

No. 691,819.

Patented Jan. 28, 1902.

J. J. SNIDER.
ORE SEPARATOR.

(Application filed Mar. 5, 1901.)

(No Model.)

FIG: 1.

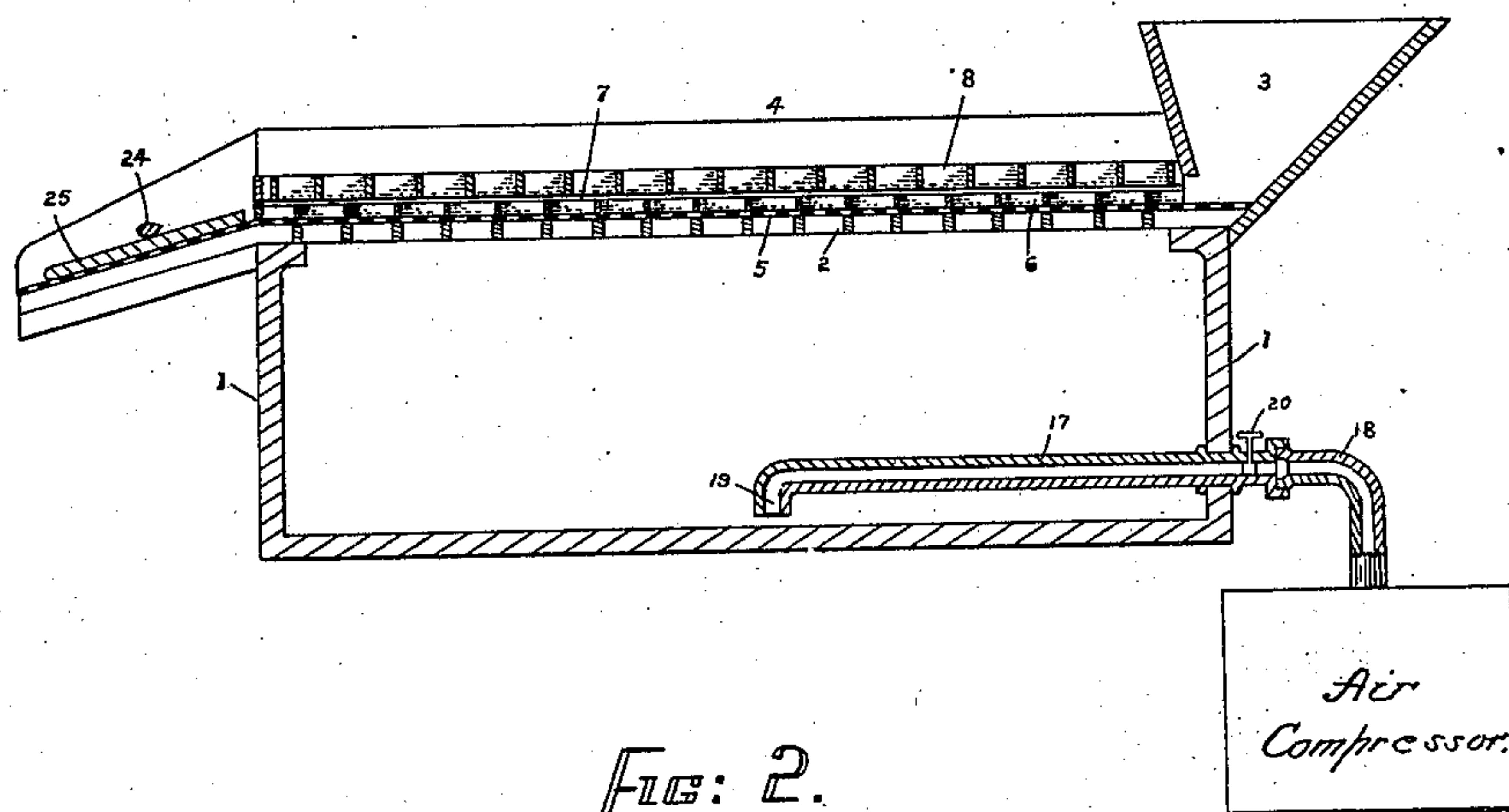


FIG: 2.

