

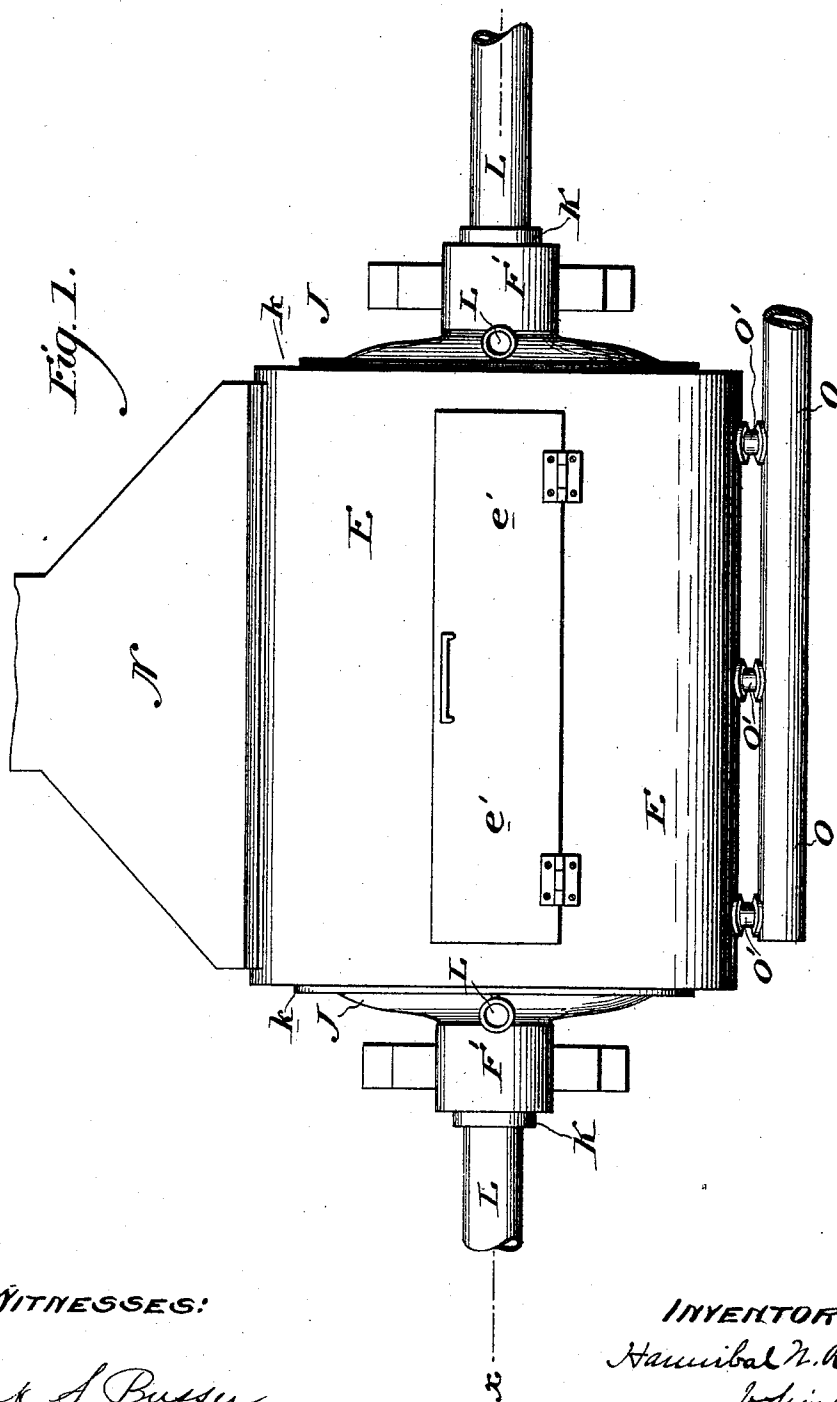
(No Model.)

3 Sheets—Sheet 1.

H. W. RAPPLEYE.
DRYING APPARATUS.

No. 484,821.

Patented Oct. 25, 1892.



