H. G. MONKHORST.

AUTOMATIC CORKING MACHINE.

APPLICATION FILED JUNE 28, 1919.

1,339,904.

Patented May 11, 1920.

2 SHEETS—SHEET 1.

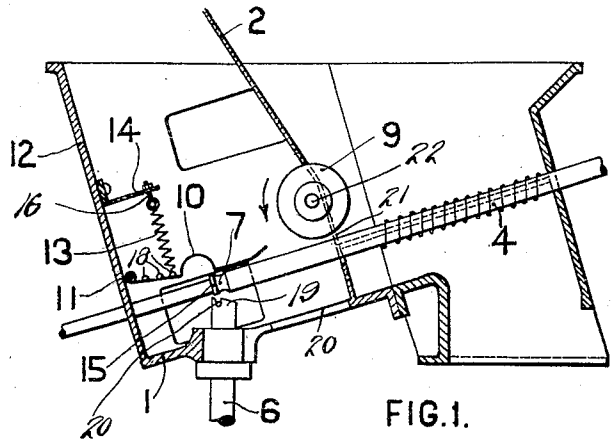


FIG. 1.

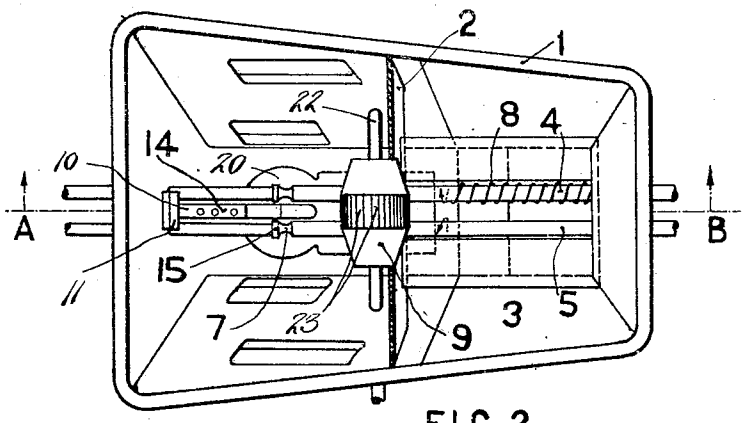


FIG. 2.

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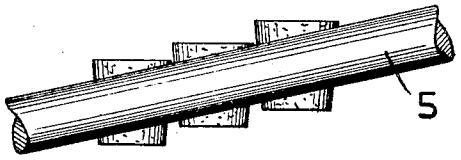
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2 SHEETS—SHEET 2.

FIG. 3.



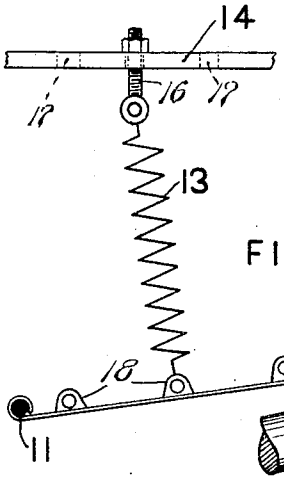


FIG. 5.

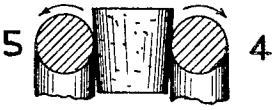
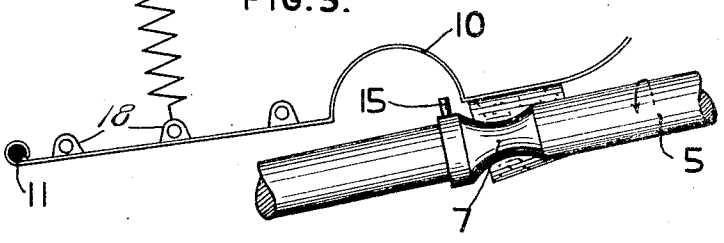


FIG. 4.



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UNITED STATES PATENT OFFICE.

HERMANUS GERARDUS MONKHORST, OF DELFT, NETHERLANDS.

AUTOMATIC CORKING-MACHINE.

1,339,904. Specification of Letters Patent. Patented May 11, 1920.

Application filed June 28, 1919. Serial No. 307,357.

