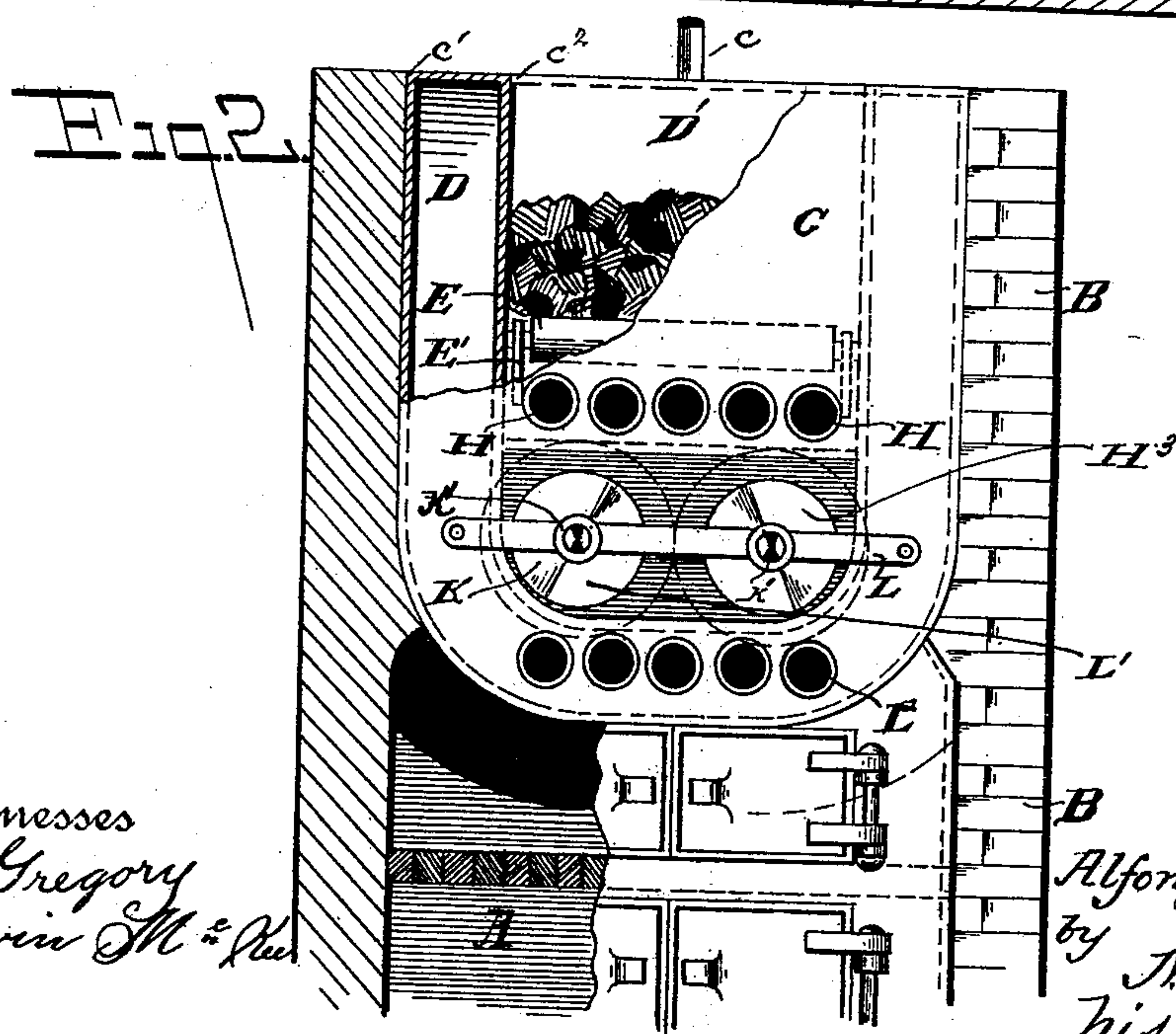
