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Patented May 20, 1902.

J. H. BAKER.

BLOW-OFF NOZZLE FOR PAPER MILL MACHINERY.

(Application filed Sept. 10, 1901.)

(No Model.)

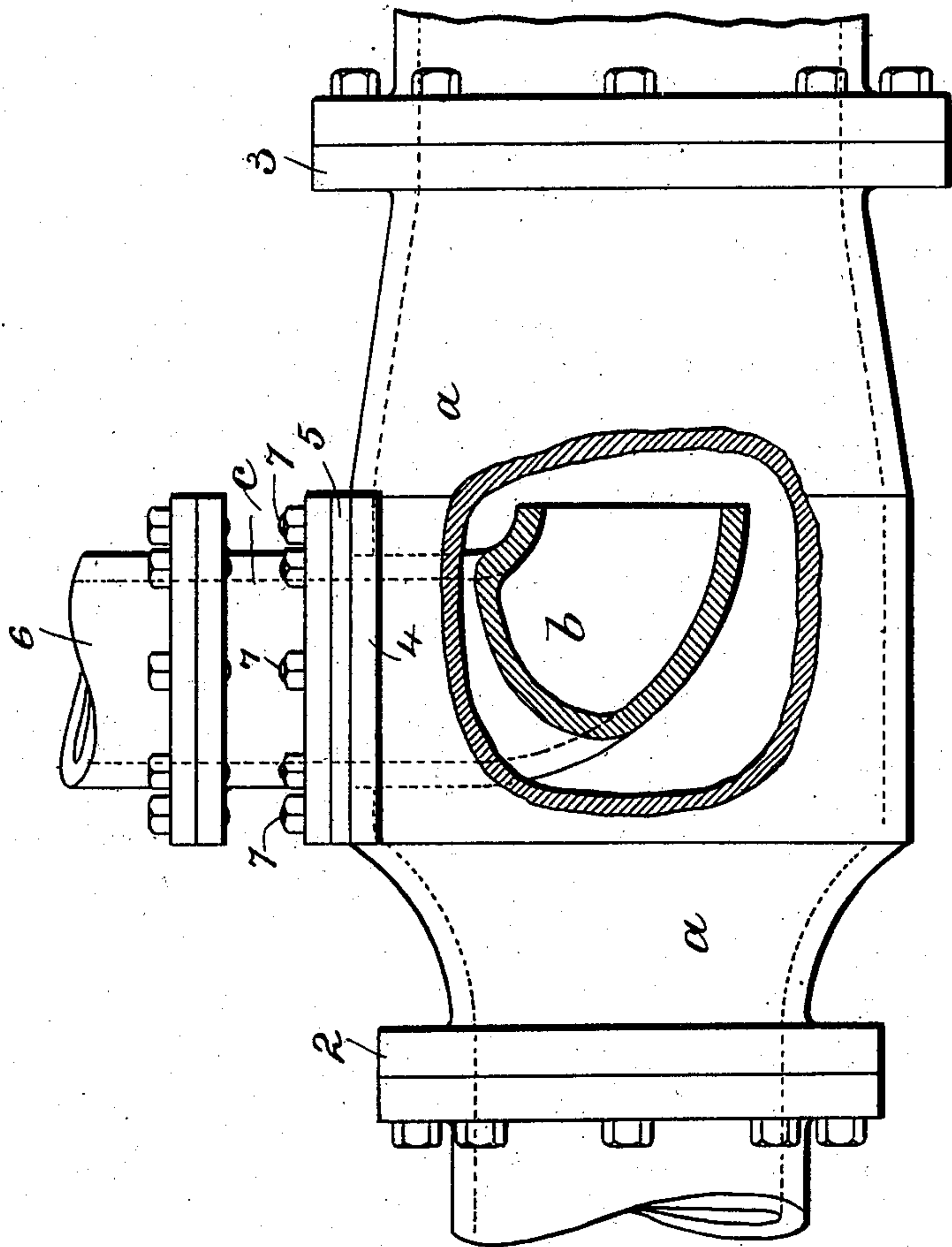


Fig. 1.

