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O. VELIE

2,199,765

DOOR LOCKING MECHANISM

Filed Nov. 1, 1938

2 Sheets-Sheet 1

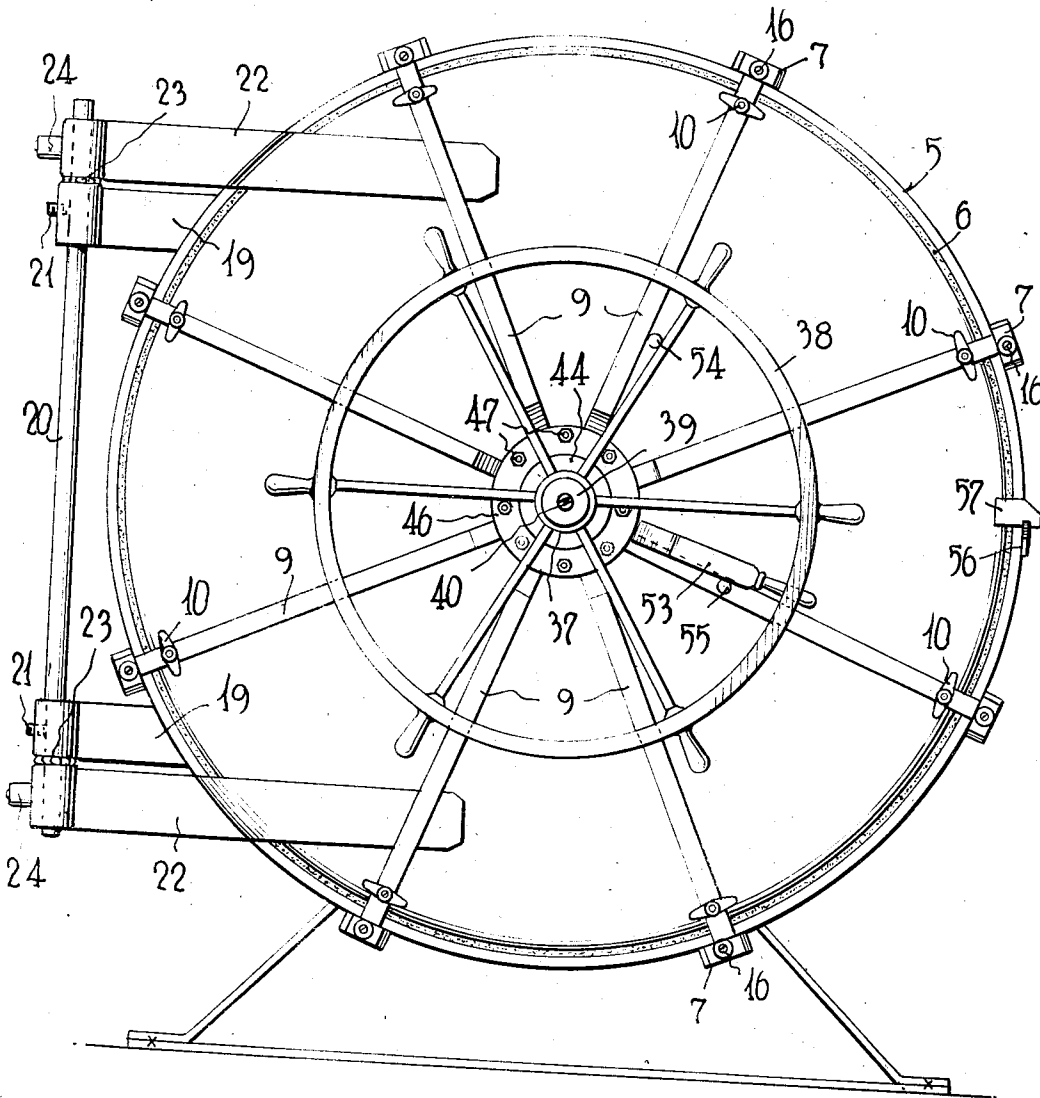


FIG. 1.

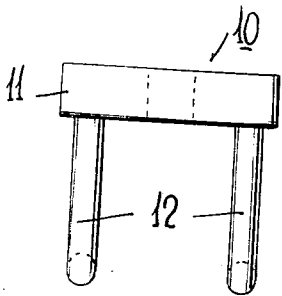


FIG. 3.

