(No Model.) 2 Sheets—Sheet 1.

C. BOLENBAUGH & E. B. WAGNER

BOLTING REEL.

No. 488,866. Patented Dec. 27, 1892.

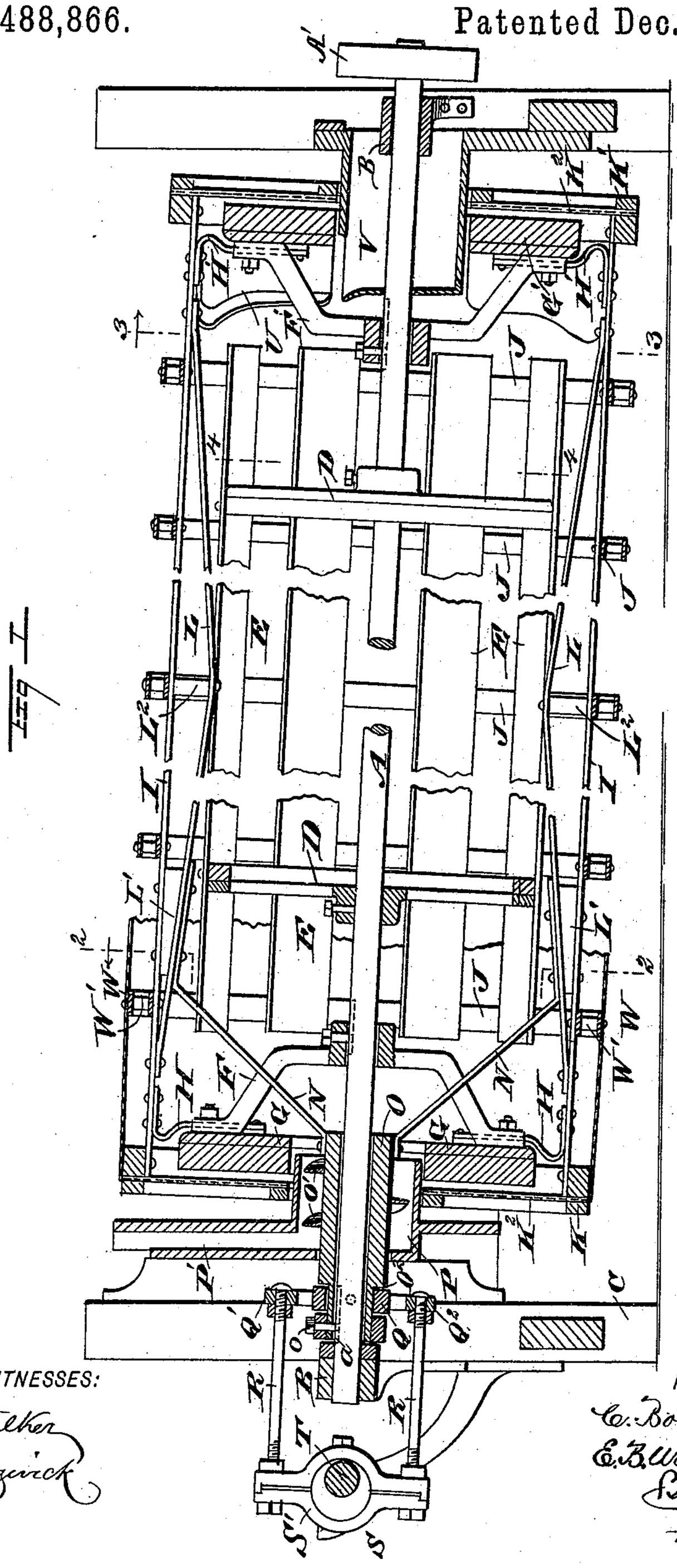

Fig. 1.

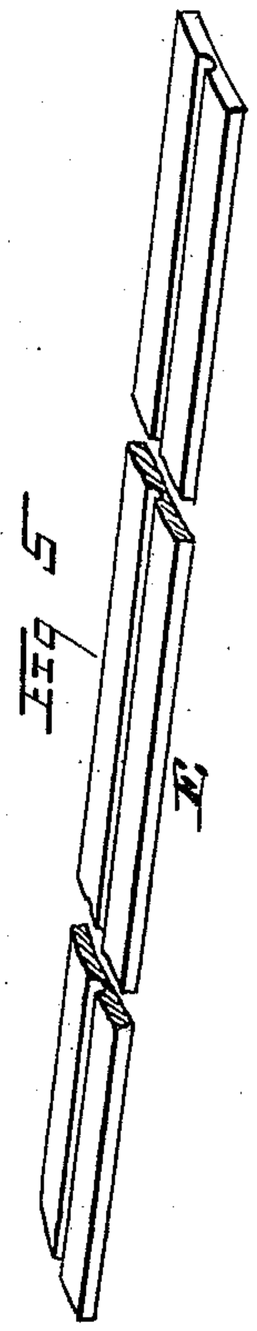

Fig. 5.

