No. 776,581. PATENTED DEC. 6, 1904.

W. ANGUS.

DRIER.

APPLICATION FILED MAR. 15, 1902.

NO MODEL.

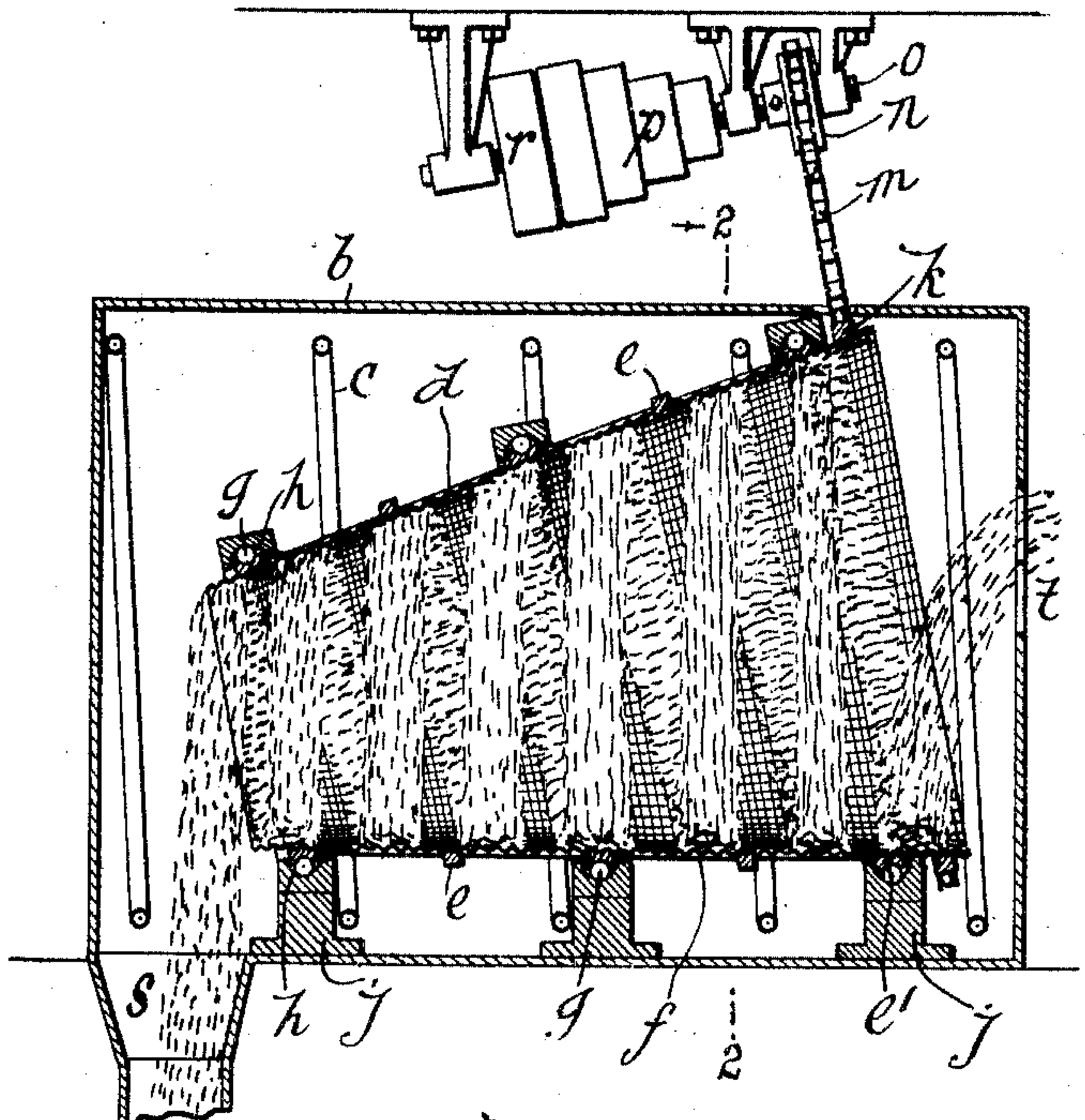

FIG. 1.

