

(No Model.)

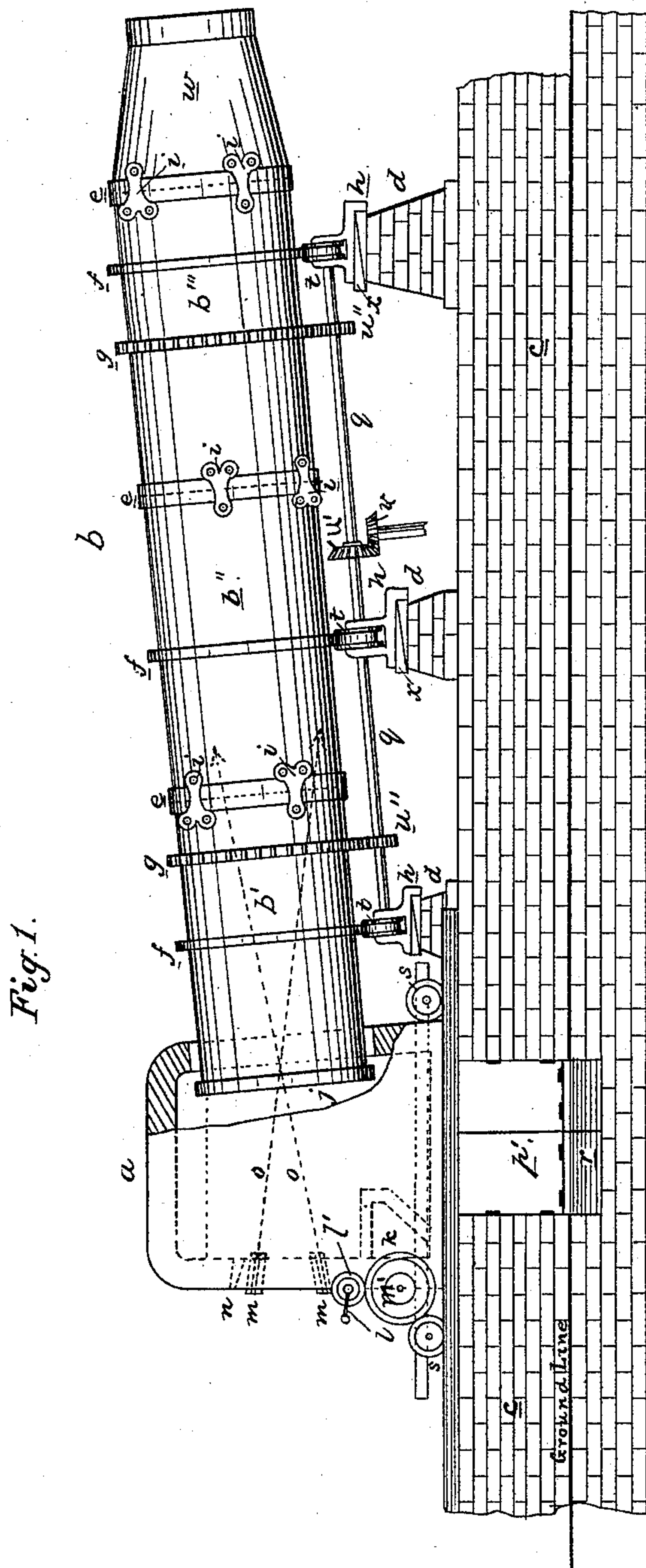
2 Sheets—Sheet 1.

J. B. HYDE.

ROTATING FURNACE.

No. 285,627.

Patented Sept. 25, 1883.



WITNESSES:

AM Robertson
A. Harry Semmes.

INVENTOR

Wm. W. Hyde
O. E. Duff
at New York

(No Model.)

2 Sheets—Sheet 2.

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Fig 2.

