No. 767,198. PATENTED AUG. 9, 1904.

H. BAETZ.

DRYING APPARATUS.

APPLICATION FILED JAN. 18, 1904.

NO MODEL.

FIG. 1.

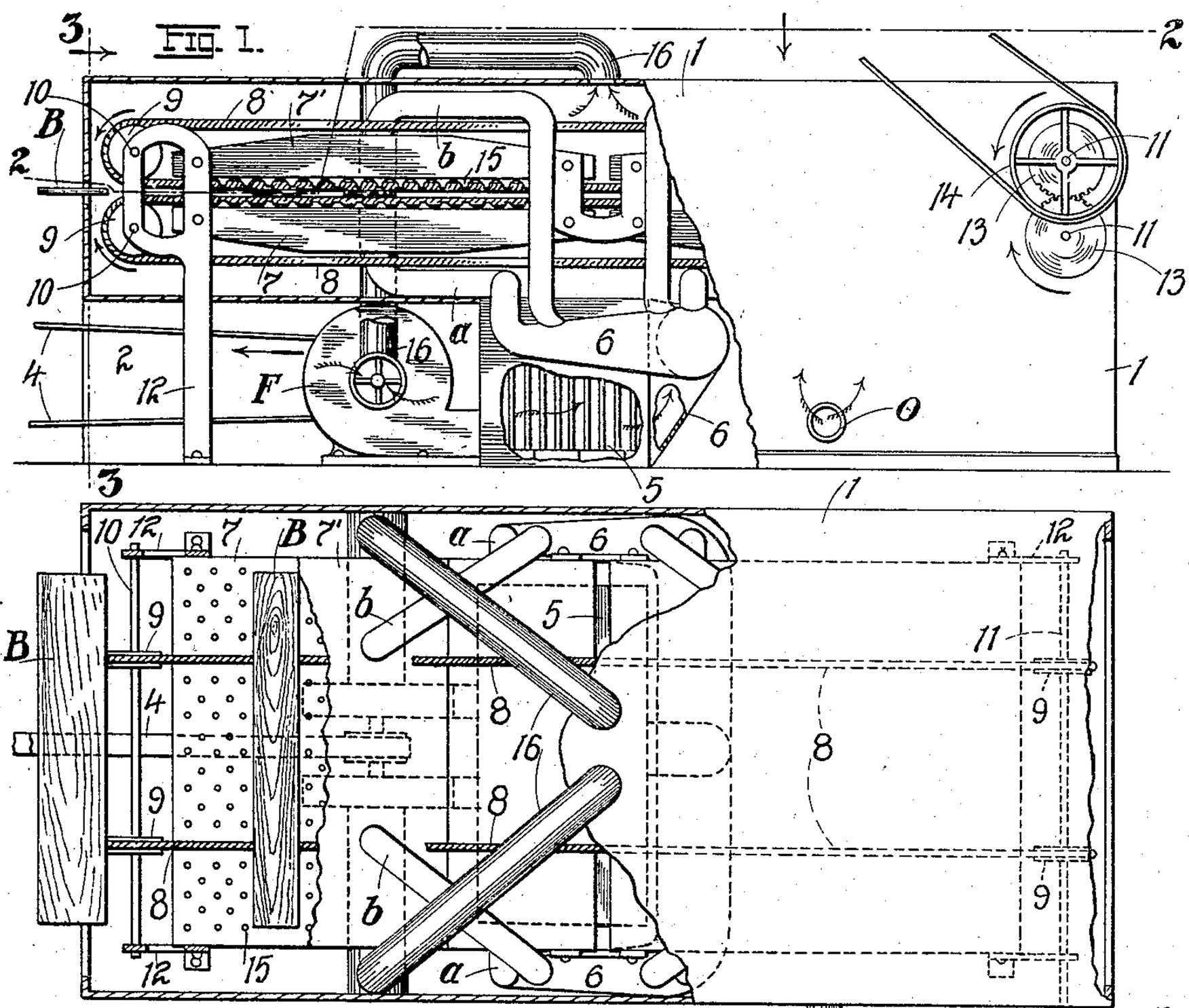

FIG. 2.

