2 Sheets--Sheet 1.

N. E. HINDS.

Improvement in Apparatus for Curing Hops.

No. 133,152. Patented Nov. 19, 1872.

FIG. I.

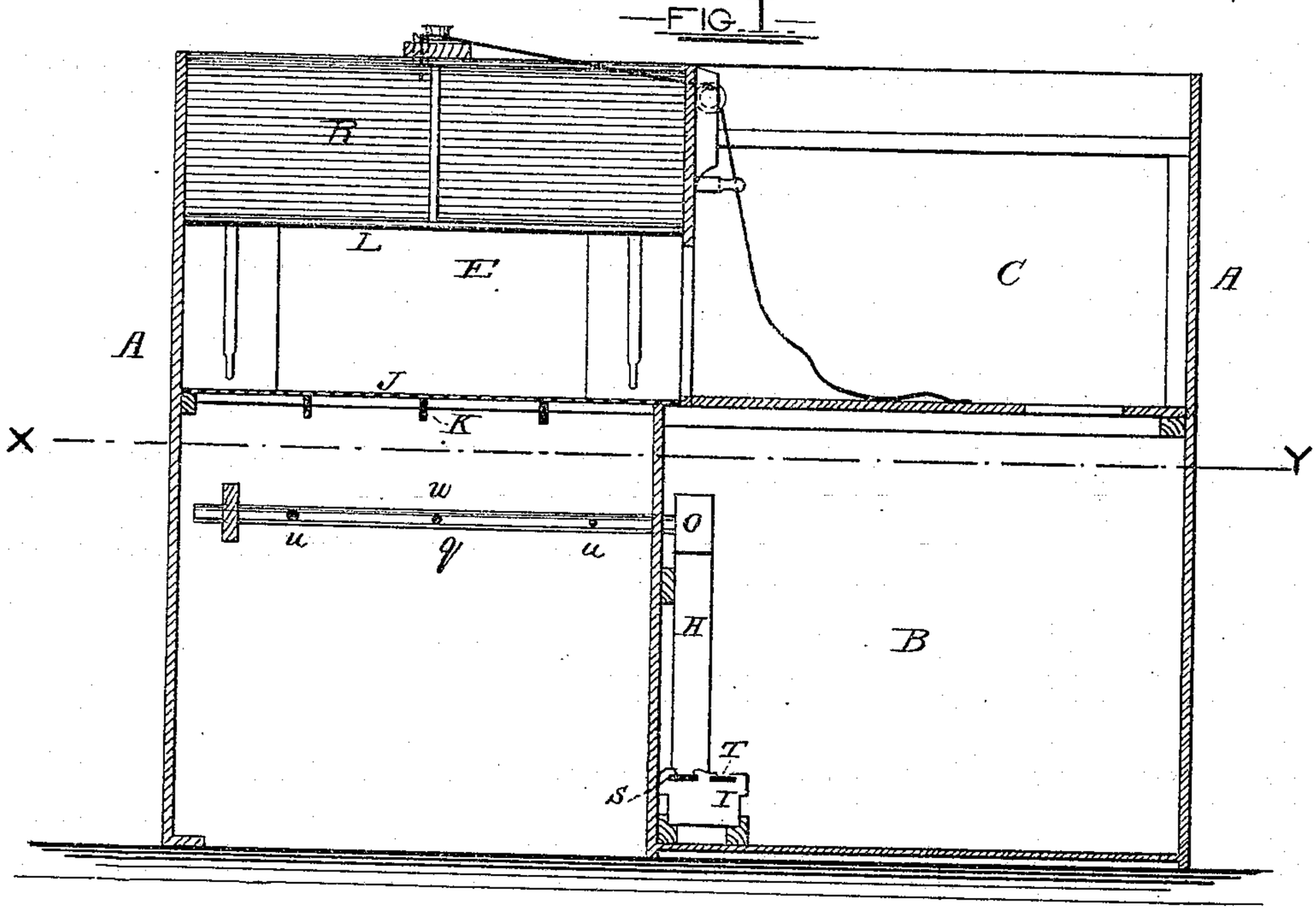
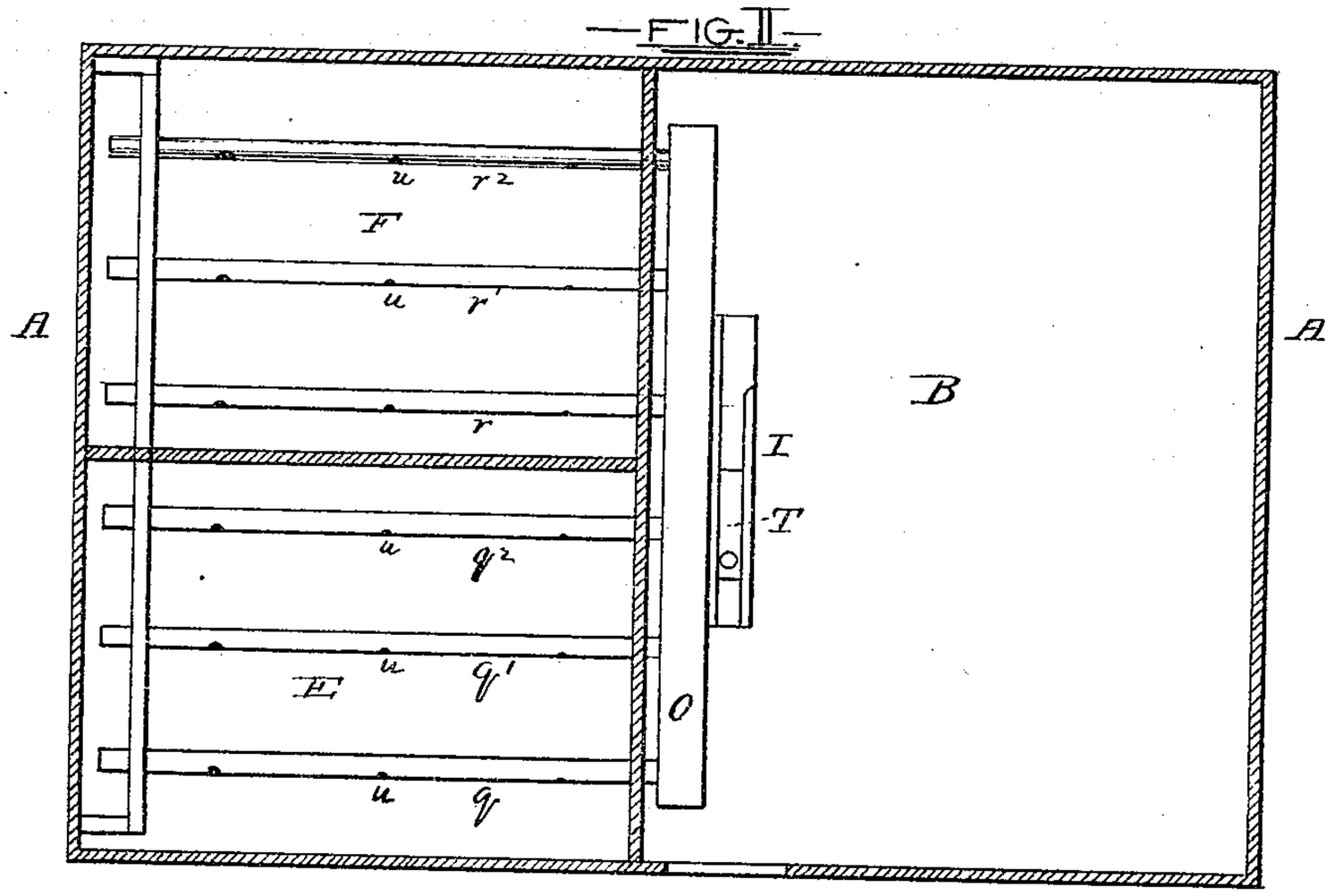


