

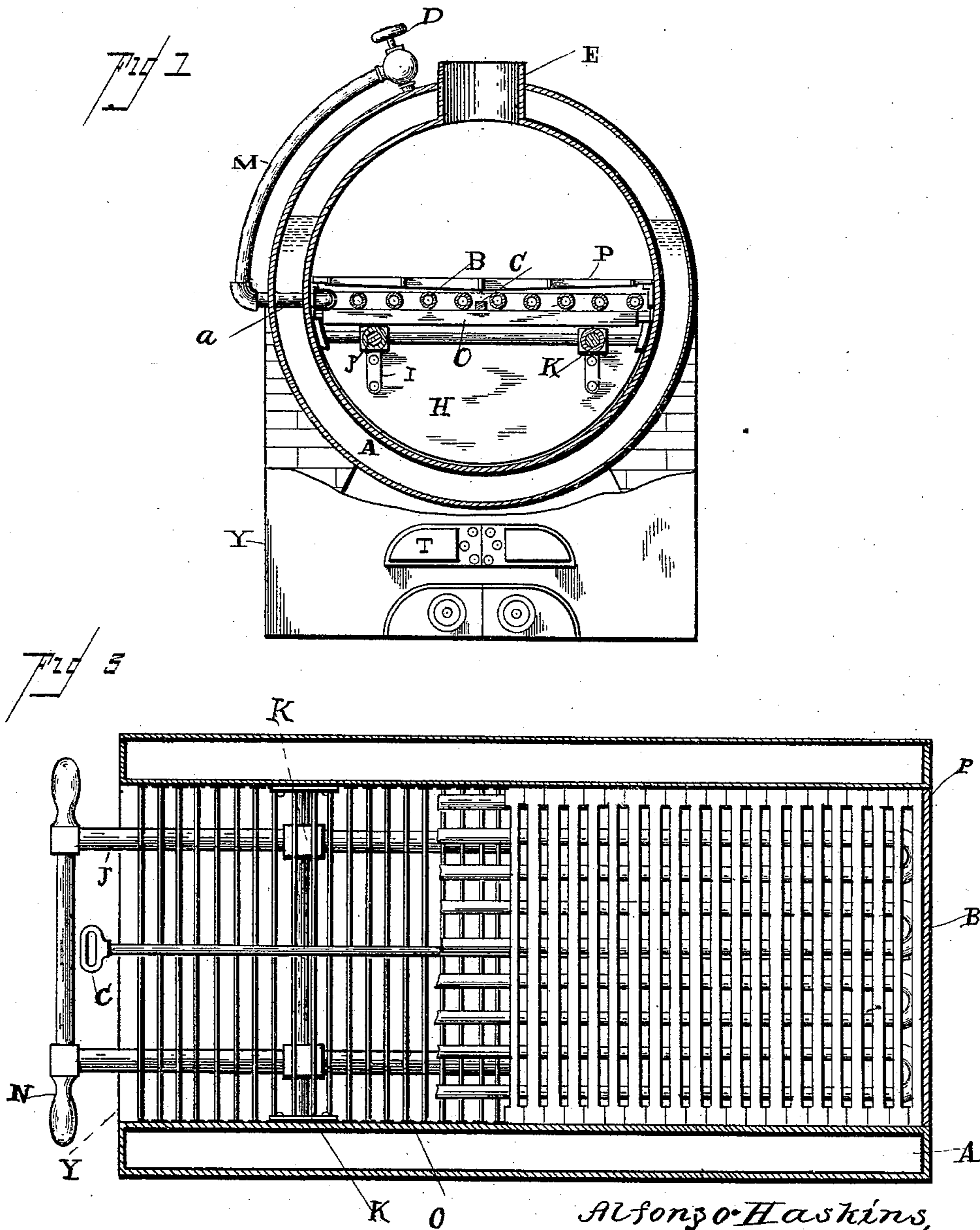
(No Model.)

2 Sheets—Sheet 1.

A. HASKINS, A. R. SCHULENBURG & C. T. CHADWICK.
BITUMINOUS ROCK DISINTEGRATING STEAM BOILER.

No. 475,278.

Patented May 17, 1892.



