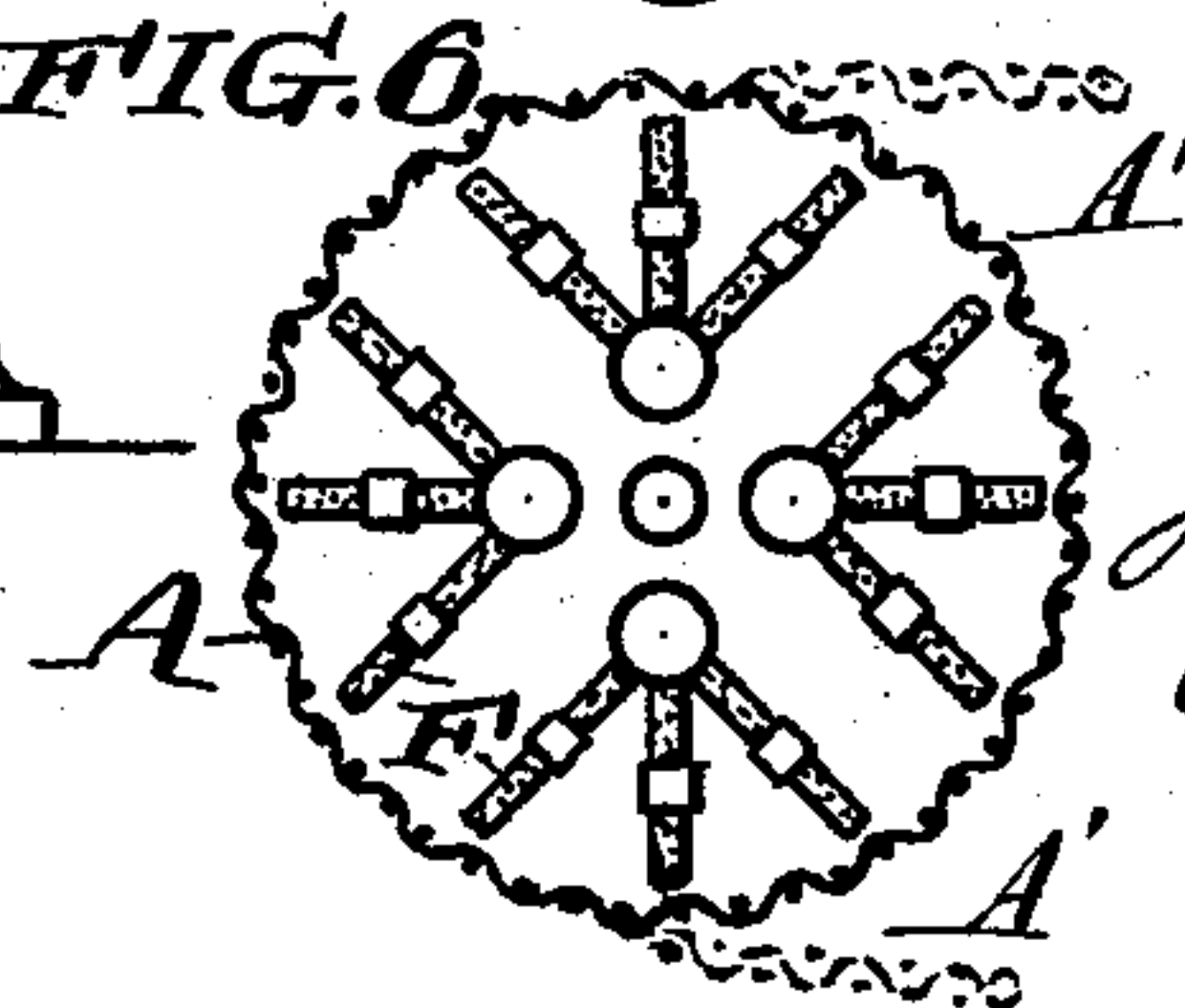