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2 Sheets-Sheet 2

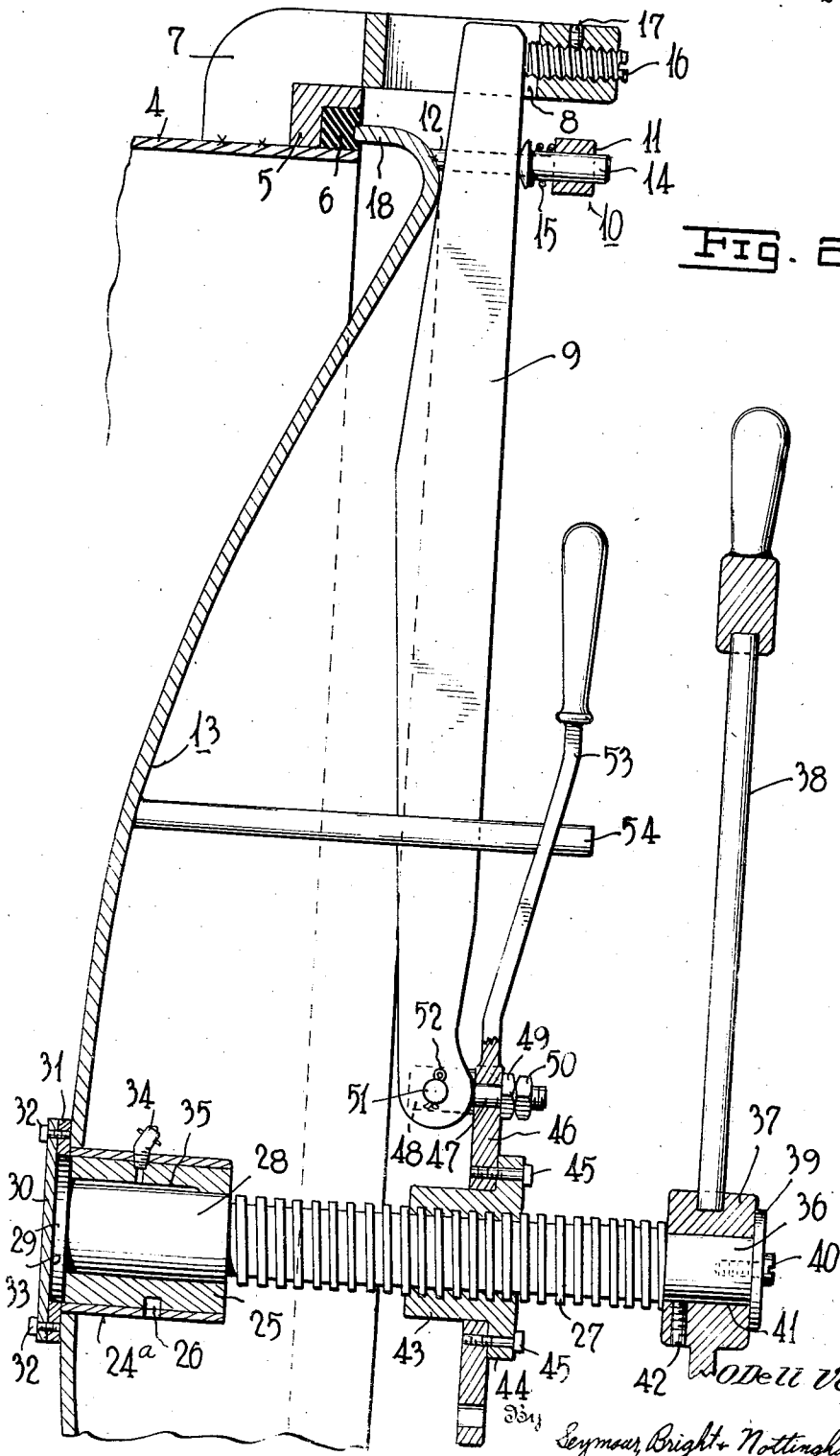


FIG. 2.

