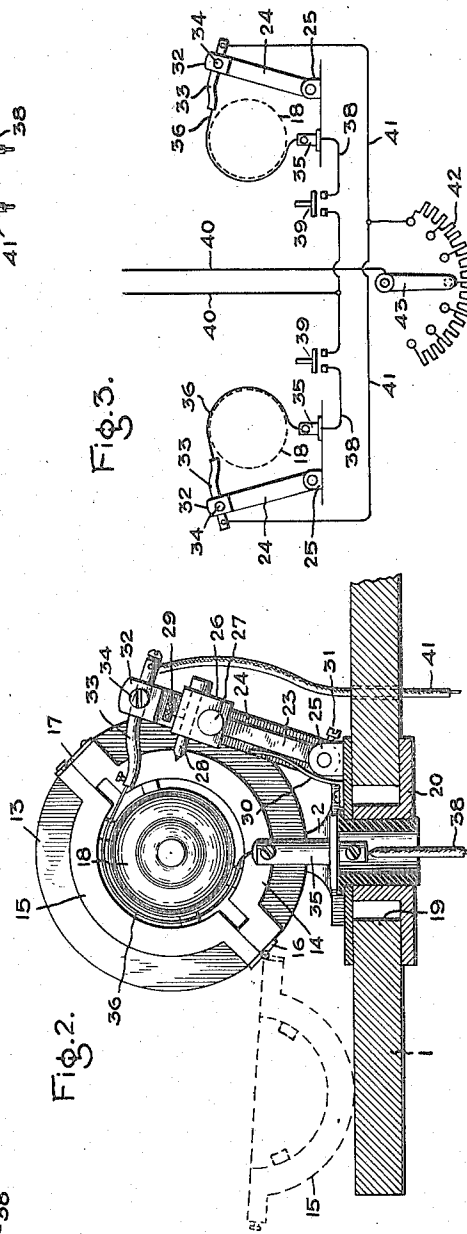
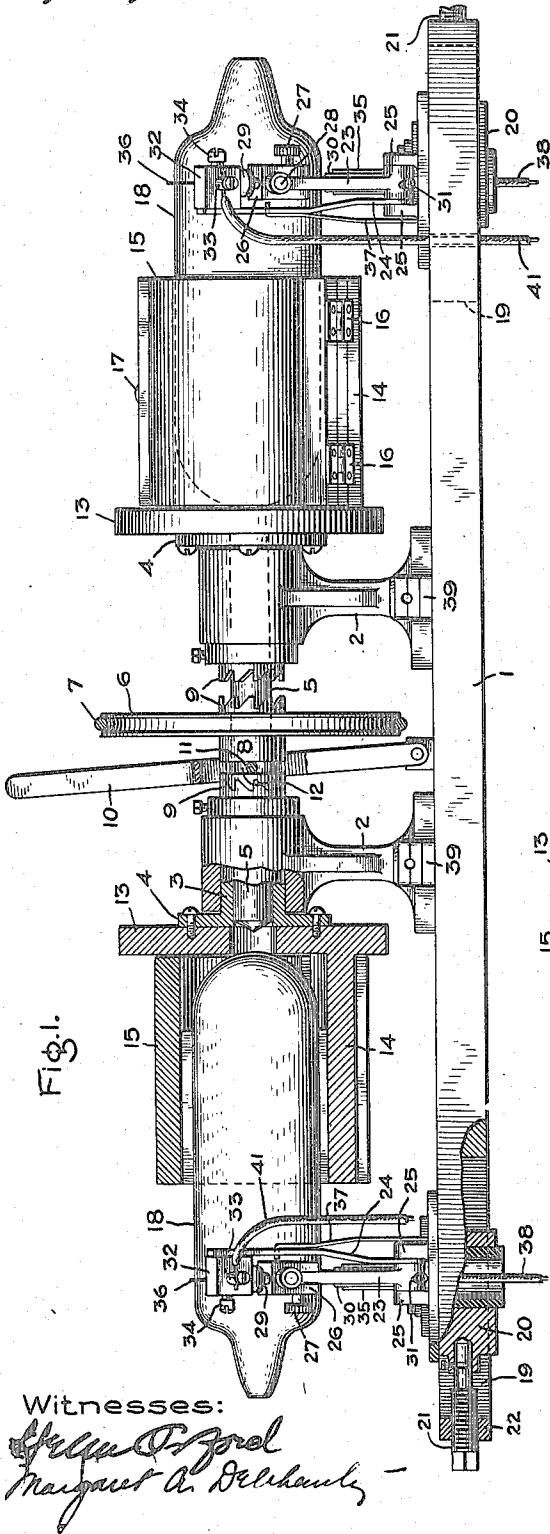


F. W. BARTLETT.
CRACKING-OFF MACHINE.
APPLICATION FILED SEPT. 27, 1913.

1,135,652.

