

No. 616,427.

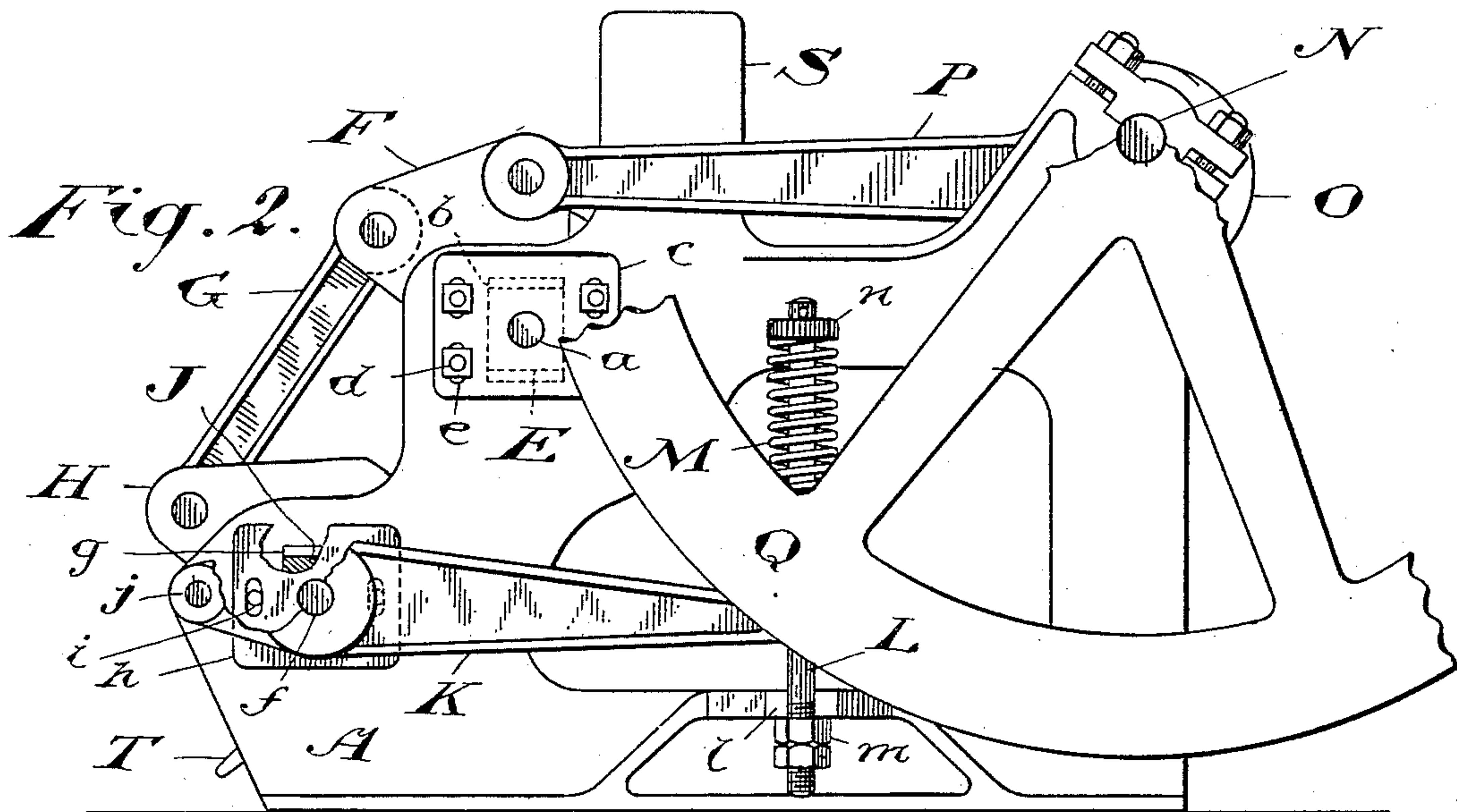