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UNITED STATES PATENT OFFICE

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DOOR LOCKING MECHANISM

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Application November 1, 1938, Serial No. 238,266

8 Claims. (Cl. 292-6)

This invention relates to improvements in re-
torts and more particularly to improvements in
the apparatus disclosed in the T. W. Reid Patent
No. 2,043,628 dated June 9, 1936.

One of the objects of the invention is to pro-
vide door-locking means, all parts of which are
arranged exteriorly of the retort where they may
be seen at all times by the operator so that he
can readily adjust and lubricate them. By ar-
ranging the locking elements outside the retort,
they will not be subject to the steam and water
used in the retort. Such steam and water has
a tendency to wash the oil off bearings and the
like if these parts are in the retort, and such oil
imparts dirt to the cans undergoing treatment
in the retort.

Another object is to supply a door mechanism
for retorts, the parts of which are so arranged
that the door can be opened slightly to permit
water to leak or drain out before the door is fully
opened.

A further object is to supply a retort having
guides on the body of the retort and the door
so that the door will always close or seal at the
same place, even with slight wear in the hinges.

With the foregoing objects outlined and with
other objects in view which will appear as the de-
scription proceeds, the invention consists in the
novel features hereinafter described, illustrated
in the accompanying drawings, and more particu-
larly pointed out in the appended claims.

In the drawings:

Fig. 1 is a front elevation of the retort with the
door in closed position.

Fig. 2 is an enlarged fragmentary sectional
view of the same with certain parts removed to
facilitate illustration.

Fig. 3 is an enlarged view of a detail.

Referring to the drawings, 4 (Fig. 2) designates
the cylindrical shell of the retort which may be
equipped with the parts shown in the above-men-
tioned patent.

The front end portion of the shell is provided
externally with a metal ring 5 which is welded
to the shell and forms with the latter, a groove for
the reception of a packing or sealing ring 6. Brackets 7 (eight in number) are welded to the
shell and ring 5 and project forwardly beyond
the front end of the shell. Each bracket is pro-
vided with a slot 8 extending lengthwise of the
shell and adapted to receive the outer end por-
tion of a locking bar or bolt 9. Each bolt passes
through a U-shaped guide 10 having a cross bar
11 that is connected by cylindrical legs 12 (Fig. 3)
to the door 13. The shank of a plunger 14 ex-

tends through each cross bar 11 and the plunger
is urged into engagement with its complementary
bolt by a coil spring 15 which surrounds the
plunger. For adjusting purposes each bracket 7
is provided with a screw 16 which impinges
against the outer end portion of the bolt and is
locked in position by a set screw 17.

The door is formed of metal and has a dome-
shaped body which projects into the front end
portion of the shell. The edge portion of the
cover forms a circular flange 18 which extends
toward the shell and cooperates with the sealing
ring 6 to seal the closure when the door is in
closed position.

As shown in Fig. 1, the shell is provided with
stationary hinge elements 19 through which
passes a vertical shaft 20 that is secured to the
parts 19 by set screws 21 or the like. Hinge
elements 22 are secured to the door and are ro-
tatable on the shaft 20; there being an anti-
friction bearing 23 between the upper hinge ele-
ments to provide for easy movement of the door.
Each of the elements 22 may be provided with a
grease fitting 24 for the application of lubricant
to the hinges.

As best shown in Fig. 2, a sleeve 24a projects
forwardly through the central portion of the door
and is secured to the door by welding or the like.
A lining sleeve 25 of any suitable metal is ar-
ranged in the sleeve 24a and secured in place
by a pin 26.

A screw 27 has an unthreaded cylindrical por-
tion 28 rotatably mounted in the lining 25 and
terminating in a head 29 which abuts against
the inner end of the liner. A cap plate 30 is se-
cured to a ring 31 secured to the inner surface
of the door at the inner end of the sleeve 25 by
means of screws 32 or the like, and a gasket 33
seals the joints between the parts 30 and 31 to
prevent any leakage of lubricant into the door
through the swivel joint or mounting of the
screw 27. A grease fitting 34 is preferably con-
nected to the sleeves 24a and 25 and is used in
introducing a lubricant into a groove 35 of the
sleeve 25 for the purpose of lubrication.

