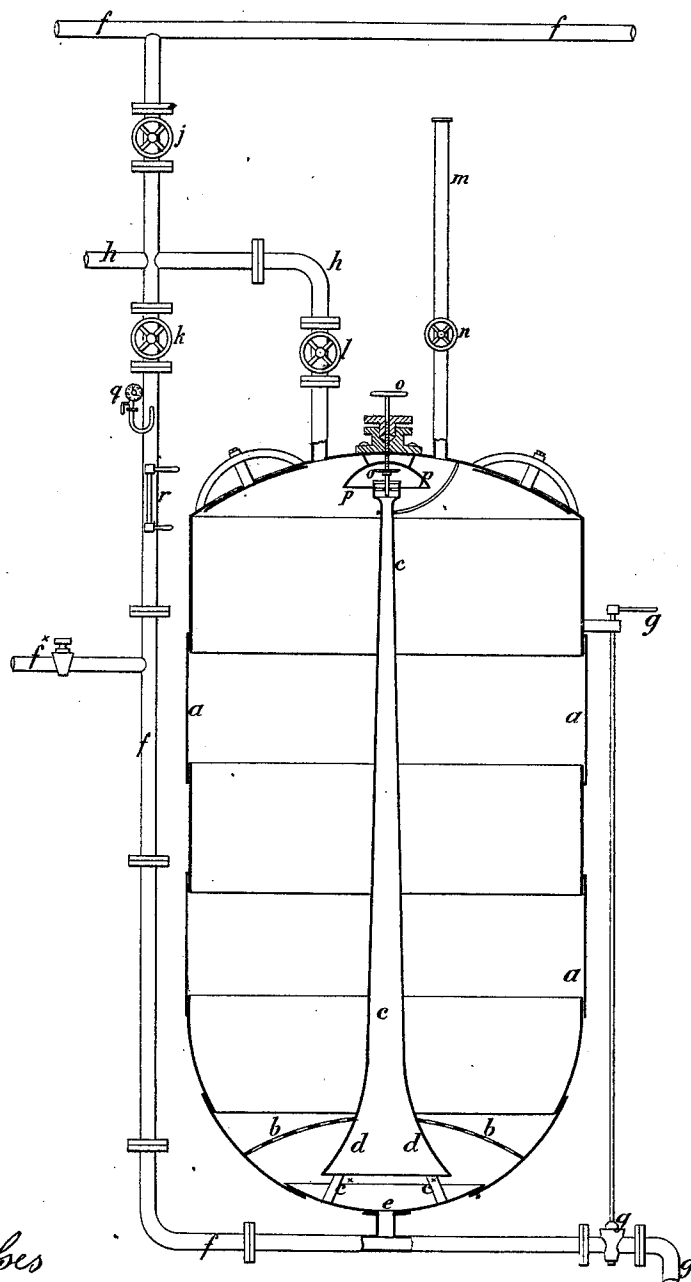


T. FLETCHER.
Bleaching-Keirs.

No. 213,647.

Patented Mar. 25, 1879.



Witnesses

*Harry A. Crawford
Harry Smith*

*Inventor
Thomas Fletcher
by his Attorneys
Howson and Son*

UNITED STATES PATENT OFFICE.

THOMAS FLETCHER, OF HYDE, GREAT BRITAIN.

IMPROVEMENT IN BLEACHING-KEIRS.

Specification forming part of Letters Patent No. **213,647**, dated March 25, 1879; application filed September 6, 1878; patented in England, May 12, 1876.

To all whom it may concern:

Be it known that I, THOMAS FLETCHER, of Hyde, in the county of Chester, Kingdom of Great Britain and Ireland, have invented certain Improvements in Apparatus for Bleaching Fabrics and other Fibrous Materials, (English patent completed May 12, 1876, No. 3,954 of 1875,) of which the following is a specification:

The object of my invention is to so construct a bleaching apparatus that the bleaching operation may be rapidly and economically conducted; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, the figure in which represents a view, partly in section, of a bleaching-keir with my improvements.

The keir *a* is made of wrought-iron, in the usual form, and is provided with a well and a perforated false bottom, *b*, from which rises a central pipe, *c*, known as the "puffer-pipe," supported on four feet, *e*. Above the upper end of this pipe *c* is arranged a bonnet, *p*, for spreading the bleaching-liquor as it is forced up the puffer-pipe, in the manner described hereinafter.

The lower end of the pipe, below the false bottom *b*, is enlarged into a funnel shape at *d*, and the bottom of the keir, immediately below, communicates through an opening, *e*, with the pipe *f*, for supplying the high-pressure steam. A continuation, *g*, of this pipe, provided with a suitable cock, constitutes the "blow-through" pipe.

To the top of the keir is connected a pipe, *h*, for supplying low-pressure steam, and these two steam-pipes, *f* and *h*, are so connected to each other, and provided with cocks *j*, *k*, and *l*, that either low or high pressure steam can be admitted either to the top or bottom of the keir. The pipe *f*^{*}, for the supply of the bleaching-liquor, communicates with the steam-pipe *f* below the cock *k*, and leading to the bottom of the keir. To the top of the keir is fitted a blow-off pipe, *m*, provided with a cock, *n*.

To a seat at the upper end of the pipe *c* is adapted a valve, *o*, carried by a screw-spindle passing through a stuffing-box in the cover of the keir, so that the passage through the puffer-pipe may be closed from the outside of the keir.

The operation is as follows: The materials to be bleached having been laid in the keir to the required depth, and the keir closed steam-tight, the top of the puffer-pipe is closed by the valve *o*, and the cock in the blow-through pipe *g* is opened. High-pressure steam is now admitted to the top of the keir by opening the cocks *j* and *l*, and this steam passes downward through the goods and out through the pipe *g*. All dirty water or liquor and other impurities are thereby carried off and the goods thoroughly steamed and heated through. The cock in the pipe *g* and the cock *l* are now closed, and the valve *o* of the puffer-pipe, as well as the blow-off cock *n*, opened. Bleaching-liquor being then admitted through the pipe *f*, and high-pressure steam turned on by opening the cocks *j* and *k*, the bleaching-liquor will be forced through the opening *e* at the bottom of the keir, up through the puffer-pipe, and spread in a shower over the materials in the vessel by the bonnet *p*. The liquor then passes through the materials under treatment, and, collecting in the well at the bottom of the keir, will be again forced up through the puffer-pipe and spread over the top of the materials.

When the bleaching operation is completed the high-pressure steam is turned off by closing the cocks *j* and *k*, and the cock in the blow-through pipe *g* is opened and the puffer-pipe valve *o* closed. Low-pressure steam being then admitted to the pipe *h* and the cock *l* opened, the steam is permitted to pass through the goods until all the bleaching-liquor has been forced out. The steam-cock *l* is then closed, and the materials removed from the keir, which is then ready to receive another lot of materials to be bleached.

A safety-valve (not shown in the drawing) is fitted to the keir, and a pressure-gage, *g*,

and water-gage *r* are adapted to the steam-pipe *f*.

I do not desire to claim in this application the arrangement of high and low pressure steam-pipes; but

I claim as my invention—

A bleaching-keir having a puffer-pipe extending nearly to the top of the keir, and provided with a valve having an operating-stem

passing through the cover of the keir, substantially as set forth.

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

THOMAS FLETCHER.

Witnesses:

GEORGE DAVIES,

JNO. HUGHES.