S. E. ALLERTON.

CAN FLANGING MACHINE.

APPLICATION FILED FEB. 9, 1920.

1,365,073.

Patented Jan. 11, 1921.

2 SHEETS—SHEET 1.

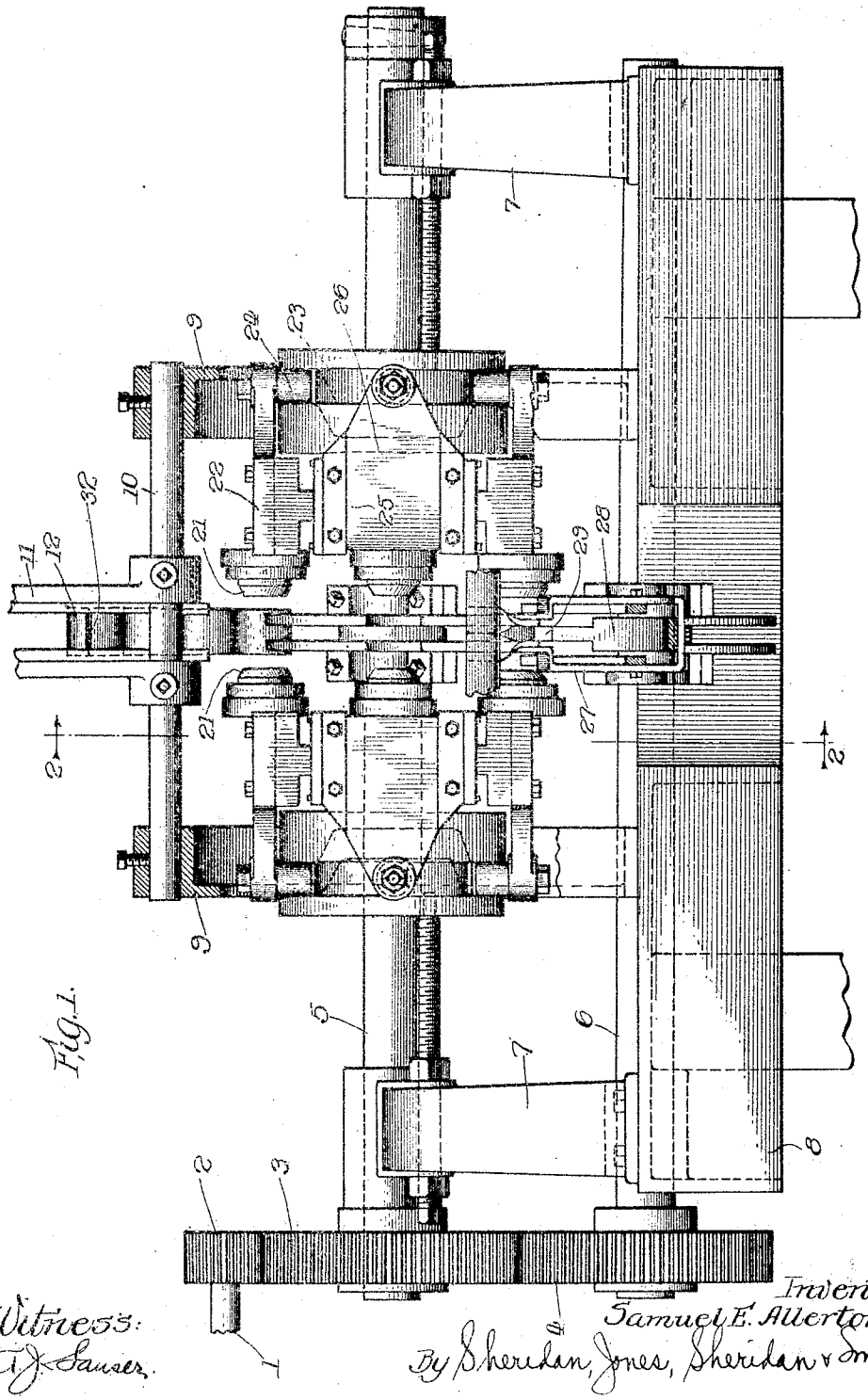

Fig. 1.

