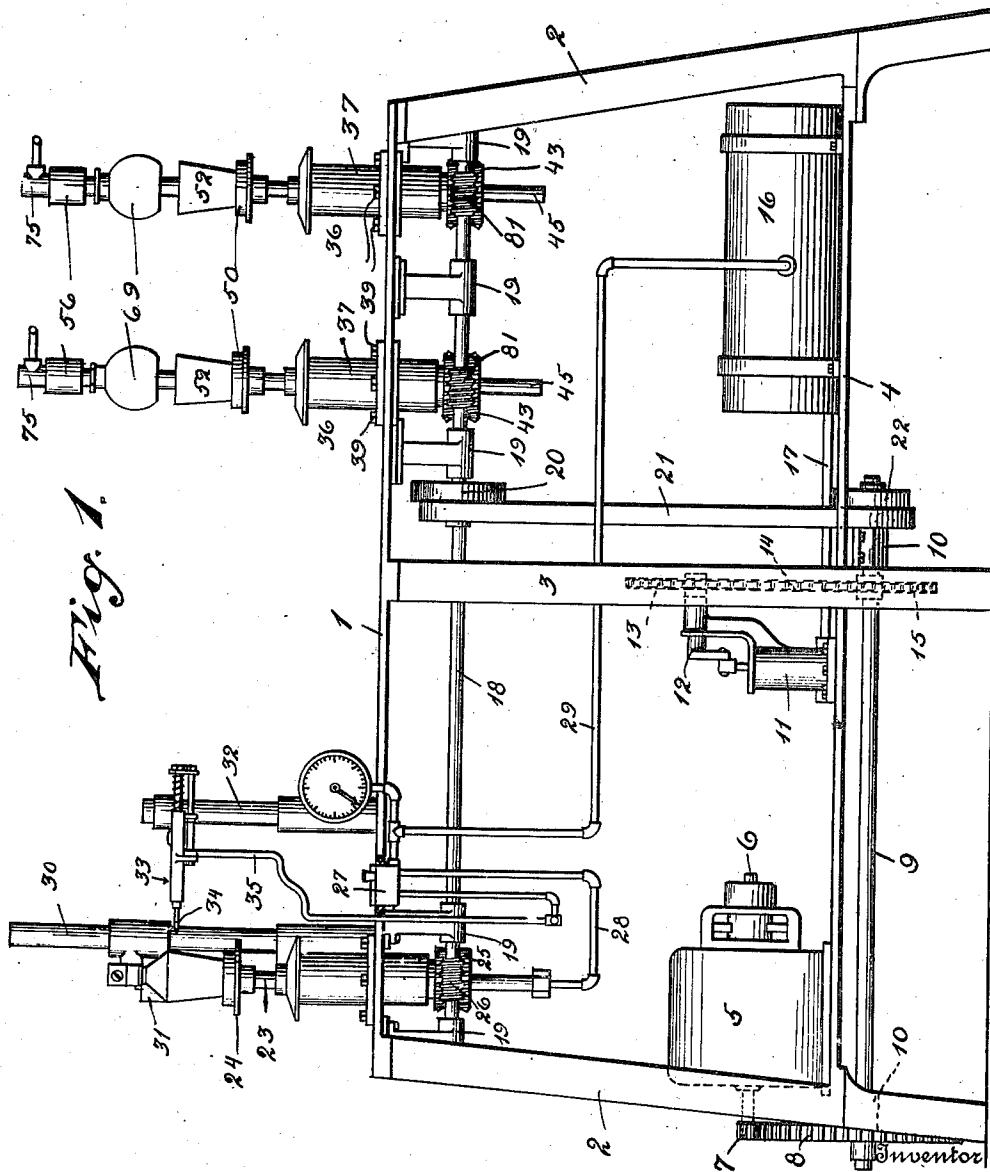


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MACHINE FOR FINISHING TUMBLERS OR OTHER ARTICLES.
APPLICATION FILED FEB. 8, 1911.

1,009,249.

Patented Nov. 21, 1911.

