(No Model.)

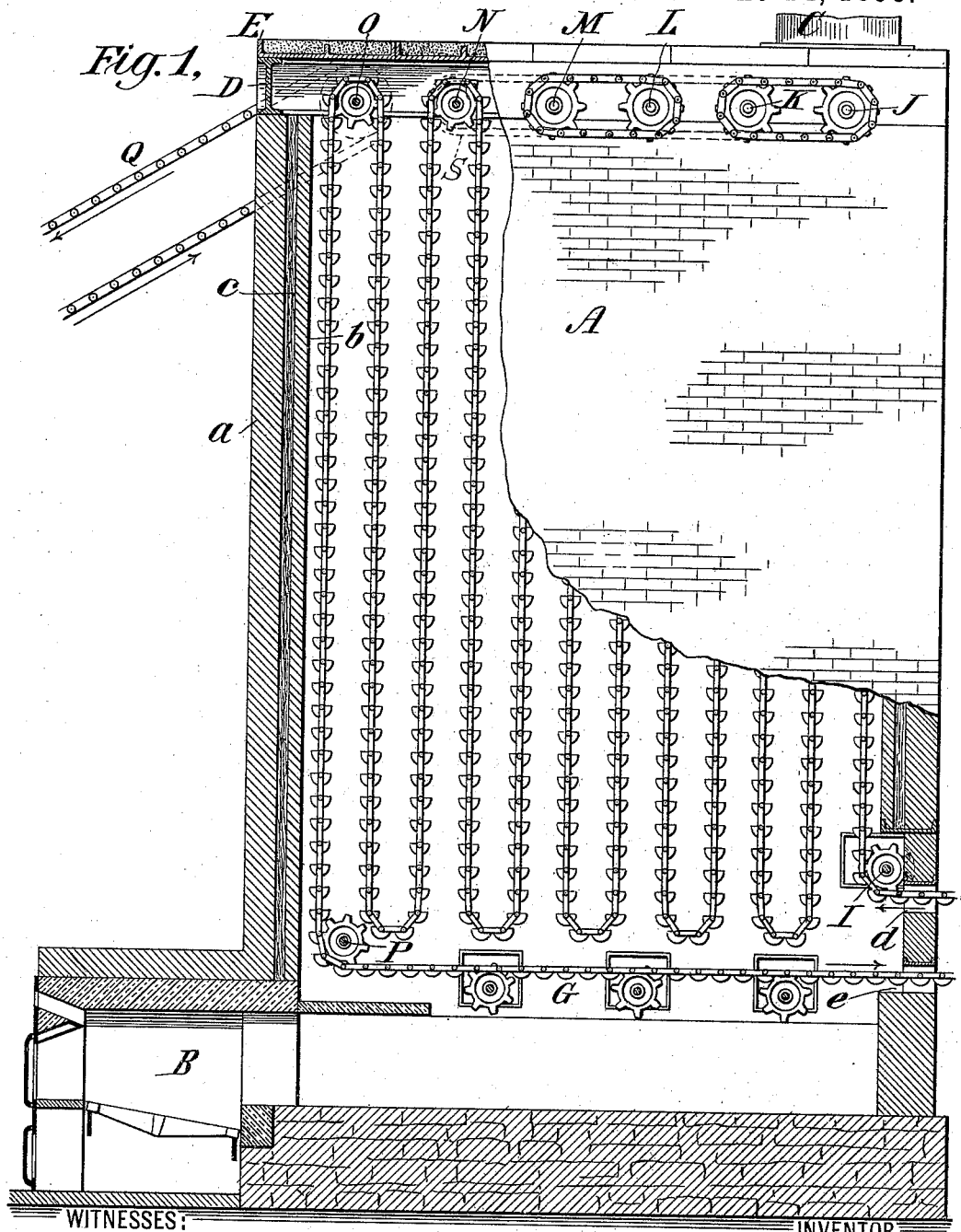
2 Sheets—Sheet 1.

T. A. EDISON.

DRYING APPARATUS.

No. 605,475. Patented June 14, 1898.

Fig. 1.



WITNESSES:

D. F. Hayford.

Jno. R. Taylor

INVENTOR

Thomas A. Edison

BY

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ATTORNEYS

(No Model.)

