

(No Model.)

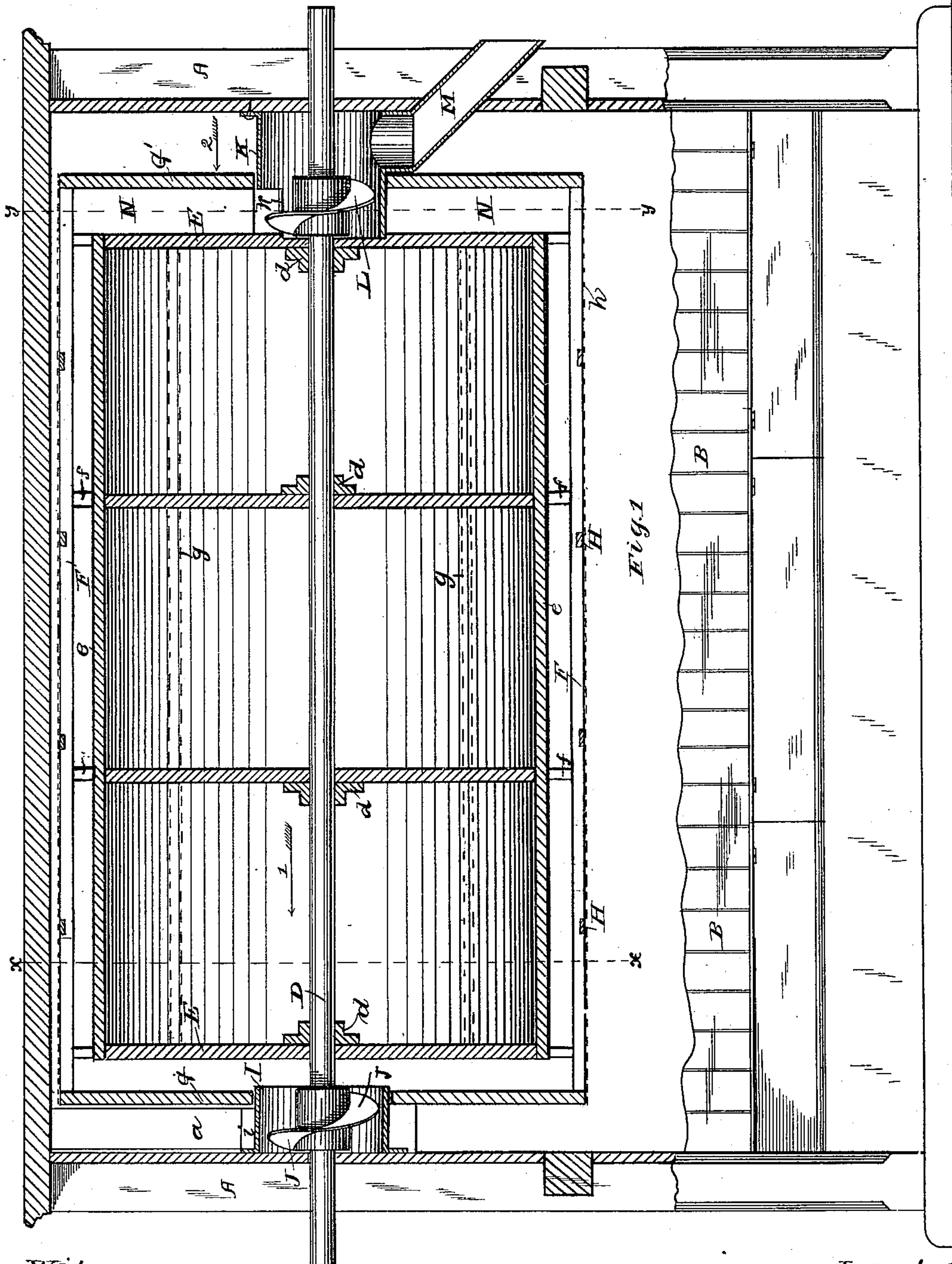
3 Sheets—Sheet 1.

N. W. HOLT.

FLOUR BOLT.