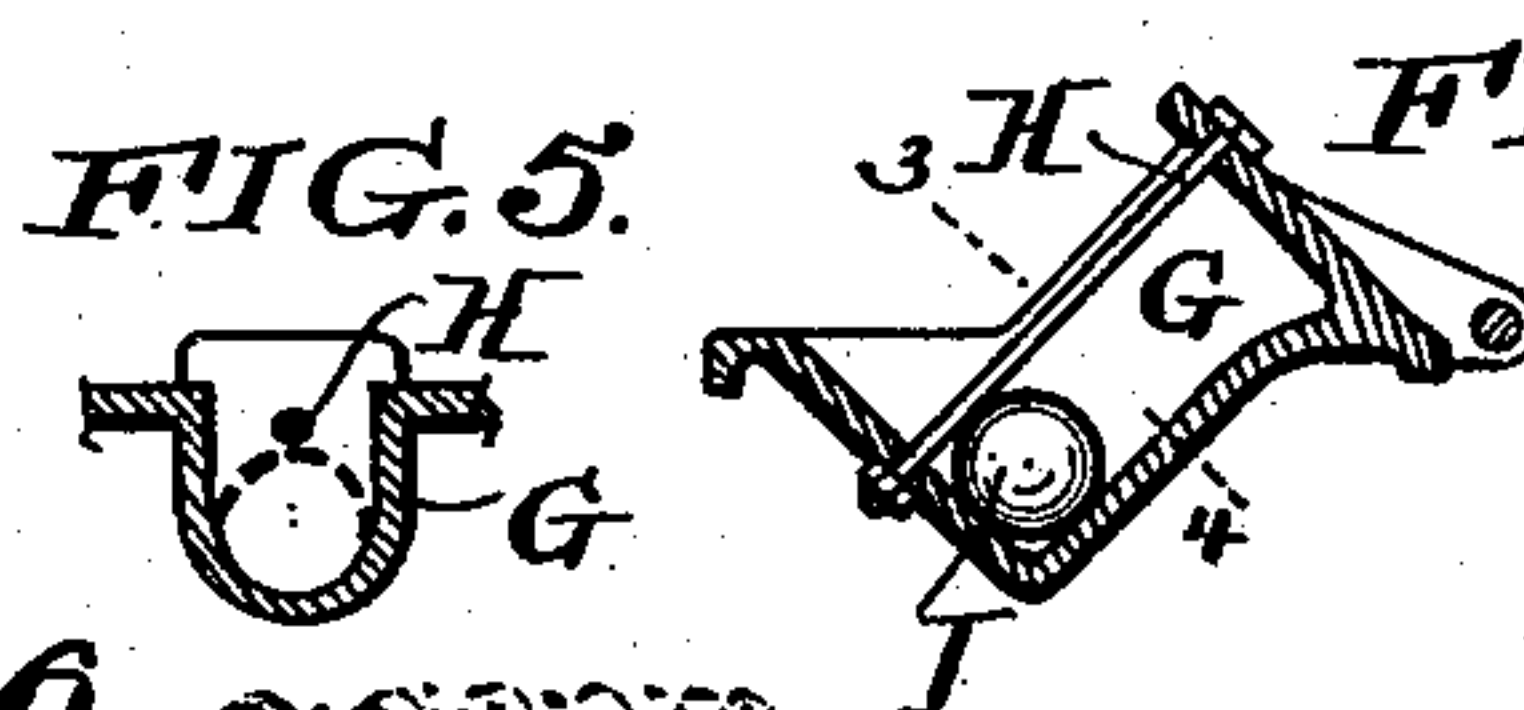
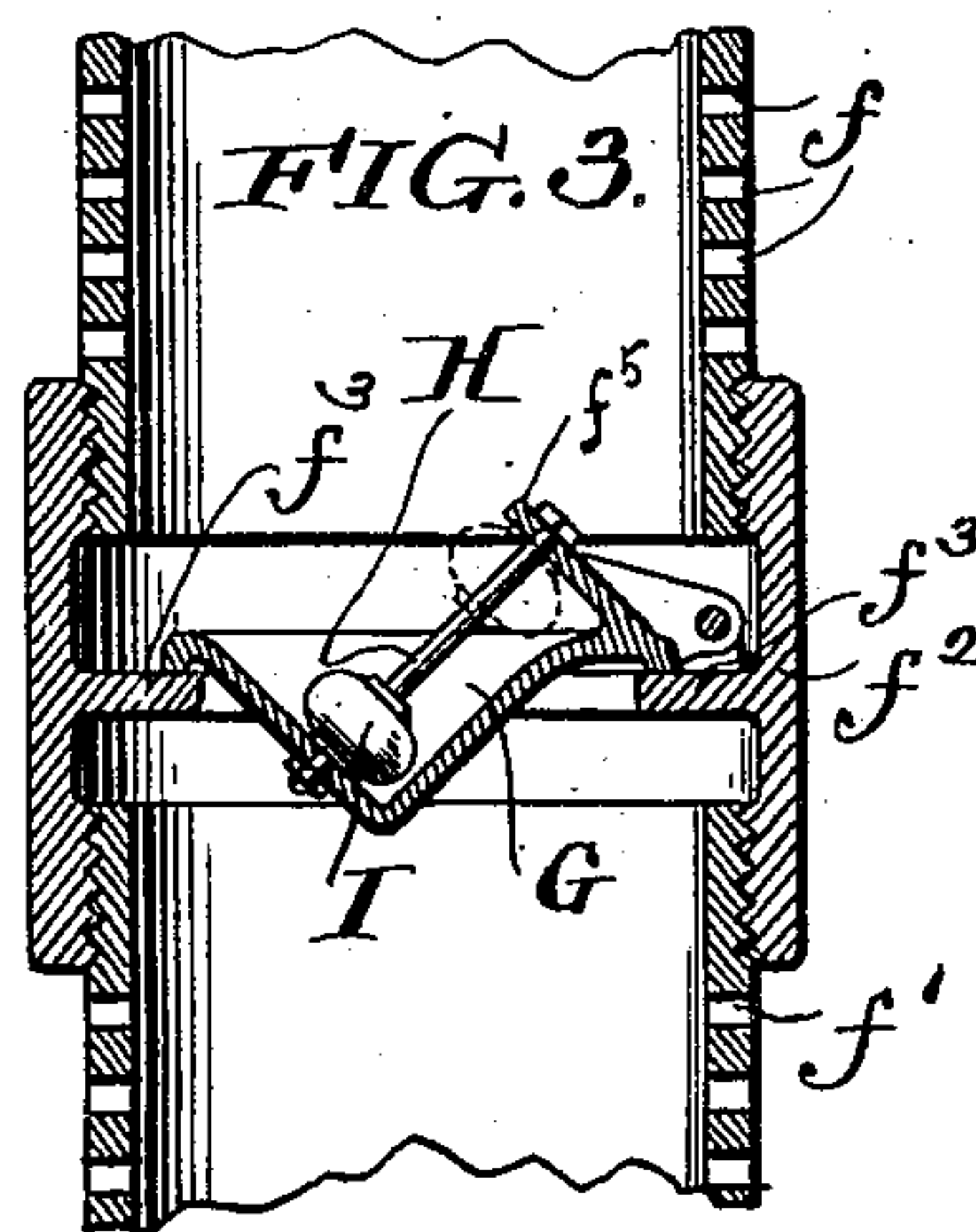
