

No. 702,212.

Patented June 10, 1902.

J. HIGGINBOTTOM.
WHEAT CLEANING MECHANISM.

(Application filed Dec. 30, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

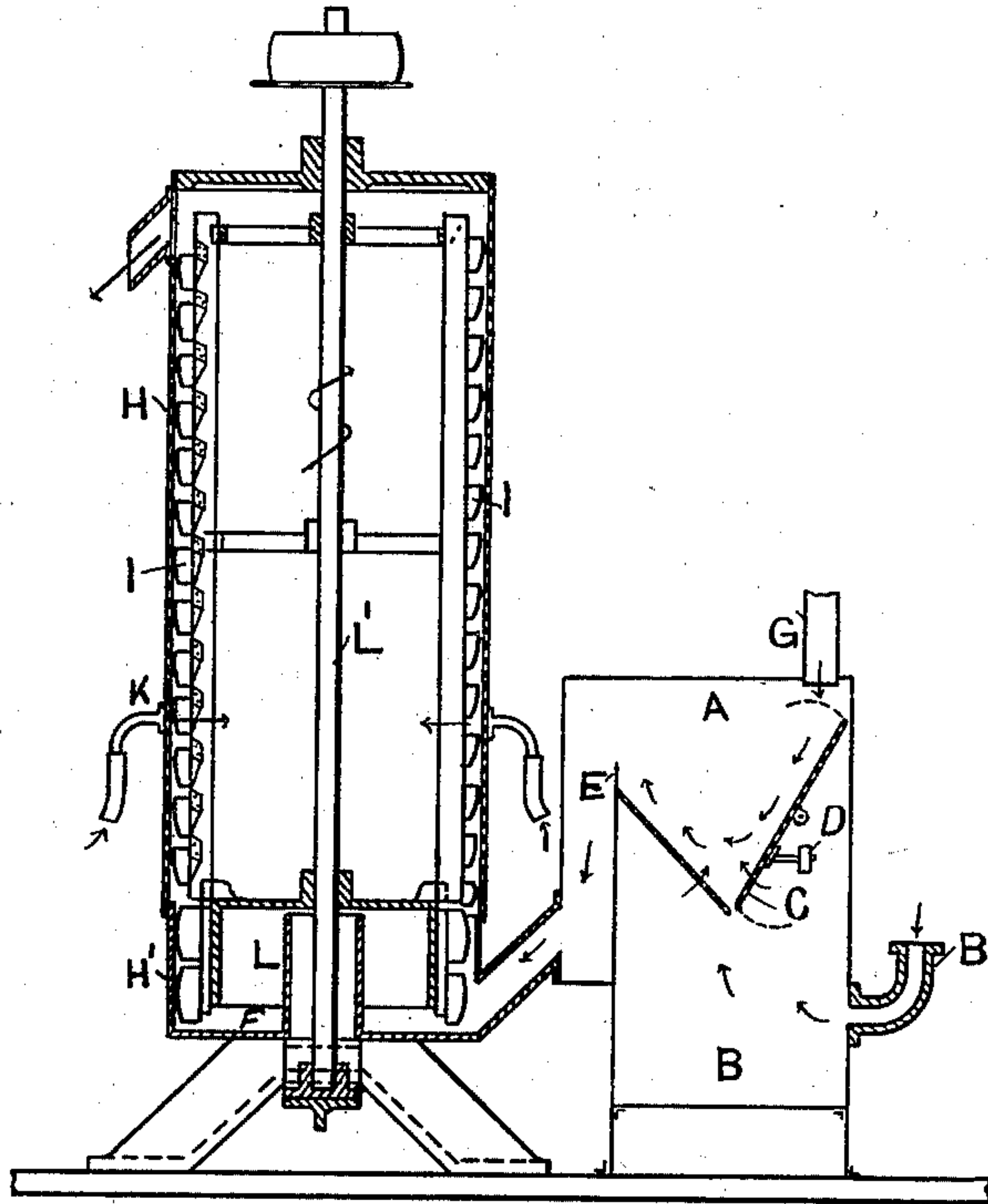
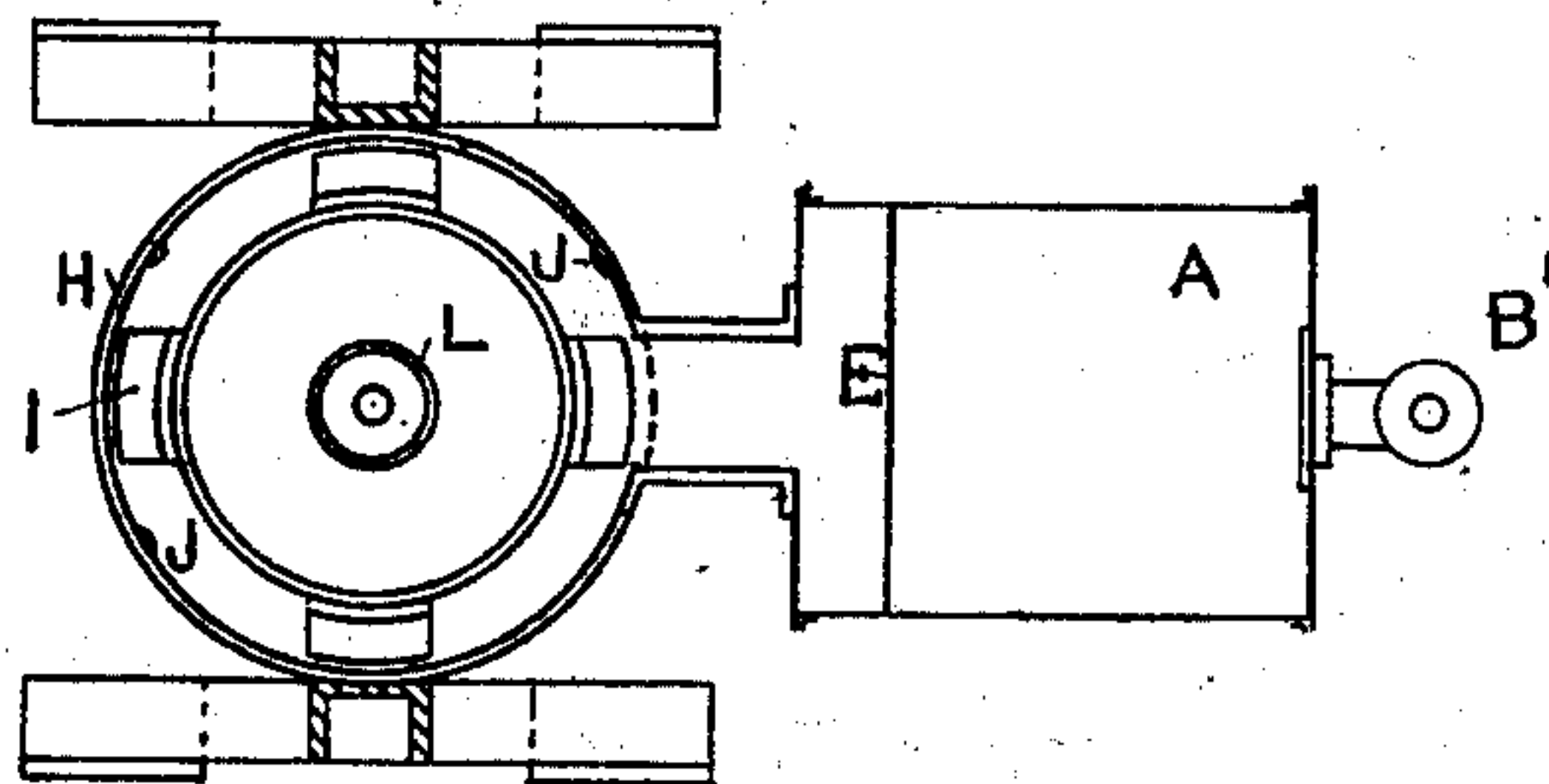


