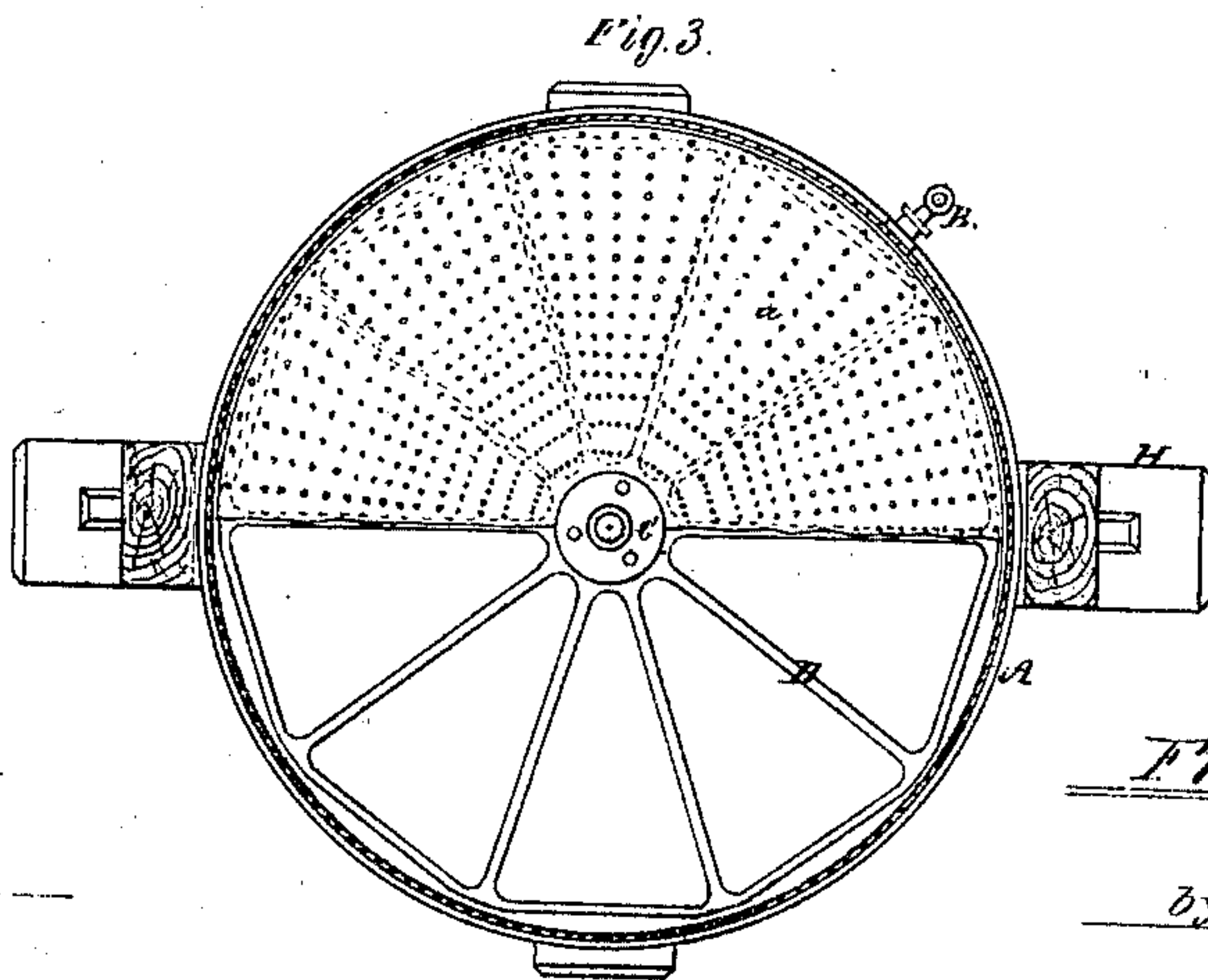
