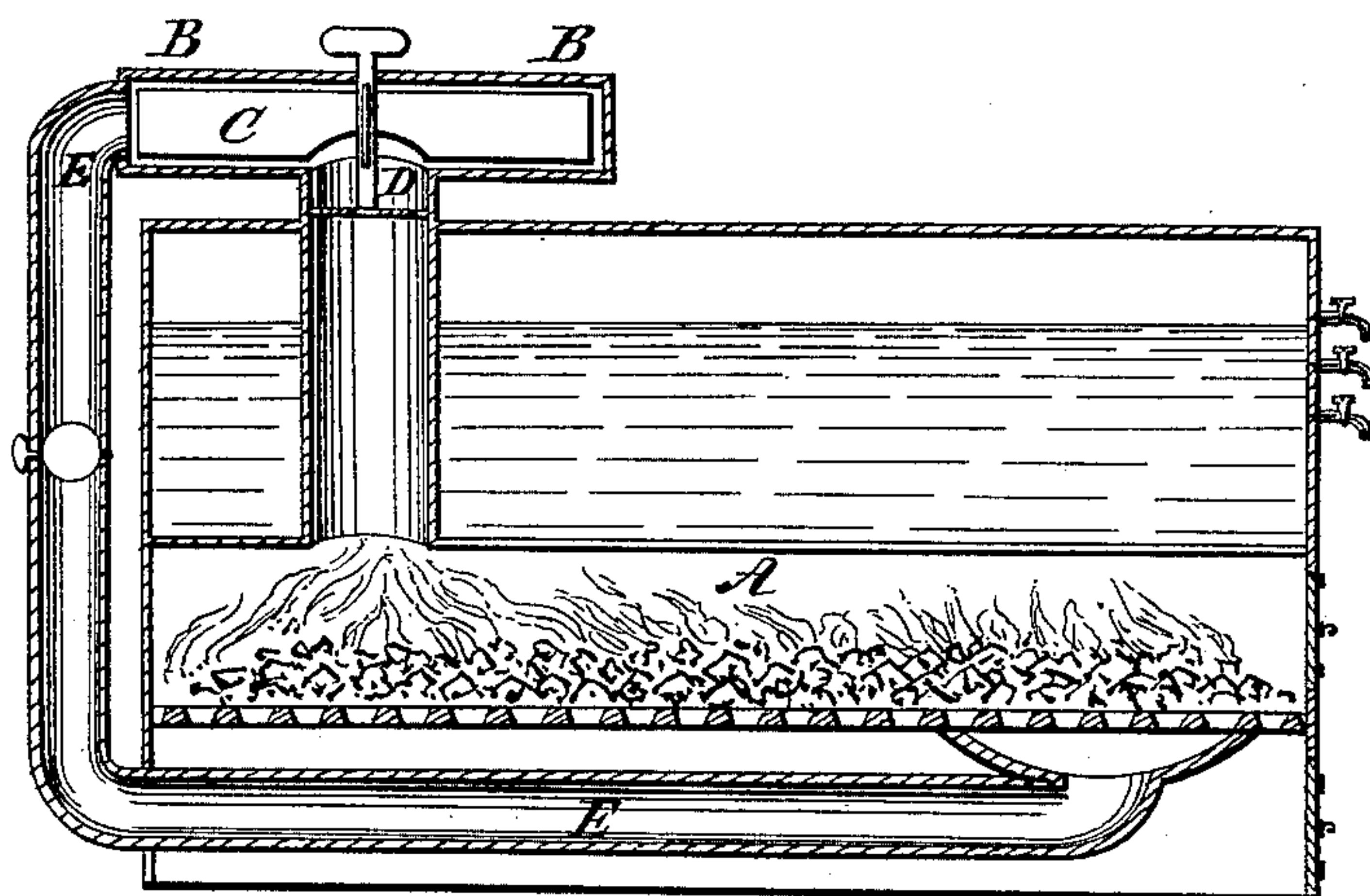


A. COLLINS.
Blast Furnace.

No. 1,054.

Patented Dec. 31, 1838.



UNITED STATES PATENT OFFICE.

ASAHEL COLLINS, OF ULSTER VILLAGE, NEW YORK.

MODE OF MANAGING THE BLAST AND DRAFT OF FURNACES, FORGES, AND FIRE APPARATUS OF VARIOUS DESCRIPTIONS.

Specification of Letters Patent No. 1,054, dated December 31, 1838.

To all whom it may concern:

Be it known that I, ASAHEL COLLINS, of Ulster Village, in the county of Ulster and State of New York, have invented an Improved Mode of Managing the Blast and Draft of Forges, Furnaces, and Fire Apparatus of Various Descriptions, and that the following is a full and exact description thereof.

The purpose to which I have applied my improved mode of managing the blast and draft is to the heating of iron in a forge or furnace, for the manufacture of axes; but it may be applied to forges and furnaces generally whether for heating metals, producing steam, or warming apartments.

The accompanying drawing represents a vertical longitudinal section of a heating furnace with this apparatus attached to it.

A, is the interior of the furnace, which must be duly inclosed, and constructed in such a way as shall adapt it to the particular purpose for which it is to be employed. On the top of this furnace I place a fan wheel of the ordinary construction of those used for blowing, in various machines where a current of air is required. The drum B, B in which the fan is contained, I have in my furnace, made of three feet six inches in diameter, and the vanes C, ten inches wide; the opening D, in its center, communicating with the furnace, is twelve inches in diameter. To the fan wheel I have given a speed of about three hundred revolutions in a minute. I mention these things as general guides, because I have found the apparatus as described to answer the purpose intended perfectly well; but, of course, the proportions, and arrangement, may be varied indefinitely. The fan when so fixed is intended to exhaust the air from the furnace, which may then receive its supply for the combustion of the fuel by atmospheric pressure. I am aware that such a fan wheel has been employed for the purpose of blowing air into forges and furnaces; and I am also aware that exhaustion has been effected in the flues of furnaces by means of exhausting cylinders, furnished with pistons, but not,

as I believe, by means of a fan wheel, or vane such as I have described; and it is in this application of the fan wheel to this special purpose, that my invention in part consists. I have, however, applied the same fan wheel, to the double purpose of exhausting the furnace above the fuel and of blowing the fire. When I thus apply it the periphery of the drum is completely inclosed excepting an opening therefrom into a blast pipe E, E. This blast pipe is to conduct the air which is driven off by the vanes into an inclosure, F, or any convenient receptacle, under the fuel in the furnace. By this means the heated air which has passed through the apparatus is in part, returned to the fire again, a constant circulation being thus kept up. I say in part returned, because fresh air must necessarily be admitted to carry on the combustion; and provision must be made for this by means of proper tubes; and also for carrying off a corresponding portion of the air which has passed through the furnace. When the apparatus is used for heating only the portion required to be renewed will be comparatively small; but where a very active combustion is required it must be proportionately increased. The modes of doing this are various and obvious.

The exhaust wheel, or, this wheel when used for exhausting and blowing, may be fixed to run vertically as well as horizontally, and it may be located in any part of the pipe, or flue, between the point where exhaustion is to be effected, and that where the blowing is to take place.

I claim—

The forcing of any required portion of the air which has been exhausted, through suitable tubes or pipes, so as to supply heated air to the fire, in conjunction with such portions of fresh air as it may be found necessary to supply; the same being effected substantially in the manner set forth in this specification.

ASAHEL COLLINS.

Witnesses:

WILLIAM MILNOR,
MORGAN CARR.