

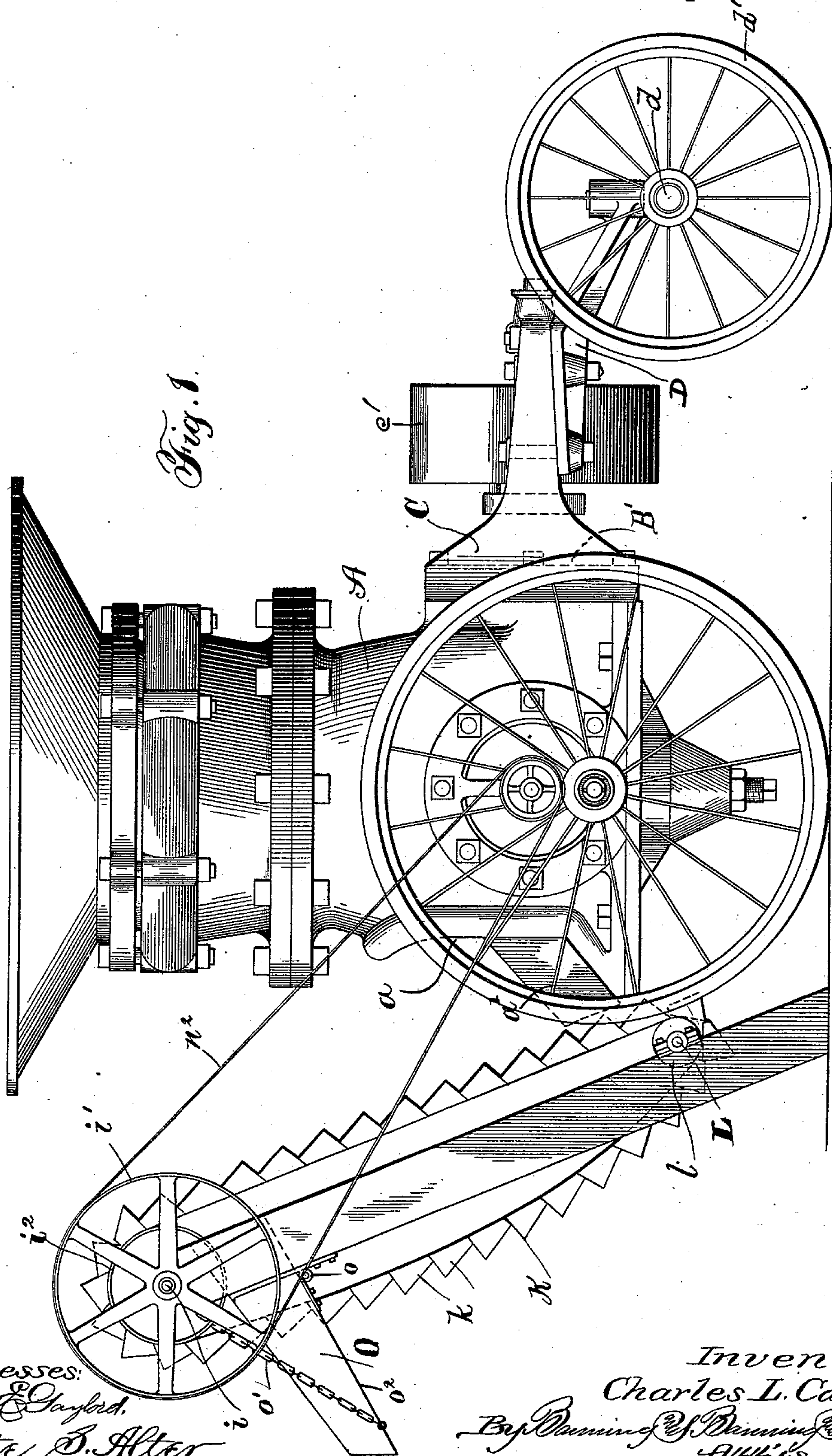
(No Model.)

