

C. KANTY & J. KAMINSKI.
 MEANS FOR CLOSING THE LIDS OF METAL VESSELS.
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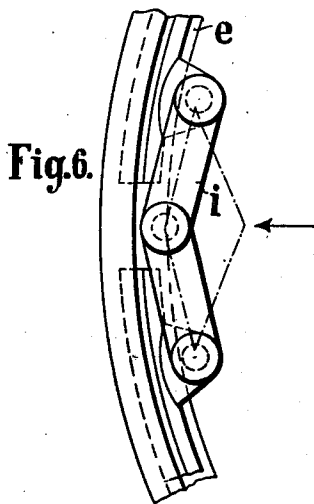
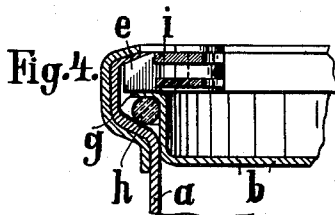
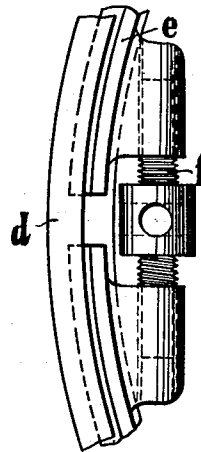
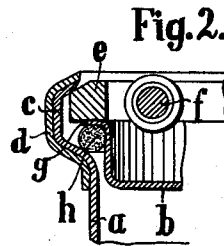
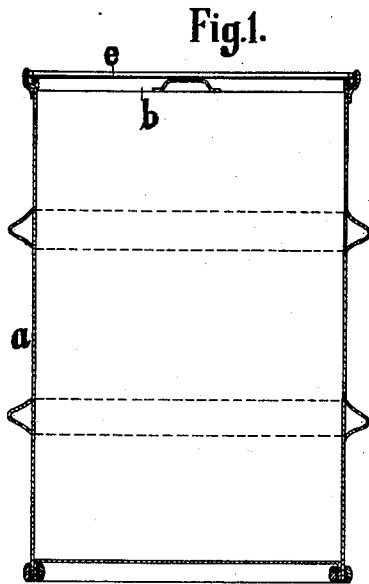
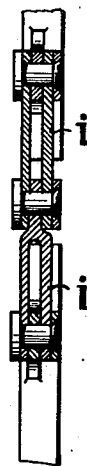


Fig.5.



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MEANS FOR CLOSING THE LIDS OF METAL VESSELS.

1,179,188.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, CARL KANTY, a subject of the King of Prussia, residing at 147 Gatherhof, Dusseldorf-Rath, Germany, and JOHANN KAMINSKI, a subject of the King of Prussia, residing at 334 Theodorstrasse, Dusseldorf-Rath, Germany, have invented certain new and useful Improvements in Means for Closing the Lids of Metal Vessels; and we do hereby declare the following to be a full, clear, and exact description of the invention.

This invention has for its object to provide an improved means for closing the lids of metal vessels, more particularly iron vessels for transport purposes.

The improved closing means comprises substantially an expanding spring ring which is arranged in an annular groove in the shell of the vessel and is provided with suitable mechanism for its expansion and contraction. This spring ring is arranged to bear upon the suitably shaped edge or flange of the lid of the vessel. The lid is supported by a rubber packing. The spring ring is adapted, when expanded, to press the lid tightly against the rubber packing bearing against the inner wall of the vessel.

The fact that the closing and opening of the lid is effected merely by expanding and contracting the spring ring, renders the improved closing means very simple in operation.

Further advantages of the improved closing means are the absence of any parts projecting outwardly or liable to be damaged during the transport of the vessel or in any other way, and also that the packing is situated outside the actual interior of the vessel. This last circumstance enables the contents of the vessel to be emptied without encountering any obstacle which is important when dealing with thick liquids and semi-solid and solid materials. In the case of very viscous materials the contents of the vessel will no doubt settle in the annular groove of the vessel but as this groove is very shallow it can be readily cleared.

Two forms of this invention are illustrated by way of examples in the drawings in which—

Figure 1 is a vertical section of an iron vessel provided with a lid according to this invention; Fig. 2 is a vertical section of one form of the improved means for closing the

lid, drawn to a larger scale; Fig. 3 is a plan to Fig. 2; Fig. 4 is a vertical section of the other form of the improved means for closing the lid; Fig. 5 is a longitudinal section of this last mentioned form, and Fig. 6 is a plan to Fig. 4.