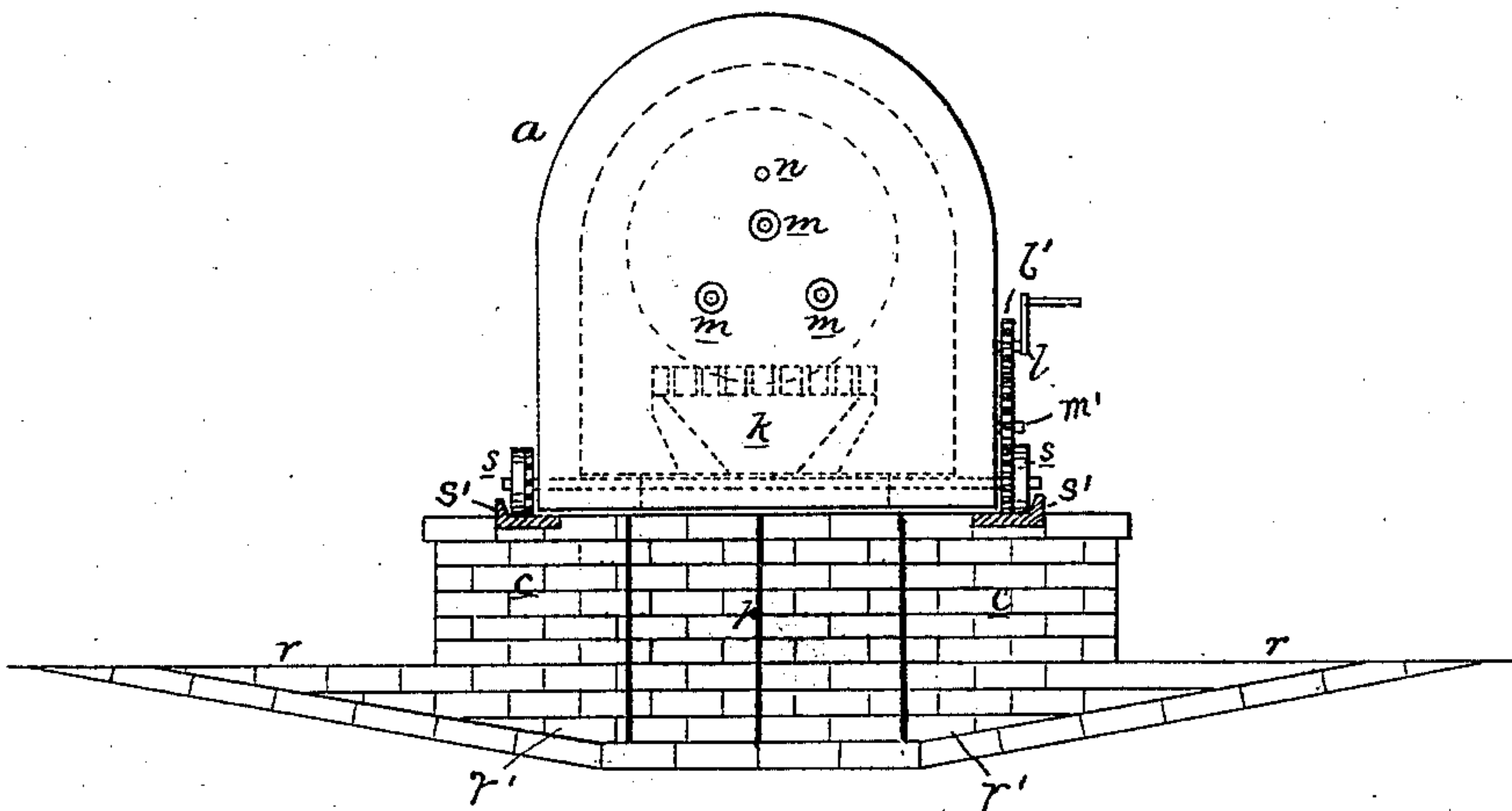
