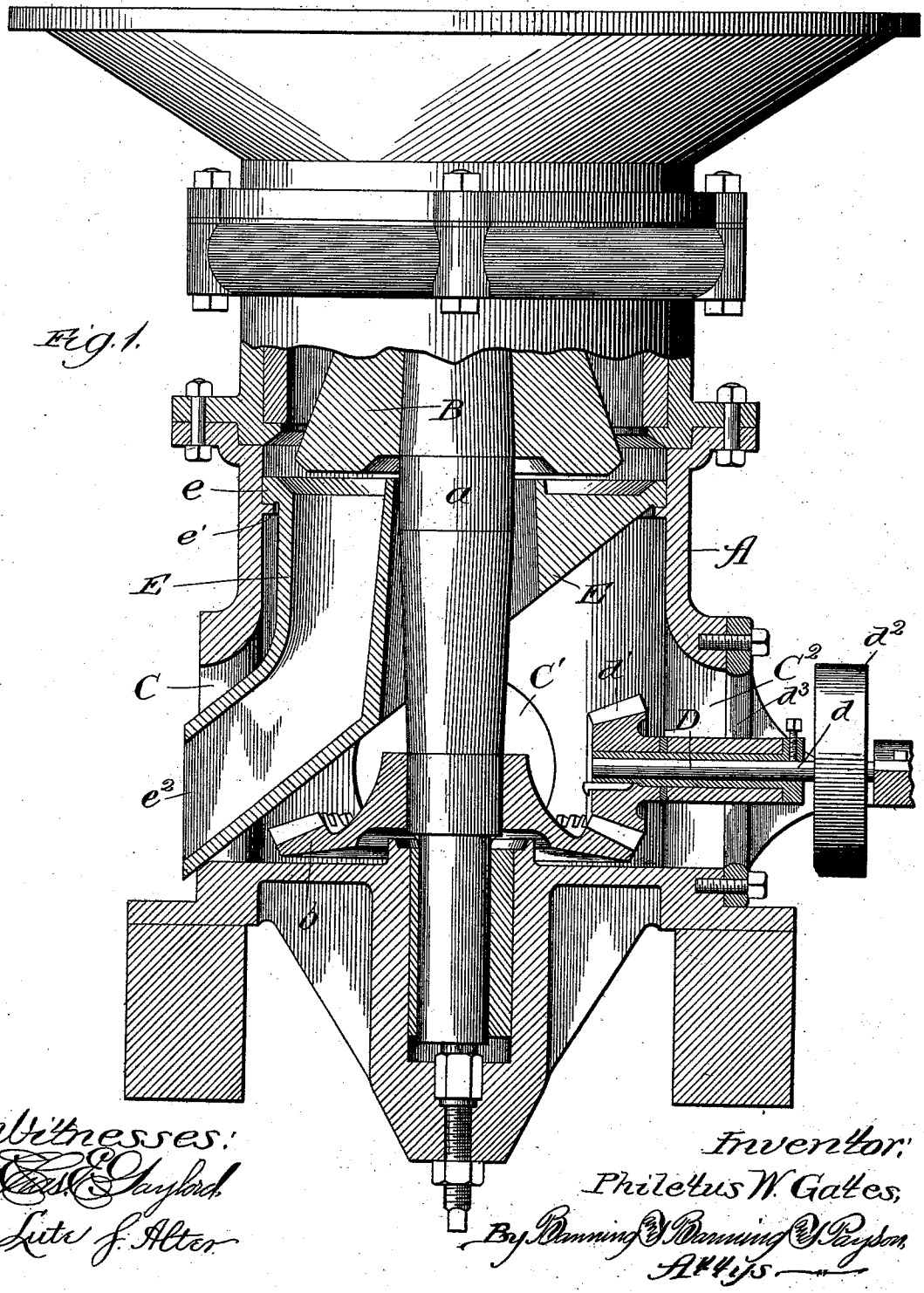
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P. W. GATES.

