

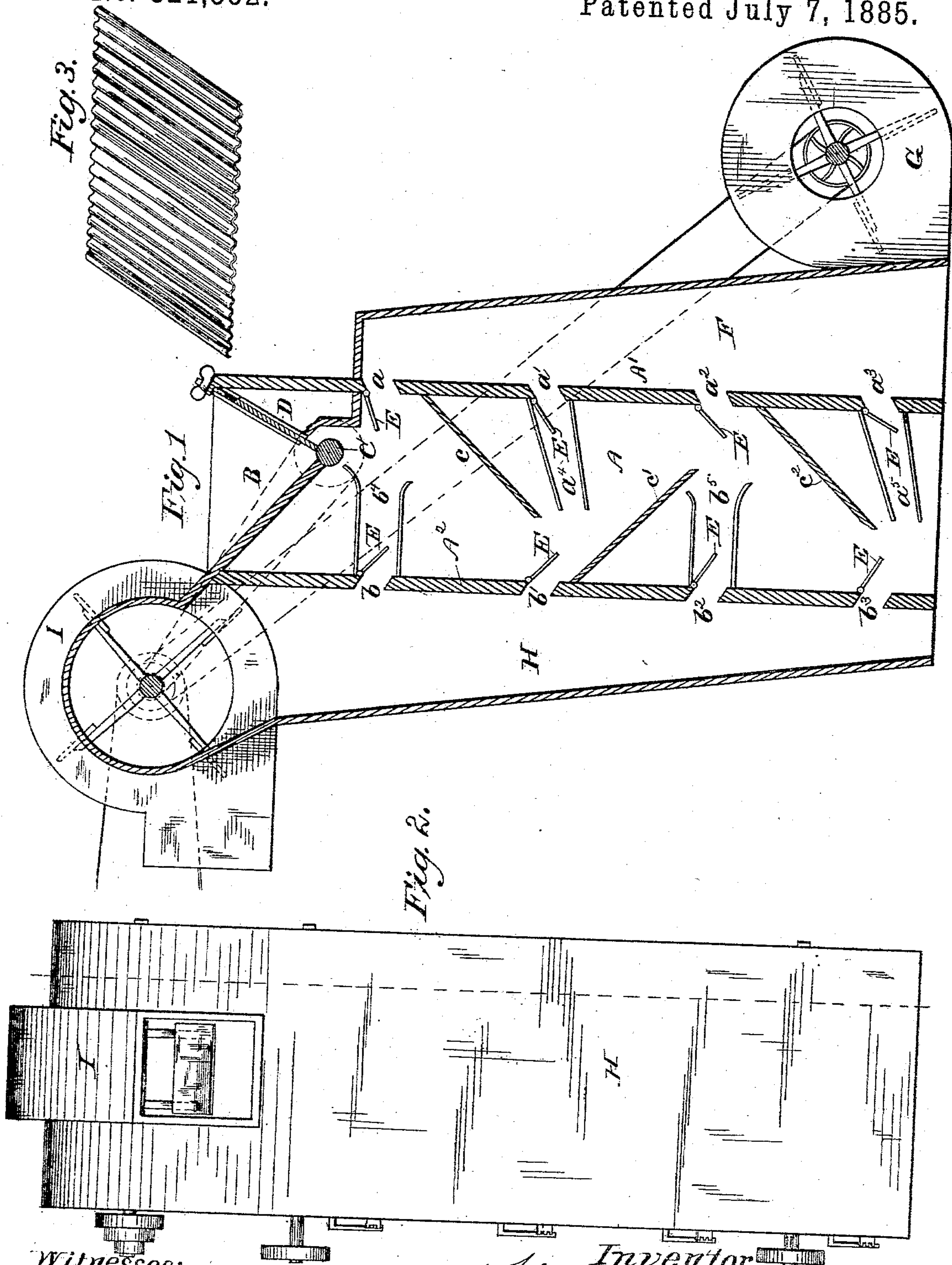
(No Model.)

W. H. WAKEFORD.

GRAVITY SEPARATOR.