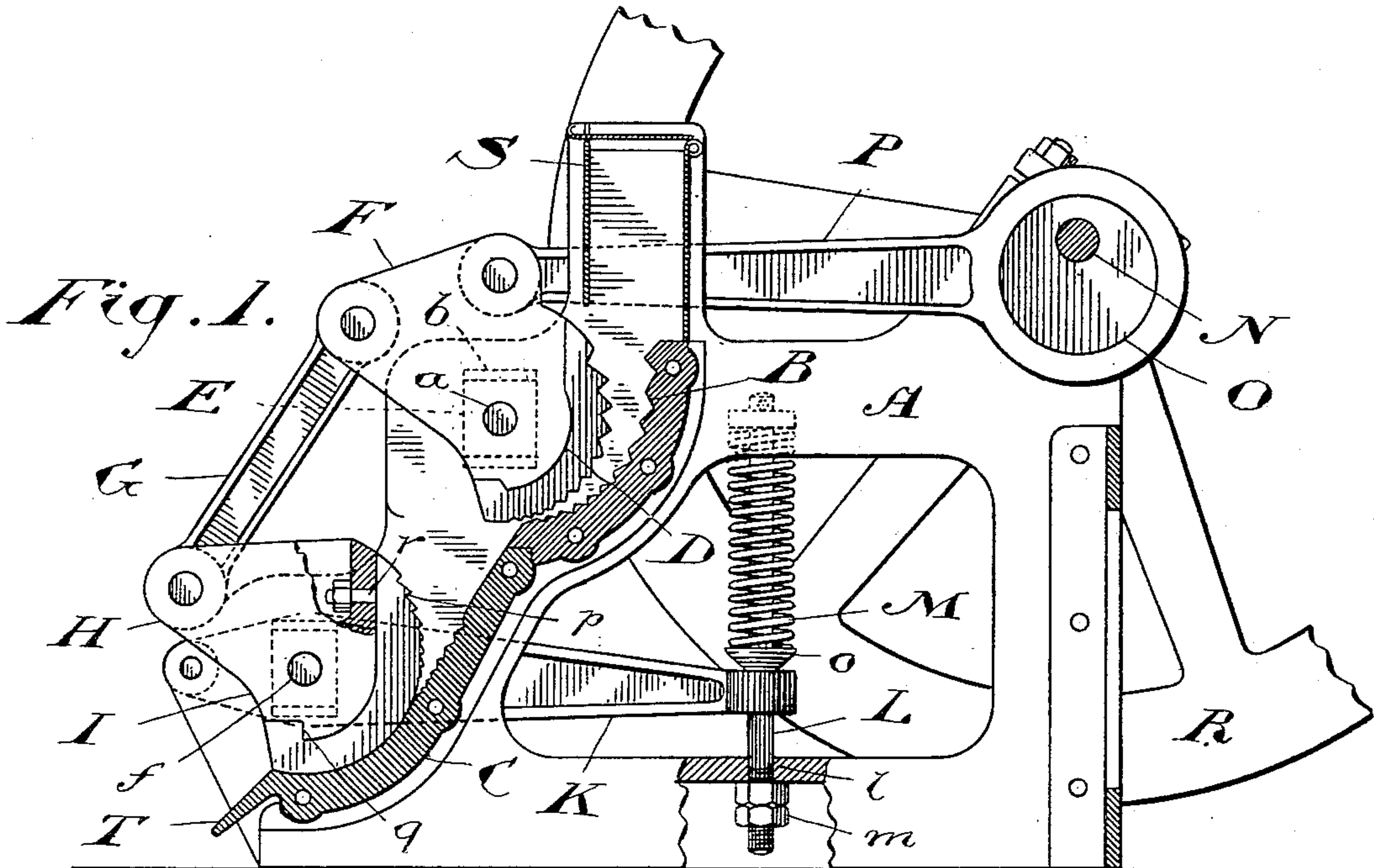
Patented Dec. 20, 1898.

