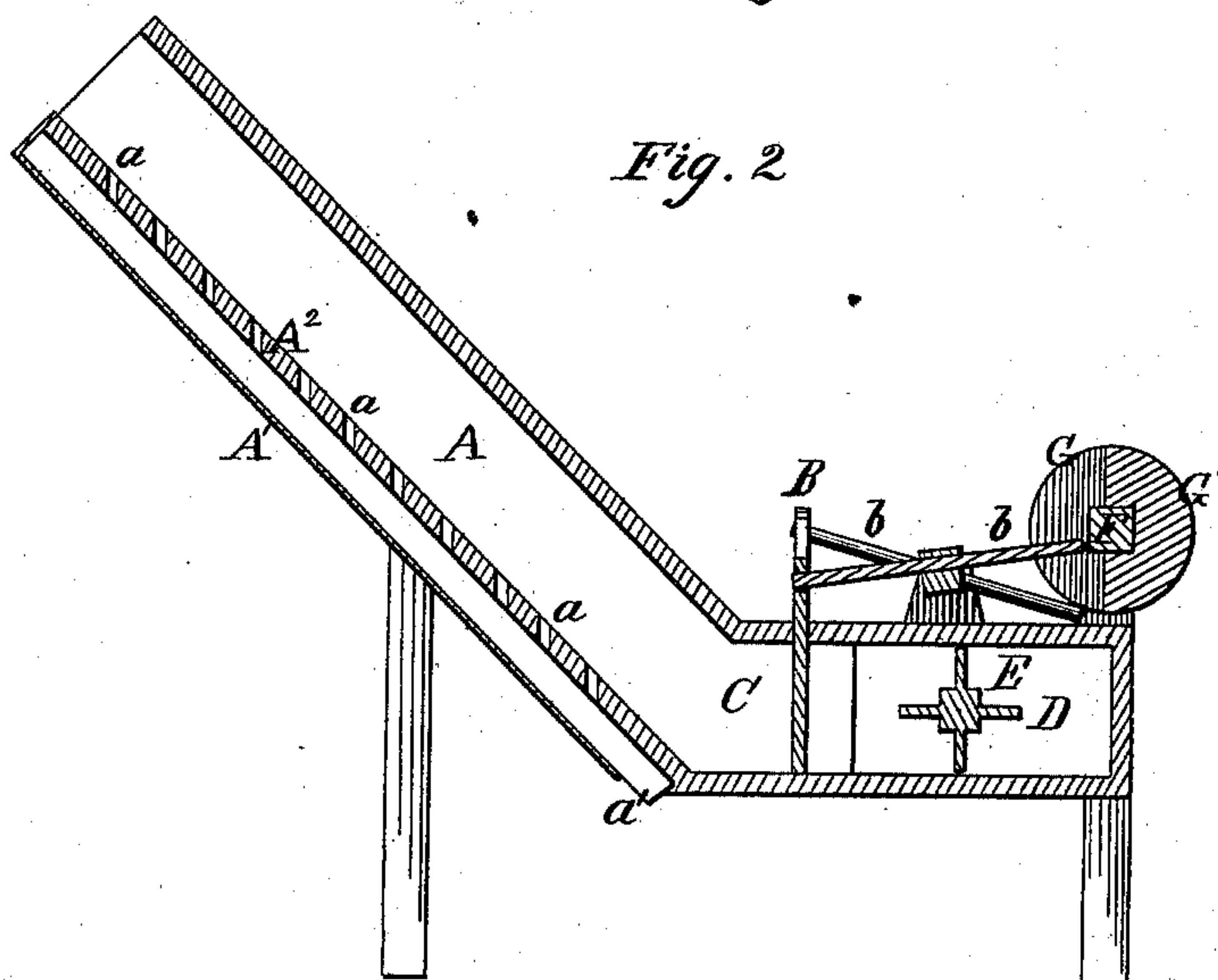
