No. 736,281. PATENTED AUG. 11, 1903.

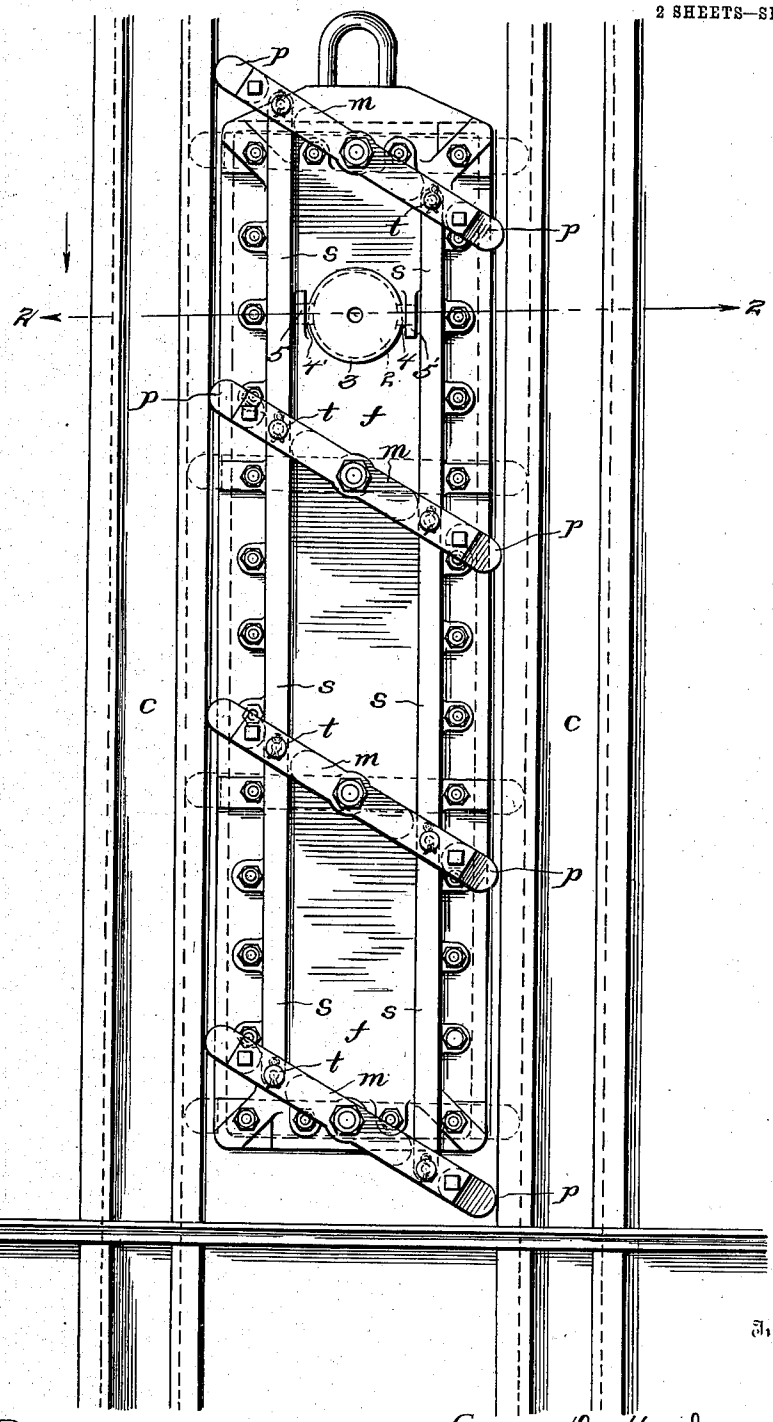
G. D. MACDOUGALL.

COKE OVEN DOOR.

APPLICATION FILED MAR. 18, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



Inventor

Witnesses

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 736,281. PATENTED AUG. 11, 1903.

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APPLICATION FILED MAR. 18, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

