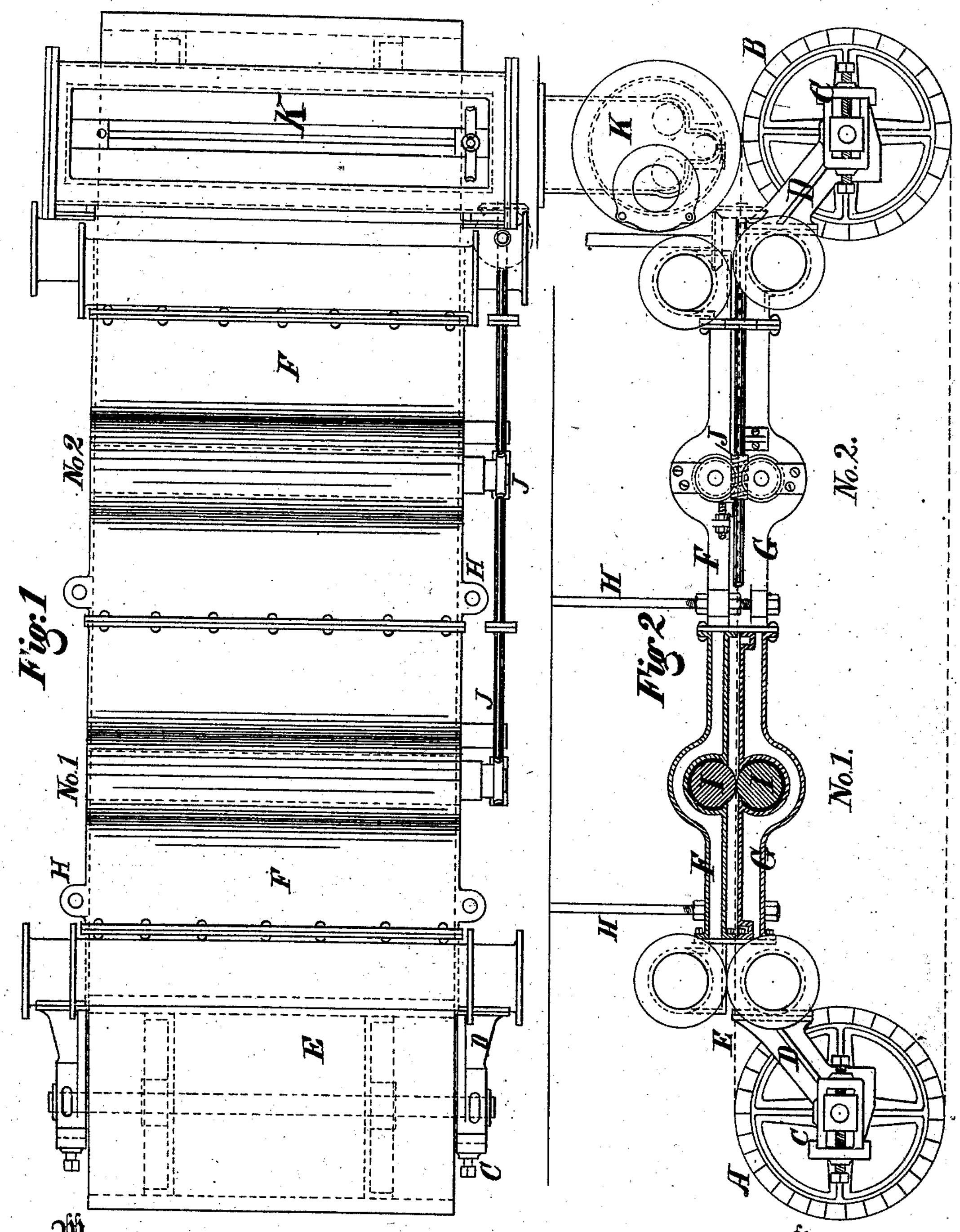
A. G. BRODIE.

DRIER.

No. 184,328. Patented Nov. 14, 1876.



Witnesses

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UNITED STATES PATENT OFFICE.

ALLAN G. BRODIE, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR OF ONE-HALF HIS RIGHT TO THOMAS S. HARRISON, OF PHILADELPHIA, PA.

IMPROVEMENT IN DRIERS.

Specification forming part of Letters Patent No. **184,328**, dated November 14, 1876; application filed May 8, 1876.

