(No Model.) 2 Sheets—Sheet 1.

# W. MATHER & J. CHRISTIE.

## APPARATUS FOR HANGING WEBS IN FOLDS IN DRYING CHAMBERS.

No. 518,508. Patented Apr. 17, 1894.

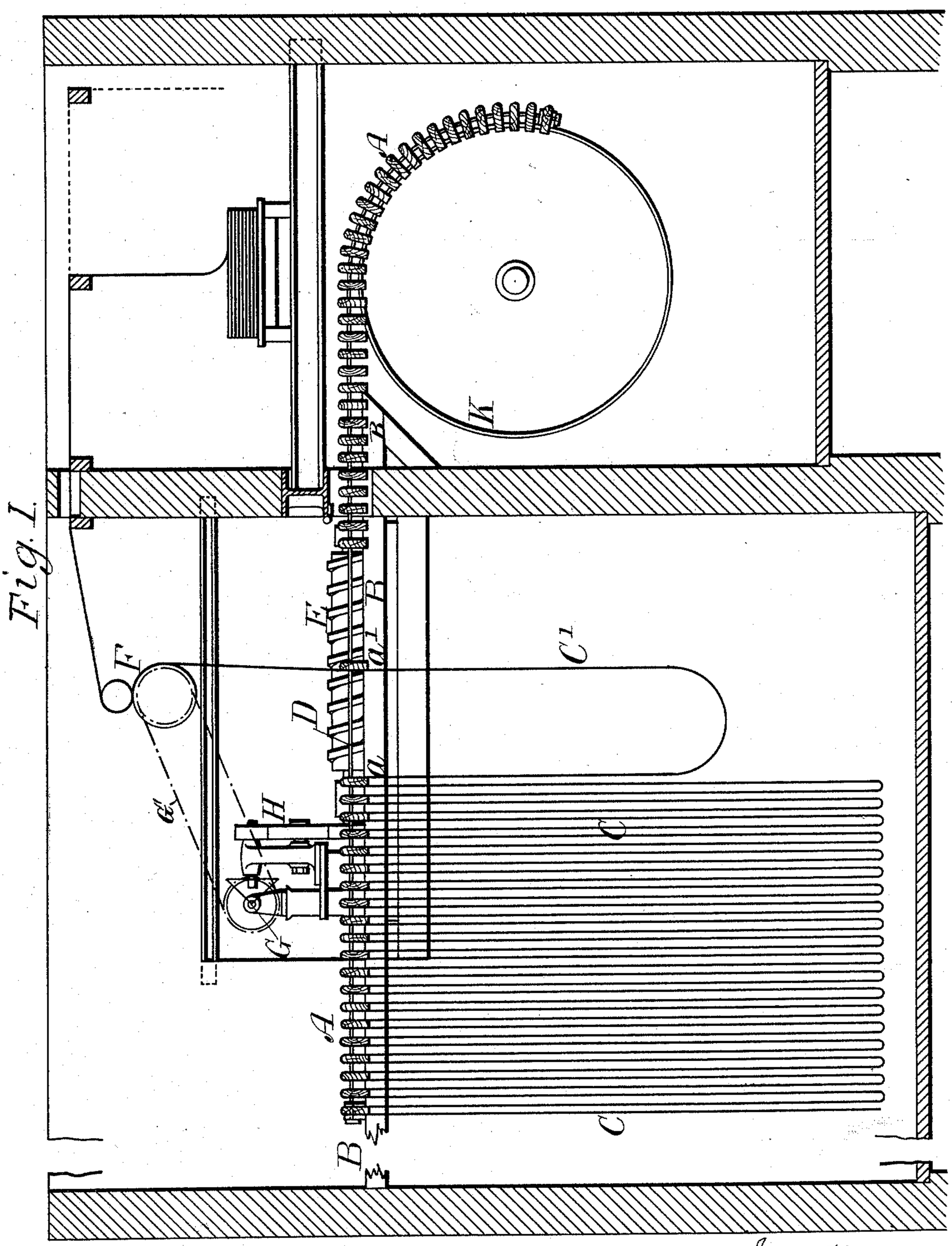


Fig. 1.

