Oct. 20, 1931. M. KULZINSKI 1,828,669

CLOSING SHUTTER FOR TUNNEL OVENS

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Fig. 1.

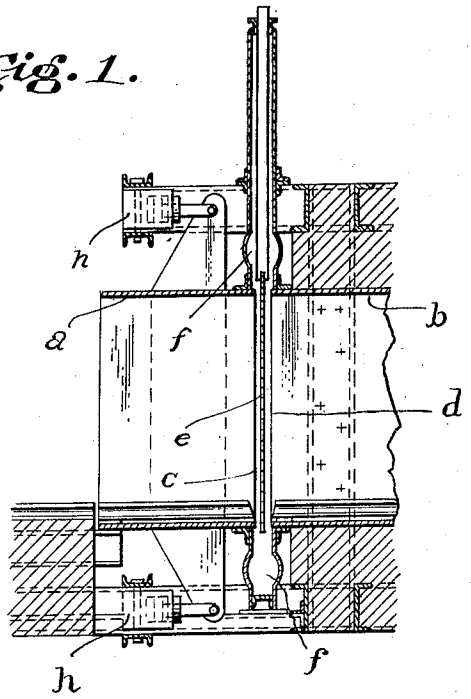
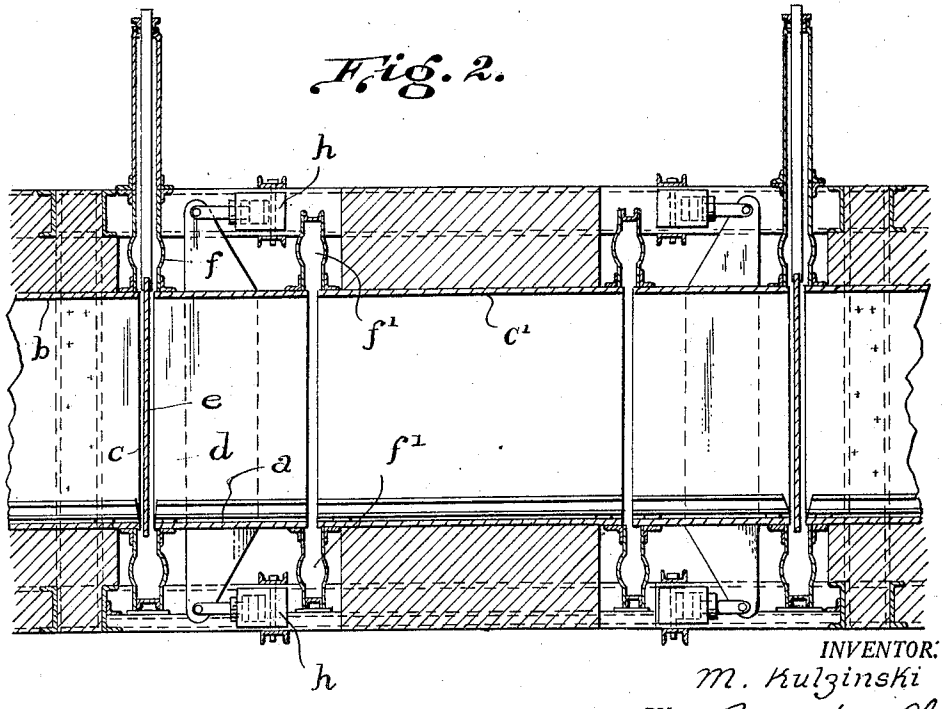


Fig. 2.



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Fig. 3.

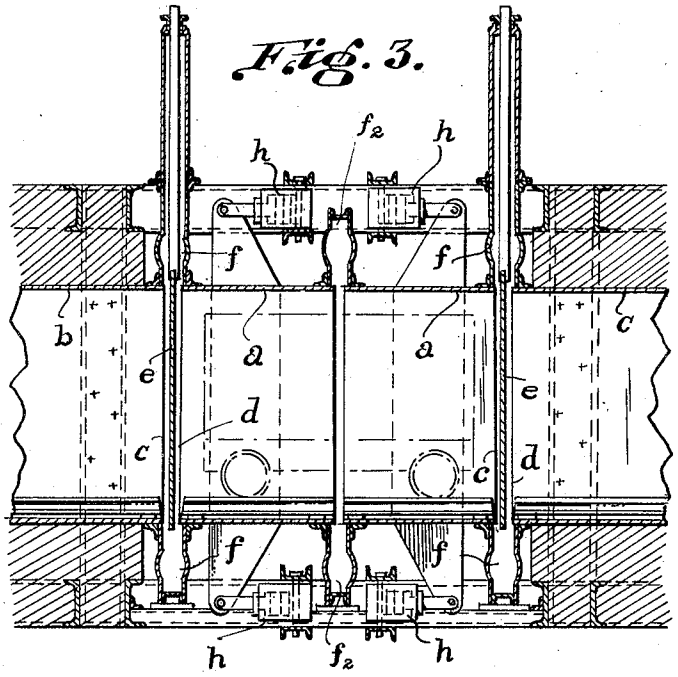
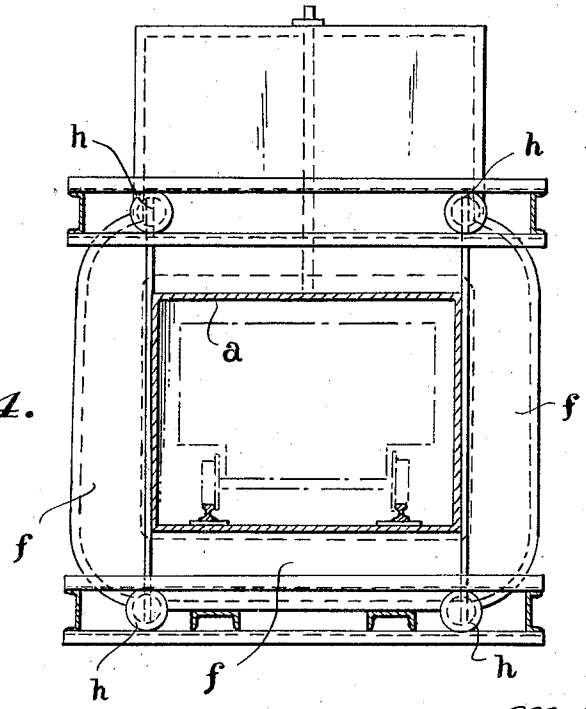