STONE CRUSHER.

No. 525,406. Patented Sept. 4, 1894.

Fig. 1.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

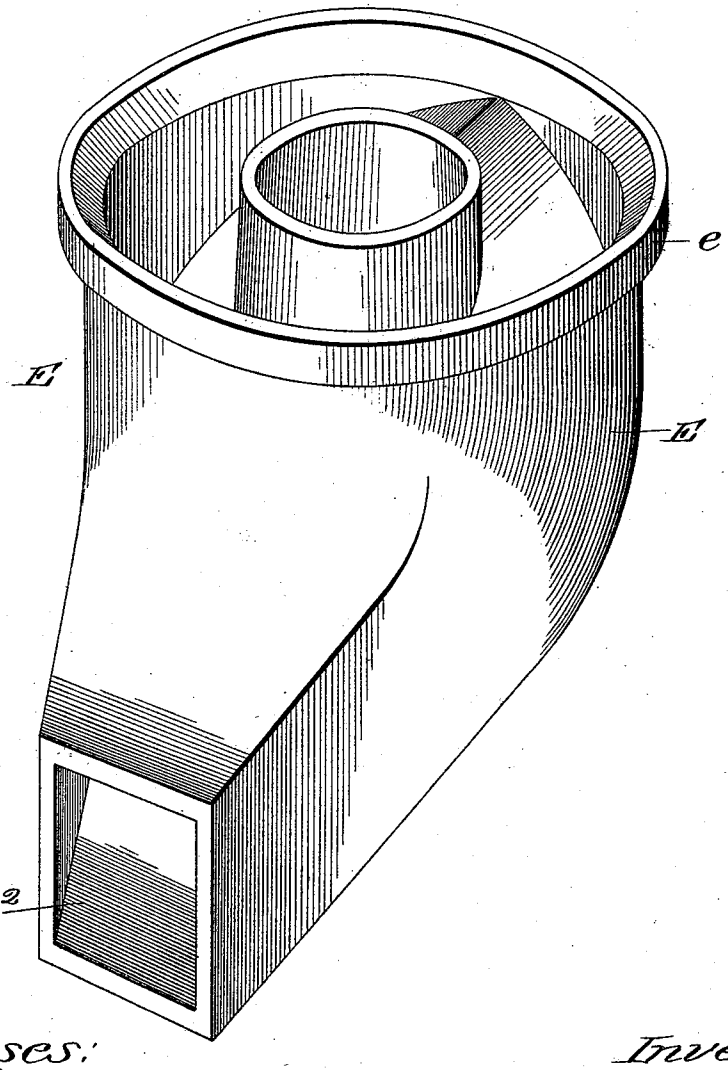
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STONE CRUSHER.

No. 525,406. Patented Sept. 4, 1894.

Fig. 2.



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UNITED STATES PATENT OFFICE.

PHILETUS WARREN GATES, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GATES IRON WORKS, OF SAME PLACE.

STONE-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 525,406, dated September 4, 1894.

Application filed October 24, 1893. Serial No. 488,994. (No model.)

To all whom it may concern:

Be it known that I, PHILETUS WARREN GATES, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Stone-Crushers, of which the following is a specification.

My invention relates particularly to the mechanism used for catching and discharging the broken stone after it has been crushed.

In the drawings, Figure 1 represents the side elevation, partly in section; and Fig. 2 a perspective view of the diaphragm or chute removed from the crusher.

