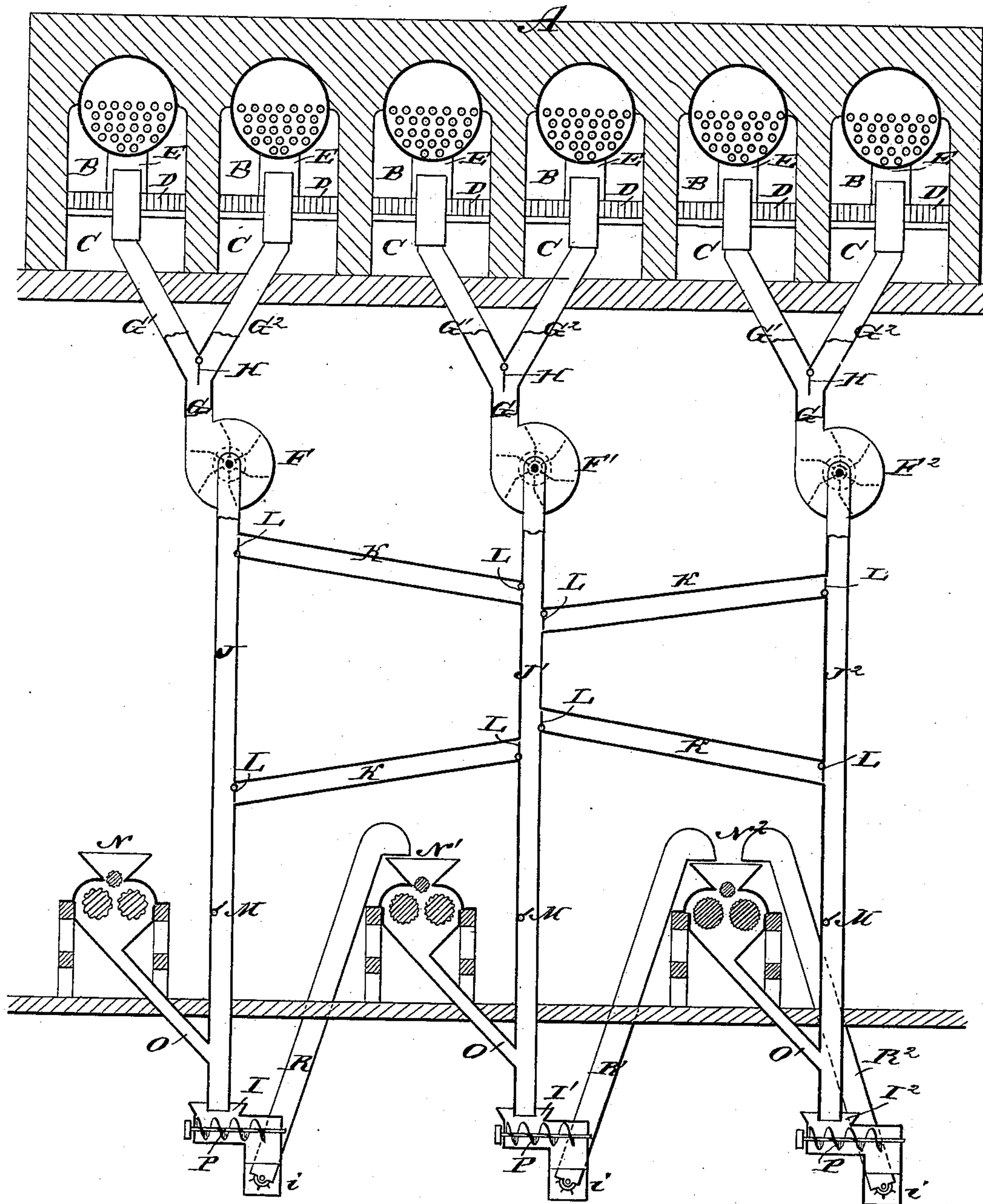


R. W. O. REHMENKLAU.
FEEDING COAL TO FURNACES.

Patented Dec. 29, 1885.

Fig. 1.



WITNESSES:

Fig. 2.