Fig. 4.



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UNITED STATES PATENT OFFICE

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CLOSING SHUTTER FOR TUNNEL OVENS

Application filed December 27, 1928. Serial No. 328,749.

This invention relates to a closing shutter for all types of tunnel ovens: drying ovens, dry distilling ovens, roasting and similar kilns or furnaces for the corresponding heat treating of various fuels such as charcoal, coal and lignite, all kinds of shale and bituminous materials, also for roasting different kinds of clay, clay products, all kinds of ore and the like for chemical and metallurgical purposes.

It is known that the now existing closing shutters for tunnel ovens are most unsatisfactory and technically unreliable. Such shutters are applied for closing of the inlet of the oven, or for the division of the oven into separate sections, or else for the formation of the so-called locks or lock-chambers. The unreliability of the existing closing shutters is chiefly due to the imperfect lock of the inlet of the oven, as well as to the defective isolation of the separate sections and locks, so that the gas and vapours evolved in one of the sections can penetrate into the adjacent one or even escape into the atmosphere or else outside air can flow into the oven. Besides the serious inconveniences arising out of these obstacles they are also very often the cause of explosions.

According to the present invention the above referred to defects are removed and a proper and tight lock is achieved in the following manner.

The invention is clearly illustrated in the accompanying drawings, in which:—

Fig. 1 is a vertical longitudinal sectional view of one form of the invention,

Fig. 2 is a similar view of another form of the invention,

Fig. 3 is a similar view of another modification of the invention, and

Fig. 4 is a cross sectional view of the arrangement shown in Fig. 3.

As shown in Figure 1 the movable part (a) as well as the fixed part (b) of the oven are tightly joined with diaphragm box (f) containing slide (e) which, when pressed by the movable part (a) on to fixed part (b) properly bolts the inlet of the oven. The front surfaces (c) and (d) as well as slide (e) are suitably worked and a perfectly tight lock is achieved when the movable part (a) is set into motion by means of an automatic device such as for instance, hydraulic cylinders (h), as shown on the drawings. The return movement of the movable part (a) releases slide (e) which can thus be lowered and lifted without any difficulty and in any suitable manner.

In the form of construction of closing shutters within the oven itself shown in Figure 2, the movable part (a) is tightly and elastically joined with the fixed parts (b) and (b_1) as well as with diaphragm boxes (f) and (f_1), of which diaphragm box (f) contains slide (e), so that the lowering and lifting of slide (e) can take place in a free manner.

In the case of lock-chambers arranged within the oven the movable part (a), as shown in Figure 3, is divided into two or more sections tightly and elastically intercommunicated by means of one (f_2) or more similar diaphragm boxes in order to allow of a free lowering and lifting of slides (e) and the diaphragm boxes (f) serve for the connection of the said sections with the fixed parts of the oven. Figure 4 is a cross section through the shutter.

The construction of the described shutter is thus that all the mechanisms necessary for its operating, can be placed from outside, where there is no danger of their being affected by high temperature vapours and gases, and all the necessary checks and repairs can take place at any desired time, which naturally ensures a reliable and lasting work of such a closing shutter.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In a closing shutter for tunnel ovens, of the type wherein a slide is employed for closing the inlet of the oven or dividing the oven into separate sections or forming together with another similar slide a lock-chamber, a slide receiving diaphragm box joined at one end with the fixed and at the other with the movable part of the oven.

2. Closing shutter according to claim 1, wherein mechanism is provided on the mov-

able part of the oven by means of which the pressing of this part on to the slide and of the slide on to the fixed part of the oven is effected.

3. In a tunnel oven the combination, a fixed tunnel part, a movable tunnel part, a diaphragm box connected with the movable tunnel part, a slide contained in the diaphragm box, another diaphragm box tightly and elastically joining the movable tunnel part to the fixed tunnel part.

4. An arrangement as claimed in claim 3, wherein the movable part includes a plurality of parts, and a plurality of diaphragm boxes forming elastic and tight intercommunication means between said parts.

5. In a tunnel oven the combination, a fixed part, a movable part, a diaphragm box between said parts forming a tight and elastic joint therebetween, and a slide operable in said diaphragm box for controlling communication between the parts.

6. A tunnel oven as claimed in claim 5, wherein hydraulically operable cylinders are operably connected with the movable part for tightly clamping the slide between the stationary and movable parts, substantially as and for the purposes set forth.

In testimony whereof I affix my signature.

MSTISLAV KULZINSKI.