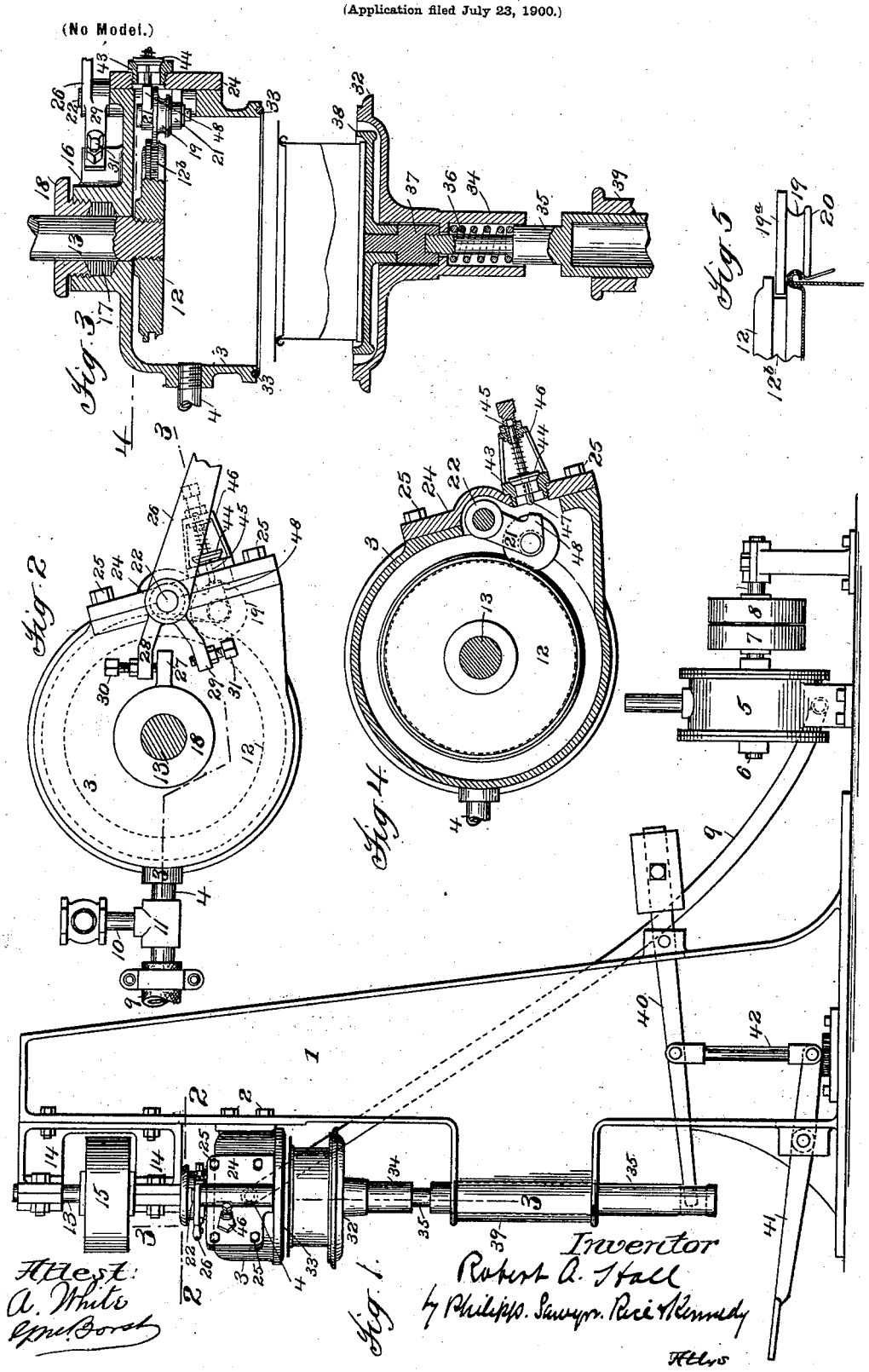
No. 676,229. Patented June 11, 1901.

R. A. HALL.

CAN CLOSING APPARATUS.

(Application filed July 23, 1900.)

(No Model.)



Witnesses:
A. White
Chas. Borst

Inventor
Robert A. Hall
by Philipp. Sawyer, Rice & Kennedy
Attys

UNITED STATES PATENT OFFICE.