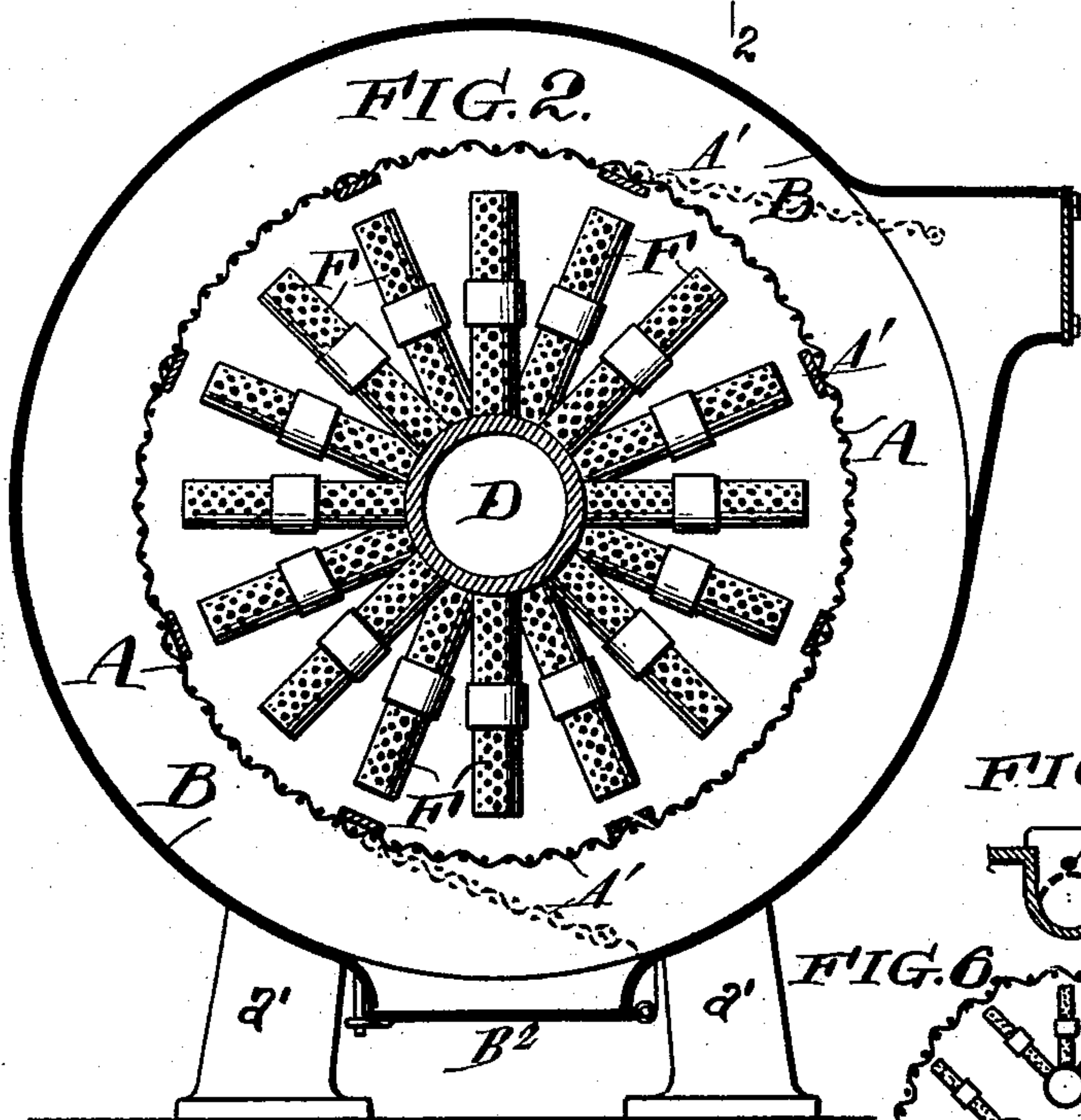