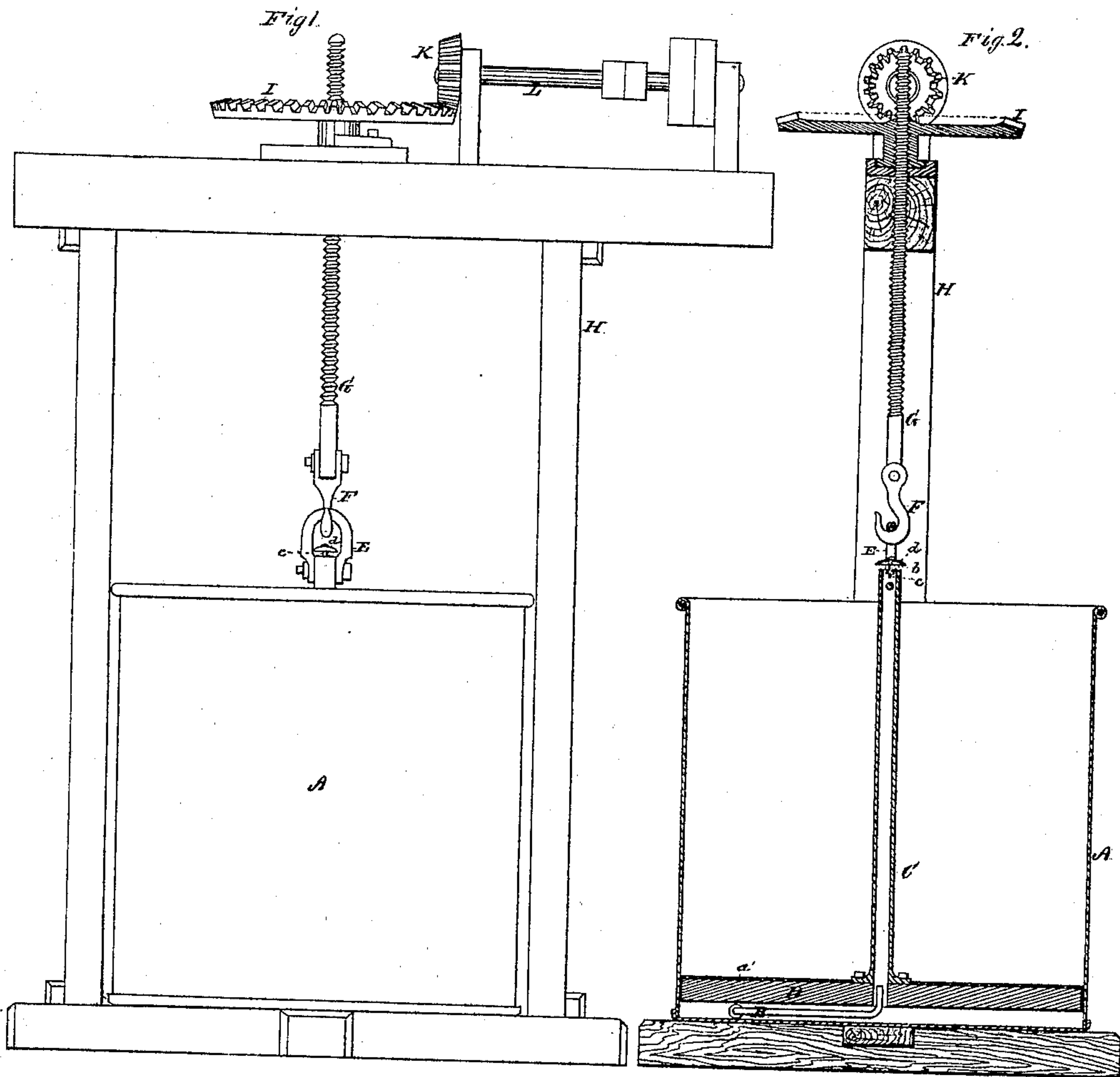