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Fig 2

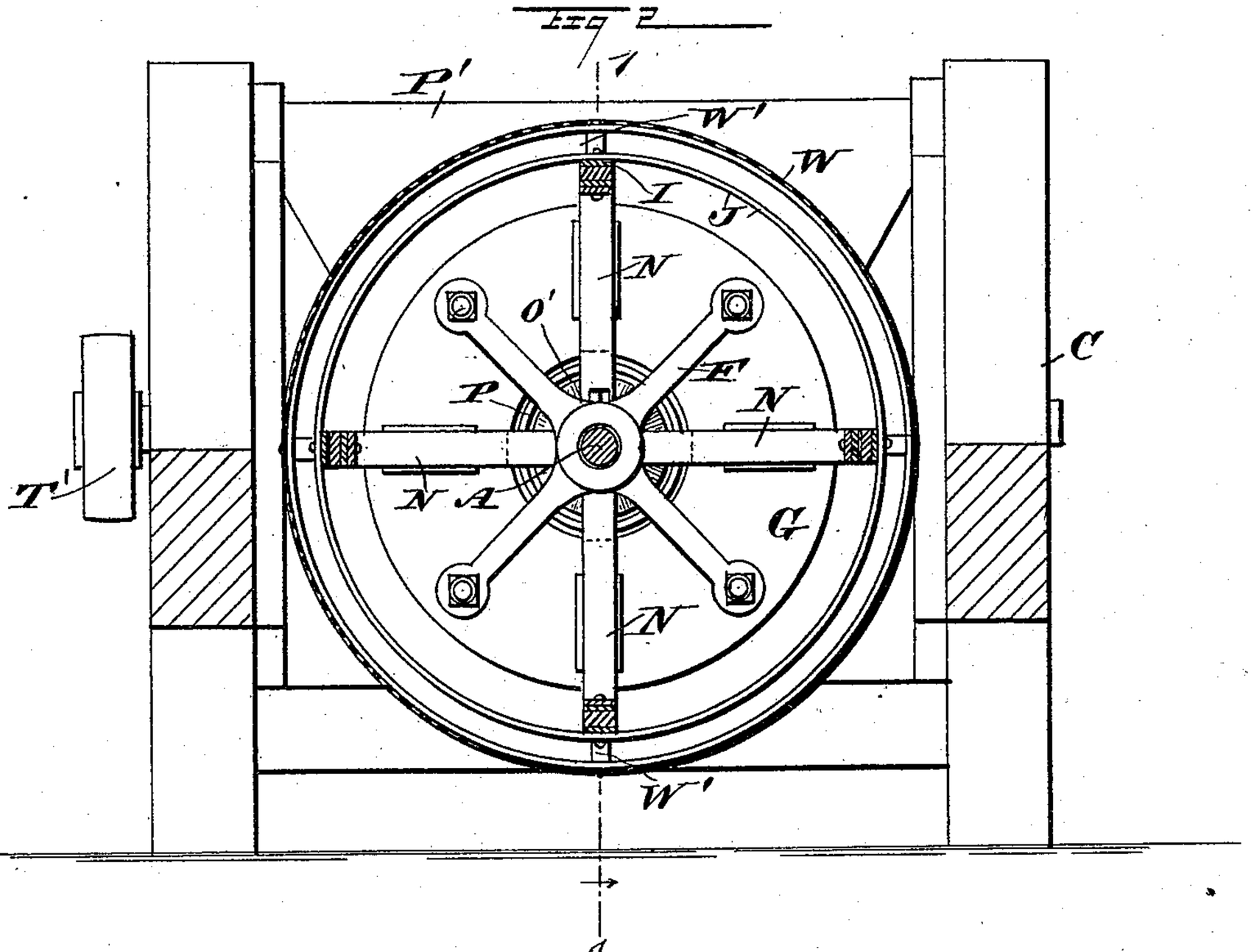


Fig 3

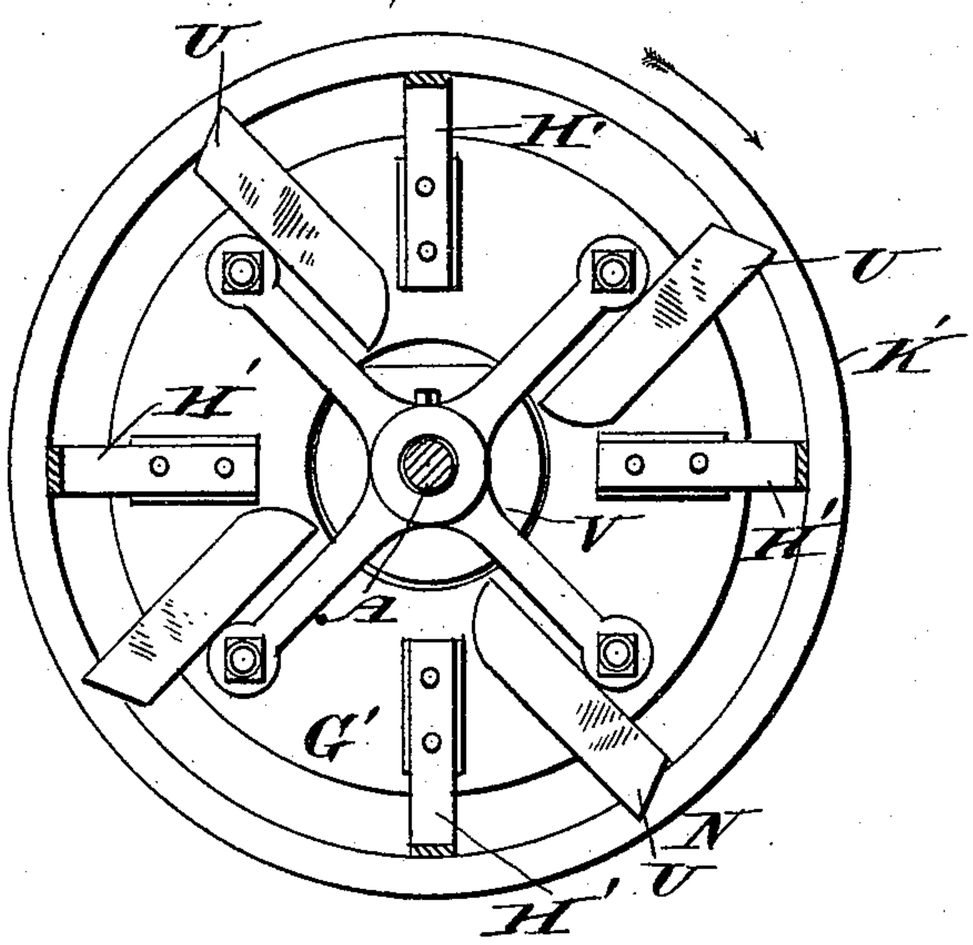