ROBERT A. HALL, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, OF NEW JERSEY.

CAN-CLOSING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 676,229, dated June 11, 1901.

Application filed July 23, 1900. Serial No. 24,534. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. HALL, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Can-Closing Apparatus, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in closing filled receptacles, such as cans.

In packing certain classes of material, and more especially tobacco, it is desirable not only to close the receptacles which contain the tobacco hermetically, but to exhaust the air therefrom, so that the contents of the receptacles are packed *in vacuo*.

It is the object of this invention to produce an improved mechanism by which filled receptacles may have the air exhausted therefrom and be hermetically closed while they are subjected to the action of the vacuum-producing devices, so that the contents of the receptacles will be packed *in vacuo*.

With this and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

Referring to the drawings which form a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a side view of a machine constructed in accordance with the invention. Fig. 2 is a sectional top plan view taken on the line 2 2 of Fig. 1, this view being on a larger scale than Fig. 1 and the frame being removed. Fig. 3 is a sectional view taken on the line 3 3 of Figs. 1 and 2. Fig. 4 is a sectional plan view on the line 4 of Fig. 3. Fig. 5 is a detail view illustrating the operation of the seaming devices.

Referring to the drawings which illustrate one embodiment of the invention, 1 indicates a frame, which may be of any suitable configuration. The frame has secured to it in any suitable manner, as by means of bolts 2, a chamber 3, said chamber, in connection with the cover, to be hereinafter described, forming a receiver from which the air is exhausted in a manner to be also hereinafter described. The chamber 3 may be constructed in any suitable manner, but it will preferably be formed from a casting, as shown. The side of the chamber 3 is or may be provided with a suitable perforation, through which extends a short pipe 4, said pipe being connected to any suitable air-exhausting devices. The devices by which the air is exhausted from the receiver may be of any suitable description. In the construction shown these devices consist of an exhaust-fan 6, suitably located in a casing 5, which is mounted near the machine, the axle of said fan 6 being provided with the usual fast and loose belt-pulleys 7 and 8. While the pipe 4 may extend down to the fan, if desired, in the construction shown the pipe 4 and the fan are connected by means of a flexible hose or tubing 9. A short pipe 10 is shown as connected by a suitable union, as 11, to the pipe 4, said pipe 10 affording means by which a vacuum-gage may be attached to the machine.

The chamber 3 is provided with any suitable form of can-closing mechanism. In the construction shown this mechanism includes a rotating chuck 12, said chuck being carried on a shaft 13, which extends through an opening in the chamber and is suitably journaled in bearings 14, connected to the frame 1. In order to rotate the chuck, the shaft 13 is provided with a belt-pulley 15, though any other means for rotating the shaft may be substituted for this pulley. The chamber 3 is provided with a collar 16, which surrounds the shaft 13 where it enters the chamber, said collar, in connection with a suitable packing 17 and a coöperating collar 18, forming a stuffing-box or gland of ordinary description, which prevents the air from entering the chamber through the shaft-bearing.

A tool is provided for bending the edge of the flange of the cover or so much thereof as may be necessary to make a good joint underneath the usual shoulder on the can, this bending operation being herein referred to as "seaming." The construction of this bending-tool may be varied widely. In the present construction, in which, as before described, the can is rotated by the chuck 12, the tool

consists of a grooved wheel 19, having an operating-shoulder 20, which takes under the bead on the can, as shown in Fig. 5. This wheel also has a shoulder 19^a, which engages the groove 12^b in the chuck, the engagement of this shoulder and groove limiting the movement of the seaming-wheel toward the can to be seamed. The wheel 19 is mounted to rotate in a forked arm 21. In order that the seaming-tool may be moved toward and away from the can, the arm 21 is mounted on a short shaft 22, journaled in boxes formed partly in the chamber 3 and partly in a removable side piece 24, which is secured to the chamber 3 by means of screws 25, the object of this construction being to permit the removal of the shaft of the seaming-tool when desired. The shaft 22 is operated by means of a hand-lever 26. Means are preferably provided to control the throw of the hand-lever. While these means may be varied in form, in the construction shown the collar 16 is provided with a projecting lug 27, said lug lying in the path of projecting arms 28 29, connected to the hand-lever. In order to make the throw of the lever readily adjustable, the arms 28 29 are provided with set-screws 30 and 31.

