

No. 612,300.

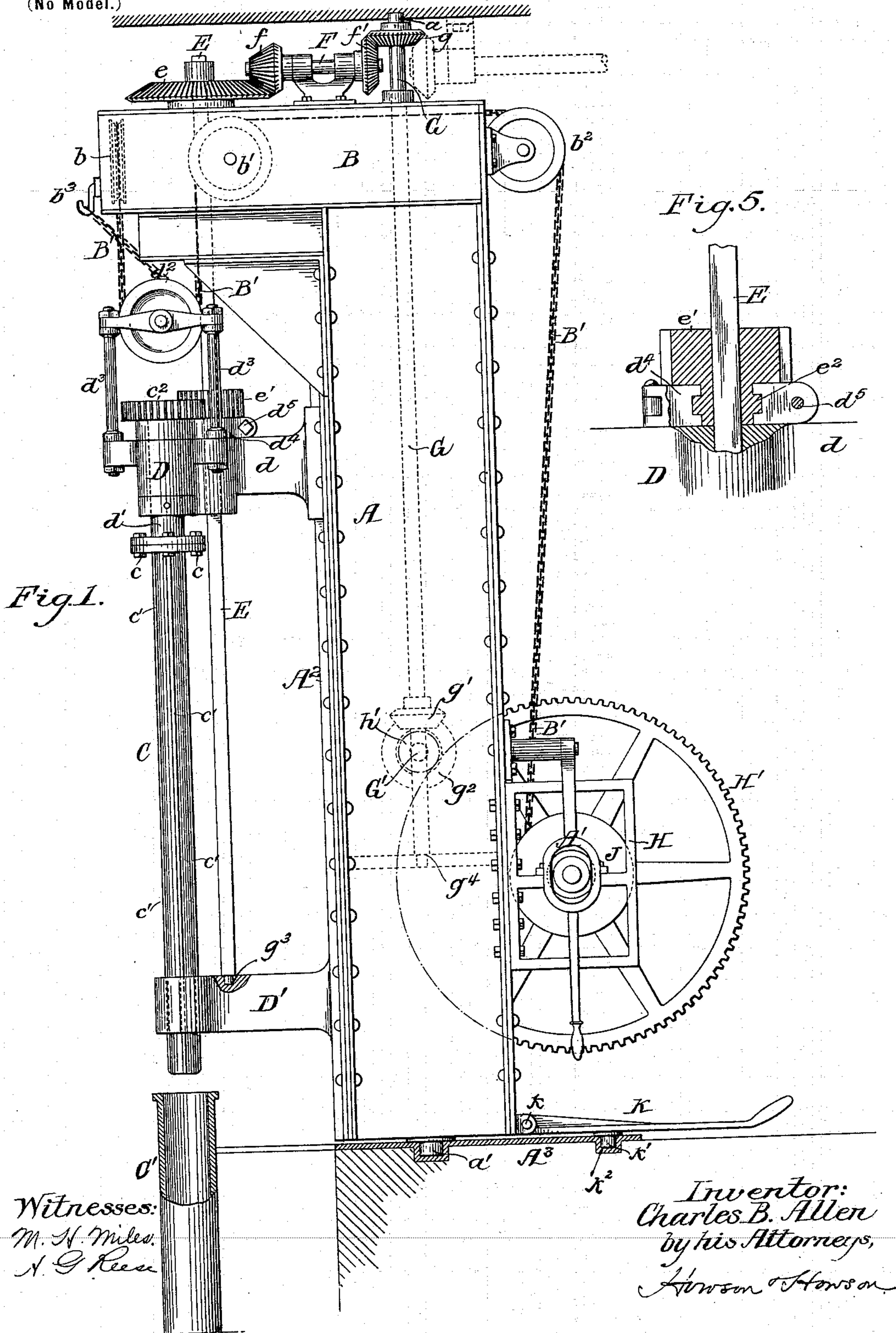
Patented Oct. 11, 1898.

C. B. ALLEN.  
ROTARY RAMMER FOR PIPE FLASKS.

(Application filed Sept. 17, 1897.)

2 Sheets—Sheet 1.

(No Model.)



