

A. C. ELLITHORPE & I. SCOVILLE.
MACHINE FOR CRACKING STONE FOR BALLASTING RAILROADS, &c.
No. 22,113. Patented Nov. 23, 1858.

Fig 1.

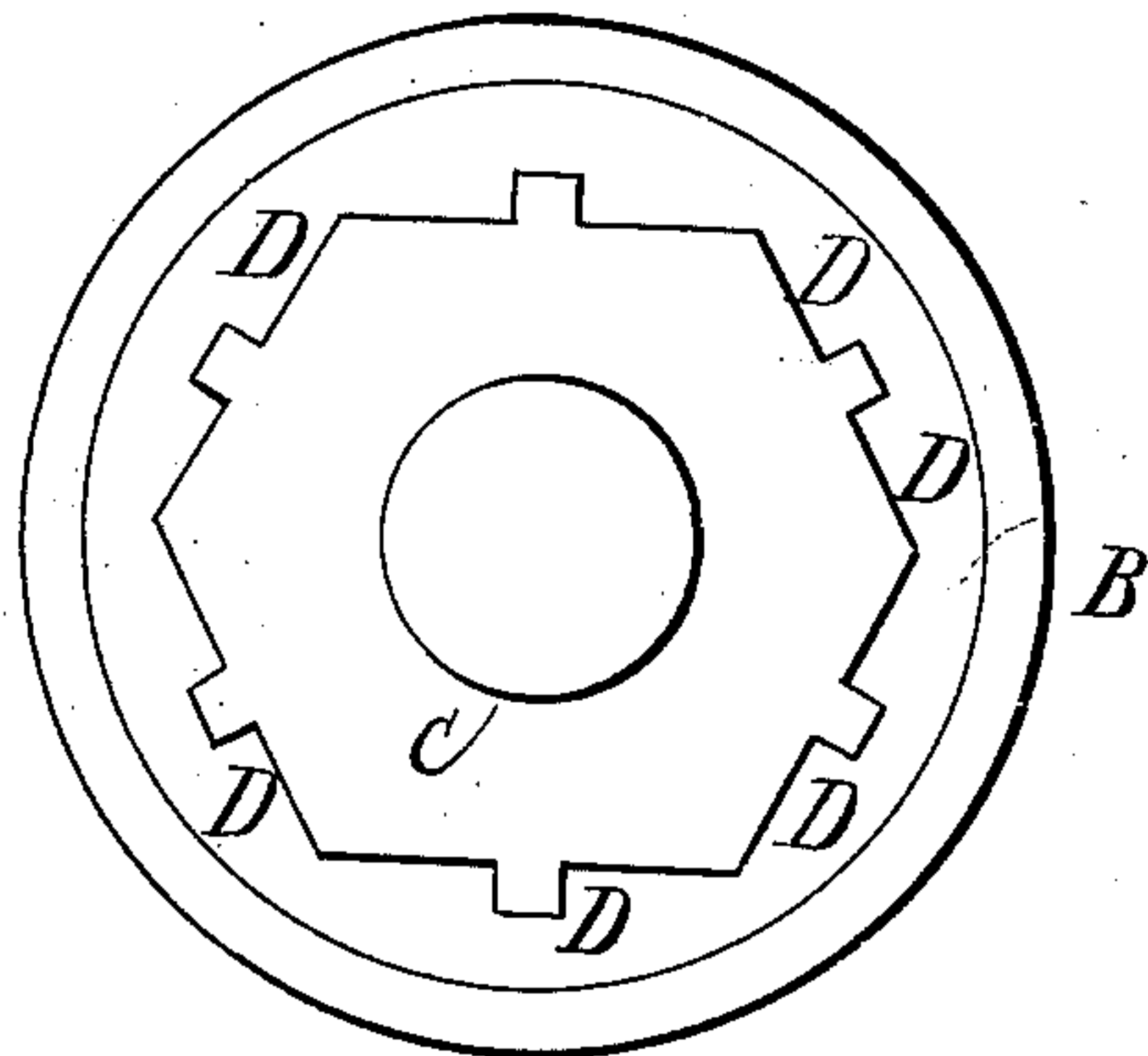


Fig 2.