3 Sheets—Sheet 1.

C. L. CARMAN.  
PORTABLE STONE CRUSHER.

No. 525,403.

Patented Sept. 4, 1894.



Witnesses:

*Chas. E. Gaylord,*

*Lute B. Alter*

Inventor:

*Charles L. Carman,*

*By Dunning & Dunning, Attys.*

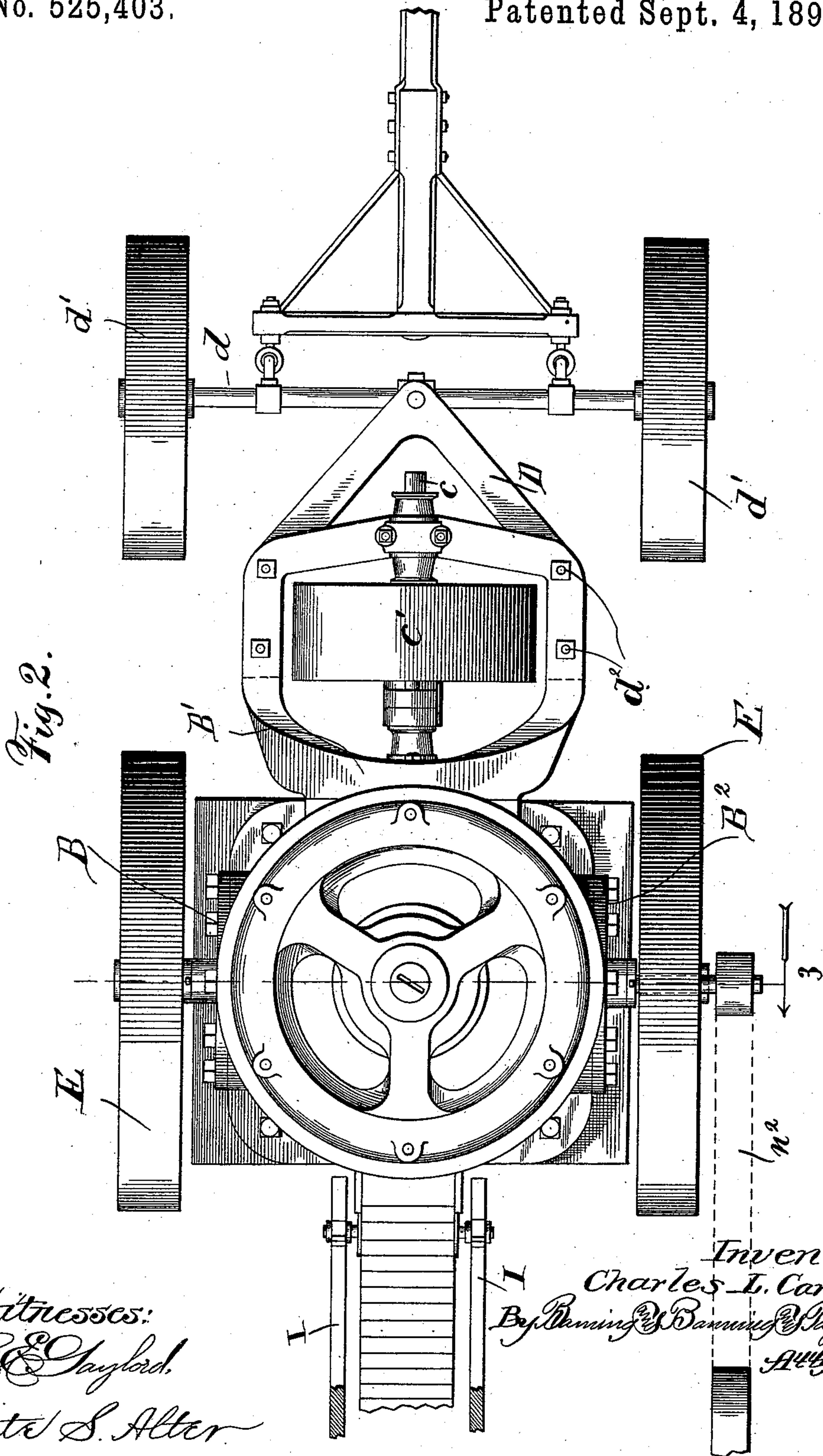
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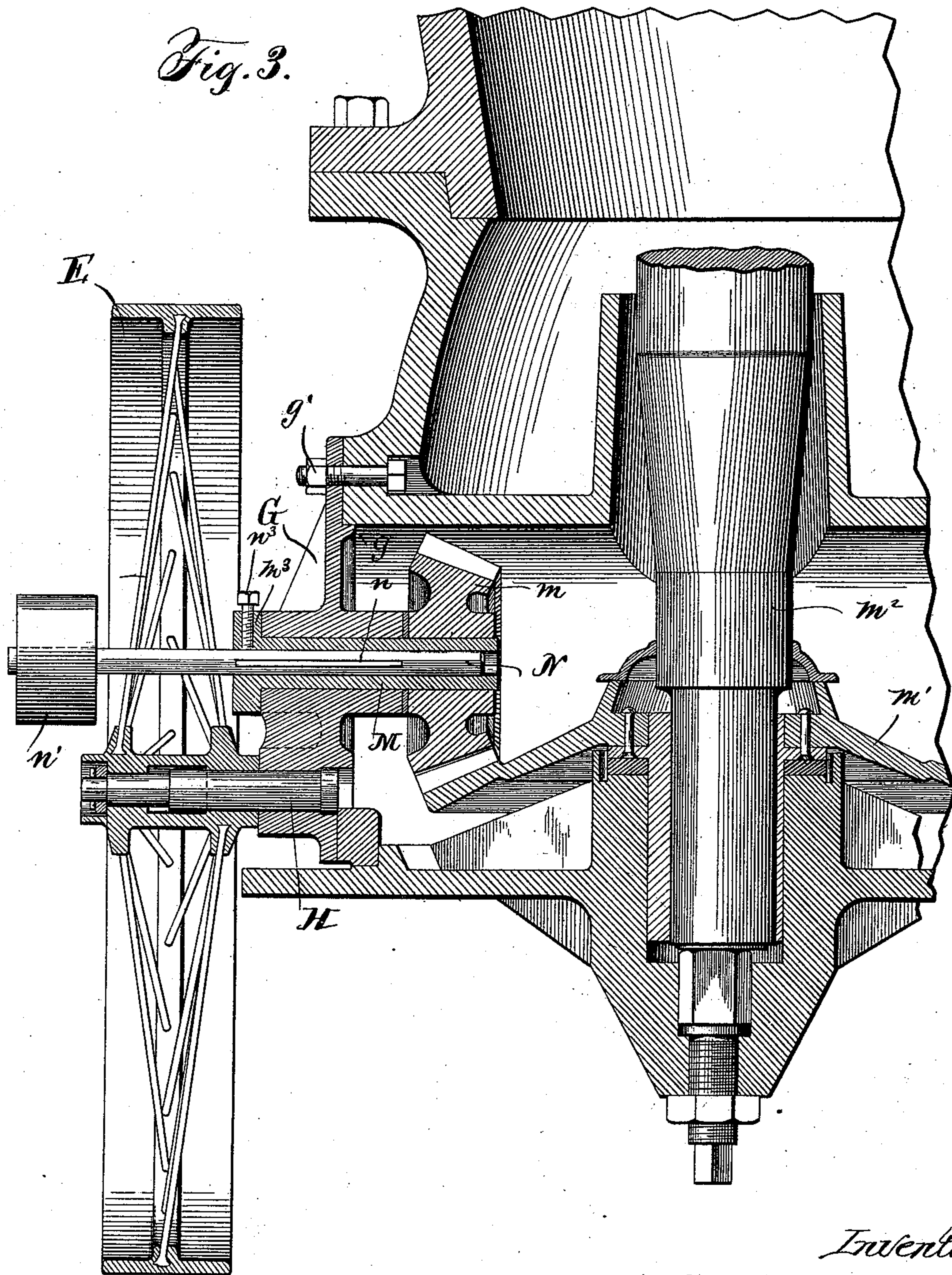
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Inventor:  
Charles L. Carman,

By Banning & Banning & Payson,  
Attys



# UNITED STATES PATENT OFFICE.

CHARLES L. CARMAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GATES  
IRON WORKS, OF SAME PLACE.