To all whom it may concern:

Be it known that I, HERMANUS GERARDUS MONKHORST, a subject of the Queen of the Netherlands, residing at Delft, Netherlands, have invented certain new and useful Improvements in Automatic Corking-Machines, of which the following is a specification.

The present invention relates to automatic corking machines; and its object, stated briefly, is to provide improved means for feeding conical corks one by one into the vertical feed tube leading toward the plunger mechanism in such a manner that they all assume the correct position, to wit with their tapered ends down.

This is usually a matter of considerable difficulty because of the fact that cork has a low specific gravity but a great coefficient of friction, so that the slightest resistance suffices to prevent the cork from following the movements required for the purpose aimed at. The low specific gravity of the material, the comparatively little conicity of the corks, and the fact that the height of conical corks does not as a rule exceed the diameter of the top face render it extraordinarily difficult to feed the corks with their tapered ends down into the feed tube.

According to the present invention the corks in a container are conveyed to the feed tube by two inclined shafts mounted in parallel relation side by side in the lower part of the container and rotating in opposite directions with their sides facing each other moving upward, both shafts being provided at their lower ends outside the container with annular recesses located substantially in line with the axis of the feed tube.

The annexed drawing shows an embodiment of the invention. In this drawing:

Figure 1 is a vertical sectional view of the improved feeding mechanism taken on the line A—B in Fig. 2.

Fig. 2, is a plan view thereof.

Figs. 3 and 4 are fragmental detail views in side and end elevation, respectively, showing how the corks should be supported by both shafts in order that they may be properly conveyed to the feed tube, and

Fig. 5 is an enlarged detail view in side elevation, showing the means for preventing the corks from falling on the feed tube with their axes substantially at right angles to the axis of said tube.

The apparatus shown comprises a hopper 1 divided by a wall 2 into two chambers, one of which, designated by the reference numeral 3, serves for receiving a number of conical corks of a given size. In the lower portion of the hopper and extending over an opening 20 in the bottom are mounted two shafts 4 and 5 which are inclined downwardly at an angle of approximately 12° to the horizontal and which extend the entire length of the hopper, thereby passing through an opening 21 in the division wall 2. Said shafts are driven in such a manner as to rotate at equal speeds in opposite directions, indicated by the arrows in Fig. 2. The distance between the shafts 4 and 5 may be adjusted by means not shown, to suit the size of the corks used, and the shaft 4 may be formed with a threaded portion 8 which is located within the chamber 3.

Into the lower portion of the hopper 1 opens the upper end of the vertical feed tube 6; the mouth of said tube is cut out in such a manner as to easily receive the corks arriving in the required position along the shafts 4 and 5. Each of the shafts is formed with a circular groove 7 which is located above the mouth of the feed tube, and at the left hand side of this groove there is a collar carrying a radially extending pin 15. The said mouth of the feed tube has a slight rearward and downward inclination as indicated at 18 in Fig. 1, and is notched at 19 in line with pins 15, so as to avoid obstructing their movement.

The upper portion of the opening 21 in the division wall 2 is adapted to receive a cylinder 9 mounted on a horizontal shaft 22 and rotatable in the direction indicated by the arrow; the surface of said cylinder, which is provided with longitudinal ribs 23, is disposed a slight distance above the upper sides of the shafts 4 and 5.

At a slight distance above the lower portions of the shafts 4 and 5 is a blade or pressure finger 10 pivoted at 11 to the front wall 12 of the hopper 1. Said blade has a semicircular upwardly bent portion near the mouth of the feed tube 6, and it is sup-

ported with its bottom face in substantially parallel relation with the shafts 4 and 5 by a weak helical spring 13 secured to a bracket 14 screwed to the front wall 12. Means are provided whereby the blade 10 can be coupled with the spring 13 at different distances from its pivot; such means being here shown as comprising an eye bolt 16 to which the upper end of the spring is attached, engageable interchangeably in openings 17 formed in said bracket, the lower end of the spring being attachable interchangeably to any one of a series of apertured lugs 18 formed on blade 10.

