

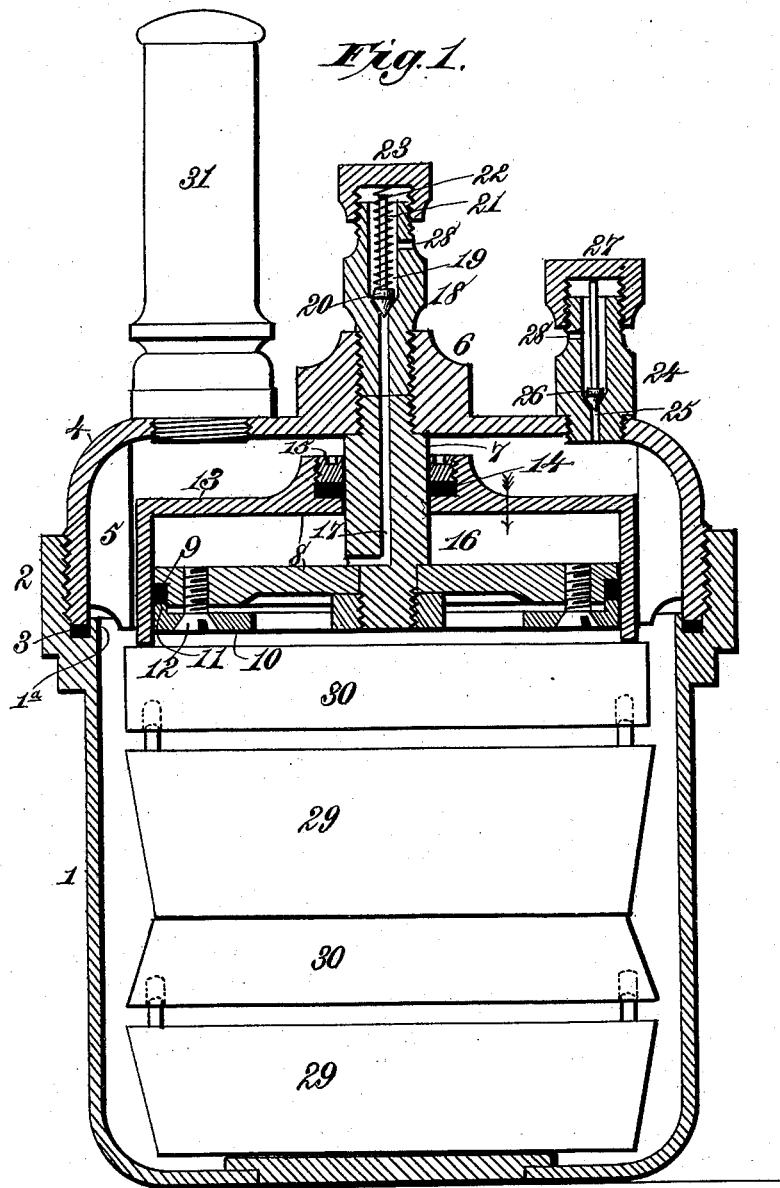
(No Model.)

2 Sheets—Sheet 1.

A. B. WOODARD.
VULCANIZING APPARATUS.

No. 384,183.

Patented June 5, 1888.



Witnesses:
Robert C. Pratt,
H. R. McCreedy.

Inventor:
Alonzo B. Woodard.
By *James E. Norris.*
Atty.

(No Model.)

