L. S. GOODRICH.

Improvement in Apparatus for Feeding Blast Furnaces.

No. 115,305. Patented May 30, 1871.

Fig. 1.

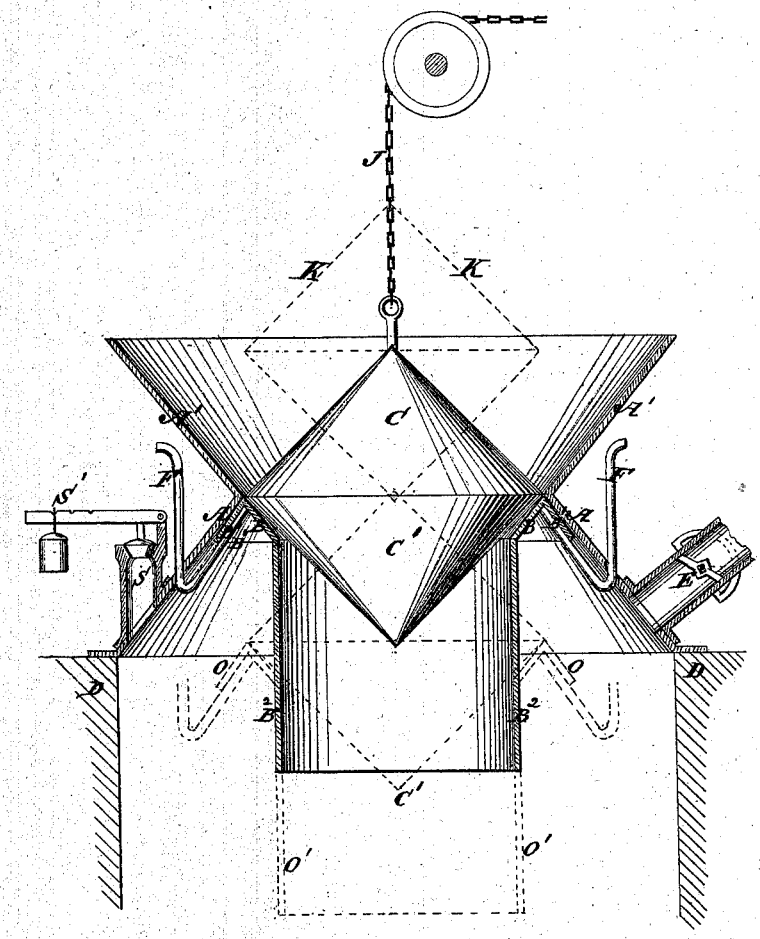
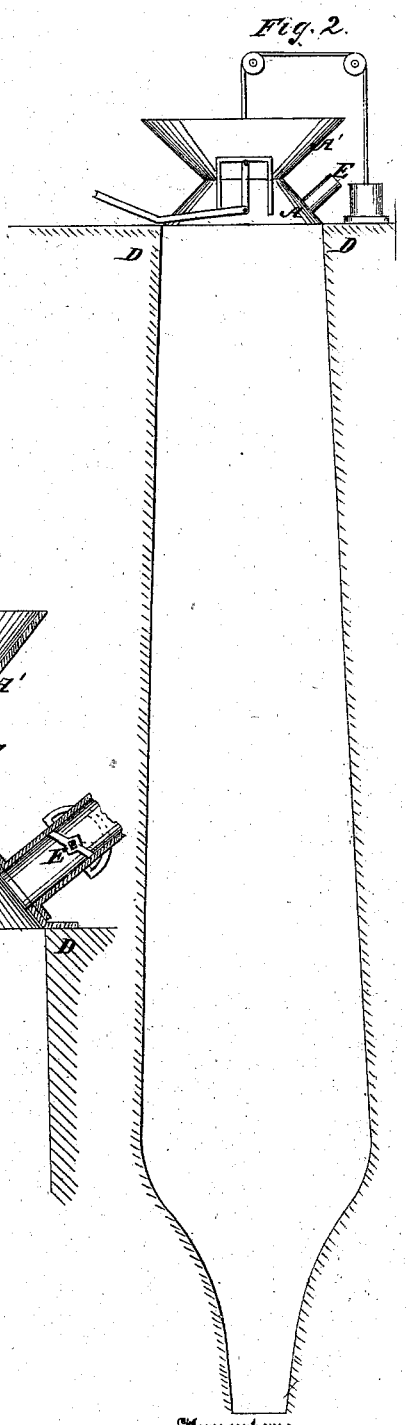


Fig. 2.



