

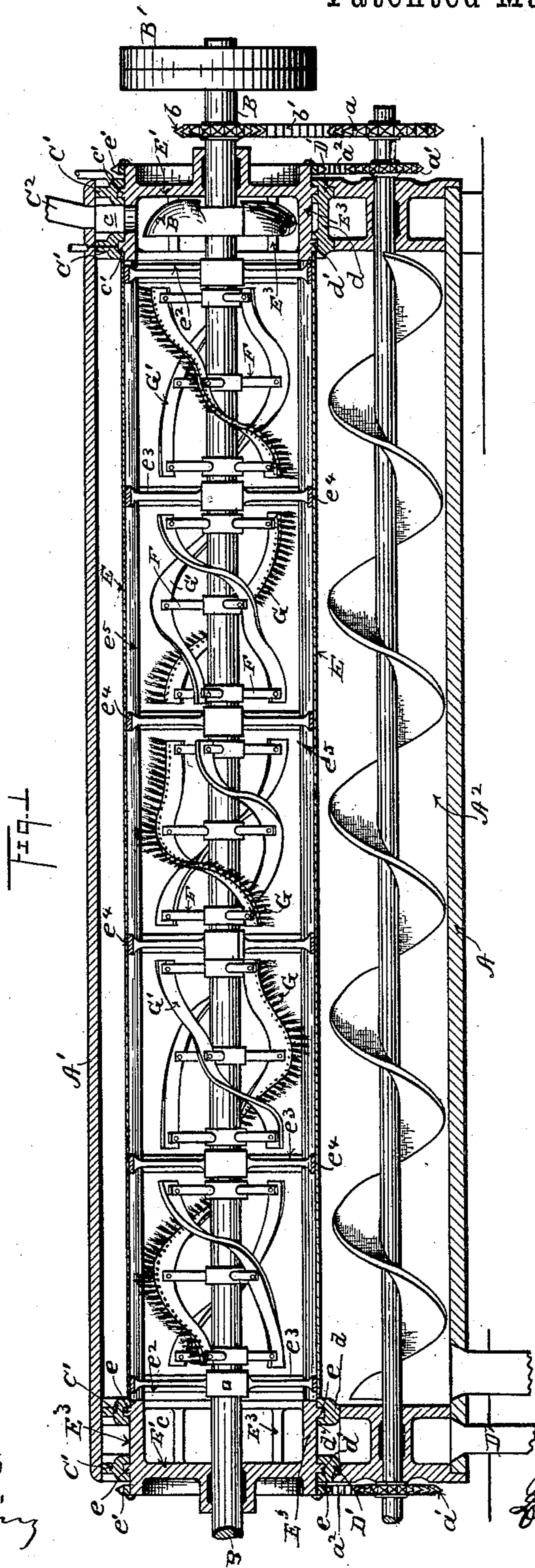
(No Model.)

3 Sheets—Sheet 1

J. B. DOBSON.  
BOLTING REEL.

No. 424,100.

Patented Mar. 25, 1890.



WITNESSES

*Bellevue S. Lowrie*  
*Geo W. King*

INVENTOR

*James B. Dobson*  
*Leggett and Leggett*  
ATTORNEYS

(No Model.)