The outer end portion of the screw is also un-
threaded as shown at 36 and forms a support for
the hub 37 of a hand wheel 38. A washer 39 is
secured to the outer end portion of the screw by a
set screw 40 and functions to prevent endwise
movement of the hand wheel. Rotation of the
wheel relatively to the part 36 is prevented by a
key 41, which is arranged between the parts 36
and 37 and is releasably held in position by a set
screw 42.

A nut 43 is in threaded engagement with the screw and has a flange 44 that is secured by any suitable means such as screws 45, to an annular disc 46. The latter is provided with a circular series of holes through which rotatably extend the shanks 47 of angular connectors 48. Each shank is secured to the disc by means of a nut 49 and a lock nut 50. Each connector has a second shank 51 arranged at right angles to its shank 47 and such shank 51 extends loosely through the inner end of one of the locking bolts 9 and is secured to the latter by a cotter pin 52 or the like.

A hand lever 53 is fixed to or integral with the disc 46 and its swinging movement about the axis of the screw 27 is limited by stops or abutment posts 54 and 55, the former being rigidly connected to the door and the latter being secured to one of the bolts. The hand lever 53 is positioned between the hand wheel 38 and the bolts.

Cooperating guide elements 56 and 57 (Fig. 1) arranged respectively on the body of the retort and on the door, act to guide the door into proper closing position when the door is moved into that position.

When the door is open the cans are introduced into the retort and as disclosed in the above-mentioned patent, such cans are held in trays or coolers and piled on a truck, the latter being pushed along tracks in the body of the retort. After the cans are introduced, the door is closed. This accomplished, then it is locked by first turning the hand lever 53 to cause the bolts to be projected into the slots 8. This locks the nut 43 against rotation, and then the hand wheel 38 is turned so as to exert pressure against the door 13 and to force the edge of the flange 18 into sealing engagement with the packing ring 6.

During such closing operation, the screws 16 are adjusted if necessary and then locked in position by the screws 17.

After the door has been tightly closed the contents of the cans are cooked by introducing steam into the retort, and when the contents are completely cooked, the steam is shut off and cold water is introduced into the retort for the purpose of cooling the cans and their contents. When the cans have been cooled sufficiently, a drain valve is opened and the door is then slightly opened by manipulating the hand wheel 38, which will cause the flange 18 to move away from the packing ring 6. When all of the water has been discharged from the retort, the hand lever 53 is manipulated to retract the bolts 9 from the brackets 7. Then the door can be swung open completely.

While I have disclosed what I deem to be a preferred form of my mechanism, I do not wish to be limited thereto as there might obviously be changes made in the form, construction and arrangement of the constituent elements as well as their modus operandi without departing from the spirit of the invention as comprehended within the scope of the appended claims.

What I claim and desire to secure by Letters Patent is:

1. In a structure of the type having an opening, a door for closing such opening and brackets secured to the structure and arranged in spaced relation about the edge portion of the door, the improvement comprising a screw, a swivel joint connecting the screw to the door, means for use in turning said screw, a nut having threaded

engagement with the screw, bolts arranged exteriorly of the door, having their inner ends operatively connected to the nut and engageable at their outer ends with said brackets, and means functioning independently of the first-mentioned means for turning said nut relatively to the screw, and thereby moving the inner ends of said bolts toward or away from said door.

2. In a structure of the type having an opening, a door for closing such opening, and brackets secured to the structure and arranged in spaced relation about the edge portion of the door, the improvement comprising a screw, a swivel joint connecting the screw to the door, means for use in turning said screw, a nut having threaded engagement with the screw, bolts arranged exteriorly of the door, having their inner ends operatively connected to the nut and engageable at their outer ends with said brackets, and means functioning independently of the first-mentioned means for turning said nut relatively to the screw and thereby moving the inner ends of said bolts toward or away from said door, each bracket being provided with adjustable means for moving its complementary bolt toward said structure.

