

(No Model.)

2 Sheets—Sheet 1.

F. HOFACKER.
FEEDING MECHANISM FOR FURNACES.

No. 566,582.

Patented Aug. 25, 1896.

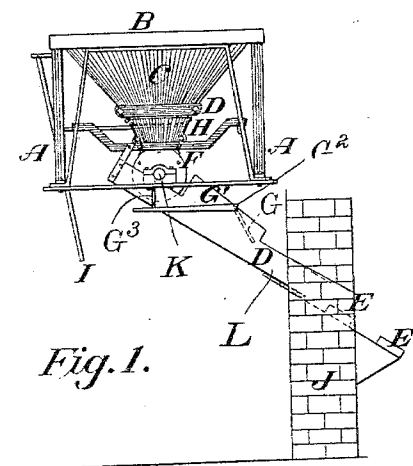


Fig. 1.

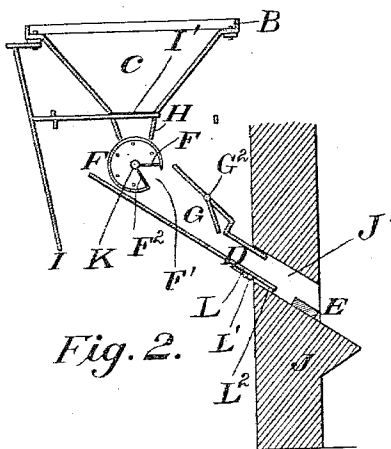


Fig. 2.

Fig. 5.

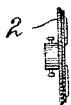


Fig. 6.

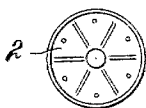


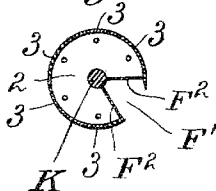
Fig. 7.



Fig. 8.



Fig. 9.



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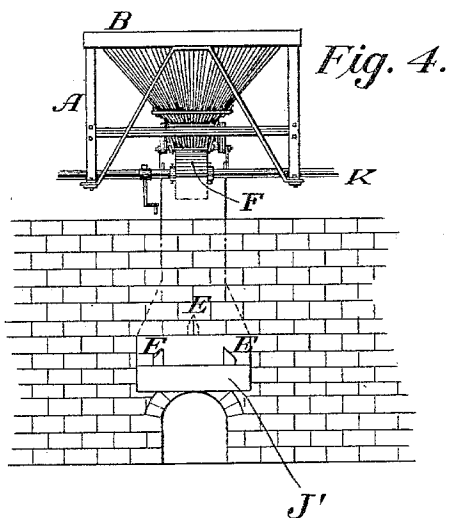
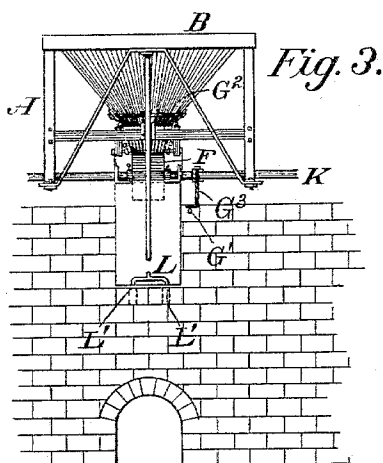
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2 Sheets—Sheet 2.

F. HOFACKER.
FEEDING MECHANISM FOR FURNACES.

No. 566,582.

Patented Aug. 25, 1896



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UNITED STATES PATENT OFFICE.

FRED HOFACKER, OF ROCKLAND, MAINE.

FEEDING MECHANISM FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 566,582, dated August 25, 1896.

Application filed October 7, 1895. Serial No. 564,920. (No model.)

To all whom it may concern:

Be it known that I, FRED HOFACKER, of Rockland, in the county of Knox and State of Maine, have invented certain new and useful
5 Improvements in Feeding Mechanism for Furnaces, of which the following is a specification.

This invention has for its object to provide simple, durable, and efficient means for feeding
10 ing coal in regular quantities and at regular intervals to furnaces, and for insuring a better distribution of the coal in the furnace.

The invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of my improved coal-feeding mechanism, showing a portion of the furnace-wall. Fig. 2 represents a sectional view of the same. Fig. 3 represents a front view, and Fig. 4 represents a rear view, of the improved feeding apparatus. Figs. 5 to 9, inclusive, represent views of details hereinafter described.

The same letters and figures of reference indicate the same parts in all the figures.

In the drawings, J represents the wall of a furnace, having an inclined feed-opening J',
30 through which fuel is to be introduced.

D represents an inclined chute communicating with the opening J'.

C represents a hopper located above the upper end of the chute D and adapted to receive
35 coal to be conveyed to the furnace.

