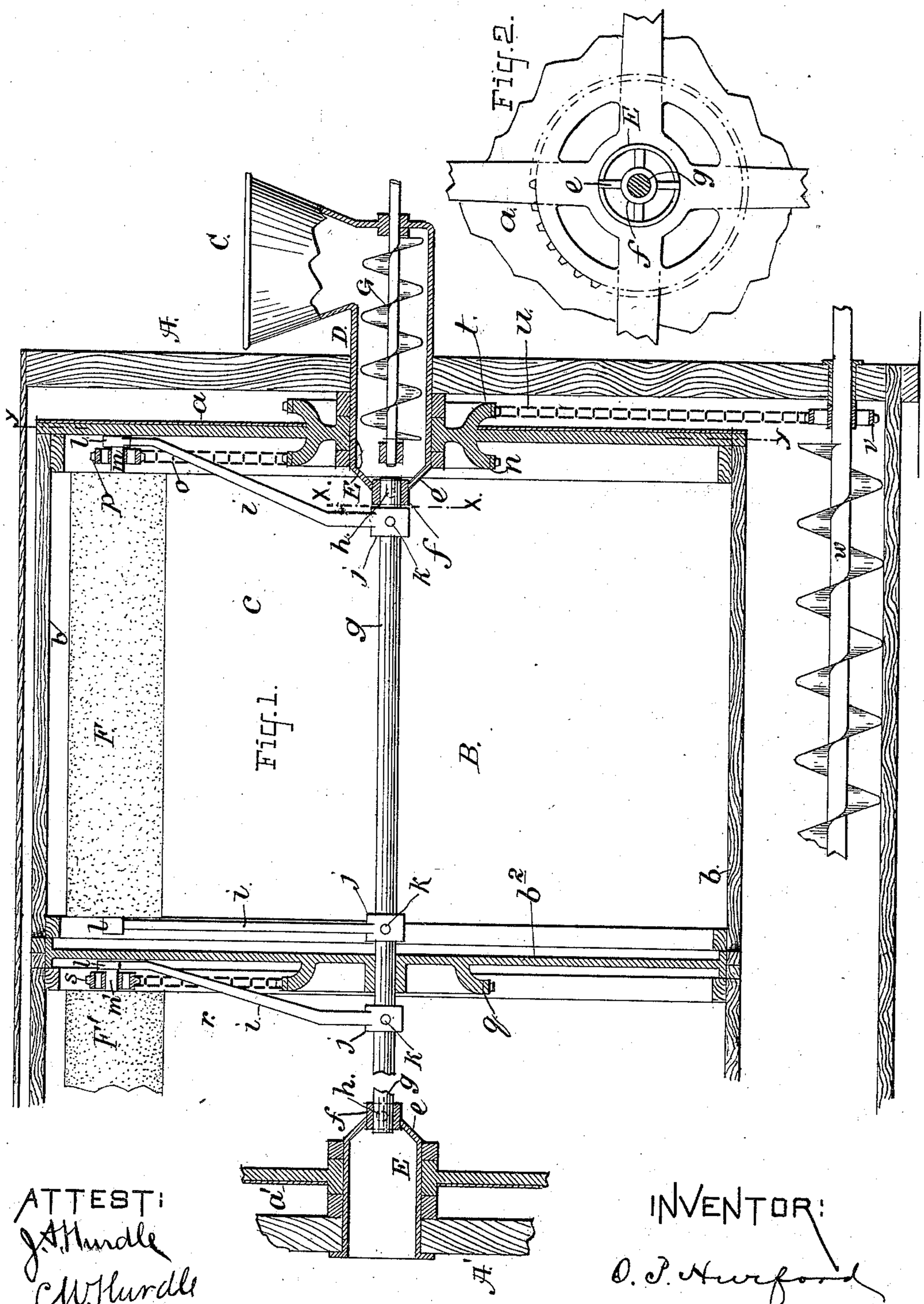
(No Model.)

2 Sheets—Sheet 1.

O. P. HURFORD.

REEL BOLT.

No. 331,240. Patented Nov. 24, 1885.



