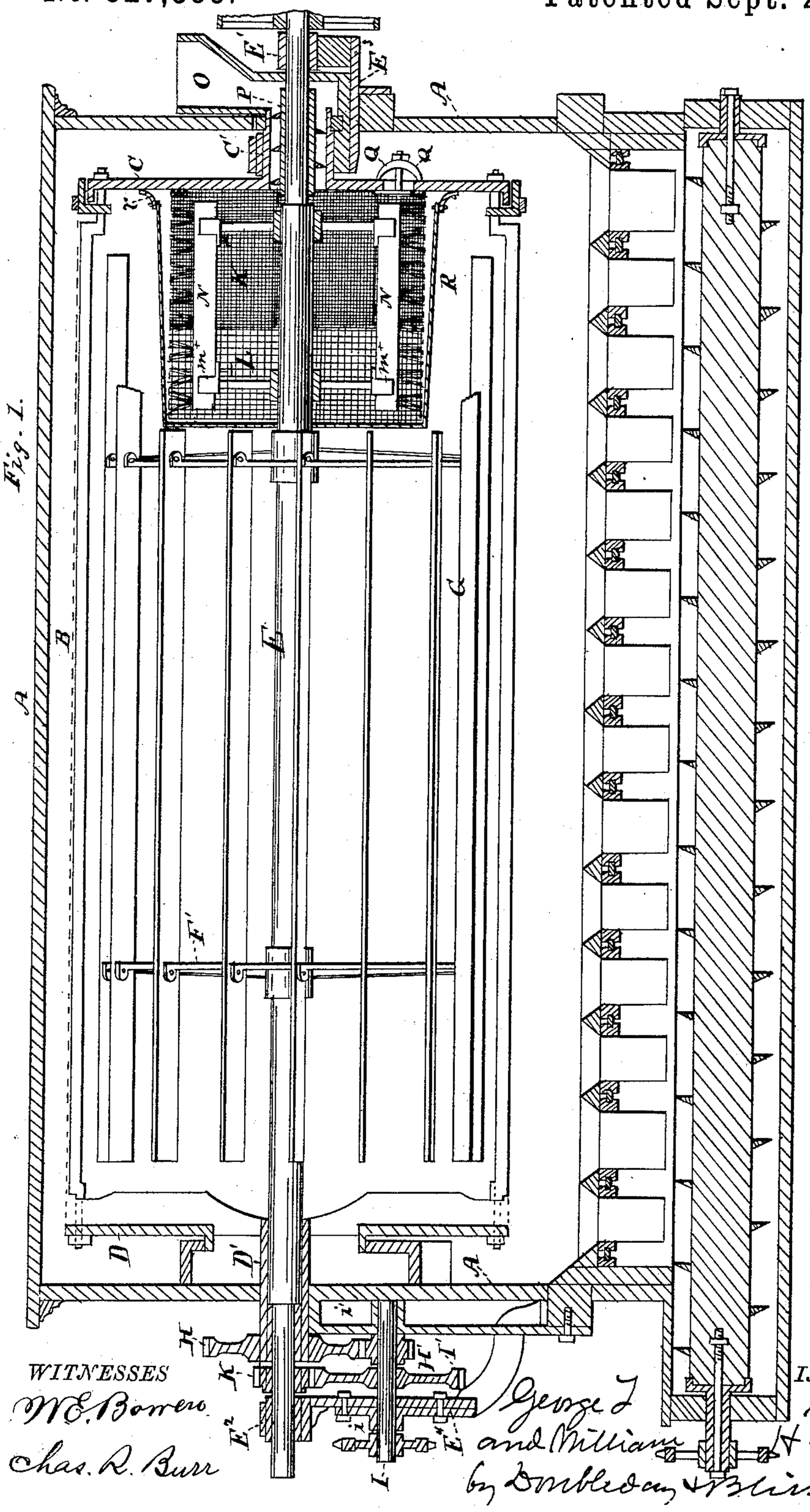
(No Model.) 2 Sheets—Sheet 1.

