

No. 825,285.

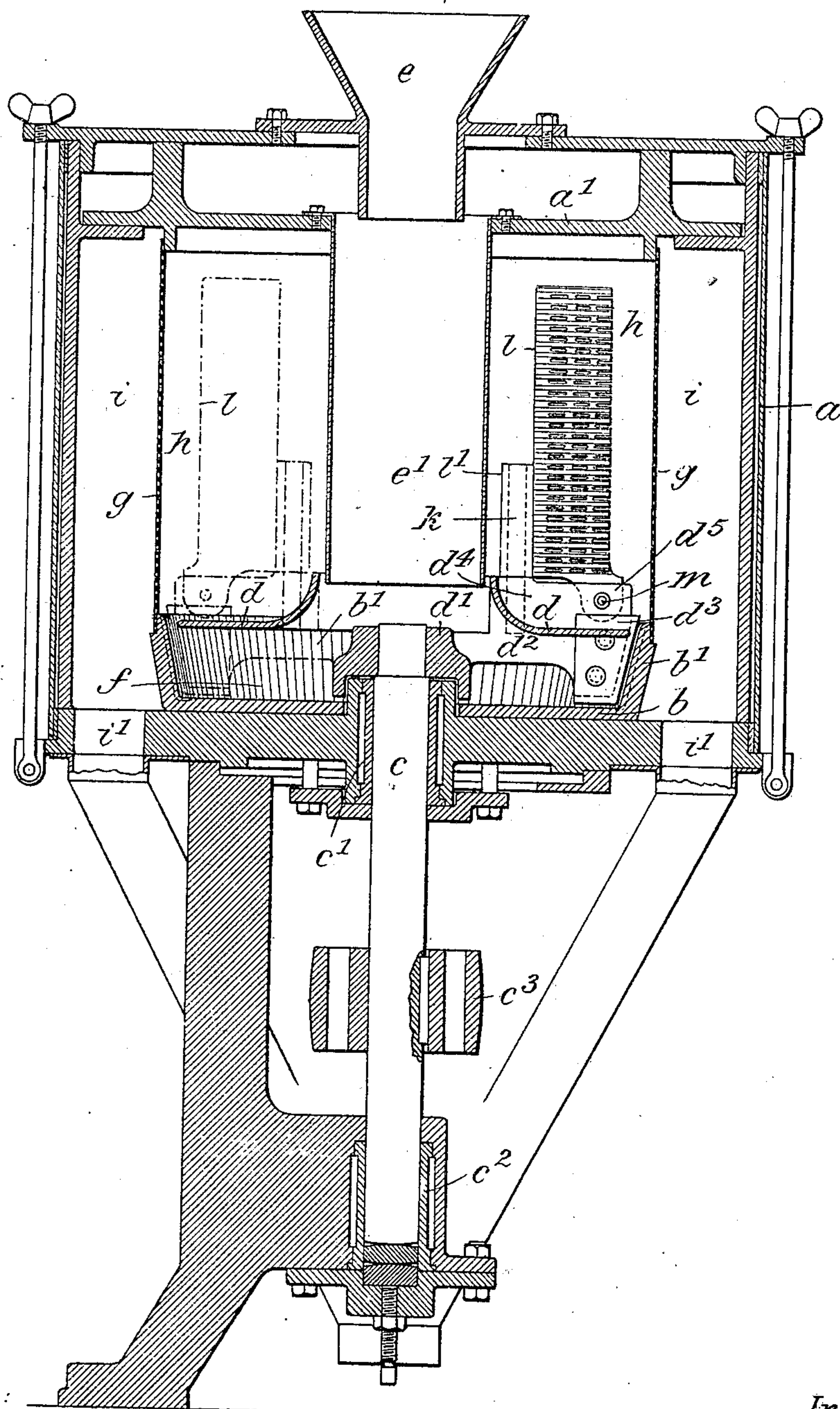
PATENTED JULY 10, 1906.

M. F. ABBÉ.
GRINDING MILL.

APPLICATION FILED OCT. 28, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Arthur Zumpfe
William Schutz.

