No. 724,880. PATENTED APR. 7, 1903.

E. A. JONES.

METHOD OF EMPTYING BEATING ENGINES.

APPLICATION FILED MAR. 13, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

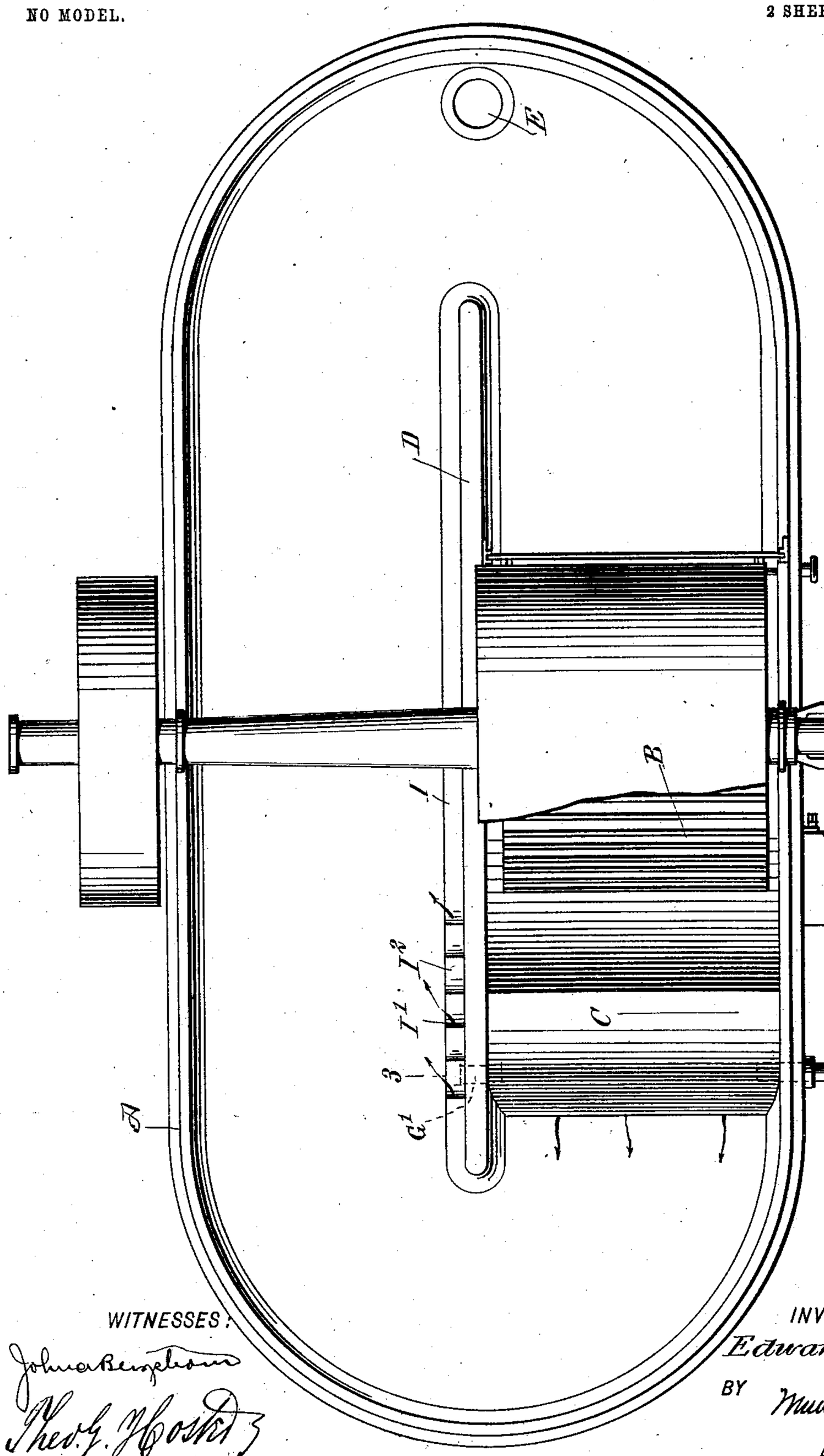