ATTEST:
J. A. Hurdle
C. W. Hurdle

INVENTOR:
O. P. Hurford
By atty. Jacob Felbel.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

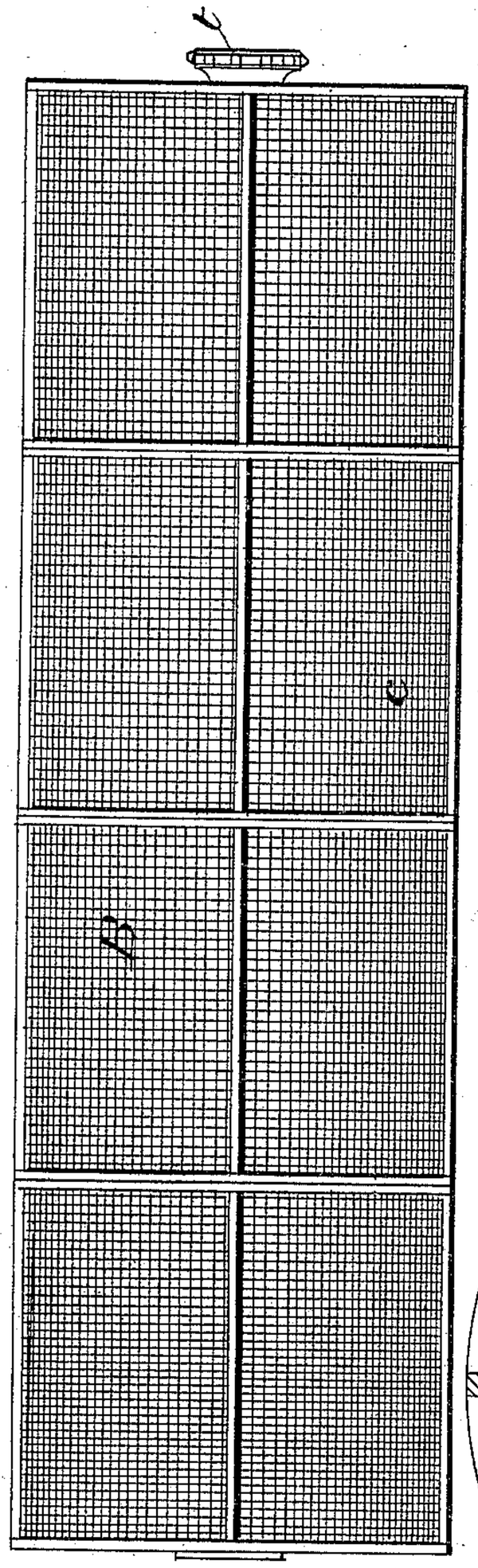


Fig. 5.