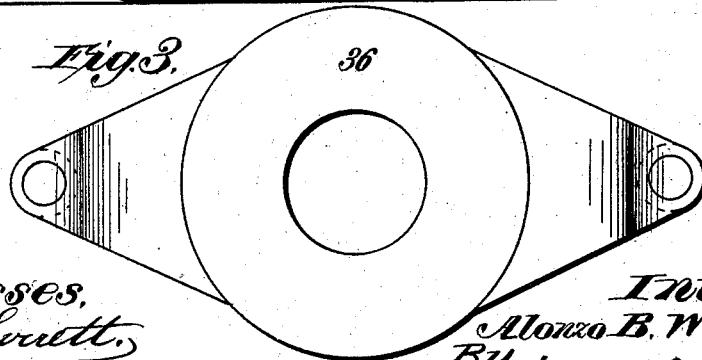
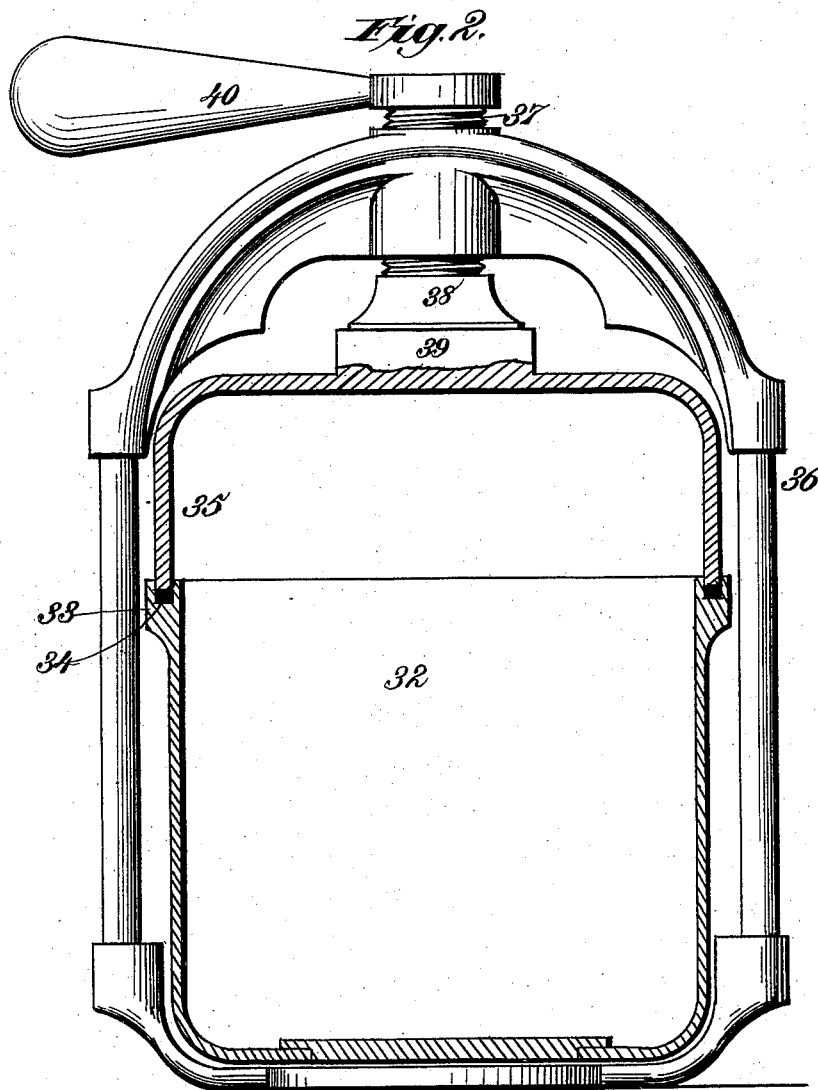
A. B. WOODARD.

2 Sheets—Sheet 2.

VULCANIZING APPARATUS.

No. 384,183.

Patented June 5, 1888.



Witnesses,
Robert Smith,
H. R. McBrady.

Inventor,
Alonzo B. Woodard,
By James L. Norris,
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UNITED STATES PATENT OFFICE.

ALONZO B. WOODARD, OF ANDOVER, ASSIGNOR OF ONE-HALF TO RICHARD W. BARNEY, OF HORNELLSVILLE, NEW YORK.

VULCANIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 384,183, dated June 5, 1888.

Application filed August 18, 1887. Serial No. 247,391. (No model.)

To all whom it may concern:

Be it known that I, ALONZO B. WOODARD, a citizen of the United States, residing at Andover, in the county of Allegany and State of New York, have invented new and useful Improvements in Vulcanizing Apparatus, of which the following is a specification.

My invention relates to vulcanizing apparatus of the class usually employed in dental establishments, and the purpose thereof is to provide simple and effective means whereby the flasks may be automatically closed by the pressure of steam generated during the vulcanizing process. It is my purpose, also, to combine with said apparatus devices whereby the steam-pressure may be counteracted by an air-cushion, the resistance of which may be varied to prolong the time occupied in closing the flasks, as circumstances may require. It is my further purpose to provide a strong, simple, and comparatively inexpensive vulcanizing-vessel, and to combine therewith a simple device for sealing the same and retaining it in a tightly-closed condition throughout the process.

To these ends the invention consists in the several novel features of construction and new combinations of parts, hereinafter fully set forth, and then specifically pointed out and defined in the claims following this specification.

In the accompanying drawings, Figure 1 is a central vertical section of an apparatus in which my invention is embodied. Fig. 2 is a similar view illustrating the improved vulcanizing-vessel and its connections. Fig. 3 is a plan view of Fig. 2, the vessel and clamping-screw being removed.

In the said drawings, the reference-numeral 1 denotes the vulcanizing-vessel, having an enlarged internally-threaded annulus, 2, at its top. At the bottom of this annulus a groove is cut, in which is laid a packing-ring, 3, confined between the annulus 2 and the rim 1^a of the vessel 1. The cover 4 is provided with a male thread, which meshes with the internal thread of the annulus, the edge of said cover resting upon the packing. Upon the interior the cover is provided at regular intervals with bracket-pieces 5, having vertical edges which