Fig. 2.



Witnesses.

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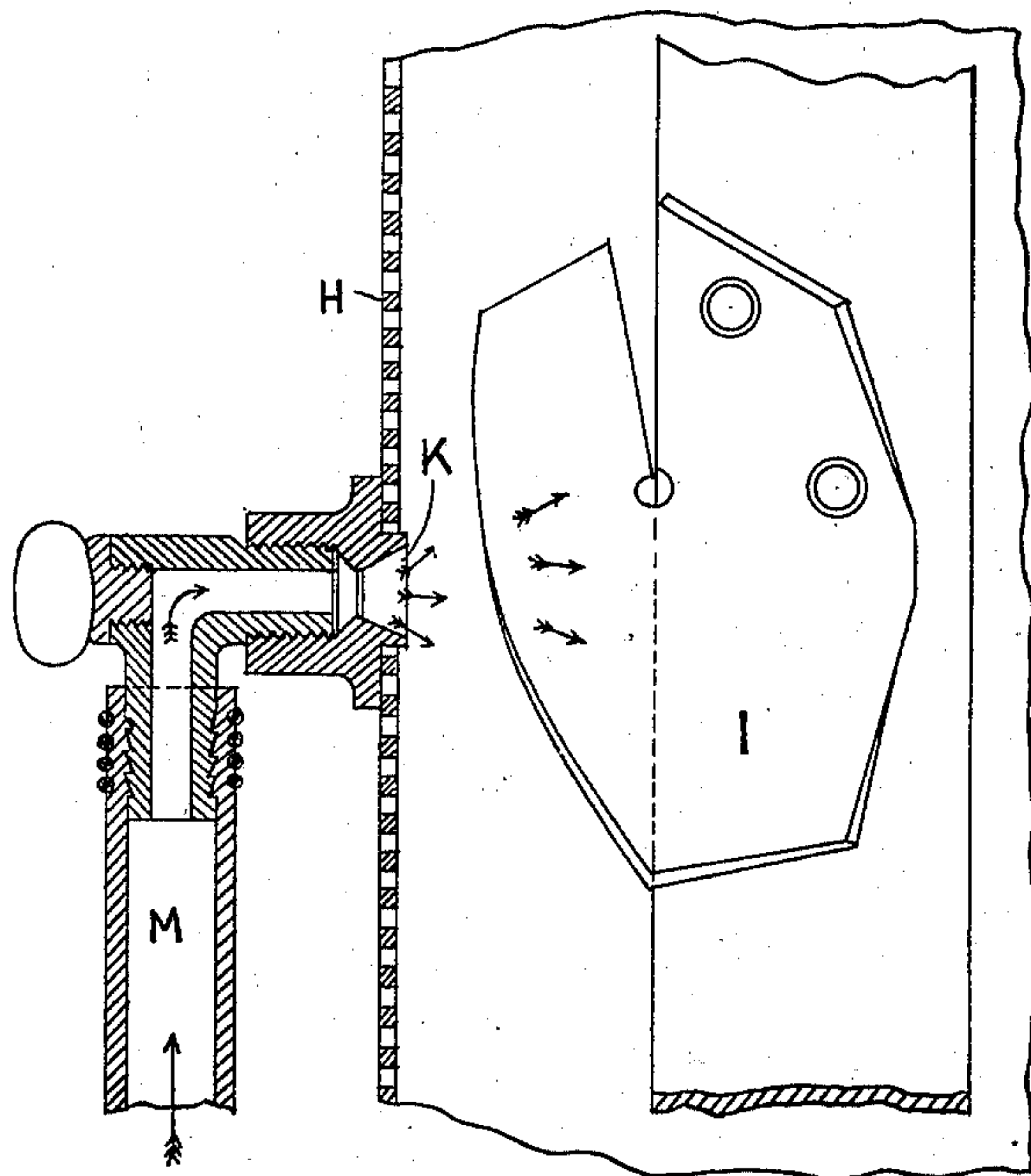


FIG. 3.