Fig. 1.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2

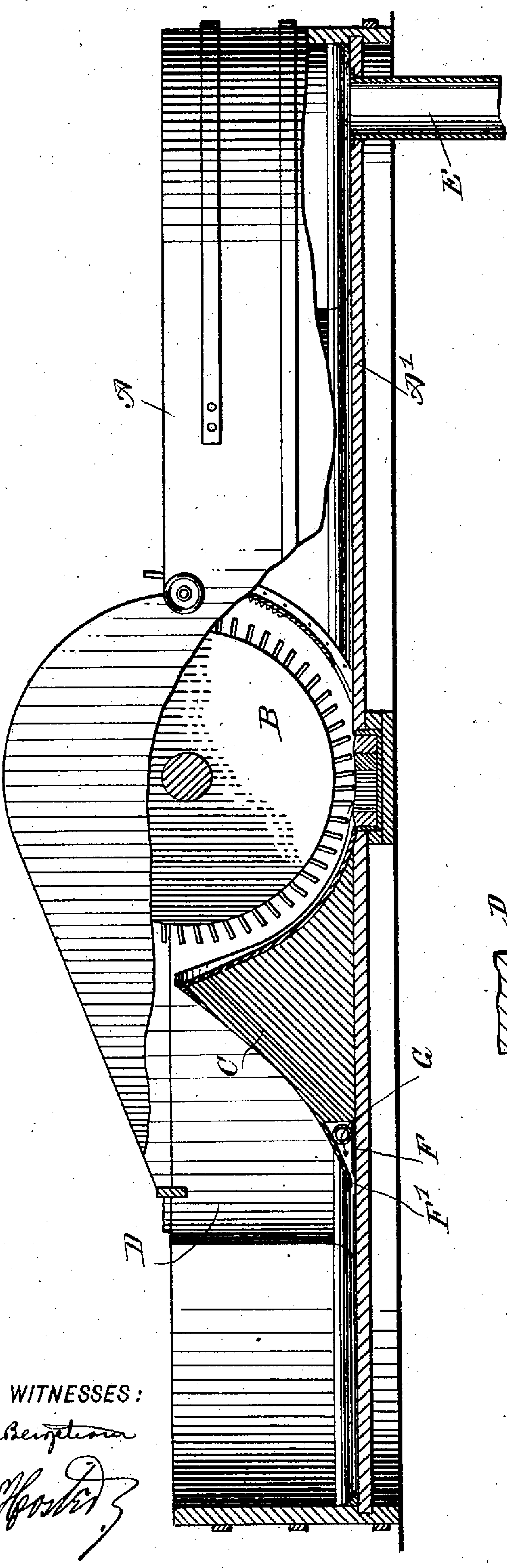