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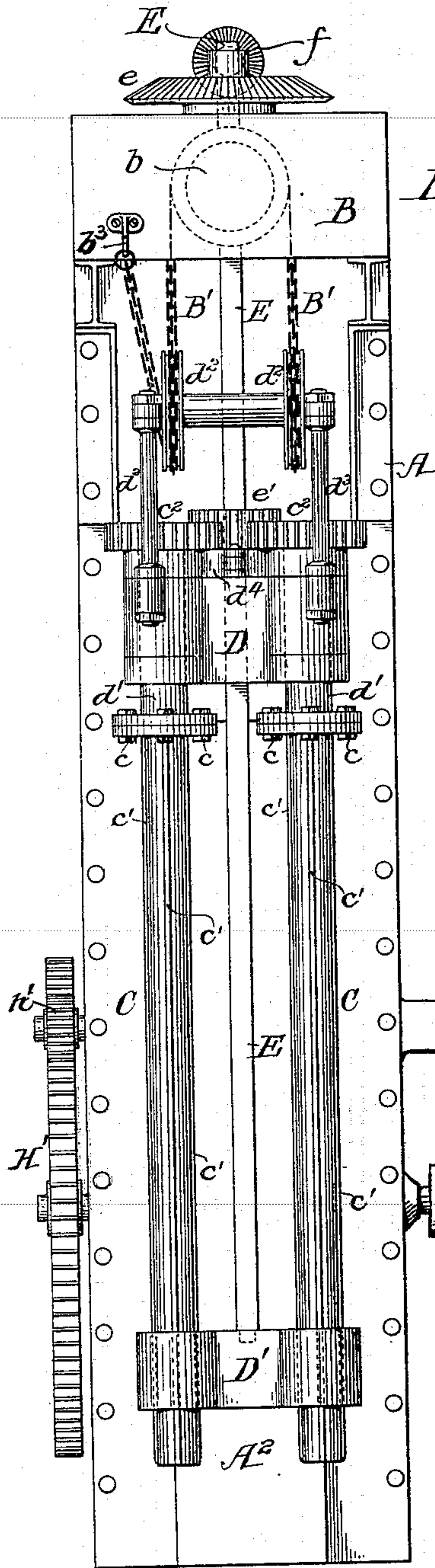


Fig. 2.

