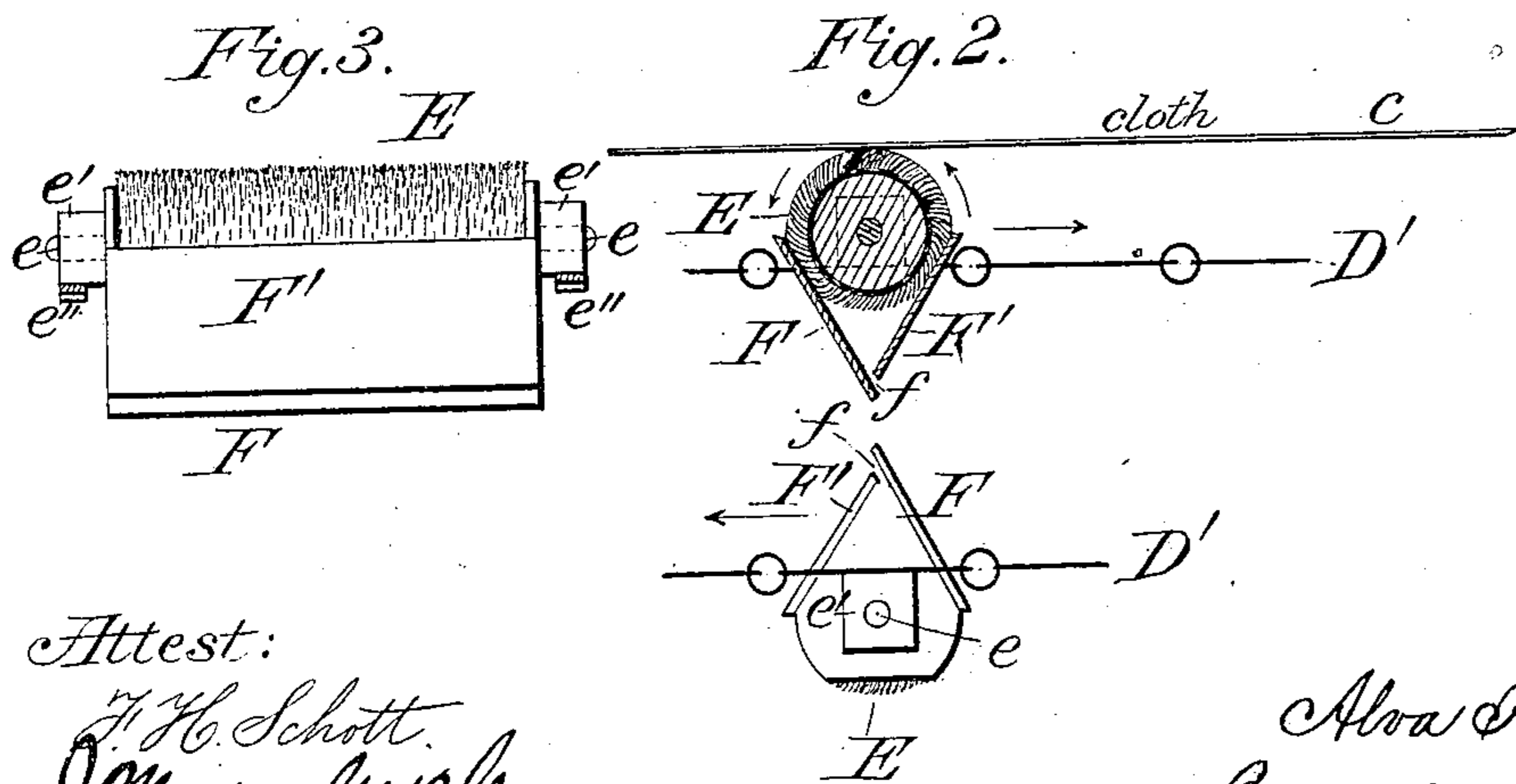
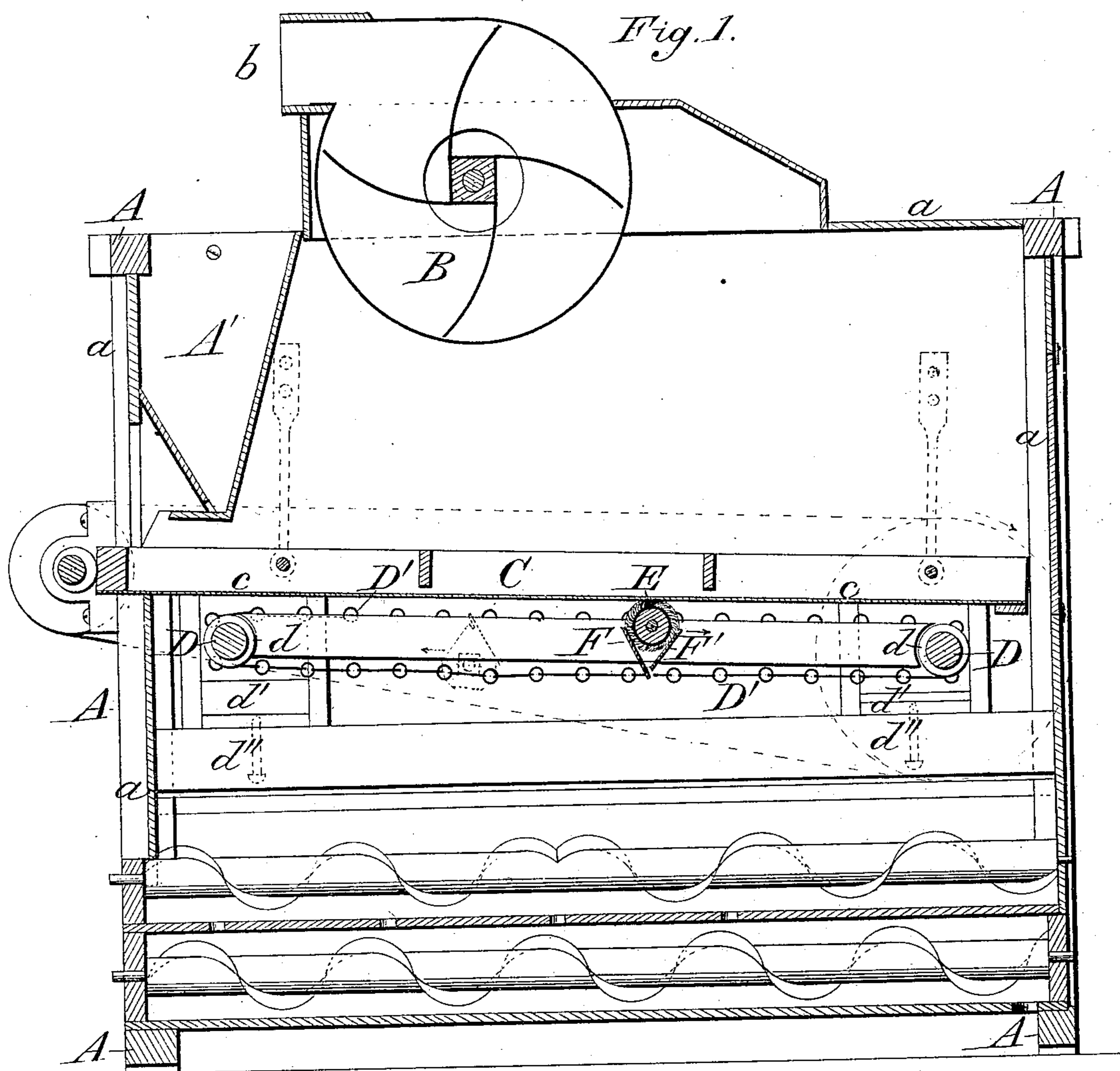


