

Dec. 9, 1924.

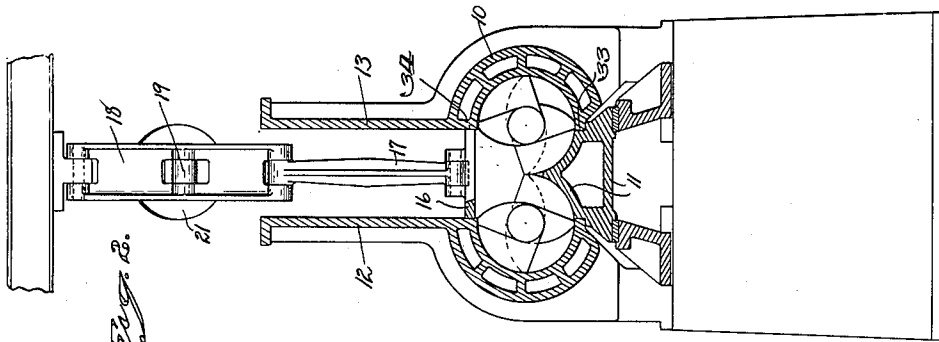
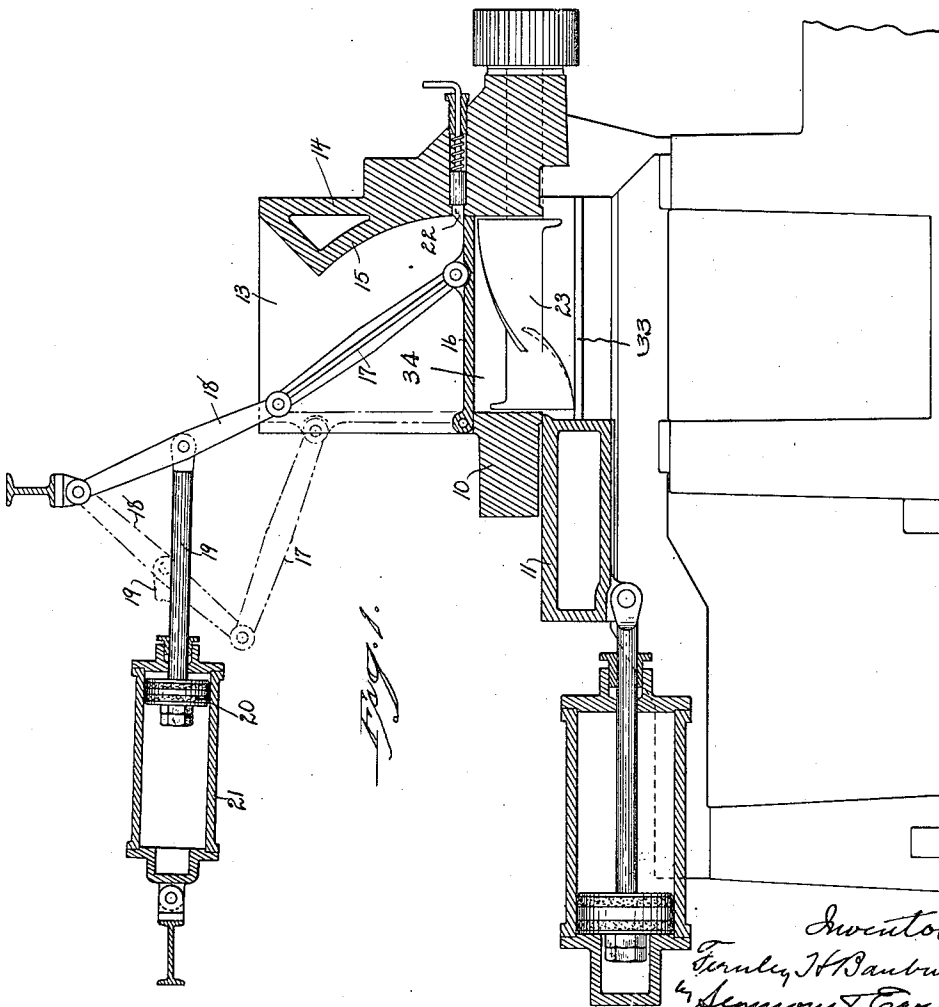
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1,518,129

APPARATUS FOR TREATING RUBBER AND OTHER HEAVY PLASTIC MATERIAL

Filed Feb. 16, 1922

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 5.