No. 335,454.

Patented Feb. 2, 1886.



Witnesses:

J. C. Turner  
B. W. Sommers

Inventor:

Noah W. Holt  
by Bonbleday & Bliss  
attys

(No Model.)

3 Sheets—Sheet 2.

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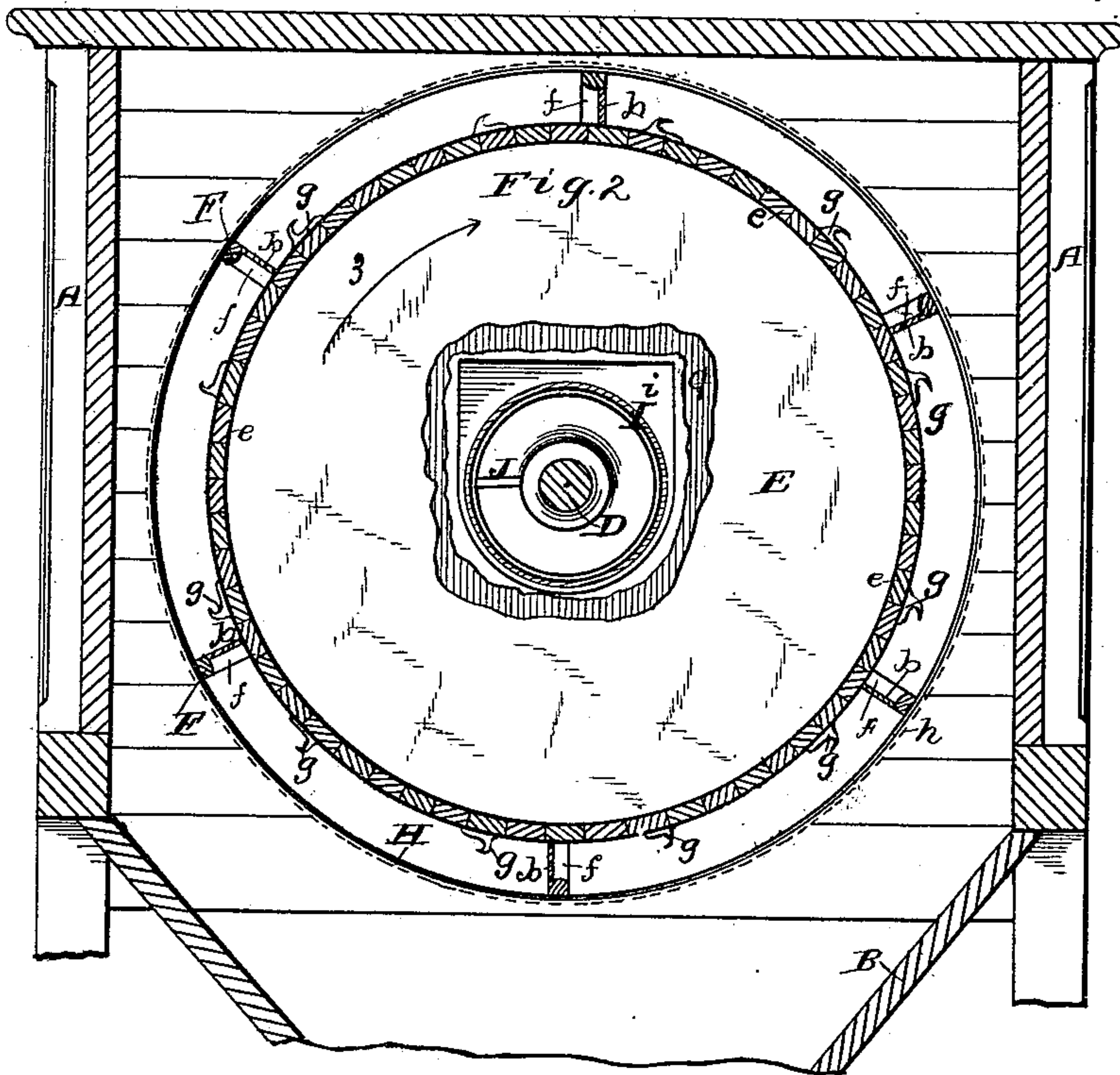
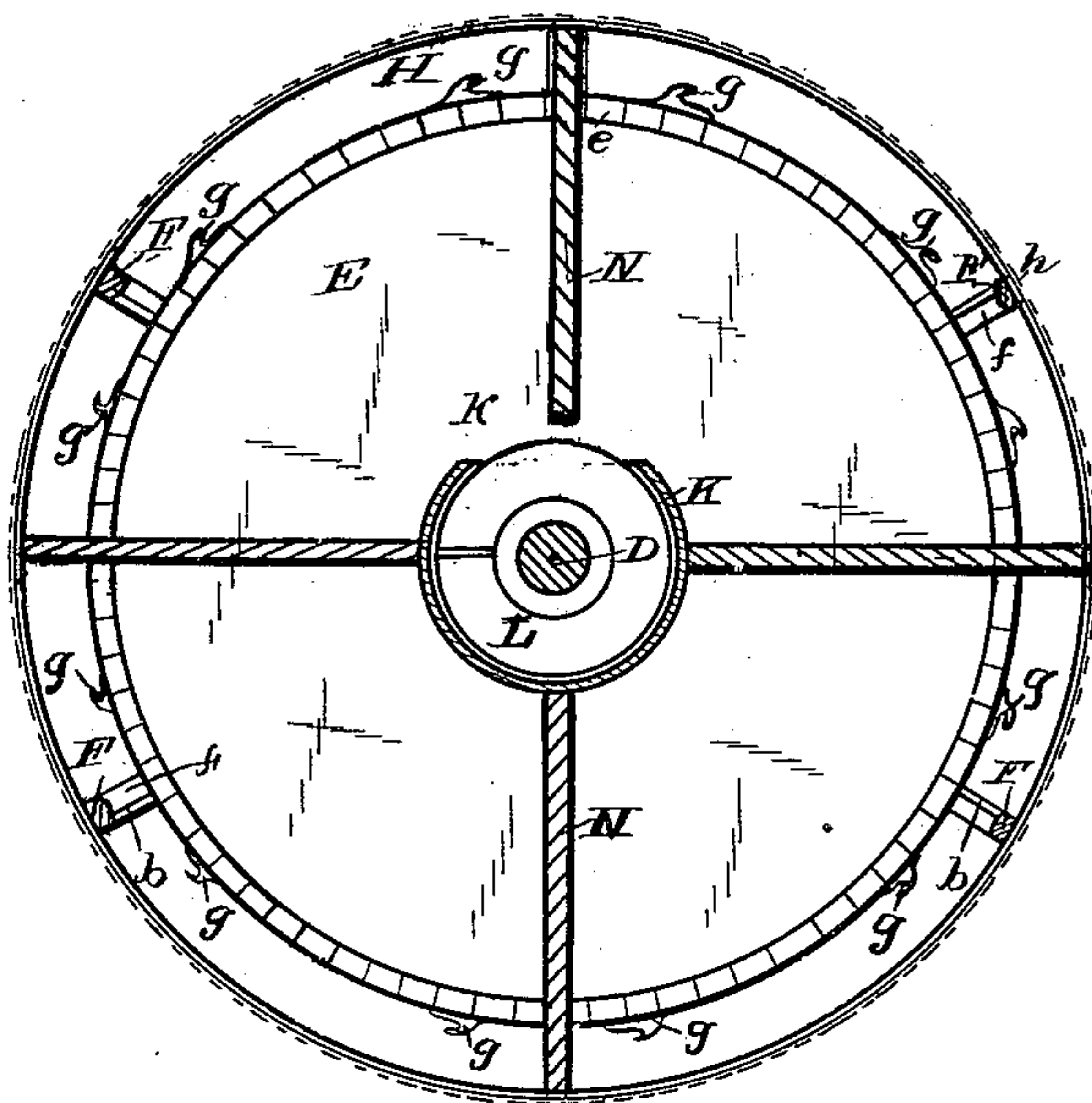


Fig. 3



*Witnesses:*

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(No Model.)