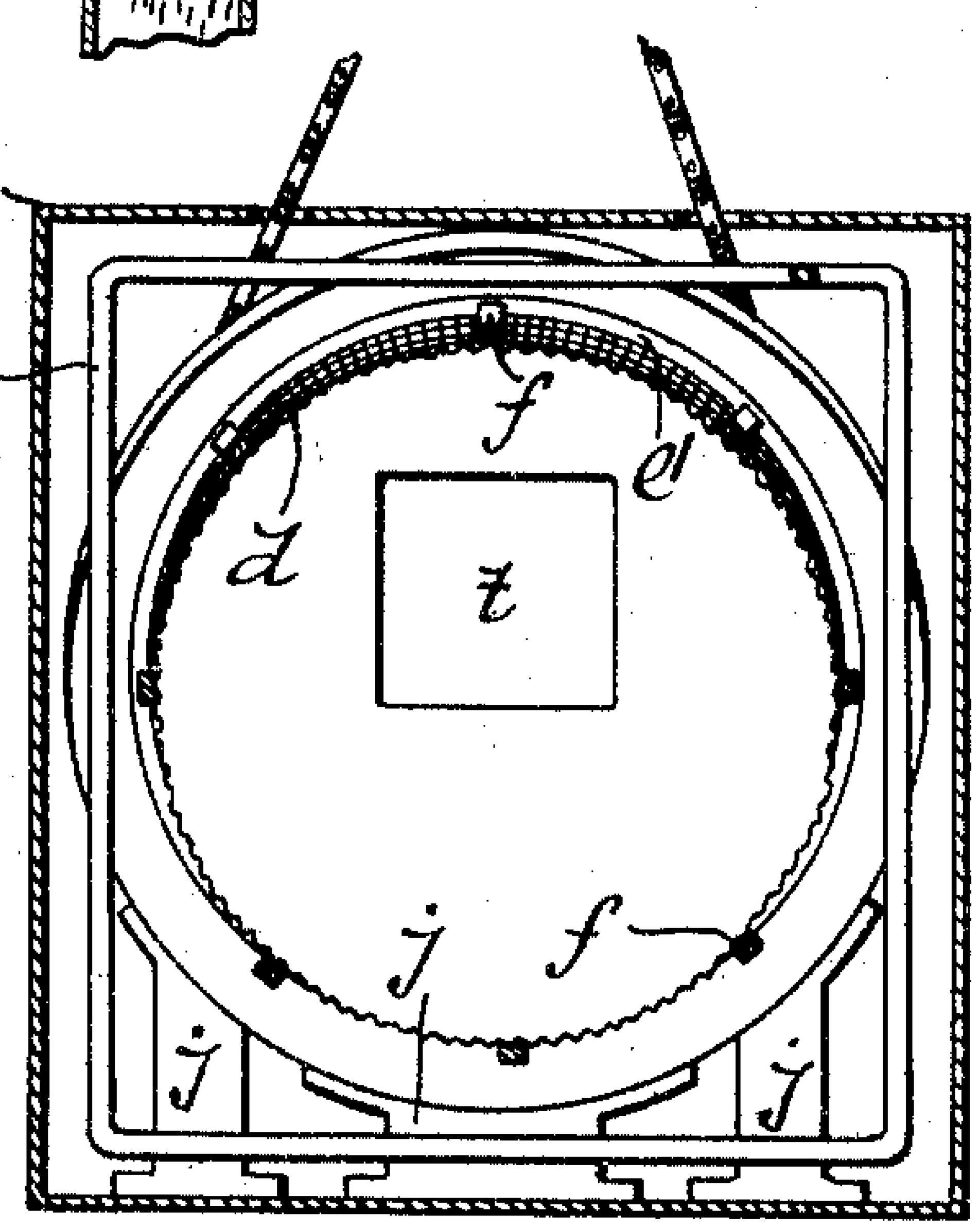

FIG. 2

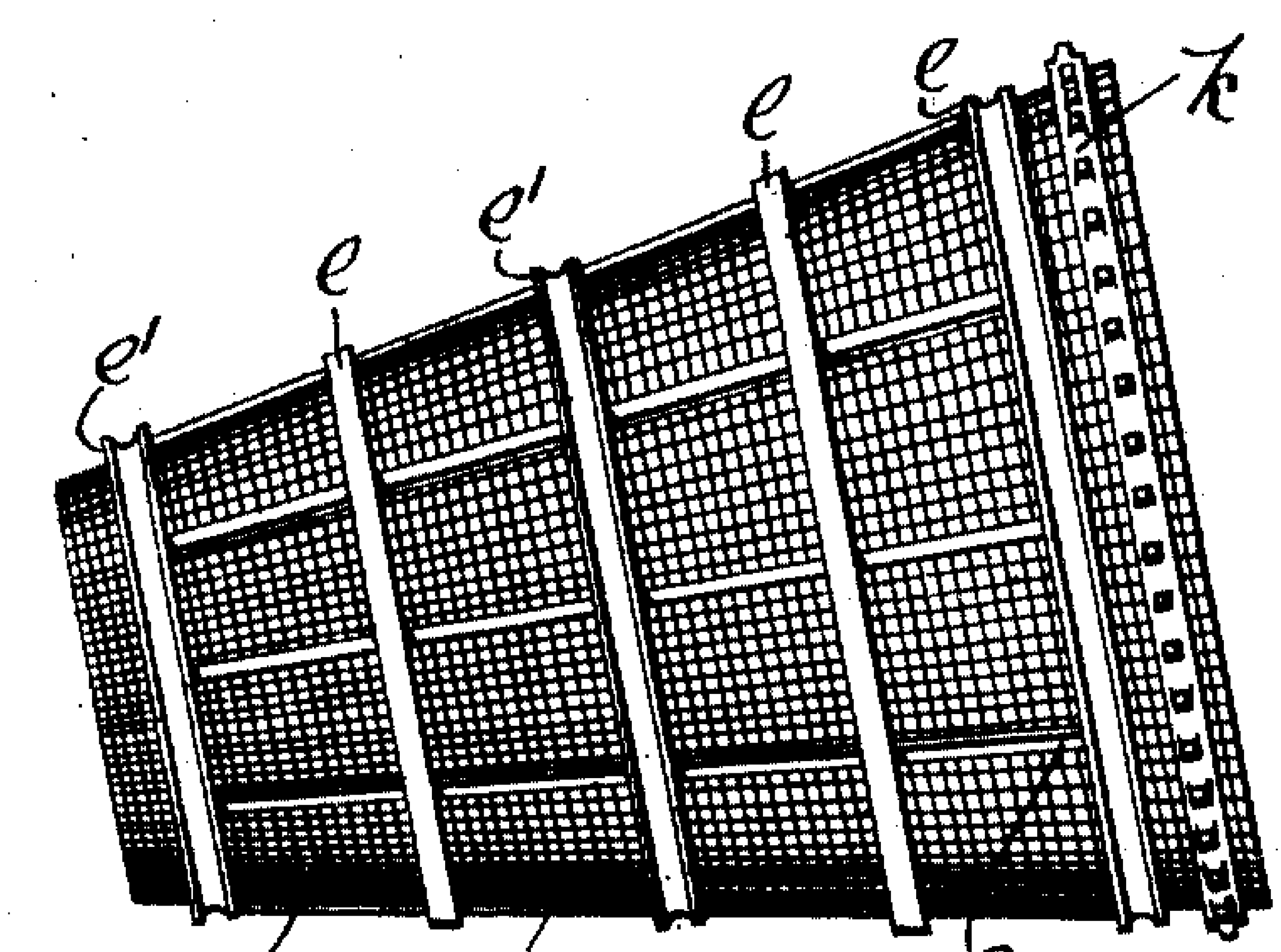

FIG. 3.

Witnesses

Inventor

William Angus

By his Attorney

No. 776,581. Patented December 6, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM ANGUS, OF MONTREAL, CANADA.

DRIER.

SPECIFICATION forming part of Letters Patent No. 776,581, dated December 6, 1904.

Application filed March 15, 1902. Serial No. 98,395. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ANGUS, of the city of Montreal, district of Montreal, and Province of Quebec, Canada, have invented certain new and useful Improvements in Driers; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to the drying of disintegrated pulp; and it has for its object to more thoroughly dry pulp in that state and control the drying thereof to enable pulp in different states of dampness to be brought to the required degree of dryness.

The invention may be said, briefly, to consist of a truncated conical hollow cylinder constructed, preferably, of wire-cloth and the interior thereof being without obstruction of any kind. A series of exterior braces, preferably in the form of hoops joined by bars extending longitudinally of said cylinder, serve to impart the required rigidity thereto, and a regulable gear rotates the cylinder with a variable speed, while the whole is inclosed in a dry-chamber heated by steam-pipes.

For full comprehension, however, of my invention reference must be had to the accompanying drawings, forming a part of this specification, in which like symbols indicate the same parts, and wherein—

Figure 1 is a longitudinal sectional view of my complete drying apparatus. Fig. 2 is a transverse vertical sectional view thereof, taken on line 2 2, Fig. 1; and Fig. 3 is a side elevation of my improved cylinder removed.

The inclosing chamber *b* and heating-coils *c* may be of any approved construction and arrangement.

