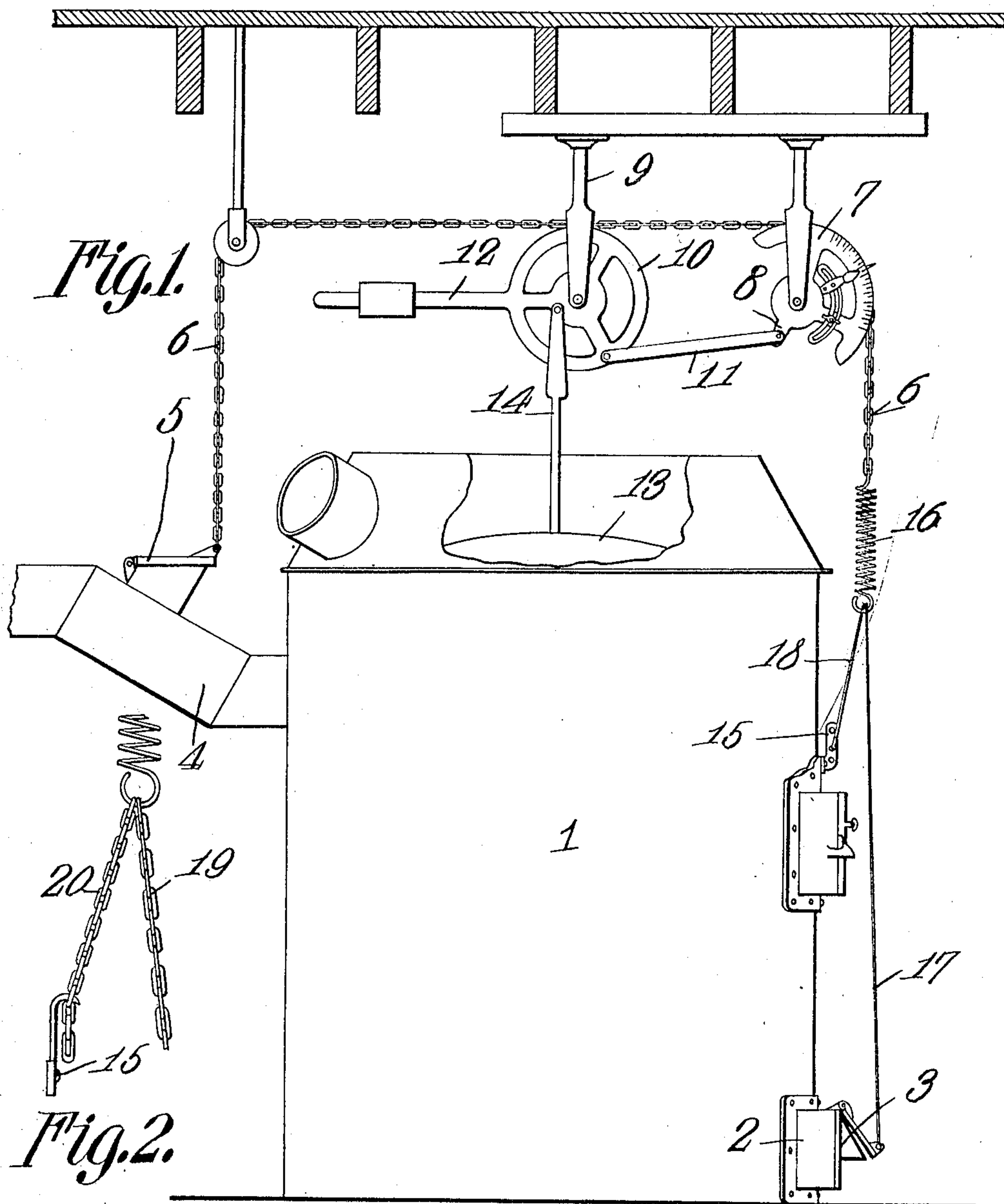


F. D. KEES.
FURNACE REGULATOR.
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913,507.

Patented Feb. 23, 1909.



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UNITED STATES PATENT OFFICE.

FREDERICK D. KEES, OF BEATRICE, NEBRASKA.

FURNACE-REGULATOR.

No. 913,507.

Specification of Letters Patent.

Patented Feb. 23, 1909.

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To all whom it may concern:

Be it known that I, FREDERICK D. KEES, a citizen of the United States, residing at Beatrice, in the county of Gage and State of Nebraska, have invented a new and useful Furnace-Regulator, of which the following is a specification.