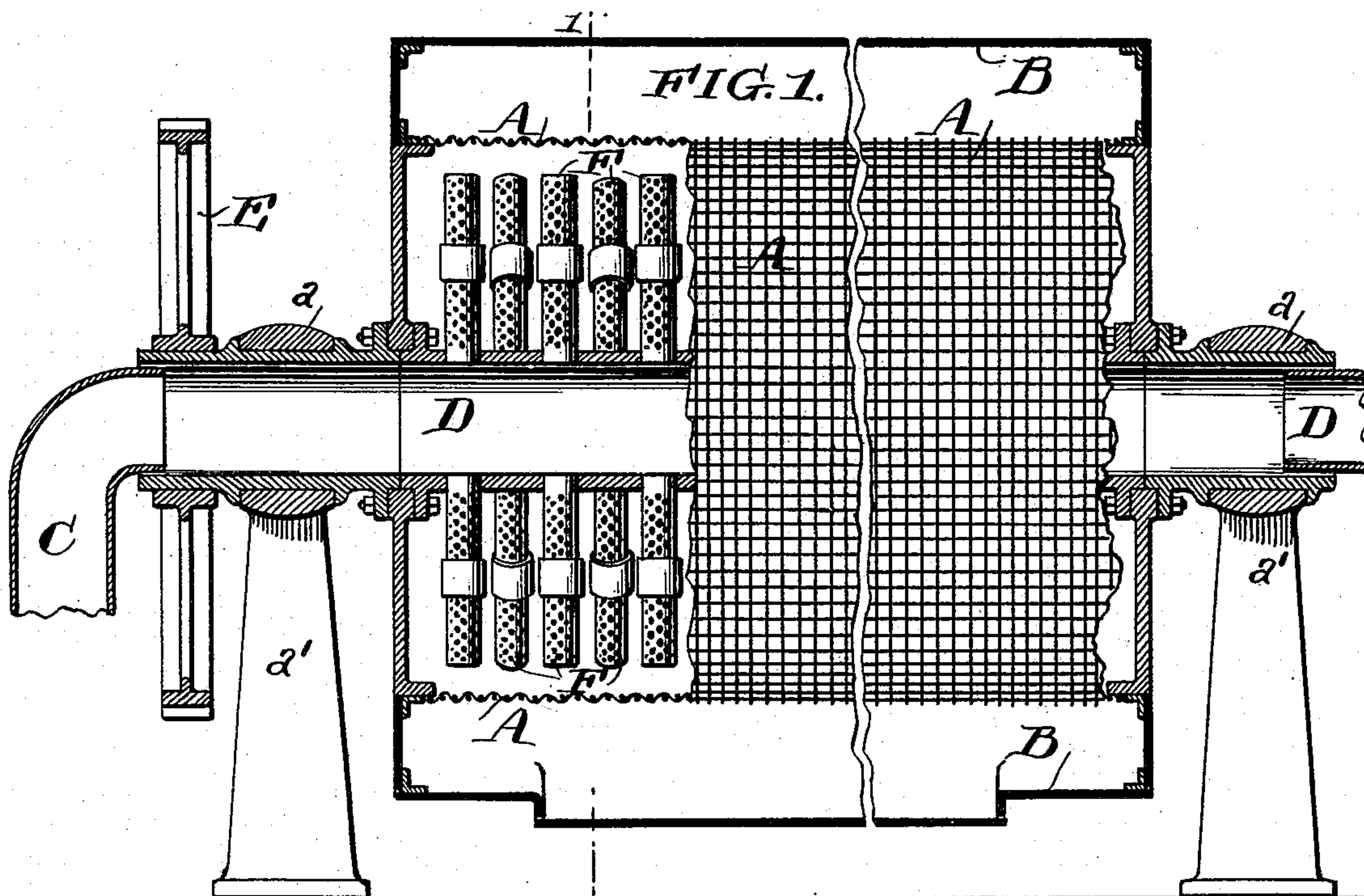