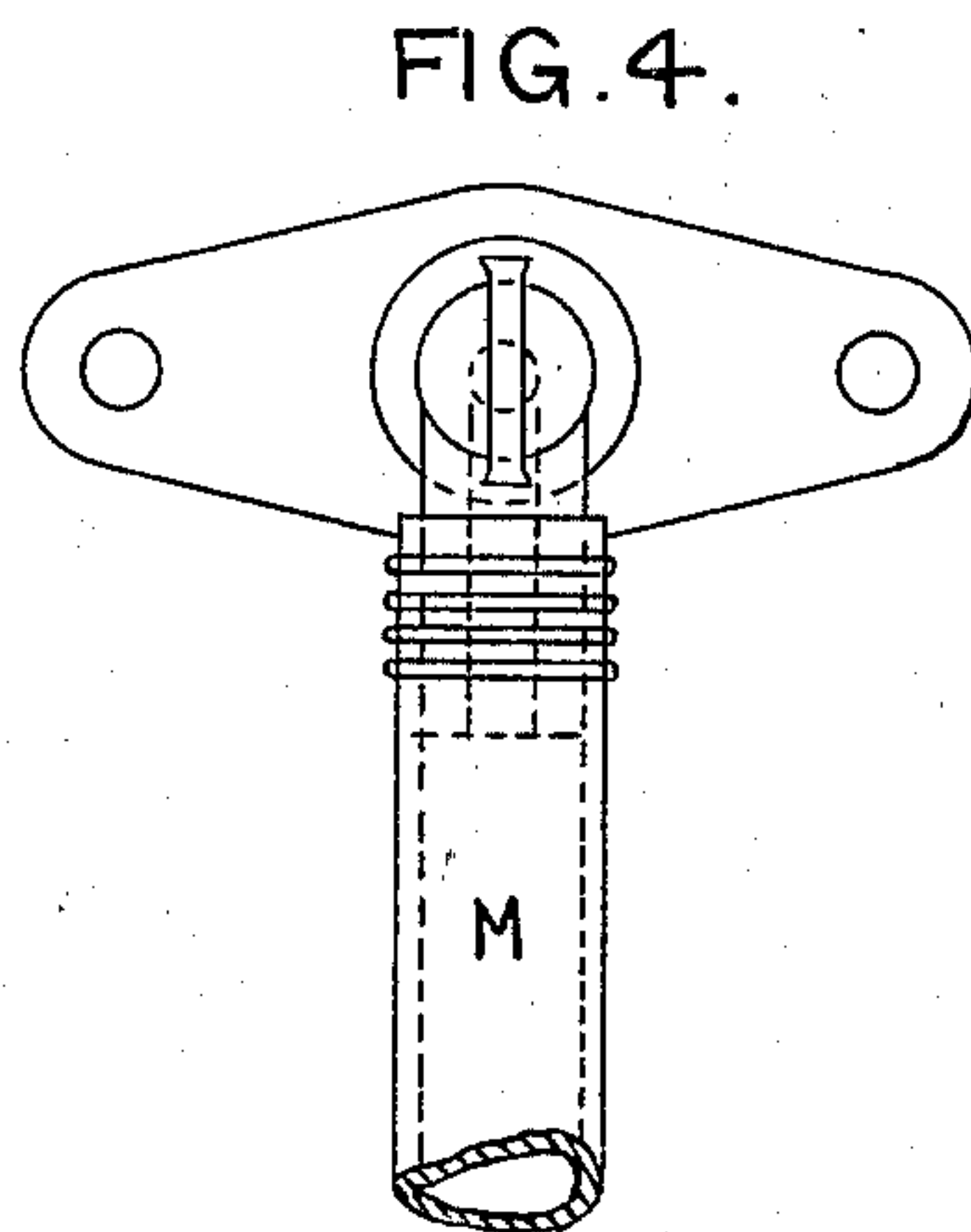


FIG. 4.