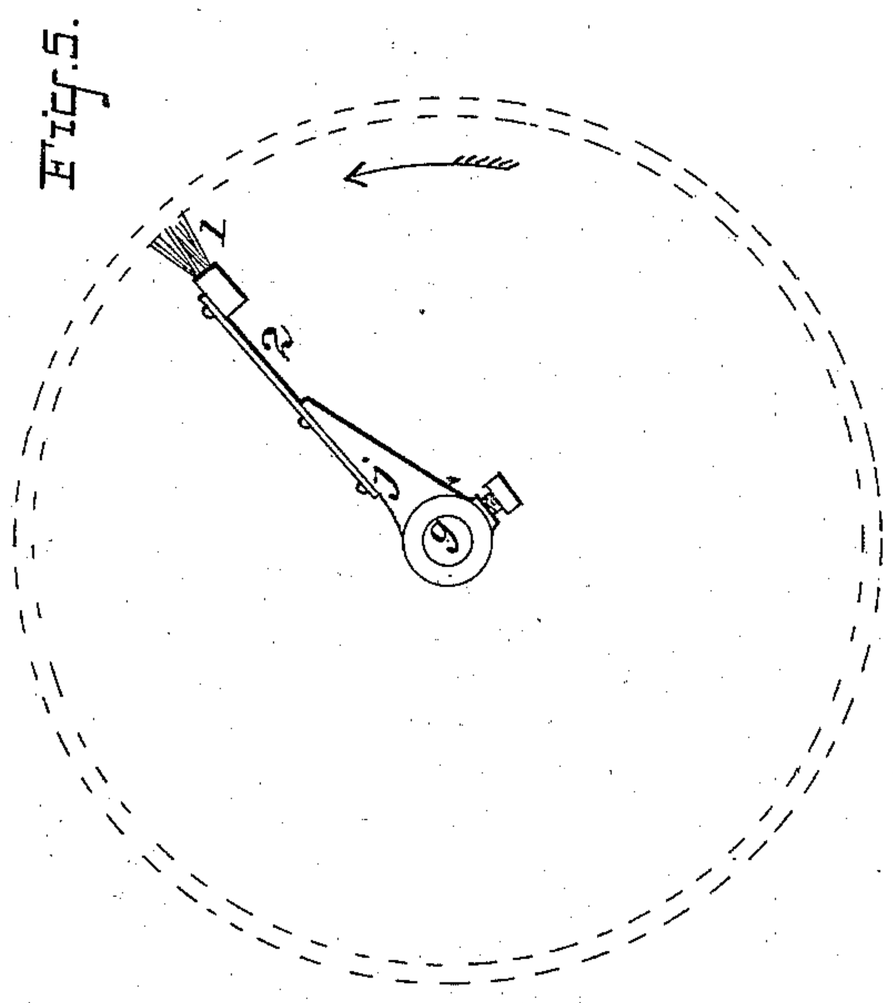
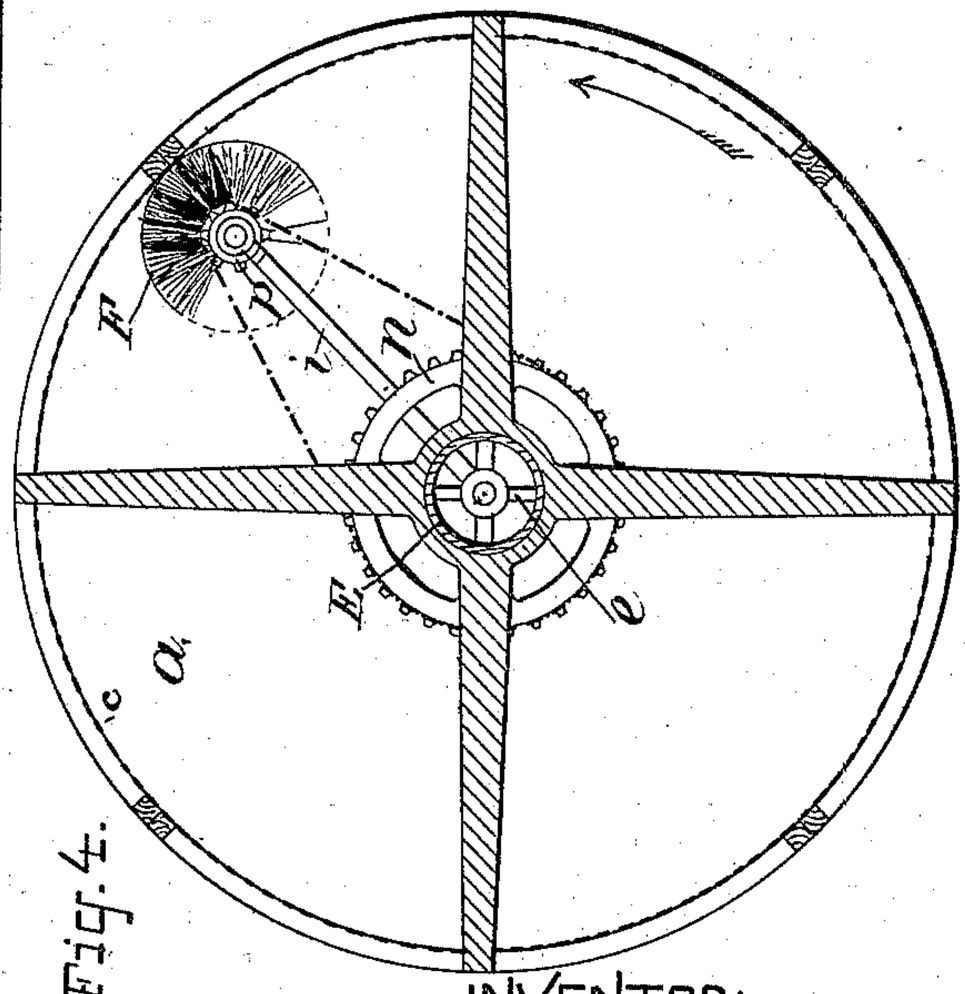


Fig. 4.