Patented Apr. 13, 1915.



Inventor:
Frederick W. Bartlett,
by *John P. Ford*
His Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK W. BARTLETT, OF CALDWELL BOROUGH, NEW JERSEY.

CRACKING-OFF MACHINE.

1,135,652.

Specification of Letters Patent.

Patented Apr. 13, 1915.

Application filed September 27, 1913. Serial No. 792,205.

To all whom it may concern:

Be it known that I, FREDERICK W. BARTLETT, citizen of the United States, residing in borough of Caldwell, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Cracking-Off Machines, of which the following is a specification.

This invention relates to the manufacture of vacuum bottles, that is to say, glass receptacles having double walls with the space between them evacuated of air and moisture. Such bottles are made by placing a receptacle inside of a larger one, sealing their open ends together, silvering the surfaces of the annular space between them and then evacuating said space. When received from the glass blower, the receptacles or blanks are cylindrical in shape with one end hemispherical and the other drawn down to a short neck where the blowing tube was attached. To prepare the blanks for sealing together they must be cut off smoothly at a point not far from said neck, and on a plane perpendicular to their longitudinal axis.

The object of my invention is to accomplish this cutting with a minimum of breakage. To this end it consists in a machine having rotatable holders for the blanks, means for rotating either holder at will, means for scoring the blanks at the proper place, and means for applying high heat along the line of the score to cause the glass to expand suddenly and crack apart on said line.

The invention will be better understood from the following detailed description, reference being had to the accompanying drawing, in which—

Figure 1 is a front elevation of the machine, partly in section; Fig. 2 is an end elevation, and Fig. 3 is a diagram of the electrical circuits.

On a suitable bed plate or table 1 are supported two pillow blocks 2 in each of which is journaled a sleeve 3 having a face-plate 4 on its outer end. A driving shaft 5 is journaled in the sleeves, and is provided with means for rotating it, such as the pulley 6 splined on said shaft and rotated by a belt 7. The space between the inner ends of the sleeves is sufficient to permit the hub 8 of the pulley to slide to and fro in order to engage it with one or the other of said

sleeves, but not with both at the same time. To insure a positive engagement, the meeting ends of the hub and sleeves are preferably formed with clutch teeth 9. A lever 10 has a fork in which are pins 11 engaging a groove 12 in the hub 8, so that by throwing the lever one way or the other the pulley will rotate one of the sleeves. When the lever is in its intermediate position both sleeves are stationary. A holder or chuck is attached to each of the face-plates for receiving, holding and rotating the blank to be cracked off. One of these chucks is adapted to take the larger blank and the other the smaller one. Each chuck has an end plate 13 secured to the face-plate, and a body made in halves 14, 15, the former being preferably integral with the end plate and the latter hinged to the half 14 at 16. The halves meet on a longitudinal central plane when closed, and are fastened by a catch 17. The blanks 18 extend for some distance beyond the outer ends of the chucks, as shown, to afford room for the cracking off members to operate. These will now be described.

In each end of the table is a longitudinal slot 19, parallel with the axis of the shaft and chucks. A carriage 20 is adjustable along each slot by means of a feed screw 21 meshing in a nut 22 at the outer end of the slot 19. The carriage lies under the projecting portion of the blank, and carries a scoring tool movable toward and away from said blank. Preferably two parallel independent arms 23, 24 are hinged between two lugs 25 on the carriage and are movable in planes perpendicular to the axis of the cylindrical blank. The arm 23 has a clamp 26 secured to its upper end by a set screw 27, and a diamond-shaped scoring tool 28 is held in said clamp, being capable of longitudinal adjustment by means of a set screw 29. A flat spring 30 biases said arm away from the blank, its outward movement being limited by a stop pin 31.