2 SHEETS-SHEET 1.



Witnesses
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334

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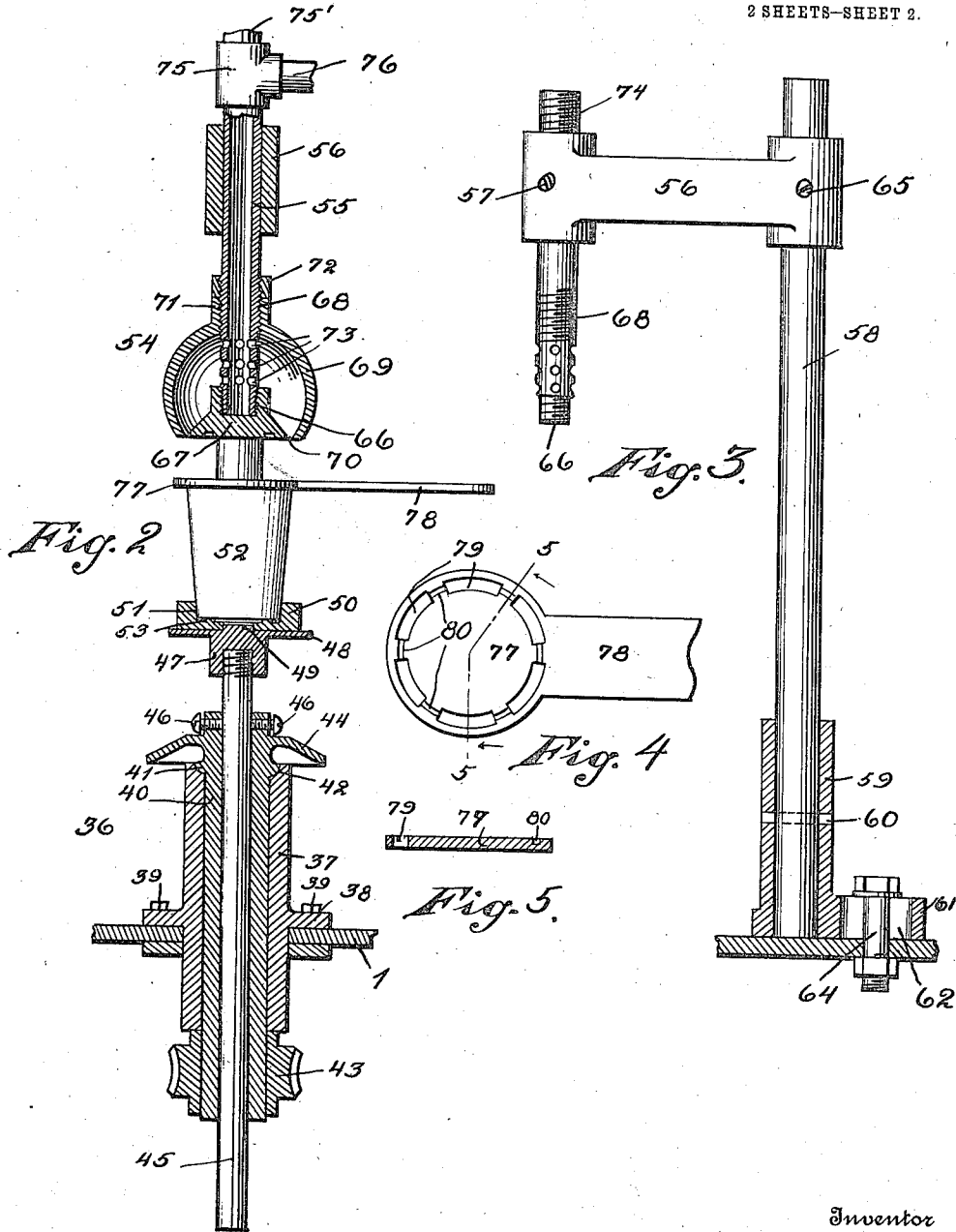
Inventor
A. B. Knight

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UNITED STATES PATENT OFFICE.

ALBERT B. KNIGHT, OF FAIRMONT, WEST VIRGINIA.

MACHINE FOR FINISHING TUMBLERS OR OTHER ARTICLES.