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Albert R. Schulenburg,
Charles T. Chadwick,

INVENTORS

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Fig. 2.

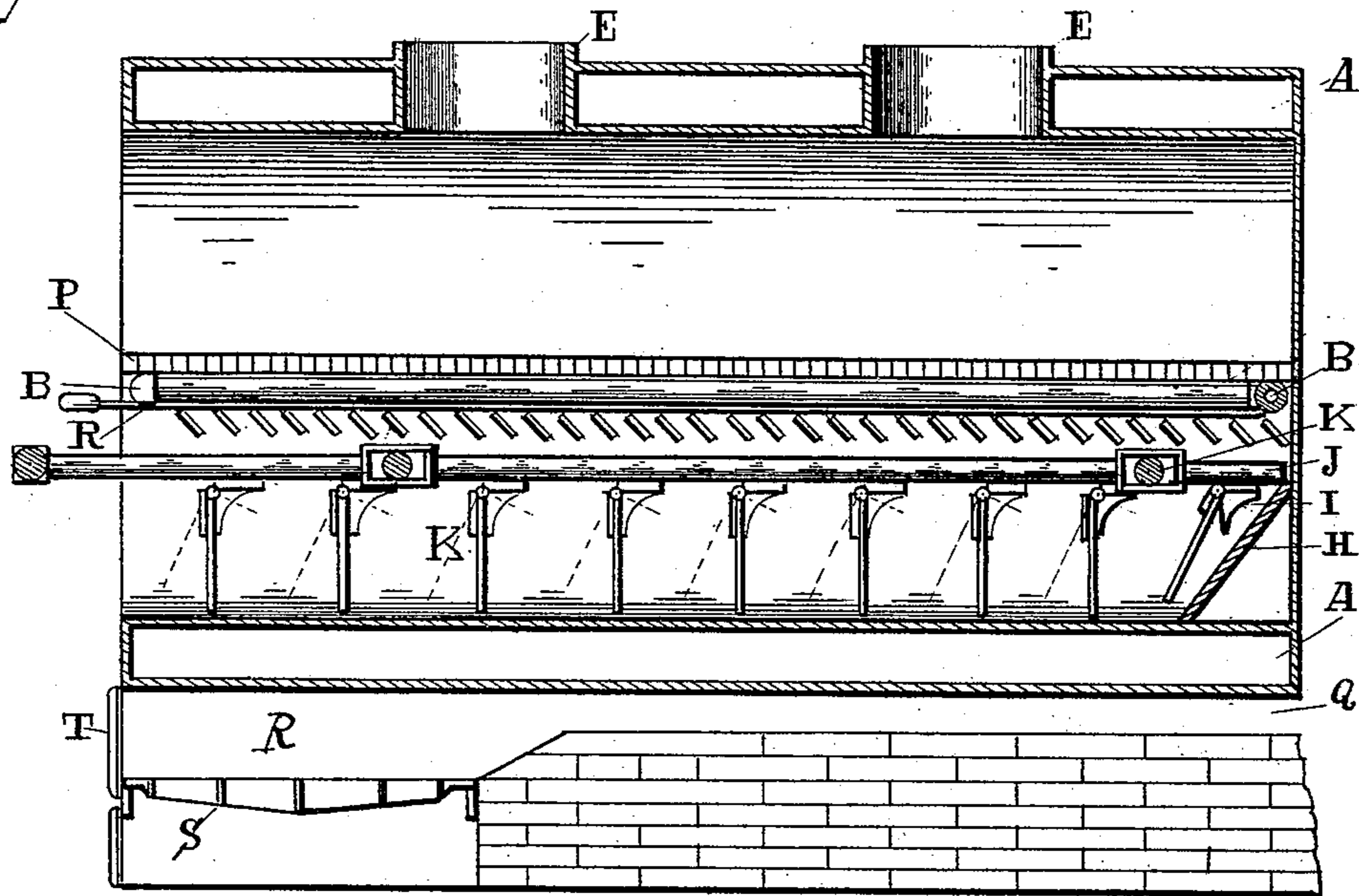


Fig. 4.

