W. I. KINTZ.

Boiler and other Furnaces.

No. 221,682. Patented Nov. 18, 1879.

Fig. 1.

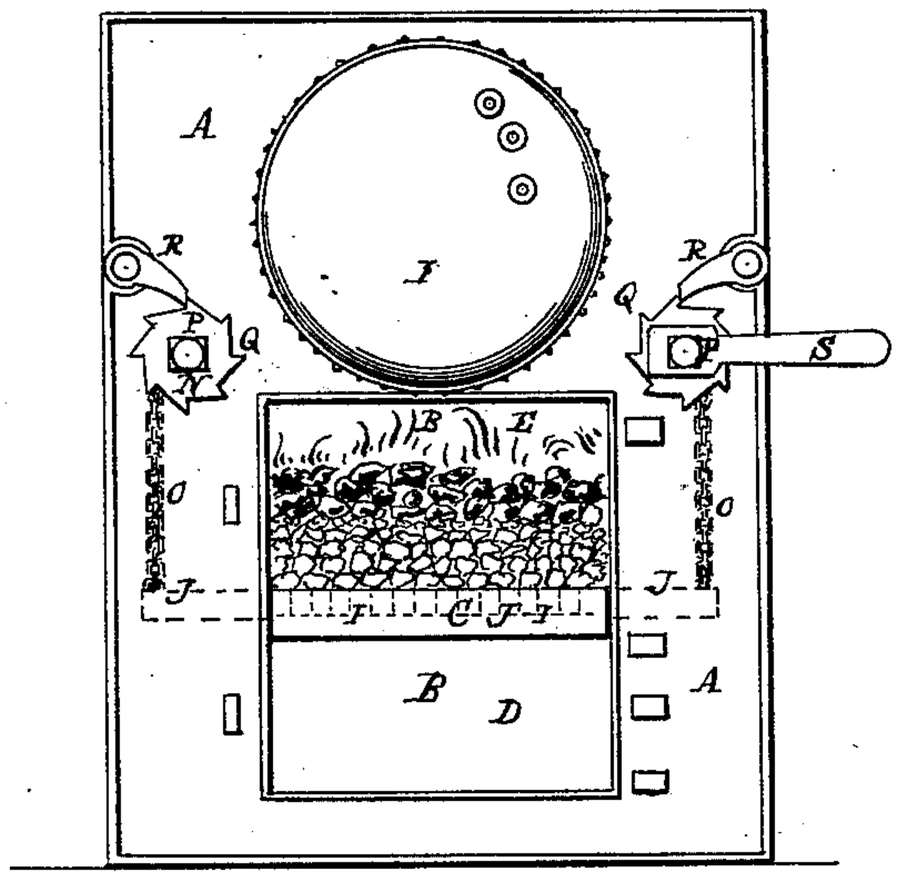


Fig. 2.