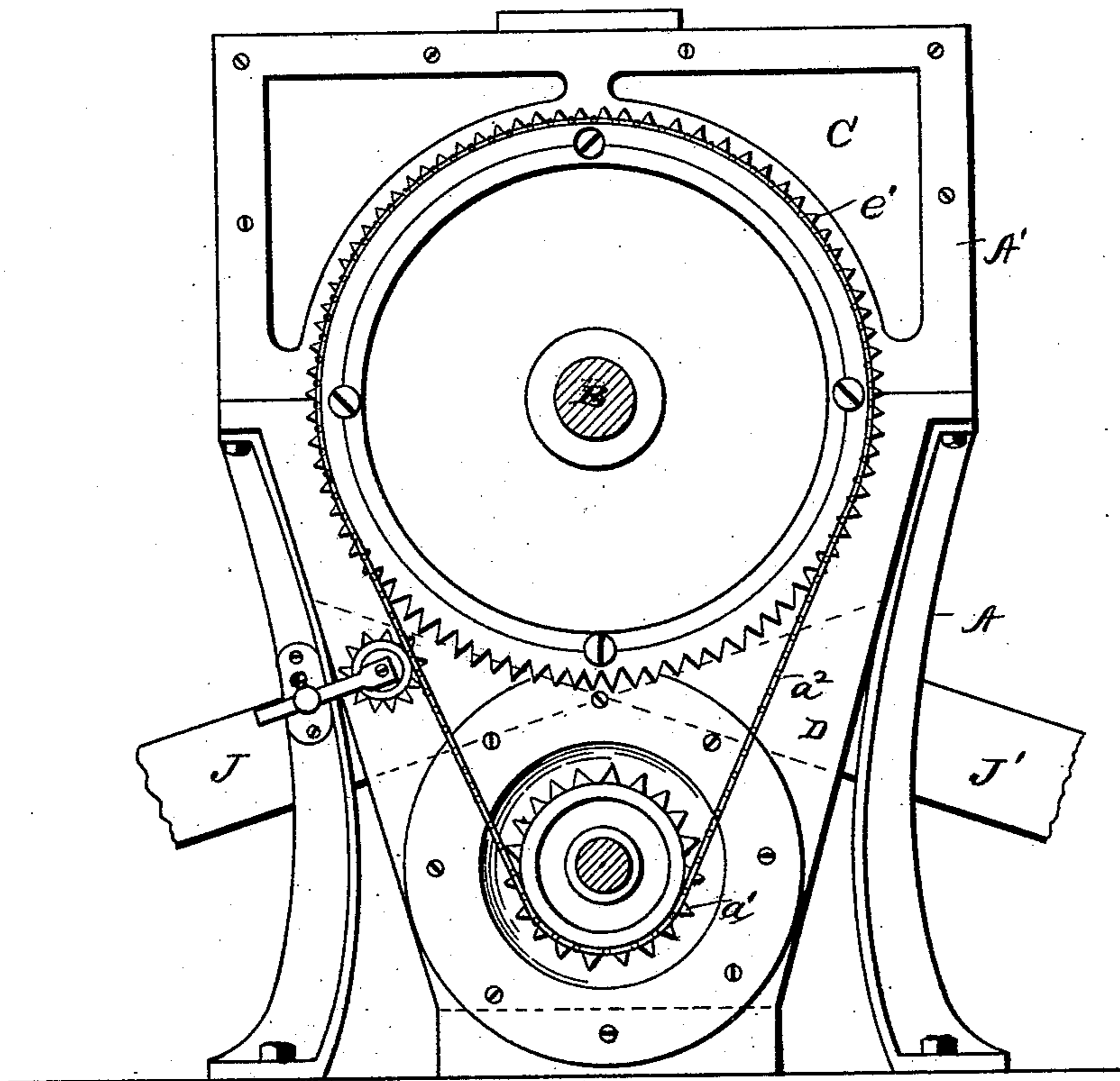
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Fig. 2