1,009,249.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Original application filed November 10, 1910, Serial No. 591,624. Divided and this application filed February 8, 1911. Serial No. 607,356.

To all whom it may concern:

Be it known that I, ALBERT B. KNIGHT, a citizen of the United States, residing at Fairmont, in the county of Marion and State of West Virginia, have invented certain new and useful Improvements in Machines for Finishing Tumblers or other Articles, of which the following is a specification.

The subject matter of this invention is shown but not claimed in my co-pending application for Letters Patent, Serial No. 591,624, filed November 10, 1910, of which the present application is a division.

An important object of this invention is to provide means to melt the upper end of the tumbler after the same has been cracked off, such means being readily adjustable so that the same may be employed in connection with articles of different sizes.

A further object of this invention is to provide means to smooth off or shape the heated end of the tumbler, such means being so constructed that it does not prevent the flame from coming in contact with the tumbler.

Other objects and advantages of this invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a side view of my combined machine for cracking off and finishing tumblers, Fig. 2 is a central vertical sectional view through the means for supporting and rotating the tumbler and through a burner structure for heating the same, Fig. 3 is a side elevation of an adjustable support for the burner structure, Fig. 4 is a bottom plan view of a device for smoothing off or shaping the upper end of the tumbler, and Fig. 5 is a vertical sectional view taken on line 5—5 of Fig. 4.

In the drawings wherein is illustrated a preferred embodiment of my invention, a supporting structure is illustrated being preferably in the form of a table, comprising a flat horizontal top 1 supported by legs 2 and 3, as shown. Below the top 1 and spaced therefrom is a horizontally disposed support 4 having suitable connection with

the lower portions of the legs 2 and 3. Suitably mounted upon the support 4 near one end of the machine, is a motor 5 of any well known or preferred type. This motor has its armature shaft 6 provided outwardly of the legs 2 with a small pinion 7, having engagement with a large pinion 8. The pinion 8 is rigidly mounted upon a horizontal actuating shaft 9, disposed below the support 4 and suitably journaled through bearings 10. Rigidly mounted upon the support 4 near its center, is a vacuum pump 11 of any well known or preferred type, which is operated by a crank-shaft 12 carrying a sprocket wheel 13. This sprocket wheel is rotated by a sprocket chain 14 operating through suitable openings formed in the support 4 and engaging a sprocket wheel 15 carried by the actuating shaft 9. Rigidly mounted upon the support 4 to one side of the pump 11, is a vacuum tank 16, which is connected with the pump by a pipe 17. Disposed near and below the top 1 is a rotatable line-shaft 18, which is journaled through stationary bearings 19. This line shaft is provided intermediate its ends with a step pulley 20, about which is trained a belt 21, extending downwardly to operate through openings (not shown) formed in the support 4. This belt is trained about a step pulley 22 rigidly connected with the inner end of the shaft 9. From the description of the above referred to parts, it is obvious that the rotation of the armature shaft 6 is imparted to the actuating shaft 9, which is connected up to drive the pump 11 and the line shaft 18.

Suitably mounted at one end of the top 1 are means for cracking off the tumbler, such means comprising broadly a rotatable spindle 23 carrying a plate 24 upon its upper end. The spindle 23 receives its rotation from a worm-wheel 25 having engagement with a worm 26 formed upon the line shaft 18. The spindle 23 is tubular and is connected with a valve structure 27 by a pipe 28. This valve structure is connected with the tank 16 by a pipe 29. By proper manipulation of the valve structure, a vacuum may be created below the tumbler for holding the same in place. Disposed behind the spindle 23 is a

vertical support 30 which is suitably mounted upon the top 1. This support adjustably holds a burner 31, which is adapted to provide a flame to heat the tumbler in a zone in which the same is being scored, by means to be described. An upright 32 has suitable connection with the top 1 and supports a scoring device 33. This scoring device includes a reciprocatory diamond pointed needle 34 which is adapted to move into and out of engagement with the tumbler. Means are provided to effect the movement of the needle, to which is connected a pipe 35, having suitable connection with the valve structure 27. When the valve structure is moved in one direction a vacuum is first created below the tumbler for holding the same and then a vacuum is created in the pipe 35 to operate the means which move the needle 34. This cracking off apparatus is shown and described in detail in my pending application Serial No. 591,624, filed November 10, 1910. As the cracking off apparatus will not be claimed in the present application no further description thereof is deemed necessary.