3 Sheets—Sheet 3.

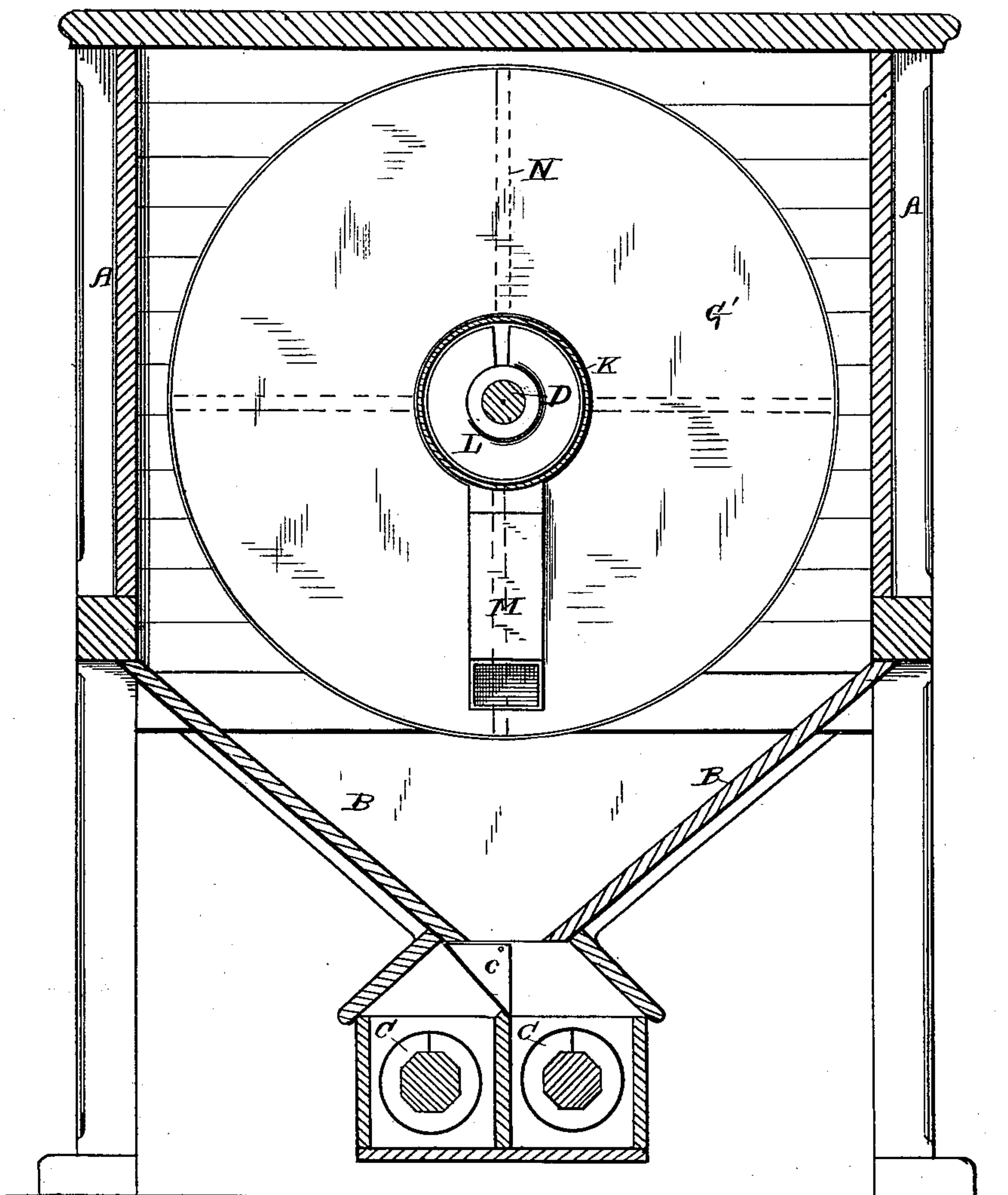
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*Fig. 4*



Witnesses:

*J. C. Turner*  
*B. W. Summers*

Inventor:

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# UNITED STATES PATENT OFFICE.