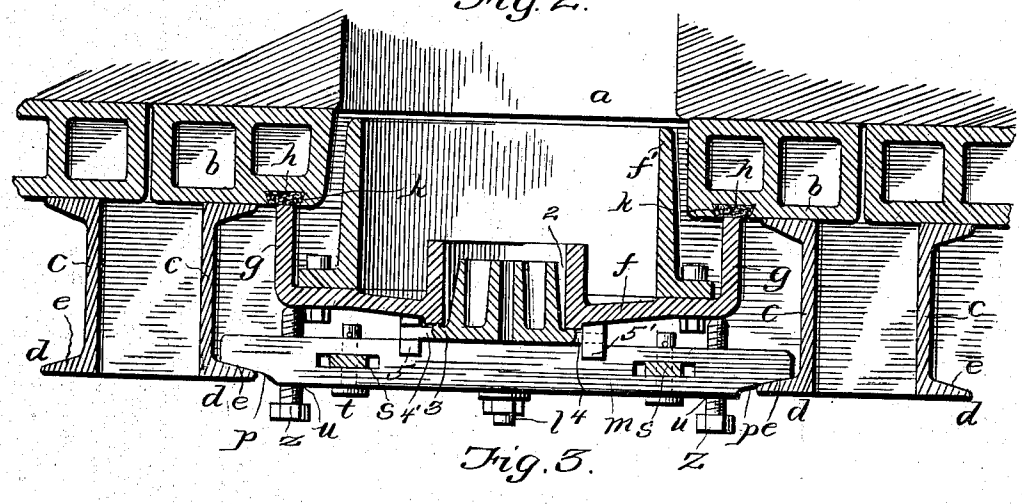


Fig. 3.

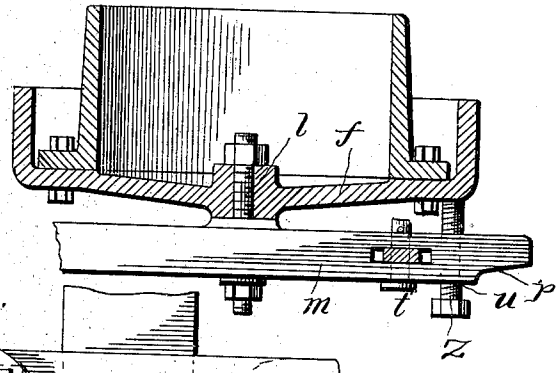


Fig. 4.

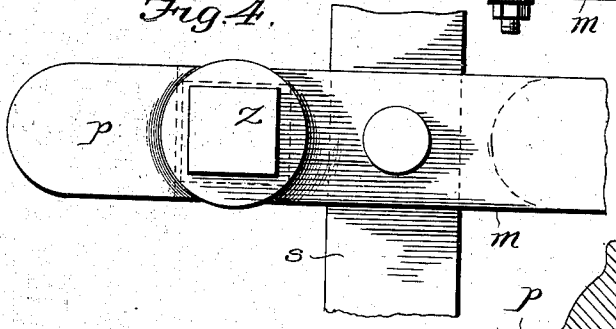
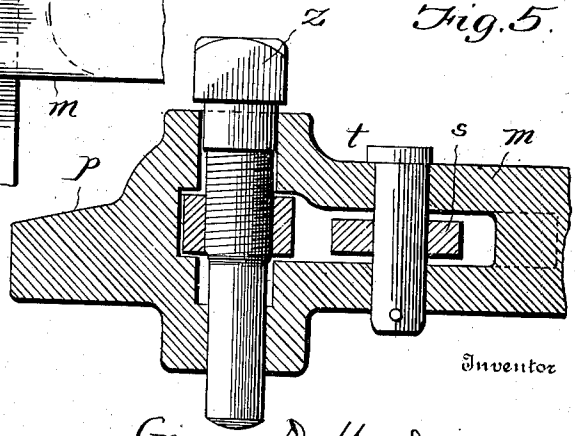


Fig. 5.



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No. 736,281. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

GEORGE D. MACDOUGALL, OF BUFFALO, NEW YORK.

COKE-OVEN DOOR.

SPECIFICATION forming part of Letters Patent No. 736,281, dated August 11, 1903.

Application filed March 18, 1903. Serial No. 148,398. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. MACDOUGALL, a citizen of the Dominion of Canada, and a resident of Buffalo, in the county of Erie and State of New York, have made a certain new and useful Invention in Coke-Oven Doors; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

Figure 1 is a front elevation of the invention as applied, the levers *m* being shown as released in full lines. Fig. 2 is a section on the line 2 2, Fig. 1, with levers *m* in engagement with the buckstays. Fig. 3 is a detail sectional view of the door *f* and adjacent parts. Fig. 4 is a detail fragmentary view of one end of one of the levers *m*. Fig. 5 is a detail longitudinal section of one end of one of the levers *m*.

The invention relates to ovens and furnaces, and especially to open-end coke-ovens; and it consists in the novel construction and combinations of parts, as hereinafter set forth.

The object of the invention is mainly to provide such ovens with self-sealing doors which may be readily operated with a minimum expenditure of time and labor.