FIG. II.



WITNESSES:-

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Theodore Munger.

INVENTOR:-

Nehemiah E. Hinds

by his attys

Cox and Cox

2 Sheets--Sheet 2.

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FIG. III.

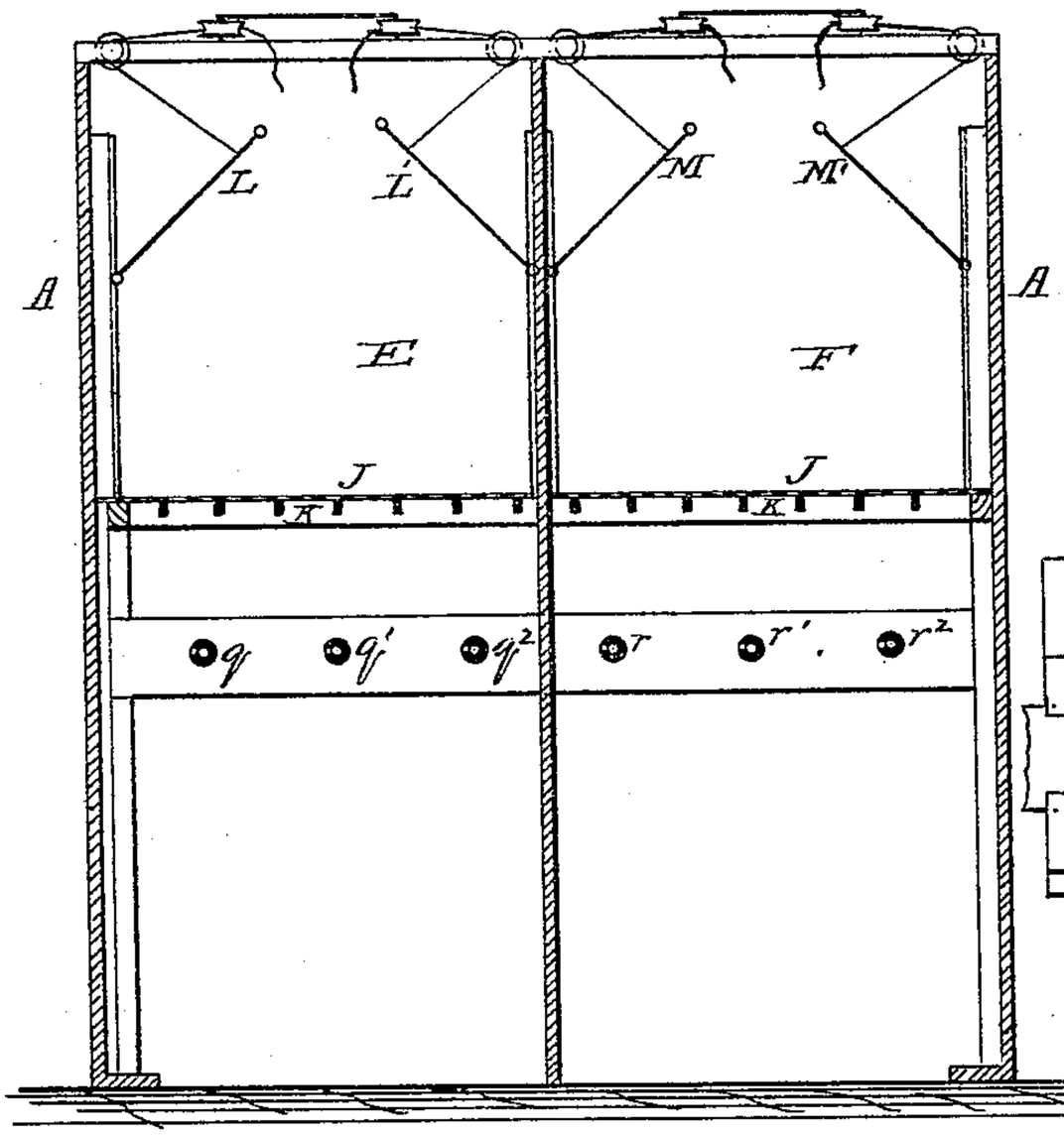
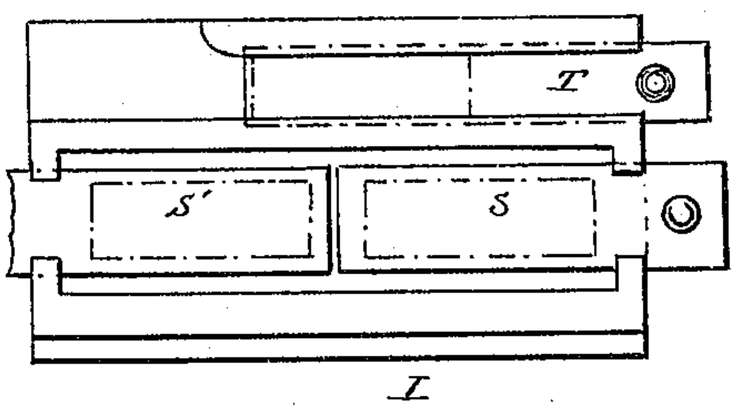


FIG. V.