(No Model.)

A. H. KIRK.
Middlings Purifier.

No. 238,401.

Patented March 1, 1881.



Attest:

J. H. Schott.
J. Mason Grazier

Inventor:

Alon H. Kirk
By A. Cranford atty.

UNITED STATES PATENT OFFICE.

ALVA H. KIRK, OF MINNEAPOLIS, MINNESOTA.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 238,401, dated March 1, 1881.

Application filed September 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALVA H. KIRK, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Middlings-Purifiers; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention consists in a new means of cleaning the bolt-cloth of a reciprocating shaker of all adhering particles of fine flour; in the construction and combination of the device with the shaker, as will be fully hereinafter described.

In the drawings, Figure 1 is a longitudinal upright sectional view. Fig. 2 is an enlarged view of the cleaner in cross-section; and Fig. 3 is an enlarged side view of the same.

A represents the frame of the machine; *a*, the casing; *A'*, the feed-hopper; B, the suction-fan in its case, with air-exit *b*. C is the reciprocating shaker-frame, clothed on its underside with bolt-cloth *c* in the usual manner. D are transverse shafts with sprocket or toothed wheels *d* near each of their ends. These shafts revolve in adjustable bearing-blocks *d'*, which are adjusted to their proper height to give the necessary pressure to the cleaner by the temper-screws *d'' d''*. D' is an endless chain or other equivalent device, its links taking over the teeth or projections on wheels *d*. There are two of these chains or belts, one on each side of the machine.

The shafts D, fan B, reciprocating shaker C, and endless chains D' are put in motion by any proper mechanism. E is the bolt-cloth cleaner or mesh-opener; is made in the form of a roller that revolves with its axis in proper bearings or boxes that travel with the endless chains, and to which such boxes are attached, which causes the roller-cleaner to traverse the under side of the shaker in contact with the bolt-cloth in one direction only.