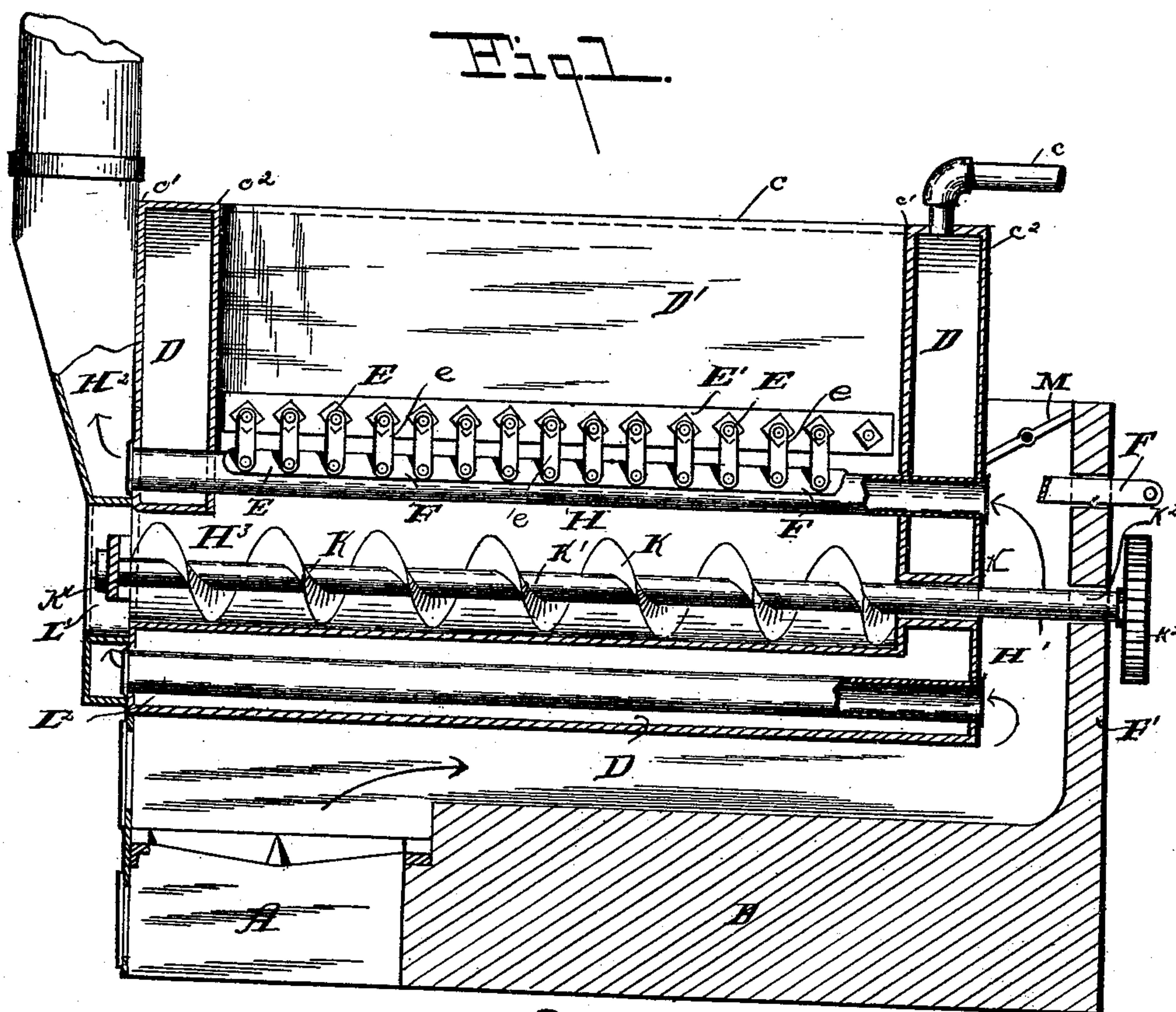