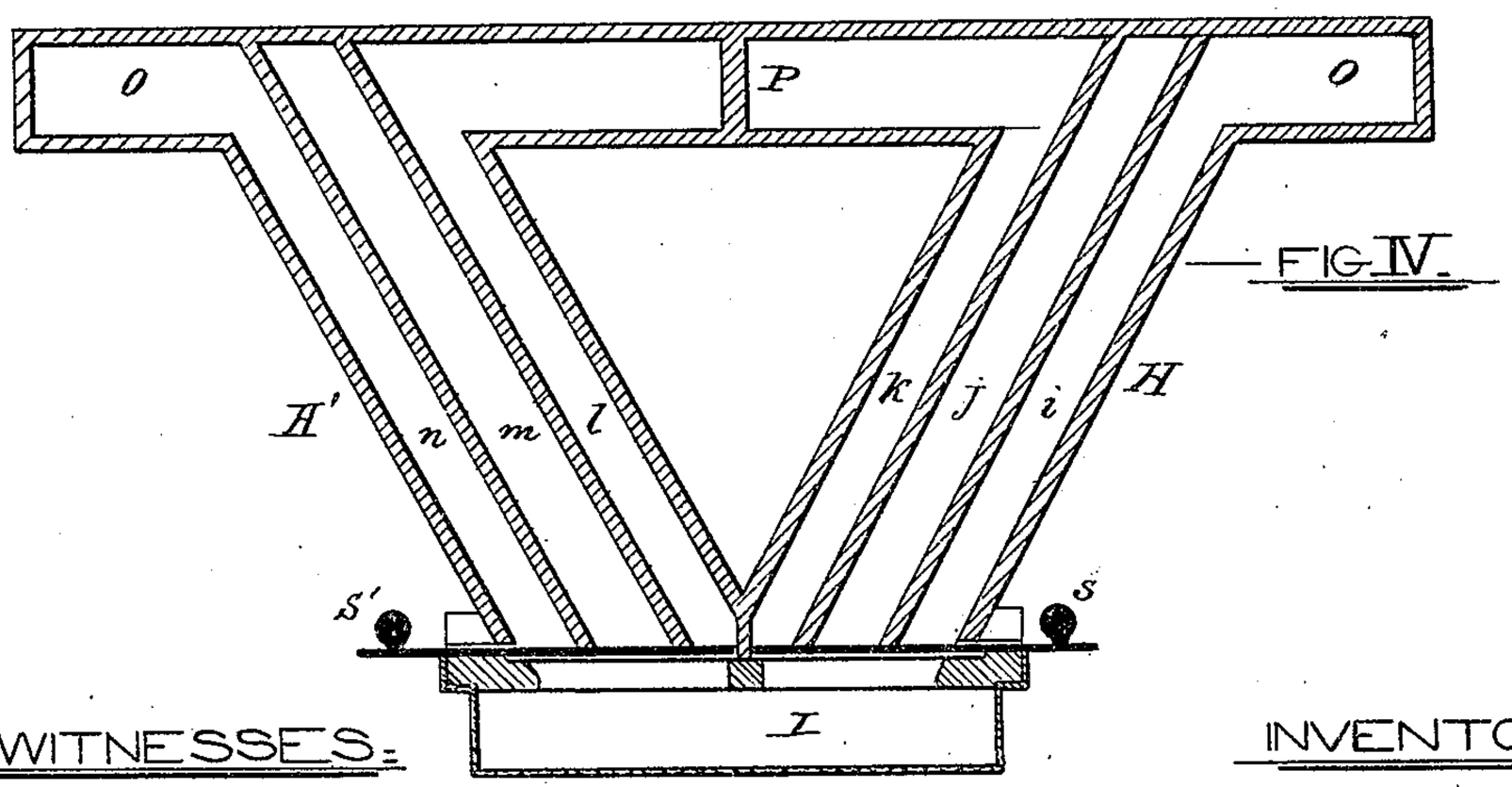


FIG. IV.

WITNESSES:

Geo N. Howard.

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UNITED STATES PATENT OFFICE.

NEHEMIAH E. HINDS, OF COOPERSTOWN, NEW YORK.

IMPROVEMENT IN APPARATUS FOR CURING HOPS.

Specification forming part of Letters Patent No. **133,152**, dated November 19, 1872; antedated November 15, 1872.

To all whom it may concern:

Be it known that I, NEHEMIAH E. HINDS, of Cooperstown, in the county of Otsego and State of New York, have invented a new and useful Improvement in Kilns for Curing Hops, of which the following is a specification, reference being had to the accompanying drawing.

Nature and Objects of the Invention.