NOAH W. HOLT, OF JACKSON, MICHIGAN, ASSIGNOR TO THE GEORGE T. SMITH MIDLINGS PURIFIER COMPANY, OF SAME PLACE.

## FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 335,454, dated February 2, 1886.

Application filed May 9, 1885. Serial No. 164,926. (No model.)

*To all whom it may concern:*

Be it known that I, NOAH W. HOLT, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Flour-Bolts, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a vertical longitudinal section of my improved flour-bolt. Fig. 2 is a vertical transverse section on line *xx*, Fig. 1, looking in the direction of the arrow 1, same figure. Fig. 3 is a vertical section on line *yy*, Fig. 1, looking in the direction of the arrow 2, Fig. 1. Fig. 4 is an elevation of the discharging end of the bolt, the end casing being broken away to show the construction and relation of the devices for discharging the tailings.

Similar letters of reference indicate like parts in all the figures.

A A represent, generally, the frame-work and casing.

B B are the gather boards or cant-boards, and C C the conveyers.

*c c* are swinging pivoted chutes arranged to deliver bolted material to either of the conveyers alternately.

D is the through-shaft, supported at its ends in bearings firmly attached to the frame-work; but as these parts may be of any usual or approved construction they need not be more specifically described.

*d d* are a series of flanged hubs keyed or set-screwed to the central shaft.

E E are circular supporting-heads fastened to the flanged hubs *d d*. Two, three, or more of these heads may be used, according to the length of the reel. These heads are surrounded by a shell composed preferably of tongue-and-grooved strips or boards *e e*, thus forming a central circular-shaped closed drum which revolves with the central shaft, D.

F F are longitudinal ribs, each supported at a short distance from the central shell by means of arms or posts *f f*, and concentric to the central shaft.

H H are cloth-carrying rings mounted on the longitudinal bars, the bolting-cloth being indicated by *h*. This cloth may be composed of several sections varying in size of mesh,

and arranged with the finest at the head, and progressively coarser toward the tail, or vice versa, as the character of the work to be performed may indicate.

*b b* are partition-boards running lengthwise of the bolt and attached to either the arms or posts *f*, the longitudinal bars F F, or both, as may be thought best. Under some circumstances the posts may be omitted and the longitudinal bars supported upon the outer edges of the partition-boards *b b*.

G is a circular head, imperforate except at its center, and of a diameter substantially equal to the cloth-rings H H.

I is a cylindrical shell surrounding and concentric to the central shaft, D. This shell is by preference attached to the inner face of the head end casing and projects through the head G, which has a central opening of such size as to fit somewhat closely the periphery of this shell.

*i* is a feeding hopper or opening on the upper side of the shell, through which the material to be bolted is fed in through a suitable spout, *a*, which extends from this shell to the deck of the bolt.

J is a feed-screw carried by the central shaft, D, and operating to discharge material from the shell to the interior of the bolt. At the tail end of the bolt there is a similar head, G', imperforate except at its center, where it has an opening which surrounds a discharging-shell, K, secured to the tail end casing and projecting through the head G' into close proximity to the head E, which is arranged near the tail end of the bolt. This discharging-shell K has an opening or hopper, *k*, on its upper side within the head G', and L is a discharging-screw operating to discharge material through an opening in the outer end of the shell K to a tailings-spout, M.

N N are a series of elevating boards or blades arranged on radial lines between the head G' and the adjacent head E of the cylindrical shell or drum. These elevating-blades are by preference of such length that they reach substantially from the bolt-cloth to the inner end of the shell K, as indicated in Figs. 1 and 3.

*g g* are a series of elevating ribs, wings, or lifters attached to the outer surface of the cylindrical shell on lines parallel with the central



shaft, for a purpose which will be explained. By preference I make these lifters of strips of sheet metal stamped or swaged into proper form, or they may be of wood or other suitable material of any shape which is adapted for work.