G. T. SMITH & W. H. DICKEY.

CENTRIFUGAL REEL.

No. 327,333. Patented Sept. 29, 1885.

Fig. 1.



N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

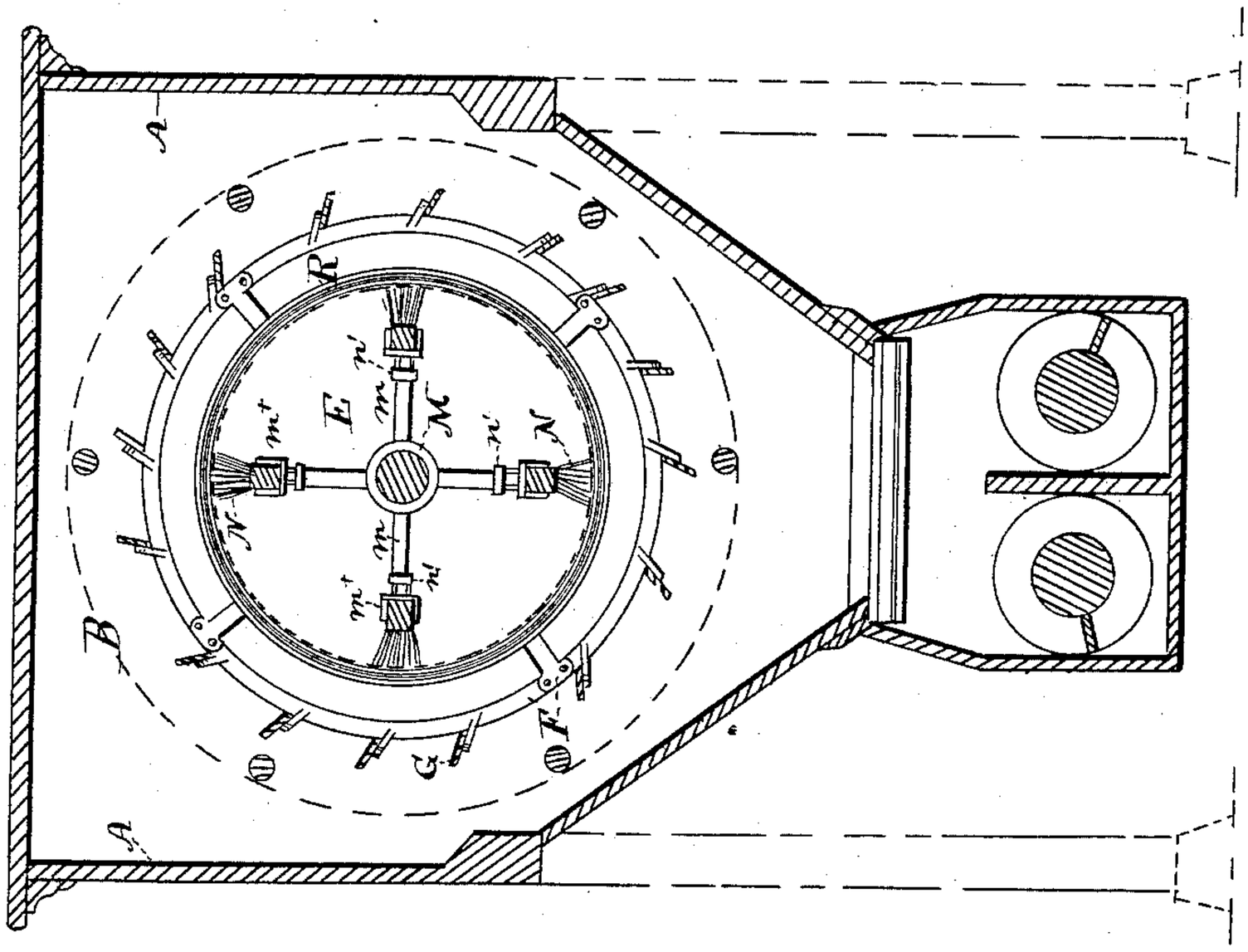
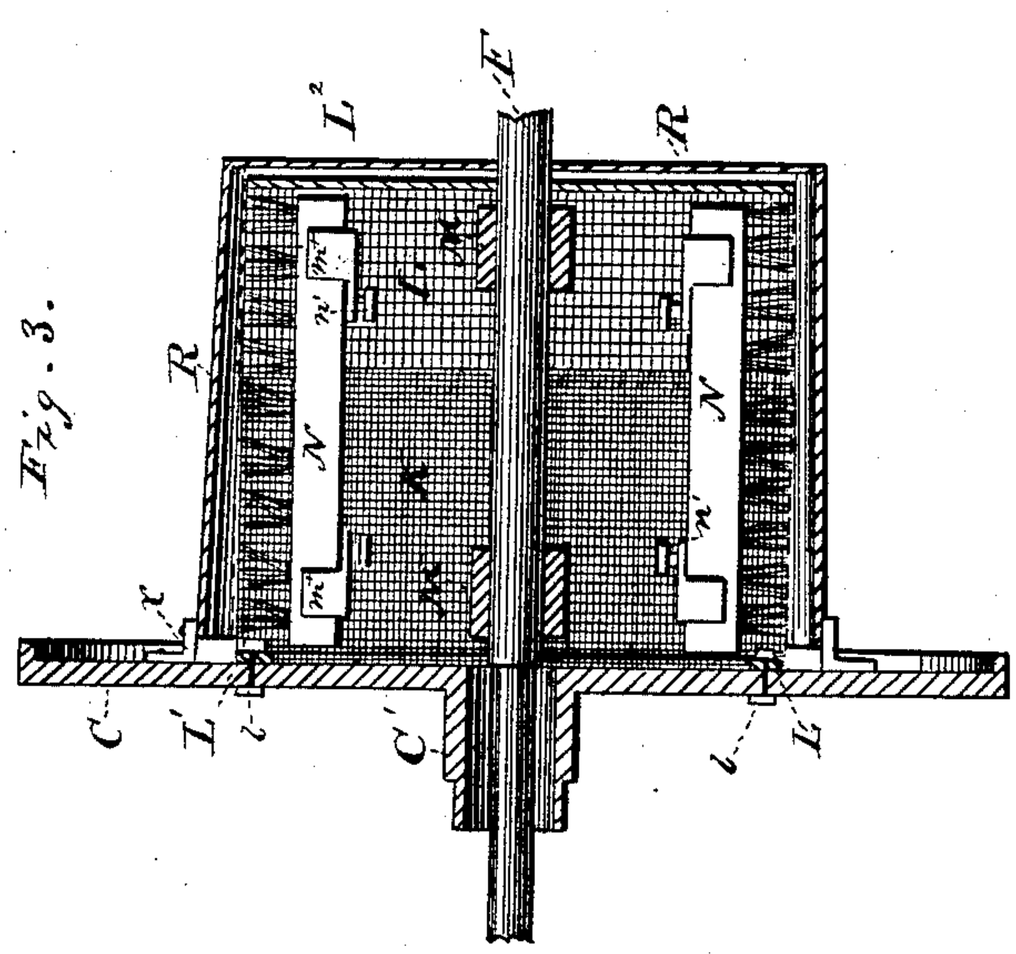


