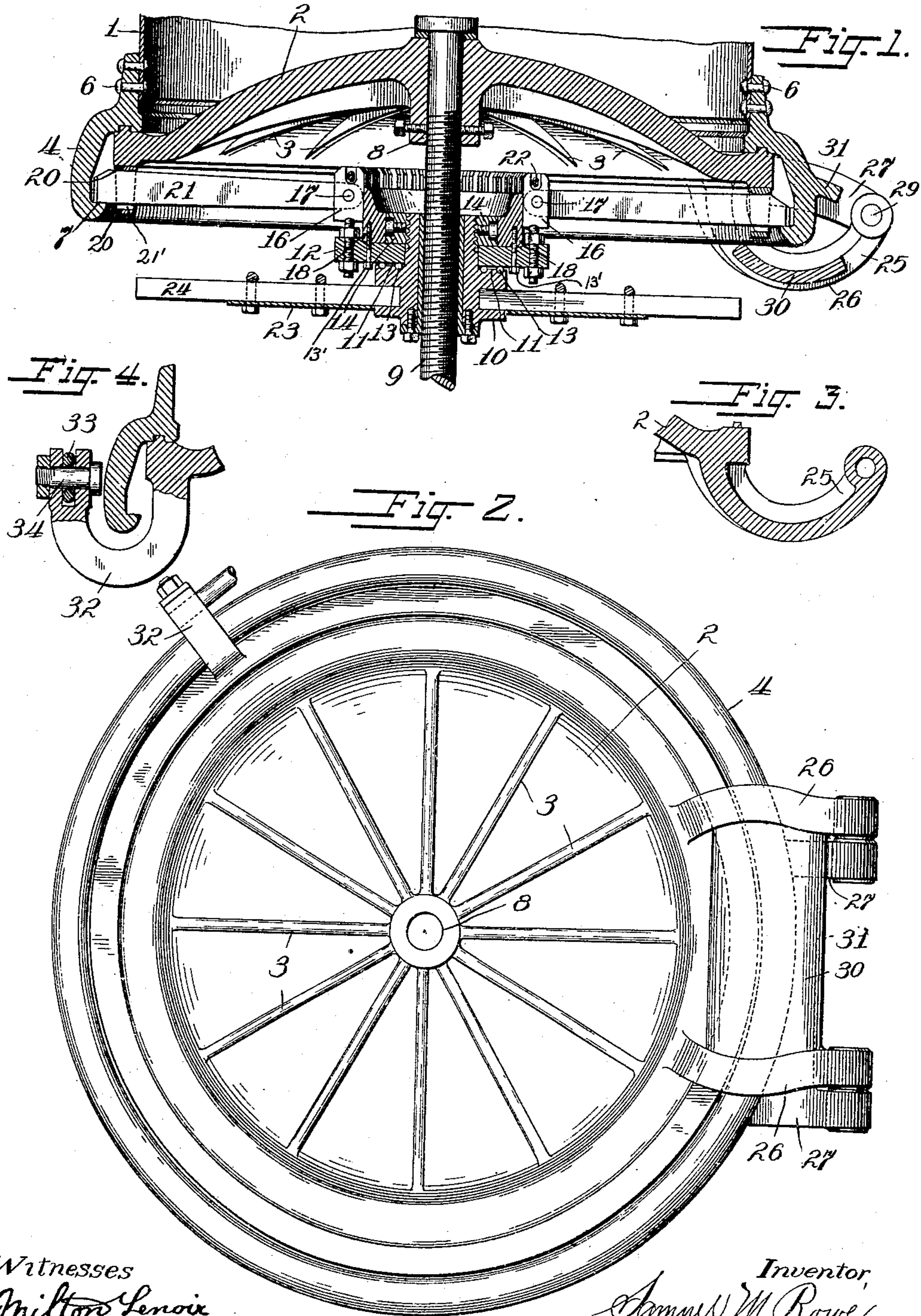


S. M. ROWE.
DOOR MECHANISM FOR CREOSOTING TANKS.
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Witnesses
Milton Lenoir
Emilie Rose

Inventor,
Samuel M. Rowe,
By Albert N. Chase,
Attorney.

UNITED STATES PATENT OFFICE.

SAMUEL M. ROWE, OF CHICAGO, ILLINOIS.

DOOR MECHANISM FOR CREOSOTING-TANKS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL M. ROWE, a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Door Mechanisms for Creosoting and Analogous Retorts, of which the following is a specification.

This invention relates to improvements in door mechanisms for creosoting and analogous retorts and has for its salient objects to provide a structure in which all the parts under stress may contribute their maximum strength in confining the door in position. In structures of this character the door of the retort is subject to very high pressure from within and heretofore difficulty has been experienced in so constructing and arranging the parts of the structure as not to weaken any other part.

In the construction shown in the drawings, which in its general form is of a well known commercial type, the door is held closed by means of a plurality of confining levers abutting against a confining ring secured to the outside of the retort proper at the end thereof. Heretofore it has been the practice to so construct the door hinge that the supporting lugs thereof have passed through the confining ring or trimmer upon the end of the retort, which construction obviously weakened the latter. Inasmuch as this ring takes the whole pressure exerted upon the door, it has been deemed necessary heretofore to make it extremely heavy, its confining strength being due, when thus notched, chiefly or entirely to its rigidity against bending stresses.