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Thos. A. Grant

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(No Model.) 2 Sheets—Sheet 2.

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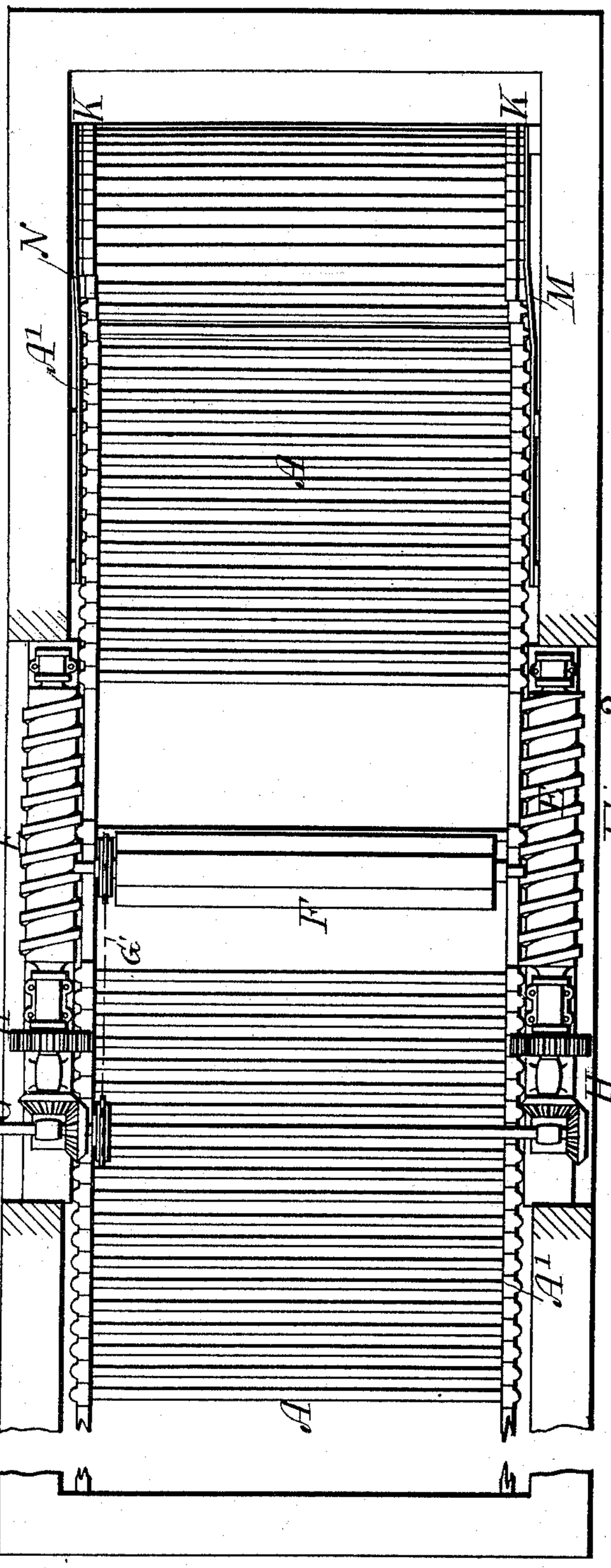


Fig. 2.