are all concentric with the cover. Through a boss, 6, on the top is tapped a rod or bar, 7, upon the lower end of which is rigidly mounted a head, 8. Within an angular circumferential groove in this head is placed a packing, 9, and a ring, 10, having an annular flange, 11, is arranged on the under side of the head, the flange being drawn up against the packing 9 by means of screws 12, passing through the ring and tapped through the head. Upon the bar 7, between the head and the cover, is mounted a piston, 13, having the form of an inverted cup. This piston has a bearing on its outer face upon the vertical edges of the bracket-pieces 5, and the inner face bears against the packing 9, forming a tight joint between the head 8 and the piston. Around the bar 7 the piston is countersunk and receives a packing, 14, which lies around the bar, a nut, 15, being screwed down thereon to confine and expand the packing. By this construction a steam-tight chamber, 16, is formed within the piston, and leading therefrom is an air-channel, 17, in the bar 7, said channel passing through a plug, 18, having a valve-chamber, 19. A conical spring-pressed valve, 20, closes this channel, the stem 21 of the valve projecting somewhat above the top of the plug 18, and the spring 22 being coiled around the stem. A screw-cap, 23, compresses the spring, and may, when desired, be turned down to bear upon the end of the valve-stem and positively close the air-channel 17. A plug, 24, is tapped through the cover at one side and provided with a bore, 25, which is closed by a valve, 26. This valve may be held upon its seat by the screw-cap 27, or by any other convenient means. This device gives communication with the top of the vulcanizing-chamber. In both the plugs 18 and 24 an opening, 28, below the screw-caps, leads from the valve-chamber to the outer air.

The numeral 29 indicates the vulcanizing-flasks, and 30 denotes the lids therefor. These parts may be of any known construction, the dimensions of the vulcanizing-vessel with relation to said flasks being such as to effect the closing of the latter by a downward movement equal to the drop of the piston upon the bar 7.

A thermometer, 31, may be mounted upon the cover in any suitable manner.

The method of using this apparatus is as follows: The flasks being arranged therein in the manner shown, and the piston 13 resting upon the lid of the upper flask, the valve 20 is closed and heat applied in the usual manner. As steam forms, the air in the vessel rises to the top, and may be drawn off or allowed to escape by partly unscrewing the cap 27. As the steam-pressure rises, the piston 13 is pressed downward; but this pressure may be counteracted by turning the screw-cap 23 down against the valve-stem. This causes the retention of the air within the piston, and the latter therefore cushions upon the imprisoned air. By releasing the valve, however, this counteracting element may be at any time removed, whereon the steam-pressure will act upon the piston to close the flasks without obstruction. In cases where it is desirable that the flasks should be closed gradually, this feature may be utilized with much advantage, as the valve may be so manipulated as to allow a very gradual air-escape and cause the flasks to close as slowly as may be required.

Instead of the vulcanizing vessel shown and described, I may use that shown in Fig. 2. This consists of a body, 32, having an offset, 33, in which is formed a groove containing a packing, 34. The cover 35 seats upon this packing, and the vessel is then set within the clamping-frame 36, having a screw, 37, tapped through its top. Upon this screw is swiveled a block, 38, which rests on a boss, 39, on the cover. The screw is turned by a lever, 40, whereby the cover may be forced down with any desired power.

It is evident that the flask-closing devices, consisting of a piston moving upon a rigid support and containing an air-chamber inclosed between said piston and a rigid head, might be applied to any vulcanizer, the pressure of the steam closing the flasks against the resisting pressure of the air in the chamber 16. This change would simply consist in omitting the air-escape from air chamber 16, and my invention contemplates this modification in construction.

What I claim is—

1. The combination, with a vulcanizing-vessel having a rigid bar depending from its cover, of a head and a piston, one rigidly and the other movably mounted on said bar and forming a steam-tight air-chamber between the head and the piston, and an air-escape from said chamber, substantially as described.

2. The combination, with the cover of a vulcanizing-vessel having vertical concentric guides, of a central bar, a piston movable upon said bar and having a depending peripheral flange bearing on the vertical guides, a rigid head on the bar packed within the flange of the piston, and a valve closing a channel in the bar, which communicates with the space between the head and the piston and with the outer air, substantially as described.

3. The combination, in a vulcanizing-vessel, of a cover having interior concentric vertical guides and provided with a central bar depending inside the cover, and having a channel leading to a valve-chamber in a plug above the cover, of a piston moving on said bar and having a depending flange bearing on the guides, a head rigidly mounted on the bar within the flange of the piston, a spring-actuated valve in the chamber of the plug above the cover, a screw-cap adapted to bear against the stem of said valve, and an air-conducting plug communicating with the interior of the vessel and having a valve closed by a screw-cap, substantially as described.

4. The combination, with a vulcanizing-vessel, of a series of vertical concentric guides mounted internally upon the cover, a central bar depending therefrom, a piston moving on said bar and having a depending flange bearing on said guides, a head rigidly mounted on the bar within said flange, an air-conducting plug having a valve and communicating with the interior of the vessel, and a similar plug having a channel communicating with a channel in the bar, said plug having a valve-seat, a spring-closed valve, and a screw-cap which may be engaged with the valve-stem, substantially as described.

5. The combination, with the cover 4, having vertical guides 5 and provided with a central bar, 7, of the piston 13, having a packing and nut surrounding said bar, the head 8, having a packing, 9, the ring 10, having an annular flange 11, the plug 18, having valve-chamber 19, communicating with an air-channel, 17, in the bar 7, the valve 20, and screw-cap 23, substantially as described.

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

ALONZO B. WOODARD.

Witnesses:

WM. C. BINGHAM,
RICH. W. BARNEY.