Inventor

Max F. Abbé
by Frankfort Sierens Att'y

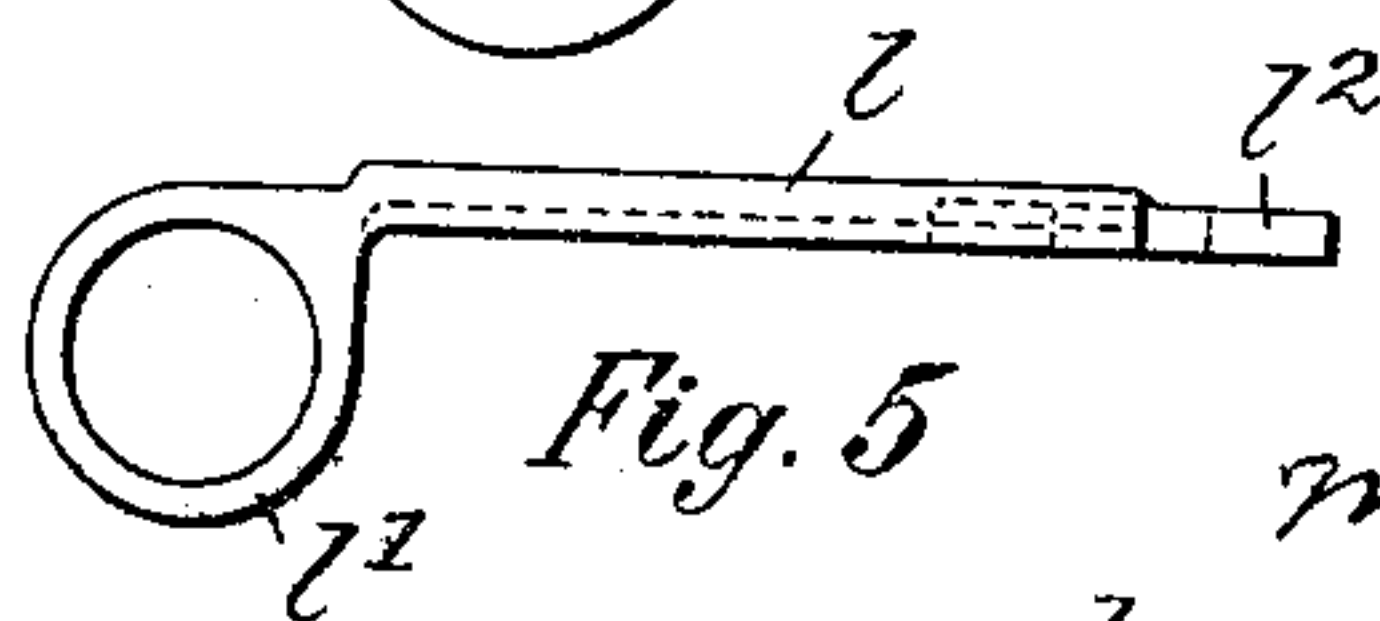