To all whom it may concern:

Be it known that I, ALLAN G. BRODIE, of New Brunswick, in the State of New Jersey, have invented a new and useful Drying Apparatus for Pulp White-Lead and other material, of which I hereby declare the following to be a full, clear, and precise description, and sufficient to enable others skilled in the art to which my invention appertains to comprehend and construct an apparatus embodying it, reference being had to the accompanying drawing, which forms part of this specification.

My invention relates to a class of devices aiming to effect the thorough drying of pulp white-lead and other material, and has for its object a cheap and effective device of such class; to which end it consists of the drying apparatus hereinafter described and claimed.

Of the drawings, which represent a very simple structure of apparatus embodying my invention, Figure 1 is a top-plan view; and Fig. 2, a side elevation, partially in section.

Similar letters of reference indicate corresponding parts wherever used.

The mechanical construction of the apparatus shown is the following: A B are two large horizontal drums, journaled in adjustable bearings C C, supported upon bracket-arms D D. E is a horizontal endless traveling apron, of metal, felt, or other material, passing around and operated by the drums A B. Above and below the apron are steam-radiating cases F G, preferably of the exact width of the apron, and constructed, for convenience, in distinct sections, (marked in the drawings as No. 1 and No. 2,) secured together by bolts or otherwise. The upper and lower cases are entirely separated from one another, there being no lateral inclosing connection, so that the apron is only inclosed upon top and bottom, while at the sides it is open, giving free access to the air. They are heated by steam or hot air through any fit series of pipes.

The cases preferably depend from hangers H H from the ceiling, and the bracket-arms D D may be attached to them, or may themselves constitute hangers for the drums; but the whole apparatus may be supported upon props or otherwise from below, so as to be placed upon the floor. Any number of sections of cases may be employed for any length of apron. Each double section of case is formed to inclose, and support in journals set in the sides of the cases, two or more double sets of rollers, I I, placed by twos approximately above one another, which serve to carry and ease the passage of the apron, forming together friction-rollers, while the upper one of each set serves also to flatten out the material spread upon the apron. The rollers are conveniently operated by means of a worm-shaft, J, at the side of the cases, which meshes with bevel-pinions, or the like, set upon the shafts of the rollers, and serves to impart to each set of rollers a motion of rotation inward together, and in the direction necessary to aid in the carriage of the apron.

Material to be dried is fed upon the apron at one end by means of any automatic hopper or other device, K, constructed so as to spread the material evenly across the entire width of the apron.

Edges may, for precaution, be formed upon the apron itself, or upon the lower case, or flanged rollers may be employed, to prevent any lateral escape of the material; or the double sets of rollers I I may themselves be flanged.

The worm-shaft J may be connected by any system of gearing with the drums A B and any feeding device within the hopper, so that power applied through any one pulley or shaft may serve to drive the entire operative mechanism of the drier.

Such being its construction, the device is operated by imparting motion to the drums A B, or one of them, and to the rollers I I, so as to set the apron in motion as the material to be dried is fed upon it, the same being dried by the heat radiated upon it from the steam-cases in its passage between them, and any portion adhering being removed from the apron by brush or scraper as the apron passes over the second drum.

The principal advantages are, that the apparatus is cheap, simple in construction, not liable to get out of order, being suspended from the ceiling, does not take up valuable space, and is capable of indefinite enlargement by the insertion of new sections and lengthening

of the belt—a result never before attained in a drying apparatus.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A drying apparatus for pulp white-lead and other material, consisting, essentially, of a horizontal endless drying-apron, E, the upper free portion of which, between its carrying-drums A B, is inclosed by two separate horizontal steam-radiating cases, F G, which cases are formed to support and almost inclose double sets of carrying and crushing rollers, I I, upon one extremity of the top of the upper portion of which apron the material to be dried is fed, and upon and by which apron such material is carried between the steam-cases and their rollers, and is thoroughly dried in its passage, substantially as described.

2. In a drying apparatus constructed as hereinbefore described, two distinct horizontal steam-radiating cases, F G, placed one above the other, each made in any desired number of sections, Nos. 1 and 2, adapted to be united together to form any desired length of case, and each section provided with and almost inclosing a roller, I, the whole adapted to receive, inclose, heat, and ease in carriage the free upper portion of a horizontal endless apron, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

ALLAN G. BRODIE.

Witnesses:
NICHS. S. WINCKLER,
GEO. W. DAVIES.