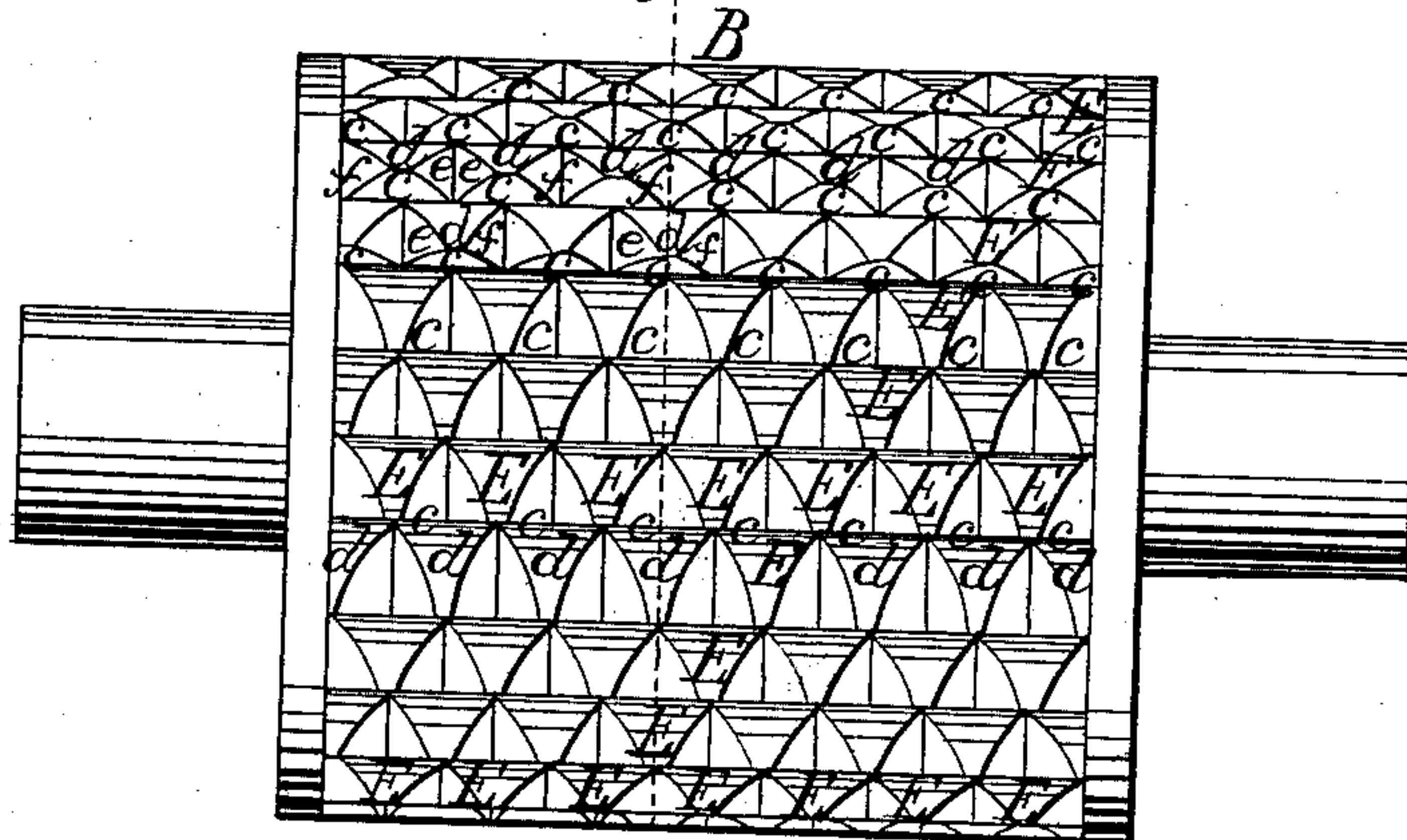