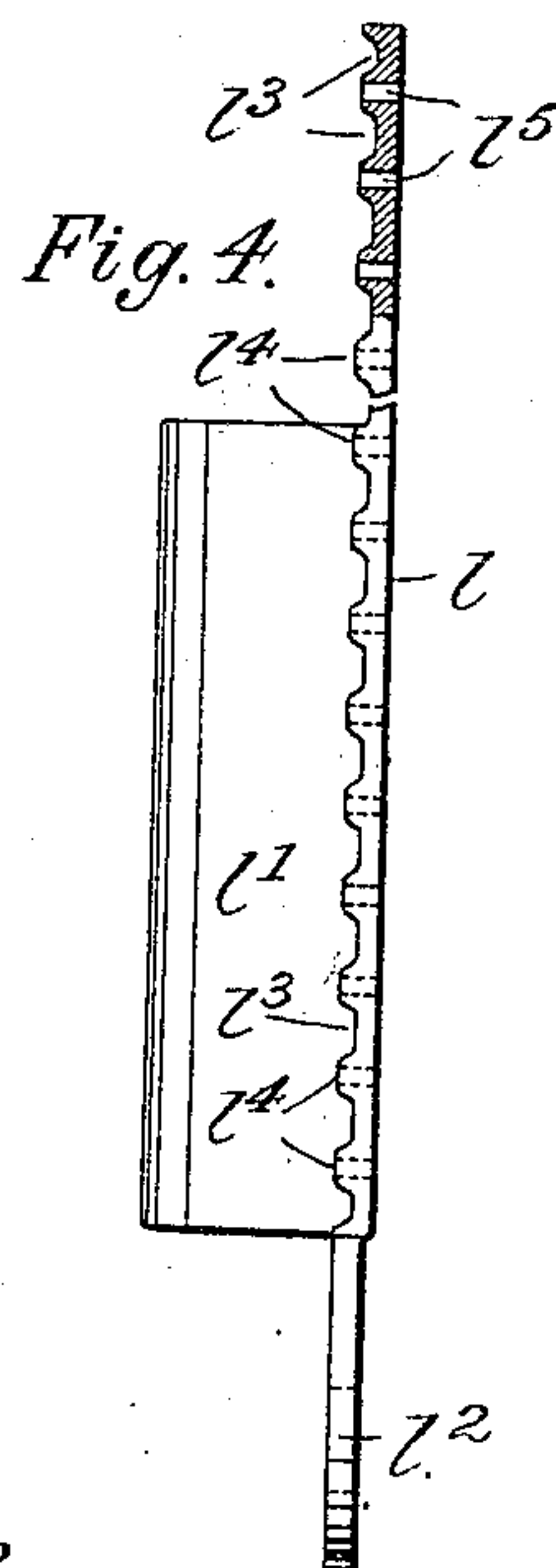
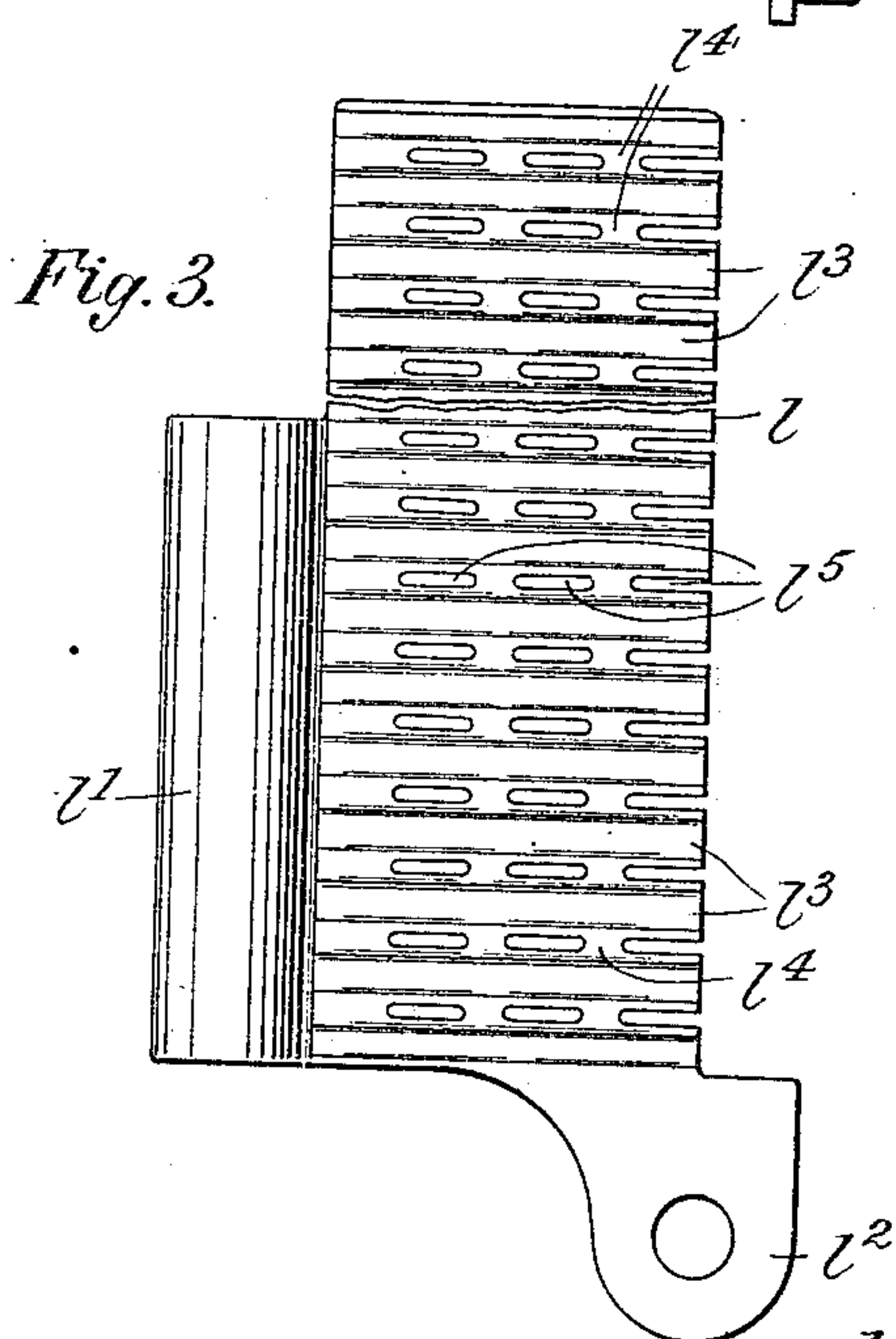
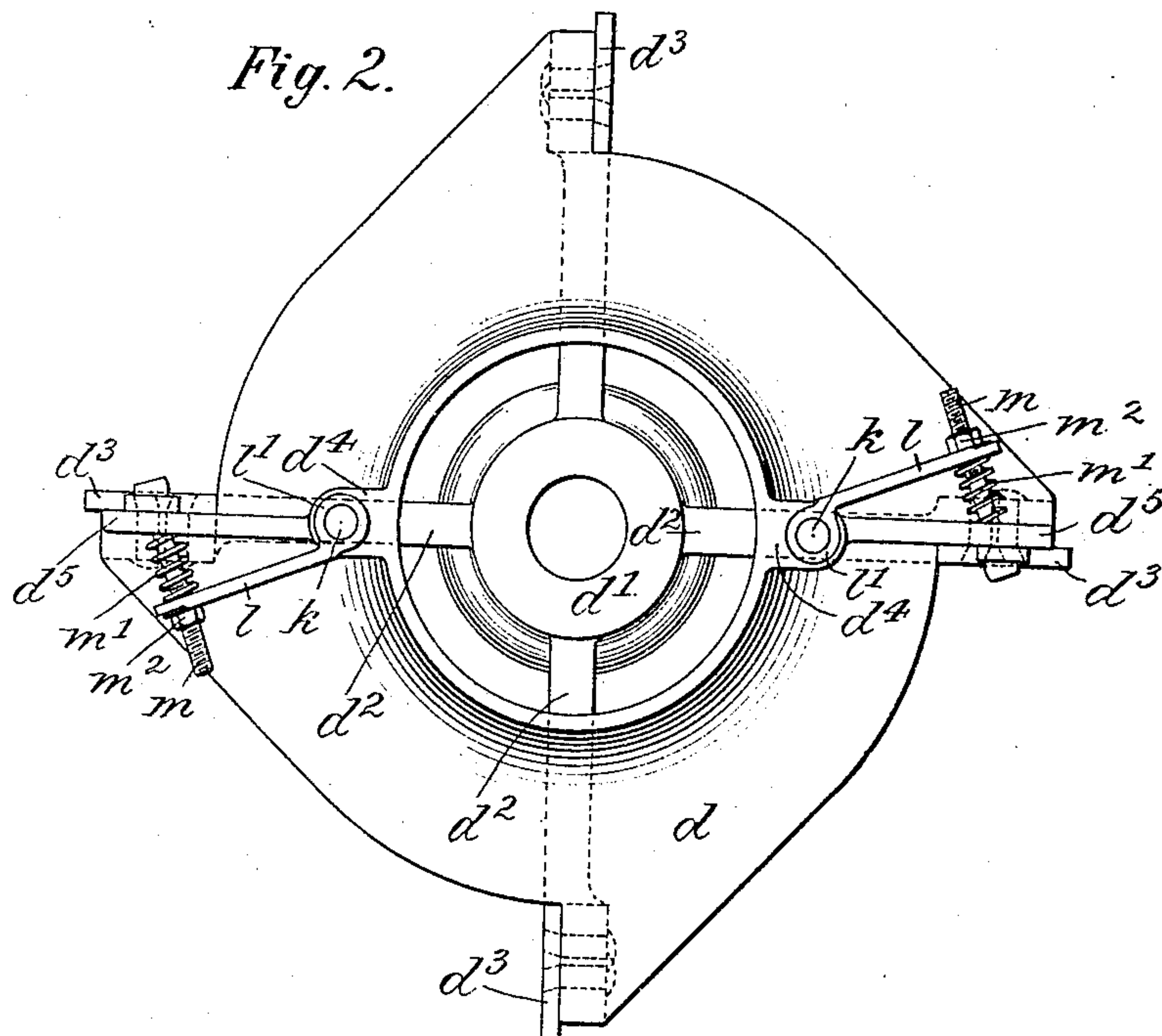
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M. F. ABBÉ.
GRINDING MILL.

