

(No Model.)

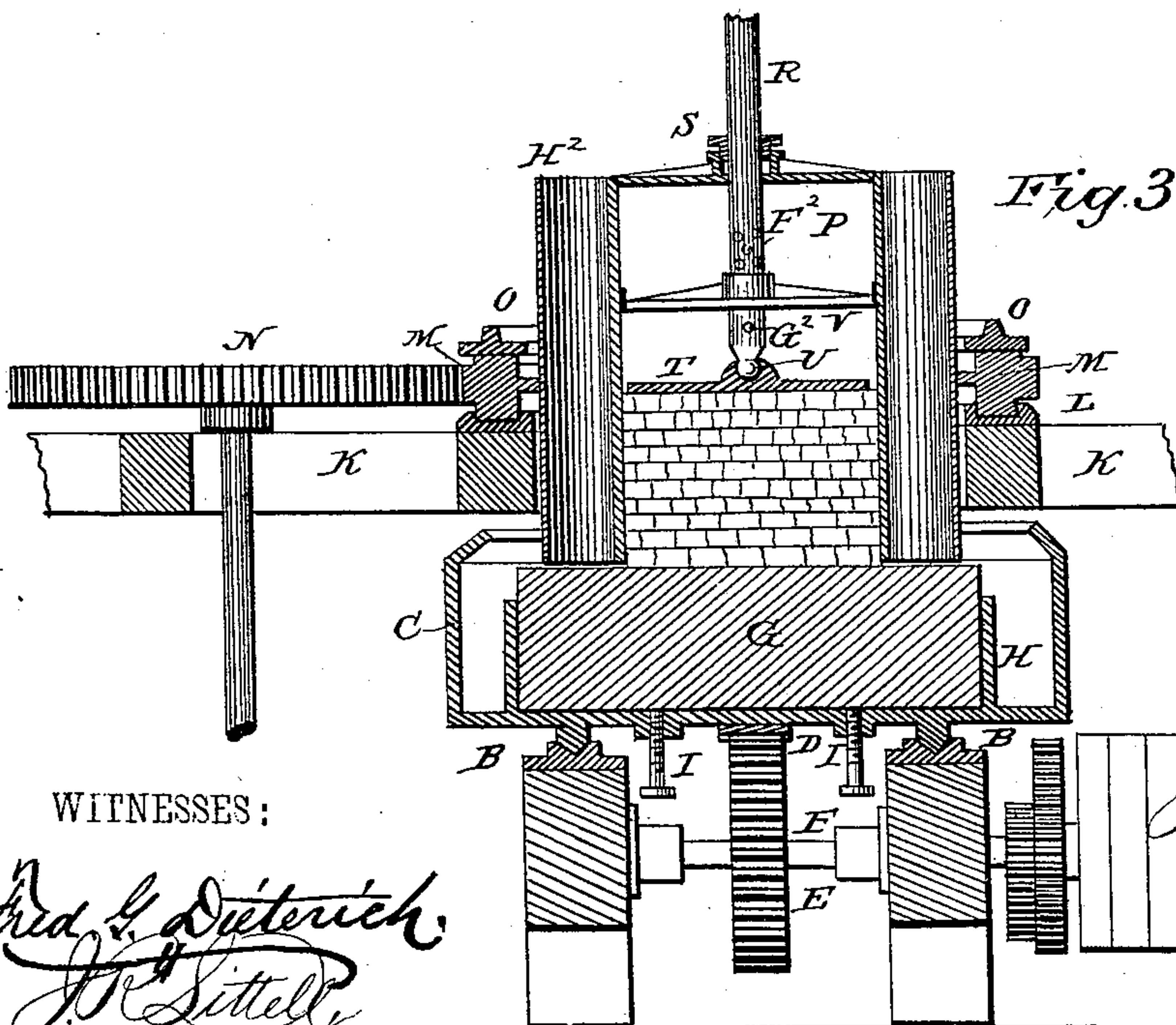