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LEVEN S. GOODRICH, OF WAVERLY, TENNESSEE.

IMPROVEMENT IN APPARATUS FOR FEEDING BLAST-FURNACES.

Specification forming part of Letters Patent No. 115,305, dated May 30, 1871.

To all whom it may concern:

Be it known that I, LEVEN S. GOODRICH, of Waverly, in the county of Humphreys and State of Tennessee, have invented a new and useful Improvement in Blast-Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in blast-furnaces; and it consists in an improved valve arrangement in the throat of the furnace, having for its object to enable me to distribute the coal, ore, and fluxes more evenly than has been heretofore done.

Figure 1 is a sectional elevation through the throat of a furnace and my improved valve apparatus, and Fig. 2 is a section of the furnace and side elevation of the valve apparatus.

Similar letters of reference indicate corresponding parts.

D D represent the throat of furnace or top of in-wall, upon which is placed my apparatus for charging. A A and A′ A′ is a V-shaped circular shell, consisting of two conical, bottomless, cup-shaped vessels, joined at the smallest ends, formed of any suitable material, either in one or more pieces, and of such dimensions as may be desired to fit the throat or top of the furnace operated upon, as shown in the drawing. B^2 B^2 is a short cylinder, having a flared top, B B, to form a seat for the cone C′; and attached to B B is a flange, B^x B^x, which closes as a valve against the under surface of A A. This tubular valve apparatus B B^1 B^2 is to be provided with any suitable apparatus for being lowered and raised at will. C and C′ represent a valve formed by joining two cones at their bases. F F are guide-rods to regulate the position of B B in its movements. The dotted lines K K represent the cone-valve raised for charging through the center of the lower cylindrical part B of the valve. The dotted lines O O O′ O′ represent the lowering of the entire valve to form an annular opening, through which the charges are applied when it is desired to distribute it outwardly from the center.

I propose, in using my distributer, to convey the charges in the usual cylindrical box with a valvular button overhead, where it discharges and falls into the hopper A′ A′, first the coal, then the ore or flux, whereby, in descending into the hopper, it is equally distributed around the cone C. Now, if the charge is desired to be placed in the center of the stack, the cone C is raised by suitable means—say a chain, J—and the charge descends by its gravity through the cylinder B^2 B^2, and in its descent the coal, ore, and flux are completely intermixed, forming a conical-shaped elevation of the stock at the center of the furnace. Now, in order to bring the surface of stock level within the furnace-stack, I charge the hopper A′ A′ as before; but instead of raising the cone C, I now lower the entire valve apparatus B B^1 B^2 and cones C C′ so as to form an annular opening all around the same, through which the charge descends, thus bringing up the surface next the in-wall even with the center. Thus, by alternating the charges as designated, a perfect distribution of the stock is secured and a greater amount of ore placed directly in contact with the carbon.

E represents the pipe for conducting the gas from the head of the stack to heating-stove or boiler, in which I place a valve to enable the manager to regulate the pressure within the stack at will. To enable the manager at all times to know the exact pressure within the stack I place a large safety-valve, S S, at the top of the stack, with graduated lever and weights, by which he is enabled to ascertain the precise pressure he is working, and by changing the valve E he can increase or diminish the same at his pleasure.

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

The combination, with the top wall D of a blast-furnace, of the top A A′, the valve-tube B B^1 B^2, and the double conical plug C C′, all substantially as specified.

LEVEN S. GOODRICH.

Witnesses:

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