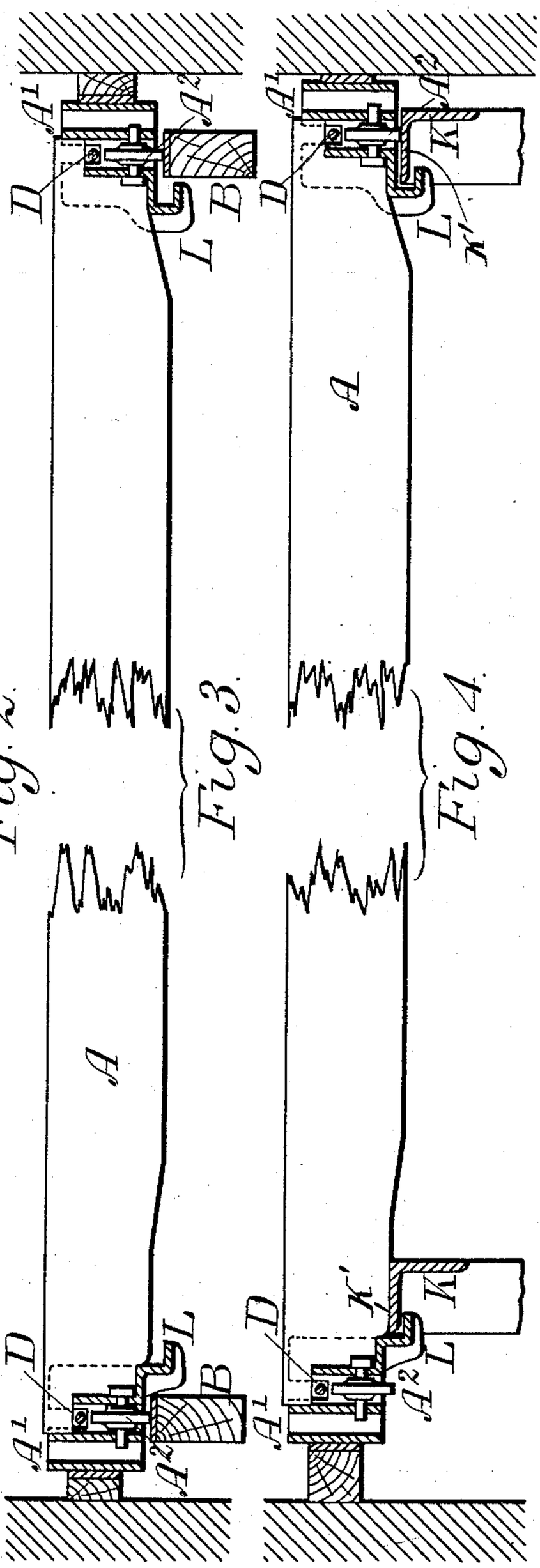


Fig. 3.




Fig. 4.

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# UNITED STATES PATENT OFFICE.

WILLIAM MATHER, OF MANCHESTER, ENGLAND, AND JOHN CHRISTIE, OF ALEXANDRIA, SCOTLAND, ASSIGNORS TO MATHER & PLATT, LIMITED, OF MANCHESTER, ENGLAND.

## APPARATUS FOR HANGING WEBS IN FOLDS IN DRYING-CHAMBERS.

SPECIFICATION forming part of Letters Patent No. 518,508, dated April 17, 1894.

Application filed August 1, 1893. Serial No. 482,107. (No model.) Patented in England September 28, 1892, No. 17,326.

*To all whom it may concern:*

Be it known that we, WILLIAM MATHER, residing at Salford Iron Works, Manchester, in the county of Lancaster, England, and JOHN CHRISTIE, of the firm of John Orr Ewing & Co., residing at Alexandria Works, Alexandria, Dumbartonshire, Scotland, subjects of the Queen of Great Britain, have invented certain new and useful Apparatus for Hanging Webs in Folds in Chambers for Steaming, Drying, Seasoning, and such Like Purposes, (for which we have obtained Letters Patent in Great Britain, dated September 28, 1892, No. 17,326,) of which the following is a specification.

This invention relates to apparatus whereby continuous webs of fabric are hung in folds or loops in chambers, in order to be steamed, dried, seasoned, or otherwise treated, as we shall describe referring to the accompanying drawings.

Figure 1 is a longitudinal section and Fig. 2 is a plan of the apparatus, Figs. 3 and 4 showing details to enlarged scale.