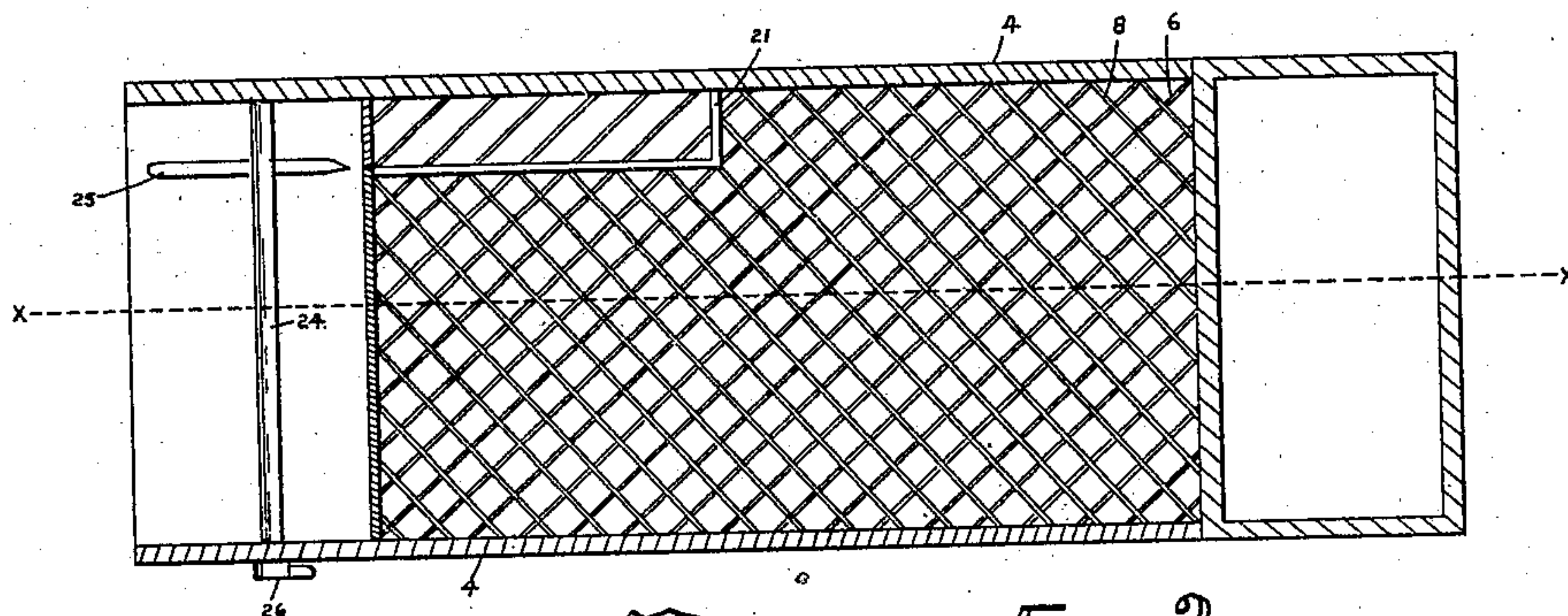
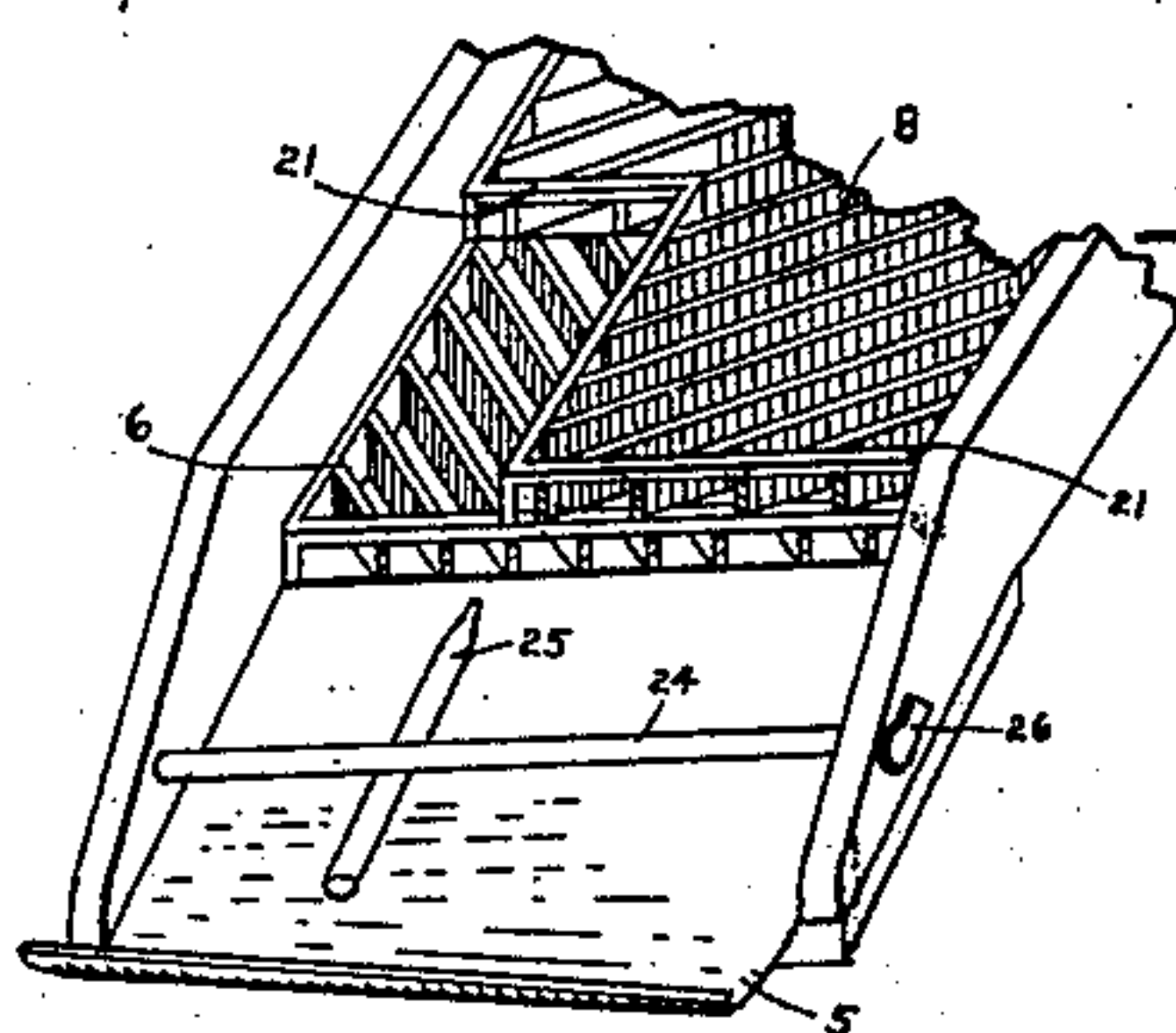