The object of the present invention is to so construct the supporting lugs and door hinge that they will extend around and not through the confining ring thereby securing the full tensile strength of the confining ring. The manner of doing this will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the device showing the door closed within the retort. Fig. 2 is a bottom plan view of the door with the confining head and spindle removed. Fig. 3 is a detailed view of that part of the hinge which is cast with the door. Fig. 4 is a sectional detail showing the manner of arranging the supporting lug.

Referring to the drawings 1 designates the end of a creosoting retort provided with

an inwardly extending door 2 which is concave in cross section and is provided with a series of radial strengthening flanges 3—3 in a well understood manner, in order to secure maximum strength. In order to confine this door within the retort it is provided with a confining head hereinafter described, which engages the confining ring 4. This ring is riveted by a series of rivets 6 to the end of the retort shell and extends outwardly therefrom some distance and terminates in an inwardly extending flange 7. This confining ring is usually made as a casting fitting over the end of the retort, as shown clearly in Fig. 1.

Describing now the manner of confining the door within the ring, the former is centrally apertured at 8 for the reception of a spindle member 9 which is externally screw-threaded as shown clearly in Fig. 1. Upon the lower end of the spindle member is screwed a locking member 10 which is adapted to travel upon the spindle member 9. Upon the shoulder 11 of the member 10 is seated a non-rotatable toggle plate 12 and between the plate and member 10 are inserted a plurality of anti-friction ball-bearings 13 which permit the member 10 to easily move independently of the toggle plate 12. In order that the toggle plate may be readily assembled upon the member 10 and also be confined against axial movement, I provide a confining ring 14 which is fixedly secured to the member 10 after the toggle plate is in position. Inside the toggle plate 12 and flush with the outer circumference of the confining ring 14 is seated an abutting ring 18 which is secured to the plate 12 by means of suitable through bolts 13'. Near the outer periphery of the toggle plate 12, are fastened a plurality of U shaped toggle bolts 16 in which are pivotally mounted toggle levers 21 by means of pins 17 inserted through the bolts. The inner end of each of these toggle levers is adapted to engage the abutting member 18 and their outer ends are adapted to engage the supporting flange 7 of the confining ring 4 when the door is closed. Upon the outer periphery of the door is provided a cage ring 20 having guide openings 21' through which the outer ends of the toggle levers pass and are confined against lateral movement. In order to more securely hold the U shaped bolts against the abutting ring I provide a spring pressed ring 22 which is seated in recesses formed in

the U-bolts, as shown clearly in Fig. 1. The member 10 is socketed to receive a plurality of handles 24 and preferably a plate 23 is provided to which said handles are secured.

From the foregoing it will be seen that the member 10 and parts united therewith is adapted to travel upon the screw-threaded spindle 9, carrying with it the toggle plate which, however, does not rotate. The axial movement of these parts moves the toggle levers into or out of locking engagement with the flange 7.

Describing now the manner of supporting the door structure, 25 designates as a whole a hinge, comprising a pair of arms 26 cast with the door structure and another pair 27 cast with the confining ring 4. These arms are pivotally connected with each other at 28 by means of pintles 29, as seen clearly in Fig. 2. The arms 26 are curved outwardly and extend around the supporting flange 7 of the ring 4. To secure further strength, the arms 26 are connected by a web 30 while the arms 27 are connected by a similar web 31. It will thus be seen the hinge has ample strength while the other parts of the structure are in no wise weakened.

In structures of this character it is desirable to partially suspend or support the door by means of overhead chains or the like, so that when the door is open part of the strain upon the hinge members will be relieved. To this end I provide a U shaped supporting lug 32 which is cast with or secured to the outer periphery of the door at its upper edge and extends around and outside of the projecting part of the confining ring 4. The free end of this confining lug is centrally forked for the reception of a supporting link 33 which is secured to the lug by means of a through pin 34 as shown clearly in Fig. 4. It will be noted that this supporting lug is also so constructed and arranged that it does not pass through the confining ring.

I claim as my invention:

1. In a creosoting or analogous retort, the combination with a door structure, of a circumferentially-unmutilated confining ring

inside of which the door seats, radially shiftable toggle levers secured to the door and cooperating with said confining ring to hold the door in closed position, and a hinge member comprising an arm cast with said ring and a second arm cast with said door structure and extending outwardly around said ring member, said hinge arms being pivotally connected.

2. In a creosoting or analogous retort, the combination with a door structure, of a circumferentially-unmutilated confining ring inside of which the door seats, said confining ring being provided with an in-turned flange portion, radially shiftable toggle levers upon said door structure cooperating with said in-turned flange portion to hold the door in closed position, means for operating said toggle levers, and a hinge structure comprising a pair of arms secured to said ring, a web member connecting said arms, a second pair of arms secured to said door structure and provided with a similar connecting web, said latter pair of arms being outwardly moved around the edge of said confining ring and pivotally secured to said first pair of arms.

3. In a retort, the combination with a door structure, of a circumferentially-continuous and unmutilated confining ring provided with an in-turned flange portion, radially shiftable toggle levers secured to said door structure and cooperating with said in-turned flange portion to hold the door in closed position, means for operating said locking mechanism, a hinge mechanism comprising an arm secured to said confining ring, a second arm secured to said door structure and passing around and outside of said confining ring and pivotally secured to said first arm, and a curved supporting lug secured to the outer edge of said door structure and extending around the outside of said confining member.

SAMUEL M. ROWE

Witnesses:

EMILIE ROSE

FRANK L. BELKNAP