In the accompanying drawings, illustrating the invention in connection with a coke-oven, the letter *a* designates the end of a coke-oven, to which is secured a door-casing *b*, usually of iron. This door-casing is provided on opposite sides or opposite edges with the hollow ventilated buckstays *c*, these consisting of elongated steel bars or frames projecting or standing out from the casing and having the vertical edge flanges *d*, which are beveled on their under surfaces *e*, such surfaces being inclined from root to edge outward or away from the door-casing in such wise as to provide pressure of gradually-increasing degree toward the door-frame.

The door *f* is hung in the usual manner and is designed to swing easily between the parallel buckstays to position, its inner portion entering the doorway of the door-frame and its outer wide inturned flange *g* impinging against the asbestos packing *h*, which is seated in a recess *k* of said door-frame.

The door is provided with a series of bolt-holes for the reception of the pivot-bolts *l* of the exterior latch-levers *m*, which are thereby pivoted to the door-frame in series, their pivot-bolts being in line with each other. The ends of each latch-lever are beveled or rabbeted on their outer edges, as indicated at *p*, and the levers are of proper length to provide for the engagement of their ends with the beveled flanges of the buckstays to press the flange *g* against packing *h*. At the same time they are made of proper length for disengagement from said flanges when turned to inclined position. Usually the levers are connected by a bar or bars *s*, which being pivoted to the levers at opposite end portions thereof, as indicated at *t*, serve as coupling-bars, whereby all the levers of the series may be operated at one time. Threaded perforations *u* are made through the end portions of the levers at points corresponding to the position of the outer flange of the door and the asbestos packing, and in engagement with these perforations are provided vertical pressure-screws *z*, which are designed to engage the outer surface of the door at these points, so that when the latch-levers are locked in engagement with the flanges of the buckstays the screws can be turned to force the outer flange *g* to intimate contact with the asbestos packing, sealing the joint in a secure manner.

Access to the upper part of the oven is provided by means of the circular opening 2, which is supplied with the annular flanged cover 3. The cover is held in place by its lugs 4 4′ engaging by a half-turn the up and down extending lugs 5 5′, which are connected to the door at both sides of the opening.

It will be seen that when the rotary latch-levers are turned to engagement with the sloping flanges of the buckstays their pressure upon the door becomes greater and greater as the movement of these latch-levers continues, and when the door is locked as firmly and securely as can be accomplished with these levers additional security is provided by turning the pressure-screws *z* of said levers against the marginal portion of the door, forcing its sealing-flange to close con-

tact with the asbestos packing in the door-frame. In this manner the tightness of the joint between the door-flange and the asbestos packing can be adjusted to suit the necessities of the case.

The door *f* is of vertically-elongated form, having the flange *g*, long vertically and short at top and bottom. The vertical series of pressure-screws *z* will thus bind the flange against the packing at intervals sufficiently close together to form a tight joint. The handle coupling-bars *s* are needed at each end portion of the latch-levers on account of the frictional bind of the beveled end rabbets of the latch-levers against the buckstays at each side of the door. The door *f* is provided with the inwardly-projecting flame guard or fender *f'*.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In an oven, the combination of the door-casing having the packing, the buckstays having the inclined or beveled vertical edge flanges, the door having the inturned flange engaging said packing, the exterior rotary latch-levers pivoted to the door and having the beveled end rabbets engaging the beveled flanges of said buckstays to press the door-flange against said packing, substantially as specified.

2. In an oven, the combination of the door-casing having the packing, the buckstays having the inclined or beveled vertical edge flanges, the door having the inturned flange engaging said packing, the exterior rotary latch-levers pivoted to the door and having the beveled end rabbets engaging the beveled flanges of said buckstays to press the door-flange against said packing, and the two exterior handle coupling-bars connecting said latch-levers at opposite end portions thereof, substantially as specified.

3. In an oven, the combination of the door-casing having the packing, the buckstays having the inclined or beveled vertical edge flanges, the vertically-elongated door having the long vertical inturned flange and the short bottom and top flange engaging said packing, the series of exterior rotary latch-levers pivoted to the door and having the beveled end rabbets engaging the beveled flanges of said buckstays to press said door-flange against said packing, and the vertical series of pressure-screws in said latch-levers, substantially as specified.

4. In an oven, the door-casing having the packing, the hollow forwardly-offset vertical buckstays having the inclined or beveled vertical edge flanges, the door having the inturned flange engaging said packing and the inwardly-projecting guard or fender within said flange, the exterior rotary latch-levers pivoted to the door, and having the beveled end rabbets engaging the beveled flanges of said buckstays, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. D. MACDOUGALL.

Witnesses:
F. C. BAKER,
JAMES A. WHITE.