G. DE GRAHL.

FURNACE DOOR.

APPLICATION FILED OCT. 17, 1908.

942,822. Patented Dec. 7, 1909.

Fig. 1.

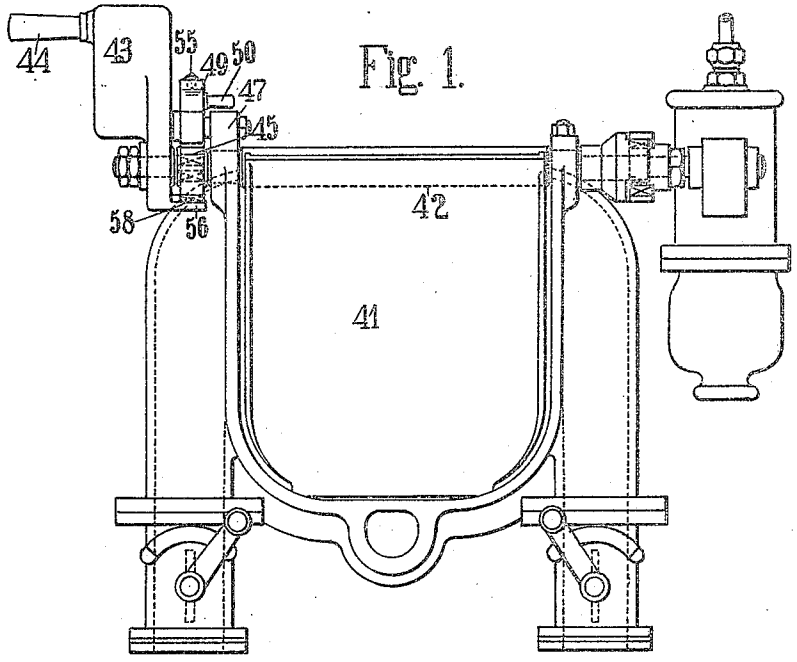


Fig. 2.

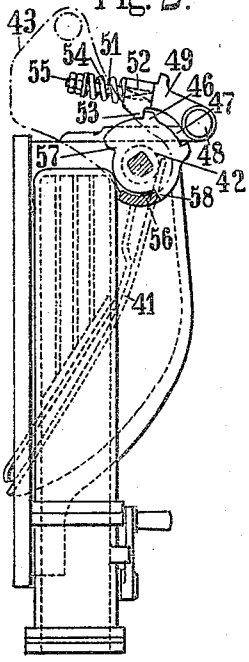


Fig. 3.

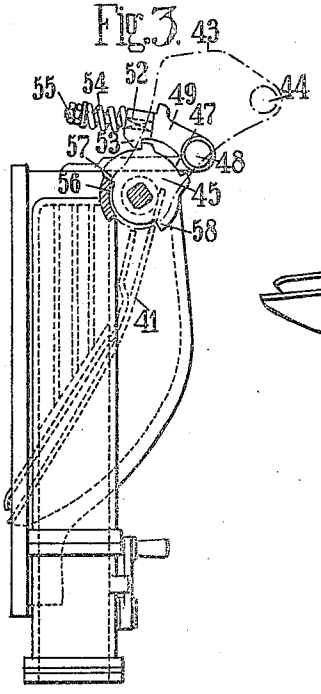
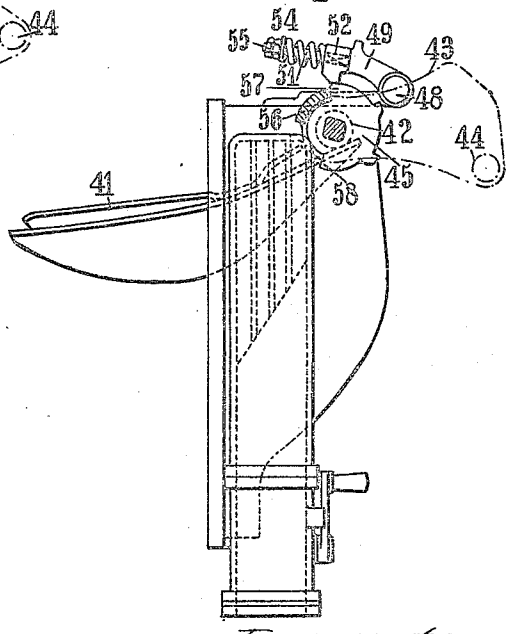


Fig. 4.