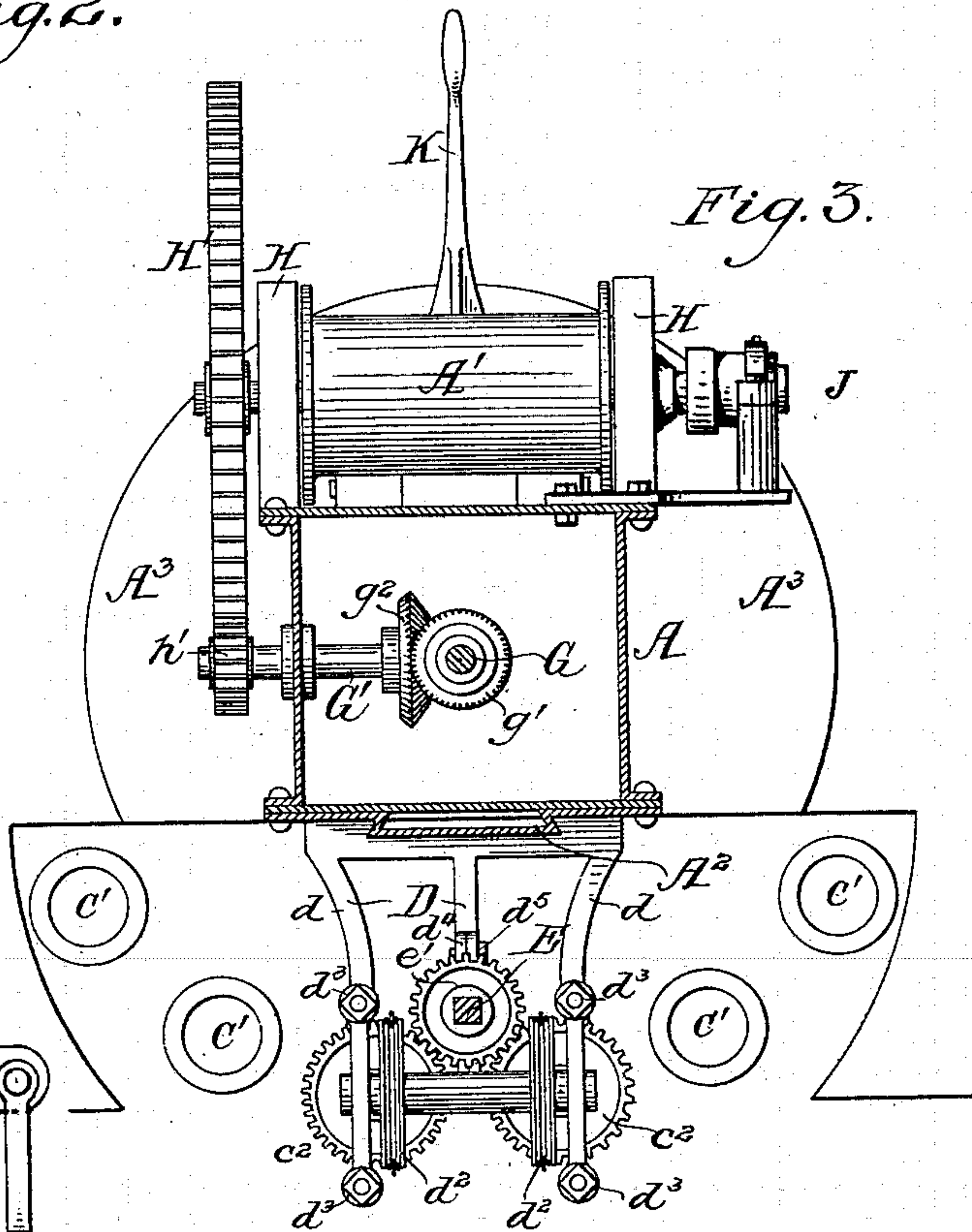
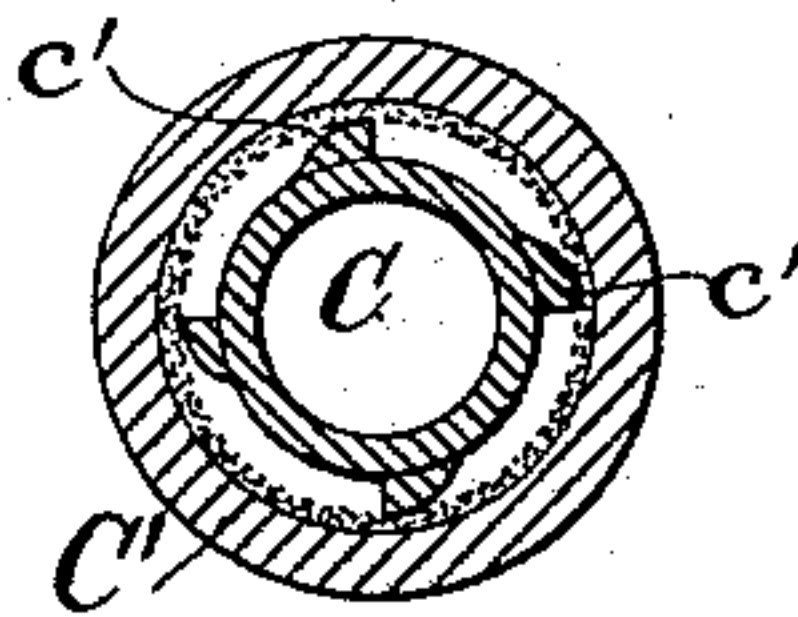


Fig. 3.

Fig. 4.



Witnesses:  
M. N. Miles  
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Inventor:  
Charles B. Allen  
by his Attorneys,  
Hanson & Hanson.



# UNITED STATES PATENT OFFICE.

CHARLES B. ALLEN, OF BURLINGTON, NEW JERSEY, ASSIGNOR TO ANDREW H. McNEAL, OF SAME PLACE.

## ROTARY RAMMER FOR PIPE-FLASKS.

SPECIFICATION forming part of Letters Patent No. 612,300, dated October 11, 1898.