The arm 24 carries the heat-applying member, preferably a high resistance wire connected to a source of electric current. A block 32 of insulating material is fastened to the upper end of the arm 24 and a metallic terminal 33 is held in said block by a set screw 34. The block is offset so that the terminal lies in the same transverse plane as the point of the scoring tool. Un-

derneath the blank and in the same transverse plane as the terminal 33 is a second terminal, preferably a binding post 35 secured to the carriage. A fine wire 36 of high resistance metal, such as platinum, is secured to the terminal and the binding post. A spring 37 biases the arm 24 away from the blank to put a tension on the wire 36. An insulated wire 38 connects the binding post with a push button switch 39 located on the table and connected to one of two supply conductors 40. The terminal 33 is connected by wire 41 with one end of a rheostat 42 whose movable arm 43 is connected with the other supply conductor. The two resistance wires at opposite ends of the machine are thus connected in parallel.

The operation is as follows: The attendant opens a chuck, places a blank therein, closes and fastens the chuck, pulls over the lever to engage the clutch and set the blank rotating, pushes up the arm 23 to bring the scoring tool against the blank and cause its diamond-point to scratch a line around the blank, and lets the arm 23 come back. The spring 37 keeps the resistance wire taut in contact with the blank along the line scored by the tool. A short closure of the switch 39 sends current through said wire, heating it to a high temperature almost instantly and cracking the glass evenly along the scored line. The strength of the current and consequently the rapidity of heating can be regulated by the rheostat. A skilled operator can crack off the blanks at the rate of one a minute, with very little loss from breakage. Either end of the machine can be used, depending upon the size of the blank to be operated on.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

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

1. Means for cracking off a hollow cylindrical glass blank, comprising a rotatable chuck, a glass cutting tool mounted to move in a direction perpendicular to the axis of said blank, a resistance wire adapted to come in contact with the opposite side of said blank in the same plane of movement as said tool and a source of electric current in circuit with said wire.

2. Means for cracking off a hollow cylindrical glass blank, comprising a rotatable chuck having a body made in halves hinged together, a glass cutting tool, an arm carrying said tool and movable in a plane perpen-

dicular to the axis of said blank, a pair of terminals in the same plane as the tool, a resistance wire connected to said terminals, and a source of electric current in circuit with said terminals.

3. Means for cracking off a hollow cylindrical glass blank, comprising a rotatable sleeve, a driving shaft, a clutch for connecting said shaft and sleeve, a chuck secured to said sleeve, a scoring tool movable toward and away from the blank, a resistance wire lying in the same plane of movement as the tool, and means for applying the same to the score made by the tool.

4. Means for cracking off a hollow cylindrical glass blank, comprising a rotatable chuck, an arm hinged to swing in a plane perpendicular to the axis of the blank, a scoring tool adjustably mounted on said arm, a spring biasing said arm away from said blank, a resistance wire and means for applying the same to the score made by said tool.

5. Means for cracking off a hollow cylindrical glass blank, comprising a rotatable chuck, two arms hinged to swing in planes perpendicular to the axis of said blank, a scoring tool mounted on one arm, a terminal mounted on the other arm in the same plane as that in which the tool operates, a binding post in said plane, and a resistance wire connecting said terminal and post.

6. Means for cracking off a hollow cylindrical glass blank, comprising a rotatable chuck, a carriage adjustable in a direction parallel with the axis of said chuck, arms hinged to said carriage and movable in planes transverse to said axis, a scoring tool on one arm, a resistance wire having one end secured to the other arm, and a binding post on said carriage to which the other end of said wire is attached.

7. Means for cracking off a hollow cylindrical glass blank, comprising means for holding said blank, means for rotating it on its axis, a mechanically mounted scoring tool movable in a plane transverse to said axis, and a mechanically mounted resistance wire movable in the same plane as the tool.

8. Means for cracking off hollow cylindrical glass blanks, comprising two chucks rotatably mounted on a common axis, and facing in opposite directions, a rotating clutch between said chucks, means for causing said clutch to engage either one of said chucks at will, an arm adjacent to the outer end of each chuck, pivoted to move in a plane at right angles to the axis of the chucks, a scoring tool carried by each arm, and a resistance wire mounted to move in the same plane as each arm.

9. Means for cracking off hollow cylindrical glass blanks, comprising two chucks rotatably mounted on a common axis, and facing in opposite directions, a rotating clutch

between said chucks, means for causing said clutch to engage either one of said chucks at will, an arm adjacent to the outer end of each chuck, pivoted to move in a plane at right angles to the axis of the chucks, a scoring tool carried by each arm, a resistance wire mounted to move in the same plane as each arm, said wires being connected in mul-

tiple, and means for simultaneously varying the current flowing through both wires. 10

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

FREDERICK W. BARTLETT.

Witnesses:

LUTHER W. CRANE,
JOSEPH N. TUTTLE.