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE T. SMITH AND WILLIAM H. DICKEY, OF JACKSON, MICHIGAN.

CENTRIFUGAL REEL.

SPECIFICATION forming part of Letters Patent No. 327,333, dated September 29, 1885.

Application filed June 20, 1883. (No model.)

To all whom it may concern:

Be it known that we, GEORGE T. SMITH and WILLIAM H. DICKEY, citizens of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Centrifugal Reels, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a longitudinal section of a reel constructed with our improvement, this figure showing also a surounding casing and conveyer mechanism below the reel. Fig. 2 is a vertical cross-section. Fig. 3 is a vertical section, enlarged, of the disintegrator.

This invention relates to the construction of flour-bolts, particularly that class which is known as "centrifugal reels," and in which the material to be bolted is acted upon by a series of revolving beaters, and is thereby driven against the bolting-cloth, through which portions of the flour or other material are driven.

One object of this invention is to prevent the contact with the bolting-cloth of pieces of metal and other substances which would be liable to injure the bolting-cloth by cutting holes through it or otherwise, and at the same time to insure that nearly the entire length of the bolting-cloth from head to tail of the reel shall be utilized.

To this end one part of our invention consists in the combination, in a flour-bolt having a closed head provided with an opening to receive material, and a feeding device communicating with said opening, a sifter or riddle into which the material is discharged upon its passage through the reel-head, and an outer inclosing jacket or shell which is adapted to collect such material as passes through this sifter, and deliver it to the bolting-cloth in close proximity to the reel-head, through which the material is delivered to the interior of the sifter.

Having thus set forth the nature of our invention, we will proceed to describe one construction of mechanism which we have devised for carrying it into effect.

The improvements which we have devised are applicable generally to reels of a class known as "centrifugal reels," and we do not wish to limit ourselves to any specific form of the reel, though we have shown and will describe but one construction having our improvements embodied.

In the drawings, A represents a casing or housing, which may be of the ordinary character.

B represents the silk cloth or covering of the reel. It is supported upon heads C D, these heads being cast with or provided with hollow trunnions C′ D′.

E is a shaft mounted centrally within and extending longitudinally through the reel. It is mounted in bearings E′ E^2, the bearing E′ being supported by means of a bracket-plate, E^3, and the bearing E^2 being supported by a standard or upright, E^4.

F F are spiders having the radially-extending arms F′, carrying the beaters or spreaders G, the spiders being secured upon the shaft E by means of their hubs. The beaters or spreaders G are, by means of shaft E, revolved within the reel, and independently thereof, at a speed considerably greater than that of the reel. Preferably the relative speeds are in the proportion of ten to one.

A rotary motion is transmitted from the shaft to the reel through the following devices: K represents a wheel mounted upon the shaft E, and meshing with another wheel, I′, on a supplemental shaft, I, preferably below the shaft E, and mounted in bearings *i i′*, supported by the casing A and upright E^4. H′ is a wheel on shaft I, meshing with a wheel, H, secured to the outer end of the hollow trunnion D′ at the tail of the reel. When the shaft E is rotating, motion is transmitted therefrom, through the devices last described, to the reel, as will be readily understood, the speed being reduced in about the ratio mentioned.

Within the reel, at the head end or receiving end, we arrange the disintegrator, which consists, essentially, of a series of rapidly-revolving brushes, a sifter surrounding the brushes, and a shell interposed between the sifter and the bolting-cloth of the reel, which parts we will proceed to describe.

Referring particularly to Figs. 1 and 3, K L is a cylinder formed of wire-cloth of different sizes of mesh, the part L being much coarser than the part K.

L^2 is the circular head arranged to close the inner end of the cylinder or cage.

l l are bolts, and L′ is a clamp, by means of which the cage is firmly secured to the head C of the reel, so as to rotate with it.

M M are hubs secured to the main shaft E, and are each provided with two or more radially-projecting arms, *m*. Each of these arms is provided at its outer end with a socket or fork, $m^{\times}$, within which the backs of the brushes N N are seated.

n′ n′ are screws seated in lugs attached to or cast upon the arms *m*, whereby the brushes may be properly adjusted so that their bristles shall engage with or be in close proximity to the inner surface of the wire-cloth cage. As shown in the drawings, these brushes are arranged on lines parallel with the main shaft E; but, when preferred, they may be arranged spirally, substantially as are the beaters G, in order that by their revolution they shall gradually work the material within the cage toward the disk or head-piece L^2.