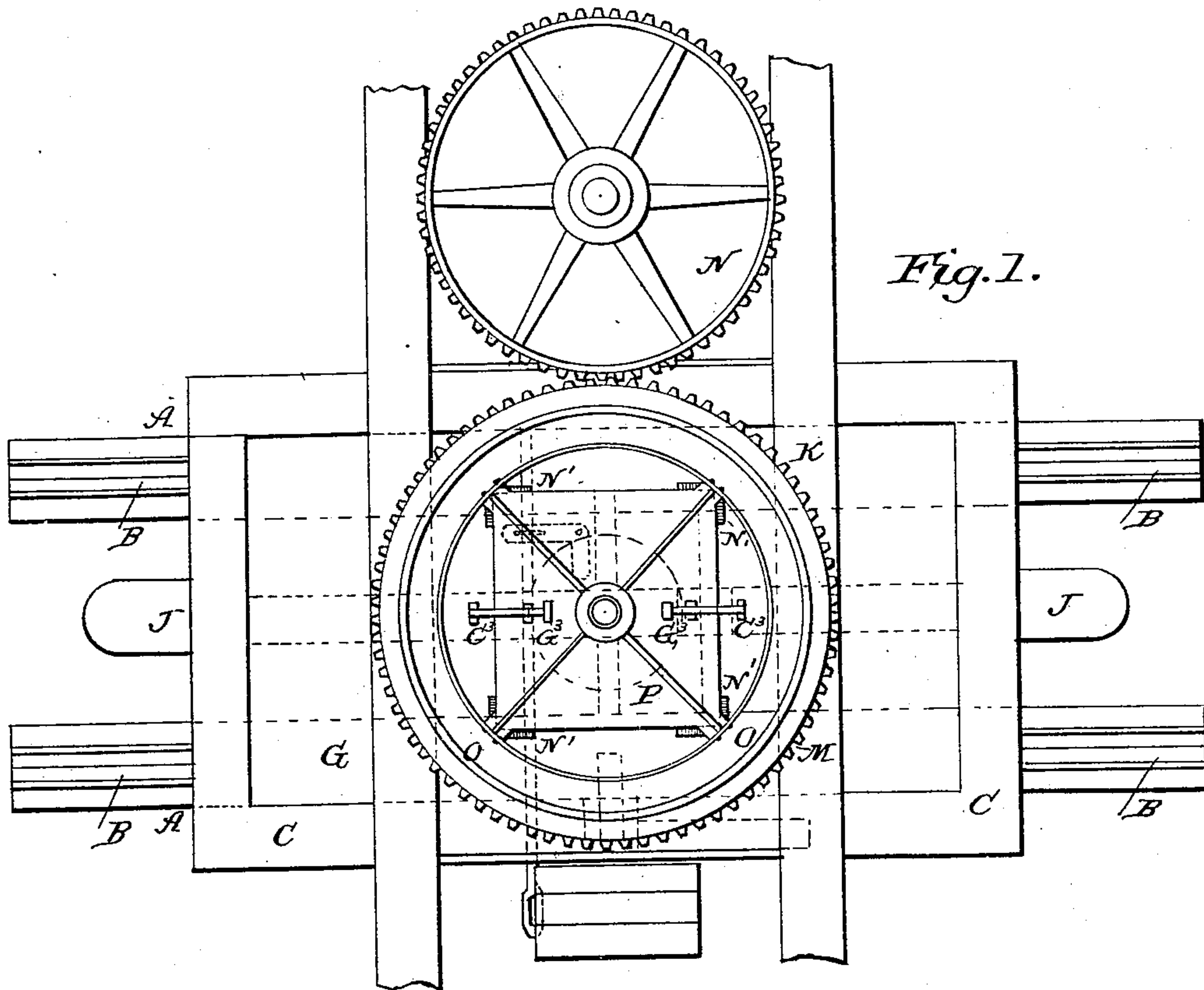
2 Sheets—Sheet 1.

