

(No Model.)

2 Sheets—Sheet 1.

T. A. EDISON.
ORE CONVEYER AND METHOD OF ARRANGING ORE THEREON.

No. 471,268.

Patented Mar. 22, 1892.

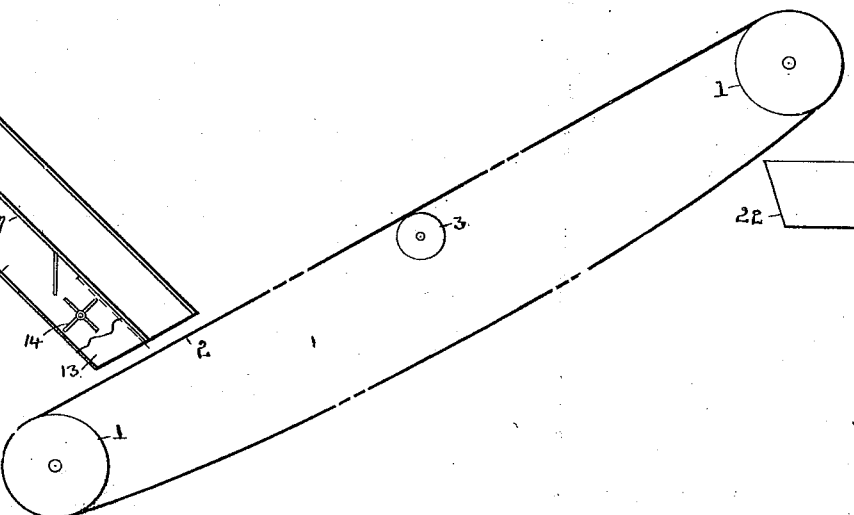
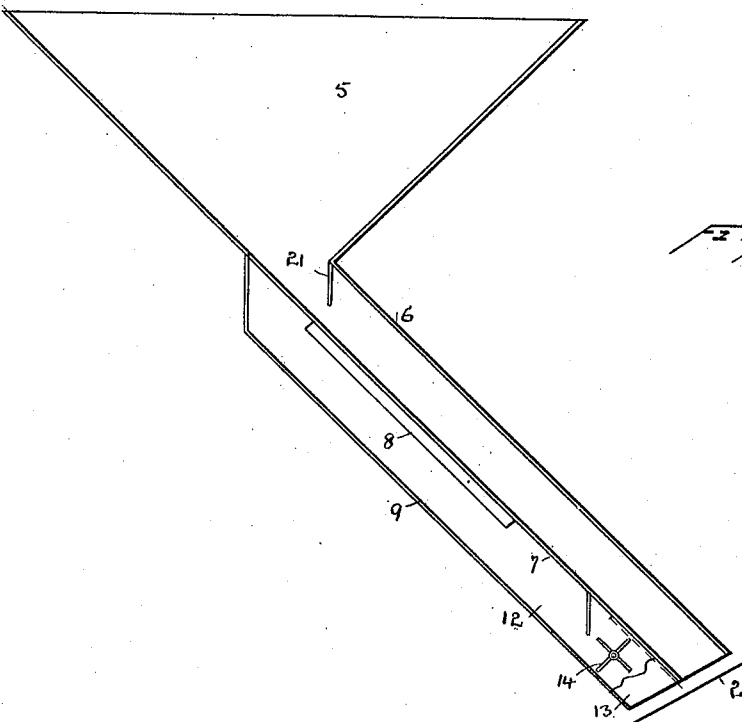