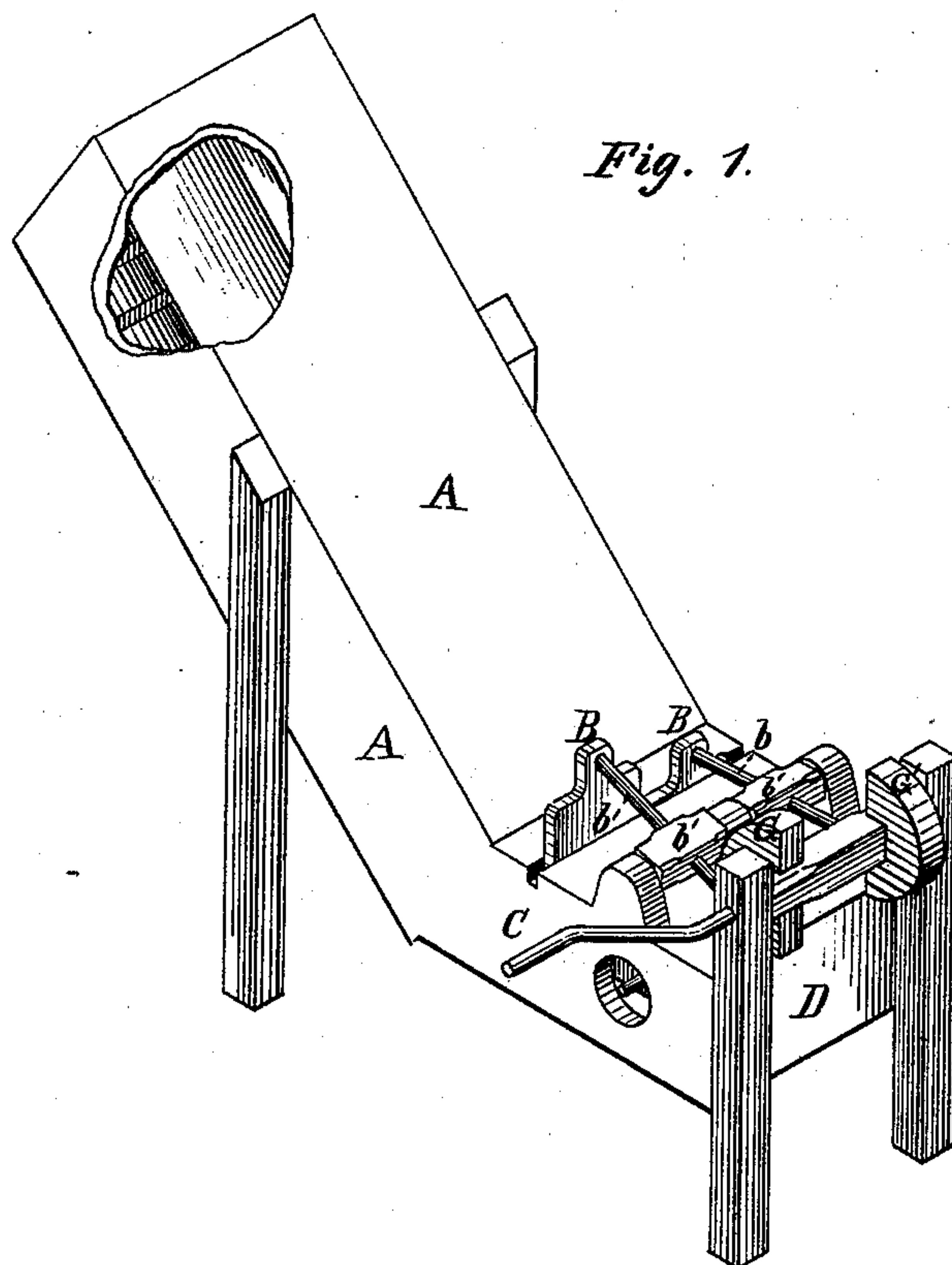