WITNESSES:

Frank S. Bussell
Harry Handwick

INVENTOR:

Hannibal W. Rappleye
by his atty
J. H. Harding

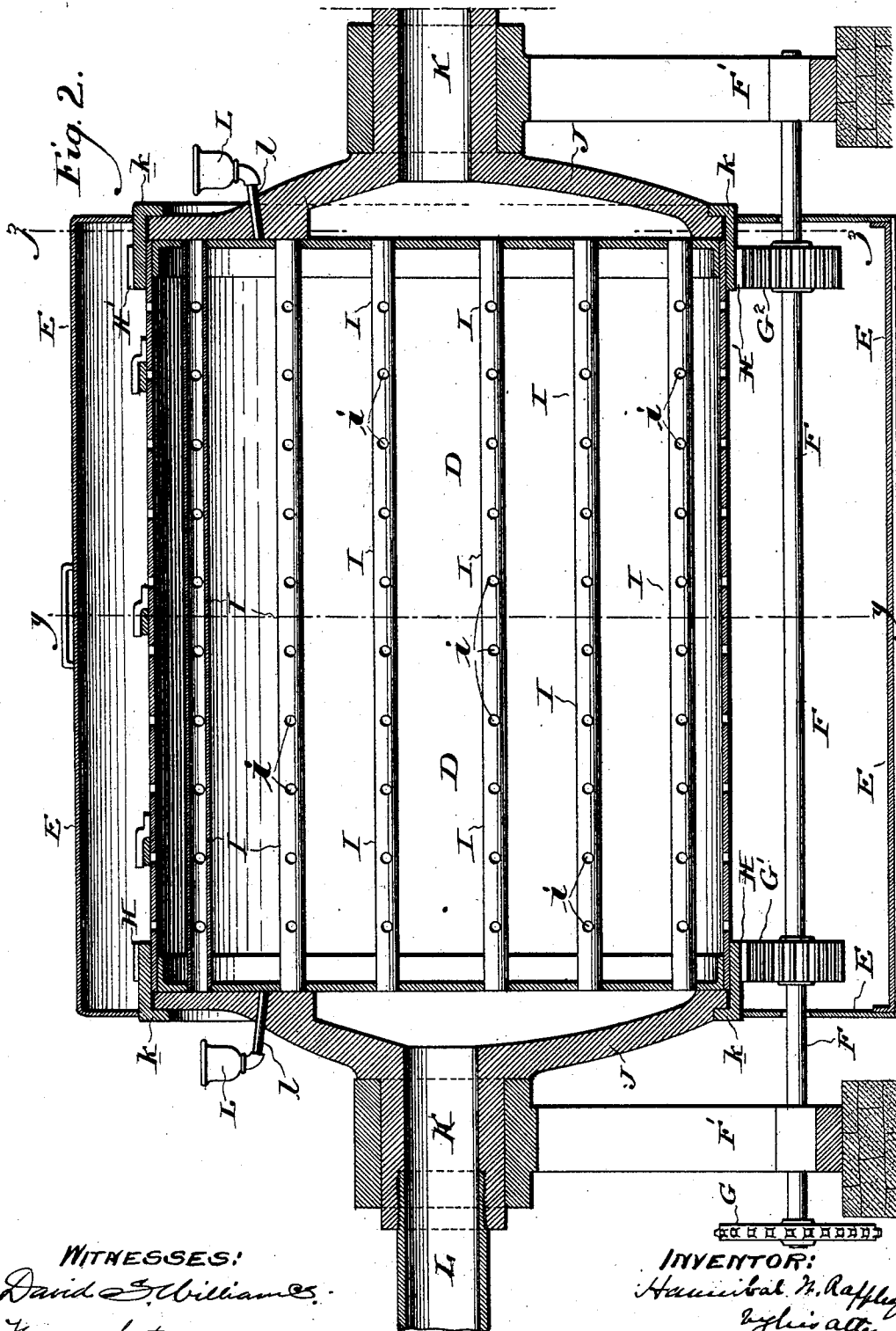
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WITNESSES:
David S. Williams.
Frank J. Bussan