My improved drying-cylinder *d* is made of wire-cloth and is of truncated conical form, with a series of encircling hoops *e* and longitudinal bars *f* to act as braces. The end and central hoops *e'* are formed with perimetrical runways to rest upon a series of balls *g*, carried in a series of runways *h*, supported by stays *j*, while a sprocket-wheel *k*, rigidly mounted upon the cylinder, is driven by a chain *m* from a sprocket-wheel *n* upon a drive-shaft *o*. This shaft is driven at a variable speed by a stepped pulley *p*, while a loose pulley *r* enables the cylinder to be stopped independently of the initial driving power. The cylinder is arranged with its lower side horizontal, and it is of such a diameter at its end as to have its upper side overhang the lower sufficiently to enable an object to drop therefrom clear of said lower side into a receptacle *s* for that purpose. By rotating the cylinder the pulp particles fed at *t* are lifted until the portion of the cylinder carrying them is reversed and then they drop therefrom to a point on the cylinder in advance of that upon which they were formerly lifted, and thus the pulp progresses until it is dropped into the receptacle *s*.

In drying pulp according to my invention it is first disintegrated by any suitable means and the amount of moisture carried thereby ascertained. The temperature of the chamber is then raised to a degree dependent upon the amount of moisture in the pulp and the cylinder started at a speed commensurate with said moisture, a small proportion of moisture requiring the subjection of the pulp to the drying temperature for but a short time, and consequently the cylinder will be rotated at a higher speed than when a larger proportion of moisture is to be dried from the pulp.

If desired, the cylinder can be supported and rotated by other means than illustrated and other changes made in the precise construction herein described without departing from the spirit of my invention.

What I claim is as follows:

1. A drier for drying moist particles, consisting of a truncated conical foraminous cylinder arranged with its lower side horizontal and means for causing the moist particles to be lifted by the cylinder and dropped across the interior thereof thereby causing them to dry, substantially as described.

2. A drier for drying moist particles consisting of a chamber, means for dry-heating said chamber, a truncated conical cylinder made of wire-cloth in one piece, means for rotatably supporting said cylinder within said chamber with its lower side horizontal, means for rotating said cylinder, and a receptacle

located beneath the truncated end of said cylinder, substantially as described and for the purpose set forth.

3. A drier for drying moist particles consisting of a chamber, means for dry-heating said chamber, a truncated conical cylinder, means for rotatably supporting said cylinder within said chamber with its lower side horizontal, a series of hoops encircling said cylinder, a series of bracing-bars extending longitudinally of said cylinder and connected to said hoops, means for rotating said cylinder, and a receptacle located beneath the truncated end of said cylinder, substantially as described and for the purpose set forth.

4. A drier for drying moist particles consisting of a chamber, means for dry-heating said chamber, a truncated conical cylinder, within said chamber with its lower side horizontal, a series of hoops encircling said cylinder, a series of bracing-bars extending longitudinally of said cylinder and connected to said hoops, a series of annular runways encircling and carried by said cylinder, a series of annular runways encircling said last-mentioned runways, a series of balls between the runways of said first and second mentioned series, means for supporting said last-mentioned series of runways, and a receptacle located beneath the truncated end of said cylinder, substantially as described and for the purpose set forth.

5. A drier for drying moist particles consisting of a chamber, means for dry-heating said chamber, a truncated conical cylinder within said chamber with its lower side horizontal, a sprocket-wheel encircling and carried rigidly by said cylinder, a driving-shaft, a stepped pulley and a sprocket-wheel upon said shaft, and a chain passed around said first and last mentioned sprocket-wheels, for rotating said cylinder, and a receptacle located beneath the truncated end of said cylinder, substantially as described and for the purpose set forth.

6. A drier for drying moist particles consisting of a chamber, means for dry-heating said chamber, a truncated conical pervious cylinder, means for rotatably supporting said cylinder within said chamber with its lower side horizontal, a series of hoops encircling said cylinder, a series of bracing-bars extending longitudinally of said cylinder and connected to said hoops, a series of annular runways encircling and carried by said cylinder, a series of annular runways encircling said last-mentioned runways, a series of balls between the runways of said first and second mentioned series, means for supporting said last-mentioned series of runways, a sprocket-wheel encircling and carried rigidly by said cylinder, a driving-shaft, a stepped pulley and a sprocket-wheel upon said shaft, and a chain passed around said first and last mentioned sprocket-wheels for rotating said cylinder, and a receptacle located beneath the truncated end of said cylinder, substantially as described and for the purpose set forth.

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

WILLIAM ANGUS.

Witnesses:
WILLIAM P. MCFEAT,
FRED. J. SEARS.