(No Model.)

J. J. DE KINDER & A. S. VOGT.
DRYING MACHINE.

No. 506,917.

Patented Oct. 17, 1893.



WITNESSES:
Henry Drury
Frank A. Bussan

INVENTORS:
Joseph De Kinder
A. S. Vogt
by the undersigned
J. H. Hendrix

UNITED STATES PATENT OFFICE.

JOSEPH J. DE KINDER, OF PHILADELPHIA, AND AXEL S. VOGT, OF ALTOONA,
PENNSYLVANIA.

DRYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 506,917, dated October 17, 1893.

Application filed October 11, 1892. Serial No. 448,499. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH J. DE KINDER, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and
5 AXEL S. VOGT, a subject of the King of Sweden and Norway, and a resident of Altoona, county of Blair, State of Pennsylvania, have invented a new and useful Improvement in Drying-Machines, of which the following is a
10 full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

Our invention has for its object the production of a machine in which various materials may be treated and thoroughly dried, and it is especially adapted for the drying of what are known as brewers' grains; and our invention consists in certain arrangements and combination of mechanism whereby the
15 heat is evenly distributed to the material to be dried and is prevented from passing into that portion of the receptacle unoccupied by the material to be dried.

In the drawings—Figure 1 is a longitudinal
25 section partially in elevation of our apparatus. Fig. 2 is a section on line 1—2, Fig. 1. Fig. 3 is a section of one of the pipes. Fig. 4 is a detached perspective view of a modified form of port closing device. Fig. 5 is a section
30 on the line 3—4, Fig. 4. Fig. 6 is a view similar to Fig. 2 of a modified form of apparatus.