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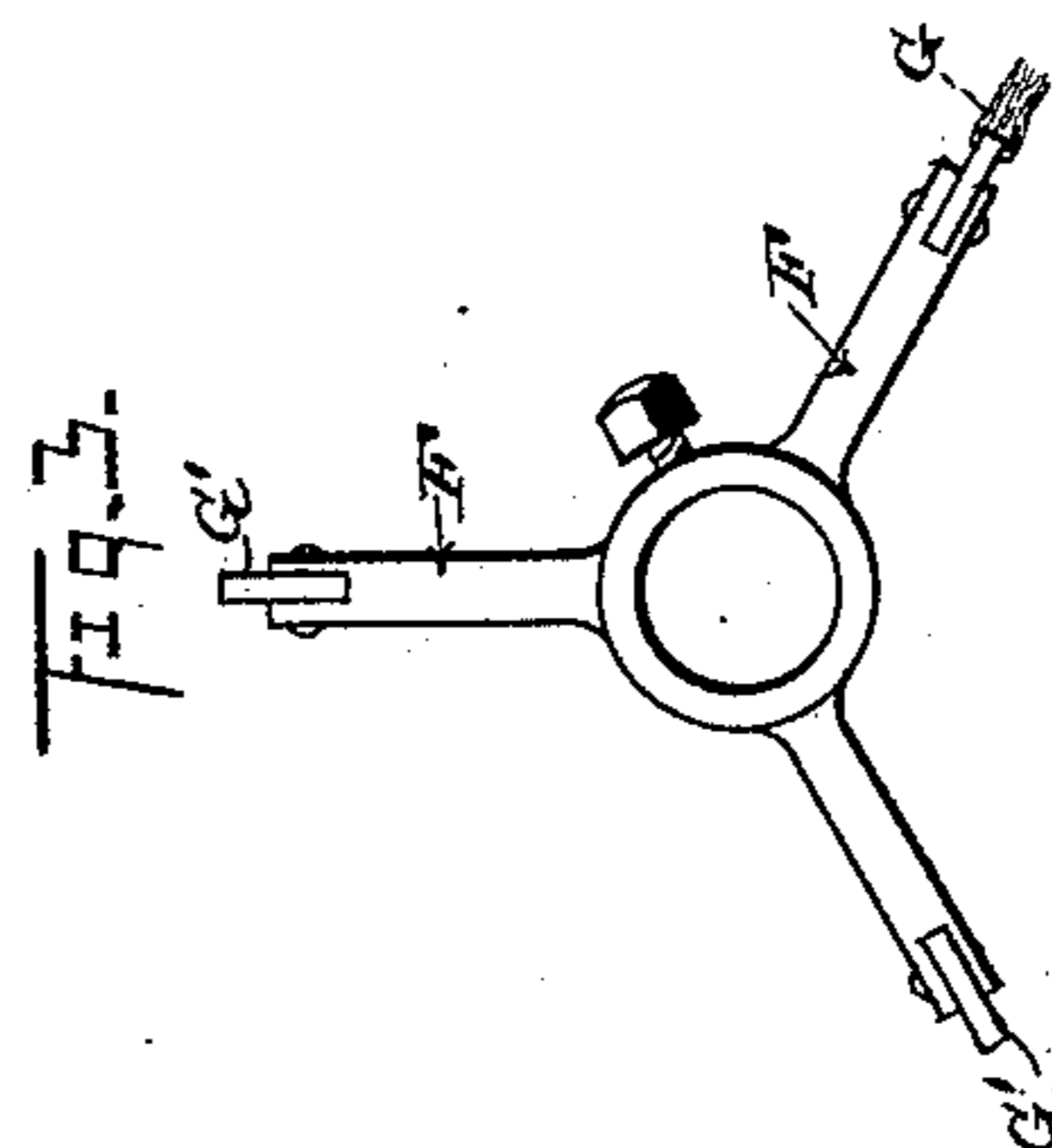
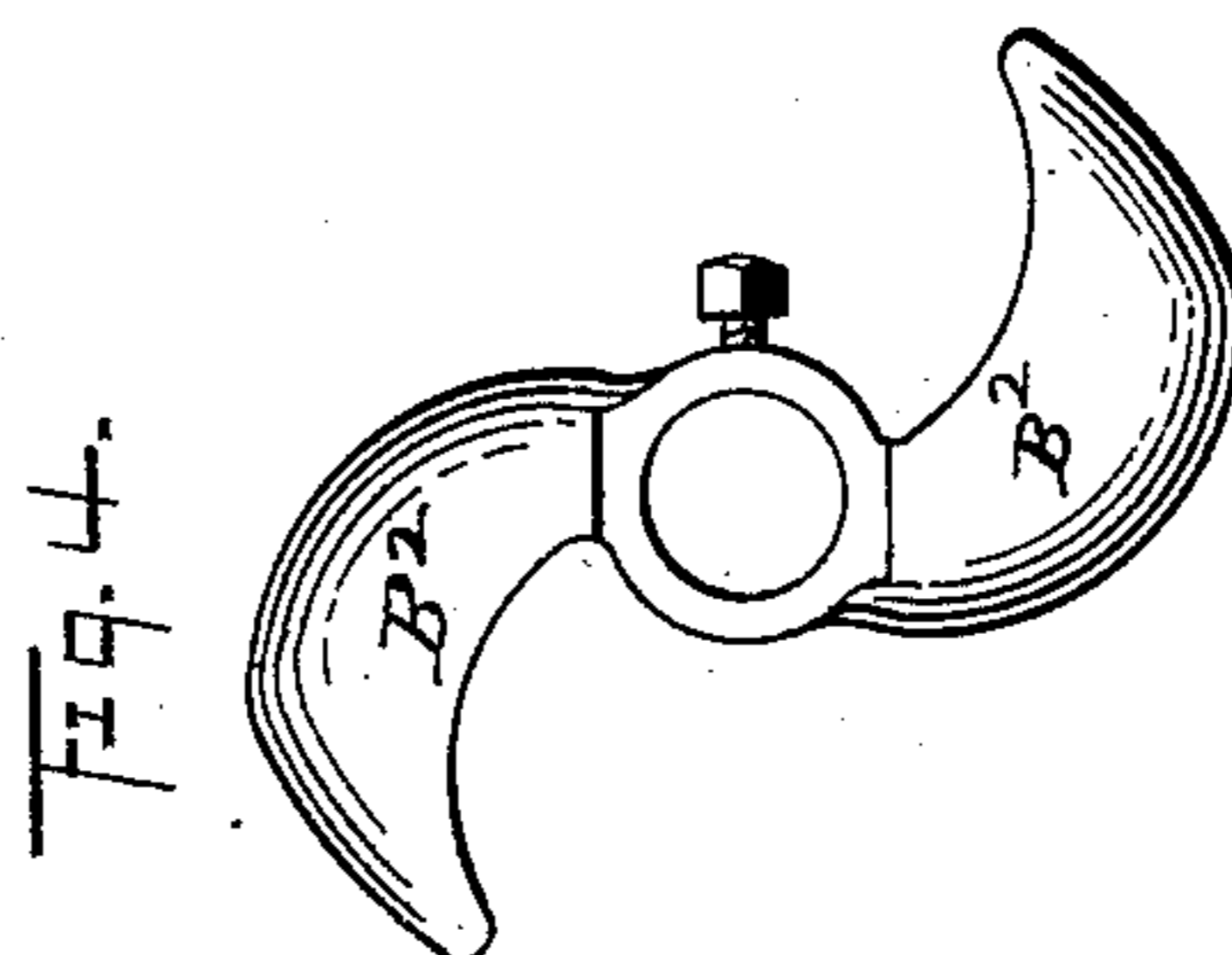