Application filed September 17, 1897. Serial No. 651,991. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES B. ALLEN, a citizen of the United States, and a resident of Burlington, Burlington county, New Jersey, have invented certain Improvements in Rotary Rammers for Pipe-Flasks, of which the following is a specification.

My invention relates to the art of making sand molds for casting pipe and other cylindrical shapes; and it consists of certain improvements in machines for packing the sand against the walls of the pipe-flasks preparatory to placing the cores in the same.

My invention is fully illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view, and Figs. 4 and 5 are views of details of my invention.

The ordinary method of forming sand molds for casting small pipe is well known in the art and is substantially as follows: A packing or ramming pattern-bar carried by the jib of a crane or other suitable structure is arranged in such a manner that it may be lowered into the flask located in the molding-pit. This packing or ramming bar is usually provided with some means for packing the sand against the wall of the flask. After the pattern-bar has been lowered in the flask sand is poured into the same. The bar is then rotated and slowly withdrawn from the flask, packing the sand against the wall of the flask as it moves upward. Heretofore, however, it has been found impracticable to pack more than one flask at a time, and it has been practically impossible to pack flasks for pipes of small diameter.

This present invention therefore consists of a machine having rotating ramming or packing pattern-bars adapted to pack two or more pipe-flasks at a time and of such construction that flasks for molding pipe of any diameter up to twelve inches can be packed in a perfectly satisfactory manner.

In the drawings, A is a suitable crane which is pivotally mounted top and bottom at  $a$  and  $a'$ , so as to be revoluble. At the top of the crane is mounted a jib B, which carries the mechanism for rotating the pattern-bars and for driving the winding-drum A' and the sheaves or pulleys  $b$ ,  $b'$ , and  $b^2$ ,

over which the chain B', supporting the pattern-bars, passes. This chain is attached at one end to a hook  $b^3$ , secured to the end of the jib, passes over one of the sheaves  $d^2$ , thence over the sheave  $b$ , then over the other sheave  $d^2$ , and thence over the sheaves  $b'$  and  $b^2$  to the drum A', to which it is fastened.

The pattern-bars are shown at C, and they are carried by a head D, having a projection  $d$ , adapted to engage and slide up and down on a rib or flange A<sup>2</sup> on the side of the crane, a guide D' for the pattern-bars C being arranged near the bottom of the crane. The pattern-bars are hollow and are provided with a series of ribs  $c'$ , secured to the surface of the same in any suitable manner. The head D carries flanged depending portions  $d'$ , to which the pattern-bars C are secured by means of suitable bolts  $c$ . This head D drops by gravity when the pattern-bars are introduced into the flasks C'; but it is lifted when the flasks are being packed by the rotating pattern-bars by means of the chain B', which passes over the sheaves  $d^2$ , carried by a suitable frame  $d^3$ , mounted on top of the head D.

A square shaft E is carried by a bevel-wheel  $e$ , journaled in the jib B. This shaft E passes through the head D, the lower end of the same resting in a step-bearing  $g^3$  in the guide D', and is driven by means of the bevel gear-wheel  $e$  at the top of the jib. Each of the flanged depending portions  $d'$ , which carry the pattern-bars C, has a pinion  $c^2$  at the top of the same suitably journaled in the head D, and meshing with these pinions  $c^2$  is a pinion  $e'$ , through which the square shaft E passes. This pinion  $e'$  is the driving-pinion for the pattern-bars and is carried up and down by the head D to transmit motion to the pinions  $c^2$ , and thus rotate the pattern-bars C. In order to carry the driving-pinion  $e'$ , a split collar  $d^4$  is arranged on the head D, and this collar engages the lower portion  $e^2$  of this pinion and forms a bearing for the same, as shown in Fig. 5, a suitable bolt or set-screw  $d^5$  being provided for holding the collar together. The bevel-wheel  $e$ , carrying the shaft E, is driven by the pinion  $f$  on the counter-shaft F, which in turn receives motion from the driving-shaft G through the medium of the bevel-pinions  $f'$  and  $g$ .