The operation of the described arrangement is as follows:

If the chamber 3 is filled with conical corks of a given size, and if the shafts 4 and 5 rotate at a suitable speed in the proper directions, a number of corks will assume a position wherein they hang between and are supported by the shafts 4 and 5 as shown in Figs. 3 and 4, *i. e.*, with their tapered ends down. Owing to the upward movement of the inner or supporting sides of the shafts the corks will be lifted at irregular intervals by the frictional resistance between corks and the feeding shafts, and gradually move down the slope of the shafts. Undersized corks are free to fall through the opening between the shafts and to drop through the bottom opening 20 of the hopper.

The correctly sized corks conveyed to the left by the shafts 4, 5 in the manner illustrated by Figs. 3 and 4 are free to pass through the opening 21 in the division wall 2 without contacting with the cylinder 9. If, however, an oversized cork should be supported between the shafts, the same will have its upper face at an abnormal distance above the shafts and consequently come in contact with the ribbed surface of the cylinder 9 rotating at high speed, whereby it is lifted from between the shafts and forced to the upper portion of chamber 3.

If a cork, supported in the correct manner by and between the shafts 4 and 5, has come in line with the feed tube 6, it loses its support owing to the presence of the annular grooves 7, so that it drops into the said tube, from which it is transported by suitable means to the plunger for forcing it into the neck of a bottle. The pressure finger 10 has for its duty to prevent the cork from tipping when entering the mouth of the feed tube.

In some cases an abnormally sized or shaped cork that has freely moved past the cylinder 9 may assume a position between the shafts 4 and 5 as illustrated by Fig. 5. It will be understood that it is essential that this cork should move past the mouth of the tube 6, as otherwise it might choke the passage through said tube. This is accomplished by the pressure finger 10 which, being suspended from a weak helical spring, has a tendency to vibrate on the slightest contact therewith. As clearly shown in Fig. 5 the flat end portion of the pressure finger 10 rests by gravity on the conical surface of the cork, thus preventing the cork from tipping and falling down in a wrong position through the enlarged opening formed by the grooves 7. After the cork has moved past the mouth of the feed tube 6 it is grasped by the pins 15 on the shafts 4 and 5 and flung away.

The screw thread 8 on shaft 4 serves the purpose of forcing the corks positively down the shafts 4 and 5 and of avoiding any appreciable gap or interruption in the row of corks traveling toward the feed tube 6. Said screw thread might in some cases be dispensed with.

What I claim as my invention is:

1. In a device of the character referred to, the combination with a container and a substantially vertical feed tube, of two inclined shafts mounted in parallel relation side by side in the container and rotatable in opposite directions with their sides facing each other moving upward, each shaft being provided at its lower end outside the container with an annular recess substantially in line with the axis of the said tube.

2. In a device of the character referred to, the combination with a container and a substantially vertical feed tube, of two inclined shafts mounted in parallel relation side by side in the container and rotatable in opposite directions with their sides facing each other moving upward, one shaft being provided with screw threads, and each shaft having at its lower end outside the container an annular recess substantially in line with the axis of the said tube.

3. In a device of the character referred to, the combination with a container and a substantially vertical feed tube, of two inclined shafts mounted in parallel relation side by side in the container and rotatable in opposite directions with their sides facing each other moving upward, each shaft being provided at its lower end outside the container with an annular recess substantially in line with the axis of said tube, and with a lateral extension past the mouth of said tube.

4. In a device of the character referred to, the combination with a container and a substantially vertical feed tube, of two inclined shafts mounted in parallel relation in the container and rotatable in opposite directions with their sides facing each other moving upward, and a member mounted at some distance vertically above said shafts and rotatable about a horizontal axis substantially at right angles to the axes of the shafts, said shafts having annular recesses at their

lower ends which are located outside of the container and substantially in line with the said tube.

5. In a device of the character referred to, the combination with a container and a substantially vertical feed tube, of two inclined shafts mounted in parallel relation side by side in the container and rotatable in opposite directions with their sides facing each other moving upward, said shafts having annular recesses at their lower ends which are located outside of the container and substantially in line with the axis of said tube, and a member yieldingly supported at some distance vertically above the lower ends of the shafts with its bottom face substantially parallel with the axes of the shafts.

In testimony whereof I affix my signature.

HERMANUS GERARDUS MONKHORST.