular positions relative to each other, yieldable means interposed between the adjustable portions of said levers to permit slight relative yieldable movement, means for adjusting the yieldable means and an adjustable support for the pivot of said levers.

8. In a can capping machine a seaming turret carrying a plurality of spindles, seaming rollers adapted to cooperate with means on the spindles for forming a seam between a can cap and its body, a plate carried by the turret and upon which said rollers are supported, and means for adjusting said plate to simultaneously adjust all of the rollers relative to the spindles.

HENRY L. GUENTHER.