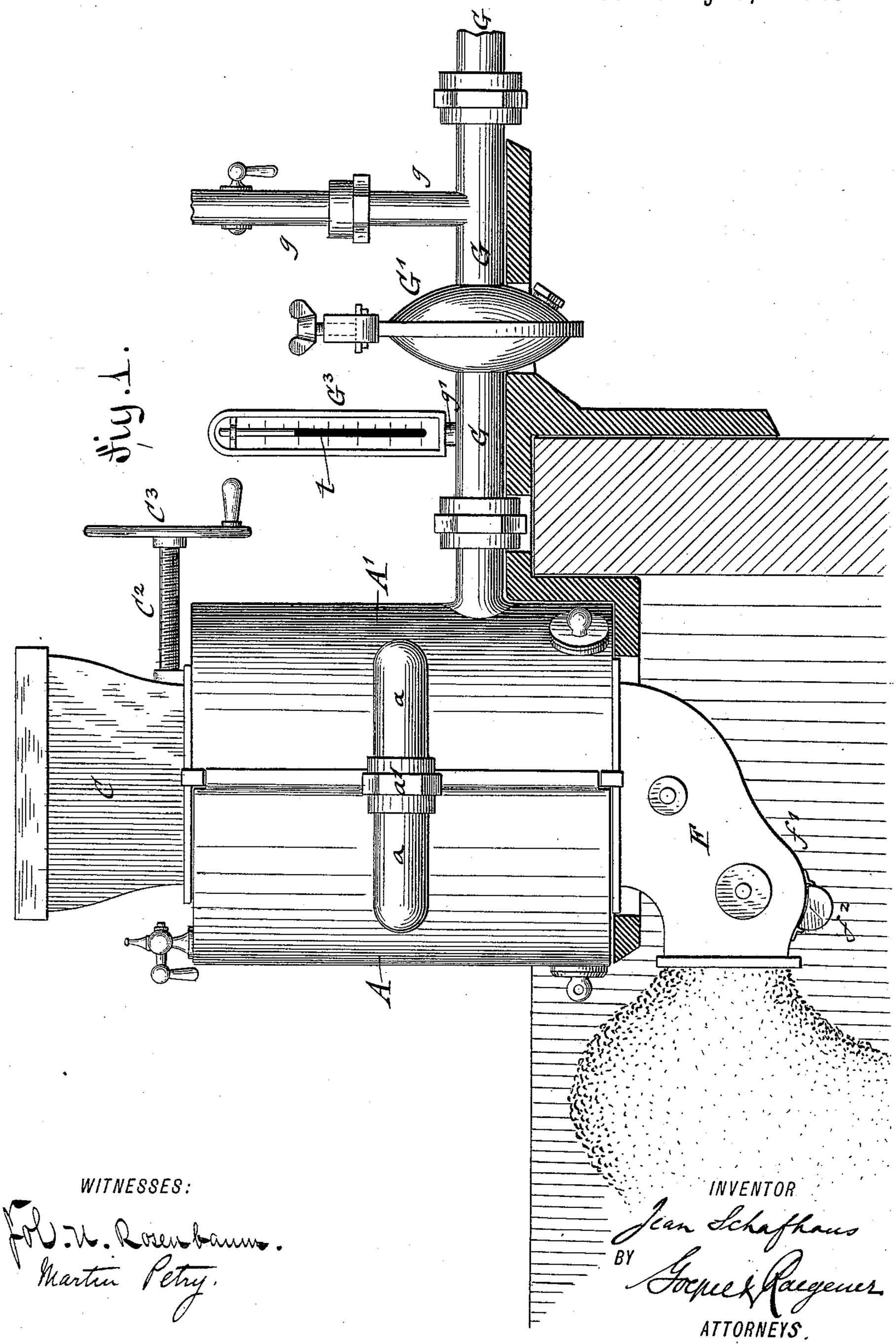
(No Model.) 3 Sheets—Sheet 1.

J. SCHAFHAUS.

MASHING MACHINE.

No. 431,624. Patented July 8, 1890.



WITNESSES:

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Martin Petry.