(No Model.)

A. HASKINS.
ASPHALT DISINTEGRATING BOILER.

No. 500,495.

Patented June 27, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

ALFONZO HASKINS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE
JORDAN BITUMINOUS ROCK COMPANY, OF SAME PLACE.

ASPHALT-DISINTEGRATING BOILER.

SPECIFICATION forming part of Letters Patent No. 500,495, dated June 27, 1893.

Application filed June 13, 1892. Serial No. 436,594. (No model.)

To all whom it may concern:

Be it known that I, ALFONZO HASKINS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Asphalt-Disintegrating Boilers; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention has relation to a certain new and useful disintegrating boiler for bituminous sand rock or asphalt, which consists in the arrangement of parts and details of construction as will be hereinafter more fully set forth in the drawings, described and pointed out in the specification.

The object of the present invention is to provide a boiler so constructed as to permit the holding of material to be disintegrated directly within an open heating chamber; to allow for the removal automatically of the disintegrated rock or asphaltum as fed from heating chamber or conveyers located thereunder; and to permit the direct utilization of hot air or steam generated by the furnace or boiler by the application thereof to the mass to be acted upon or disintegrated without necessitating employment of extra machinery therefor.

My invention further consists in providing a disintegrating boiler which shall be more compact, less expensive, more durable, and more effectual in its operation than any device of a similar nature heretofore known to me.

Referring to the drawings forming a part of this application, wherein similar letters of reference are used to denote corresponding parts throughout the entire specification and views, Figure 1, is a longitudinal sectional view in elevation; and Fig. 2, a front elevation, escape flue or chimney for products of combustion removed.

The letter A, is used to indicate furnace of my disintegrator, which may or may not be built in wall B. Above the furnace is located U-shaped boiler C, which is constructed with double wall C', C², in order to provide an annular water space D, adapted to be filled with

water so as to permit generation of steam, which has its outlet through escape pipe c. With the exception of said outlet, for escape of steam, water space is entirely closed. Within interior space or chamber D', of boiler is located a series of cross bars E, the ends of which fit within shoulders of side pieces E', secured to inner wall of chamber, as shown in Fig. 2. These bars are rectangular in cross section and form a grate upon which material to be disintegrated rests. Grate bars are loosely mounted in shoulders of side pieces, and each bar is connected to operating rod F, by means of links e, as clearly shown in Fig. 1. The operating bar or rod F, passes through end water space and rear wall F', of furnace wall, beyond the latter of which it projects. By any suitable mechanism this rod may be reciprocated and the movement thereof serves to shake the grate bars and cause downward travel of sand, rock, or asphaltum resting thereon.

Below the grate bars I locate a series of longitudinal heating flues H, which rest within openings formed in end walls of boiler. These flues pass through the water space and inner end opens into heat chamber H', of the furnace, while opposite end communicates with escape flue H², for products of combustion, as shown. Of course it will be readily understood that any number of these heating flues may be employed.

By the introduction of the grate bars and heating flues within boiler chamber D', I form what may be termed the conveyer or discharge chamber H³, directly thereunder and into which the material as disintegrated falls or passes from the grate bars as they are agitated. Within chamber H³ or bottom of U-shaped boiler, I locate one or more spiral conveyers, K, the shaft K', of which extends through openings k, formed within water space D, as shown. To outer end k², is secured gear wheel K², which intermeshes with gear located upon second conveyer shaft in order to impart motion of one to the other. Any suitable mechanism may be employed for the purpose of imparting motion to the conveyer shaft. Ends k' of the conveyers pass through bridge wall L, secured across open end L', of the boiler as shown in Fig. 2. As the conveyers are rotat-

ed, such disintegrated material as falls beneath or below shaking grate bars into chamber H^3 , will be gradually forced out of open end L' , of the boiler into a chute or vessel placed thereunder in order to receive the same. This outward forcing of the disintegrated material is accomplished by reason of the spiral blade of the conveyers. The hot product of combustion from the furnace A, passes beneath bottom of U-shaped boiler into chamber H' , as shown by arrows, Fig. 1. From chamber H' , the products of combustion flow through longitudinal flues H, until finally discharged into exit flue H^2 . While passing through said flues, the heat therefrom serves to disintegrate such material as may be placed within boiler chamber D' , and resting upon grate bars. By reciprocating operating rod F, grate bars are rotated or oscillated within their bearings and material caused to fall therebetween.