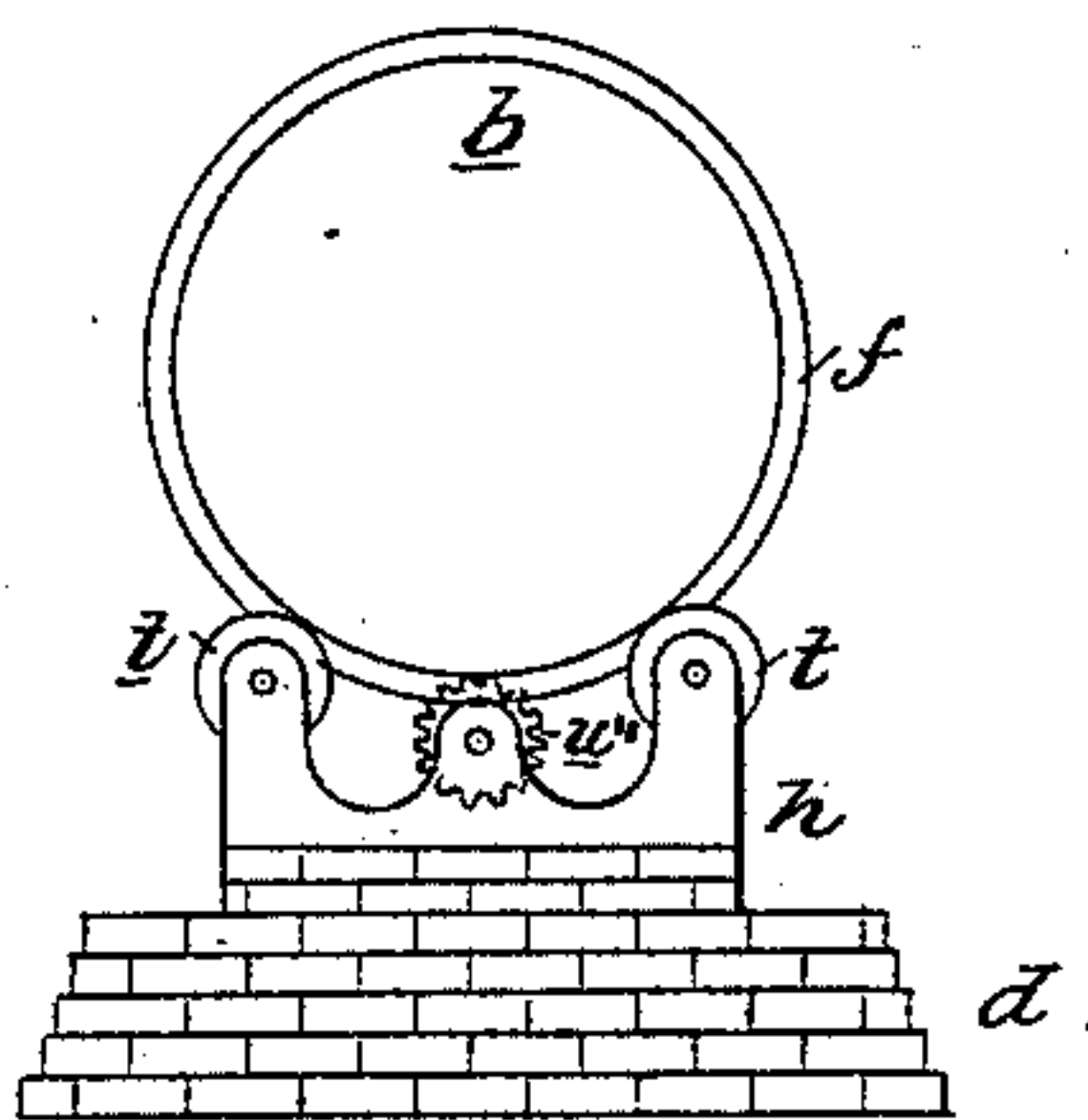