J. PRICKETT.

MACHINE FOR REDUCING WOOD TO PAPER PULP.

No. 277,060.

Patented May 8, 1883.



WITNESSES:

And. L. Dieterich
J. R. Sittell

J. Prickett
INVENTOR.
by *Chas. Snow & Co.*
ATTORNEYS.

J. PRICKETT.

MACHINE FOR REDUCING WOOD TO PAPER PULP.

No. 277,060.

Patented May 8, 1883.

Fig. 2.

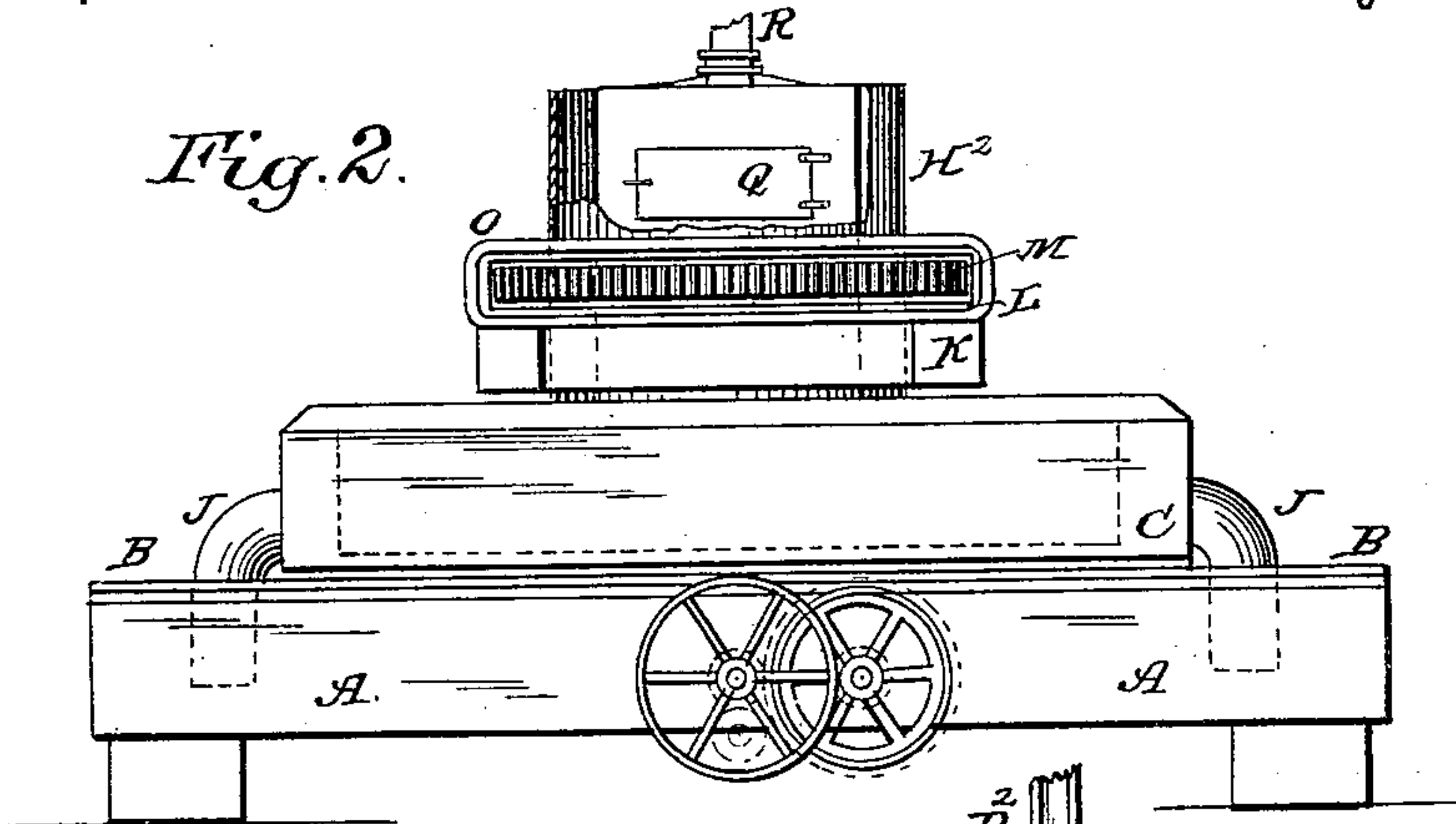


Fig 5

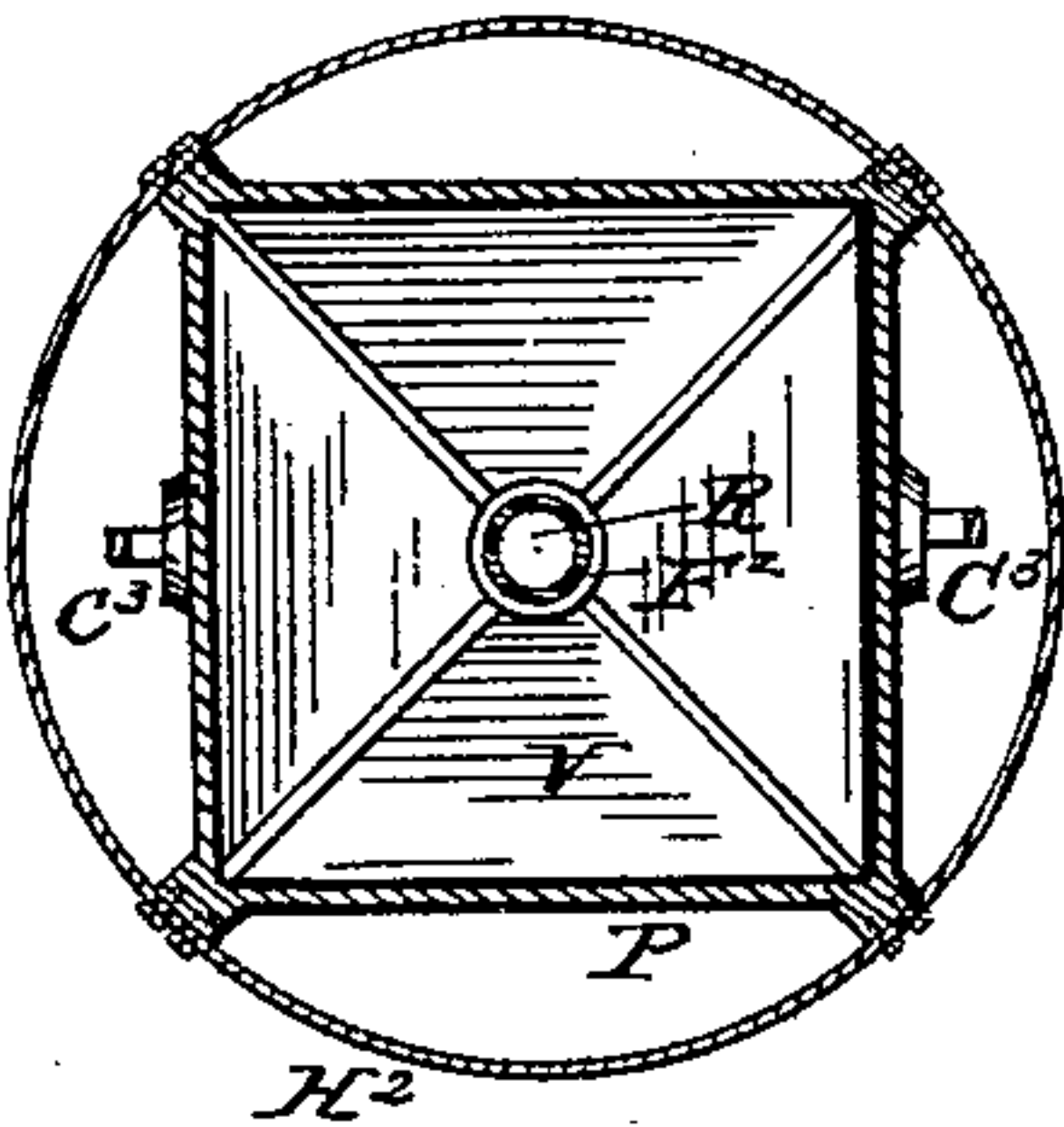
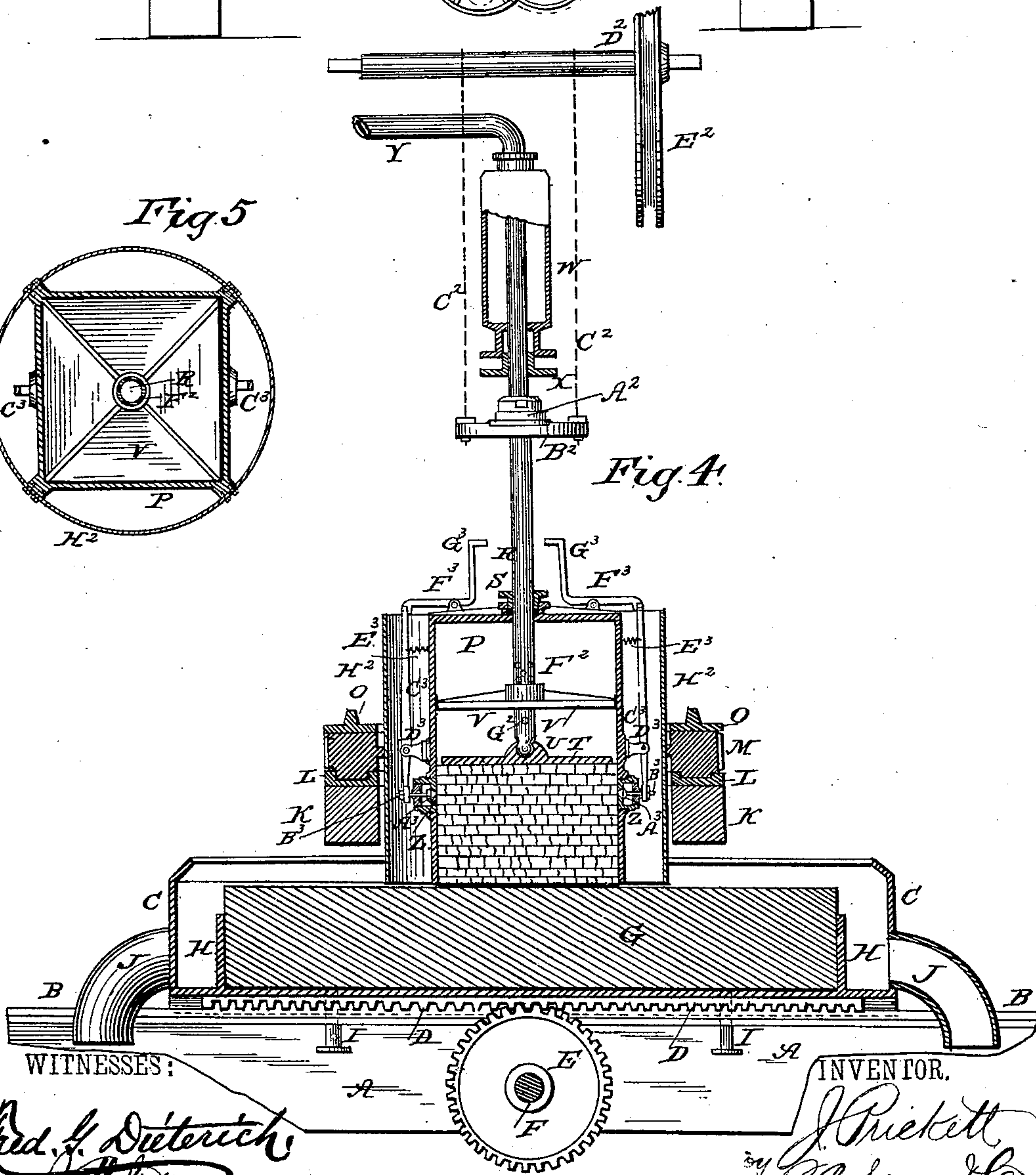