Mounted at the back of the crane is the



winding-drum A', adapted to a suitable frame H and provided with suitable clutching mechanism J, whereby it may be connected to or released from operative engagement with the gear-wheel H'. This gear-wheel H' is driven by a pinion h', mounted on a counter-shaft G' inside the crane, which receives its motion from the driving-shaft G through the medium of the bevel-pinions g' and g<sup>2</sup>, and is in turn driven by the shaft G<sup>2</sup>. (Shown in dotted lines.) The driving-shaft is journaled in a suitable bearing g<sup>4</sup>, fixed to the crane. The winding-drum is provided for the purpose of raising the pattern-bars out of the flasks as they pack the sand against the walls of the same.

The driving-shaft G is constantly in motion and the gear-wheel H' is revolving all the time. The rammers are also constantly rotating both when they are dropped into the flask and when they are lifted out of the same, and to lift them out of the flasks the winding-drum must be clutched to the gear-wheel H'. A suitable pawl or other device may be arranged on the winding-drum, so that it will be held against backward movement during the operation of raising the pattern-bars from the flasks.

The crane is adapted to revolve so as to pack different sets of flasks in the pit; but as it is necessary that it be in position to permit the pattern-bars to register with the flasks I provide a lever K, pivoted at k at the base of the crane and carrying a stud k', adapted to engage depressions k<sup>2</sup> in the base-plate A<sup>3</sup>, secured to the floor of the shop, the lever also serving to turn the crane when it is to be moved. If necessary, any suitable device may be used to lock this lever when the packing operation is going on.

The operation of the machine is as follows: The flasks C' being fixed in the pit directly underneath the pattern-bars C, so that said bars may enter the flasks directly in the center of the same, the winding-drum is released and the head D, supporting the pattern-bars C, descends, carrying said bars to the bottom of the flasks, and sand is then poured into the flasks in the space between the walls of the same and the pattern-bars. When a sufficient quantity of sand has been placed in the flasks, the winding-drum is clutched to the driving mechanism and the pattern-bars, revolving all the time, are slowly lifted out of the flasks, the ribs on the surface of the same packing the sand against the walls of the flask. When one pair of flasks have been packed, the crane is moved so as to bring the pattern-bars over the next pair of flasks, the said flasks being arranged in the pit in series of two, as shown in Fig. 3. The finished molds are then lifted out of the pit and fresh ones placed therein, the packing or ramming operation continuing as before.

While the present apparatus is shown and has been designed especially for the purpose of ramming or packing two pipe-flasks at one operation, it will be quite evident that with but slight modification it may be constructed to ram three or more flasks, as occasion may demand or circumstances require.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination in a machine of the character described, of the crane, a vertical slideway on the same, a head adapted to said slideway, depending members carried by said head, pattern-bars connected to said members, pinions journaled in the head and carried at the top of said depending members, a driving-pinion journaled in the head and operatively connected thereto and means for driving said pinion whereby the pattern-bars may be rotated.

2. The combination in a machine of the character described, of the crane, a vertical slideway on the same, a head adapted to said slideway, depending members carrying pattern-bars secured to said head, pinions on said members, a driving-pinion meshing with the same and carried by the head, and a square shaft upon which said driving-pinion is adapted to slide journaled in suitable bearings, serving to turn said driving-pinion.

3. The combination in a machine of the character described, of the crane, the jib mounted on the same, a vertical slideway on the crane, a head carrying rotating pattern-bars adapted to said slideway, means for rotating said bars consisting of pinions operatively connected to the same and a driving-pinion meshing therewith, and a square shaft for turning said driving-pinion passing through the same and having at its upper end a pinion journaled in the jib which serves to drive said square shaft.

4. The combination in a machine of the character described, of the crane, a vertical slideway on the same, a head adapted to said slideway, depending members carried by said head, pattern-bars connected to said head, pinions journaled on the head and carried at the top of said depending members, a driving-pinion operatively connected thereto, means for driving said pinion whereby the pattern-bars may be rotated, and a split collar carried by the head and serving to hold the driving-pinion thereto and also as a bearing for said pinion, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. B. ALLEN.

Witnesses:

MURRAY C. BOYER,  
JOS. H. KLEIN.