APPLICATION FILED OCT. 28, 1905.

2 SHEETS—SHEET 2.



Witnesses:
Arthur J. Jumper.
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Inventor:
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UNITED STATES PATENT OFFICE.

MAX F. ABBÉ, OF NEW YORK, N. Y.

GRINDING-MILL.

No. 825,285.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed October 28, 1905. Serial No. 284,775.

To all whom it may concern:

Be it known that I, MAX F. ABBÉ, a citizen of the United States, residing at New York city, Manhattan, county and State of New York, have invented new and useful Improvements in Grinding-Mills, of which the following is a specification.

This invention relates to a grinding-mill in which the properly-ground particles do not become unduly powdered by being returned to the grinding-surfaces. By my invention the ground particles are evenly distributed over the screen, so that packing is prevented and a uniform output is insured.

In the accompanying drawings, Figure 1 is a vertical section of my improved grinding-mill; Fig. 2, a plan of the carrier; Fig. 3, a side view of the flight; Fig. 4, an end view, partly in section, of the flight; and Fig. 5, a top view thereof.

The letter *a* indicates the casing of the grinding-mill, containing the bed-plate *b*, having the corrugated grinding flange or ring *b'*. Within casing *a* is stepped the shaft *c*, turning in bearings *c'* *c''* and rotated by pulley *c'''*. Shaft *c* engages the hub *d'* of an annular carrier *d*, having radial arms *d''*. The carrier *d* is provided with the beaters *d'''*, that coact with the grinding-flange *b'*. The material to be ground is conveyed from hopper *e* through duct *e'* and opening of carrier *d* into the chamber *f*, from which it passes to the grinding-surfaces.

An upright cylindrical screen *g*, extending upwardly from flange *b'* to cover *a'* of casing *a*, divides the latter into an inner chamber *h* and an outer chamber *i*. The ground particles pass from inner chamber *h* through screen *g* into outer chamber *i*, from whence they escape through outlets *i'*. Means are provided for lifting the ground particles along the inner surface of screen *g*, so that they become evenly distributed over the same. These means are as follows:

The carrier *d* has a pair of lugs *d''''*, from which rise a pair of pivots *k*. These pivots are embraced by the tubular hubs *l'* of upright wings or flights *l*, extending above the beaters, partly across chamber *h*, and adapted to throw the ground particles against screen *g*. The flights *l* are adjustable to change their inclination with relation to the screen and to thus permit the mill to be set for ground particles of different mesh. Thus when the flights are set in a radial direction the particles passing through the screen will

be smaller than when the flights are set at an angle, the size of the particles increasing with the inclination of the flights. The adjustment of each flight is effected by a bolt *m*, passing through a perforated rib *d''''* of carrier *d* and through an eye *l''* of flight *l*. The bolt *m* carries a spring *m'* and a nut *m''* on opposite sides of the flight, so that by manipulating the nut the flight may be readily adjusted.

The forward or working surface of flight *l* is provided with a series of horizontal grooves *l'''* and intervening horizontal ribs *l''''*. The ribs *l''''* are perforated, as at *l''''''*, to reduce the resistance of the air during the rotation of the flight. The grooves *l'''* form a series of superposed pockets or furrows which tend to retain the uplifted particles in their raised position and direct them against the screen.

In operation the centrifugal force, together with the suction generated by the flights, causes the ground particles to ascend within chamber *h*. As these particles are encountered by the flights they creep up along the same and are by the furrows *l'''* subdivided into a series of horizontal strata facing the screen *g* at different elevations. From the furrows the ground particles are thrown against the screen and discharged into chamber *i*, the insufficiently-ground particles returning to the beaters.

It will be seen that the flights cause the upper as well as the lower parts of the screen to be uniformly utilized, so that the working area of the screen is increased. In this way uniformity in the output of the mill is insured, while undesirable regrinding is prevented and the capacity of the mill is enlarged.

What I claim is—

1. In a grinding-mill, a grinding-ring, combined with a rotatable beater, a cylindrical screen above the grinding-ring, a grooved flight inclosed by the screen, and means for rotatably mounting the flight, substantially as specified.

2. In a grinding-mill, a screen, combined with a flight having a series of furrows and intervening perforated ribs, and means for rotatably mounting the flight, substantially as specified.

3. In a grinding-mill, a grinding-ring, combined with a rotatable beater, an upright cylindrical screen above the ring, and an upright rotatable flight inclosed by the screen above the beater, substantially as specified.

4. In a grinding-mill, a grinding-ring, com-

bined with a rotatable carrier having a beater, an upright cylindrical screen above the ring, and an upright flight inclosed by the screen and secured to the carrier above the beater, substantially as specified.

5 5. In a grinding-mill, a grinding-ring, combined with a rotatable carrier having a beater, a screen above the grinding-ring, a flight, and means for adjustably connecting
10 said flight to the carrier above the beater, substantially as specified.

6. In a grinding-mill, a grinding-ring, com-

bined with a rotatable carrier having a beater, a screen above the grinding-ring, a flight pivoted to the carrier above the beater, and a bolt that adjustably connects the flight to the beater, substantially as specified. 15

Signed by me at New York city, Manhattan, New York, this 27th day of October, 1905.

MAX F. ABBÉ

Witnesses:

FRANK V. BRIESEN,
WILLIAM SCHULZ.