

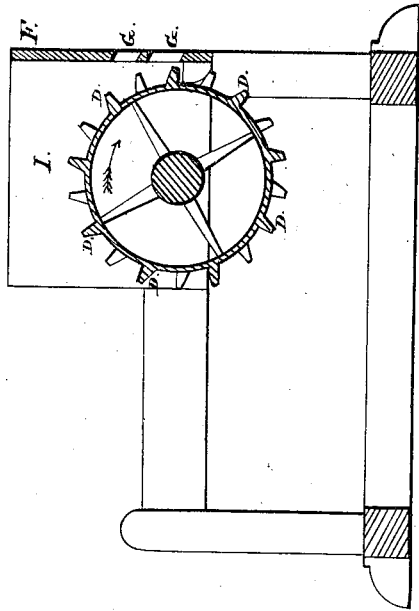
*De Haven & Umholtz.*

*Coal Breaker.*

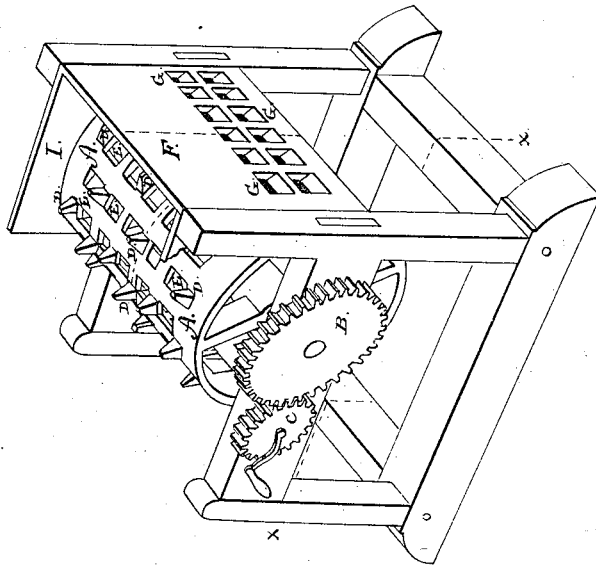
*N<sup>o</sup> 5,440.*

*Patented Feb. 8, 1848.*

*Fig. 2.*



*Fig. 1.*



# UNITED STATES PATENT OFFICE.

WM. DE HAVEN AND PHILIP UMHOLTZ, OF MINERSVILLE, PENNSYLVANIA.

## COAL-BREAKER.

Specification of Letters Patent No. 5,440, dated February 8, 1848.

*To all whom it may concern:*

Be it known that we, WM. DE HAVEN and PHILIP UMHOLTZ, of Minersville, in the county of Schuylkill and State of Pennsylvania, have invented a new and Improved Manner of Constructing Machines for the Breaking of Anthracite; and we do hereby declare that the following is a full and exact description thereof.

10 We construct a cylinder of cast-iron, which is hollow, and is made to revolve on gudgeons by the application of any adequate power. On the periphery of this cylinder there are rows of teeth that

15 project out therefrom, and said periphery is also perforated by a large number of holes of sufficient size to allow the broken coal to pass through them into its interior, whence it escapes at its lower side, and at

20 its ends, which are open, with the exceptions of the space occupied by the arms to which its gudgeons are attached. Near to one side of this cylinder we place a stout plate of cast-iron, which has through its lower por-

25 tion rows of holes similar in size to those which pass through the cylinder, but inclining downward so as to facilitate the escape of the broken coal through them. The lower edge of this plate may stand at the distance

30 of four, or five inches, more or less, from the cylinder; and from this lower edge teeth, similar to those on the cylinder, project out horizontally, toward said cylinder, these being so arranged as that the teeth on

35 the cylinder may pass between them. This plate may stand vertically, or it may have an inclination outward should it be desired to increase the space which is first to receive the coal to be broken, and which constitutes

40 what may be called the hopper of the machine. To form this hopper the plate above named is made to extend up to some height above the top of the cylinder, and there are also corresponding end plates which rise to

45 the same height.

In the accompanying drawings Figure 1, is a perspective representation of the machine, with the omission of one of the end plates, which is left off for the purpose of

showing the cylinder the more perfectly. 50 Fig. 2, is a vertical section of the machine through its middle, from front to back.

A, A, is the hollow cylinder, which may be turned by means of a wheel and pinion B, and C, or in any other convenient way. 55

D, D, are teeth projecting out from said cylinder, and E, E, openings through it.

F is a cast-iron plate, extending the whole length of the cylinder, and rising above it, as represented, and G G are holes for the escape of the broken coal through them. 60 H, is one of the teeth on the lower edge of the plate, and between which the teeth D, D, pass.

I, is one of the end plates, constituting a 65 part of the hopper.

The manner in which this machine operates will be readily understood from the foregoing description of it. The unbroken coal is to be thrown into the space constituting the hopper, and the cylinder being 70 turned in the direction indicated by the arrow, the coal will be broken by the action of the teeth D, and H, and will in part escape between said teeth, and in part 75 through the openings in the cylinder and in the plate F.

Having thus fully described the manner in which we construct our machine for the breaking of coal, and shown the operation 80 thereof; what we claim therein as new, and desire to secure by Letters Patent, is—

The manner in which we have arranged and combined the respective parts thereof, consisting of a single hollow cylinder, furnished with teeth, and having perforations 85 through it, and of the plate on one side of said cylinder which also is perforated, and is furnished with a row of teeth on its lower edge; the whole arrangement and combination being substantially the same with that 90 herein set forth.

WM. DE HAVEN.  
PHILIP UMHOLTZ.

Witnesses:

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CHARLES W. D. TUYLE.