INVENTOR

Jean Schafhaus

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ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

J. SCHAFHAUS.

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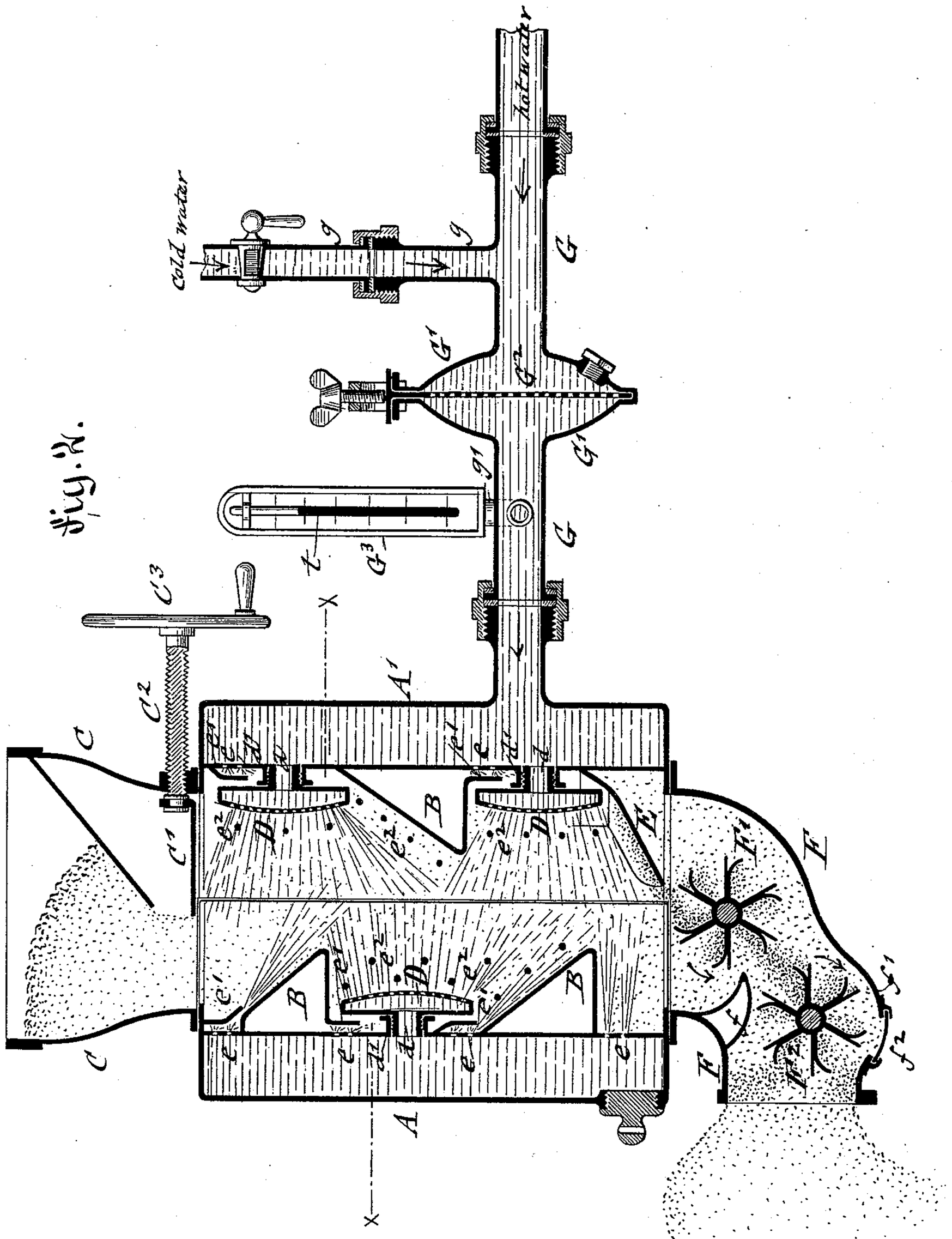
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

J. SCHAFHAUS.

MASHING MACHINE.