B. R. SEABROOK.
ROCK CRUSHER.

(Application filed Dec. 29, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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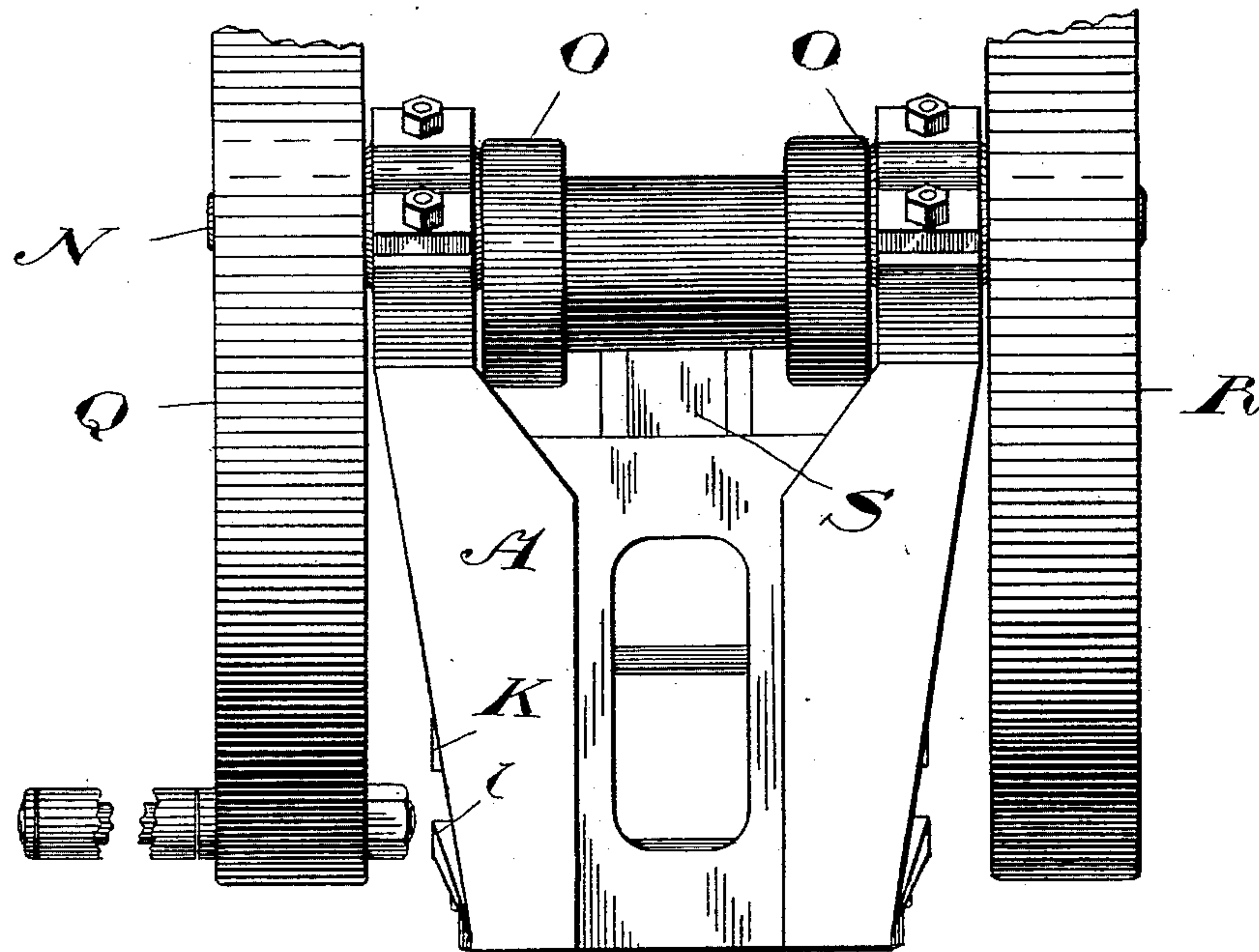
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2 Sheets—Sheet 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

BAGSTER ROADS SEABROOK, OF VICTORIA, CANADA.

ROCK-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 616,427, dated December 20, 1898.

Application filed December 29, 1897. Serial No. 664,315. (No model.)

To all whom it may concern:

Be it known that I, BAGSTER ROADS SEABROOK, of the city of Victoria, in the county of Victoria and Province of British Columbia, Canada, have invented a certain new and Improved Rock Crusher and Pulverizer, of which the following is a specification.

The object of my invention is to devise a simple and efficient rock crusher and pulverizer; and it consists, essentially, of a frame supporting a lower curved bed smooth at its lower portion and toothed above and a toothed upper curved bed discharging thereon, of a curved oscillator toothed at its upper portion only and normally resting in contact with the smooth portion of the lower bed, of means for supporting the said oscillator so that its bearing may be moved away from the bed while the oscillator is in operation, of means tending to retain the oscillator in its lowest position, of an upper toothed oscillator journaled in proximity to the upper oscillator-bed, of the means used for simultaneously operating the two oscillators, and of such details of construction as are hereinafter more specifically described and then definitely claimed.

Figure 1 is a longitudinal section of my improved crusher and pulverizer. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation showing the arrangement of the bearings for the driving-shaft.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the frame of the machine, suitably shaped and constructed to support the different parts.

B is a curved upper bed-die, and C is the lower curved bed-die, onto which the upper bed discharges. These bed-dies are suitably supported transversely of the machine. The lower bed is smooth at its lower portion and toothed above, while the upper bed is toothed throughout, as shown.

D is the upper oscillator, the shaft *a* of which is journaled in bearing-blocks E, vertically movable in the guideways *b*, formed in the frame of the machine. Plates *c* are formed on or connected to the outer sides of these bearing-blocks and are secured to the frame of the machine by means of the bolts

d, passing through slots *e* in the plates. Thus the oscillator can be set at any required distance from the bed and securely held in position by tightening the said bolts. 55

F is an arm extending outwardly from the oscillator D. G is a link journaled to the said arm and to the arm H, extending from the lower oscillator I. This lower oscillator 60 is provided with a shaft *f*, journaled in the bearing-blocks J, adapted to slide in guideways *g* in the frame of the machine. These bearing-blocks have plates *h* formed on or connected thereto, which are steadied on the 65 frame by studs *i*, passing through slots in the plate.

K K are levers journaled at *j* on the frame of the machine and also journaled on the ends of the shaft *f* of the lower oscillator. 70 The other end of each lever K has a rod L passing through it. The lower end of this rod passes between the jaws *l* and is provided with the adjusting-nuts *m*, bearing against the under side of the jaws. The other end 75 of the rod L is provided with a collar *n*.