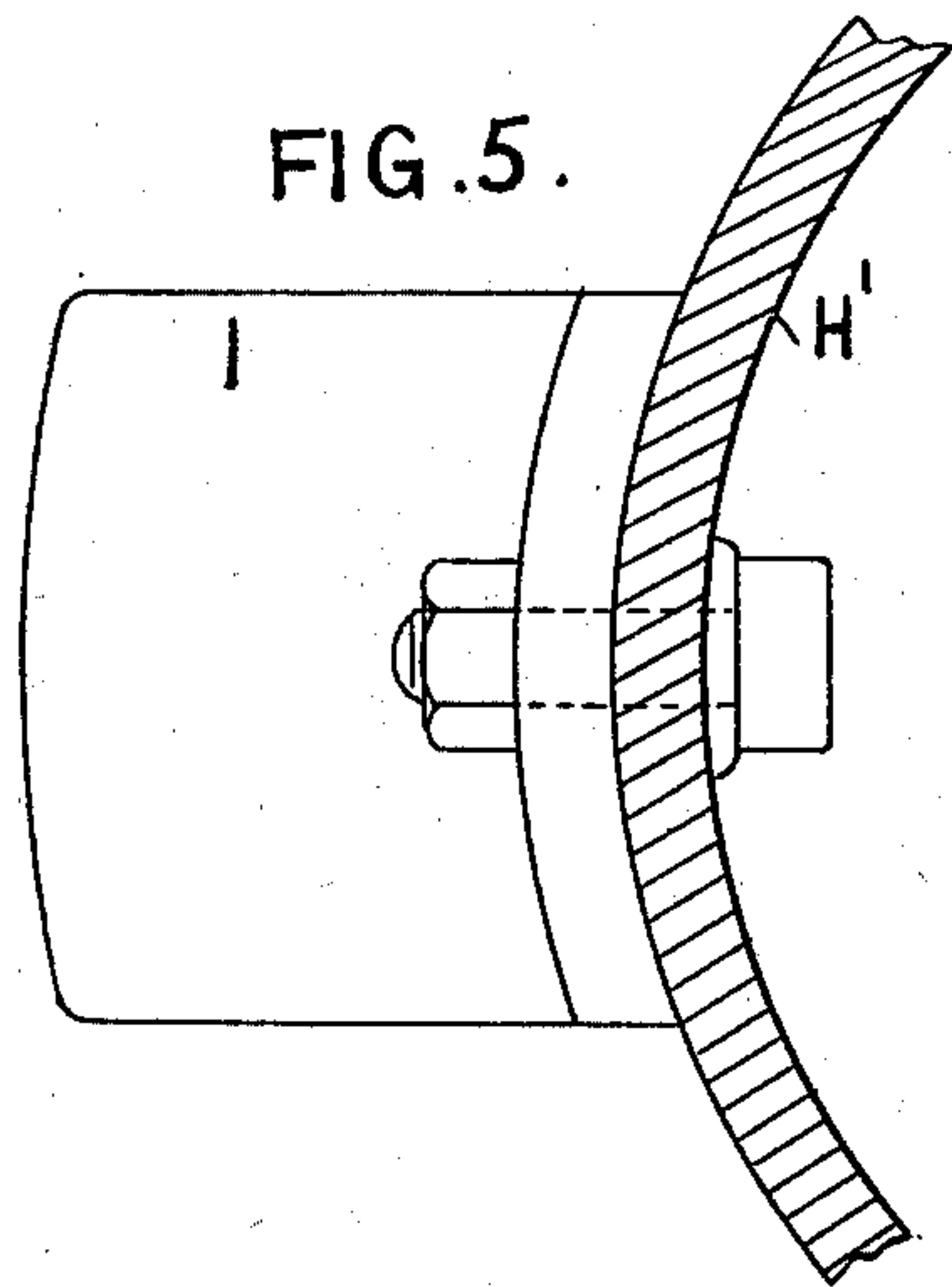


FIG. 5.