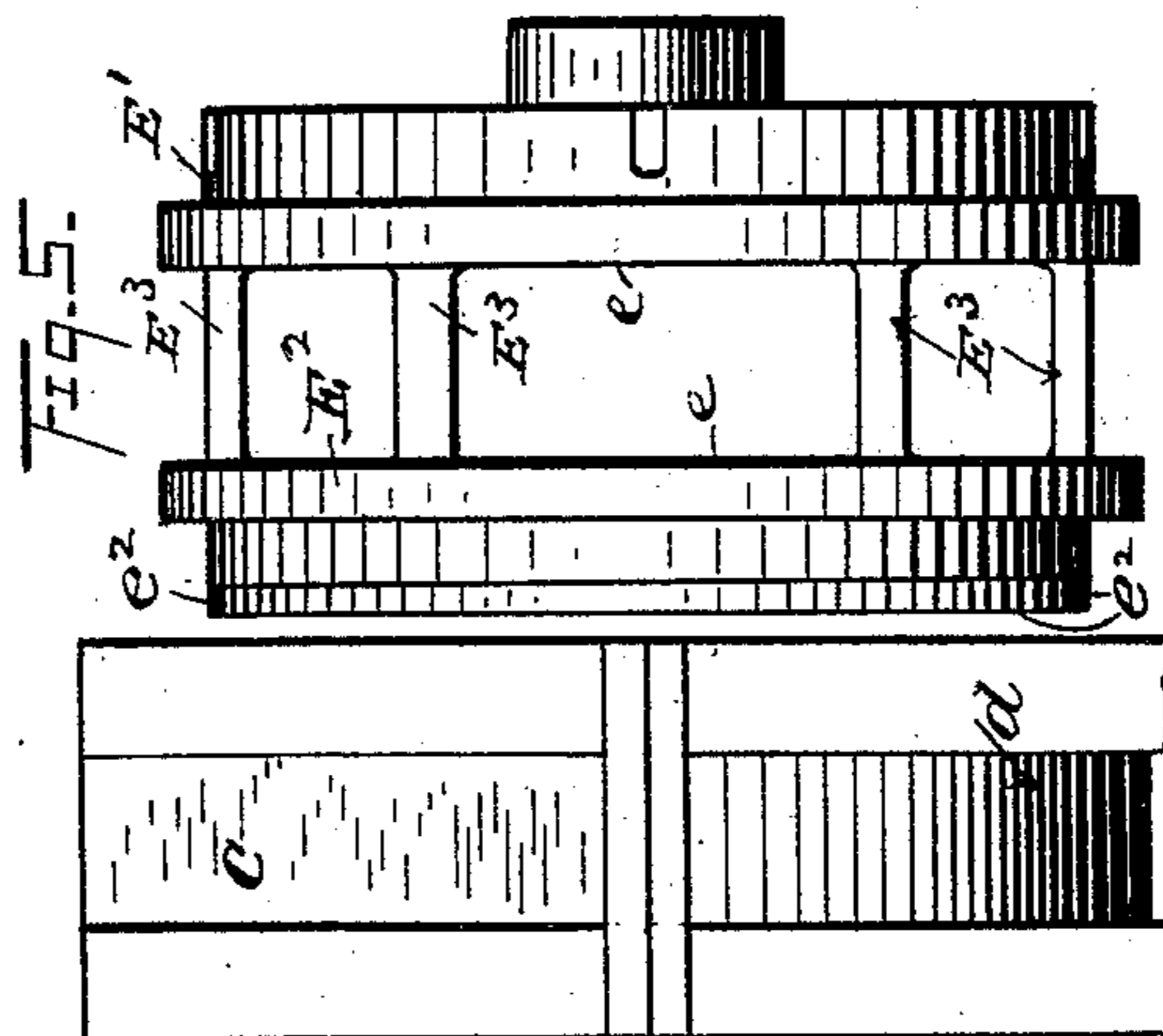
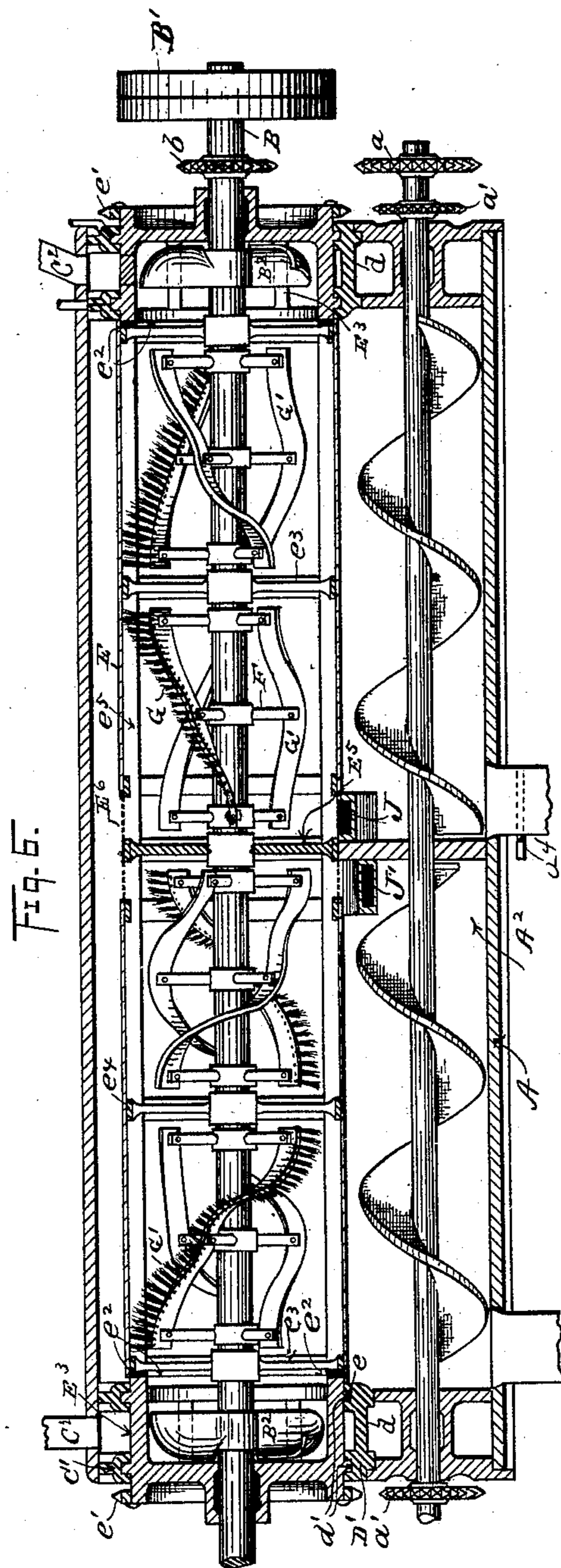
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WITNESSES  
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INVENTOR  
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# UNITED STATES PATENT OFFICE.