A is the receptacle for the material to be dried, which is preferably a perforated cylinder having doors or movable portions, A', for
35 the insertion and removal of the material, and surrounded by a solid casing B having corresponding doors, B' B².

C are the steam or other heat-inlet pipes.
40 Through the cylinder A passes the conduit or pipe D, which is secured to said cylinder A and opens into the pipe C. This pipe D rests in bearings *a* upon the support or stands *a'*, and it is adapted to revolve, and may be re-
45 volved by means of the wheel E secured to said pipe D beyond the cylinder A (Fig. 1). Within the cylinder A, opening into said conduit D and projecting therefrom at an angle to the axis of rotation of said pipe D, are the
50 perforated pipes F. These pipes are made

in two sections, *f*, *f'* (see Fig. 3), connected together by the joints *f*², said joints having the inwardly projecting flange *f*³, forming what may be called a port between the two sections of pipe F.

G is an angle-iron frame, forming a valve, the extent of which is greater than the width of the port. One end of this angle frame or valve is pivoted to one side of the flange *f*³, and the projecting portion of the angle frame
55 or valve is adapted to rest on the flange *f*³.

H is a rod connected to one arm of the angle frame, and connected at its other end to an arm *f*⁵ projecting from the angle-iron frame or valve G. Upon this rod is the weighted
60 sphere or ball I, through which ball the rod H passes loosely. In place of the ball or sphere being suspended on the rod H, it may be placed between the rod H and the angle-frame (see Figs. 4 and 5). As may readily be seen,
65 as the pipes F revolve, the ball I will slide upon the rod (or between the rod and the frame), tilting the frame, and according to the position of the ball, open or close the port. The closing of the port occurs when the pipe
70 is standing inclined upward in the position projecting upward from the conduit or pipe D, and as the pipe moves downward from the vertical position it opens, the closed position being that where a portion of pipe F projects
75 beyond the material to be dried.

Instead of using a single central conduit, a series of conduits or pipes may be used, as shown in Fig. 6.

Having now fully described our invention,
80 what we claim, and desire to protect by Letters Patent, is—

1. In a drying machine the combination with a receptacle to receive the material to be dried, of a heat conduit extending through
85 said receptacle and adapted to rotate with said receptacle, pipes opening into and projecting from said conduit at an angle to the axis of rotation of said conduit, said pipes being provided internally with a port, an angle
90 framed valve adapted to cover said port, said angle framed valve being hinged, and a weight upon said frame adapted to move upon said frame when said pipe is revolved.

2. In a drying machine the combination 100

with a receptacle to receive the material to be dried, of a heat conduit extending through said receptacle and adapted to rotate with said receptacle, pipes opening into and projecting from said conduit at an angle to the axis of rotation of said pipe, said pipes being provided internally with a port, an angle framed valve adapted to cover said port, said angle framed valve being hinged, a rod or bar secured to said angle frame, and a weight through which said rod or bar passes and upon which said weight is adapted to slide.

3. In a drying machine the combination with a receptacle to receive the material to be dried, of a heat conduit extending through said receptacle and adapted to rotate with said receptacle, pipes opening into and projecting from said conduit at an angle to the axis of rotation of said conduit, said pipe being formed in two parts, a joint uniting said parts, said joint having an internal flange which forms a port within said pipes, an angle framed valve adapted to cover said port, said angle framed valve being pivoted and a

weight upon said valve and adapted to move upon the frame when said pipe is revolved.

4. In a drying machine the combination with a receptacle to receive the material to be dried, of a heat conduit extending through said receptacle and adapted to rotate with said receptacle, pipes opening into and projecting from said conduit at an angle to the axis of rotation of said conduit, said pipes being formed in two parts, a joint which unites said parts, said joint having an internal flange which forms a port in said pipes, an angle framed valve adapted to cover said port, said angle framed valve being hinged, a rod or bar secured to said frame, and a weight through which said rod or bar passes and upon which said weight is adapted to slide.

In testimony of which invention we have hereunto set our hands.

JOSEPH J. DE KINDER.
AXEL S. VOGT.

Witnesses:

CHARLES W. KEPHART,
EDWARD F. REIGH.