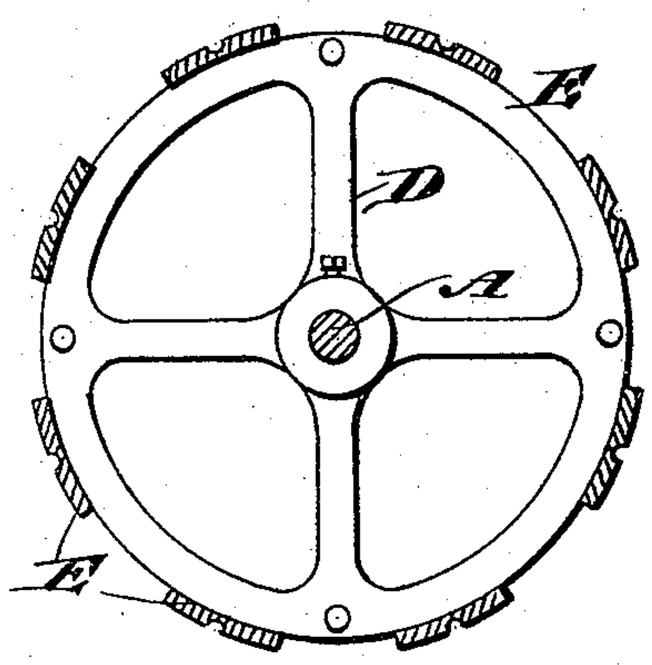


Fig 4



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UNITED STATES PATENT OFFICE.

