(No Model.) 2 Sheets—Sheet 1.

W. J. FOLEY.

PAPER MAKING MACHINE.

No. 304,091. Patented Aug. 26, 1884.

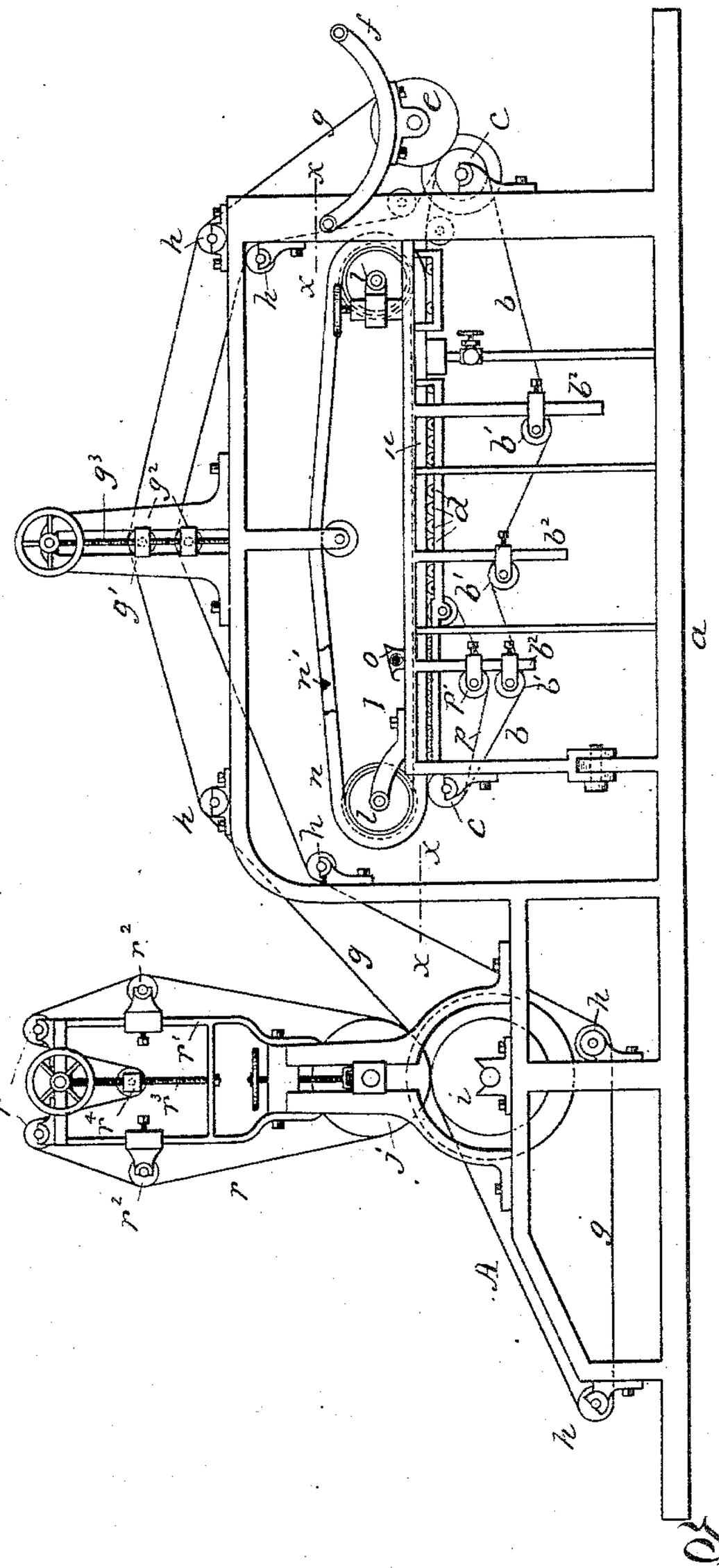

Fig. 1.

Witnesses
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Ed. F. Dimock

Inventor
William J. Foley
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(No Model.)