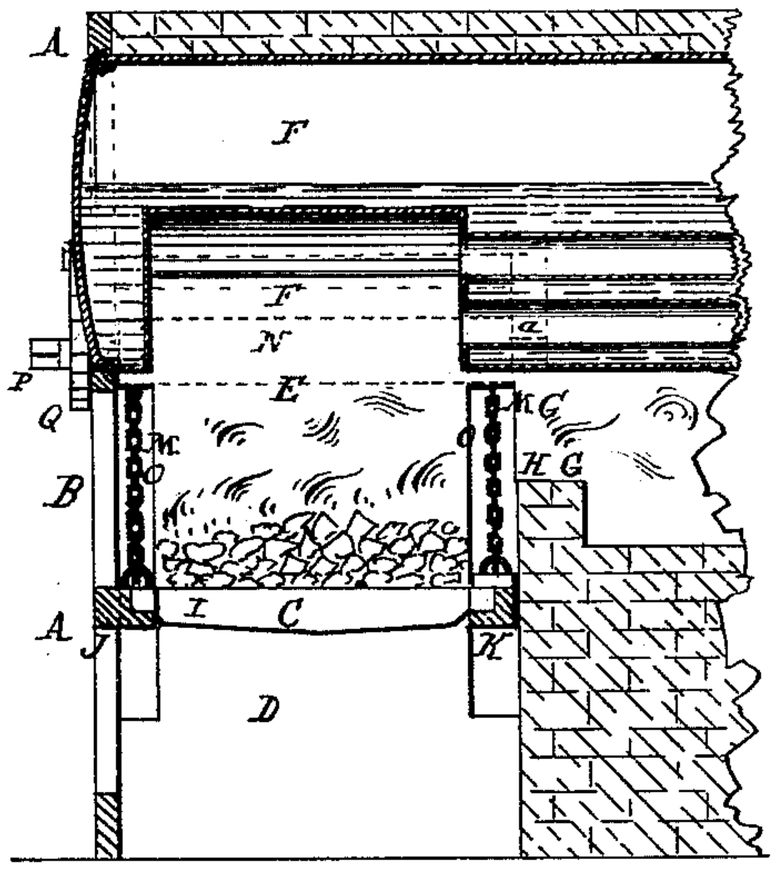


Fig. 3.

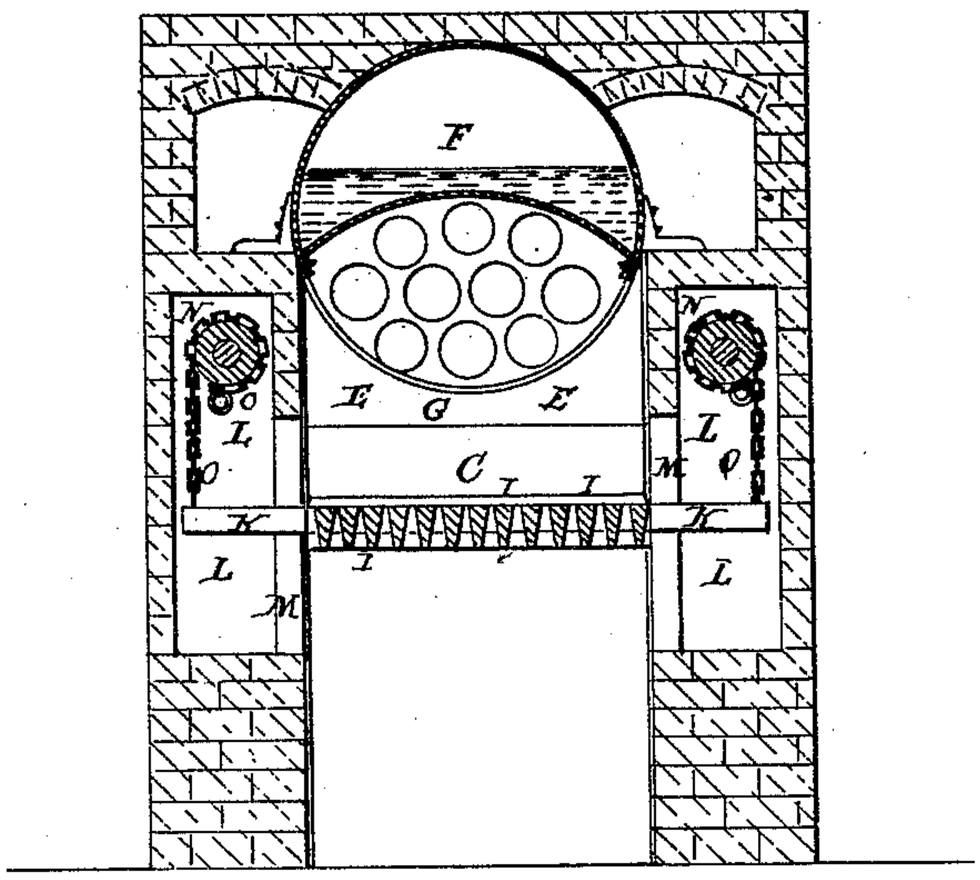
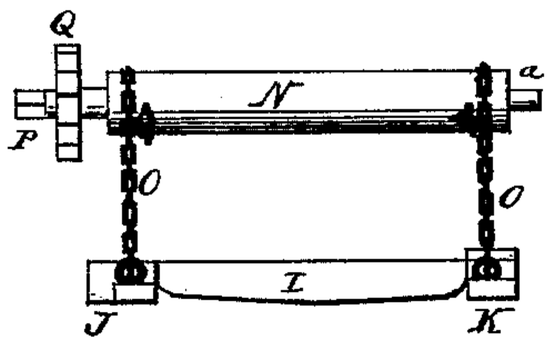


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM I. KINTZ, OF TIFFIN, OHIO.

IMPROVEMENT IN BOILER AND OTHER FURNACES.