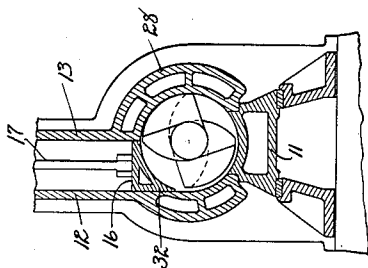


Fig. 4.

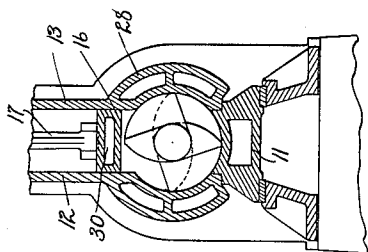


Fig. 3.

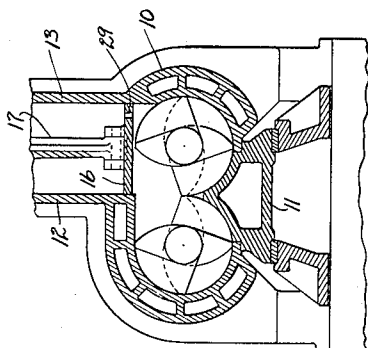


Fig. 6.

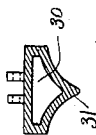
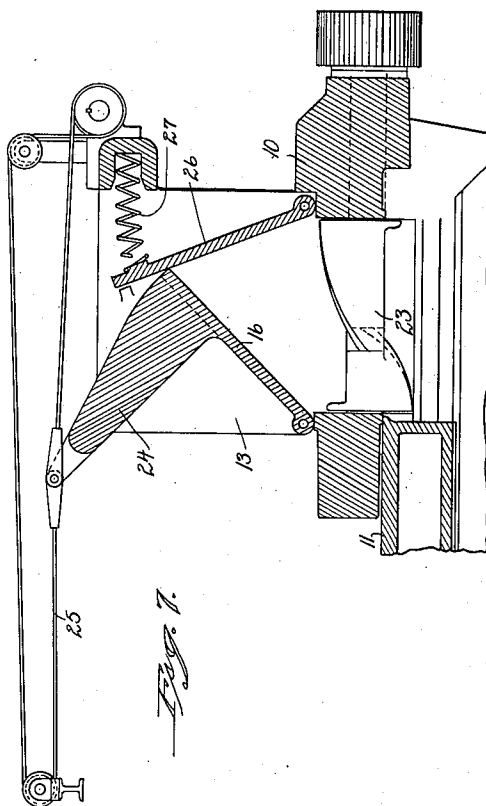


Fig. 7.



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UNITED STATES PATENT OFFICE.

FERNLEY H. BANBURY, OF ANSONIA, CONNECTICUT, ASSIGNOR TO BIRMINGHAM IRON FOUNDRY, OF DERBY, CONNECTICUT, A CORPORATION.

APPARATUS FOR TREATING RUBBER AND OTHER HEAVY PLASTIC MATERIAL.

Application filed February 16, 1922. Serial No. 537,132.

To all whom it may concern:

Be it known that I, FERNLEY H. BANBURY, a subject of the King of Great Britain, residing at Ansonia, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Apparatus for Treating Rubber and Other Heavy Plastic Material; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this application, and represent, in—

Fig. 1 a sectional view of a machine for treating rubber and other heavy plastic material constructed in accordance with my invention.