Fig. 4

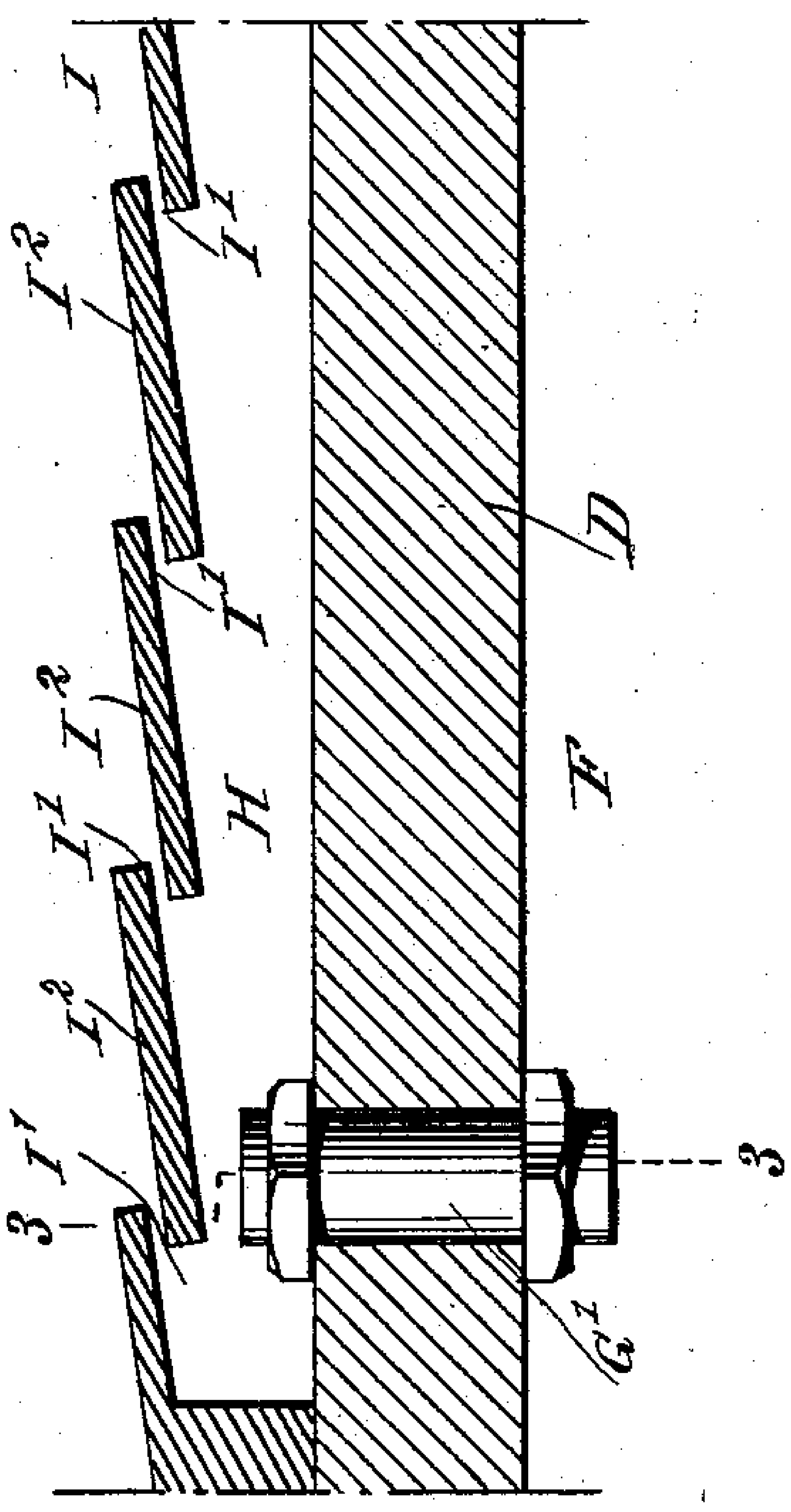
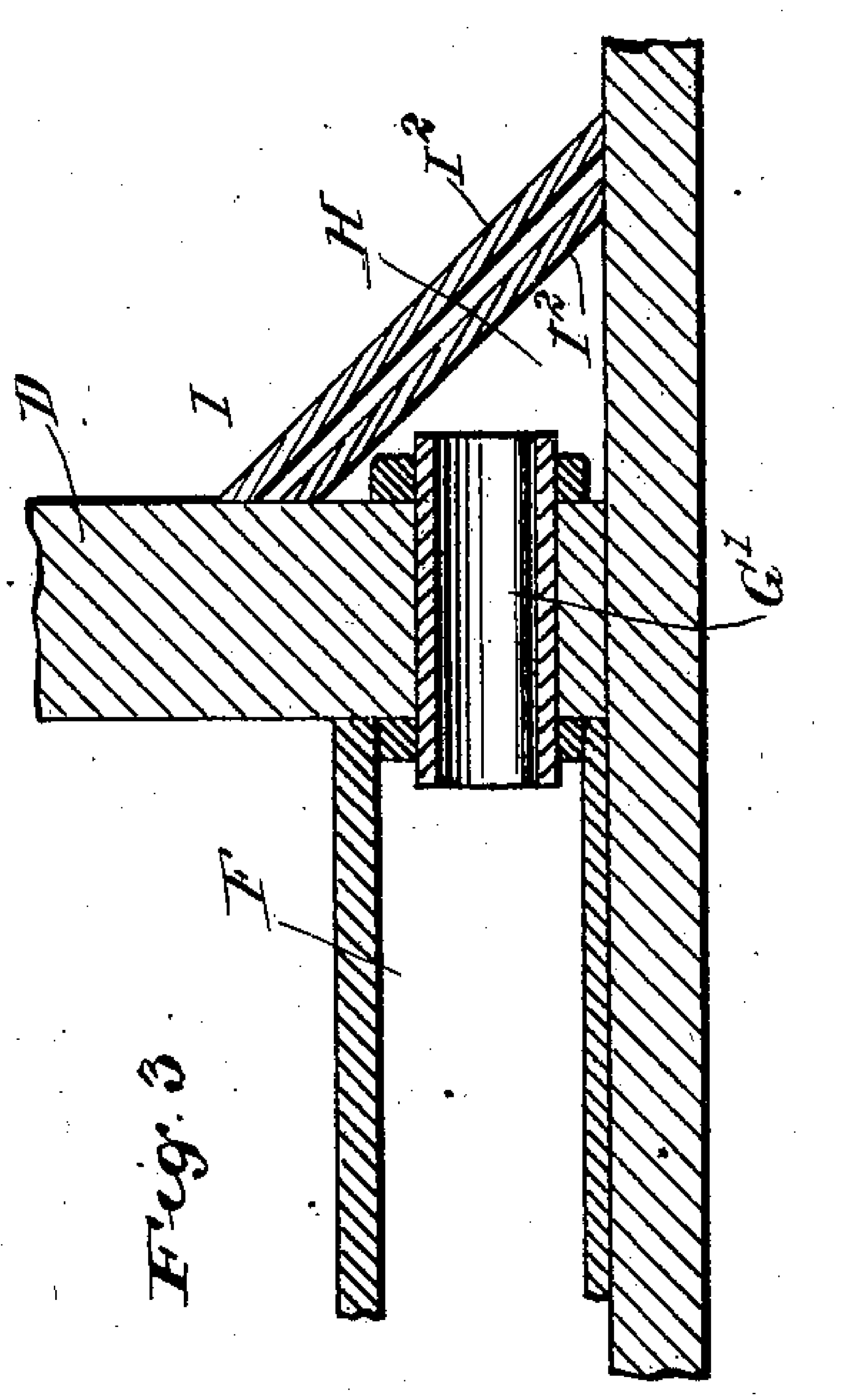