No. 321,552.

Patented July 7, 1885.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. WAKEFORD, OF BALTIMORE, MARYLAND.

## GRAVITY-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 321,552, dated July 7, 1885.

Application filed September 11, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. WAKEFORD, a citizen of the United States, residing at Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Gravity-Separators; 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.

The object of my invention is to provide a machine more especially adapted for operating upon heavy middlings, to separate the lighter particles therefrom by air-currents passing across a falling stream of such middlings.

My invention as a whole consists of the combination, with an upright chest, which I term a "gravity-chest," having valved ports on opposite sides and alternating cant-boards, of a blast-fan for blowing air into the chest through the air-ports on one side, and a suction-fan for exhausting air from the chest through the exhaust-ports in its other side.

My invention is explained in detail in the following description, aided by the annexed drawings.

Figure 1 is a sectional elevation of my improved gravity-separator. Fig. 2 is a rear elevation of the same. Fig. 3 illustrates one of the corrugated cant-boards.

The same letters of reference indicate identical parts in all the figures.

The vertical chest A is provided on top with a suitable hopper, B, for the middlings, which are fed into the chest by the usual feed-roll, C, in a stream regulated by the ordinary adjustable feed-slide, D.

In the machine illustrated one side, A', of the chest is provided with four air-ports,  $a$   $a'$   $a^2$   $a^3$ , extending horizontally across the chest from end to end. The opposite side, A'', of the chest is provided with four exhaust-ports,  $b$   $b'$   $b^2$   $b^3$ , which are directly opposite the air-ports. Each of these eight ports is controlled by a separate valve, E, so that the ports may be throttled more or less, as may be required. The chest is also constructed with three cant-

boards,  $c$   $c'$   $c^2$ , which project alternately from the sides A' and A'' of the chest, and are for that reason termed "alternating cant-boards." These cant-boards cause the stream of middlings to descend in a zigzag course through the chest. They may have a plain, smooth surface; but, in order to preserve the uniformity and spread of the stream of middlings as much as possible, I sometimes corrugate or flute the surface of these cant-boards, as shown in Fig. 3. They are preferably made of sheet-tin, and they extend from end to end of the chest. The air-ports  $a'$  and  $a^3$  are provided with nozzles  $a^4$  and  $a^5$ , reaching into the chest under the cant-boards  $c$  and  $c^2$ , to deliver the air-blasts near the outer edges thereof. The exhaust-ports  $b$  and  $b^2$  are provided with similar nozzles,  $b^4$   $b^5$ , to reach to within close proximity of the falling stream of middlings. On the outside of the chest the air-ports are covered by the blast-trunk F, which distributes the blast from the blast-fan G to said air-ports. The exhaust-ports are covered on the outside of the chest by the exhaust-trunk H, connected with the exhaust-fan I. Driving-power may be applied to the suction-fan as indicated, and the feed-roll and blast-fan may be driven from the shaft of the suction-fan by suitable belt-gearing, as shown. The air-currents passing through the descending stream of middlings to the exhaust-fan will carry off the light impurities, which may be blown into a dust-room or dust-filter. The force of the air-currents is primarily regulated by the speed and adjustment of the fans, and secondarily by adjustments of the valves E.

I claim as my invention—

1. The combination, substantially as before set forth, of a gravity-chest having valved ports on opposite sides, a blast-fan for blowing air into the chest through the air-ports on one side, and a suction-fan for exhausting air from the chest through the exhaust-ports in its other side.

2. The combination, substantially as before set forth, of a gravity-chest having valved ports on opposite sides, and alternating cant-boards, a blast-fan for blowing air into the chest through the air-ports on one side, and a

suction-fan for exhausting air from the chest through the exhaust-ports in its other side.

3. The combination, substantially as before set forth, of a gravity-chest having valved  
5 ports on opposite sides, and alternating corrugated cant-boards, a blast-fan for blowing air into the chest through the air-ports on one side, and a suction-fan for exhausting air from

the chest through the exhaust-ports in its other side. 10

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

W. H. WAKEFORD.

Witnesses:

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