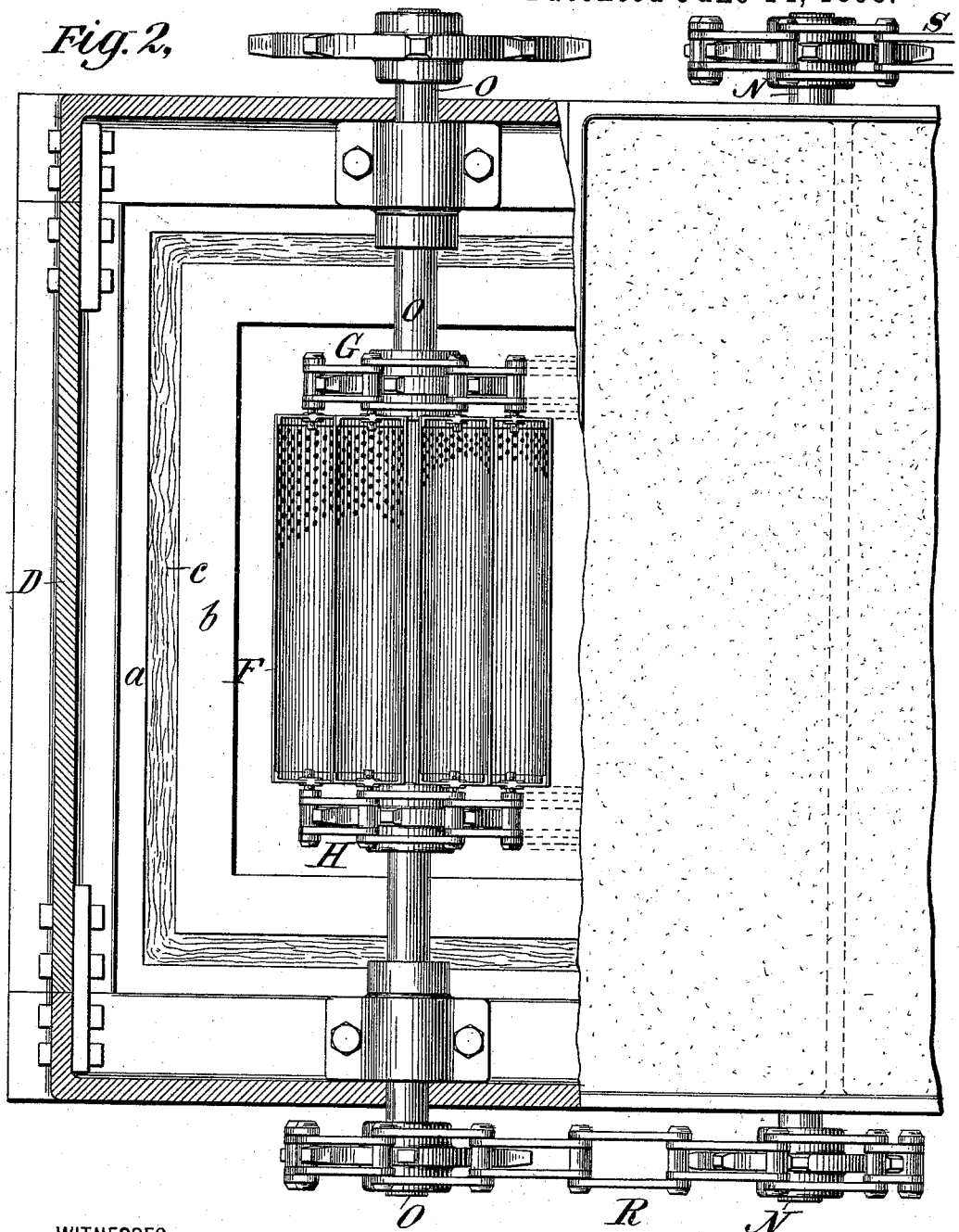
2 Sheets—Sheet 2.

T. A. EDISON.

DRYING APPARATUS.

No. 605,475. Patented June 14, 1898.

Fig. 2,



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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 605,475, dated June 14, 1898.

Application filed June 29, 1897. Serial No. 642,814. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Ovens, (Case No. 980,) of which the following is a specification.

The object I have in view is to produce a drying or baking oven suitable for the drying or baking of iron-ore briquets or analogous material.

In the accompanying drawings, forming part hereof, Figure 1 is an elevation and partial section of the oven, and Fig. 2 is a top view with a portion of the top of the oven removed.