Fig. 3



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD A. JONES, OF PITTSFIELD, MASSACHUSETTS.

METHOD OF EMPTYING BEATING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 724,880, dated April 7, 1903.

Application filed March 13, 1902. Serial No. 98,034. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. JONES, a citizen of the United States, and a resident of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Method of Emptying Beating-Engines, of which the following is a full, clear, and exact description.

The invention relates to the manufacture of paper; and its object is to provide a new and improved method of emptying from beating-engines the finished pulp in a thorough, quick, and economical manner without requiring manually-wielded rakes for moving the pulp to the discharge-pipe of the vat, as heretofore practiced.

The method consists, essentially, in subjecting the pulp in the vat of the beating-engine to the action of a forceful undercurrent to set the pulp in motion and direct it to the discharge-pipe of the vat.

In order to carry this method into effect, I prefer to employ a beating-engine such as shown, for instance, in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the beating-engine, parts being broken out. Fig. 2 is a longitudinal sectional elevation of the same, parts being shown in elevation. Fig. 3 is an enlarged transverse section of part of the same on the lines 3 3 of Figs. 1 and 4, and Fig. 4 is a sectional plan view of the same.

In emptying beating-engines of the pulp as heretofore practiced it was necessary to employ rakes, by the use of which the attendant in charge of the beating-engine raked the finished pulp from the head end of the vat and from the return side down to the discharge-pipe in the lower end of the vat. As such finished pulp is of about a semifluid consistency, it adheres strongly to the sides and bottom of the vat, and hence does not flow readily by its own gravity to the discharge-pipe.

Now in order to empty the vat quickly and without manual labor I subject the bottom portion of the sluggish pulp mass to the action of one or more forceful undercurrents produced by jets of water or other fluid under pressure. I prefer to make use of two distinct undercurrents—one to act on the pulp at the rear of the backfall and the other at the return side of the vat—so that the pulp is readily set in motion and carried to the discharge-pipe of the vat.

The beating-engine shown in the drawings consists of a vat A, having the beating-drum B, backfall C, mid-feather D, and discharge-pipe E, leading from the lower end of the vat at the bottom A′ thereof to carry the pulp to a suitable place of discharge. Under the rear wall of the backfall C is arranged a pressure-chamber F, extending from the front side of the vat A to the mid-feather D, and the said pressure-chamber is formed with a jet-opening F′ for discharging water under pressure into or under the pulp or stock at the bottom of the vat and in the direction in which the pulp or stock is intended to flow. A supply-pipe G opens into the pressure-chamber F and is connected with a suitable supply, such as a tank containing water located overhead, to discharge water under pressure into the pressure-chamber F, the water then passing under pressure out of the jet-opening F′.

A short pipe G′ extends through the mid-feather D to connect the pressure-chamber F with a second pressure-chamber H, formed under a portion of the gusset I at the return side of the mid-feather D, as plainly indicated in the drawings, special reference being had to Figs. 1, 3, and 4. From the pressure-chamber H lead a number of jet-openings I′, formed by making the gusset I in sections I^2, set at angles one to the other and slightly spaced apart at the overlapping ends. (See Fig. 4.)

Now it will be seen that a portion of the water or other fluid passing through the pipe G into the pressure-chamber H passes under pressure into the pressure-chamber H and through the jet-openings I′ under the pulp at the return side of the vat to insure a ready flow of the pulp down to the discharge-pipe E. The jet-openings I′ may also be formed by perforations in the sections I^2 and are preferably so located as to send the jets of water laterally in fan shape to reach the entire lower portion of the mass flowing down the return side of the vat. Thus when the water is turned on in the pipe G the water flowing out under pressure from the pressure-chamber F imparts an initial motion to the pulp, so as to start the latter around the up-

per end of the vat A, and then the jets from the openings I′ aid the downward flow of the pulp to insure a rapid emptying of the pulp from the vat without the assistance of rakes wielded by the attendant of the machine.

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

1. The herein-described method of emptying beating-engines, consisting in subjecting the bottom portion of the pulp in the vat to the action of a jet of a fluid under pressure at a point substantially in the immediate rear of the backfall to produce an undercurrent to carry the pulp around the upper end of the vat and down on the return side of the mid-feather to the discharge end of the vat, as set forth.

2. The herein-described method for emptying beating-engines, consisting in subjecting the bottom portion of the pulp in the vat to the action of a jet of water under pressure to produce an initial undercurrent at the rear end of the backfall, to move the pulp around the upper end of the vat to the return side thereof, and then subjecting the pulp on the return side to the action of jets of water under pressure to produce a second undercurrent, to float it to the discharge-pipe at the lower end of the vat, as set forth.

3. The herein-described method of emptying beating-engines, consisting in subjecting the bottom portion of the pulp in the vat to the action of a jet of water in sheet form to produce an initial movement of the pulp at the rear end of the backfall to carry it around the upper end of the vat and onto the return side of the mid-feather, and then subjecting the pulp on the return side of the mid-feather to a plurality of lateral jets of water in sheet form and issuing from the mid-feather side of the vat, to continue the movement of the pulp to the discharge end of the vat, as set forth.

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

EDWARD A. JONES.

Witnesses:
THEO. G. HOSTER,
EVERARD BOLTON MARSHALL.