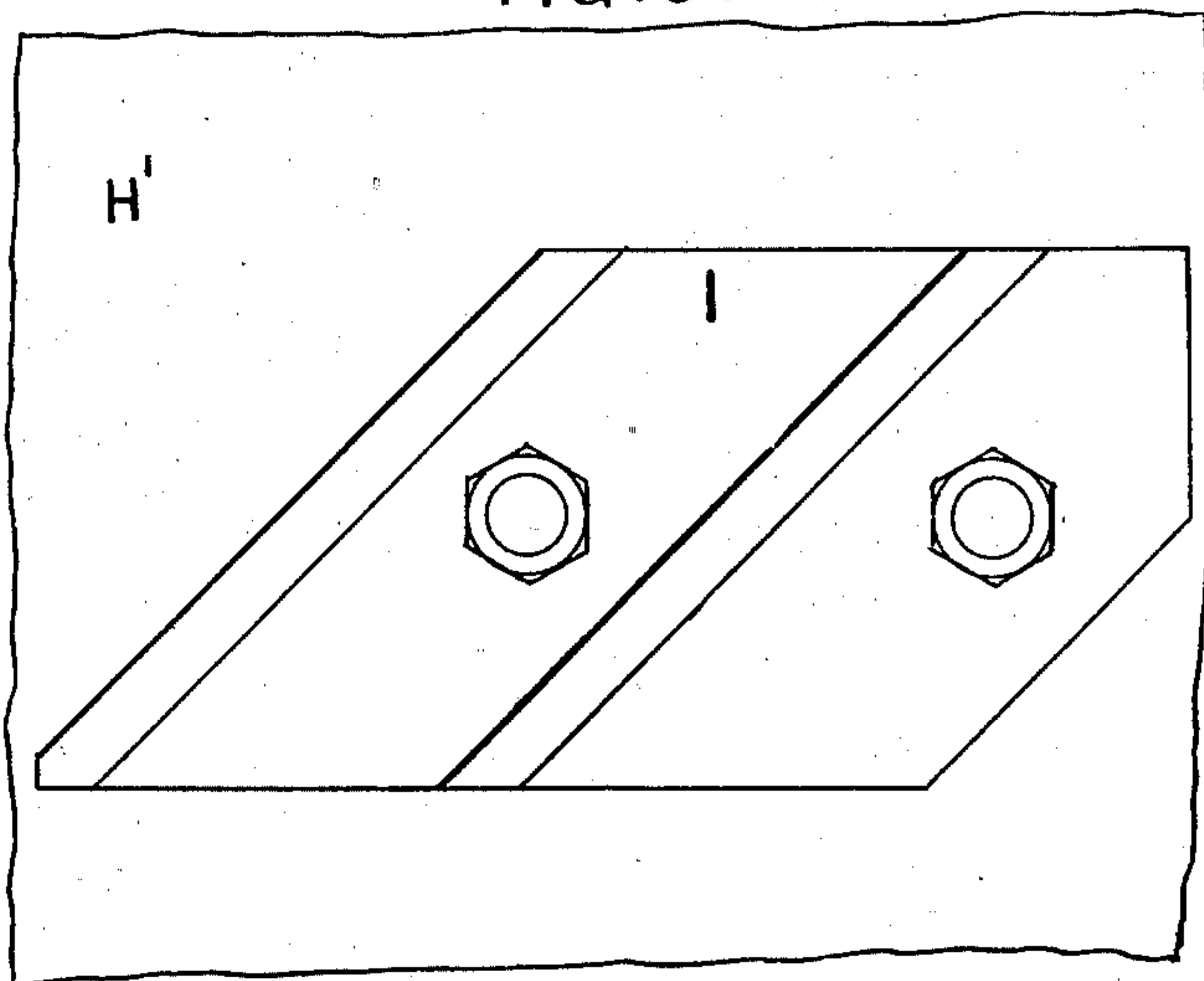


FIG. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES HIGGINBOTTOM, OF LIVERPOOL, ENGLAND.

WHEAT-CLEANING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 702,212, dated June 10, 1902.

Application filed December 30, 1897. Serial No. 664,702. (No model.)

To all whom it may concern:

Be it known that I, JAMES HIGGINBOTTOM, a subject of the King of Great Britain, residing at Liverpool, in the county of Lancaster, England, have invented certain new and useful Improvements in Wheat-Cleaning Mechanisms, of which the following is a specification.

My improvements are intended to be applied to machines for the purpose of separating stones and the like from wheat by means of currents of water; also, for washing and scouring mud and dirt from wheat while immersed in water and for rinsing and for draining the wheat.

The invention is illustrated by the accompanying drawings, in which—

Figure 1 is a vertical section; Fig. 2, a plan of my machine. Figs. 3 and 4 are enlarged views of rinsing-jets, and Figs. 5 and 6 similar views of beaters.

In carrying out my invention I form an upper water-chamber A, having one or more of its sides or walls formed with perforations for the passage of water, and I also form a lower water-chamber B, from which water passes through the said perforations into the upper water-chamber. The water is supplied to the lower water-chamber by the pipe B'. I place one or more hanging valves C between the upper and lower water-chambers and below the grain-admission pipe, and I balance the valve or valves by means of weight D in such manner that any stones or heavy material which become deposited in the upper chamber are permitted to fall automatically into the lower chamber by means of the said balanced valves. In some cases I make the valve or valves with perforations of sufficiently small size to prevent the passage of wheat, so that the water from the lower chamber may also flow through the perforated valve or valves into the upper water-chamber. The mode of operation of this part of my invention is as follows: A stream of water is passed into and through the lower water-chamber and from thence through the perforated walls or sides or valves into the upper chamber also. Such water then passes in a stream over a sill or lip E, arranged at the top of the hopper-shaped bottom of the upper water-chamber A—that is, at the side of chamber