F represents a rotary coal measuring and discharging valve, which is composed of a cylinder affixed to a horizontal shaft K journaled in suitable bearings and continuously rotated
40 by power applied in any suitable way. One side of the cylinder is left open to form the mouth of a pocket F', the sides of which are formed by plates F² F², which radiate from the shaft K to the inner surface of the cylinder at opposite sides of the mouth of the opening therein, as shown in Figs. 2 and 9. This construction of the cylinder with the pocket formed by the diverging plates F² possesses several advantages. In the first place, it permits the feeder to rotate continuously in one
45 direction, the cylindrical portion shutting off the supply of fuel from the hopper, since the

periphery of the cylinder fits the lower end of an extension H of the hopper C and prevents the discharge of coal therefrom excepting when the pocket F comes under side extension, said pocket receiving a charge of coal,
55 which is conveyed away from the extension H by the rotary movement of the cylinder F and dumped into the upper portion of the chute D. Another advantage lies in the fact that the quantity of fuel is restricted to the space between said plates, and said plates being inclined or diverging from each other cause the fuel to be quickly discharged in one
60 feed instead of being slowly turned out, as would be the case if the plates were absent and the entire cylinder filled with fuel. The coal is thus intermittently discharged in regular quantities into the chute, the inclination of the latter causing the coal to gravitate into the furnace through the opening J'. The lower portion of said opening is laterally enlarged, as shown in Fig. 4, and its bottom surface is provided with projections E E, which
65 may be bricks arranged to deflect portions of the coal sliding down the chute, and thus distribute the coal over a wider area of the furnace than would otherwise be the case.

L represents a steam-pipe located at the under side of the chute and having two nozzles L' L' extending between the under side of the end of the chute and the floor of the inclined opening J', and arranged to direct jets of steam through openings L² into the feed-opening J' for the purpose of keeping
80 the heat from passing outwardly through said opening, and for the further purpose of forcing the fine coal into the furnace, said jets of steam serving also to induce a current of air to keep the upper portion of the chute free from fine particles of fuel.

The hopper C is supported by a frame A, which may be of the general construction shown in Fig. 1.

I' represents a gate adapted to slide in the bottom of the hopper, said gate being connected with a lever I, whereby it may be operated to open and close the bottom of the hopper.

G represents a valve which is adapted to close the chute D to prevent the escape of smoke and gases therethrough. Said valve is attached to a rod or shaft G² journaled in
100

bearings on the chute, and is provided with an arm G' , which projects into the path of a crank G^3 on the shaft K. When the said crank is in the position shown in Figs. 1 and 3, it depresses the valve-arm G' , thus opening the valve, as shown in Figs. 1 and 2, this taking place just as a charge of coal is discharged from the pocket of the cylinder F, so that the coal is permitted to pass through the chute. The valve is closed either by its own weight or by a suitably arranged weight or spring when the crank G^3 releases the arm G' , which occurs as soon as the charge of coal has passed the valve, the latter remaining closed until the next charge of coal is dumped into the chute. The cylinder F is preferably composed of two disk-shaped heads 2, of the form shown in Figs. 5 and 6, affixed to the shaft K, and a series of segmental sections 3, Figs. 7 and 8, each having ears 4 at its ends adapted to be bolted to the heads 2. One of the sections 3 has a cutting-edge projecting over the pocket F' and adapted to readily pass through the mass of coal at the bottom of the chute and close the latter. This sectional construction of the cylinder F provides for the adjustment of the size of the measuring-pocket by removing or replacing a section 3 at each end, and therefore permits of the pocket being enlarged if lumpy coal is to be fed to the furnace.

The operation is as follows: The shaft K being continuously rotated the cylinder F acts to permit an intermittent discharge of coal from the hopper, the cylinder closing the hopper after each filling of the pocket F' . The charges of coal are delivered to the furnace by the chute, and are evenly distributed or scattered over the fire, the chute being automatically opened while each charge is passing through it and closed until the next charge is admitted.

I do not limit myself to the details of construction and mechanism here described, and

the same may be variously modified without departing from the spirit of my invention. 45

I prefer to provide a series of two or more hoppers, chutes, and measuring-cylinders located side by side, all supplying the same furnace. 50

I claim—

1. The rotary valve or cylinder comprising a shaft, disks or heads affixed thereto, segmental plates affixed to the said heads, and partitions forming a pocket within the periphery of the cylinder, said periphery being interrupted to form the mouth of the pocket. 55

2. A furnace-feeding mechanism comprising a hopper, a rotary cylinder or valve arranged to close the outlet of the hopper and comprising the heads 2, the removable sections 3 having ears 4, and the diverging plates F^2 forming a pocket, a chute arranged to receive coal from said pocket and conduct it to the furnace, a valve arranged to open and close the chute, and means for operating the valve. 60 65

3. A furnace-feeding mechanism comprising a hopper, a rotary cylinder or valve arranged to close the outlet of the hopper and comprising the heads 2, the removable sections 3 having ears 4, and the diverging plates F^2 forming a pocket, a chute arranged to receive coal from said pocket and conduct it to the furnace, a valve arranged to open and close the chute, means for rotating the feeding-valve, and connections for opening and closing the chute-valve at each rotation of the feeding-valve. 70 75

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 28th day of September, A. D. 1895. 80

FRED HOFACKER.

Witnesses:

L. R. CAMPBELL,
FRED. W. NORTON.