Fig. 4.



WITNESSES:

And. H. Dieterich
J. S. Sill

INVENTOR.

J. Prickett
Wm. A. Snow & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOSHUA PRICKETT, OF MARINETTE, WISCONSIN, ASSIGNOR OF TWO-THIRDS
TO WALTER S. PRICKETT AND ALBERT H. MELLEN, OF SAME PLACE.

MACHINE FOR REDUCING WOOD TO PAPER-PULP.

SPECIFICATION forming part of Letters Patent No. 277,060, dated May 8, 1883.

Application filed March 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA PRICKETT, a citizen of the United States, residing at Marinette, in the county of Marinette and State of Wisconsin, have invented a new and useful Machine for Reducing Wood to Paper-Pulp, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to machines for reducing wood to paper-pulp; and it consists in certain improvements in the construction of the same, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a plan view of my improved paper-pulp machine. Fig. 2 is a side view of the same. Fig. 3 is a vertical transverse sectional view. Fig. 4 is a vertical longitudinal sectional view, and Fig. 5 is a horizontal sectional view.

The same letters refer to the same parts in all the figures.

A in the drawings represents a suitable frame or base supporting a pair of grooved track rails or ways, B B, upon which slides a casing, C, which may have V-shaped ribs upon its under side to engage the grooves in the track-rails. Suitable mechanism is to be provided for imparting a reciprocating motion to the said casing, which latter may, as in the drawings, be provided with a longitudinal rack upon its under side, as shown at D, to engage a gear-wheel, E, upon a transverse shaft, F, to which motion may be conveyed in any convenient manner. I would have it understood that any desired mechanism may be employed for reciprocating the said casing.

G is the grindstone, which is placed in the casing C, where it is surrounded by flanges H, projecting upward from the bottom of the casing, and which serve to retain the stone securely in its proper position. The stone may be supported upon strong and powerful set-screws I in the bottom of the casing, by means of which it may be raised, so as to compensate for wear. In this manner the stone may be used until worn quite thin. The ends of the casing C are provided with spouts J, through which the pulp passes into suitable tanks or receptacles placed underneath, and from whence it may be conveyed in the usual manner to the shakers.

K is a frame arranged above the casing C, and supporting a circular guide or way, L, upon which is mounted a horizontally-revolving gear-wheel, M, to which motion may be imparted through a pinion, N, from any suitable power. An additional circular guide, O, located above the gear-wheel M, may be connected to the guide L, and supported by the latter by means of suitable brackets.

P is a square or rectangular vertical casing arranged within the gear-wheel M; and connected securely to the latter by means of corner clamps or brackets N' N'. It will thus be seen that a rotary motion is imparted to the vertical casing P, the lower edge of which latter is adjusted a short distance above the stone. The casing P is provided with a suitable door, Q, near its upper end, through which the wood to be ground may be placed in the box or casing. Said door should be flush with the inner side of the casing, and it must be capable of being closed absolutely water-tight. The upper end of the casing P has an opening for the passage of a hollow or tubular piston-rod, R, for which a packing-box, S, is provided.

T is a follower, connected to the lower end of the piston-rod R by a universal joint, U; and V is a piston, which is firmly mounted upon the rod R a short distance above the follower.

W is a small cylinder, arranged vertically above the casing P, and supported by suitable frame-work, which is not shown in the drawings. The lower end of said cylinder has an opening surrounded by a packing-box, X, for the passage of the piston-rod R, the upper end of which is open and extends into the cylinder W, as shown. The upper end of the cylinder W is connected by a pipe, Y, with a supply of water under pressure, which may be furnished either by having a suitable head of water, by a pump, or in any other convenient manner. A pressure of only about nine pounds to the square inch is required; but this may of course be varied to suit circumstances.

The casing P is provided near its lower end, on opposite sides, with seats Z Z for a pair of valves, A³ A³, to the shanks of which, B³, are pivoted the lower ends of levers C³, which are pivoted to brackets D³ upon the sides of the casing, above the valve-seats. Springs E³, the tendency of which are to open the valves, con-

nect the upper ends of the levers C^3 with the body of the casing.

F^3 is a lever pivoted at the upper end of the casing P , and provided at its inner end with an upwardly-extending arm, G^3 . The outer end of the lever F^3 is adapted to engage the upper end of the levers C^3 , holding the latter out from the sides of the casing, and thus keeping the valves closed. When the piston passes below the valves A^3 the arms G^3 are struck by a collar which is loose upon the piston-rod, and which will be presently more fully described. The levers F^3 are thus disengaged from the levers C^3 , the upper ends of which are then forced inwardly by the springs E^3 , thus automatically opening the valves A^3 .

The piston-rod R is provided with a fixed collar, A^2 , under which a loose collar or sleeve, B^2 , is arranged, as shown. The sleeve B^2 is connected by ropes or chains C^2 with a shaft, D^2 , located transversely above the cylinder W , and having a grooved wheel, E^2 , operated by a rope or in any suitable manner.

The tubular piston-rod R is provided with openings F^2 just above the piston V , and below the latter, above the follower T , it is also provided with one or more small openings, G^2 . The revolving casing P is to be surrounded with a cylindrical casing, H^2 , of sheet metal, in order to prevent the atmospheric resistance, which would otherwise be caused by the fan-like action of the said casing when it is in operation rapidly revolved.