In order to close the chamber 3, a suitable cover is provided. While this cover may be variously constructed and mounted, it preferably consists of a casting 32, the edge of which is arranged to seat itself against the open side of the chamber 3, a suitable gasket 33 being also preferably provided to insure a tight joint. The casting 32 is provided with a downwardly-projecting hub 34, said hub surrounding the upper reduced end of a suitable plunger 35. A spring 36 is preferably introduced between the hub and the reduced end of the plunger, so as to permit the plunger to have an upward movement independent of the casting. In the upper portion of the hub 34 there is located a shouldered block 37, on the upper reduced end of which is mounted a disk 38, which serves as the can-support. The block 37 is preferably connected in any suitable manner, as by screw-threads, to the upper end of the plunger 35.

The frame 1 is preferably provided with a suitable bearing 39, through which the plunger 35 moves, and any suitable means may be provided for giving the plunger its reciprocating movement in this bearing. In the construction shown the plunger is operated by a weighted lever 40, to which an ordinary treadle 41 is connected by means of a connecting-rod 42.

In order to permit the cover to readily move away from the chamber 3 after the can has been seamed, a suitable relief-valve is provided for breaking the vacuum in the chamber. In the construction shown the side piece 24 is provided with a valve-seat 43, with which cooperates a valve 44, carried by a spring-controlled stem 45, said stem being guided in arms 46 in an obvious manner. While the valve may be operated in any suitable manner, in the construction shown the valve-stem 45 is caused to project through the valve, as shown at 47, and the arm 21 is provided with a suitable projection 48, which as the seaming-tool is swung away from the chuck strikes the valve and opens it.

The suction devices in this machine are preferably continuously operating. When, therefore, the cover 32 in its upward movement, caused by the treadle and plunger, seats itself against the chamber 3, a vacuum is instantly produced in the chamber and the air is exhausted from the can. The further upward movement of the plunger, which is permitted by the spring 36, causes the can-support 38 and the can to be moved upward, thus bringing the upper end of the can in contact with the rotating chuck 12. This causes the can to rotate, the movement being facilitated by the fact that the can-support 38 is rotatably mounted on the block 37. The operator now seizes the lever 26 and throws the grooved wheel 19 over into position so that it operates upon the edge of the can between it and the chuck. As soon as the cover is seamed upon the can the operator throws the lever 26 in the opposite direction, which not only releases the can from the action of the seaming mechanism, but also causes the projection 48 to strike the projecting end 47 of the relief-valve and break the vacuum in the receiver. As soon as this is done the operator removes his foot from the treadle, allowing the plunger to be depressed and bring the seamed can down into position to be removed from the machine.

It is to be understood that the mechanical details by which the invention is carried into effect may be varied, and the invention is not therefore to be limited to the precise construction which has been hereinbefore described.

What is claimed is—

1. The combination with a receiver, of an exhaust mechanism, means for supporting a can in the receiver, a seaming mechanism, and means for subjecting the can to the action of the seaming mechanism while in the receiver, substantially as described.

2. The combination with a receiver, of a constantly-acting exhaust mechanism, means for supporting a can in the receiver, a seaming mechanism, and means for subjecting the can to the action of the seaming mechanism while in the receiver, substantially as described.

3. The combination with a vacuum-chamber, of a cover therefor, means for supporting a can in the chamber, a constantly-acting exhaust mechanism connected with the chamber, a can-closing mechanism, and means for subjecting the can to the action of the can-closing mechanism, substantially as described.

4. The combination with a vacuum-chamber, of a cover therefor, means for support-

ing a can in the chamber, a constantly-acting exhaust mechanism connected with the chamber, a seaming mechanism, and means for subjecting the can to the action of the seaming mechanism, substantially as described.

5. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a cover for the chamber, a can-support carried by the cover, a can-closing mechanism, and means for subjecting the can to the action of the closing mechanism, substantially as described.

6. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a cover for the chamber, a can-support carried by the cover, a seaming mechanism, and means for subjecting the can to the action of the seaming mechanism, substantially as described.

7. The combination with a vacuum-chamber, of a cover therefor, means for supporting a can in the chamber, a constantly-acting exhaust mechanism connected with the chamber, a seaming mechanism, means for subjecting the can to the action of the seaming mechanism, and means independent of the movement of the cover for relieving the vacuum in the chamber, substantially as described.

8. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a cover for the chamber, a can-support carried by the cover, a can-closing mechanism, means for subjecting the can to the action of the can-closing mechanism, and means independent of the movement of the cover for relieving the vacuum in the chamber, substantially as described.

9. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a cover for the chamber, a can-support carried by the cover, a seaming mechanism, means for subjecting the can to the action of the seaming mechanism, and means independent of the movement of the cover for relieving the vacuum in the chamber, substantially as described.

10. The combination with a vacuum-chamber, of an exhaust mechanism connected therewith, a chuck mounted in the chamber, means for rotating the chuck, a seaming-tool coöperating therewith, a cover for the chamber, and a can-support rotatably mounted in the cover, substantially as described.

11. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a chuck mounted in the chamber, means for rotating the chuck, a seaming-tool coöperating therewith, a cover for the chamber, and a can-support rotatably mounted in the cover, substantially as described.

12. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a chuck mounted in the chamber, means for rotating the chuck, a seaming-tool coöperating therewith, a cover for the chamber, a can-support rotatably mounted in the cover, and means independent of the movement of the cover for relieving the vacuum in the chamber, substantially as described.

13. The combination with a vacuum-chamber, of an exhaust mechanism connected therewith, a chuck mounted in the chamber, means for rotating the chuck, a seaming-tool coöperating with the chuck, a cover for the chamber, a can-support rotatably mounted in the cover, means for moving the cover to close the vacuum-chamber, and means for giving the can-support a movement independent of the cover to bring the can against the chuck, substantially as described.

14. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a chuck mounted in the chamber, means for rotating the chuck, a seaming-tool coöperating with the chuck, a cover for the chamber, a can-support rotatably mounted in the cover, means for moving the cover to close the vacuum-chamber, and means for giving the can-support a movement independent of the cover to bring the can against the chuck, substantially as described.

15. The combination with a vacuum-chamber, of a constantly-acting exhaust mechanism connected therewith, a chuck mounted in the chamber, means for rotating the chuck, a seaming-tool coöperating with the chuck, a cover for the chamber, a can-support rotatably mounted in the cover, means for moving the cover to close the vacuum-chamber, means for giving the can-support a movement independent of the cover to bring the can against the chuck, and means independent of the movement of the cover for relieving the vacuum in the chamber, substantially as described.

16. The combination with a vacuum-chamber, of a chuck mounted therein, means for rotating the chuck, a seaming-tool coöperating with the chuck, a cover for the chamber, a plunger on which the cover is carried, a spring interposed between the plunger and the cover, a rotating can-support mounted in the cover, and means whereby the plunger is caused to move the can-support, substantially as described.

17. The combination with a receiver, of an exhaust mechanism connected therewith, a chuck mounted in the receiver, a seaming-tool movably mounted in the receiver, means for supporting a can in the receiver, means for moving the seaming-tool so as to cause the seaming mechanism to act upon the can, a valve in the receiver, and means whereby the seaming-tool is caused to open the valve to relieve the vacuum in the receiver, substantially as described.

18. The combination with a receiver, of a constantly-acting exhaust mechanism connected therewith, a chuck mounted in the

receiver, a seaming-tool movably mounted in the receiver, means for supporting a can in the receiver, means for moving the seaming-tool so as to cause the seaming mechanism to act upon the can, a valve in the receiver, and means whereby the seaming-tool is caused to open the valve to relieve the vacuum in the receiver, substantially as described.

19. The combination with a vacuum-chamber, of a chuck mounted therein, a movably-mounted seaming-tool coöperating with the chuck, a cover for the chamber, a can-support carried by the cover, a relief-valve in the chamber, and means whereby the seaming-tool operates the relief-valve, substantially as described.

20. The combination with a receiver, of an exhaust mechanism connected therewith, a chuck mounted in the receiver, an arm mounted in the receiver, a seaming-tool carried by the arm, a lever for operating the arm, a relief-valve in the receiver, and means whereby the arm opens the relief-valve, substantially as described.

21. The combination with a receiver, of an exhaust mechanism connected therewith, a chuck mounted in the receiver, an arm mounted in the receiver, a seaming-tool carried by the arm, a lever for operating the arm, a relief-valve in the receiver, means whereby the arm opens the relief-valve, and stops for controlling the movement of the lever, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT A. HALL.

Witnesses:
GEO. M. GALES,
J. PARKER.