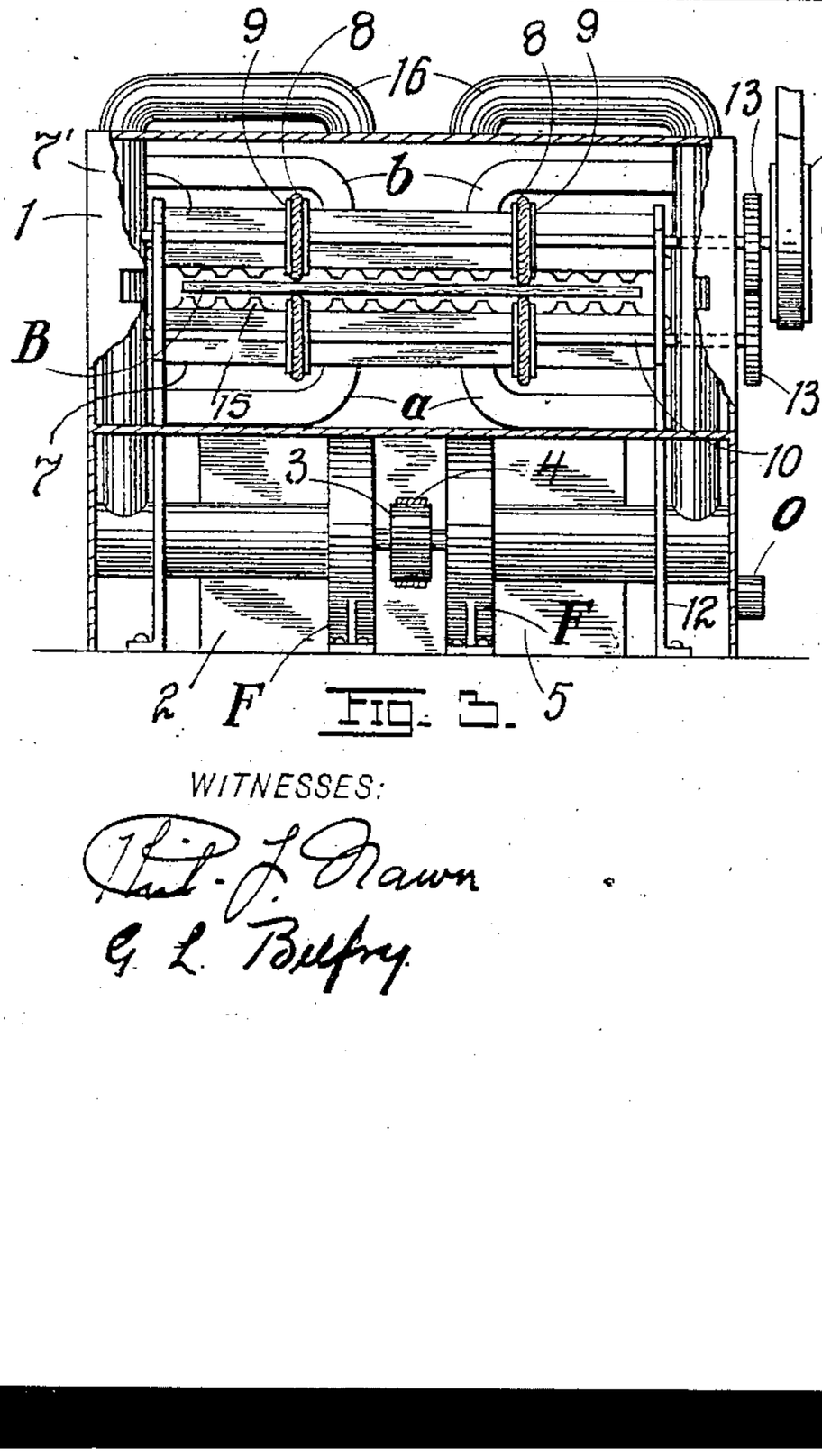

FIG. 3.