## PORTABLE STONE-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 525,403, dated September 4, 1894.

Application filed October 24, 1893. Serial No. 489,007. (No model.)

*To all whom it may concern:*

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

My invention relates particularly to the method of securing the running gear to a stone crusher and combining with it, in a convenient manner, a suitable elevator for elevating the crushed material to a screen and chute for the proper sorting of the same.

It has for its object the providing of a simple, economical and efficient portable stone crusher; and my invention consists in the features, details and combinations hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improvement; Fig. 2 a plan view, looking at the same from the top; and Fig. 3 a sectional elevation of a portion of the mechanism, taken on line 3 of Fig. 2 looking in the direction of the arrow.

In the construction of my improvement, I prefer to use an ordinary stone crusher, A, of the type known as the "gyrating crusher," said crusher frame being provided with the usual discharge opening, *a*, for the discharge of the crushed material, and three other openings, B, B' and B<sup>2</sup>, located at equi-distant points around the circumference and intended primarily for the insertion of the mechanism for operating the crushing mechanism.

Secured to the frame at and in line with the opening, B', is a supporting frame or bracket, C, provided with bearings in which is mounted a driving shaft, *c*, which is provided at its inner end with a gear engaging with and adapted to rotate the beveled gear which actuates the crushing mechanism, and also provided with a pulley, *c'*, adapted to be operated by a belt from some suitable motor. This frame, C, is so constructed that it is adapted to be secured at one end only to the crusher frame, by means of suitable nuts and bolts, and has its lower surface practically flat and constructed in such manner that there may be detachably secured to it a metallic brace or bracket, D, extending forward and downward to be pivotally engaged with

an axle, *d*, upon which is mounted in the usual manner a pair of wagon wheels, *d'*, preferably constructed upon the bicycle type. This axle may be provided with the usual thill coupling, axle tree and tongue. The mounting of the wheels in the above described manner provides a minimum amount of gearing, and allows the gearing to make a suitable turn in rounding corners.

The side wheels, E, are mounted and secured to the crusher frame independently of each other, for the purpose of more readily removing the same from the frame and doing away with the usual axle in such cases provided, and to make use of the holes in the frame which are at right angles to the discharge chute and primarily intended for the insertion of the driving gear. To accomplish this result, I provide hubs, G, having a portion, *g*, of suitable diameter to snugly fit the bore of the openings, B and B<sup>2</sup>, and secure the hub to the frame by means of the bolts and nuts, *g'*, in such manner that the hub may be easily removed when desired.

I mount securely in any convenient manner to that portion of the hub, preferably near the lower portion of the opening, gudgeons, H, and on these gudgeons I mount in any convenient manner the wheels, E, so that they may easily rotate during the moving of the crusher from place to place, and which is particularly illustrated in Fig. 3 of the drawings.

When it is desired to use the crusher as a stationary crusher, the hubs, G, may be removed, which action removes also the wheels, E, and by removing the bolts, *d<sup>2</sup>*, the brace or hounds, D, are also removed, thereby removing the front running gear and allowing the crusher to be placed on a suitable foundation and used as a stationary crusher. When it is used as a portable crusher, it is sometimes desirable to have a suitable screening apparatus attached to it, and means for elevating the material after it has been crushed as it passes out of the discharge opening to the screen. To accomplish this result, I provide beams, I,—which may be attached to and entirely supported by the crusher frame—provided with suitable bearings, in which is mounted near the top a shaft, *i*, provided at



one end with a pulley,  $i'$ , and near its center, between the side beams, with a pulley,  $i^2$ , intended for supporting and driving the belt, K, carrying the elevator buckets,  $k$ .