Fig. 2 a vertical sectional view of the same.

Fig. 3 a broken sectional view, showing a double cylindrical casing, with the feed-opening over one side.

Fig. 4 a similar view, showing a single cylindrical casing, with the feed-opening arranged centrally thereto.

Fig. 5 a similar view, illustrating a single cylindrical chamber, with the feed-opening eccentric thereto.

Fig. 6 a sectional view of a modified form of door.

Fig. 7 a broken sectional view, illustrating a modified form of means for operating the door for closing the casing-opening.

This invention relates to improvement in apparatus for treating rubber and other heavy plastic material, and particularly to machines for this purpose which includes a stationary casing with one or more rotors, with an opening in the top of the casing over the rotor or rotors, through which material to be treated is admitted, and particularly to machines of this type, in which the upward movement of the mass being treated is restricted. The object of this invention is to provide a machine of the class described with a hinged door to close the filling opening in the top of the casing, and the invention consists in the construction as hereinafter described and particularly recited in the claims.

In carrying out my invention, I employ

a stationary casing 10 provided with a discharge-opening 33 having a horizontally movable bottom door 11, which, as herein shown, is operated by pneumatic or other suitable means. The top of the casing is formed on opposite sides with walls 12 and 13 extending upward, and are connected at one end by a wall 14, the inner face 15 of which is preferably curved. Between the side walls and opposite the end wall, is hinged a closure in the form of a door 16, which is adapted to close the charging opening 34 in the top of the casing. The said walls 12, 13 and 14 provide a fixed housing for the pivotally-mounted, plate-like closure or door 16. The said walls 12, 13 and 14 form a fixed, three-sided hopper, the other side of which is formed by a plate-like closure or door 16 hinged directly to the casing aforesaid, in position to function when in its open position as a part of the hopper and when in its closed position to close the charging-opening in the top of the casing. This door may be operated by means of links 17 and 18 operated by a piston-rod 19, carrying a piston 20 in a cylinder 21, the piston being adapted to be operated by any suitable means, so that, when moved in one direction, it will close the door, as shown in Fig. 1, or, when moved in the opposite direction, will lift the door, as shown in broken lines in that figure. As the door starts to close, it engages with the curved face 15 of the wall 14, so as to force any material between the walls downward into the cylinder. The links 17 and 18 may be so arranged as to stand in a straight line when the door is in its closed position, and hence lock the door; or a spring-latch 22 may be provided in the wall 14 to engage with the door 16 when in its closed position. As shown in Figures 1 and 2 of the drawings, the casing is a double one and in each of them is a rotor 23.

Instead of operating the door by means of links, the door may be provided with an arm 24, connected with a cable 25, by which the arm may be moved in one direction or the other, so as to raise or close the door, and instead of forming a wall 14 with a curved face, a hinged wall 26 may be employed with a spring 27, tending to force the wall 26 inward, so as to be engaged by

the door 16 when it is moved to its closed position, and thus accomplish the same result as is accomplished by the curved wall 15.

Also, instead of having the side walls 12 and 13 arranged centrally between a double cylindrical casing 10, these walls may be arranged at one side of the casing, as indicated in Figure 3 of the drawings; or the walls may be employed with a single cylindrical chamber 28, as indicated in Figure 4 of the drawings; or, instead of being arranged concentric with the casing, it may be at one side thereof, as indicated in Figure 5 of the drawings.

If desired, the door 16 may be provided with a slot 29, as indicated in Figure 3, forming a sight opening by which the contents of the casing may be examined, and, if desired, this slot may be employed as a feeding-opening for the introduction of the usual powders employed in making rubber.

Furthermore, the closure, instead of being solid, as shown in Figure 1 of the drawings, may have a cooling chamber 30, as shown in Figure 4, and instead of having a flat under-face, may have a central downward extension 31, as shown in Figure 6, to stand between the rotors when two are employed, or an extension 32 at one side when one rotor is employed, as shown in Figure 5.