Fig 3.



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INVENTOR

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UNITED STATES PATENT OFFICE.

J. BURROWS HYDE, OF NEW YORK, N. Y.

ROTATING FURNACE.

SPECIFICATION forming part of Letters Patent No. 285,627, dated September 25, 1883.

Application filed September 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, J. BURROWS HYDE, a citizen of the United States of America, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Rotating Furnaces and Apparatus Connected Therewith, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an ore roasting and smelting apparatus; and it consists in the parts which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of the cylinder and furnace, a part of the furnace being broken away, showing the position of the rear end of the cylinder therein. Fig. 2 shows a front view of the furnace mounted upon masonry. The dotted lines in this view indicate the position of the cylinder and grated hearth; and Fig. 3 shows a cross-section through the cylinder, showing the masonry upon which it is mounted, the friction-rollers, and actuating spur-wheel.

Similar letters indicate like parts throughout the several views.

The letter *a* represents the furnace; *b*, the cylinder, constructed in sections *b' b'' b'''*, and *c d* the masonry upon which they are mounted.

e e e are flat rings riveted to one end of a section of the cylinder and overlapping the adjoining section.

i i are clamp-plates riveted to their respective sections, and secured to the adjoining section by means of a screw-bolt and nut, thereby serving as connecting-links to unite the sections.

f f f are three rings or circumferential flanges secured to cylinder *b*, and *g g* indicate toothed rings secured to and encircling said cylinder.

h h are metallic caps upon the elevations *d*.

k is an elevated grate-hearth adapted to receive incandescent coal or other fuel. A combustion-jet (not shown) is placed immediately under said grate.

l is a crank secured to a spur-wheel, *l'*, which engages the teeth in a spur-wheel, *m'*, and said wheel *m'* engages spurs on the inside of the bottom or tread wheel, *s*.

The wheels *s* support the furnace, and are adapted to move and convey the same upon

the flanged rails *s'*, said wheels *s* being operated through the medium of the crank *l* and intervening spur-wheel, *m'*.

m m n are tuyeres, the one, *n*, being adapted to receive hydrocarbon, and the other two, *m m*, being adapted to the reception of pulverized fuel. Said tuyeres are also adapted to receive air, gas, or hydrocarbon vapor. In the use of air it is preferable that it be heated and blown in.

In using powdered fuel it may be blown into the furnace through the openings *m m* with the air-blast. *o o* are dotted lines showing the course of the blast through the furnace and into the cylinder.

p is a recess in the masonry *c*, to facilitate the removal of material. The sides of the recess *p* (marked *p'*) are closed by hinged iron shutters. These shutters are made in four pieces, the two lower ones being hinged to the two upper pieces. Said lower pieces fold upward over the face of the upper pieces, and said upper pieces fold back against the sides *c*. The object of this construction is to have the lower sections of the shutter fold up so as to clear the sloping hearth. The recess *p* is closed by shutters similar to those on the side.

r represents the ground-surface, beneath which is the sloping hearth *r'*. The bottom of the furnace *a* is open to admit the material to pass through onto the hearth *r'*, from whence it is removed when the shutters *p' p'*, either one or both, are thrown back, as specified.

q is a shaft revolvably mounted under the cylinder. Said shaft is provided with miter-wheel *u'*, which gears with miter *u*.

u'' u'' are spur-wheels on said shaft, which mesh in the teeth of rings *g g*.

t t t are grooved friction-rollers in which the flanges *f f f* fit, and by means of which the cylinder is revolvably supported.

It will thus be seen that by turning the gear *u* the cylinder will be rotated.

w represents the funnel-shaped end of the cylinder.

x x are wedges under the caps *h*, adapted to raise or lower the inclination of the cylinder. The caps *h* are made to overlap the front end of the masonry, whereby they are secured against the rearward tendency of the cylinder caused by its inclination.

I construct the cylinder slightly tapering

toward the base end, to compensate for the expansion of the iron shell, and consequent loosening of the lining, which is usually of fire-brick or other refractory material.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the rotating cylinder, the open-bottom furnace provided with wheels, a track, and a recess below said track, adapted
10 to receive the discharge from the lower end of the cylinder, substantially as described, and for the purposes set forth.

2. The shaft *g*, provided with bevel-gear wheel *u'* and spur-wheels *u''*, the grooved friction-rollers *t*, compound caps *h*, and wedges *x*,
15 in combination with the cylinder *b*, provided with rings *f g*, the latter being toothed, substantially as set forth.

3. The shaft *g*, provided with bevel-gear
20 wheel *u'* and spur-wheels *u''*, the grooved friction-rollers *t*, compound caps *h*, wedges *x*, and cylinder *b*, in combination with the furnace *a*, adapted to move to and from the end of the cylinder, substantially as set forth.

4. The cylinder *b*, mounted as specified, in
25 combination with the movable furnace *a*, provided with grate-hearth *k* and openings *m m n*, as specified.

5. The masonry *c*, provided with recess and shutters, as specified, the furnace *a*, mounted
30 on wheels and provided with openings *m m n*, and grated hearth *k*, in combination with cylinder *b*, inclined as specified.

6. A dissectible rotating ore-roasting cylinder made up of sections, said sections being
35 united by means of lap-rings and clamp-fastenings, the wing of the lap serving as a guide to the joining thereof and for securing the cylinders together, as set forth.

In testimony whereof I affix my signature in
40 presence of two witnesses.

J. BURROWS HYDE.

Witnesses:

A. B. ROBERTSON,
A. HARRY SEMMES.