By an examination of the drawings it will be readily understood that the annular space between the cylindrical central drum and the bolt-cloth is divided into six sections by means of the partitions *b b*, and it will also be understood that the material which is fed in through the shell I is delivered in about equal quantities to each of these sections. As the bolting progresses this division of the unbolted material into six separate portions continues, one of the results being that the bolt is nearly counterbalanced, there being about as much unbolted material upon one side of a line drawn vertically through the shaft D as there is upon the opposite side—a mode of operation which is found to be very advantageous. As the reel rotates the lifters or ribs pick up the unbolted material and discharge it against the bolt-cloth on the downward-moving side of the reel, and this delivery is made by a succession of discharges in small lots, thereby effectually utilizing a large portion of the cloth. It will be understood that this delivery of the unbolted material to the downward-moving part of the bolt-cloth is more satisfactorily effected by reason of the cylindrical form of the inner drum, it being apparent that as the bolt rotates the downward inclination of each successive section, which is inclosed between two adjacent partitions, progresses or is increased differently from what it would be if the bolt were many-sided and the section between two adjacent partitions were flat. The gradual delivery of the material to the downward-moving cloth materially facilitates a clean separation. This gradual delivery in successive small quantities will also be facilitated by the employment of the wings *g g*. The rear sides (having reference to the direction of the rotation of the reel indicated by the arrow in Fig. 2) are at such angles to the surface of the drum that they are adapted to partially restrict the movement of the material as it slides over the downward-inclined portion of the drum, especially in case the bolt be running at so slow a rate of speed that the material is elevated only by banking up against the upward-moving partitions. The tailings which do not pass through the cloth are taken up by the blades N and delivered into the tailings-discharge shell K, whence they pass out through the spout M, the reel rotating in the direction indicated by the arrow 3, Fig. 2.

I do not wish to be limited to the exact construction of parts shown, nor to the use of any particular material for the cylindrical shell, because it might be made of metal disks

with an inclosing-shell of sheet metal; and it is obvious that the reel may be made of polygonal or other many-sided form with a correspondingly-shaped inner shell; or either the reel or shell might be circular, as shown, while the other might be many-sided. Under either construction I propose to give to the bolt such pitch or incline as shall insure the passage of the material through it from the head to the tail, as is customary in many well-known forms of bolt.

What I claim is—

1. In a flour-bolt, the combination of a central closed drum, a concentric series of longitudinal ribs supported upon the cylindrical drum, cloth-rings supported upon the longitudinal ribs, the bolting-surface, reel-heads attached to the ends of the ribs, and longitudinal partitions dividing the space between the drum and the cloth-rings, substantially as and for the purpose set forth.

2. In a flour-bolt, the combination of a central cylindrical closed drum, a concentric series of longitudinal ribs supported upon the cylindrical drum, cloth-rings supported upon the longitudinal ribs, the bolting-surface, and the elevators *g g*, substantially as set forth.

3. In a flour-bolt, the combination of a central closed drum, an outer bolting-surface surrounding the drum and projecting beyond both ends of the drum, longitudinal partitions dividing the space between the bolting-surface and the periphery of the drum into sections, and reel-heads at the ends of the bolting-surface, substantially as set forth.

4. In a flour-bolt, the combination of a central drum closed at the head end, an outer bolting-surface attached to and carried by the rotating shell, the longitudinal partitions, a centrally-open head attached to and rotating with the bolting-surface, a feeding-shell concentric to the bolting-surface and projecting through the centrally-open head, and means for delivering material through the feeding-shell, substantially as set forth.

5. In a flour-bolt, the combination of a central shaft, a central closed drum mounted on the shaft, an outer bolting-surface mounted upon the drum and projecting at both ends beyond the drum, the longitudinal partitions, means for delivering material to the annular space between the drum and the bolting-surface, a centrally-open head at the tail end of the bolt attached to and carried by the bolting-surface, and means for discharging the tailings through the centrally-open head, substantially as set forth.

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

NOAH W. HOLT.

Witnesses:

C. F. KNAPP,

GEO. S. BENNETT.