

(No Model.)

H. P. FAIRFIELD.

ORE SEPARATOR.

No. 292,637.

Patented Jan. 29, 1884.

Fig:2.

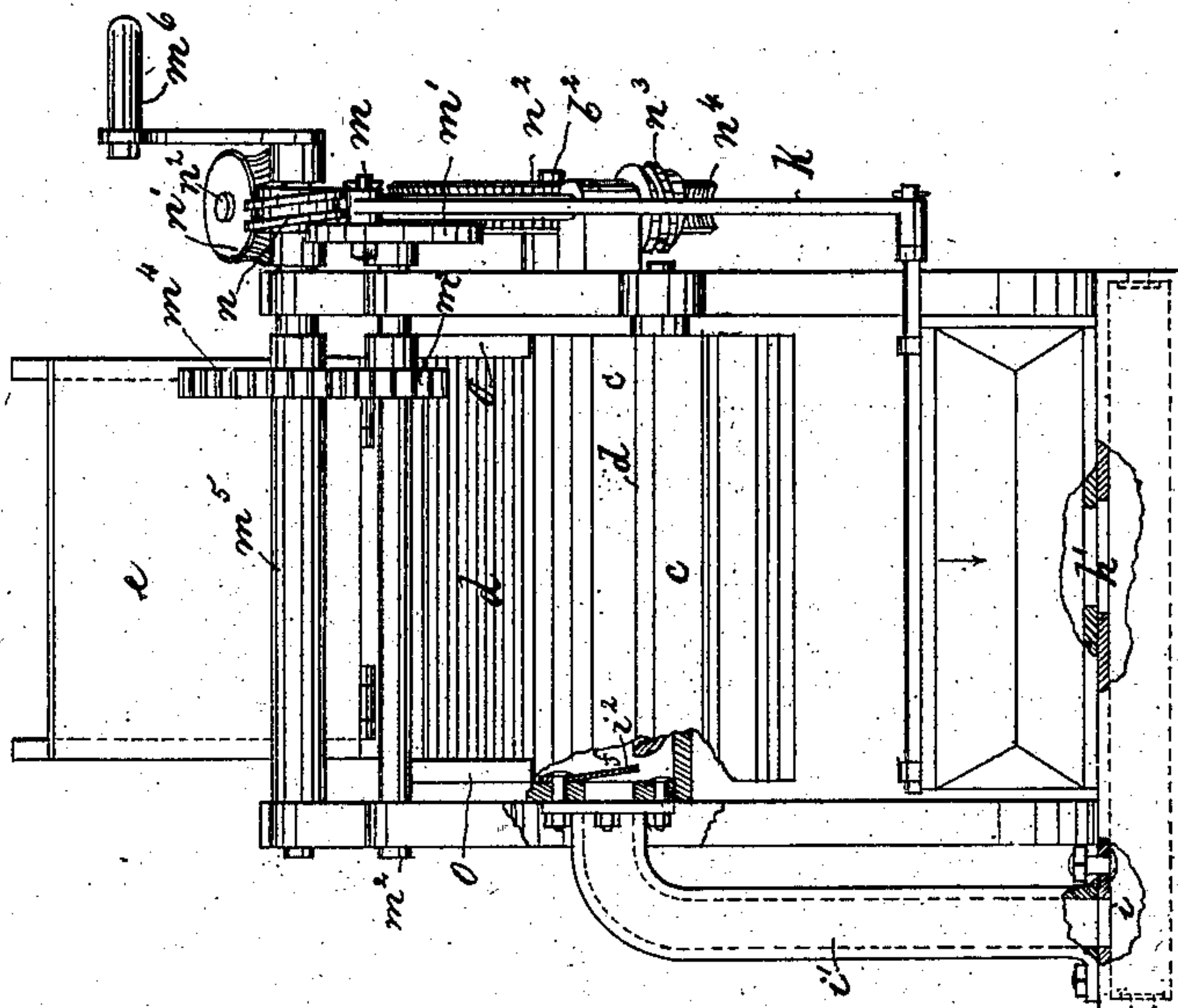
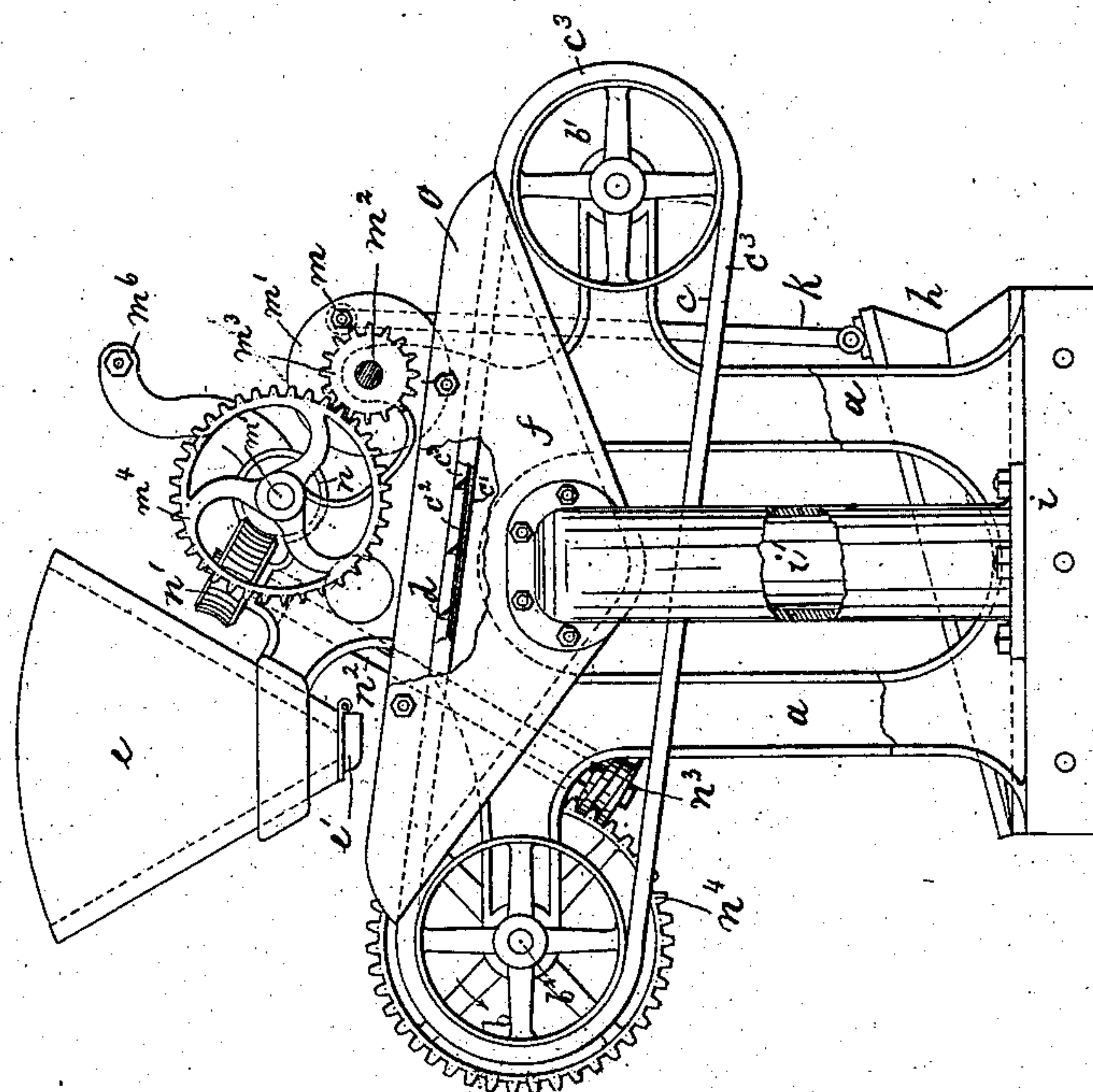