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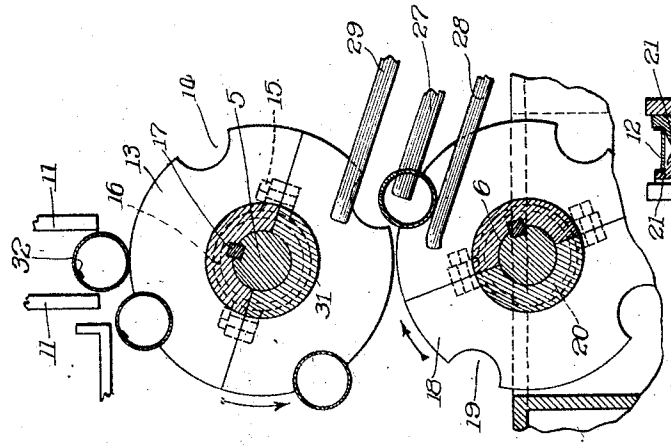

Fig. 3

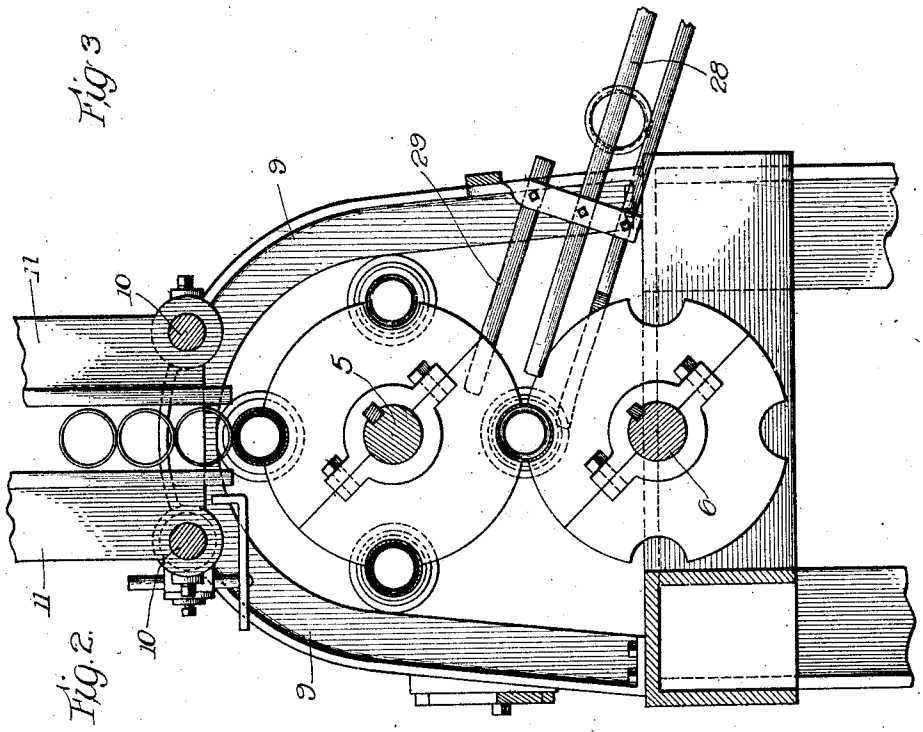

Fig. 2

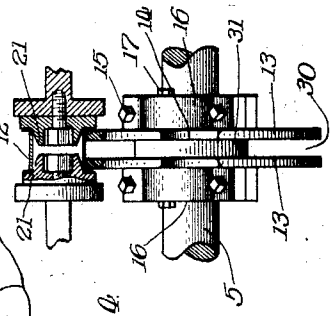

Fig. 4

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UNITED STATES PATENT OFFICE.

SAMUEL E. ALLERTON, OF CHICAGO, ILLINOIS.

CAN-FLANGING MACHINE.