JAMES B. DOBSON, OF CLEVELAND, OHIO, ASSIGNOR TO THE DOBSON & CRAWFORD MANUFACTURING COMPANY, OF SAME PLACE.

## BOLTING-REEL.

SPECIFICATION forming part of Letters Patent No. 424,100, dated March 25, 1890.

Application filed September 30, 1889. Serial No. 325,515. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES B. DOBSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Bolting-Reels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in bolting-reels; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section. Fig. 2 is an enlarged end elevation. Fig. 3 is an elevation of a spider F detached. Fig. 4 is an elevation of wheel B<sup>2</sup> detached. Fig. 5 is a detail of a head of the casing. Fig. 6 is a side elevation, partly in section, corresponding in the main with Fig. 1, but showing modified adjustments of the parts.

A represents the casing, usually of wood, and having a removable top section or cover A', a conveyer A<sup>2</sup> being located below and within the lower section of the casing, substantially as heretofore used. The heads of the casing are usually of cast-iron divided into upper and lower sections C and D, the division occurring at the union of members A and A'. Each section of a head has double end walls, respectively, C' C' and D' D'. The two end walls of the upper section are connected at the sides by a web; but this web has an opening therein, as shown at c, immediately under the feed-spout C<sup>2</sup>, attached to and passing through the wood-work or casing of the machine. The end walls D' D' of the lower section of a head are connected by webs d, the latter being approximately semi-cylindrical. Web d at the head of the machine is imperforate, while web d at the tail end of the machine has an orifice d<sup>4</sup> at the bottom thereof of connecting with discharge-spout D<sup>2</sup>. These metal heads are bored to fit the heads of the reel, and the internal edges of these end walls are grooved, respectively, at c' d', to fit corresponding tongues of the reel-head, by which arrangement absolutely no dust escapes from the reel.