The heating-chamber A of the oven is a vertical chamber or stack having an oblong cross-section. The vertical walls are preferably of ordinary brick *a*, lined inside with fire-brick *b* and an intermediate filling *c* of mineral wool or asbestos. Below the stack and at one end thereof is the furnace B, which delivers the products of combustion to the entire lower end of the heating-chamber, from which they escape at the upper end through a stack C. A controllable supply of air is furnished to the furnace both above and below the grate-bars. Upon the top of the vertical walls are mounted I-beams D, the top of the oven being closed by plates E, which are covered with sand. The troughs, buckets, or shelves F, which carry the briquets, are of sheet metal and preferably perforated, as shown, to permit the hot gases to pass through the load of briquets carried by each. They are preferably U shape in cross-section and are closed at their ends by semicircular metal plates, which are swung on the pivot-pins connecting the links of two chains G H. These bucket-pins are case-hardened, since they cannot be lubricated, and I have found that this gives a smooth glassy surface which has the minimum friction and wear. The chains G H enter the rear wall of the oven at its lower end through a suitable opening *d* and pass around guiding sprocket-wheels on a shaft I, suitably supported within the oven. The chains then pass upwardly to the top of the oven and over sprocket-wheels on a shaft J, which extends across the oven and out through the I-beams D on its side walls. After passing over the sprocket-wheels on the shaft J the chains hang in a free loop extending to near the bottom of the heating-chamber and returning to sprocket-wheels on a shaft K at the top of the oven. In the same manner the chains extend over sprocket-wheels on other shafts L, M, N, and O, hanging in free loops between these shafts. After passing over the sprocket-wheels on the last shaft O the chains pass downwardly to the bottom of the oven, around guiding sprocket-wheels on a shaft P, and horizontally toward the rear of the oven and out through a suitable opening *e* to a conveyer, into which the buckets discharge, the chains being supported between the shaft P and this opening by a suitable number of sprocket-wheels. To drive the chains and the buckets supported by them so as to maintain the position of the freely-hanging loops, I connect a driving-chain Q with a sprocket-wheel on the shaft O outside of the oven. At the other end the shaft O is connected by a chain R with a sprocket-wheel on the end of the shaft N outside of the oven. The shaft N is in turn connected at its other end by a chain S with a sprocket-wheel on the end of the shaft M. In like manner the shaft M is coupled to the shaft L, the shaft L to the shaft K, and the shaft K to the shaft J, all these sprocket-chains being located outside of the oven. Thus the motion communicated to the shaft O by the driving-chain Q is in turn communicated with the same speed to all the other shafts at the top of the oven, over which the bucket-chains are looped, and the length of the loops is thus maintained the same.

By having the bucket-chains hang in loops in the heating-chamber no trouble is caused by contraction and expansion and a great length of the chains is secured in a heating-chamber of minimum size.

What I claim is—

1. In a heating or baking oven for drying or baking pulverized ore and similar material in bulk, the combination of a vertically-disposed heating-chamber, means for heating the same, a series of shafts passing through the interior of the chamber near the upper end thereof, a continuous conveying-chain near each side of the chamber extending over said shafts and hanging in free loops, a series

of swinging buckets carried by said chains, and means for driving the chains at an approximately constant speed throughout their lengths, substantially as and for the purposes set forth.

2. In a heating or baking oven for drying or baking pulverized ore and similar material in bulk, the combination of a vertically-disposed heating-chamber, a furnace adjacent to said chamber, the products of combustion of which are directed through the chamber, shafts mounted in the heating-chamber near its upper end and in the same horizontal plane, a continuous conveying-chain near each side of the chamber extending over said shafts and hanging in free loops, a series of swinging buckets carried by said chains, and means for driving the chains at an approximately constant speed throughout their lengths, substantially as and for the purposes set forth.

3. In a heating and baking oven, the combination of a vertical heating-chamber, shafts passing through the interior of the chamber, sprocket-wheels on said shafts within the chamber, chains hanging in free loops from said sprocket-wheels, a series of flights for carrying material attached to the chains, and means for driving the shafts positively at the same rate of speed, substantially as set forth.

4. In a heating and baking oven, the combination of a vertical heating-chamber, shafts passing through the interior of the chamber, sprocket-wheels on said shafts within the chamber, endless chains hanging in free loops from said sprocket-wheels, a series of swinging flights for carrying material attached to the chains, means for driving one of the shafts outside of the chamber, and sprocket-wheels and chains connecting the several shafts outside the chamber arranged alternately on opposite sides of the chamber, whereby all the shafts will be driven at the same rate of speed, substantially as set forth.

5. In a heating and baking oven, the combination of a vertical heating-chamber, shafts passing across the top of said chamber, sprocket-wheels on said shafts within the chamber, chains hanging in free loops from said sprocket-wheels, and a series of swinging perforated U-shaped buckets carried by said chains, substantially as set forth.

6. In a heating and baking oven, the combination of a vertical heating-chamber, shafts passing across the top of said chamber, sprocket-wheels on said shafts within the chamber, a conveyer formed of endless chains passing over said sprocket-wheels with a series of swinging buckets between them, said conveyer hanging in free loops in the chamber, and means for supporting and conducting part of such conveyer without the oven, whereby the material may be placed upon or removed from the buckets of the conveyers, substantially as set forth.

This specification signed and witnessed this 10th day of June, 1897.

THOMAS A. EDISON.

Witnesses:
RICHARD N. DYER,
W. PELZER.