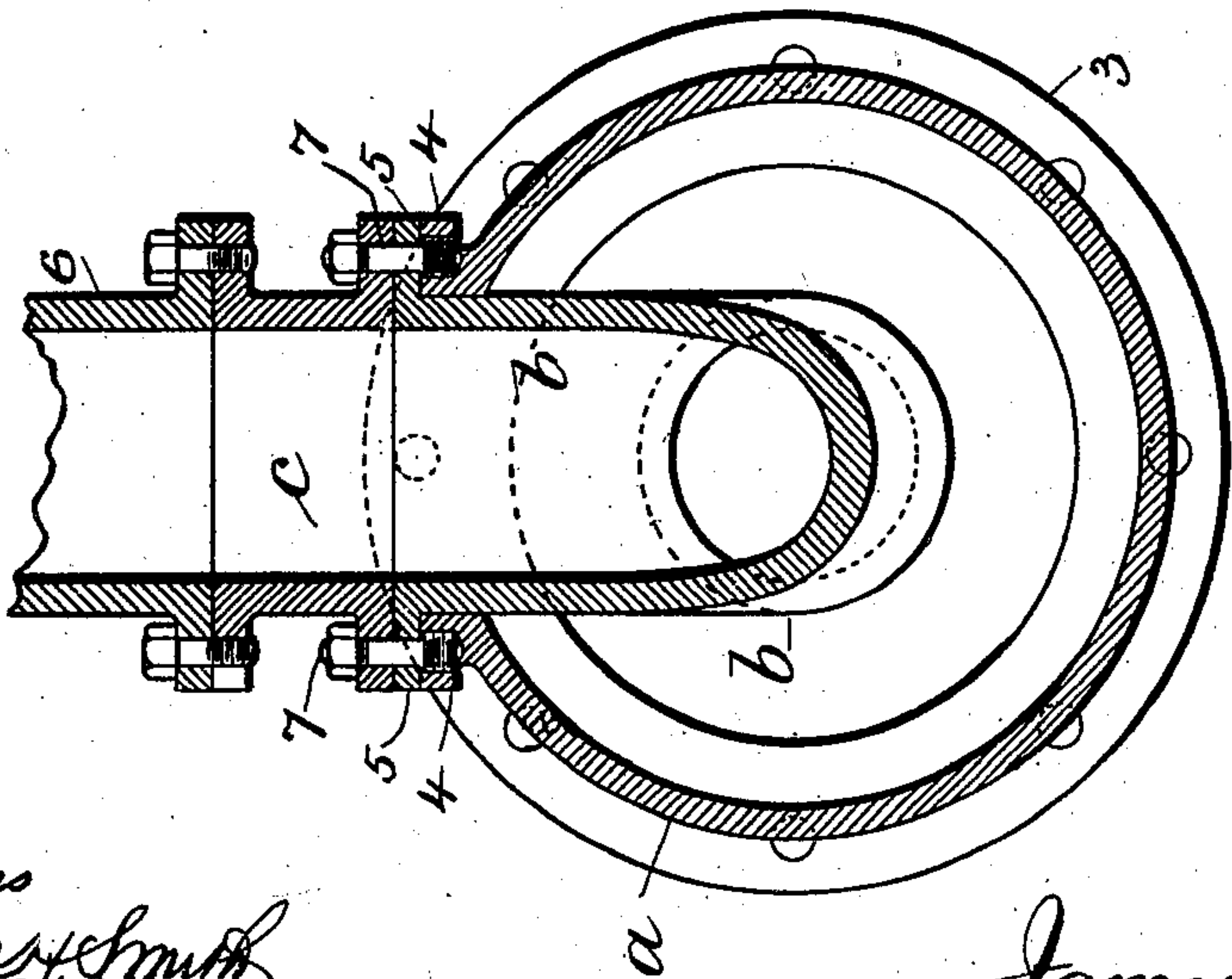


Fig. 2.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## BLOW-OFF NOZZLE FOR PAPER-MILL MACHINERY.

SPECIFICATION forming part of Letters Patent No. 700,469, dated May 20, 1902.

Application filed September 10, 1901. Serial No. 74,873. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. BAKER, a citizen of the United States, residing at Saratoga Springs, in the county of Saratoga and State of New York, have invented an Improvement in Blow-Off Nozzles for Paper-Mill Machinery, of which the following is a specification.

In paper-mill machinery the hot pulp passes from the bottom of the pulp-digester to the blow or receiving tank. These blow-tanks have an opening from the top of the tank to the roof or open air, and the hot pulp is largely charged with sulfurous fumes, which escape from the open upper end of the blow-tank and become very objectionable, not only in the immediate vicinity of the blow-tank, but often in the surrounding neighborhood.