INVENTOR:
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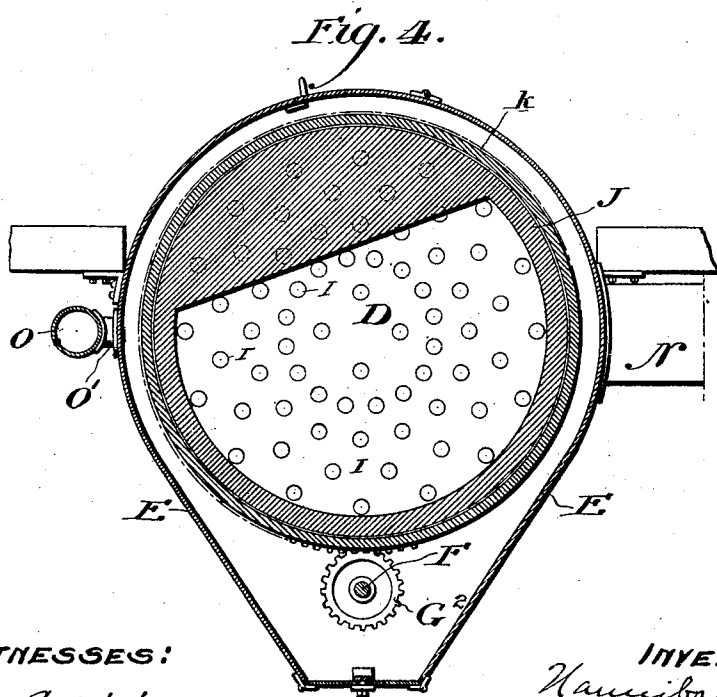
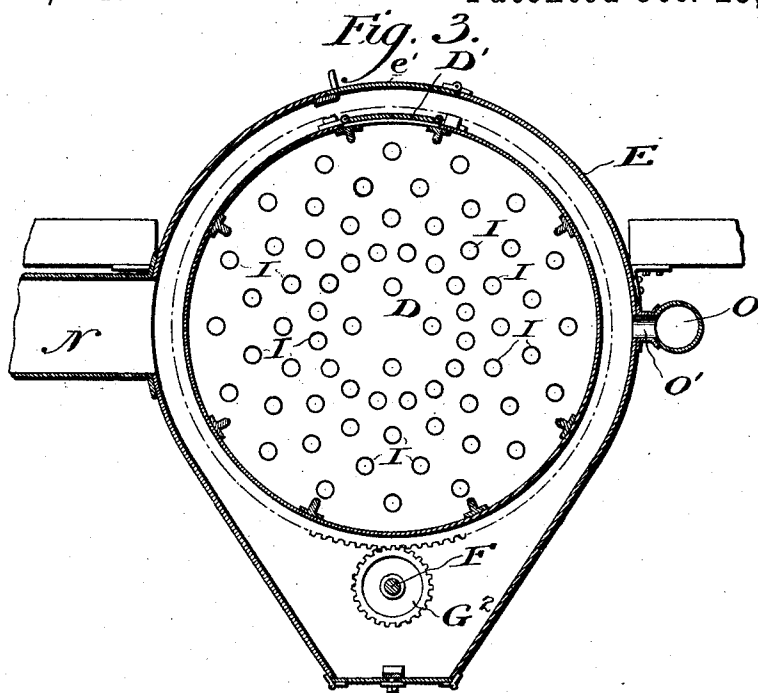
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INVENTOR:

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UNITED STATES PATENT OFFICE.

HANNIBAL W. RAPPLEYE, OF PHILADELPHIA, PENNSYLVANIA.

DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 484,821, dated October 25, 1892.

Application filed September 4, 1891. Serial No. 404,714. (No model.)

To all whom it may concern:

Be it known that I, HANNIBAL W. RAPPLEYE, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Drying Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of drying-machines which consists in a rotary vessel in which the material to be dried is placed and hot air or other heating medium is passed through said vessel and the material therein contained; and it consists in certain novel mechanism to cause all the heat to be used in that portion of the cylinder containing the material to be dried.

I will now describe the preferred form of embodiment of my invention, although the same may be varied without departing from my invention.

In the drawings, Figure 1 is a plan view of machine. Fig. 2 is a sectional view on line *x x*, Fig. 1. Fig. 3 is a sectional view on line *y y*, Fig. 2. Fig. 4 is a sectional view on line *z z*, Fig. 2.

D is a cylinder in which the material to be dried is placed, provided with a perforated periphery and closed ends. Surrounding the cylinder D is the casing or cylinder E, which is solid. A door or opening D' is provided on the periphery of the cylinder D, and a door *e'* is also provided on the periphery of the casing or cylinder E.