3. In a structure of the type having an opening, a door for closing such opening and brackets secured to the structure and arranged in spaced relation about the edge portion of the door, the improvement comprising a screw, a swivel joint connecting the screw to the door, means for use in turning said screw, a nut having threaded engagement with the screw, bolts arranged exteriorly of the door, having their inner ends operatively connected to the nut and engageable at their outer ends with said brackets, means functioning independently of the first-mentioned means for turning said nut relatively to the screw and thereby moving the inner ends of said bolts toward or away from said door, a screw connected to each bracket and impinging against the complementary bolt of that bracket for moving the latter toward said structure, and means for locking the last-mentioned screw in various positions of adjustment.

4. In a structure of the type having an opening, a door for closing such opening and brackets secured to the structure and arranged in spaced relation about the edge portion of the door, the improvement comprising a screw, a swivel joint connecting the screw to the door, means for use in turning said screw, a nut having threaded engagement with the screw, bolts arranged exteriorly of the door, having their inner ends operatively connected to the nut and engageable at their outer ends with said brackets, means functioning independently of the first-mentioned means for turning said nut relatively to the screw and thereby moving the inner ends of said bolts toward or away from said door, said swivel joint comprising a sleeve element projecting forwardly from the door, said screw having an unthreaded portion rotatably mounted in the sleeve and terminating in a head of larger diameter than the internal diameter of the sleeve to prevent the head from moving through the sleeve, and means for sealing said head to prevent lubricant from the sleeve being discharged at the head end of the screw.

5. In a structure of the type having an opening, a door for closing such opening and brackets secured to the structure and arranged in spaced relation about the edge portion of the door, the improvement comprising a screw, a swivel joint connecting the screw to the door, means for use

in turning said screw, a nut having threaded engagement with the screw, bolts arranged exteriorly of the door, having their inner ends operatively connected to the nut and engageable at their outer ends with said brackets, and a hand lever for turning said nut relatively to the screw independently of said means, and thereby moving the inner ends of said bolts toward or away from said door.

6. In a structure of the type having an opening, a door for closing such opening and brackets secured to the structure and arranged in spaced relation about the edge portion of the door, the improvement comprising a screw, a swivel joint connecting the screw to the door, a hand wheel for use in turning said screw, a nut having threaded engagement with the screw, bolts arranged exteriorly of the door, having their inner ends operatively connected to the nut and engageable at their outer ends with said brackets, and means for turning said nut relatively to the screw independently of said hand wheel, and thereby moving the inner ends of said bolts toward or away from said door.

7. In a structure of the type having an opening, a substantially circular door for closing said opening, and a series of spaced brackets secured to the structure and having slotted portions arranged exteriorly of the structure adjacent to the edge of the door, the improvement comprising a screw arranged exteriorly of the door, a swivel connection joining the inner end of the screw to the central portion of the door, a hand wheel rigidly connected to the outer end portion of the screw, a nut having threaded engagement with the screw, a series of angular connecting elements, each connecting element having a pair of shanks and the shanks of each pair being at angles to one another, one shank of each connector being pivotally connected to said nut, and a series of bolts arranged exteriorly of the door

and having their inner ends pivotally connected to the other shanks of said connecting elements, means on the door for guiding said bolts, each bolt being adapted to extend into a slot of one of the brackets for locking the door in closed position, and manually operated means functioning independently of said hand wheel for turning said nut relatively to said screw, and thereby moving the inner ends of said bolts toward or away from said door.

8. In a structure of the type having an opening, a substantially circular door for closing said opening, and a series of spaced brackets secured to the structure and having slotted portions arranged exteriorly of the structure adjacent to the edge of the door, the improvement comprising a screw arranged exteriorly of the door, a swivel connection joining the inner end of the screw to the central portion of the door, a hand wheel rigidly connected to the outer end portion of the screw, a nut having threaded engagement with the screw, a series of angular connecting elements, each connecting element having a pair of shanks and the shanks of each pair being at angles to one another, one shank of each connector being pivotally connected to said nut, and a series of bolts arranged exteriorly of the door and having their inner ends pivotally connected to the other shanks of said connecting elements, means on the door for guiding said bolts, each bolt being adapted to extend into a slot of one of the brackets for locking the door in closed position, and manually operated means functioning independently of said hand wheel for turning said nut relatively to said screw, and thereby moving the inner ends of said bolts toward or away from said door, the last-mentioned means comprising a hand lever arranged between the hand wheel and said bolts.

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