In order to more quickly heat the water contained within water space D, surrounding the boiler, and maintain an even temperature thereof, when supply of heat through flues H, has been cut off, as hereinafter set forth, I provide a second set of longitudinal flues L^2 , which flues are located and run within bottom of water space as shown. The ends of these flues pass through walls of water space and communicate with chamber H' , and exit flue H^2 . A portion of the flowing products of combustion pass from chamber H' , through flues L^2 , and is discharged into exit flue H^2 . Inasmuch as water within water space surrounds these flues it is obvious that the temperature thereof is quickly raised to the proper degree. When no material is being disintegrated products of combustion escape directly from within chamber H' , by opening of damper M. Consequently same does not then flow through tubes H, as before described. However portions thereof will flow through flues L^2 and serves to maintain water within water space to its proper temperature in order to generate steam. The generated steam passing through outlet pipe c, may be conveyed to engine for running thereof.

The disintegrating boiler herein described may be built within a wall, as shown, or located upon any suitable truck and thus be adapted to move from place to place. By preference I prefer to utilize the hot products of combustion as disintegrating heat for material contained within boiler, by carrying the hot air beneath boiler grate bars and permitting heat thereof to ascend therebetween and thus act upon the material. However if so desired, these heating tubes may be perforated and steam ejected therethrough, which will make its escape through the perforations and thus be ejected against the mass of material resting upon the grate bars. However, as above stated, I prefer to employ dry heat for disintegrating purposes. By providing an open boiler I am enabled to permit the continuous feeding of material thereto. This

cannot be accomplished by the use of a cylindrical boiler, but only by such a one as is substantially U-shaped.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

1. A disintegrator for bituminous sand rock, or the like, consisting of a boiler approximately U-shaped, vibrating grate bars located therein, and of a series of longitudinal heating flues located within the boiler and beneath the grate bars, said flues extending beyond the boiler walls and adapted to receive the hot products of combustion from the furnace and convey same through the boiler in order to heat the material located therein.

2. A boiler for disintegrating purposes of an approximately U-shape, surrounded by a water space, and provided with a series of shaking grate bars, and a series of longitudinal heating flues, which flues extending through the water space and beyond the walls of the boiler so as to receive the hot products of combustion and convey same through the water space in order to heat the water contained therein.

3. The combination with an approximately U-shaped boiler, grate bars located in the lower portion thereof, and of a series of longitudinal heating flues located beneath the grate bars and extending through walls of the boiler.

4. The combination with a boiler approximately U-shaped, of the furnace, and of the longitudinal heat flues located within the boiler and extending through the walls thereof, said flues adapted to receive the hot products of combustion from the furnace and convey same through the boiler in order to heat material located therein.

5. A boiler for disintegrating purposes, said boiler having an open top and being of an approximately U-shape, and surrounded or inclosed by a water space, and of longitudinal heating flues located within the water space and extending beyond the boiler walls as and for the purposes set forth.

6. The combination with an open boiler of approximately U-shape, grate bar and longitudinal heating flues located therein, and of the spiral conveyers located within the bottom of the boiler below the heating flue for the purpose of removing the disintegrated material.

7. The combination with an approximately U-shaped boiler, vibrating grate bars arranged transversely therein, operating rod for vibrating said bars, heating flues, said flues running longitudinally within the boiler, beneath the grate bars, and extending beyond the walls of the boiler in order to receive the hot products of combustion and convey same through the boiler so as to heat the material located therein, and of the conveyers for discharging disintegrated material as fed thereto through the medium of the vibrating grate bars.

8. The combination with the open boiler, approximately U-shaped, transverse grate bars located therein and adapted to be vibrated, operating rod for vibrating the grate
5 bars, and of the link connection between grate bars and operating rod.

9. An open boiler approximately U-shaped, surrounded by a water space, longitudinal heating flues located within said space, said
10 flues extending beyond the walls of the boiler

and adapted to receive the hot products of combustion and convey same through the water space of the boiler and of the outlet pipe for generated steam.

In testimony whereof I affix my signature in 15 presence of two witnesses.

ALFONZO HASKINS.

Witnesses:

N. A. ACKER,

J. W. KEYS.