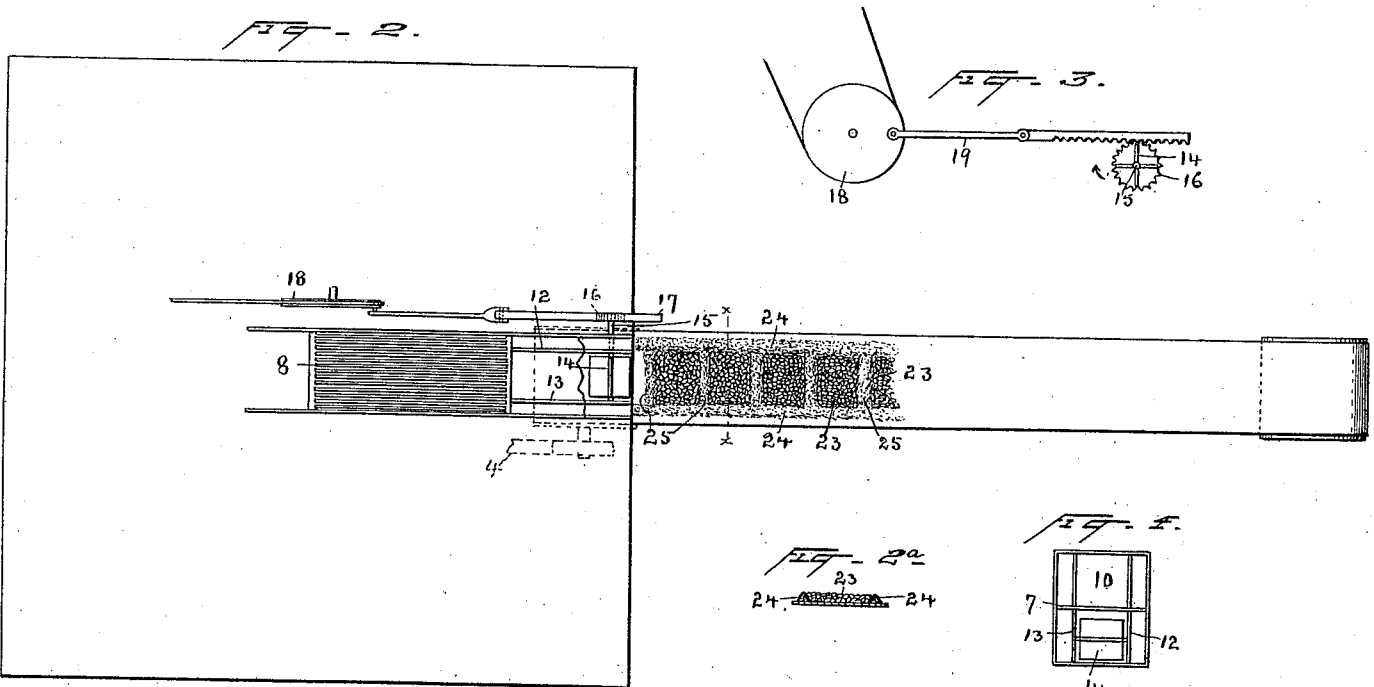
Fig. 1.



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UNITED STATES PATENT OFFICE.

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ORE-CONVEYER AND METHOD OF ARRANGING ORE THEREON.

SPECIFICATION forming part of Letters Patent No. 471,268, dated March 22, 1892.

Application filed October 1, 1891. Serial No. 407,456. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Ore-Conveyers and Methods of Arranging Ore Thereon, (Case 935,) of which the following is a specification.

The present invention relates to conveying ore or other material from one point to another, and especially for conveying it from one level to another or for conveying it long distances on the same level. It is common in belt-conveyers to run the belt over pulleys with concave surfaces, whereby the belt is bent to concave form, and the material being conveyed is retained thereon, since with long belts running over plain pulleys the ore or material being carried works off from the belt at the sides, owing to sagging of the belt or other causes. I desire to avoid the use of specially-formed concave pulleys and to use plain pulleys, at the same time preventing the ore or other material from falling off of the belt and preventing it from moving around on the belt, owing to the inclination thereof. This is accomplished by arranging the ore on the belt in a certain manner, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a side view, partly in section, of the apparatus. Fig. 2 is a plan view, a part of the hopper and the top of the conveying-shaft being removed. Fig. 2^a is a section on line *x* of Fig. 2. Fig. 3 is a detail view of the apparatus for controlling an intermittent valve used in the apparatus; and Fig. 4 is a sectional view on line *y* of Fig. 1, looking in the direction of the arrow.

11 are driving and supporting pulleys in the same or different levels, supporting the conveyer-belt 2. Said pulleys have plain cylindrical surfaces. A supporting-pulley 3 may be used between the pulleys 11, if necessary, and one of said pulleys 11 may be driven by a belt 4 or otherwise.