1,365,073. Specification of Letters Patent. Patented Jan. 11, 1921.

Application filed February 9, 1920. Serial No. 357,432.

To all whom it may concern:

Be it known that I, SAMUEL E. ALLERTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Can-Flanging Machines, of which the following is a specification.

My invention relates to improvements in can-making machines and more particularly to machines for flanging the ends of the cylindrical can body.

One object of the invention is to provide a solid backing for each flange while it is being formed, thereby insuring uniformity in the section thereof around the entire periphery of the can body and avoiding the irregularities which heretofore have frequently prevented the production of an air-tight can when the heads of a can were thereafter flanged on to the cylinder.

Another object is to provide a machine having removable and interchangeable turrets for holding the cans during said flanging operation, whereby the same machine is adapted for cans of different dimensions.

Further objects and advantages will be apparent from the following description considered in conjunction with the accompanying drawings, in which I have illustrated one embodiment of the invention.

Figure 1 is a front elevation of the machine partly in section.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a side elevation of the turrets.

Fig. 4 is a front elevation partly in section of one of the turrets and the flanging members.

The flanging machine is driven from a power shaft 1 on which is mounted a pinion 2, which drives a gear 3, the latter driving a second gear 4, said gears being mounted on parallel shafts 5, 6, which turn in opposite directions. Said shafts are mounted in suitable bearings 7, 7 at opposite ends of the machine and are supported by the base or bed plate 8. A frame or housing is also mounted on the bed of the machine near the middle thereof and consists of end frames 9 and transverse rods 10, the latter supporting a magazine comprising guide members 11, between which the cylindrical can bodies 12 descend and are fed to the machine.

As shown in Fig. 3, each can body, as it leaves the bottom of the magazine, meets a rotatable turret 13 and drops into a semi-circular recess 14 therein. Said turret is preferably split on a radial plane, the two semi-circular parts being secured by studs 15 which pass through lateral hubs on the turrets and clamp the same about a collar 16, which is secured to the shaft 5 by a spline 17. A second turret 18 is located preferably below the first turret and is similar thereto having recesses 19 and being removably clamped about a second collar 20 on the lower shaft 6. These turrets rotate in opposite directions, as indicated by the arrows in Fig. 3.

As the can bodies rotate with the upper turret, they are prevented from falling out of the recesses by the flanging heads 21, shown in Figs. 1 and 4, which flanging heads are advanced sufficiently to fit into the can ends as soon as the latter leave the magazine. These flanging heads are carried by and slide in suitable supports 22 and are advanced by cams 23 and rollers 24, the supports 22 having a base portion 25, which is mounted on a central supporting member 26, all of the foregoing parts, except the cam members 23 rotating with the upper shaft 5.

The outline of the cams is such that the heads approach each other gradually as they descend, their innermost positions being reached just prior to the point where the upper and lower turrets meet. This movement of the flanging heads results in flanging the heads of the can body substantially at right angles thereto, as shown in Fig. 4. At the end of this operation the metal is flanged over against the solid backing furnished by the turrets 13 and 18. The recesses 14 and 19 therein form an inclosure which almost completely surrounds the can body. In fact, during the small angular movement of possibly 30° or 40°, when the can bodies are passing the point at which the upper and lower turrets are almost in contact, each portion of the flange at each end of the can is provided with a solid backing at some time during this short interval. During such interval the flanging heads remain a fixed distance apart and the slightly rounded edges of the recesses in the turrets roll a smooth uniform fillet at the base of the flanges and insure a definite predetermined angle of the flange with respect to the can body. As the rotation continues, the

flanged cans are guided from the turret by suitable end guides 27 rolling down a supporting incline 28, an upper guide 29 being provided to insure removal of the can from the recess in the upper turret.