FIG: 3.



WITNESSES
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ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 691,819, dated January 28, 1902.

Application filed March 5, 1901. Serial No. 49,762. (No model.)

To all whom it may concern:

Be it known that I, JAY J. SNIDER, of Xenia, Greene county, Ohio, have invented certain new and useful Improvements in Ore-Separators, of which the following is a full, clear, and exact description.

My invention is designed to provide for the concentration of the ore, so as to save everything of value, and at the same time to provide a very simple construction of apparatus positive in its action.

In the accompanying drawings, Figure 1 shows the separator in sectional view. Fig. 2 is a plan view of the same. Fig. 3 is a detail perspective view of the discharging end of the bed, showing the particular construction at this point.

Heretofore it has been proposed to utilize a bed of flexible fabric, through which pulsations of air are forced to act upon the ore as it is fed upon the bed, and to locate above this bed a grating composed of a series of strips running diagonally across the upper side of the bed, with other strips running diagonally in a contrary arrangement. The spaces between the lower strips form channels, into which the heavy particles gravitate, being guided to one discharge-corner, while the lighter and earthy particles rise between the upper strips and are guided by them in a direction contrary to that of the ore particles and are discharged into a channel extending along the side of the length of the concentrating-bed proper. Generally this action is carried out in my device; but I have materially improved this action by utilizing instead of a bellows, as heretofore used, a chamber beneath the bed, which is in communication with a source of pressure, such as compressed air, this pressure being admitted to the chamber at intervals and with any degree of force, thus acting upon the material to be concentrated as it is fed upon the bed. By the use of a positive pressure, which can be instantly applied and as readily cut off, a more perfect action is secured, as the moment the pressure ceases the chamber beneath the bed contains only air under atmospheric pressure and the ore instantly falls according to its specific gravity. I preferably admit the air under greater pressure to the chamber beneath the bed in

such a manner as to assure its uniform action throughout the chamber and through the perforations in the bed from end to end thereof, so that there is no irregular working. Heretofore when a bellows was used the chamber beneath the bed was really an air-pressure chamber and the pressure was never wholly discontinued, and this retarded the separation of the ores and had the tendency to mix them, so that the result invariably was not only the concentrates and refuse, but also middlings, which latter required to be passed through for further concentration.