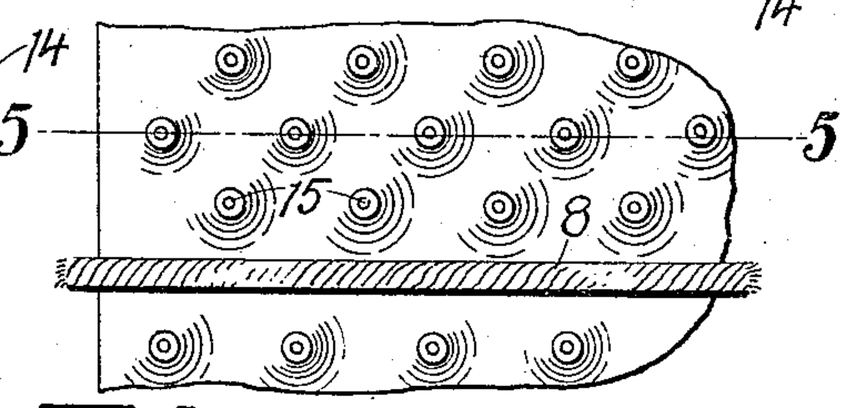

FIG. 4.

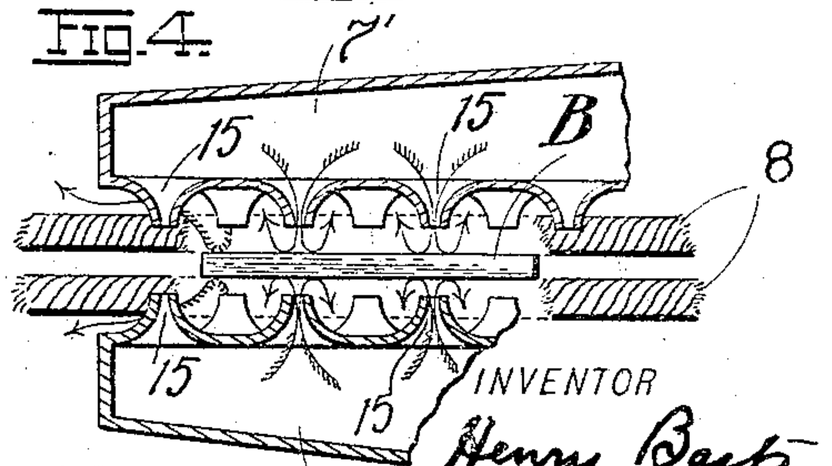

FIG. 5.

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UNITED STATES PATENT OFFICE.

HENRY BAETZ, OF ST. LOUIS, MISSOURI.

DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 767,198, dated August 9, 1904.

Application filed January 18, 1904. Serial No. 189,483. (No model.)

To all whom it may concern:

Be it known that I, HENRY BAETZ, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Drying Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in drying apparatus; and it consists in the novel construction and arrangement of parts more fully set forth in the specification, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the apparatus with a section of the wall of the casing removed. Fig. 2 is a partial top plan and part section on line 2 2 of Fig. 1. Fig. 3 is a vertical transverse section on line 3 3 of Fig. 1. Fig. 4 is an enlarged detail face view of one of the hollow heads or air-chambers; and Fig. 5 is a section on line 5 5 of Fig. 4, showing, however, a pair of heads with a board between them.

The present invention, while specially designed for the drying of lumber, may of course be utilized for purposes of drying articles of any character, as will clearly appear from a detailed description thereof.

The object of the invention is to construct an apparatus in which the length of time usually consumed in the drying shall be minimized, the principle involved in the present invention being the application of (preferably heated) air under pressure impinging in individual currents or jets against the surface of the board to be dried, the utilization of a portion of the current thus used for admixture with a supply of fresh air fed to the fans or blowers, and the deflection of the impinging currents in such manner that after impact they are conducted away from the surface impinged, so as to allow fresh currents (not laden with moisture) to impinge against such surface, and thus dry the article in a minimum length of time. The process results in the production of a superior and evenly-dried product. This will be clearly apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents a casing having a front bottom compartment 2 for the reception of the fans or blowers F, the latter being driven from a belt pulley 3, the belt 4 of which leads to any suitable source of power. (Not shown.) The discharge-pipes of the fans lead to a steam-heater 5, located to the rear of the compartment 2, the air-delivery pipe 6 from said heater terminating in the series of distributing-pipes *a* and *b*, respectively, the former series leading to the bottoms of the lower hollow chambers or heads 7 and the latter leading to the tops of the upper heads 7′, the number of such pipes and heads depending, of course, on the size of the drying apparatus or casing. The heads 7 7′ are arranged in superposed pairs or series, the adjacent faces of the heads being spaced sufficiently apart to allow for the travel between them of the adjacent laps of a series of superposed feed-cables 8, the latter encircling the heads 7 7′ and passing over pulleys 9 9 on the pairs of shafts 10 10, 11 11, respectively, the shafts being mounted in the standards 12, (which likewise serve to support the adjacent ends of the heads 7 7′.) The ends of the shafts 11 are provided with gear-wheels 13 13, which mesh with one another, the upper shaft being further provided with a belt-pulley 14, leading to any suitable source of power. (Not shown.) By imparting to the pulley 14 motion in the direction indicated by the plain arrows, Fig. 1, the cables will be driven in proper direction to feed the boards B between the adjacent faces of the heads 7 7′.