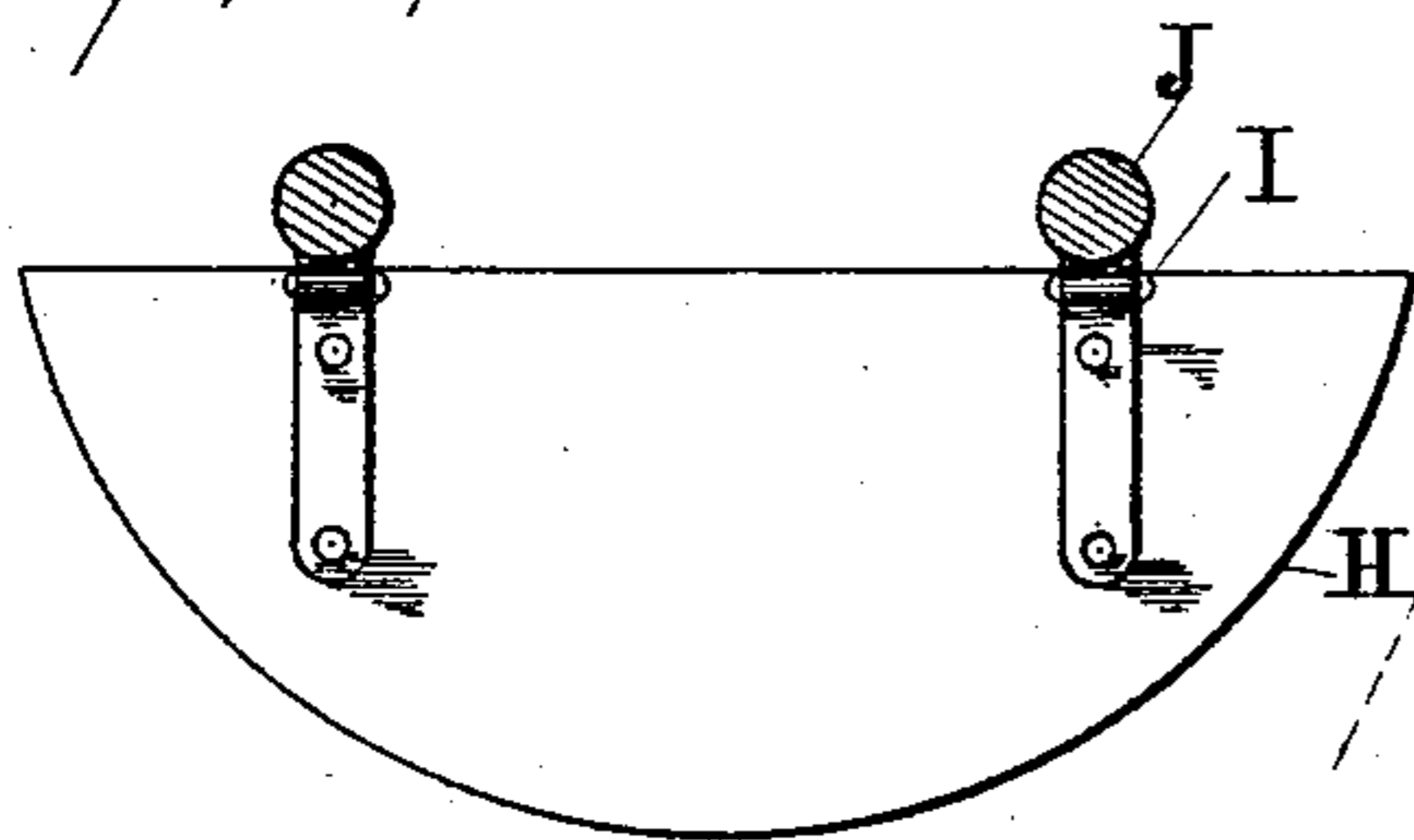