By the complete cessation of the pressure I avoid the production of middlings and secure a maximum discharge of valuable ore particles with a discharge of refuse limited to a small portion of the apparatus.

In Fig. 1 the frame of the apparatus is shown at 1 and comprises a chamber located beneath the bed-support 2. Above this support and resting upon it is a bed or covering 5, of suitable material, having openings or perforations extending therethrough. A hopper 3 discharges upon this bed, and above the bed are arranged a series of flat strips, preferably of metal, extending diagonally and suitably secured to the sides 4. Directly over the strips 6 are arranged a second set of strips 8, also extending diagonally, but running in a direction contrary to that of the strips 6. The upper strips are somewhat wider, forming deeper channels than the strips 6. Between the two sets of strips an air space or channel 7 is provided for a purpose hereinafter set forth. Instead of making the chamber beneath the bed an air-chamber under a constant pressure from a bellows or the like, as heretofore, this chamber is simply a space extending beneath the bed, and I admit a pressure of air to the chamber through a pipe 17, which is in connection with any suitable source of air-pressure through its outer end 18. A valve 20 controls this pressure. The end of the pipe 17 within the chamber has a turned-down elbow 19, which is preferably located near the center of the chamber and near to its bottom, so that the air is discharged centrally of the chamber and downwardly, and thus it is diffused with equal force throughout the chamber and acts with uni-

formity upon every part of the perforated bed. The pressure is admitted intermittently, there being an impulse and then an absolute cessation, which thus allows a perfect concentration according to the specific gravity of the material and avoids the production of middlings invariably in separators having more or less constant pressure in the chamber beneath the bed.

10 I find it unnecessary to provide a channel along the entire side of the bed for the refuse, and, as shown in Figs. 2 and 3, I extend the strips 6 and 8 entirely across from side to side of the bed except at the lower corner portion, 15 where I interrupt the strips 8, shortening them at this point, so as to provide a channel formed by the frame 21 and the wall 4, permitting the discharge of the tailings.

I find in practice that as the material flows 20 to the opposite side of the bed at a point where the strips extend entirely across, the material will find its way through the air space or channel between the upper strips 8 and the lower strips 6, thus allowing me to 25 concentrate the finer particles of the valuable material, and thus adds very materially to the production of the machine.

In Fig. 3 I show in perspective the discharge end of the machine, and I arrange a rod 24, 30 extending across the bottom, with a small crank 26 on its outer end, this rod being adapted to be turned eccentrically, so as to hold in place a finger 25, which directs the tailings off at one side and forms a line of separation 35 for the heavier and more valuable particles. This finger may be adjusted to narrow or

widen the channel for the tailings and is held in place by the rod 24, above referred to.

What I claim is—

1. In an ore-separator, an inclosed chamber, a grating or support across the top of said chamber, a perforated bed or covering thereon, diagonally-arranged strips above the bed or covering, a second series of strips arranged diagonally above the first-mentioned series 45 and in a contrary direction thereto, and leaving an air-space between the two series and means for causing air-pressure in the chamber and up through the bed and strip, substantially as described. 50

2. In an ore-separator, a chamber in communication with a source of pressure, a supporting-frame across the top of the chamber, a perforated bed or covering on said frame, a series of diagonally-arranged strips above the 55 covering, and a second series of oppositely-arranged strips above the first leaving a horizontal channel between the lower strips extending from side to side throughout the length and width of the frame, while the upper 60 strips extend throughout the width of the upper half of the frame and only partially of the width of the lower half, substantially as described.

In testimony whereof I have hereunto subscribed my name to this specification in the 65 presence of two witnesses.

JAY J. SNIDER.

In presence of—

W. L. MILLER,
W. D. RIDDELL.