This roller-cleaner may be made of any spongy yielding substance, such as will, when it is

pressed up against the bolt-cloth in its revolution in traversing the length of the bolt-cloth, bear against said cloth sufficiently hard for the yielding surface to enter into and through the meshes of the cloth, and thereby loosen and lift the adhering particles and force them upward upon the upper surface of the bolt-cloth, instead of wiping them off below the cloth.

I prefer to make such rollers with a covering of the hide or skin of an animal with the hair or short wool left on the skin, or the entire roller may be made of sponge, rubber, or other equally yielding substance, and effect the same result.

ee are the axes of the roller E, that freely turn in boxes *e' e'*, which boxes have a flange or projection, *e''*, by which they are secured to the endless chains D', and by such construction the roller-cleaner travels, along with the endless chain, around the wheels on shafts D, and when on the upper side of the wheels on shafts D the roller-cleaner surface will be in contact with the under side of the bolt-cloth, and when in such contact, by reason of the friction and hold which the yielding surface has upon the meshes of the bolt-cloth, the roller-cleaner will revolve while in contact with the cloth; but when out of contact it does not revolve, as it is carried along by the chains D'.

F and F' are sheet-metal shields placed upon either side of the cleaner-roller E, and are securely attached to the boxes *e'*, in which the axes of roller E revolve. These shields are placed at an angle to each other and on opposite sides of the roller-cleaner, with one overlapping the other in such manner as to form a space, *f*, between them, as seen in Fig. 2, which opening will discharge all the fine particles that are carried within the shields while the roller is acting on the bolt-cloth, and when it is out of contact with the cloth, on its return to the head of the shaker, it is in a reversed position, or the other side up, and being so, the inclination of the shields prevents any flour or middlings that have passed through the bolt-cloth from coming in contact with the roller, nor can the opening *f* receive any, because one side plate overlaps the other far enough to cover opening *f*, and thus prevents any accumulation of fine particles on the cleaning-roller.

The action of this cleaning-roller upon the bolt-cloth is entirely different from the action of a wiping-brush, in common use, in this: The wiping-brush is drawn along in contact with the cloth, wiping the cloth horizontally, creating great friction and wear upon the texture of the bolt-cloth, and carrying the particles along with the brush from the head to the tail of the shaker, thus mixing the substance brushed off, and when the shaker is clothed with cloth of different degrees of fineness, designed to keep the different grades separate, the different grades are mixed, while with my invention the roller-cleaner does not act, like a brush, to wipe the cloth, but revolves merely by frictional contact with the cloth, so that the yielding or flexible surface will, in contradistinction to wiping, lift the particles upward, forcing them to the top of the cloth, loosening the middlings from the cloth and leaving them in the best possible position to be acted upon by the air-current passing up through the cloth and the quick reciprocations of the shaker, thus making a perfect operation without in any way mixing the middlings, and at the same time does not wear the fiber of the cloth, as the wiping action of a brush does.

Other constructions for revolving the cleaner-roller than its frictional contact with the bolt-cloth may be used—such, for instance, as rubber friction-pulleys at both ends of the roller-shaft, to bear upon the longitudinal side pieces of the shaker, or toothed pinions fast on the shaft of the roller-axles and gearing into horizontal adjustable racks might also be used to revolve the cleaning-roller in contact with the bolt-cloth, as such construction would produce the same effect; but I prefer that the cleaner-roller should revolve by frictional contact with the bolt-cloth without other means for revolving it.

I lay no claim to a brush, whether revolving or wiping off the under side of the cloth; but

Having thus described my invention, what I claim is—

1. In a middlings-purifier, a bolt-cloth cleaner-roller, E, having a spongy or other continuous yielding surface, and traveling in one direction underneath and in contact with the cloth, having a yielding or flexible surface, and revolving on its axis as it travels in one direction only underneath the bolt-cloth by frictional contact therewith, substantially as described.

2. The shields F and F', in combination with a cleaning-roller, E, constructed and operating as described.

3. The combination of the cleaning-roller E, having shields F and F', with a reciprocating shaker-bolt of a middlings-purifier, operating as described.

4. A cleaning-roller, E, having a yielding surface, and carried by an endless chain or belt in contact with the cloth of a reciprocating shaker in a middlings-purifier, as and for the purposes described.

5. In a middlings-purifier, the combination of a reciprocating shaker-bolt, mechanism for producing a current of air passing upward through the bolt-cloth, a cleaning-roller traveling in one direction underneath the cloth and in contact therewith, having a yielding surface, and revolving on its axis by frictional contact with the cloth, and means for causing the roller to travel from the head to the tail of the bolt in contact with the cloth, and returning to the head of the bolt out of contact with the cloth, substantially as and for the purposes described.

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

ALVA H. KIRK.

Witnesses:

H. O. HAMLIN,
W. J. FENDER.