5 is a hopper, in which the material to be conveyed is fed, and from which the ore passes into the conveyer-shaft 6. This shaft is divided about centrally by a cross-partition 7, in which, near the upper end, is a sieve 8, formed, preferably, of several strips or bars

placed side by side, but a short distance from each other, thereby allowing fine material to fall through into the passage 9, but maintaining the coarser material above the partition 7. The upper passage has a contracted opening at its lower end, as indicated at 10, Fig. 4. The lower passage is divided by two vertical partitions 12 13 into a central and two side passages, the central passage being of substantially the same width as the opening 10. These vertical partitions extend from the lower end of the passage 9 to the sieve 8. Between the partitions 12 13 is a valve 14 in the form of a rotating body having four blades and having a shaft 15, carrying a gear 16, on which rests the rack-bar 17, reciprocated by the wheel 18 and connecting-rod 19.

20 is a guard above the valve.

21 is a guard or valve controlling the flow of material into the shaft.

22 is a receptacle for the ore placed adjacent to the outer end of the belt.

When ore is fed into the shaft it is separated, as already indicated, into coarser and finer portions. The coarser portion passes out in a continuous stream onto the center of the belt, as indicated at 23, Fig. 2. The finer portion passes out through three different passages, it passing in continuous streams through the two side passages, as indicated at 24, Fig. 2, and passing out intermittently, as indicated at 25. This latter feed is caused by the movement of the valve 14, which is as follows: When the rack-bar is moving forward, the valve is driven in the direction of the arrow, Fig. 3. This prevents the material passing out through the lower central opening; but while said rack is moving in the opposite direction, turning the valve in the opposite direction the material, previously held up is fed forward, mixing with the coarser material at the divisions 25. The fine and coarse material may be mixed or may overlap a little along the edges without destroying the utility of the arrangement. The fine and coarse ore thus form a sort of ladder on the belt, and it is found that the rows or banks of fine material hold the coarser material in place, so that it will keep on the belt at a much greater inclination and for a longer span than would be the case were all the material put on together in the usual manner.

It will be evident that the valve 14 is not essential in all cases; but that a part of the advantages of my invention are gained by means of the side rows of fine material only, and these may be obtained by omitting the valve and bringing the two partitions 12 13 to a point, as indicated in dotted lines, Fig. 2.

When the valve 14 is used, any suitable mechanism for causing it to act intermittently may be employed, and it is obvious that the form of sieve employed for separating the coarse and fine materials is unimportant.

What I claim is—

1. The method of conveying ore and similar material, which consists in providing a traveling belt and placing the coarser portion of the ore or material on the belt and confining the same by rows or banks of finer material, whereby the coarser material is kept from working off the belt, substantially as described.

2. The method of conveying ore and similar material, which consists in providing a traveling belt and placing the coarser portion thereof centrally on the belt and placing the finer portion thereof in rows along the edges of the coarser portion, substantially as described.

3. The method of conveying ore and similar material, which consists in providing a traveling belt and placing the coarser portion thereof centrally on the belt and placing the finer portion thereof in rows along the edges of the coarser portion and in rows across the coarser portion at intervals, substantially as described.

4. The combination, with a conveyer-belt, of means for feeding material of one grade onto it along its central line and means for feeding material of a different grade onto the same belt at each side to confine the first-mentioned material, substantially as described.

5. The combination, with a conveyer-belt, of means for feeding coarse ore or material

onto it along its central line, means for feeding finer ore onto the same belt at each side of the coarser ore, and means for feeding the fine ore in rows across the coarser ore at intervals, substantially as described.

6. The combination, with a conveyer-belt, of a shaft through which the ore is fed, said shaft being divided by a cross-partition, and a sieve in said partition, whereby the finer and coarser portions of the ore are separated, the upper division of the shaft having a contracted opening and the lower division having side openings over the belt, substantially as described.

7. The combination, with a conveyer-belt, of a shaft through which the ore is fed, said shaft being divided by a cross-partition, a sieve in said partition, whereby the finer and coarser portions of the ore are separated, the upper division of the shaft having a contracted opening, the lower division having side openings and a central opening, and means for closing and opening the central opening, substantially as described.

8. The combination, with a conveyer-belt, of a shaft through which the ore is fed, said shaft being divided by a cross-partition, a sieve in said partition, whereby the finer and coarser portions of the ore are separated, the upper division of the shaft having a contracted opening, the lower division having side openings and a central opening, and means for closing the central opening and for opening the same intermittently, said means consisting of a valve and a driving connection for moving it first in one direction and then in the opposite direction, substantially as described.

This specification signed and witnessed this 28th day of August, 1891.

THOS. A. EDISON.

Witnesses:

CHARLES M. CATLIN,
JOHN F. RANDOLPH.