In the stone crushers now in use, the crusher is so constructed and arranged that after the material has been broken or crushed, it is discharged at some fixed point and from there conveyed, by means of a suitable carrier, to any desired location. The mechanism for operating and driving the crushing mechanism, enters the crusher frame, generally at an opening in the rear of the frame and in line with the discharge opening, so that when it becomes necessary or desirable to change the location of this—what I term intermediate driving mechanism—so that it will be parallel with a main driving shaft, the entire machine would have to be turned a quarter way around, which, of course, would correspondingly change the location of the discharge opening. As this would be undesirable, it has been necessary to devise means by which the intermediate driving mechanism could be secured to the crusher frame at different angles in relation to the discharge opening, so that the interposition of quarter turn belts or bevel gearing for driving either the intermediate driving mechanism or auxiliary driving mechanism would be avoided. My invention is designed to obviate these objections, and is intended to provide a stone crusher having several openings in its frame, which may be used for the insertion of intermediate driving mechanism, and in combining with the crusher frame and its operative mechanisms a removable and adjustable diaphragm or chute, so constructed and arranged that it may be removed or adjusted in such a position that its discharge nozzle may be led out of any one of the several openings above alluded to, without disturbing the operative or intermediate driving mechanism.

In constructing my improved stone crusher, I use a crusher frame, A, which may be made in as many sections as may seem desirable, for facilitating the construction of the frame and the insertion of the proper mechanism. I provide my crusher with the ordinary gyrating shaft, *a*, having the usual crusher head, B, secured to the upper portion, and a bevel gear, *b*, secured to the lower portion of the gyrating shaft for operating the crusher mechanism. I provide the crusher frame with several openings, C, C′ and C^2, arranged adjacent to the bevel gear on the gyrating shaft, and provide suitable intermediate driving mechanism, D, consisting of a shaft, *d*, a bevel pinion, *d′*, secured to its inner end and engaging with the bevel gear on the gyrating shaft, and a driving pulley, d^2, secured to its outer end in such manner as to be engaged by and adapted to be operated by a driving belt, leading from some suitable motor, for the purpose of transmitting the necessary power to the crushing mechanism. The intermediate driving shaft is mounted in some suitable bracket, d^3, which may be removably attached to the crusher frame, or be attached to a suitable base at and in line with any of the several openings in the crusher frame; but for the purpose of illustration I have shown it secured to the crusher frame at and in line with its opening, C^2. I provide a diaphragm or chute, E, having an annular flange, *e*, on its upper end, adapted to rest on a shoulder, *e′*, preferably forming a portion of the crusher frame, and having a discharge nozzle, e^2, leading out of one of the openings in the crusher frame, which, for the purposes of illustration, I have shown leading out from the opening, C. The nozzle is so proportioned that it fits this opening very loosely, but at the same time it serves to hold the diaphragm in a practically fixed position, for the slight variation that might be caused in the difference of size between the nozzle and opening would not affect the discharge of the crushed material into an outside carrier. The diaphragm or chute may be provided with set screws for holding it in any one of its fixed

positions, but it is not deemed necessary to employ these set screws, as the weight of the diaphragm will hold it as securely as is necessary in any of its different positions.

Should it be deemed necessary or desirable at any time to change the location of the intermediate driving mechanism so that it may become parallel to a main driving shaft and still retain the discharge opening at its fixed point, all that would be necessary to do is to push inwardly and upwardly on the discharge chute or diaphragm and turn it around, so that its nozzle would come opposite the desired opening, when the chute could be allowed to drop back into its position and the discharge nozzle come out of the desired opening in the crusher frame and to turn the entire mechanism around until the intermediate driving shaft is in its desired position, or parallel with the main driving shaft.

It will thus be seen from the foregoing description that it is not necessary to disturb the operating or intermediate driving mechanism in changing the relation between the discharge opening and the point at which the intermediate mechanism enters the crusher frame.

I claim—

In stone crushers, the combination of a crusher frame provided with several openings, crushing mechanism arranged therein and having its operating mechanism adjacent to such openings, intermediate driving mechanism engaging with such operative mechanism and arranged to enter the crusher frame in line with one of its openings, and a discharge chute adjustably secured therein so that its discharge nozzle may be led out of any of the openings in the crusher frame, whereby the relative positions of such discharge nozzle and the intermediate driving mechanism is changed, substantially as described.

PHILETUS WARREN GATES.

Witnesses:
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