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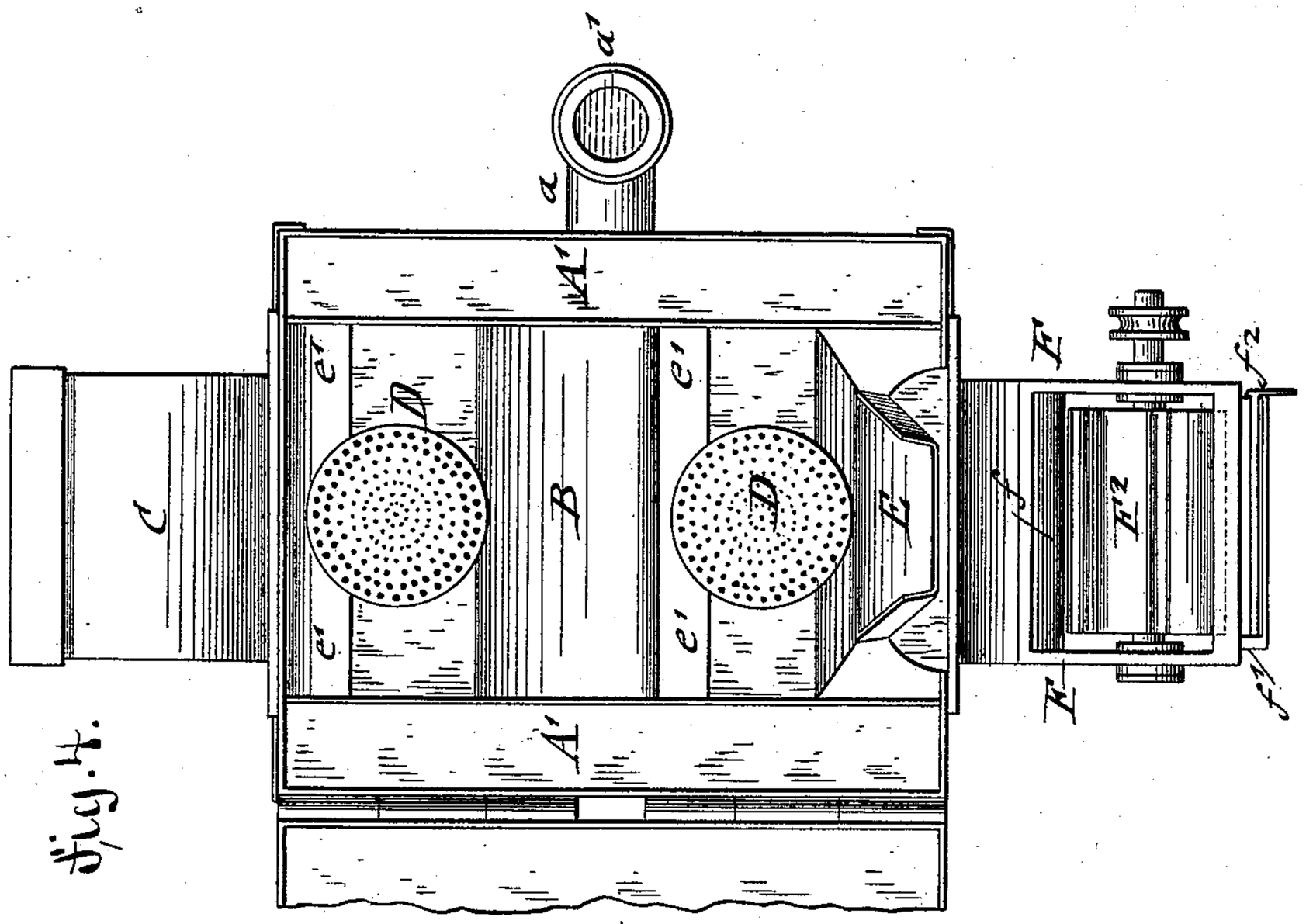

Fig. 4.