This invention relates to an improvement in kilns for curing hops; and consists, first, of a series of tubes connected with a steam-generator outside of the kiln, arranged within the kiln in such a manner as to discharge the steam beneath the hops and permit it to pass up through the hops, thereby thoroughly saturating them, the object of this part of the invention being to keep the hops thoroughly dampened while undergoing the bleaching process; secondly, of a pair of frames, covered with canvas, arranged within the kiln in such a manner as to be swung down upon and completely cover the hops, the object of this part of the invention being to partially confine the steam, but more especially the fumes of the brimstone, within the kiln, and only permit them to escape slowly through the canvas—the united objects of the two parts of the invention being to produce a kiln that will cure hops in a manner far superior to the kilns heretofore in use.

Description of the Drawing.

Figure I is a vertical longitudinal section. Fig. II is a longitudinal section through the line *x x*. Fig. III is a vertical transverse section. Fig. IV is a vertical section of the flues H H′ and the steam-generator I. Fig. V is a plan view of the steam-generator, showing the gages.

General Description.

In the accompanying drawing, A is the hop-house, having the boiler-room B, store-house C, and kilns E and F. I is the steam-generator in the boiler-room B. Flues H H′, having three compartments, *i j k* and *l m n*, convey the steam from the generator I to a chamber, O, divided by the partition P, so that one-half of said chamber O communicates with three tubes, *q*, q^1, and q^2, and the other half with three tubes, *r*, r^1, and r^2. The steam-generator I is provided with gages S S′ for letting on and shutting off the steam, so as to cause it to pass through either or both of the flues H H′, or be shut off from either or both of them. The generator I is also supplied with a gage, T, for permitting the escape of the steam when desired. The tubes $q\,q^1\,q^2$ and $r\,r^1\,r^2$ extend the full length of the kilns E and F, and are secured about three and a half feet below the dry-cloth J, which is stretched upon a frame, K, in each kiln E and F. The tubes $q\,q^1\,q^2$ and $r\,r^1\,r^2$ have discharge-orifices *u*, located so as to insure uniformity in the discharge of the steam and cause it to pervade all parts of the kiln beneath the hops. The orifices *u* are smallest near the flues H H′, and increase in size toward the opposite ends of the tubes. Frames L L′ and M M′, covered with canvas, are secured by hinges to the inside of the kilns E and F, and arranged to open upwardly and outwardly. The texture of the canvas R should be such that it will permit the steam and the fumes of the brimstone to pass through it slowly. The frames L L′ and M M′ are operated by cords running over pulleys arranged in any suitable manner.

Operation.

The hops are placed in the kilns E or F, or both, and the frames L L′ and M M′ lowered upon them so that the canvas will completely cover the hops. The canvas projects slightly beyond the edges and ends of the frames L L′ and M M′, leaving no aperture between them when they are closed. The steam is turned upon either kiln at the will of the operator by drawing either gage S or S′. The steam passes up either flue H or H′, as the case may be, into the tubes $q\,q^1\,q^2$ or $r\,r^1\,r^2$, and out at the discharge-orifices *u*, thence up through the hops, steaming them thoroughly throughout. The fire is then started in the dry-stove for the purpose of burning the brimstone. The brimstone is placed upon the dry-stove and burned until the hops are sufficiently bleached, the steaming process kept going during the bleaching process, in order to keep the hops from drying. The canvas covering partially

confines the fumes of the brimstone and permits the fumes and the steam to escape very slowly. When the hops are sufficiently bleached the steam may be shut off from the kilns and the gage T opened to permit the steam to escape from the boiler. The dry-stove is then brought into requisition, and the hops are dried in the usual manner, with the exception that the canvas still covers the hops to expedite the operation.

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

1. A series of tubes, q q^1 q^2, provided with discharge-orifices u, arranged in a kiln, E, beneath the hops, and connected with a steam-generator, I, placed outside of the kiln E, substantially as shown and described, for the purposes hereinbefore specified.

2. The frames L L′, covered with canvas, when placed within the kiln E and operated to cover the hops, substantially as shown and described, for the purposes hereinbefore specified.

3. The flues H H′, in combination with the tubes q q^1 q^2 and r r^1 r^2 and the steam-generator I provided with gages S S′ and T, substantially as shown and described, for the purposes hereinbefore specified.

In testimony that I claim the foregoing improvement in kilns for curing hops, as above described, I have hereunto set my hand and seal this 23d day of April, 1872.

NEHEMIAH E. HINDS. [L. S.]

Witnesses:
O. N. HINDS,
I. A. PARSHALL.