F is a shaft supported in uprights F' F', one adjacent to each end of the cylinder D. Upon the shaft F is the sprocket-wheel G, which is driven from any desired source of power.

G' G' are gear-wheels upon the shaft F, one at each end of the cylinder D and which engage gear on said cylinder to rotate said cylinder H H'. Within the cylinder D and extending through the ends of the cylinder are the pipes I, provided with openings *i*.

J J are heads, one at each end of the cylinder. These heads surround the ends of the cylinder, and angle-guards *k* are secured to cylinder D and project over the heads J J, as shown in Fig. 2. The heads J J are supported

upon hollow trunnions K K. A portion of the heads are cut away, forming a recessed chamber O, as shown in Fig. 4, and the hollow trunnions K K open into this recessed chamber O, and a pipe L, adapted to carry hot air, is connected to each of these bearings, so that hot air is admitted to the recessed chamber O. The trunnions K K are supported by the uprights F' F', in which the shaft F finds a bearing. As may be seen from the drawings, the heads J J, where they are not cut away to form the recessed chamber O, rest closely against the cylinder D, thus closing the pipes I at that point; but where the heads are cut away a recessed chamber is formed between the heads and cylinder, and the hot air passing through the supports K K will pass into said chamber and through the pipes I. Oil-pipes *l l* lead from oil-reservoirs L L to the portion where heads J J and cylinder D are in contact to prevent friction.

It is especially desirous to concentrate the heat at that portion of the cylinder D where the material is, and I accomplish this with my machine. The hot air enters through the hollow trunnions K K in the recessed chamber formed in the recessed chamber O, from which it passes through the perforated pipes I, which are in line with said chamber, into the cylinder D and through the material, and with the moisture it has absorbed it passes through the perforated periphery of cylinder D into the outer casing E, whence it passes to outlet N.

In order to prevent the temperature falling, so that moisture abstracted from the material will be deposited in the casing E, a super-heater is provided, which connects with casing E by the openings O', by which means hot air is carried into the casing and the temperature retained, so that the moisture will not be deposited in the casing E.

The operation is as follows: The material to be dried is placed in the cylinder D, the doors of both the cylinder D and casing E closed, the cylinder D revolved as described, and hot air admitted through the trunnions K K. As the cylinder revolves the pipes I will come in line with the recessed chamber O, when hot air will pass through them, and then come in line with the solid portion of the heads, when they receive no hot air, the

pipes which are above the material being in line with the solid portion of heads and the pipes surrounded by material being in line with the recessed chamber O. The operation
5 is continued until the material is sufficiently dried, when it is removed through the bottom or lower surface of cylinder D and casing E, and during the operation as the pipes rise
10 above the material they come in line with the closed portion of heads, and when they are surrounded by material they come in line with the recessed chamber O. In some cases the pipes I need not be perforated, in which
15 case the hot air passes through the pipes without escaping into the material, in which case steam or hot air would be admitted through one of the supports J J only, the other support J being used for the purpose of allowing the steam or hot air to pass out.

20 I do not intend to limit myself to the specific construction of cylinder or head or the specific mechanism for operating the cylinder. The extent of the recessed chamber O may be varied.

25 Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a drying apparatus, the combination
30 of a rotary cylinder, pipes passing through the cylinder, and a stationary head recessed

or cut away, except at its upper part, to form a heat-chamber communicating with the pipes.

2. In a drying apparatus, the combination of a rotary cylinder having closed ends, perforated pipes passing through the cylinder, 35 and a stationary head fitting against the end of the cylinder, said head recessed or cut away, except at its upper portion.

3. In a drying apparatus, the combination of a rotary cylinder, pipes passing through 40 the cylinder, and a stationary head recessed or cut away, except at its upper part, to form a heat-chamber communicating with the pipes, the upper portion of said head being substantially flush with said cylinder. 45

4. In a drying apparatus, the combination of a rotary cylinder having closed ends, perforated pipes passing through said cylinder, and a stationary head fitting against the end of the cylinder, said head recessed or cut 50 away, except at its upper portion, the upper portion of said head being substantially flush with said cylinder.

In testimony of which invention I have hereunto set my hand.

H. W. RAPPLEYE.

Witnesses:

FRANK S. BUSSEY,
HARRY HARDWICK.