This invention has reference to improvements in furnace regulators, and it is designed to produce a regulator for the draft openings of a furnace which shall be an improvement on a furnace regulator patented by Willum Hager, the patent being numbered 870,028, and bearing date Nov. 5, 1907. The invention consists essentially in providing the furnace regulator of Hager with certain improvements whereby the ash-pit door may be limited in or restrained from movement while the air inlet valve is at all times under the control of the regulator, and is unrestrained in movement within the limits of the regulator movement.

As constructed in accordance with the above mentioned patent the regulator opens the draft of the ash-pit door at the same time that it closes the air valve on the smoke pipe and closes the latter at the same time that it opens the former. The instant the furnace cools off a little the draft is opened and the check closed so that there is always a draft on the fire. It has been found almost impossible to hold a fire in the furnace over night or to keep the temperature down in mild weather. Thus, the consumption of the coal is continuous under all conditions of weather. In the present invention the purpose here is to prevent, when desired, the ash-pit door from opening or to limit the amount of opening thereof while at the same time the air valve in the smoke pipe works automatically. This is found to produce a more even temperature and a smaller consumption of coal.

With the above and other objects in view the invention consists in the second novel details of arrangements and combinations of parts, fully described, illustrated in the accompanying drawings, and particularly set forth in the claim.

In the accompanying drawings like characters of reference indicate like parts in the several views.

Figure 1 is a side view of a furnace equipped with this invention. Fig. 2 is a detail view of a modification of certain parts of the device.

Referring to the drawing above men-

tioned, there is shown a furnace 1, provided with an ash-pit door 2, having a flap or valve 3, for the admission of air. The furnace is also provided with the usual pipe 4, having an air inlet valve 5, which is similar to that provided in ordinary furnaces. A chain 6 passes over a sector 7 and transversely over a pulley fastened to the floor 9 above the furnace by means of a suitable hanger, and thence downward to connect to the valve 5. The sector 7 is provided with a hub having a short radial arm 8. A hanger 9 carrying a wheel 10 is connected to the sector 7 by 8, 6, 9, and 11 and provided with a wickered arm 12.

The furnace 1 is provided with a dome 13 connected with the wheel by means of a rod 14. Attached to a suitable portion of the furnace and to the door casting is a latch 15 which latch may be in the form of a bar having a number of little holes therealong as shown in Fig. 1 or may be a simple hook as indicated in Fig. 2. Attached to the lower end of that portion of the chain which passes downward from the sector 7 is a spring 16 preferably of spiral form. In the form of the device shown in this Fig. 1 there is attached to the lower end on said spring a wire 17 connected with the valve 3. The spring 16 is of such strength that, when not held from so doing, it will raise the valve 3 without appreciably stretching. In order to provide a means whereby the valve 3 may either be limited in the movement or kept entirely closed, there is connected to the lower end of the spring a wire 18 provided with a bend or hook at the end arranged to engage one of the openings in latch 15. In the form shown in Fig. 2 the wire 17 is omitted and the chain 19 substituted therefor. Further, a chain 20 is substituted for the wire hook 18.

Referring again to Fig. 1 the openings in the latch 15 are so arranged that when the wire hook 18 is inserted in the lowermost opening, the spring will be drawn down to such a position that the valve 3 will at all times remain closed. By positioning the wire hook 18 in one of the other openings in the latch 15 the valve 3 will be permitted a limited amount of opening movements. Referring again to Fig. 2 it is to be noticed that, the latch 15 being in a form of a hook, the same function is obtainable by connecting one of the links of the chain 20 to the latch 15.

It is to be observed that, whether the valve 3 be arranged to remain entirely shut or whether it be allowed a limited amount of opening movement, the valve 5 can at all 5 times be actuated by the movement of the sector 7. It is thus seen that it is not only possible to control both the valve 3 and the air valve 5 by the regulator but it is possible so to adjust the parts of the device that the 19 air valve 5 may be more fully under control of the regulator than the ash-pit door valve 3. It will be evident, however, that the operation of this device, when once adjusted, is entirely automatic.

15 Having thus described the invention, what is claimed, is:—

In a furnace, a dome capable of the ex-

pansion and the contraction of the reaction of the heat, an ash-pit, a draft valve for the ash-pit, a smoke pipe, an air valve for the 20 smoke pipe, a chain connected to said air valve, means connected to the dome arranged to move said chain, a spring carried on said chain, means to connect said spring to the ash-pit draft valve, and co-acting 25 means on said furnace and spring to limit the upward movement of the spring.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FREDERICK D. KEES.

Witnesses:

MARGARET McCALPIN,
J. A. KEES.