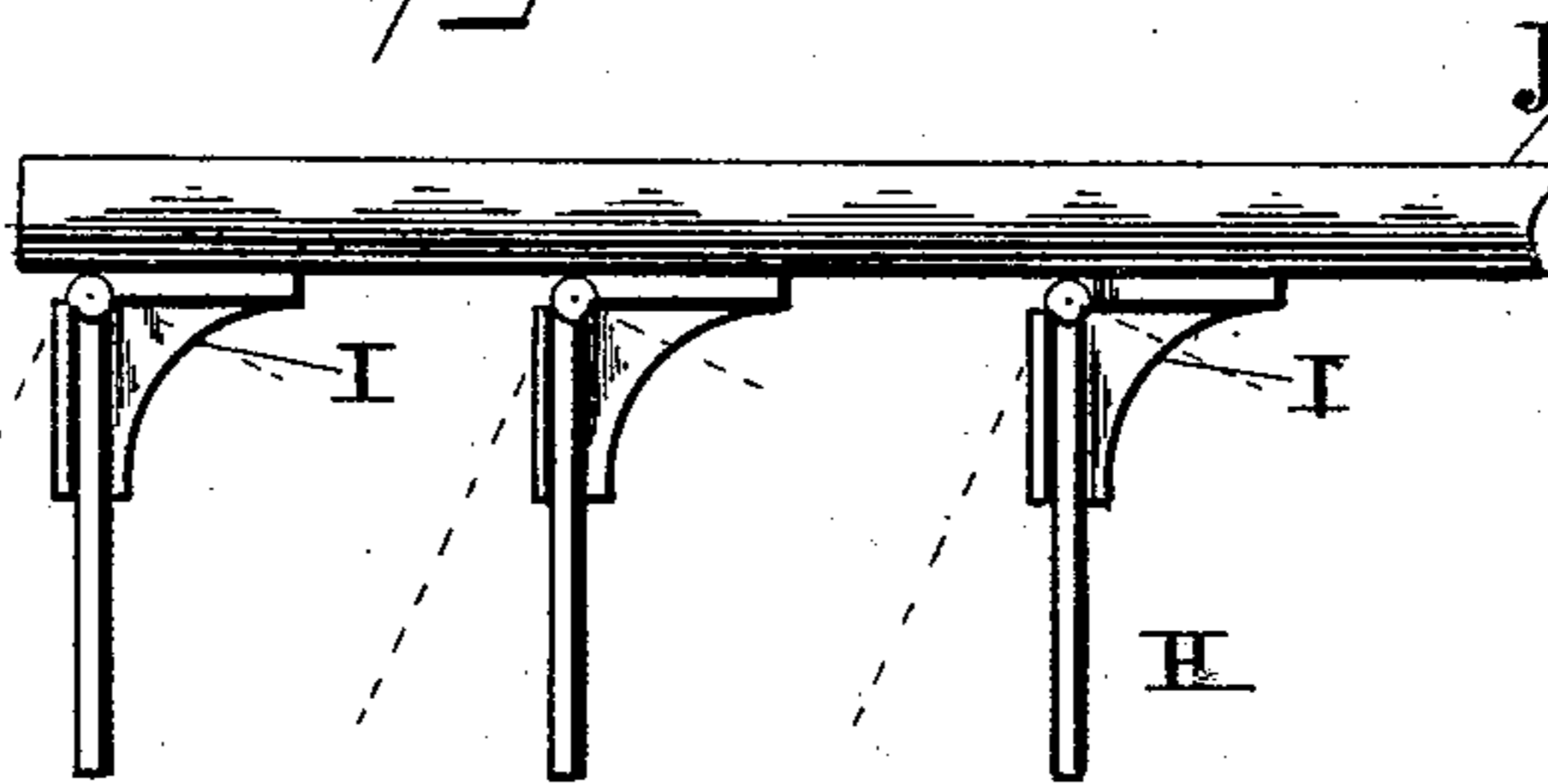