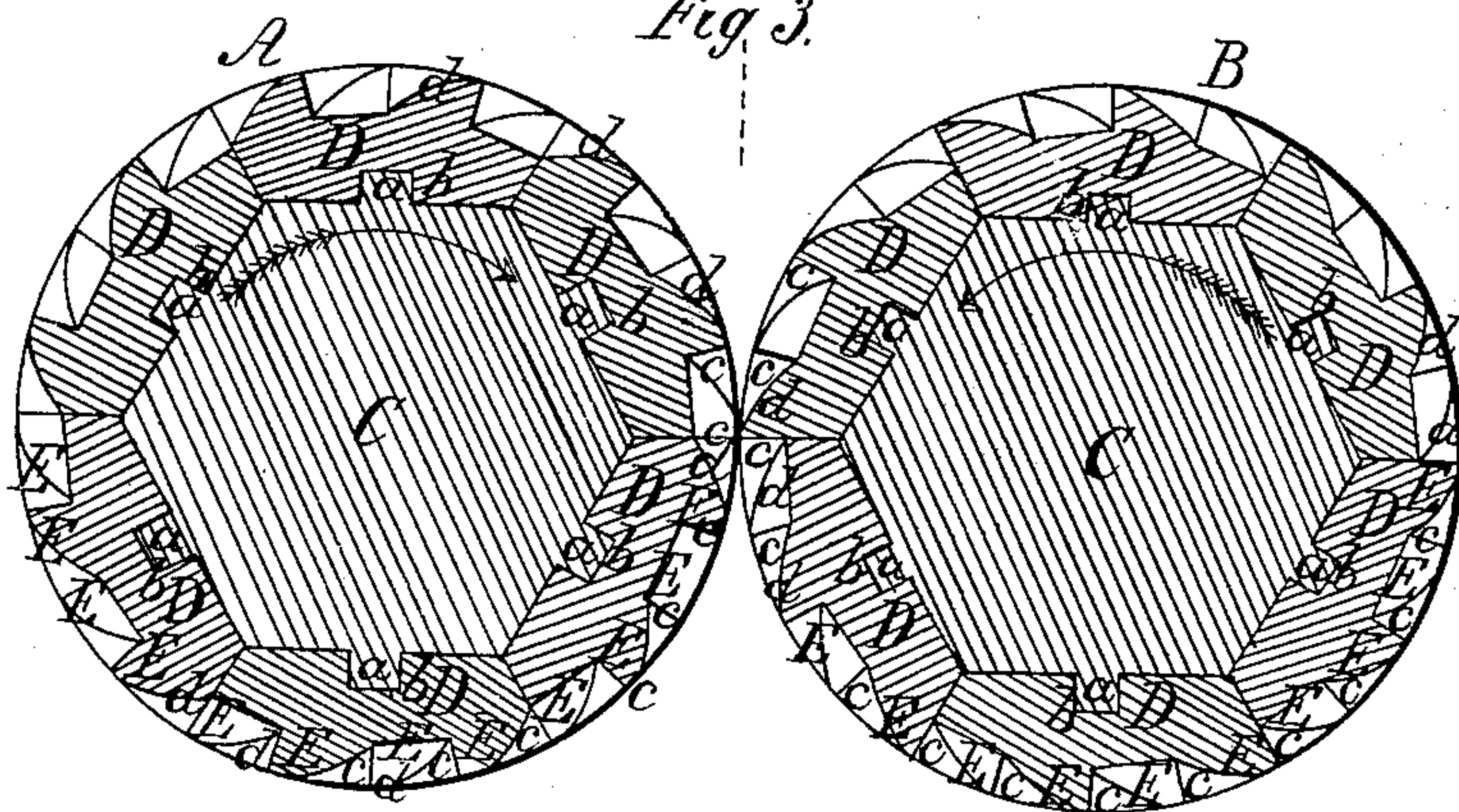