M is a coil-spring bearing against the collar *n* and against the bearing-piece *o*, resting upon the top of the lever K. From this construction it will be seen that by adjusting the 80 nuts *m* a greater or less tension will be placed upon the ends of the levers K, so that the lower oscillator I will be held downward with a greater or less pressure, as may be desired. Under ordinary circumstances the nuts are 85 so adjusted that the spring has little or no action whatever on the oscillator when it is in the position shown, the pressure of the spring only being exerted to any great extent when the passage of ore raises the oscillator 90 and when the rocking of the oscillator (the curve of which is eccentric to its shaft) causes the oscillator to lift its shaft in a vertical direction.

N is the driving-shaft, suitably journaled 95 at the rear of the machine, the frame of which is flared outwardly, as shown more particularly in Fig. 3, to give room for the location of the eccentrics O in a line with the upper oscillator D. These eccentrics are connected 100 by the eccentric-rod P with the upper oscillator, being suitably journaled on the arm F thereof.

Q is a hand-wheel fast on the shaft N, so

that, if desired, hand-power may be used, and R is a fly-wheel and pulley, so that power may be conveyed to the machine by a belt from any suitable engine.

5 S is the hopper, communicating with the space between the upper oscillator and its bed, and T is a lip forming the discharge-spout for the lower bed.

The oscillators may be formed in any suitable manner; but I prefer to make them with detachable die-plates *p*, shouldered at *q* to fit a similar shoulder on the bed of the oscillator and bolted to the upper part of the oscillator-bed by means of one or more bolts *r*.

15 This forms a very simple and strong attachment, and the die-plates may be quickly changed at any time when worn.

When the machine is in use, the ore is fed through the hopper S to be acted upon by the upper oscillator, which operates substantially in the manner of the oscillators shown in my United States Patent No. 593,861, of November 16, 1897. The crushed ore passes from the upper bed to the upper portion of the lower bed, between the teeth of which and the teeth of the lower oscillator it is still further crushed and reduced in size. It then passes between the smooth surfaces of the oscillator and the bed, where it is subjected to a crushing grinding action, which quickly reduces it to powder.

As the curve of the surface of the oscillator is eccentric to the shaft on which it is journaled, the oscillator has a sort of climbing action upon the bed, which not only causes the pressure of the springs M to be brought to bear upon the ore, but draws the latter over the bed without permitting it to become "glossed" and remain in the machine. If the machine were handling wet work, this glossed material would form slimes.

I find in practice that my machine is very efficient, steady in running, and economical in power. I find that by arranging the spring-pressure on the lower oscillator, so that pressure is gradually applied as the oscillator is rocked, a great saving of power is obtained and also a great decrease of wear upon the metal surface is effected.

50 If the machine is required for crushing only, the lower oscillator may be removed and disconnected, the upper one alone remaining to do the work. Similarly for pulverizing the lower part of the machine alone may be used, if desired.

What I claim as my invention is—

1. In a rock crusher and pulverizer, a curved bed supported in a suitable frame, in combination with an oscillator; bearing-blocks vertically adjustable in suitable guideways in the frame of the machine and having the shaft of the oscillator journaled therein; a toothed upper curved bed communicating with the lower bed and having a toothed oscillator adjustably journaled therein; an arm extending from each oscillator; a link connecting the said arms, one or more eccentric-rods journaled to the arm of the oscillator, and eccentrics operating said rods; and a shaft for transmitting power to said eccentrics, substantially as described.

2. In a rock crusher and pulverizer, a curved bed supported in a suitable frame, in combination with an oscillator normally in contact with the lower portion of the bed; bearing-blocks vertically movable in suitable guideways in the frame of the machine and having the shaft of the oscillator journaled therein; and means tending to retain the oscillator in contact with the bed; a toothed upper curved bed communicating with the lower bed; a toothed oscillator journaled in proximity thereto; an arm extending from each oscillator; a link connecting the said arms and means for rocking one of the oscillators, substantially as and for the purpose specified.

3. In a rock crusher and pulverizer, a curved bed supported in a suitable frame, in combination with an oscillator normally in contact with the lower portion of the bed; bearing-blocks vertically movable in suitable guideways in the frame of the machine and having the shaft of the oscillator journaled therein; means tending to retain the oscillator in contact with the bed; a toothed upper curved bed communicating with the lower bed; a toothed oscillator journaled in proximity thereto; an arm extending from each oscillator; a link connecting the said arms; one or more eccentric-rods journaled to the arm of the upper oscillator and operated by eccentrics on a shaft deriving motion from any suitable source of power, substantially as and for the purpose specified.

Victoria, December 11, 1897.

BAGSTER ROADS SEABROOK.

In presence of—

H. G. HALL,

W. POLLARD GRANT.