The shell *a* of the iron vessel (Fig. 1) is formed at its open end that is to be closed by the lid *b*, with an annular groove *c* which is preferably strengthened by means of iron strip *d*. This groove contains an expanding spring ring *e*. This ring *e* may be split in one or more places and is arranged to be expanded and contracted by means of one or more turnbuckles *f*.

The spring ring *e* has a conical surface fitting against the upper turned-in edge of the groove *c*, and it rests with its under surface upon the right angled bent edge or flange *g* of the lid *b* which fits loosely in the vessel. The lid *b* is supported by a rubber packing ring *h* of any suitable cross section placed in the groove *c*. On expanding the spring ring *e* by turning the turnbuckle *f*, the lid is pressed tightly against the rubber packing which is thus forced tightly against the inner wall of the vessel and thus closes the latter. By turning the turnbuckle in the opposite way the ring is contracted and the lid can then be removed to open the vessel.

The construction of the spring ring and the means for expanding and contracting it, as also the shape of the grooves and the flanging in of the lid may be of any suitable kind. The expanding and contracting of the spring ring may be effected for instance as shown in Figs. 4, 5 and 6, by means of toggle levers *i* connected directly to the spring ring *e*. In this arrangement in order to close the vessel *a*, that is to press the flange *g* of the lid *b* firmly against the packing *h*, the toggle levers *i* must be forced from the open position indicated by dotted lines in Fig. 6 in the direction of the arrow into the extended position shown in full lines. To open the vessel, the toggle levers *i* must be forced outward by means of a suitable implement.

The toggle mechanism shown in Figs. 4, 5, and 6 has, compared with the turnbuckle shown in Figs. 2 and 3, the advantage that it can expand and contract the spring ring instantaneously. The toggle mechanism has also the further advantage of being more easily operated, since the toggle levers need

only to be pressed inward or outward to close or open the vessel. The number of the toggle levers and the manner of fixing and constructing them may be varied according to requirement.

The toggle mechanism may, if desired, be combined with the turnbuckle *f* shown in Figs. 2 and 3. In such a case the toggle mechanism is preferably fitted to one half of the ring *e* and the turnbuckle *f* to the other half. The turnbuckle *f* will then be used conveniently for effecting any requisite adjustment of the ring *e* and also for applying a greater pressure to the packing, while the toggle mechanism will be used for actually opening and closing the vessel.

I claim:—

1. A metallic vessel having its upper edge outwardly grooved to form a seat lying outside the inner diameter of the vessel, a readily removable closure lid seated in said groove and a readily detachable retaining ring overlying the edge of the lid and means carried by the opposite ends of the ring for forcibly expanding said ring into said groove, at least one of the engaging faces between the groove and ring being beveled to insure a downward pressure of the ring on the lid as the ring is expanded in engagement with the groove.

2. A metallic vessel having its upper edge outwardly grooved to form a seat lying outside the inner diameter of the vessel, the upper wall of the groove overlying only the outer portion of said seat, a readily removable closure lid resting upon only the inner portion of said seat and a readily detach-

able closure ring overlying the edge of the lid and means carried by the opposite ends of the ring for forcibly expanding said ring into engagement with the inner face of the outlying upper portion of said groove, at least one of the engaging faces between the groove and the ring being beveled to insure a downward pressure of the ring on the lid as the ring is expanded in engagement with the groove.

3. A metallic vessel having its upper edge outwardly grooved to form a seat lying outside the inner diameter of the vessel, the upper wall of the groove overlying only the outer portion of said seat, a readily removable closure lid resting upon said seat and a readily detachable closure ring overlying the edge of the lid, oppositely threaded sockets on the adjacent ends of the ring, and an expansion screw having oppositely threaded shanks entering said sockets and adapted on the rotation of the screw to expand the ring into the groove, at least one of the engaging faces between the ring and groove being beveled to insure a downward pressure of the ring on the lid as the ring is expanded in engagement with the groove.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CARL KANTY. [L. S.]
JOHANN KAMINSKI. [L. S.]

Witnesses:

GUSTUS DERENBACH,
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