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UNITED STATES PATENT OFFICE.

OLIVER PERRY HURFORD, OF OAKDALE, NEBRASKA.

REEL-BOLT.

SPECIFICATION forming part of Letters Patent No. 331,240, dated November 24, 1885.

Application filed July 29, 1885. Serial No. 172,930. (No model.)

To all whom it may concern:

Be it known that I, OLIVER PERRY HURFORD, a citizen of the United States, and a resident of Oakdale, in the county of Antelope and State of Nebraska, have invented certain new and useful Improvements in Reel-Bolts, of which the following is a specification.

Previous to my invention rotary flour-bolts and middlings-purifiers have been provided with interiorly-arranged brushes for clearing the meshes of the bolting-cloths through which the material being operated upon is sifted, and in the several constructions of such rotary bolts and purifiers it has been customary to mount the clearing-brushes at different parts of the machine and in different ways.

In one prior construction of the machine the brushes have been loosely suspended on the revolving axis of the reel, and by their gravity remain stationary and operate always at the bottom of the rotatory reel. Machines having brushes so mounted and operated are objectionable, in that brushes work those portions of the bolting-surface where the material is being sifted, and hence soon become clogged up themselves and inefficiently operate to clear the meshes of the bolting-cloths.

In a patent granted to me March 25, 1884, is shown another construction of machine, in which the brushes are loosely mounted on a central rotating shaft and are provided with means to maintain said brushes always at the upper portion of the reel. Said machine, so far as its brushes are concerned, is much superior in point of utility to machines made heretofore, on account of the removal of the brushes from the bottom of the machine.

My present invention has for its object to improve the construction of rotary flour-bolts and middlings-purifiers; and to this end it consists in a machine involving the various combinations of devices to be hereinafter fully described, and particularly pointed out in the claims.

In the drawings which accompany this specification and form a part thereof, Figure 1 is a vertical longitudinal section of a machine embodying my invention. Fig. 2 is a partial cross-section thereof, taken at the line *x x* of Fig. 1, looking toward the feed-tube. Fig. 3 is a side elevation, on a decreased scale, of the bolting-reel. Fig. 4 is a cross-section of the reel, taken at the line *y y* of Fig. 1. Fig. 5 is a cross-sectional view of the reel, showing a non-rotatable brush, which may be used in a machine involving my improvements in lieu of the rotating brush shown in the other figures of the drawings.

In the several views the same parts will be designated by the same letters of reference.

A and A′ are respectively the end frames at the head and foot of the machine.

B is the bolting-reel, C the supply-hopper, and D the feed-tube through which the material to be operated upon is supplied to the reel. The reel is composed, as usual, of ends or heads *a a′*, connected by suitable longitudinal framework, *b*, and is surrounded in any of the well-known ways by bolting-cloth *c*. Each head of the reel is formed with a central hole or opening and is mounted upon a tubular gudgeon or bearing, E, firmly secured to and projecting inwardly from each end frame. The inner end of each gudgeon E is provided with a cross-piece, *e*, from which extends inwardly an eye or hub, *f*.

g is a round rod extending, preferably, the whole length of the reel, the ends of which are inserted into the eyes *f f*, and are there firmly secured by means of set-screws *h h*. Upon said rod, at suitable distances apart, are mounted brush-supporting arms *i i*. The said arms are formed at their lower ends with collars *j j*, by which, through the medium of set-screws *k k*, they are made fast to the rod *g*, and the upper ends of said arms are provided with bearings *l l*, which in the use of rotary brushes support the shafts of said brushes.

F F′ designate the rotary brushes, which may be of any desired detail construction, and *m m′* the shafts of said brushes.

As customary, the reel B is divided off into sections by partitions b^2; and it will be seen and understood, of course, that in each section of the reel a brush is provided for clearing the meshes of the cloth surrounding that section. The head *a* of the reel is formed or provided interiorly with a sprocket-wheel, *n*, and to the outer end of the brush-shaft *m* is secured another sprocket-wheel, *p*, preferably of smaller diameter. A drive-chain, *o*, passes partially around each of the sprocket-wheels, and serves to transmit motion from the wheel *n* to the

wheel *p*, and thus rotate the shaft *m* and the cylindrical brush F, attached thereto. Each partition b^2 of the reel is also formed or provided with a chain-wheel, as *q*, and on each brush-shaft, as *m'*, is arranged a chain-wheel, as *s*, and the said wheels are banded together by a chain belt, as *r*, for the purpose of rotating the cylindrical brush in each section. The reel-head *a* is formed or provided exteriorly with another sprocket-wheel, *t*, which connects by a drive-chain, *u*, with a sprocket-wheel, *v*, fast on a screw-shaft, *w*, at the lower portion of the machine, whereby the reel is rotated. The shaft *w* is preferably the main shaft of the machine.