A—or through an aperture in the walls of the upper water-chamber into the second portion of the apparatus, where the softening of mud and the scouring and washing of the wheat are performed in an annular washing-chamber F. The wheat containing stones and mud is fed by spout G into the stream of water flowing through the upper water-chamber A. The stones by means of gravity sink to the bottom of the upper chamber and are automatically discharged therefrom by the balanced hanging valves into the lower water-chamber B. The stones which pass into the lower water-chamber are removed automatically therefrom by means of an elevator or worm or screw, (not shown,) as is well understood by millers. The wheat and the mud are carried by the current of water over the sill or through the aperture, as above described, into the second portion of the machine.

The second portion of the machine is constructed with a vertical stationary perforated cylinder H, having revolving beaters I in its interior, with flights set at an angle for the purpose of causing the wheat being treated to become scoured and washed and to rise inside the cylinder from the bottom to the top and to be discharged therefrom through an aperture in the top of the cylinder. Such beaters are set out in detail in Figs. 5 and 6. I make such stationary cylinder with either parallel or conical sides. I also make the lower portion H' of the cylinder H impervious, and it may have ribs or corrugations J on its interior surface. The upper portion H of the cylinder is formed of woven gauze or perforated metal. I make one or more apertures K in the perforated cylinder above the lower impervious part for the admission of jets of water to the interior of the cylinder for the purpose of rinsing the washed and scoured and uprising wheat with clean water. These jets are shown on a larger scale in Figs. 3 and 4, in which M is a half-inch pipe. In some cases I may introduce clean water through the shaft L', which in such cases would be made hollow and fitted with tubes to form jets by rinsing in the interior of the machine. I use the perforated portion of the cylinder above the rinsing-jet apertures for the purpose of draining the wheat by means

of the centrifugal force imparted to the up-
rising wheat by the revolving beaters and
flights. In some cases I may use these rins-
ing-jets upon a washing-cylinder in which
the wheat is descending instead of uprising.

5 The action of the second part of the appa-
ratus is as follows: The wheat, mud, and wa-
ter enter F at the lower impervious part H'
of the cylinder and are driven by the revolv-
10 ing beaters and flights I around the interior
of the cylinder. Thereby the mud becomes
softened, broken up, and dissolved in the
water. The wheat and the muddy water rise
up the interior of the cylinder until they reach
15 the perforations in the cylinder. The muddy
water then passes through the perforations.
The wheat continues to rise, and as it is pass-
ing the jets K of clean water it becomes
rinsed. Also I form the impervious portion
20 H' of the cylinder with an interior flange or
rim L to prevent the water and wheat from
flowing out at the center of the cylinder.

The water adhering to the wheat after pass-
ing the water-jets is drained off by centrifu-
25 gal force through the perforations in the up-
per part of the cylinder, the beaters traveling
at a speed of about two thousand five hun-
dred feet a minute.

I declare that what I claim is—

30 1. In a grain-scouring machine the combi-

nation of the upper water-chamber A, having
a perforated hopper-shaped bottom, and an
aperture at its side, the lower water-chamber
B, pipe B' for admission of water under pres-
sure to chamber B, the grain-admission pipe 35
G at top of chamber A, and weighted valve
C at the lower part of chamber A, whereby
the grain, mud and stones are caused to fall
through the water to the bottom of chamber
A where mud and stones are automatically 40
delivered through the weighted valve to the
chamber B, while the grain flows with the
water over the aperture at the side of cham-
ber A.

2. The combination with a stoning device, 45
of a vertical cylinder H and H', the lower
portion H' being imperforate, the upper por-
tion H being perforate, beaters I, all set at
an angle, adapted to rotate at high speed
within this cylinder, and jet-pipes K placed 50
in the perforate portion of the cylinder, sub-
stantially as and for the purposes described.

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

JAMES HIGGINBOTTOM.

Witnesses:

W. H. BELSTON,
J. McLACHLAN.