Witnesses:-

C. H. Crawford

E. Schallinger

Inventor:-

Gustav de Grahl

by R. Singer.

Attorney

ANDREW, B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GUSTAV DE GRAHL, OF WILMERSDORF, NEAR BERLIN, GERMANY.

FURNACE-DOOR.

942,822. Specification of Letters Patent. Patented Dec. 7, 1909.

Application filed October 17, 1908. Serial No. 458,290.

To all whom it may concern:

Be it known that I, GUSTAV DE GRAHL, a subject of the German Emperor, and residing at Wilmersdorf, near Berlin, Germany, have invented certain new and useful Improvements in Furnace-Doors, of which the following is a specification.

My invention relates to boiler furnaces and a primary object is to provide improvements in and relating to the doors thereof.

One illustrative embodiment of my invention is represented in the accompanying drawing, in which,

Figure 1 shows the device in front elevation, whereas Figs. 2, 3, and 4 are side elevations partly in section, respectively showing the door closed at the moment when the door begins to open and showing the door open.

Referring to the drawing, 41 is the furnace door, which is rigidly connected with the door shaft 42. On the door shaft 42 is supported revolubly a counterweight 43, said counterweight being provided with a handle 44. The sector 45, having a nose 46, is fastened on the shaft 42 by the side of the counterweight 43. On the lug 47 on the upper part of the bearing there is pivoted at 48 the detent lever 49, which is provided with the handle 50. The bolt 51 is rigidly connected with said detent lever 49, said bolt having at 52 a square cross-section. At 52 the pawl 53 is displaceably but not revolubly supported on the said bolt. Said pawl is subjected to the action of a spring 54, which abuts at one end against the abutment 55 on the bolt and presses the pawl 53 continually against the detent lever 49. Said abutment may be fixed in different positions on the bolt 51.

The counterweight 43 is provided with a projection 56 and the sector 45 with the two shoulders 57, 58, the projection being adapted to engage said shoulders 57, 58.

When the door is to be opened, the counterweight 43 is first moved from the position shown in Fig. 2 into the position shown in Fig. 3, but the door still remains in the closed position. During this movement the projection 56 of the counterweight 43 leaves the shoulder 58 of the sector 45 and abuts against the shoulder 57. The counterweight 43 having arrived into the position shown in Fig. 4, its statical moment with regard to the shaft 42 facilitates the door being opened so that the furnace door can be brought without great expenditure of force into the open position represented in Fig. 4. In this position the door is held by the counterweight 43 which abuts with its projection 56 against the shoulder 57 of the sector 45.

When closing the furnace door, the counterweight 43 first returns into the position shown in Fig. 3 and then into the position shown in Fig. 2, the projection 56 of the counterweight 43 leaving the shoulder 57 of the sector 45 and consequently owing to the weight of the furnace door the shoulder 57 of the latter is forced to follow the projection 56 of the counterweight 43, that is to say, the door returns into its closed position.

I claim.—

1. In a device of the class described the combination of a furnace provided with a door-opening, a shaft on the furnace, a door on the shaft for closing the door-opening and able to swing inward, of a counterweight revoluble on said shaft and adapted to balance said door, and a sector having two shoulders fixed on said shaft, said counterweight being adapted to coact with and actuate said sector.

2. In a device of the class described the combination of a furnace provided with a door-opening, a shaft on the furnace, a door on the shaft for closing the door-opening and able to swing inward, of a counterweight revoluble on said shaft and adapted to balance said door, and a sector having two shoulders fixed on said shaft, said counterweight having a projection adapted to coact with and actuate said shoulders.

3. In a device of the class described the combination of a furnace provided with a door-opening, a shaft on the furnace, a door on the shaft for closing the door-opening and able to swing inward, of a counterweight revoluble on said shaft and adapted to balance said door, a sector having two shoulders and a nose fixed on said shaft, said counterweight having a projection adapted to coact with and actuate said shoulders, and a detent-lever pivoted on the furnace, said detent-lever having a spring-pressed pawl adapted to engage with said nose.

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

GUSTAV DE GRAHL.

Witnesses:

FRIEDRICH ROKAHR,

WOLDEMAR HAUPT.