CYRUS BOLENBAUGH AND EZRA B. WAGNER, OF WARSAW, INDIANA.

BOLTING-REEL.

SPECIFICATION forming part of Letters Patent No. 488,866, dated December 27, 1892.

Application filed July 14, 1892. Serial No. 440,057. (No model.)

To all whom it may concern:

Be it known that we, CYRUS BOLENBAUGH and EZRA B. WAGNER, both of Warsaw, in the county of Kosciusko and State of Indiana, have invented a new and Improved Bolting-Reel, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved bolting reel, which is simple and durable in construction, and arranged to very effectively grade the material passing through it.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section of the improvement on the line 1—1 in Fig. 2; Fig. 2 is a transverse section of the same on the line 2—2 in Fig. 1; Fig. 3 is a similar view of the same on the line 3—3 in Fig. 1; and Fig. 4 is a like view of the same on the line 4—4 in Fig. 1. Fig. 5 is a perspective of one of the agitator plates.

The improved bolting reel is provided with a main shaft A slightly inclined, as shown in Fig. 1, and journaled at its ends in bearings B and B′, held on a suitably constructed frame C. The shaft A is provided with pulley A′ connected with suitable machinery for imparting a rotary motion to the said shaft. On the shaft A between the heads of the frame C, are secured the spiders D, supporting on their rims the longitudinally extending plates E, each formed on its outer surface with a longitudinally extending groove, as is plainly shown in Fig. 4. On the shaft A are also held adjustable, by means of set screws, the spiders F and F′ carrying the rims or rings G G′, respectively, arranged near the middle of the rim and carrying a series of springs H and H′ respectively, riveted or otherwise fastened at their free ends to longitudinally extending metallic bars I, connected with each other transversely by rings or hoops J riveted to the said plates I. The plates I extend a suitable distance from the plates E, which latter serve as agitators and are not shifted longitudinally, as hereinafter more fully described. The ends of the plates I are connected by rivets, bolts or other means to the heads K, K′ of the reel, each head being provided with the usual bolting cloth K^2, forming the ends for the reel. Each of the longitudinally extending plates I is braced on the inside by a brace L riveted at its ends to the plates I, near the ends thereof. Near the upper end of the brace L is arranged a block L′ set between the brace and its plate I, and at the middle of each brace is arranged a post L^2 connecting it with its plate, as shown in Fig. 1. Each of the braces L is connected at the block L′ with an inwardly and forwardly extending arm N, attached to the inner end of a sleeve O, mounted to slide longitudinally on the shaft A, at the upper end thereof by means of the groove *a* in the shaft and screws *o* passed through the collar into the groove. On this sleeve O is formed a feed screw O′, operating in the feed spout P provided with an inlet hopper P′ and secured to the main frame C, at the upper end thereof. The sleeve O extends through the outer wall of the hopper P′, and is formed at its outer end with an annular groove O^2, engaged by a ring Q formed with arms Q′ and Q^2 arranged diametrically opposite each other and rigidly connected by rods R with the eccentric strap S′ of an eccentric S secured on a transversely extending shaft T mounted to turn in suitable bearings held in the upper end of the main frame C. The shaft T is connected by pulley T′, see Fig. 2, or otherwise, with machinery for imparting a rotary motion to the said shaft, the rate of speed being about three hundred and fifty revolutions per minute, to one hundred and seventy revolutions per minute of the main driving shaft A. On the lower rim G′, and on the inside thereof, are arranged radially extending buckets U adapted to discharge into the open top of the outlet chute V secured on the lower end of the frame C and discharging to the outside. The chute V, as well as the the inlet spout P, is arranged

concentric to the shaft A, and they pass through openings in the heads K′ and K and the rims G′, G, as is plainly shown in Fig. 1. The bolting cloth for the reel is supported on the rims of the heads K and K′, and on rings W, arranged concentric to the rings or hoops J, and secured thereto by posts W′, as is shown in the upper end of Fig. 1 and indicated in Fig. 2.