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALFONZO HASKINS, ALBERT R. SCHULENBURG, AND CHARLES T. CHADWICK,
OF SAN DIEGO, CALIFORNIA; SAID HASKINS ASSIGNOR OF ONE-EIGHTH
TO CHARLES C. LOOMIS, OF SAME PLACE.

BITUMINOUS-ROCK-DISINTEGRATING STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 475,278, dated May 17, 1892.

Application filed January 10, 1890. Renewed June 13, 1891. Again renewed March 28, 1892. Serial No. 426,798. (No model.)

To all whom it may concern:

Be it known that we, ALFONZO HASKINS, ALBERT R. SCHULENBURG, and CHARLES T. CHADWICK, citizens of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Boilers for Disintegrating Bituminous Rock, of which the following is a specification.

Our invention has for its object the provision of a steam-boiler in which bituminous rock will be thoroughly disintegrated and the decomposed rock automatically fed to and discharged from the front end of the boiler. This object we accomplish by the use of the mechanism shown in the accompanying drawings; and the invention consists in certain novel features of the same, as will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a transverse section of our improved boiler. Fig. 2 is a longitudinal vertical central section of the same, and Fig. 3 is a horizontal section thereof. Fig. 4 is a detail rear elevation of one of the shovels, and Fig. 5 is a detail edge view of the shovels.

Referring to the drawings by letter, A designates a circular boiler composed of two concentric shells and provided in its top with a series of openings E, through which the rock may be fed into the boiler. The boiler is divided into two chambers by a series of transverse grate-bars P, upon which the rock is supported, and below these grate-bars we arrange a series of return steam-pipes having perforated tops, through which the steam is permitted to escape to the rock. The upper chamber is closed at its front end by suitable doors, (not shown;) but the front end of the lower chamber is open, so as to permit the discharge of the disintegrating rock. At the end of these return-pipes we provide a short branch pipe *a*, which passes through the boiler and is connected to the lower end of a curved feed-pipe M, arranged outside the boiler, the upper end of said pipe being connected to a steam valve or cut-off D, so that the steam may be permitted to pass from the boiler to the

perforated return-pipes. Below the return-pipes we provide a series of vibratory grate-bars O, which are connected by a longitudinal bar or rod C, so that they may be vibrated, when so desired, or adjusted to permit the decomposed rock to fall in larger or smaller quantities. Below the vibratory grate-bars we secure in the boiler a series of transverse supporting rods or bars K, which pass through longitudinal slots in the reciprocating rods J, said rods being connected at their front ends by the handles N. On the under sides of the rods J we secure or form a series of brackets I, having vertical front faces, and to the front edges of these brackets we pivot the shovels H, which are adapted to rest against the front sides of the brackets and be thereby held in a vertical position. The lower edges of the shovels are circular, so as to conform to the outline of the boiler, as clearly shown.

The boiler is supported in a furnace of brick-work in the usual manner, said furnace having a fire-chamber R and a flue Q leading therefrom of ordinary construction.

In practice the boiler is filled with water and a fire started in the fire-chamber in the usual manner. The rock to be acted on is placed in the boiler upon the stationary grate-bars and the cut-off or valve D is opened. As the steam forms in the boiler it will pass into the return-pipes and will escape from the same, so as to pass upward through the rock and decompose the same. The disintegrated rock falls to the bottom of the boiler, and will be pushed from the same by the shovels. When the rods J are brought forward, the shovels will be held in a vertical position by the brackets I, and will consequently push the rock toward and from the front end of the boiler. When the rods J are pushed backward, the shovels will swing upward, so as to pass over the rock, as will be readily understood upon reference to the drawings. The rear end of the boiler is inclined, as shown at L, so as to direct the disintegrated rock to a point in advance of the rear shovel, and thus prevent the rock from accumulating in the rear end of the boiler.

Having thus described our invention, what

we claim, and desire to secure by Letters Patent, is—

1. A boiler for disintegrating bituminous rock, provided in its lower portion with a longitudinal series of vertically-disposed vibrating shovels, substantially as and for the purposes set forth.
2. The combination of the circular boiler and the series of vibrating shovels in the lower portion thereof, said shovels having convex lower edges, as set forth.
3. The combination of the boiler, the transverse rods therein, the longitudinal reciprocating bars having slotted portions engaging said rods, and the series of vibrating shovels carried by said longitudinal bars, as set forth.
4. The combination of the boiler, the longi-

tudinal reciprocating bars mounted therein, the brackets secured to said bars and having vertical front faces, and the shovels pivoted to the front sides of said brackets, as set forth.

5. The combination of the boiler, the stationary grate-bars arranged transversely therein, the return steam-pipes arranged below the said grate-bars, the vibratory grate-bars below said pipes, and the series of vibratory shovels below the vibratory grate-bars, as set forth.

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