To facilitate this latter operation it will be noted that the turrets are provided with a central peripheral recess 30 into which the member 29 projects. This recess may be formed by making the turrets in two parts, that is, of right and left hand sections clamped about the shaft 5, for example, as shown in Fig. 4 and provided with a central spacing member 31. On the other hand, this spacing member may be integral with said turret sections. Where the turrets are made in two sections in the manner just stated, they may be separated the desired distance by varying the thickness of the spacing member 31 thereby insuring a recess having a length just equal to the desired distance between the can flanges and insuring the proper solid backing during the formation of said flanges. Where the spacing member 31 is integral with the turret sections, the entire turret may be removed and a different turret substituted therefor. This same substitution may also be effected in any case where it is desired to provide turrets having recesses of different depth to accommodate cans of different diameter. The distance between the magazine guide members 11 may also be varied to accommodate cans of different dimensions. The machine is adjustable in various other respects to accommodate cans of varying sizes.

In flanging machines of the continuously rotating type, as heretofore constructed, only a single upper turret has been provided, as a result of which the cans were only partially surrounded by a supporting member during the flanging operation. Furthermore, said single turret has been narrower than the distance between the finished flanges, as a result of which no solid backing has been provided for said flanges during the formation thereof. As a result the flanges do not always bend at a uniform angle, that is, the flange section is not uniform throughout the periphery, particular difficulty being encountered at the joint formed by the overlapping ends of the blank, which are soldered together in forming the cylindrical can body. Such joint is shown at 32 in Figs. 1 and 3. The flange at this point being stiffer, due to the double thickness of metal, does not bend as readily and an imperfect bend occasionally is formed as a result of which it is impossible to form an air-tight joint when the heads of the cans are flanged in place. Thus an imperfect can results.

With the improved construction described herein a uniform flange is provided at each end of the can resulting in the practical elimination of defective joints of this character. Furthermore, the turrets may be readily replaced to accommodate cans of different diameter, thus simplifying the procedure previously followed.

It is to be understood that the machine described herein constitutes only one embodiment of the invention and that various changes and modifications may be made which fall within the scope of the appended claims.

What I claim is:—

1. In a can-flanging machine, a pair of supports each pivotally mounted and having a recess to receive a can, said supports jointly surrounding said can, and flanging means arranged at opposite sides of said joint support, the width of said joint support equaling the distance between the flanges to be formed on the ends of said can body whereby a solid backing is provided during the flanging operation.

2. In a can-flanging machine, a rotatable turret having a recess to receive a can body, a second similar turret substantially surrounding the remainder of said can body, and flanging means arranged at opposite ends of said recess, the length of said recess equaling the distance between the flanges to be formed on the ends of said body whereby a solid backing is provided during the flanging operation.

3. In a can-flanging machine, a pair of cooperating turrets arranged to rotate continuously in opposite directions, and flanging means for holding the blanks in place and for flanging them as they pass between said turrets.

4. In a can-flanging machine, a pair of shafts, a pair of turrets of equal diameters arranged on said shafts in substantially the same plane with their peripheries substantially in contact, each turret having a plurality of circumferential semi-circular recesses arranged to match with those on the other turret during the rotation of said turrets, a magazine for feeding blanks to said recesses, and flanging means for flanging said blanks during the part of the rotation when the blanks are passing between said turrets.

5. A can-flanging machine comprising a base, a pair of superimposed parallel shafts, intermeshing gears on said shafts, a turret on each shaft, each turret having semi-circular recesses therein, a magazine above said upper turret, a pair of stationary cams, flanging members arranged to rotate with said upper shaft and being movable toward and away from each other by said cams, said cams being designed to hold the bodies in said upper turret during a partial rotation thereof and flange said blanks during the part of the rotation when said blanks are passing between said turrets, and means for

removing said blanks from said turrets after the flanging operation.

6. In a can-flanging machine, a pair of co-operating turrets having recesses which meet adjacent the point of contact, flanging heads which rotate in line with the recesses in one turret, and means for gradually moving said heads toward each other during part of the rotation to flange the can body, said heads thereafter remaining a fixed distance apart during the interval when the can body is encircled by the walls of the two recesses, thereby insuring a uniform flange.

In testimony whereof, I have subscribed my name.

SAMUEL E. ALLERTON.