The adjacent faces of the heads 7 7′, between which the lumber to be dried is fed, are provided with a series of perforated spray teats or nozzles 15, the individual air-currents or jets forced therefrom impinging against the opposite faces of each piece of lumber. The forcible impact of such an air-jet causes the same to rebound or be reflected from the surface thus impinged, (see feathered arrows, Figs. 1, 5,) thereby permitting fresh particles of air to impinge against said surface. In the prevailing methods of drying lumber where the air is simply allowed to circulate through the stack subjected to the drying op-

eration the film of air immediately in contact with the surface of the lumber becomes in time saturated with moisture and in a measure adheres to said surface, thus preventing access thereto of fresh particles of air and retarding the drying operation. In my process, however, the deflected particles of air are driven away under the pressure behind them, a portion of such deflected (but heated) air finding its way through the roof of the casing 1 and through the diverging exhaust-pipes 16 16 (which are disposed on either side of the casing) into the blowers or fans F, the lower ends of the said pipes partly feeding said blowers, as shown. In this way a portion of the heat units imparted to the air initially by the steam-coils of the heater 5 is utilized, so that as little of the heat as possible shall be wasted. The heavy damp air not utilized as here indicated will escape through the bottom openings O of the casing.

By properly proportioning the length of the casing 1, the temperature to which the drying-air is heated, and the speed of the feed mechanism a single passage of the lumber through the apparatus will suffice to thoroughly dry the same, (the articles dried being taken out through the rear of the casing.)

It is of course conceivable that the apparatus is susceptible of considerable modification from that shown. In lieu of the heads 7 7′ I may substitute any equivalent therefor which will deliver the air in the form of individual currents, jets, sprays, streams, and the like. I may not necessarily heat the air, though of course this is the more desirable and in the majority of cases essential. I may provide different feed mechanism and need not confine myself to the cable-feed device here shown. I may heat the air before it reaches the blowers. In fact, the changes may be various, and yet not depart from the spirit of the invention.

I may add that by my method the articles are more quickly, uniformly, and perfectly dried than by any of the prevailing methods, since under my invention the presence of the film of moisture-laden air clinging to the surface of the lumber, (or other article,) and which retards the drying operation, is impossible.

Having described my invention, what I claim is—

1. In a drying apparatus, a suitable casing, a blower, one or more pairs of juxtaposed air-chambers suitably spaced and receiving the air supplied by the blower, the adjacent faces of the chambers on either side of the open space separating them being provided with a series of openings for the discharge of the air, and suitable feed mechanism for advancing the articles to be dried, through the open space separating the chambers in the path of the air-currents delivered through said openings, substantially as set forth.

2. In a drying apparatus, a suitable casing, a blower, a heater for the air delivered by said blower, one or more pairs of superposed air-chambers or heads suitably spaced and receiving the air supplied by the blower, the adjacent faces of the heads on either side of the space separating them being provided with series of air teats or nozzles, exhaust-pipes leading from the casing back to the blower, and suitable feed mechanism for advancing the articles to be dried through the space separating the heads in the path of the air-currents delivered by said teats or nozzles, substantially as set forth.

3. In a drying apparatus, a suitable casing, a series of fans or blowers located in proximity thereto, a steam-heater for receiving the air discharged by the blowers, distributing-pipes leading from the heater, a series of pairs of properly-spaced, superposed heads communicating with said pipes, discharge teats or nozzles distributed along the adjacent faces of the heads on either side of space separating the members of each pair, exhaust-pipes leading from the casing back to the fans, and means for feeding the articles to be dried, through the casing, in the path of the jets of air ejected from said teats or nozzles, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY BAETZ.

Witnesses:
EMIL STAREK,
G. L. BELFRY.