Procter
C. Sedgwick

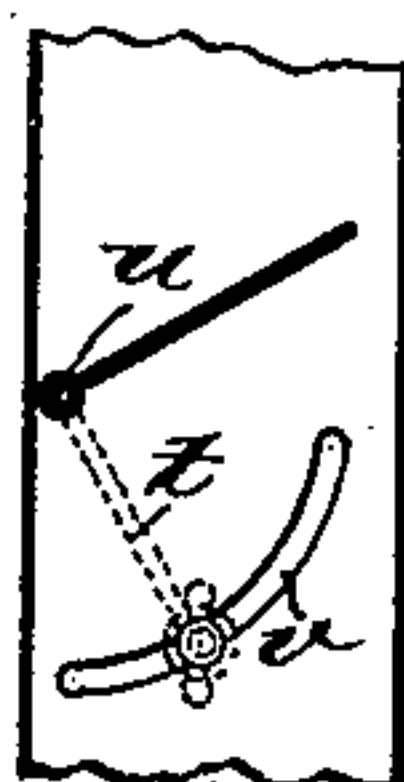
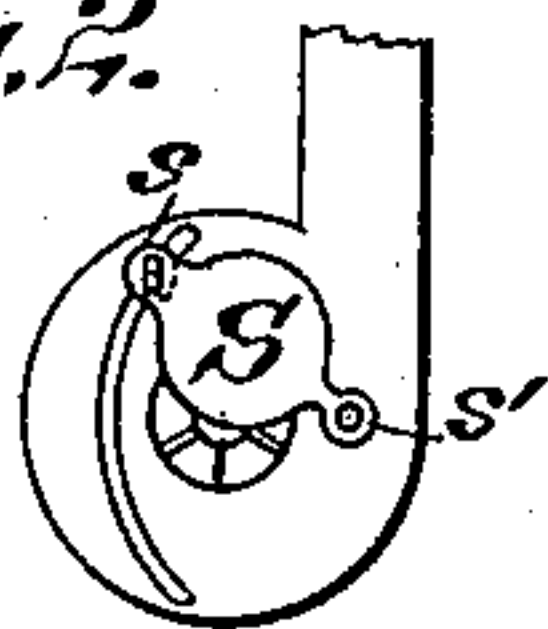


Fig. 3.

INVENTOR:

R. W. O. Rehnert-Klau

BY *Munn & Co*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

RUDOLPH W. O. REHMENKLAU, OF MINNEAPOLIS, MINNESOTA.

FEEDING COAL TO FURNACES.

SPECIFICATION forming part of Letters Patent No. 333,337, dated December 29, 1885.

Application filed April 4, 1885. Serial No. 161,199. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH W. O. REHMENKLAU, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and Improved Method of Preparing and Feeding Coal to Furnaces, of which the following is a full, clear, and exact description.

The object of my invention is to provide for preparing and feeding coal to furnaces to insure a more thorough combustion of the coal than has heretofore been obtained. In the ordinary manner of feeding furnaces a certain percentum of coal is lost before being fully burned by being carried off with the cinders, &c. By my method the loss is reduced to a minimum, and at the same time a more intense and steady heat is maintained in the fire-chamber.

The invention consists of the combinations of parts, including their construction, substantially as hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a view, mainly sectional, illustrating my method of preparing and feeding coal to furnaces. Fig. 2 is a detail view of one of the air-inlet ports of the blower, showing the manner of adjusting it for regulating the supply of air. Fig. 3 is a detail view enlarged, showing the form and manner of regulating the valves situated in the conveying-ducts.

In the drawings, A represents a gang of boilers with their respective fire-chambers B and ash-pits C.

In using my method the fire-chamber has a floor of fire-resisting bricks or blocks laid on the grate-bars, as indicated by D. In the center of the fire-chambers, and just in advance of the bridge, deflectors E are placed, which are to be made of fire-clay or other fire-resisting material. Leading from the blowers F F' F², and into the fire-chamber B, are bifurcated ducts or pipes G. By having these ducts bifurcated two fire-chambers may be supplied from one and the same blower. At the intersection of the two branches G' G² of the ducts G valves H are placed, the objects of which

are to shut off the supply of pulverized coal from one of two fire-chambers supplied by one of the blowers should it be desired. From the blowers F F' F² conveying ducts or pipes J J' J² descend to the receptacles I I' I². These conveying-ducts J J' J² are connected together by cross-pipes K, which have communication with the said ducts. At the point of junction of these ducts J, J', J², and K, valves L are secured. The ducts J J' J² also have valves M for shutting off the supply to the blowers.