G. T. SMITH.
Dust Separator for Flour Mills.

No. 223,655.

Patented Jan. 20, 1880.



Witnesses:
H. N. Low.
H. H. Bliss.

Inventor:
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att'y

UNITED STATES PATENT OFFICE.

GEORGE T. SMITH, OF BLOOMINGTON, ILLINOIS.

DUST-SEPARATOR FOR FLOUR-MILLS.

SPECIFICATION forming part of Letters Patent No. 223,655, dated January 20, 1880.

Application filed April 18, 1879.

To all whom it may concern:

Be it known that I, GEORGE T. SMITH, of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Flour-Mills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide means for collecting the dust or fine particles taken from middlings by the air-currents, thereby dispensing with the dust-room, which is regarded by many millers as being objectionable; and to this end my invention consists in the employment, in connection with middlings-purifiers, of a series (two or more) of air trunks or conduits, into each of which the air from the purifiers is discharged alternately, whereby each of the ducts becomes, in its turn, a dead-air chamber, in which the particles of dust or pulverulent impurities may settle and be discharged through openings in the bottom thereof, the air being discharged from the duct in a comparatively pure condition.

Figure 1 is a perspective view of an apparatus designed for carrying out my invention, and Fig. 2 is a vertical section of the same.

In the drawings, A A A represent the sides and top, which inclose two or more ducts or trunks, arranged side by side, the bottoms A² of the duct being provided with transverse slots or openings *a*, which communicate with a compartment formed by an extension of the sides A and the bottom A'.

These ducts are to be arranged at an angle of, preferably, about forty-five degrees, their length and position in the mill being determined by circumstances; but I prefer that they should be about sixty feet in length.

At or near the lower end of each duct or trunk I arrange a gate, B, constructed to slide vertically in grooves formed for its reception in the walls of the ducts or of a horizontal extension, C, thereof.

D E represent a fan constructed to produce air-currents through the purifiers; but it will be understood that the fan may be located at

any other point than that indicated, as convenience may require. In fact, I usually prefer to arrange the fans upon the purifiers in the usual manner, although, under some circumstances—as, for instance, if these conduits are located at some distance from the purifier—I may place a fan in substantially the relation to them (the conduits) shown, in order to supplement the fans upon the purifiers. F is a shaft mounted in suitable bearings and provided with cams G G', or their equivalents, which engage with levers *b b*, the levers being pivoted by means of rock-shafts *b' b'*. One end of each lever is thrust through one of the gates B. The cams are arranged upon opposite sides of the shaft F, so that as the shaft revolves said cams, acting upon the levers *b b*, will lift alternately the gates B B.

Although I have shown but two trunks and gates in the drawings, in practice I prefer to use three or more, with such an arrangement of cams upon the shaft F that one gate only shall be open at the same time.

From an examination of the drawings, it will be readily seen that the dust-laden air is admitted alternately to each of the ducts, and that during that portion of the time in which the gates are closed each duct is converted into practically a dead-air chamber, and where three conduits are used each one is a dead-air chamber two-thirds of the time, the result being that the dust and impurities which are taken from the middlings by the air-current are deposited (while the air remains thus practically at rest) and are discharged through the throats or openings *a* into the compartment below, and are discharged through an opening, *a'*, at the lower end thereof, and thence into a spout or conveyer, as may be found most convenient.

I am aware that cloth or other similar material has been employed to collect dust and other impurities, which are removed by air-currents from middlings-purifiers, or millstones, or flour-bolts; but in such prior construction the operation was radically different from that employed by me, because when cloth is used it serves as a strainer or filter, and arrests the particles of dust, because of the fineness of its meshes, and where, in such prior constructions, valves have been employed to arrest temporarily the air-currents, such cessation

has been produced only in order to facilitate the removal from the under side of the cloth of the adhering dust; but in my invention the parts are so constructed and arranged that the air passes through each chamber practically without restriction, except by the gate or valve, which valve is, however, operated in such manner that the air in each chamber remains practically at rest at least one-half the time, and the particles of dust are removed, not by means of a strainer or filter from a moving current of air, but by their own specific gravity from air which is substantially at rest.

I do not in this patent claim, broadly, the combination, in a flouring-mill, of two or more air-trunks or settling-chambers, each provided with a gate or valve, and thereby adapted to receive alternately the dust-laden air from a middlings-purifier, as I have embodied this invention in a separate application, which I have filed as a division of this case, for which reason I limit this patent to the specific features of invention recited in the claims hereof, reserving to myself the right to claim any other patentable features which are shown or described in the other division above mentioned.

Having thus described the construction and operation of my invention, what I claim is—

1. In a flouring-mill, two or more air trunks or compartments, each provided with a gate or valve, and mechanism which opens and closes the valves alternately, in combination with an air-trunk and fan, which discharges into the compartments air and dust, substantially as set forth.

2. As a means for removing dust from air-currents, two or more air trunks or compartments, each provided with a bottom, A^2 , having openings a , and having a receiving-bottom, A' , in combination with gates or valves, mechanism which opens and closes the valves alternately, and an air-trunk and fan which discharges into the compartments air and dust, substantially as set forth.

3. The combination, with the air ducts or compartments, the sliding gates B , the cams $G G'$, the levers $b b$, and the fan $D E$, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE T. SMITH.

Witnesses:

CHAS. F. WERTZ,
C. RAYBURN.