B is the driving-shaft, having mounted thereon usually tight and loose pulleys, for the purpose as shown at B'.

E is the bolting-reel, constructed as follows: E' are metal disks located at the ends and constituting the heads of the reel. The disks are connected by bars E<sup>3</sup> with rings E<sup>2</sup>, a ring, disk, and connecting-bars being preferably cast integral, a ring and disk constituting substantially a double head for the reel. The ring and disk are separated to correspond with the double end walls of the heads of the casing and are turned off to fit the bore of the latter, each ring and disk having a peripheral tongue e, that fits in the respective grooves c' d' aforesaid. The hubs of disks E' are bored to receive the driving-shaft, thereby constituting a journal-bearing for the latter.

At the head end of the machine, between disk E' and the connected ring E<sup>2</sup>, is a two-bladed wheel B<sup>2</sup> of the propeller-wheel variety for projecting material into the reel, wheel B<sup>2</sup> being secured to the driving-shaft usually by means of a set-screw.

The driving-shaft at either end of the machine is provided with a small sprocket-wheel b, respectively connected by chains b' with larger sprocket-wheels a, the latter being mounted on the respective trunnions of the conveyer. On these same trunnions are mounted smaller sprocket-wheels a', connected by endless chains a<sup>2</sup> with larger sprocket-wheels e', the latter being fastened, respectively, to disks E' aforesaid, by which arrangement the reel is driven from both ends, the relative sizes of the different sprocket-wheels being such as to transmit from the comparatively fast revolving driving-shaft the slower movements necessary for the conveyer and reel. To the metal rings E<sup>2</sup> aforesaid are respectively attached wooden rings e<sup>2</sup> for attaching the bolting-cloth, and between the heads of the reel and located at suitable intervals are a series of spiders e<sup>3</sup>, mounted loosely on the driving-shaft, and each spider has attached a wooden ring e<sup>4</sup> for supporting the bolting-cloth. Longitudinal wooden strips e<sup>5</sup> extend the internal length of the reel for attaching and supporting the bolting-cloth and for giving stiffness to the reel. On

shaft B and located in the spaces between the different spiders  $e^3$  are mounted spiders F, three of these spiders being usually appropriated to each space on the driving-shaft.

5 These spiders are preferably of the three-armed variety, and are for supporting the spiral brushes G and spiral agitators G' G'. The agitators and brush are of flexible material, usually strips of rubber or leather  
10 belting, and are fastened to the extremes of the spider-arm. The strips of belting or other flexible material for the brushes are punctured along near the outer edge thereof for inserting the bristles, and are bent up double  
15 and secured, so that the bristles extend out widthwise of the belt and some distance beyond the edge thereof.

In adjusting the brushes and agitators of a series first one spider F—for instance, the  
20 spider at the right hand—is fastened to the driving-shaft by means of a set-screw. The next spider F is then turned on its axis to give the brush and agitator the desired spiral trend, after which this second spider F is secured to the shaft. Next, the third or last  
25 spider F of the series of three is turned on its axis in the same direction, but still further to continue the spiral trend of brush and agitators. Then the other series of spiders  
30 are successively adjusted in the same manner, the spiral trend of the entire system of brushes and agitators being in the direction to feed the material toward the tail end of the reel. The brushes of course sweep the internal surface of the bolting-cloth and prevent the latter from the possibility of clog-  
35 ging, while the brushes and agitators cooperate in causing the air and material to move spirally toward the tail end of the rail. Heretofore beaters of different variety have  
40 been employed, the functions of which were to dash the material against the bolting-cloth, whereby the material, instead of being evenly distributed over the surface of the bolting-cloth, was thrown in such quantities onto limited areas of the bolting-cloth that the latter was subject to excessive strain and wear,  
45 and was more or less clogged, and often material was forced through the mesh of the cloth that should have been retained inside the reel.