Fig:1.



Witnesses.  
Fred A. Powell.  
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# UNITED STATES PATENT OFFICE.

HADLEY P. FAIRFIELD, OF WEST MEDFORD, MASSACHUSETTS.

## ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 292,637, dated January 29, 1884.

Application filed April 16, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, HADLEY P. FAIRFIELD, of West Medford, county of Middlesex, State of Massachusetts, have invented an Improvement in Ore-Separators, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to an ore-separator of that class in which the lighter are separated from the heavier materials by the action of currents of air.

Figure 1 is a side elevation, partly in section, of an ore-separating apparatus embodying this invention; and Fig. 2, an end elevation thereof.

The frame-work *a*, of suitable form, is provided with bearings for the cylinders *b b'*, over which the endless ore-supporting surface passes, the said surface consisting of a wiregauze belt, *c'*, surmounted by a cloth, *c''*, provided with a series of riffles or transverse upwardly-projecting ribs, *d*, as best shown in a broken-away portion in Fig. 1. The said surface is provided at its edges with flanges or deckels *c''*, preferably of rubber, which prevent the ore from falling off over the sides. One of the said cylinders, as *b*, is at a higher level than the other, so that the ore-supporting surface is inclined as shown, and the said cylinders are revolved, as hereinafter described, in such a direction as to cause the surface upon which the ore is supported to travel from the lower to the higher level.

A hopper, *e*, contains the pulverized ore to be operated upon, it having at its lower end a suitable gate or valve, *e'*, the said hopper and valve constituting feeding mechanism, by which the ore may be delivered in the proper quantities upon the surface *c*.

An air-chamber, *f*, is included between the portion of the surface *c* that is tangential to the upper edges of the cylinders *b b'* and the portion of the said surface that is tangential to the lower edges of the said cylinders, the portion connecting the upper edges of the said cylinders constituting the top of the said air-chamber, so that air forced into it will escape through the meshes of the said supporting-surface throughout nearly its entire extent. The air is forced into the said chamber

*f* intermittingly, to thus produce a series of puffs or sudden currents passing through the said surface, by means of an air-forcing device or bellows, *h*, the discharge-opening *h'* of which (see Fig. 2) enters a chamber, *i*, connected by a pipe, *i'*, with the air-chamber *f*, the said pipe having a check-valve, *i''*, opening toward the said chamber. The said bellows is operated to produce sudden intermittent currents or puffs by means of a link or pitman, *k*, connected with a wrist-pin, *m*, upon a wrist-plate, *m'*, fixed upon a shaft, *m''*, provided with a pinion, *m'''*, meshing with an actuating-gear, *m''''*, mounted on a shaft, *m'''''*, provided with an actuating crank or handle, *m''''''*, to be rotated by the operator or by suitable power. The said shaft *m'''''* is also provided with a worm, *n*, meshing with a worm-gear, *n'*, upon a shaft, *n''*, provided with a worm, *n'''*, meshing with a worm-gear, *n''''*, upon the shaft *b''* of the cylinder *b*, and thus producing a slow rotation of the said cylinder, causing a very slow movement of the ore-separating surface *c* from the upper surface of the cylinder *b'* toward the upper surface of the cylinder *b*.

Ribs *d* rest upon the flanges *c''* of the edges of the ore-supporting surface, and prevent it from being raised by the pressure of the air beneath, so that the said air is permitted to escape only through the meshes of the said surface and the ore thereon, which latter is thus agitated.

The ore is delivered from the hopper *e* near the higher part of the surface, and the current of air passing upward through the said inclined surface will throw the said ore upward substantially at right angles thereto, so that it in falling will strike on a lower portion of the surface, and the lighter material, which is thrown highest, will thus gradually pass toward the lower end of the surface, while the heavier materials will not be thrown over the riffles *d*, but will gradually accumulate upon the surface *c* in front of the said riffles, where they will remain substantially unaffected by the currents of air, and will be carried forward in the slow movement of the traveling surface and ultimately discharged over the cylinder *b*.

I claim—

The combination, substantially as shown and described, of the hopper, an endless traveling

belt provided with transverse riffles and longitudinal deckels, drums to support such belt, with its end next the hopper higher than the other, gearing to drive such belt, an air-  
5 chamber through which the upper part of the belt passes, an air-forcing apparatus, a chamber into which the air is forced thereby, and a conduit or pipe connecting the two air-chambers, all and severally as set forth.

In testimony whereof I have signed my name to to this specification in the presence of two subscribing witnesses.

HADLEY P. FAIRFIELD.

Witnesses:

JOS. P. LIVERMORE,  
W. H. SIGSTON.