Specification forming part of Letters Patent No. **221,682**, dated November 18, 1879; application filed September 17, 1879.

To all whom it may concern:

Be it known that I, WILLIAM I. KINTZ, of Tiffin, in the county of Seneca and State of Ohio, have invented a new and useful Improvement in Boiler and other Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a front elevation of a boiler-furnace with my improvements. Fig. 2 is a central longitudinal section of the same, and Fig. 3 a cross-section of it. Fig. 4 is a detached side view of the grate and the winding attachment.

The nature of my invention consists in combining, with the grate of a furnace, mechanical appliances or means for raising and lowering the grate, whereby, as hereinafter described, such greater or less degree of heat can be applied to a steam-boiler or other object being heated as may be desired.

By my invention the overheating of a boiler or other object to which heat is applied may be prevented and the heat of the same reduced as desired.

In the annexed drawings, A represents the front side of the furnace, which is made of iron or suitable fire-proof material, and has the front opening, B, for the grate C and ash-pit D, all of which may be covered, if desirable, by doors hinged to said front side, A.

Above the grate C is the fire box or room E, in or over which the boiler or body F to be heated is arranged. The rear wall or side of the fire-room E has a flue, G, which is provided with the usual bridge H, over which the products of combustion pass on their way to the chimney.

The grate C consists of grate-bars I I, which rest upon or form a part of a front cross-bar, J, and a rear cross-bar, K.

The longitudinal sides or walls of the fire-room E have each a chamber, L, in them, provided with a vertical slot or opening, M, one at the rear and one at the forward end of the chamber, and communicating between the fire-room and chamber L, as shown in Figs. 2 and 3.

The ends of the bars J and K project from the grate in the fire-room through said slots into said chambers, and the slots M are made wide enough to allow the ends of the bars J and K to readily move up and down therein in a heated state and carry the grate up and down with them.

The slots M are of such height as to allow the grate to be moved toward and from the boiler or body being heated as shall be the proper distance to most economically apply the combustion and heat of the fuel to the boiler, and this whether the fuel has become reduced to the lowest layer or has been increased to the largest charge.

In the upper part of each of the chambers L is arranged a horizontal metal or other fire-proof winding drum or shaft, N, properly provided with a chain or wire rope, O, for each end of the bars J and K, one end of each chain being firmly secured to the winding-drum and the other end to one end of the bars, as indicated in the drawings, so that the grate can be readily raised or lowered by turning the drum N in the proper direction. Said shafts or drums N have each a journal, *a*, on their rear end, which rests in a proper bearing in the rear of the respective chambers L, while the forward end, P, of each drum N projects through and has a bearing in the front plate or side, A, of the furnace.

The part of the end P outside and close to the front plate is furnished with a firmly-attached ratchet-wheel, Q, which is engaged by a pawl, R, pivoted above it to the front plate, as shown. By said ratchet-wheel Q and pawl R the drum N is held fast from turning in a direction to unwind and allow the grate to lower; but whenever it is desired to lower the grate, said pawls are disengaged, thereby allowing the grate to suitably descend.

To wind up the drums N and raise the grate, a wrench or crank, S, is employed upon the extreme outer end of each of the drums, as shown.

The device I have shown for raising and lowering the grate may be substituted by others equally suitable without departing from the spirit of my invention.

With my improvement applied to a furnace, as the charge of coal or fuel becomes reduced

the grate may be raised accordingly, in order to keep the fire so contiguous to the boiler or object being heated as to make the greatest amount of heat available; and when it is desired to have a new charge of coal or fuel put upon the fire, the grate can be readily lowered to allow the required room for such purpose, as well as for the free combustion of the fresh fuel.

In heating sulphur or analogous heating, or in generating steam, it is often desirable, without disturbing the fire, to either gradually or suddenly increase or decrease the heating process and without either manipulating or closing the draft of the furnace. In such case with my improvement the grate is readily either raised or lowered, and the desired effect produced.

I claim—

1. The grate C, having cross-bars J and K, in combination with a furnace having slots M, winding-drums N, and chains O, substantially as and for the purpose described.

2. The grate C, with cross-bars J and K, and the furnace, with slots M, in combination with the winding-drum N, the chains or ropes O, and the ratchet-wheels Q, and pawls R, substantially as described.

WILLIAM I. KINTZ.

Witnesses:

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