As aforesaid, the action of my improved spiral brushes and agitator gives a spiral movement to the air and material in the reel,  
55 whereby the material does not accumulate at the bottom of the reel, but, on the contrary, is kept suspended in the air. The centrifugal force of the air and material causes the latter to sweep over the entire internal  
60 surface of the bolting-cloth, and with a gentle sliding movement relative to the cloth that is extremely effective in bolting, more especially as the entire surface of the bolting-cloth is simultaneously and always utilized in bolting, and whereby the strain and  
65 wear of the bolting-cloth as compared with the resultant bolting capacity are reduced

to a minimum. The brushes and agitators, all or any section thereof, may at any time be readjusted so as to give more or less spiral trend to these members, according as it is  
70 desired to feed the materials faster or slower through the reel.

It is well understood that in modern practice the grain is primarily crushed and bolt-  
75 ed, and the unbolted product is again passed through the rolls and again bolted, and so on through several reductions. For smaller mills, I have arranged my improved reel so as to simultaneously accommodate two reductions, such modified adjustment being  
80 shown in Fig. 6. In this figure a feed-spout  $C^2$  is shown at each end of the reel, and each end has a wheel  $B^2$  for feeding the material into the ends of the reel, in which case wheels  
85  $B^2$  are respectively right and left handed. Instead of a central spider  $e^3$ , I provide an imperforate head or disk, as shown at  $E^5$ . To the periphery of disk  $E^5$  is attached a coarse wire-cloth  $E^6$  or other material of such coarse  
90 meshes as will allow the entire material to fall through. This coarse material extends from this head a few inches in either direction for attaching the ends of the bolting-cloth. The brushes and agitators are ar-  
95 ranged right and left handed, as shown, so as to feed from the respective end toward the center of the reel. Both webs  $d$  are imperforate, the discharging-spouts J J' being arranged, as shown, near the center of the ma-  
100 chine to receive, respectively, the unbolted material from the respective reel-sections. Usually an opening is had at the bottom and near the longitudinal center of the conveyer-box, such opening having a slide  $a^4$  for closing  
105 the same, so that, if desired, the bolted material from the two sections of the reel may be kept separate. If it is desired to mix the entire bolted material, slide  $a^4$  is closed.

What I claim is—

1. In a bolting-reel, the combination, with a shaft, a reel surrounding the shaft and supported in bearings formed in the casing, and gearing connecting the reel and shaft, where-  
115 by they are rotated simultaneously but at unequal rates of speed, of a feed-trough leading to the reel at one end, a discharge-spout leading therefrom at the opposite end, and brushes secured to the shaft and engaging the internal surface of the reel, said brushes  
120 having spiral tread or lead, substantially as set forth.

2. In a bolting-reel, the combination, with casing having metal heads bored to fit the respective reel-heads, the edges of the casing-  
125 head having internal circumferential grooves, of metal reel-heads adapted, respectively, to operate in the heads of the casing, such reel-heads having peripheral tongues adapted to fit the grooves of the casing-heads, substan-  
130 tially as set forth.

3. In a bolting-reel, in combination, double-walled mutually-engaging metal casing-heads and reel-heads, substantially as indicated, the

engaging edges of these heads being tongued and grooved for mutual engagement, substantially as set forth.

4. In a bolting-reel, the combination, with  
5 a casing, a reel mounted at its ends in bearings formed in the casing, and a rotary shaft supported in bearings formed in the reel-heads, of gearing connecting the shaft and reel, and brushes secured on the shaft and engaging the internal surface of the reel, substantially as set forth.

5. In a bolting-reel, the combination, with

a casing, a reel mounted in bearings formed in said casing, and a shaft mounted in bearings in the reel-heads, of flexible brushes and flexible agitators secured on the shaft, substantially as set forth. 15

In testimony whereof I sign this specification, in the presence of two witnesses, this 15th day of August, 1889.

JAMES B. DOBSON.

Witnesses:

C. H. DORER,

ALBERT E. LYNCH.