The present application relates more particularly to means for heating the upper end of the tumbler after the same has been cracked off. Such means comprises a rotatable support for holding tumbler and a burner structure for providing a flame to heat the tumbler. In Fig. 1, I have shown two rotatable supports 36 and it is to be understood that my machine may be equipped with any number of such supports as is found practical in the construction and operation of the same. Each of these rotatable supports, as shown in Fig. 2, comprises a vertical cylindrical casing 37, which is disposed within an opening formed through the top 1. The casing 37 is provided midway its ends with an annular flange 38, which is bolted to the top 1, as shown at 39. Within the casing 37 is rotatably mounted a spindle 40, provided near its upper end with an annular flange 41, fitting within a counter-bore 42. The flange 41 prevents the downward displacement of the spindle. The spindle 40 has a worm-wheel 43 rigidly connected with its lower end and operating in engagement with the casing 37. The upper end portion of the spindle 40 is provided with a preferably circular guard 44, to prevent material from dropping between the spindle 40 and the casing 37. The spindle 40 is provided with an axial opening formed there-through, for receiving a shaft 45, which is held against rotation in said spindle by clamping screws 46. The shaft 45 may be keyed to the spindle if desired. The upper end of the shaft 45 is screw-threaded for engagement with a boss 47, which is formed upon the lower side of a circular horizontal plate 48. This plate is provided upon its

upper side and centrally thereof with an upstanding boss 49, as shown. Removably mounted upon the plate 48 is a holding-ring 50, provided with a recess 51 for receiving the lower end of the tumbler 52. The bottom wall of the recess 50 is provided with an annular groove, for receiving packing 53.

Disposed above each of the rotatable supports is a burner structure 54, which is adapted to provide a flame, which may be circular or other shape, corresponding to the shape of the upper end of the tumbler 52 or other article. The burner structure comprises a tubular body portion 55 which is detachably mounted within one end of a supporting bracket 56. A clamping screw 57 holds the tubular body portion 55 against displacement. The opposite end of the bracket 56 is vertically adjustably mounted upon a shaft 58, which shaft is in turn adjustably mounted upon the top 1. The lower end of the vertically disposed shaft 58 is disposed within a sleeve 59 and held therein by a transverse pin 60. This sleeve has its lower end provided with a laterally extending head 61, having a slot 62 formed there-through, for receiving a bolt 64. This bolt clamps the head 61 to the top 1. A clamping screw 65 is provided to hold the bracket 56 in adjustment at different positions upon the shaft 58. The tube 55 has its lower end screw-threaded, as shown at 66, for engagement with a deflector 67, which has the lower portion thereof formed substantially frusto-conical and increases in diameter downwardly. At a point near and spaced from the screw-threads 66, the tube 55 is provided with a screw-threaded portion 68. Arranged above the deflector 67 is an approximately three-fourths spherical casing 69, having its lower end provided with a preferably circular opening 70, for receiving the deflector 67. A tubular sleeve 71 is formed upon the upper portion of the casing 69 and is internally screw-threaded for engagement with the screw-threaded portion 68. A clamping-ring 72 engages the screw-threaded portion 68 and prevents accidental rotation of the casing 69. By proper rotation of the casing 69, said casing may be raised and lowered with relation to the deflector 67. When the lower end of the casing 69 is below the deflector 67, the circular flame will be directed inwardly, while if the deflector is arranged below the lower end of the casing 69, the flame will be directed outwardly. From the description of the above referred to parts, it is obvious that by proper manipulation of the casing 69 the size or circumference of the flame may be changed according to the circumference of the article to be heated. The tube 55 is provided within the casing 69 with a plurality of perforations 73, for the passage of carbureted fuel into said casing 69. The tube

55 is provided at its upper end with screw-threads 74, for engagement with a T-coupling 75. A gas supply pipe 75' is connected with this coupling for supplying gas within the tube 55. An air supply pipe 76 is also connected with the coupling 75, to conduct air into the tube 55 for carbureting the gas.