The object of my invention is to reduce these sulfurous fumes, so as to overcome the aforesaid objection. In carrying out my invention I employ a blow-off nozzle and place the same in a line of piping from the bottom of the pulp-digester to the blow or receiving tank, and by means of this nozzle I introduce water into the hot pulp as the same passes from the digester to the tank. The water mixes with the hot pulp, cools the same, and takes up the sulfurous matter either in solution or by a mechanical mixture, so as to prevent the fumes when the pulp reaches the tank escaping from the open end and the sulfurous fumes becoming objectionable. I employ a cast body which advantageously tapers toward the ends, with the opening in the inlet end smaller than the opening in the exit end. This cast body is connected either in the line of piping from the pulp-digester to the blow-tank or one end may be connected directly to the pulp-digester and the other end to the line of piping. The upper portion of the cast body is made with a flange and an opening within the same, and I employ a bend passing down into the body having a flange resting upon the aforesaid flange and an orifice that points toward the delivery-opening of the body and toward the line of piping to the blow-tank. This orifice advantageously comes directly in the center of the body. A nipple is connected to the flange of the bend and a supply-pipe for water connected to the nipple. Bolts hold the water-

pipe and nipple to the cast body, and by these devices water is admitted through the bend into the center of the cast body and into the center of the moving mass of hot pulp on its way from the digester to the blow-tank. The water may be admitted in any desired quantity and at any required or advantageous pressure.

In the drawings, Figure 1 is a side elevation, partially broken open, illustrating my invention; and Fig. 2 is a vertical cross-section of the same.

The cast body *a* preferably tapers toward the ends. I provide a flange 2 at one end, which comes toward the pulp-digester, and at which flange the cast body is either directly connected to the pulp-digester or may be connected in the line of piping extending therefrom to the blow-tank. The cast body at the other end is provided with a flange 3, by which the same is connected to the pipe in the line of piping and which pipe extends to the blow-tank. The inlet-opening at the flange 2 is advantageously appreciably smaller than the opening at the flange 3, and on the upper portion of the cast body I provide a flange 4, having a flat face and an opening into the body within the flange. The bend *b* passes down through this opening into the body, and the same is tubular, with a flange 5 resting on the flange 4, and the center of the orifice of the bend is advantageously in the axial center of the cast body and the orifice pointed toward the flange 3 and toward the pipe extending to the blow-tank.

I prefer to employ a double-flanged nipple *c*, to which the water-pipe 6 is connected in any desired manner. The top bolts 7 screw into the flange 4 and extend through the flange 5 of the bend *b* and through the adjacent flange of the nipple, and nuts on the bolts 7 hold the said flanges together to firmly connect the cast body, the bend, and the nipple, and packings may be interposed between these flanges, if desired.

Water to be mixed with the hot pulp passes through the water-pipe, the nipple, and through the bend *b* into the center of the cast body, and its direction as it emerges from the bend is the same as that of the moving pulp. It is injected into the center of the mass of



hot pulp and mixed thoroughly with the same, the water and pulp flowing on to the blow-tank. The water absorbs or mechanically takes up the sulfurous matter in the hot pulp and reduces to a minimum the sulfurous fumes that may escape from the open upper end of the blow-tank as the mass of material pours into the tank, the water performing the double function of cooling the pulp and taking up therefrom the sulfurous matter.

The water may be drained or otherwise removed from the mass of pulp in the blow-tank in any desired manner.

I claim as my invention—

1. A blow-off nozzle for paper-mill machinery, comprising a cast body adapted to be connected in the line of piping from the pulp-digester to the blow-tank and having an opening in the surface thereof and a bend passing down into the cast body through said opening with the orifice of the bend in the center of the cast body and set toward the blow-tank, and means for connecting the bend to the cast body and for connecting to the bend a pipe for supplying water, substantially as set forth.

2. A blow-off nozzle for paper-mill machinery comprising a cast body having flanged ends and tapered toward the ends with the openings in the ends of different apertures, an opening in the side of the body, and a flange around the opening, a bend passing

through said opening and having a flange resting on the latter flange with the orifice of the bend coming at the center of the cast body and opening in the direction toward the larger end of the cast body and toward the pipe extending to the blow-tank, and means for connecting the bend to the cast body and for connecting to the bend a supply-pipe for water, substantially as set forth.

3. A blow-off nozzle for paper-mill machinery, comprising a cast body having flanged ends and tapered toward the ends with the openings in the ends of different apertures, an opening in the side of the body and a flange around the opening, a bend passing through said opening and having a flange resting on the latter flange with the orifice of the bend coming at the center of the cast body and opening in the direction toward the larger end of the cast body and toward the pipe extending to the blow-tank, and a double-flanged nipple resting upon the flange of the bend and bolts for connecting the parts together, and a pipe for supplying water to the bend connected to the double-flanged nipple, substantially as set forth.

Signed by me this 6th day of September, 1901.

JAMES H. BAKER.

Witnesses:

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