A number of spars A, preferably of wood with metal ends A′ forming rounded teeth, and preferably having rollers $A^2$ mounted in them, are arranged to travel parallel to each other along bearers or rails B supporting their ends. Each of the spars A carries a fold of the web, a loop C of which hangs down freely between each pair of the spars A, the pair being kept a little apart by projecting cheeks at each end. In order to hang the web in such folds and loops, mechanism of the following description is employed. All the spars are strung on a pair of spar supports, composed, as here shown, of ropes D, preferably wire ropes, passing through holes in the end fittings A′, these ropes being longer by several feet than the length occupied by the spars when they lie all as closely together as their projecting cheeks will permit. Each spar is in turn advanced into the chamber, being carried forward several feet by a worm E arranged at each side in the threads of which the ends A′ of each spar engage as it is drawn within reach of the threads by the advance of the preceding spar. There is thus left between each spar and the next spar in order, as indicated between *a* and *a′* Fig. 1, a space into which a loop of the web is delivered from suitable rollers F above, so that it hangs down as a wide loop C′. When the next spar is similarly advanced, this loop C′ is narrowed, and a succeeding wide loop is formed like C′ and then narrowed, the advance of each spar pushing onward by the width of a narrowed loop C all the spars in front of it, and by the pull of the ropes drawing onward all the spars behind it. For removing the web from the chamber, the movements of the mechanism are reversed, the web being drawn by the rollers F as loop after loop is widened out by retreat of the successive spars. The rollers F are driven by a belt as at G′ from a shaft G which is connected by bevel and speed reducing gear H to the worms E. When the spars are all moved from the chamber, they might be accommodated in a space at the end of the chamber, but, as this space would necessarily be as long as the chamber itself or nearly so, it is preferred to gather the spars on the circumferences of two parallel drums K K with lateral flanges K′ of which hooks L projecting from the ends of the spars become engaged as the spars are successively pushed out of the chamber, the ends of the spars then traveling along inclined guides M and N. These guides are arranged as shown, so that the inclined guide M acts upon the ends of the spars A to move them lengthwise, and thus cause the hooks L to pass under the flanges K′ of the drums K, as shown in Fig. 4. The space between the ends of the bearers or rails B and the drums K is, in practice, comparatively small, so that the spars A will properly pass onto the drums, and in this passage of the spars they are sustained by the supports or ropes D. The flexible ropes by which the spars are connected allow them to become rolled on the drums K. In cases where the spars, instead of being thus rolled on the wheels, are gathered in a straight line, rods may be substituted for the ropes which connect them, and the inclined guides M N would be dispensed with. Obviously for the worms E E endless chains might be substi-

tuted, presenting at intervals projecting teeth to catch the successive spars and advance them as described.

Having now particularly described the nature of this invention and the best means we know for carrying the same into practical effect, we claim—

1. An apparatus for hanging webs in folds, combining in its structure a chamber provided with parallel supports D located at its opposite sides, a series of parallel spars A crossing the said chamber, and each having its opposite ends engaged with and movable upon the said supports, mechanism arranged above the spars for hanging a web in folds between the same, and advancing mechanism acting upon opposite ends of the spars for moving each spar in turn up to and to take the place of the preceding spar after a fold of the web is hung down between two adjacent spars, substantially as described.

2. An apparatus for hanging webs in folds, combining in its structure a chamber having parallel supports D located at its opposite sides, a series of parallel spars A crossing the said chamber and each having its opposite ends engaged with and movable upon the said supports, means for hanging a web in folds between the spars, advancing mechanism acting upon the opposite ends of the spars for moving each spar in turn up to and to take the place of the preceding spar after a fold of the web is hung down between two adjacent spars, and a drying chamber into which the empty spars are successively delivered when the web is being removed therefrom, substantially as described.

3. The combination with a drying chamber, of a pair of flanged drums, a series of spars having hooks for engaging the flanges of the drums, and inclined side guides for the ends of the spars, substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 20th day of July, A. D. 1893.

WILLIAM MATHER.
JOHN CHRISTIE.

Witnesses to the signature of William Mather:

OLIVER IMRAY,
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THOMAS LAKE,
*Notary's Clerk, 17 Gracechurch Street, London.*

Witnesses to the signature of John Christie:

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WALTER DONALD ALLEN,
*Clerks, County Building, Dumbarton, Scotland.*