In Figs. 2, 4 and 5, I have shown a device for smoothing off the upper end of the tumbler 52 while the same is being heated. This device comprises a preferably circular head 77, to which is secured a handle 78. The head 77 is provided with spaced segmental openings 79 formed therethrough, which are connected by grooves 80 formed upon the lower surface of the head 77. The grooves 80 are segmental and form, in effect, a circle. These grooves are adapted to receive the upper end of the tumbler. When the head 77 is placed on the tumbler 52 so that the upper end of the tumbler fits in the grooves 80, (the upper end of the tumbler being previously heated to the melting point, and the tumbler being rotated,) when the operator presses gently on the head 77, the heated end of the tumbler will be deprived of all irregularities caused by the cracking off of the same. The upper end of the tumbler is still being heated when the head 77 is applied thereto, as the flame can pass through the segmental openings 79. The line shaft 18 is provided with worms 81, which engage the worm-wheels 43.

In the operation of the machine, after the tumbler has been cracked off, the same is placed in the holding-ring 50 and is slowly rotated thereby. The burner structure is then brought in a suitable position and the casing 69 adjusted so that a flame of the proper size is provided to engage the upper end of the tumbler. When the upper end of the tumbler is heated to the melting point, the head 77 of the smoothing device is placed upon the revolving tumbler so that the upper end of the same will fit within the slots 80, it being understood that this smoothing device may be held stationary by the operator or oscillated by him. The smoothing device does not prevent the flame engaging the upper end of the tumbler, said flame passing through the segmental openings 79.

I wish it understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that certain changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. In apparatus of the character described, the combination with a burner structure

adapted to provide a flame for heating the upper end of the tumbler, of a smoothing device to slidably engage the upper end thus heated, comprising a head provided with a plurality of openings formed therethrough. 70

2. In apparatus of the character described, the combination with a burner structure adapted to provide a flame for heating the upper end of a tumbler, of a smoothing device to engage the upper end thus heated, comprising a head provided with a groove to receive the said upper end of the tumbler. 75

3. In apparatus of the character described, the combination with a burner structure adapted to provide a flame for heating the upper end of a tumbler, of a smoothing device to engage the upper end thus heated, said smoothing device comprising a head provided with a plurality of openings formed therethrough, such openings being connected by a plurality of grooves formed upon one side of said head. 80

4. In apparatus of the character described, a rotatable device for supporting an article to be heated, a burner structure disposed in coöperative relation to said device, comprising a tube, a deflector increasing in diameter in one direction and connected with said tube, a casing disposed upon the tube and adapted to move longitudinally thereof, said casing having one end thereof reduced in width and formed open, so that when the deflector is moved inwardly sufficiently the flame will follow the curvature of the casing and have a diameter smaller than said deflector and when said deflector is moved beyond the open end of said casing the flame will be directed outwardly by said deflector so that said flame may have a diameter greater than said deflector, and means to lock said casing in adjustment at different positions upon said tube. 85 90 95 100 105

5. In apparatus of the character described, a rotatable device for supporting an article to be heated, a burner structure disposed in coöperative relation to said device, comprising a casing having one end thereof formed open and having its inner surface shaped to direct a flame inwardly, and a deflector disposed within said casing and increasing in diameter in one direction so that the same is adapted to direct the flame outwardly at approximately right angles to the direction imparted to the flame by said casing, the flame directing ability of the casing and deflector depending upon the relative position of the same. 110 115 120

6. In apparatus of the character described, a rotatable device for supporting an article to be heated, a burner structure disposed in coöperative relation to said device, comprising an approximately spherical casing having the lower portion thereof formed open the circumference of the wall of said opening being much less than the real circum- 125 130

ference of the casing taken in a horizontal plane passing through the center of said casing, and a frusto-conical deflector connected with the casing in such a manner that said deflector may be moved entirely within said casing and then in a reverse direction to extend outwardly of the casing.

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

ALBERT B. KNIGHT.

Witnesses:

**TUSCA MORRIS,
L. N. YOST.**