It is obvious that the length of the closure may be somewhat less than the length of the opening in the casing, as the main purpose of the closure is to hold the material down so as to be operated upon by the rotor or rotors.

I do not, therefore, wish to be understood as limiting my invention to any particular form of casing, nor to any particular means for operating a hinged door to close the top of the casing, or to means for holding the said door in its closed position. It is obvious that my improvements may be applied to a variety of machines of this general type.

I claim:

1. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor located in the said casing, a pivotal closure mounted upon the said casing, in position to close the said charging-opening, means for operating the said closure, a closure for the said discharge-opening, and means for operating the same.

2. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor located in the said casing, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon the said casing in position to close the said charging-opening when in its closed position, and to complete the said

three-sided hopper when in its open position, and means for operating the said closure.

3. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon the said casing in position to close the said charging-opening when in its closed position, and to complete the said three-sided hopper when in its open position, and means for positively locking the said closure in its closed position.

4. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal, plate-like closure mounted upon the casing in position to close the said charging-opening when in its closed position and to complete the three-sided hopper when in its open position, and means for operating the said closure.

5. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor, a three-sided hopper located upon the said casing over the charging-opening thereof and comprising side walls and an end wall connecting the same, a pivotal closure mounted upon the casing in position to close the said charging-opening when in its closed position and forming a part of the hopper when in its open position and co-acting with the end wall thereof in being moved into its open and closed positions; and means for operating the said closure.

6. In a machine of the class specified, the combination with a casing having a charging-opening in its top, two complementary walls extending upwardly from the said opening, and a wall connecting the adjacent ends of the said complementary walls and having its inner face curved, and a hinged closure located between the said complementary walls, and having its edge arranged to coact with the curved surface of the said other wall.

7. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon said casing in position to form a part of the three-sided hopper when in its open position and to close the said charging-opening when in its closed position, and provided with an inspection

tion-opening; and means for operating the said closure.

8. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon the casing in position to form the fourth side of the hopper when in its open position and to close the said charging-opening when in its closed position, and formed with a downward extension shaped for co-action with the rotor when closed; and means for operating the said closure.

9. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor, a three-sided hopper located upon the said casing over the charging-opening thereof and consisting of side walls and an end wall connecting the same and having its inner face curved, and a pivotal closure mounted upon the casing between the said side walls of the hopper in position to co-act with the curved inner face of the end wall thereof, the said closure forming the fourth wall of the hopper when in its open position and closing the said charging-opening when in its closed position; and means for operating the said closure.

10. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of a rotor, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon the said casing in position to close the said charging-opening when in its closed position and to complete the said three-sided hopper when in its open position; means for operating the said closure, and a spring-latch for positively locking the said closure in its closed position.

11. In a machine of the class specified, the combination with a stationary casing

having a charging-opening in its top and a discharge-opening in its bottom, of two rotors located in the casing, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon the casing in position to complete the hopper when in its open position and to close the said charging-opening when in its closed position; and means for operating the said closure.

12. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of two rotors located in the casing, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon the casing, in position to complete the hopper when in its open position and to close the said charging-opening when it is in its closed position, and provided upon its lower face with a downward extension shaped for coaction with the respective rotors when in its closed position; and means for operating the said closure.

13. In a machine of the class specified, the combination with a stationary casing having a charging-opening in its top and a discharge-opening in its bottom, of two rotors located in the casing, a three-sided hopper located upon the said casing over the charging-opening thereof, a pivotal closure mounted upon the casing in position to complete the hopper when open and to close the said charging-opening when closed, and provided with a centrally-arranged downward extension having concave surfaces for coaction with the respective rotors, means for operating the said closure, a closure for the discharge-opening, and means for operating the same.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

FERNLEY H. BANBURY.

Witnesses:

FREDERIC C. EARLE,
MALCOLM P. NICHOLS.