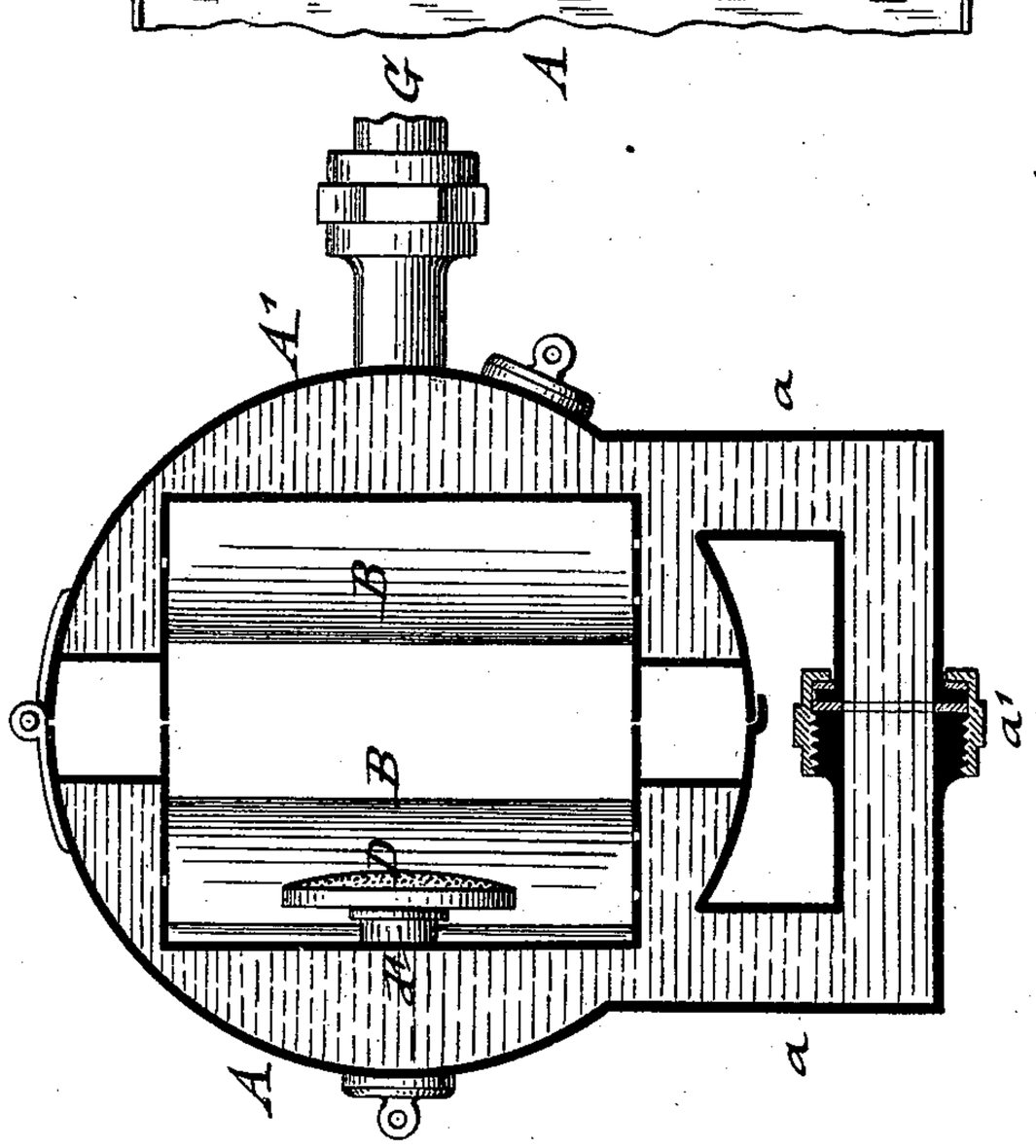

Fig. 3.

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UNITED STATES PATENT OFFICE.

JEAN SCHAFHAUS, OF NEW YORK, N. Y.

MASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 431,624, dated July 8, 1890.

Application filed May 29, 1889. Serial No. 312,547. (No model.)

To all whom it may concern:

Be it known that I, JEAN SCHAFHAUS, of the city, county, and State of New York, and a citizen of the United States, have invented certain new and useful Improvements in Mashing-Machines, of which the following is a specification.

This invention relates to certain improvements in the mashing-machine for brewers for which Letters Patent were granted to me, numbered, respectively, 148,508 and 185,702, and dated March 10, 1874, and December 26, 1876.

The object of this invention is to secure a thorough saturation of the malt with the hot water used in the mashing operation.

In the accompanying drawings, Figure 1 represents a side elevation of my improved mashing-machine. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a horizontal section on line *x x*, Fig. 1; and Fig. 4 is an interior elevation of one half of the apparatus, the other half being partly broken away.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A A′ represent the two halves or sections of my improved mashing-machine, which are hinged together at one end and connected at the opposite end by knees *a a* and a screw-coupling *a′*. Each half of the mashing-machine is provided with a hot-water jacket and provided at its inner wall with one or more inclined shelves or "bridges" B B. The bridges of one section A are arranged to alternate with the bridges of the other section A′, so that the ground or crushed malt, which is supplied by a top hopper C, is alternately conducted from one side to the opposite side of the mashing-machine.

