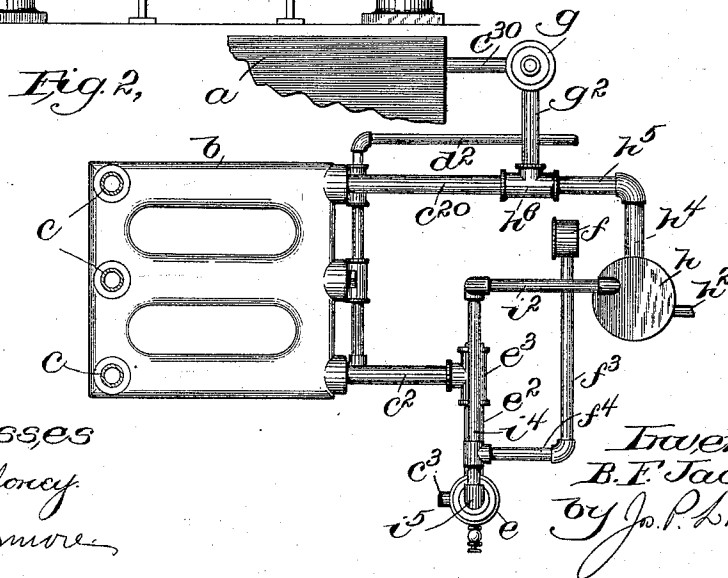
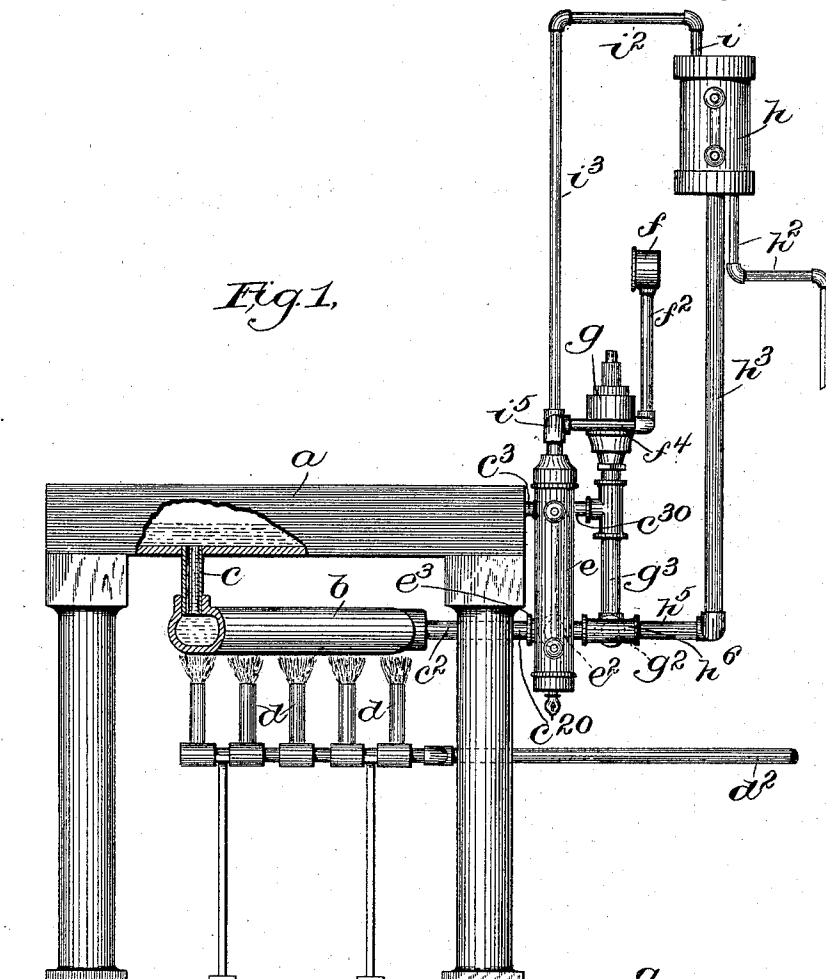


(No Model.)

B. F. JACKSON.  
MATRIX DRYING APPARATUS.

No. 603,879.

Patented May 10, 1898.



Witnesses  
Jas. J. Maloney  
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# UNITED STATES PATENT OFFICE.

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## MATRIX-DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 603,879, dated May 10, 1898.

Application filed December 3, 1897. Serial No. 660,882. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. JACKSON, of Cambridge, county of Middlesex, and State of Massachusetts, have invented an Improvement in Matrix-Drying Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a matrix-drying apparatus such as is used in printing-offices to dry the pulp-matrices which are taken from the forms of type when wet and which have to be dried before the stereotype-plates are made therefrom.

The object of the present invention is to afford a drying apparatus which is complete in itself and in which an intense heat can be quickly obtained and evenly distributed along the drying-surface, the heat, however, not being sufficiently intense to scorch or burn the pulp. To this end the apparatus which embodies the invention comprises a chamber having a flat surface to receive the matrix, the said chamber being steam-tight and adapted to contain hot water and steam, and a reservoir or steam-generator of less capacity than that of the table mounted below the said table and connected therewith by one or more pipes entering the table at the bottom thereof.

The apparatus is further provided with a number of burners having a fuel-supply pipe, gas being preferably used, the said burners being arranged below the reservoir or generator, so that the heat therefrom is concentrated on the said generator, rapidly heating the water therein and converting it into steam, which enters the table and evenly heats the top surface thereof.