The material is fed to the disintegrator by means of a hopper, O, and a passage-way or conduit, P, in which there is arranged a conveyer carried by the main shaft E.

In operation the material to be bolted is fed through the said hopper and conduits into the disintegrator, upon entering which it is operated upon by the revolving brushes, which not only break up all cakes and lumps, but also thoroughly scour the material while the same is passing around between the brushes and the wire cylinders. Such portion of the material as is not driven through the finer cloth passes along to the coarser mesh, and escapes thence into the open space within the reel, where it is acted upon by the revolving beaters G, as will be readily understood by those who are familiar with this class of bolters, except that if there be any foreign substances which it is not desirable to have pass into the reel they are caught and retained within the wire cylinder, and may be removed therefrom through a hand-hole at Q, which may be covered by a movable cap or plate.

R is a sheet-metal casing surrounding the reticulated cylinder of the disintegrator and at such distance therefrom as to leave an annular space between the two. This casing is connected with the reel-head by means of brackets or angle-irons *r r*, the inner edge of the casing being supported at a short distance from said reel-head, thus providing a throat through which such material as passes through the sifter or cylinder K L may be discharged, and will pass thence to the bolting-cloth close to the reel-head, thus insuring that nearly the entire length of the cloth shall be utilized for bolting.

While we have shown our invention as applied to a centrifugal reel with beaters revolving in close proximity to the cloth, and also with a set of brushes inside the sifter or cage K L, yet it is apparent that either the brushes or beaters might be omitted without departing from the spirit of the invention which is claimed herein, because the sifter would in such case operate satisfactorily so far as preventing bits of iron or other injurious substances from passing into the body of the bolt and afterward into contact with the cloth.

So, also, while we have shown the reel-head provided with a hand-hole at Q, and a cap or plate, *q*, covering the hand-hole, these parts might be dispensed with, it being apparent that any accumulation of material inside the cylinder or sifter could be removed by temporarily detaching said cylinder from the reel-head, or by removing the circular head L^2.

We do not in this case claim any of the inventions which are recited in the claims of another application, No. 88,581, filed by us March 17, 1883, it being our intention, however, to claim in this case all patentable inventions shown or described herein except such as are set forth in and covered by the claims of our said application No. 88,581.

What we claim is—

1. In a flour-bolt, the combination of a reel having a closed head provided with an opening to receive the material, a feeding device communicating with said opening in the reel-head, a sifter into which the material is discharged through the opening in the reel-head, and a shell interposed between the reel and the sifter, and adapted to collect material which passes through the sifter and deliver the same to the bolting-cloth in close proximity to the reel-head, which is provided with the feed-opening, substantially as set forth.

2. In a flour-bolt, the combination of a reel having a closed head provided with an opening to receive the material, a feeding device communicating with said opening in the reel-head, a sifter into which the material is discharged through the opening in the reel-head, and a funnel-shaped shell interposed between the reel and the sifter, and having its larger end toward the reel-head, which is provided with the feed-opening, substantially as set forth.

3. In a flour-bolt, the combination, with the reel-head at the receiving end of the bolt, of a reticulated sifter adapted to receive the material to be bolted, a shell of greater diameter than the sifter and arranged concentric thereto, and a head closing the inner end of the sifter, and also of the concentric shell, substantially as set forth.

4. In a flour-bolt, the combination, with the reel-head, of a reticulated sifter adapted to receive the material to be bolted, a shell of greater diameter than the sifter and concentric thereto, and a series of brackets connecting the inner edge of the shell with the reel-head, the said edge of the shell being arranged

at a short distance from the reel-head, substantially as set forth.

5. In a flour-bolt, the combination, with the reel-head at the receiving end of the bolt, of a reticulated sifter adapted to receive the material to be bolted, and a shell surrounding the cylinder, and connected at one end to the reel-head and at its opposite end to the sifter, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE T. SMITH.
WILLIAM H. DICKEY.

Witnesses:
WILLIAM F. COCHRAN,
ALBER S. MACULEN.