To regulate the supply of malt to the interior of the mashing-machine, the bottom slide C′ of the hopper C is provided at its rear end with an upwardly-bent flange, to which is swiveled an adjusting screw C^2, having a hand-wheel C^3 at its outer end. The screw C^2 turns in a threaded socket at the base of the hopper C and facilitates the accurate adjustment of the slide, so that the proper supply of malt to the machine is kept up even when operated by unskilled hands, which with the slides heretofore in use either supply a too large or a too small quantity of malt to the machine. The section A is provided in the space intermediately between the inclined shelves or bridges B B with a rose-shaped detachable sprinkler D, which is screwed by its threaded neck *d* into a threaded socket *d′* at the inner wall of the section A. The section A′ is provided respectively above and below its inclined shelf or bridge with a similar sprinkler D, which is screwed in a like manner into sockets of the inner wall of the section A′. The sprinklers D alternate in vertical series with the inclined shelves and are adapted to throw the spray in horizontal direction, or nearly so, the sprinklers of one side being opposite the inclined shelves of the opposite side. The sprinklers D communicate with the hot-water jackets of the sections A A′, so as to supply the required quantity of hot water in a fine spray to the crushed malt as the same passes from the hopper, first, to the shelf at one side, then to the shelf at the other side, and so on alternately along the shelves. The sprinklers can be readily detached for cleaning and then replaced in position. As the malt passes over the uppermost shelf it is moistened by the water supplied by the spray from the uppermost sprinkler, while when it passes over the next shelf it is moistened by the spray from the opposite sprinkler, and so on alternately until the malt arrives at the lower end of the mashing-machine and is conducted over a fixed inclined chute E below the lower sprinkler onto an agitating paddle-wheel F′, which is rotated by the falling mash, said agitating-wheel being located in the upper part of the discharge-spout F at the bottom of the mashing-machine. The spout F is provided at its upper part with a downwardly-extending nose or deflector *f* and at its lower part with a concaved depression *f′*, and between the same and the deflector *f* with a second agitating-wheel F^2. The deflector *f* conducts the mash along the curved lower wall of the discharge-spout F to the second agitating-wheel F^2, which is rotated by the falling mash in opposite direction to the first wheel F′, so as to produce thereby the thorough and reliable mixing of the mash. The shaft of the lower agitating-wheel F^2 may be provided with a pulley and rotated by a power-belt or

by means of a hand-crank applied to said shaft. Below the lower agitating-wheel F^2 is arranged a detachable slide f^2 in the depression f' of the discharge-spout F for the purpose of facilitating the cleaning of the same at that point.

To facilitate the easy passage of the moistened malt over the shelves B, the surface of the same is "lubricated," so to speak, by means of jets of water, which are supplied by apertures *e e*, arranged above the upper ends of the shelves in the inner walls of the sections A A'. The jets of water supplied through the apertures *e e* impinge againt transverse flanges or deflectors *e'*, which are arranged in front of the apertures *e*, and which serve for the purpose of breaking up the jets and transferring the water in thin sheets onto the inclined surface of the shelves or bridges B. This is an important feature of my machine, as thereby the passage of the malt over the shelves is facilitated and that part of the malt which is not moistened by the sprays from the sprinklers saturated in an effective manner. The moistening process is furthermore accelerated by lateral jets of water, which are supplied from apertures e^2, located in the inner end walls of the sections A A', as shown clearly in Figs. 2 and 3, said jets attacking the crushed malt from opposite sides, while the sprinklers and deflectors attack the malt from the remaining two sides, so as to produce the thorough and effective saturation of the same while passing through the mashing-machine.

For the purpose of supplying water of proper temperature to the mashing-machine the supply-pipe G is provided with a cold-water pipe *g* at one side of a mixing-chamber G', which is provided with a removable strainer G^2. At the opposite side of the mixing-chamber G is arranged a thermometer *t*, which is inclosed in a glass-covered casing G^3, which is connected by a pipe *g'* with the supply-pipe G, and by means of which the required temperature of the water supplied to the mashing-machine is regulated. The cold and hot water are mingled in the mixing-chamber by the strainer, which retains any impurities carried along by the water, so that the water is conducted at the required temperature to the mashing-machine. The strainer can be easily detached for cleaning by removing the top of the chamber G, while an opening and screw-plug at the bottom of the chamber facilitates the cleaning of the latter.

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

1. A mashing-chamber provided on opposite sides with inclined shelves and sprinklers arranged in alternation in vertical series, the sprinklers of one side being opposite the inclined shelves of the opposite side and adapted to throw jets in horizontal or approximately horizontal direction, said chamber being provided with jet-openings above the shelves and with downwardly-inclined deflectors in front of said jet-openings adapted to direct the water from said jet-openings in thin sheets in downward direction onto the adjacent inclined shelves, substantially as described.

2. A mashing-chamber provided at opposite ends with jet-openings and on opposite sides with inclined shelves and sprinklers arranged in alternation in vertical series, the sprinklers of one side being opposite the inclined shelves of the opposite side and adapted to throw jets in horizontal or approximately horizontal direction, said chamber being provided with jet-openings above the shelves and with downwardly-inclined deflectors in front of said jet-openings adapted to direct the water from said jet-openings in thin sheets in downward direction onto the adjacent inclined shelves, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JEAN SCHAFHAUS.

Witnesses:

PAUL GOEPEL,

JOHN A. STRALEY.