The apparatus embodying the invention is complete in itself and is found to give much better results than the drying apparatus which has been heretofore employed, saving four or five minutes at each operation, which is of material benefit in newspaper-offices, where everything is done with the greatest possible rapidity.

The apparatus is further provided with means whereby it can be supplied with water without difficulty from any ordinary supply, there being a supply-tank and means for

equalizing the pressure in the table and said tank, so that the water will enter, owing to force of gravity, when desired.

Figure 1 is a sectional side elevation of a matrix-drying table embodying the invention; and Fig. 2 is a broken plan view, the table itself being broken away to show the generator below.

The table or support for the matrices in the drying process comprises a steam-tight chamber *a*, herein shown as rectangular in shape and having a flat top to receive the matrix, below which table is mounted the reservoir or generator *b*, which may consist, as shown, of a single casting having three longitudinal channels connected across the ends. The said generator *b* communicates directly with the table *a* through one or more pipes, as the pipe *c*, extending upward through the bottom of the table, one or more other pipes, as *c*<sup>3</sup> *c*<sup>30</sup>, being also shown, which enter the table above the normal level of the water therein to afford communication with the supply-tank, &c., as will be described.

To heat the table, the apparatus is further provided with a series of burners *d*, arranged in lines below the longitudinal tubes of the generator and communicating, through the pipe *d*<sup>2</sup>, with a source of fuel-supply, ordinary illuminating-gas being commonly employed. The table and generator being supplied with water and the gas turned on the heat of the burners will be concentrated upon the water in the generator, so that the water therein will be rapidly heated, the steam arising from the surface and heating the drying-surface of the table.

The apparatus is further provided with a water-gage *e*, a pressure-gage *f*, and a safety-valve *g*, the said parts being arranged in a system of piping which connects the generator with the upper part of the table and with the water-supply tank *h*.

As herein shown, the water-inlet to the water-gage *e* is through a pipe *e*<sup>2</sup>, connected by a coupling *e*<sup>3</sup> with the pipe *c*<sup>2</sup>, the upper connection with said gage being directly through the pipe *c*<sup>3</sup>, which enters the table near the top thereof. The pressure-gage *f* is connected, through the pipes *f*<sup>2</sup>, *f*<sup>3</sup>, and *f*<sup>4</sup>, with a pipe *i*<sup>4</sup>, which is coupled at *i*<sup>5</sup> with a pipe

leading from the top of the water-gage *e*, the said pipe *i*<sup>4</sup> constituting a branch of the pressure-equalizing duct, which communicates with the tank *h*, as will be described.

5 The safety-valve *g* communicates with the table and generator through the pipes *g*<sup>2</sup>, *g*<sup>3</sup>, and *c*<sup>30</sup>, the pipe *g*<sup>2</sup> being connected with the pipe *c*<sup>20</sup>, which leads from the generator, and the pipe *c*<sup>30</sup>, leading directly from the steam-space in the table.

10 To supply the table and generator with water, the supply-tank *h* is connected by a pipe *h*<sup>2</sup> with a source of supply, such as the ordinary city water, and by a pipe *h*<sup>3</sup> with the generator *b*, the said pipe *h*<sup>3</sup> having a branch *h*<sup>4</sup> coupled to a branch *h*<sup>5</sup>, connected with the pipe *c*<sup>20</sup> by means of a T-coupling *h*<sup>6</sup>, to which is also coupled the pipe *g*<sup>2</sup>, hereinbefore described.

20 To equalize the pressure in the tank—that is to say, to make the pressure in the tank equal to that in the table, so that the water can flow into the generator—the said tank is connected at the top by means of a pipe *i* with the steam-space in the top of the table, the said pipe *i* being shown as having branches *i*<sup>2</sup> *i*<sup>3</sup> *i*<sup>4</sup>, the latter of which communicates with the top of the water-gage *e*, which is connected with the table, as described, above and below the water-line by the pipes *c*<sup>3</sup> and *c*<sup>2</sup>, respectively. When both of the pipes *h*<sup>3</sup> and *i* are open, therefore, the pressure at the top of the tank *h* will be equal to that in the chamber *a*, so that the water will flow down by gravity to charge the table and generator. As herein shown, the said pipes are normally open and the tank *h* empty, it being obvious that if the supply of water is turned on it will pass directly down from the tank *h* and enter the generator, the function of the tank being mainly that of a pressure-equalizer.

The matrix-drying apparatus hereinbefore

described possesses advantages over those now commonly employed in that it is complete in itself and independent of the main steam plant, and therefore not affected in any way by the condition thereof, while it may be more rapidly brought to the required degree of heat and such degree maintained.

I claim—

1. A matrix-drying apparatus comprising a hollow steam-tight table having a flat top to receive the matrix; a steam-generator of substantially less capacity than that of said table; one or more connecting-ducts for said generator and table; a burner or burners arranged to deliver heat against the walls of said generator; a closed water-supply reservoir above the table; and means for equalizing the pressure in said reservoir and said table to permit water to flow by gravity from said reservoir to said table; all of the said parts being arranged to form a complete self-contained apparatus; substantially as and for the purpose described.

2. The herein-described matrix-drying apparatus which comprises the table *a*, the generator *b* consisting of a single casting mounted below said table, the pipes *c* leading from said generator into said table through the bottom thereof, the water-supply reservoir *h* having a passage leading from the top thereof to the top of the steam-table, and a passage from the bottom thereof leading to the generator, and the water-gage, pressure-gage, and safety-valve arranged in said pipe system, substantially as and for the purpose described.

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

BENJAMIN F. JACKSON.

Witnesses:

H. J. LIVERMORE,  
NANCY P. FORD.