5 Near the lower end of the side beams is mounted in suitable bearings a shaft, L, which carries a pulley,  $l$ , around which the elevator belt and buckets pass, in such manner as to bring them close to the discharge chute,  $a'$ ,  
10 of the crusher.

The elevator mechanism is driven preferably through the mechanism which operates the crusher head, and in the following manner: Mounted in one of the hubs, G, shown  
15 particularly in Fig. 3, is a hollow shaft, M, having at its inner end a beveled pinion,  $m$ , engaging with and adapted to be operated by the rotation of the beveled gear,  $m'$ , which actuates the gyrating shaft,  $m^2$ . At the outer  
20 end the hollow shaft is provided with a shoulder,  $m^3$ , and bears against the hub to limit the longitudinal motion of the hollow shaft. A shaft, N, enters the axial opening of the hollow shaft, and is engaged with it by means  
25 of a feather,  $n$ , and corresponding feather way, so as to impart the rotations of the hollow shaft to the shaft, N, and permit it, through its pulley  $n'$ , to impart the necessary rotation to the elevator mechanism by means  
30 of the belt,  $n^2$ . A set screw,  $n^3$ , is passed through the shoulder of the hollow shaft and impinges against the shaft, N, to prevent the same having any longitudinal motion during its rotation, and at the same time, when the  
35 set screw is slackened, to allow the shaft, N, to be withdrawn from engagement with the hollow shaft.

It will be observed that the shaft, N, is passed through the spokes of one of the  
40 wheels, E, when it is necessary to operate the elevator, and that consequently such wheel could not be rotated or the crusher moved from place to place.

The easy removal of the shaft by the means  
45 above described permits the wheel, E, to turn and the mechanism to be moved from place to place.

A chute, O, is secured to the side beams which form the elevator frame in any convenient manner, preferably by means of  
50 hinges,  $o$ , and supported by a chain,  $o'$ , at its outer end secured to the elevator frame. The lower plate  $o^2$  of the screen, along which the crushed material passes after it is dumped  
55 on the same from the elevator, is made of reticulated material, or a wire screen, of any desired gage, for screening the crushed mate-

rial and at the same time acting as a chute to deliver the material so screened to any desired point.

While I have described the intermediate mechanism which is mounted on the hollow shaft with great minuteness, I do not desire to claim the same, as it forms no part of my invention. Neither do I lay any claim to the  
60 crushing mechanism or methods used in driving the same.

I claim—

1. In portable stone crushers, the combination of a crusher frame provided with suitable crushing mechanism and openings located around the circumference of the frame, mechanism adapted to be secured to the frame at and in line with two of such openings for the mounting of wheels forming the running  
70 gears, and wheels rotatably mounted on such mechanism, substantially as described.

2. A portable stone crusher, comprising a crusher frame provided with suitable crushing mechanism and openings located around  
80 the circumference of the frame, a bracket for carrying the actuating mechanism of the crusher secured to the frame at and in line with one of the openings, running gear pivotally and removably secured to such bracket,  
85 hubs secured to the crusher frame at and in line with the side openings, and wheels forming a portion of the running gear independently mounted in such hubs, substantially as described.

3. A portable stone crusher, comprising a crusher frame provided with suitable crushing mechanism, an opening for the discharge of the crushed material and openings intended for the insertion of actuating mechanism, a  
90 bracket for carrying the actuating mechanism secured to the crusher frame at and in line with one of its openings, running gear adapted to be secured to such bracket, means for removably securing such running gear  
100 and bracket, wheels forming a portion of the running gear independently secured to the crusher frame at and in line with the side openings, means for securing such independently to the crusher frame at and in line with  
105 such openings, an elevator for raising the crushed material to a desired point, and a combined screen and chute for screening the crushed material after it has been raised, substantially as described.

CHARLES L. CARMAN.

Witnesses:

JOHN J. BREWIS,

PHILETUS WARREN GATES.