2 Sheets—Sheet 2.

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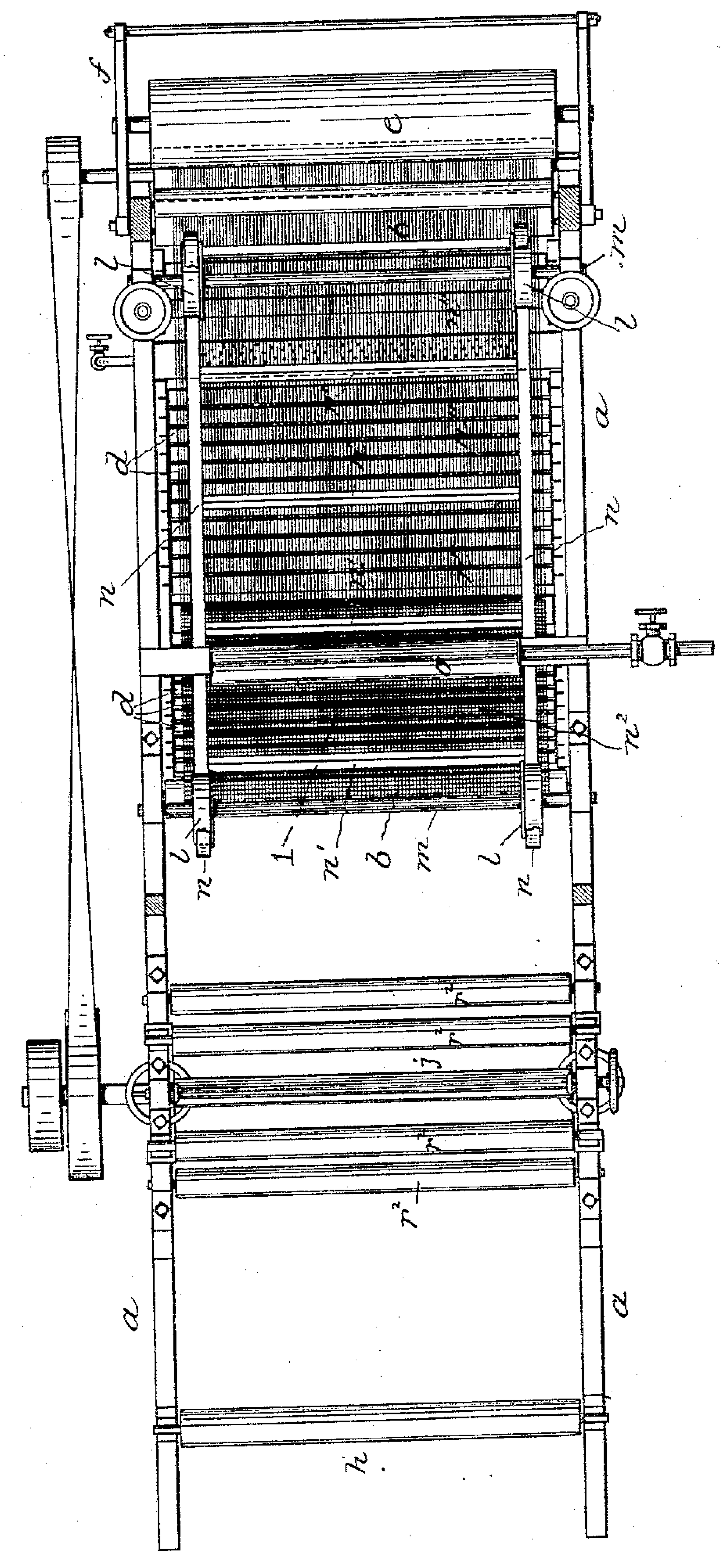

Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM J. FOLEY, OF EAST HARTFORD, CONNECTICUT, ASSIGNOR OF ONE-HALF TO ARTHUR W. EATON, OF SAME PLACE.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 304,091, dated August 26, 1884.

Application filed May 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. FOLEY, of East Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements Pertaining to Paper-Making Machines, of which the following is a description, reference being had to the accompanying drawings, where—

Figure 1 is a view in side elevation of so much of the paper-making machine as is necessary to illustrate my improvements. Fig. 2 is a plan view of the same, with parts in section to show construction. The frame and connected parts are cut away above the lines *x x* of Fig. 1, the endless felt is removed, and also the upper part of the deckles.

My invention has for its object the making, by the use of machinery, sheets of paper that shall have all the merits and characteristics of hand-made paper; and it consists in the method of making successive sheets of paper and in the means employed therefor, in the improved bottom for the mold-box, in the device for imparting the desired surface to the paper between the press-rolls, and in certain details in the construction of the machine, as more particularly hereinafter described.