Fig 3.



Witnesses;

J. P. Sammons
E. A. Weber

Inventor;

A. C. Ellithorpe
Ives. Scoville

UNITED STATES PATENT OFFICE.

A. C. ELLITHORPE AND IVES SCOVILLE, OF CHICAGO, ILLINOIS.

MACHINE FOR BREAKING STONES FOR BALLASTING RAILROADS AND TURNPIKES.

Specification of Letters Patent No. 22,113, dated November 23, 1858.

To all whom it may concern:

Be it known that we, A. C. ELLITHORPE and IVES SCOVILLE, of Chicago, in the county of Cook and State of Illinois, have invented
5 a new and useful Improvement in Machines for Cracking Stone for Ballasting Railroads and Highways; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had
10 to the accompanying drawings, forming a part of this specification, in which—

Figure 1, is an end view of one of our improved stone cracking cylinders. Fig. 2, is a side view of the same, and Fig. 3, is a
15 transverse section of two of said cylinders arranged for operating together.

Similar letters of reference, in each of the several figures indicate corresponding parts.

Before setting forth the nature of our invention, we deem it proper to state that in
20 order to accomplish economically and perfectly the cracking of stone by mechanical means to a size suitable for macadamizing or ballasting railroads and highways, a machine of great strength, durability and considerable cost is necessary and that there-
25 fore it is important to so construct and arrange the cracking teeth which are subjected to a very great resistance, strain and wear, that they will be able to effectively perform
30 the duty assigned them under ordinary circumstances without breaking off or being impaired to an extent beyond that common to all similar mechanical combinations
35 which act with friction against resisting objects with which they are brought in contact, and in the event of one section of the teeth being exerted beyond their strength, and said section should give way, facilities
40 shall be afforded whereby the worn, broken or impaired sections may be removed independently of the perfect sections and others introduced in their stead at a small cost and with very little labor and delay.

Therefore, the object of our invention is to produce a machine which will economically and practically crack stone to a size
45 suitable for the purposes stated, and possess all the above named requisites. A machine of this character has long been desired but never before obtained so far as our knowl-
50 edge extends.

The nature of our invention consists in constructing the cracking cylinders A, B,
55 of a solid central core or base C, and of a

sectional outer shell D, D, D, the sections of solid shell being fastened together by tongues and grooves *a, b*, as shown; and the outer surface of the shell dressed with stone cracking teeth E, E, E, which are
60 set in rows running parallel, longitudinally, and diagonal, transversely to the axis of the cylinder, and which are shaped similar to one half of a pyramid which is cut verti-
65 cally through its center in a line parallel with one of its sides, or so that the front or cracking sides *c*, are flat or at right angles to the axis of the cylinder while their trans-
70 verse and rear sides *d, e, f*, are similar to the sides of a pyramid with the exception that the rear sides *d*, take the form of a quadrant of a circle as they rise to the apex or point of the teeth. By thus constructing
75 the cylinder with an outer sectional shell, the great advantage of having facilities for removing any section of the teeth which may become worn or be broken, and substitut-
80 ing others for them, is obtained, and thus the necessity of providing at a considerable cost, an entirely new cylinder, avoided. And by shaping and arranging the teeth as
85 shown and above described the teeth by means of their straight broad flat side *c*, have a firmer hold upon the rock while the cracking is being performed than is ob-
90 tained with teeth which present the form of complete pyramids; because in the first case, the cracking side strikes the rock with a surface which is at right angles to the axis of the cylinder while in the latter case, the rock is struck with a surface which is oblique to the axis. The difference in ef-
95 fect of these two kinds of teeth is very great for the first receives the strain from its base to its point all at the same time and thus insures the cracking of the rock while the other receives the strain first from its base and therefrom gradually to its point in such a manner that its hold upon the rock is very slight and its action altogether inade-
100 quate to the duty to be performed. Now in order to render practicable this new shaped tooth, which is peculiarly adapted for its work, we have placed the teeth so that they run in lines diagonal transversely to the
105 axis of the cylinder, and so that the bases of the teeth unite, and each preceding tooth shall be supported by the roots or bases of each pair of succeeding teeth, and consequently the liability of the teeth being
110

broken off by concussion in a great measure avoided. It will likewise be seen that this diagonal disposition of the teeth brings the teeth of one parallel row opposite the spaces of another parallel row and that consequently the rock is cracked across the spaces between the teeth and the cracked or broken pieces fall into the spaces and escape.

By arranging and shaping the teeth as described, we are enabled to control the size to which the stone is cracked or broken, the width of the spaces between the teeth perfectly regulating the size.

In practice, with this machine, two cylinders, constructed and dressed as just described, are employed within a frame, being so geared and arranged that the teeth of one shall be in such relation to the spaces of the other and vice versa, that the point of each tooth of one cylinder shall point to the space between each pair of teeth of the other cylinder, and intersect said space in a manner to insure the cracking of the rock into uniformly sized pieces and to prevent

any flat stone from passing through unbroken.

This machine has been tried on a large scale and found to answer admirably for the purposes herein stated.

What we claim as our invention and desire to secure by Letters Patent, is—

The cylinders A, B, constructed with a solid base C, and sectional shell D, D, D, when the said shell is made in segments and dovetailed and secured together, and dressed with teeth shaped and set as described; and when the said cylinders are used for breaking stone for macadamizing or ballasting railroads etc. substantially as set forth.

The above specification of our improvement in stone crackers signed by us.

A. C. ELLITHORPE.
IVES SCOVILLE.

Witnesses:

G. YORKE AT LEE,
WM. AT LEE,
GEORGE SCOVILLE,
T. J. SAMMONS.