As will be seen, the feed-tube D is preferably formed integrally with the gudgeon E, and is provided, as usual, with a screw-conveyer, G, which receives its motion from any suitable source outside of the machine.

From the foregoing description of the construction of a machine embodying my invention and the following explanations of the operation of the same any one skilled in the art will be enabled to make and use machines involving my several improvements.

Power being applied to the driving-shaft of the machine the reel B is rotated in the direction indicated by the arrow, and the conveyer-shafts G and *w* are set in motion. The material to be operated upon is supplied at the head of the machine to the hopper C, from whence it falls into the feed-tube D and is forced along therein and out through its inner end and out through the inner end of the gudgeon, from which it falls to the bottom of the reel. The reel being set at an inclination or being tapering in form the material will gravitate toward the foot of the machine and be sifted and graded in the usual manner. The reel, turning freely on the gudgeons, will, through the intervention of the chains and chain-wheels, rotate the cylindrical brushes in contact with the inner surfaces of the bolting-clothing, and sweep and clear the meshes of any and all particles which may have lodged thereon.

During the rotation of the reel it will be understood that the rod *g* and the brush-supporting arms *j j* remain stationary and hold the brushes up against the surfaces to be cleaned. The arms *j j* may each be made of two parts, after the fashion shown in my former patent, so as to be adjustable lengthwise and take up the wear of the brushes.

The arms *j j* and the brushes carried thereby may, by reason of the construction described, be set at any inclination to the rod *g*, and hence the brushes be made to operate at any locality of the inner periphery of the reel to suit the judgment and wishes of the user of the machine.

By the use of rotatory brushes the meshes of the reel-clothing may be more effectually cleared; but, so far as one of the features of my improvements is concerned, non-rotatable brushes may be employed.

At Fig. 5 of the drawings will be seen a brush, 1, of the last-mentioned kind, but of an improved construction. Instead of being mounted directly onto the arms *j j*, the brush is secured to spring-bars 2, fastened to the arms, whereby the brush is capable of yielding in performing its function, and hence is not liable to wear out quite so soon as if mounted inflexibly.

Of course, in the use of the rotary brushes in lieu of chains and chain-wheels, band-pulleys and belts may be employed, and the brushes may be made to revolve in a direction contrary to that in which the reel revolves.

By locating the brushes at the upper part of the machine and setting them out of the vertical they are not so liable to become clogged by the material they dislodge from the bolting-cloths, which fact is a consideration of some importance.

It will be understood that my improvements may be used in any of the known constructions of machines, whether for bolting flour, purifying middlings, or doing other like work.

Having now so fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the reel-bolt, an interiorly-arranged stationary rod, arms secured to said rod, and a brush supported by said arms, substantially as set forth.

2. In combination with the reel-bolt, an interiorly-arranged stationary rod, arms adjustably secured to said rod, and a brush supported by said arms, substantially as set forth.

3. In combination with the reel-bolt, an interiorly-arranged stationary rod, arms secured to said rod, and a brush supported by said arms at an angle to the vertical, as and for the purpose set forth.

4. In combination with the reel-bolt, an interiorly-arranged stationary rod, arms secured to said rod, a rotary brush supported by said arms, and means, substantially such as described, for rotating said brush.

5. In combination with a reel mounted to rotate on gudgeons, an interiorly-arranged stationary rod supported at its ends in said gudgeons, arms secured to said rod, and a brush supported by said arms, as set forth.

6. In combination with a reel having dividing-partitions, an interiorly-arranged stationary rod, arms secured to said rod, rotary brushes supported by said arms, and means, substantially such as described, for rotating said brushes.

Signed at Oakdale, in the county of Antelope and State of Nebraska, this 20th day of July, A. D. 1885.

OLIVER PERRY HURFORD.

Witnesses:
M. W. KING,
C. F. RENO.