My invention is shown in the accompanying drawings as applied to the Harper improved Fourdrinier machines, and the letter *a* therein denotes the frame of the machine, of the material and construction common to the class stated; *b*, the wire; *c*, the wire-rolls, and *d* the small tubular wire-supporting rolls, arranged in suitable bearings in the frame. The letter *e* denotes the coucher-roll, pivotally suspended in the coucher-frame *f*; *g*, the endless felt, which passes over the coucher-roll, over the felt-rolls *h*, and between the press-rolls *i j*, that are journaled in bearings in the ordinary manner.

The wire is adjusted as to tension by means of the adjustable rolls *b'*, supported in movable bearings having means for clamping them to the standards b^2, and the felt is adjusted as to tension by means of the tension-rolls *g'*, which are moved in their bearings g^2 by means of the threaded shaft g^3 and connected mechanism. These general features of the machine are of ordinary construction and operation.

The flanged pulleys *l* are fast to the transverse shafts *m* and support the deckles *n*, which, so far as the side deckles are concerned, are of ordinary material and construction; but at suitable intervals along the deckles I arrange the transverse bars *n'*, of like material as the bands which form the side deckles, and these are preferably triangular in cross-section, and arranged with the bearing-faces of the cross-pieces in the same plane with the bearing-surface of the side deckles when they rest upon the wire. By this means, as will be seen by a glance at Fig. 2, a series of individual and separate compartments, n^2, are formed by the contact of the side deckles and cross-bars with the wire.

The stuff, having been properly beaten and strained, is pumped from the stuff-box into the trough *o*, from which it overflows into the first compartment at the left of the deckle-frame. (Denoted in the drawings by Fig. 1.) The cross-bars of the deckle, in connection with the side deckles, hold a given supply of pulp in this forming-space or mold-box.

A movable bed, *p*, preferably of india-rubber or the like elastic material, is supported in the form of an endless apron by the rolls *e p'* and by part of the rolls *d*, and it extends below and slightly beyond the forming-space in such manner that the bed is carried by the rolls underneath the wire as it passes over the tubular rolls *d* in its passage from end to end of the horizontal part of the wire. The water drains from the pulp as the wire and the deckles move along, until, as the pulp passes over the suction-box *o'*, the greater part of the moisture is exhausted from the pulp in the ordinary manner.

By the devices already mentioned a continued series of successive sheets are formed upon the wire between the sides and the cross-bars of the deckles, and these sheets are transferred at the coucher-roll from the wire to the felt *g*, and they are moved with the felt along and over the machine in the direction indicated by the overlying arrows until they are passed between the press-rolls *i j*. If the upper press-rolls, *i*, were of metal, the paper would stick to the rolls and would tear in the removal; but to prevent this and to give to the paper

the desired appearance on both surfaces, I make use of the endless felt r, supported by transverse rolls r^2 in bearings in the frame r'. Ordinary means—as threaded shaft and wheel in combination with movable bearings—are used, as shown at r^3 r^4, for adjusting the tension of the felt r and the pressure between the press-rolls, respectively. The sheets, as they pass between the felts at the press-rolls, continue to cling to either of the felts with an equal tenacity, and the result is that gravity causes them to remain on the lower felt, g, from which they are removed at A by the machine-tender.

In the foregoing drawings many parts common to paper-making machines have been omitted, in order to make more clear the principal details of my invention; but enough of the connected parts have been shown to illustrate my improvements.

The sheets of paper produced by this within-described process and machinery have the peculiar surfaces and the peculiar deckle-edge common to hand-made papers.

I claim as my invention—

1. The within-described method of making sheets of paper, which consists in forming the sheets in succession in compartments upon the wire of the paper-making machine of the Fourdrinier type and subjecting the sheets to pressure between felts as they pass between the press-rolls, all substantially as described.

2. In a paper-making machine, in combination with the wire, deckle-edges provided with transverse connecting-bars, whereby separate and distinct compartments are formed upon the wire, all substantially as described.

3. In a paper-making machine, in combination, the wire, the deckles, and an endless apron supported beneath the wire and traveling with the latter for a certain distance along its horizontal path, whereby a movable bed is formed, all substantially as described.

4. In combination, in a paper-making machine, the deckles having the connected cross-bars, the wire, and the endless apron arranged beneath the wire, whereby a bed is provided for the forming-section, all substantially as described.

5. In a paper-making machine, the combination of the felt g and the felt r and their successive supporting and propelling rolls, all substantially as described, and for the purpose set forth.

6. In a paper-making machine, the combination of the lower press-roll, j, upper press-roll, i, and felts g and r with connected felt supporting and propelling mechanism, all substantially as described.

WILLIAM J. FOLEY.

Witnesses:
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H. R. WILLIAMS.