The operation is as follows:—When a rotary motion is given to the two shafts A and T at the ratio above mentioned, then the reel is rotated, owing to the spiders F, F′ being secured to the said shaft A. At the same time a longitudinal sliding motion is given to the sleeve O from the shaft T by means of the eccentric S, the rods R, and ring Q above described. The sliding motion of the sleeve O is transmitted by the arms N to the braces L and the plates I carrying the heads K, K′ and the bolting cloth, so that the said heads as well as the bolting cloth and the supports therefor slide longitudinally, thus agitating the material fed into the bolting cloth longitudinally by shaking the same. It is understood that the sleeve O is mounted to slide on and to turn with the shaft A, so that the proper amount of material is fed to the inside of the wheel by the feed screw O′. It is further understood that the longitudinal sliding motion of the bolting cloth and the supports therefor is possible owing to the springs H H′, connecting the longitudinal plates I with the spiders F, F′. As the latter are adjusted longitudinally on the shaft A, their rims G, G′ can be set any desired distance from the bolting cloth K^2 in the heads K K′, so that any desired amount of throw can be given to the heads and their connections from the shaft T. It will be seen that as the plates E revolve with the shaft A but do not slide longitudinally, the material passing through the reel is agitated, owing to the shaking motion of the bolting cloth and the frame therefor, so that the material is graded very effectively and the tailings are finally scooped up at the lower end by the buckets U, which discharge into the top opening of the outlet spout V leading to the outside. The cylindrical series of agitator plates also carry upwardly a certain amount of material, which then falls off upon the bolting cloth; the grooves *e* therein assisting the plates in this action and the material is turned over by coming in contact with these grooves during the rotation of the reel.

Having thus fully described our invention we claim as new, and desire to secure by Letters Patent:—

1. The combination with the frame carrying the bolting cloth, the longitudinal central shaft extending therethrough, and a spring connection between the shaft and the ends of said frame, of a reciprocating sleeve or collar mounted upon and rotating with the shaft, and connections between the bolting cloth frame and said collar or sleeve, whereby the said frame will be rotated by its shaft and reciprocated against the action of its springs, substantially as set forth.

2. The combination with the main shaft, and the cylindrical series of agitator plates fixedly secured on the shaft to turn therewith but not move longitudinally, of the outer bolting cloth frame separate and independent from the agitator plates, springs supporting the said bolting cloth frame at its ends from the main shaft, a reciprocating sleeve or collar upon and rotating with the main shaft, and connections between said sleeve or collar and the bolting cloth frame, whereby as the frame rotates it will be reciprocated against the action of its springs, substantially as set forth.

3. A bolting reel comprising a shaft mounted to turn, spiders secured on the said shaft and supporting rims, springs attached to the said rims, and longitudinally extending plates connected with the said springs and supporting the bolting cloth, substantially as shown and described.

4. A bolting reel comprising a shaft mounted to turn, spiders secured on the said shaft and supporting rims, springs attached to the said rims, longitudinally extending plates connected with the said springs and supporting the bolting cloth, and means, substantially as described, for imparting a longitudinal sliding motion to the said plates to shift the outer bolting cloth reel, substantially as shown and described.

5. A bolting reel comprising a shaft mounted to turn, spiders secured on the said shaft and supporting rims, springs attached to the said rims, longitudinally extending plates connected with the said springs and supporting the bolting cloth, heads carried by the said plates, and concentric rings supported on the said plates and carrying, with the said heads, the bolting cloth, substantially as shown and described.

6. A bolting reel comprising a shaft mounted to turn spiders secured fixedly to the shaft longitudinally extending agitator plates secured to the said spiders, an outer bolting cloth reel comprising heads, longitudinally extending plates connecting the heads with each other and supporting, by means of rings, the bolting cloth, springs connected with the said reel plates, and spiders held on the said shaft and carrying on their rims the said springs, substantially as shown and described.

7. A bolting reel comprising a shaft mounted to turn and carrying an inner cylindrical series of longitudinally grooved agitator plates rotating therewith and secured against longitudinal movement thereon, an outer bolting cloth reel comprising heads, longitudinally extending plates connecting the heads with each other and supporting, by means of rings, the bolting cloth, springs connected

with the said plates, spiders held on the said shaft and carrying on their rims the said springs, an inlet chute at the upper head, an outlet spout passing through the lower head and formed with a top opening, and buckets held on the rim of the lowermost spider to scoop up the tailings and discharge the same into the top opening of the outlet spout, substantially as shown and described.

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