N N' N² represent a series of crushers which pulverize and then discharge the coal through branch ducts O into the ducts J J' J², where the blowers F F' F² act upon it. I have shown crushers with corrugated rollers; but any form of crushers may be used. The receptacles I I' I², which are of angular shape, have feed-screws P journaled in their horizontal portions. The said receptacles are also open where the ducts J J' J² enter them, thus allowing the air to enter and mix with the pulverized coal being drawn through the ducts.

In operation the coal is first put into the crusher N. After being pulverized it passes through crusher-box and duct O into conveying-duct J, where the suction-current created by the blower F carries the finer particles up into its casing, and then by blast forces it through the bifurcated distributing-ducts G against the deflectors E, where it is consumed, fire first being started by any simple means, such as cotton waste saturated with oil. The larger particles of coal which leave the crusher N, and upon which the suction-current has no effect, fall upon the screw P in the receptacle I, which carries it to the lower portion, i, thereof, from which it is carried by means of an elevator, R, into crusher N', which is set to crush finer than crusher N. The course of the pulverized coal after leaving crusher N' is substantially the same as above described. The coarser particles which leave the crusher N' not passing to the blower F' are deposited in the second receptacle, I', and are conveyed to crusher N² by means of the elevator R', which crusher is set to crush still finer. If, after leaving this crusher, all the pulverized coal is not drawn up by the blower F², it is carried back to the crusher N² by means of an elevator, R², for further crushing.

In Fig. 2 is shown one of the air-inlet valves of the blowers. It consists of a flat disk, S, having lugs $s s'$, the lug s' having a small screw-hole to receive a screw, by means of which it is secured to the casing. Through the hole in lug s a bolt passes, and into an arc slot, said bolt has a winged nut for adjusting the disk S in any desired position to admit more or less air to the blowers.

In Fig. 3 is shown the manner of positioning the valves in the conveying-ducts. To the end of the shaft u upon which the valve swings a short rod, t , is secured. The other end of this rod receives a bolt which works in the arc slot v , and this bolt has a winged nut for locking the bolt in any part of the slot v . By means of these valves the supply of pulverized coal can be cut off or admitted to any one of the combustion-chambers B at pleasure.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an apparatus for preparing and feeding coal to furnaces, the crusher N^2 , in combination with the duct J^2 , with its lower end entering the receptacle I^2 , open for the admission of air, the screw P, the elevator R^2 , the blower F^2 , disposed at the upper end of the duct J^2 , and the bifurcated duct G, connected to the blower F^2 and having branch ducts $G' G^2$, for distributing the pulverized coal to the

furnace, substantially as herein shown and described.

2. In an apparatus for preparing and feeding coal to furnaces, the combination, with a series of crushers, $N N' N^2$, of the ducts $J J' J^2$, the receptacles $I I' I^2$, which receive the lower ends of the said ducts and open for the admission of air, the feeding-screws P, disposed in said receptacles, the elevators $R R' R^2$, connecting with the said receptacles and the said crushers, the blowers $F F' F^2$, arranged at the upper ends of said ducts $J J' J^2$, and the bifurcated ducts G, connected to the said blowers and having branch ducts $G' G^2$, for distributing the pulverized coal to the furnace, substantially as herein shown and described.

3. In an apparatus for preparing and feeding coal to furnaces, the combination, with a series of crushers, $N N' N^2$, of the ducts $J J' J^2$, connected together by cross-ducts K, and having valves L and M, for cutting off and regulating the supply of pulverized coal to the different furnaces, the receptacles $I I' I^2$, screws P, elevators $R R' R^2$, blowers $F F' F^2$, and bifurcated ducts G, having branch ducts $G' G^2$, substantially as herein shown and described.

RUDOLPH W. O. REHMENKLAU.

Witnesses:

GEO. R. GALPIN,
SWANTY SWANSEN.