F. Sheldon,
Bleaching Paper.

No. 104,781.

Patented June 28, 1870.



Witnesses.
S. N. Piper.
J. R. Snow

Francis Sheldon
by his attorney.
W. H. Eddy

United States Patent Office.

FRANCIS SHELDEN, OF FITCHBURG, MASSACHUSETTS, ASSIGNOR TO THE
UNION MACHINE COMPANY, OF SAME PLACE.

Letters Patent No. 104,781, dated June 28, 1870.

IMPROVEMENT IN APPARATUS FOR BLEACHING PAPER-STOCK.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, FRANCIS SHELDEN, of Fitchburg, of the county of Worcester, of the State of Massachusetts, have invented a new and useful or improved Apparatus for Bleaching Paper-Stock or Pulp; and I do hereby declare the same to be fully represented in the accompanying drawing, and described in the following specification.

The bleaching-apparatus, as improved by me, involves the combination and arrangement, as hereinafter described, of a foraminous spider or platform, a tubular lifter, and an adjustable spray-deflector, with a kier, kettle, or cistern, and a pipe for the introduction of steam into the central part of the bottom of such cistern, there being also combined with such parts or devices mechanism for moving the spider, the lifter, and spray-valve together and vertically within the kier or cistern, as circumstances may require.

Of the drawing above mentioned—

Figure 1 is a front elevation;

Figure 2, a vertical section; and

Figure 3, a horizontal section of the said apparatus.

In such drawing—

A denotes the kier, tub, or cistern for holding the stock or pulp to be bleached, and the liquor or chemical material, or matters used in carrying on the bleaching process.

A pipe, B, for the conveyance of steam, passes through the side, or other proper portion of the lower part of the cistern, and terminates at or above the center of the bottom thereof, the said pipe, at its inner end, being open, and directly beneath the mouth or open lower end of a stand-pipe, C.

This conduit C is fastened, at its lower end, to a metallic spider or frame, D, having a strainer, or foraminous top, or flooring, *a*, whose diameter is about equal to that of the inner part of the tub.

Extending diametrically across the upper end of the pipe C is a bar, *b*, down into which a screw, *c*, provided with a concavo-convex head, *d*, is screwed. The said head has a diameter about equal to that of the pipe C, and serves as a spray-deflector.

Furthermore, a shackle, E, is pivoted to the upper end of the pipe C, and receives a hook, F, extended from a vertical screw, G.

The said screw passes through the upper girt of a

frame, H, formed and arranged with respect to the kier or cistern, in manner as represented.

A nut or beveled cog-wheel, I, resting on a bearing at the top of the frame, screws upon the screw, and engages with a beveled pinion, K, carried by a driving-shaft, L, the whole being as represented in the drawing.

By revolving the screw, the foraminous spider, with its stand-pipe, may be either raised or depressed, relatively to the cistern or kier.

In the operation of the apparatus, after it may have been charged with the material to be bleached, and the liquor and substances or matters used in effecting the bleaching of it, steam is supposed to flow into the cistern and directly into the stand-pipe. It will blow the liquor in such pipe up against the deflector, by which it will be deflected radially from the pipe, and upon the top of the charge, after ebullition of the liquid and the pulp may have been carried on a sufficient time by the steam so applied to the platform, and the pulp thereon may be raised out of the cistern, and from the bleaching-liquor thereof, thereby saving such liquor for being used on another charge of pulp.

Heretofore it has been customary to open a vent in the side of the bleaching-cistern, and allow the escape of all the spent bleaching-liquid before removing the charge of pulp from the cistern. By my process I save the said liquid.

I claim as my invention, in the apparatus as above described, the following, viz:

The elevator, as composed of the foraminous platform, and the tubular stand-pipe.

Also, the arrangement and combination of the adjustable deflector with the stand-pipe, and the foraminous platform.

Also, the combination and arrangement of the foraminous platform, the stand-pipe, and the deflector, with the kier or cistern, and its steam induction-pipe, the stand-pipe, and platform having mechanism for moving them relatively to the deflector, and the whole being substantially as and for the purpose, and to operate as specified.

FRANCIS SHELDEN.

Witnesses:

H. S. WHITCOMB,
NATHL. WOOD.