The operation of my invention is as follows:
The wood to be ground is fed into the casing P through the door Q , which is then closed tightly. Water is then turned into the cylinder W , passing through the tubular piston-rod and through the openings F^2 in the latter into the casing P , above the piston, which is thus forced downwardly, causing the follower T to press the wood contained in the casing against the stone. To the latter a slow reciprocating motion is imparted, as described, and at the same time the casing containing the wood is revolved rapidly—about five hundred revolutions per minute. Water passes at the same time through the opening G^2 in the piston-rod into the lower part of the casing, where it percolates through the wood, which is thus reduced, by the combined reciprocating motion of the stone and rotary motion of the casing, to an impalpable pulp. When the piston passes below the valve Z , the latter opens, thus causing the water to be discharged from the upper end of the cylinder and run to waste or be disposed of in any suitable manner. The pressure in the upper end of the cylinder thus ceases, and the piston remains stationary. By turning the shaft D^2 the piston-rod, with its attachments, may now be raised and the door Q opened for a fresh supply of wood. The pulp readily passes, in the manner above described, to the receiving tank or tanks.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In a machine for reducing wood to paper-

pulp, the combination, with a flat reciprocating grinding-stone, of a revolving casing containing the wood to be reduced, as set forth. 70

2. In a machine for reducing wood to pulp, the combination of a flat reciprocating grinding-stone, a revolving casing containing the wood to be ground, and mechanism for forcing the latter against the face of the stone, as set forth. 75

3. The combination of the vertical revolving casing, the horizontal reciprocating casing, the grinding-stone arranged in the said horizontal casing, and means for adjusting the said grinding-stone vertically, as set forth. 80

4. The horizontal casing having flanges projecting upwardly from its bottom, set-screws working vertically in its bottom, and discharge-spouts at one or both ends, in combination with the grinding-stone mounted in said casing, as set forth. 85

5. In a wood-grinding machine, the vertical, square, or rectangular casing mounted within a horizontal gear-wheel, in combination with suitable guides or supports for the latter, and operating mechanism, as set forth. 90

6. In a wood-grinding machine, the combination of a vertical revolving casing, a tubular piston-rod moving vertically in the same, and having a piston near its lower end, a follower connected to the lower end of said piston-rod by a universal joint, openings in the tubular piston-rod above the piston, and means for conducting water under pressure into the upper part of the casing through said tubular piston-rod, as set forth. 95

7. The combination of the vertical revolving casing, the tubular piston-rod moving vertically in the same, and having a piston and a follower, as described, and means for conducting water under pressure through the said piston-rod into the said casing, above the piston and between the latter and the follower, as set forth. 100

8. The combination of the vertical revolving casing, the tubular piston-rod moving vertically in the same, and having a piston and a follower, as described, openings in the said piston-rod above and below the piston, a cylinder arranged above the casing and receiving the upper open end of the piston-rod, and means for admitting water under pressure into the said cylinder, and thence through the tubular piston-rod into the casing above and below the piston, as set forth. 105

9. The combination of the vertical revolving casing, the tubular piston-rod moving vertically in the same, and having a piston and a follower, means for admitting water under pressure into the casing above the piston, and a valve arranged in the side of the casing and arranged to be opened automatically when the piston passes below the same, as set forth. 110

10. As an improvement in machines for reducing wood to pulp, the combination of a horizontal reciprocating grinding-stone, arranged in a suitable casing, having spouts at one or both ends for the escape of the pulp, a 115

vertical revolving casing containing the wood to be ground, a tubular piston-rod working in said casing, and having a piston and a follower, means for admitting water under pressure through the said tubular piston-rod into the casing above the piston and between the latter and the follower, an automatic discharge-valve, and suitable operating mechanism, as set forth.

10 11. In a wood-grinding machine, the combination, with the rectangular revolving casing containing the wood to be ground, of a cylin-

drical sheathing for the said casing, whereby the atmospheric resistance caused by the fan-like action of the said casing when revolving rapidly is prevented, as set forth. 15

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOSHUA PRICKETT.

Witnesses:

AMOS HOLGATE,
GEORGE CLARK.