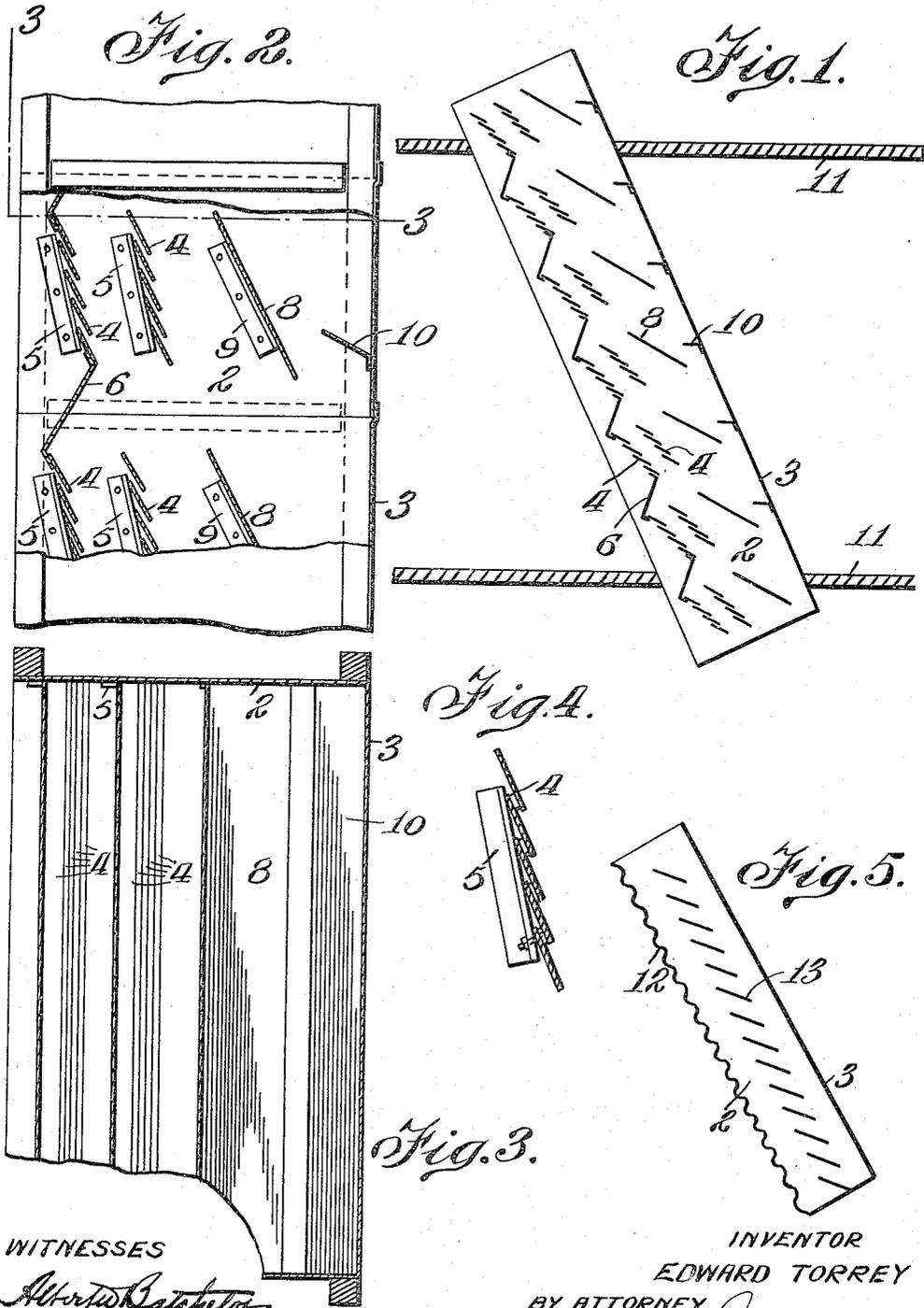


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 ORE SEPARATOR.
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1,155,292.

Patented Sept. 28, 1915.



WITNESSES

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To all whom it may concern:

Be it known that I, EDWARD TORREY, of Thetford Mines, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Ore-Separators; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates more particularly to asbestos ore separators adapted to treat crushed ore to separate the fluffed or opened asbestos fibers from the rock and from the asbestos which has not been fluffed or opened in the crushing process.

The invention has for its object to provide an apparatus of this type which will be cheaper to construct and operate, more efficient in operation and less liable to damage the asbestos fibers than those heretofore known, and which will also successfully separate ore without the necessity of subjecting the latter to as thorough drying as has heretofore been necessary, and without as heretofore filling the air with dust in the neighborhood of the mill.

For further comprehension, of the invention and of the objects and advantages thereof reference will be had to the following description and appended claims and to the accompanying drawings forming part of this specification in which similar reference characters indicate the same parts and wherein—

Figure 1 is a vertical sectional view illustrating diagrammatically the apparatus; Fig. 2 is an enlarged side view partly in vertical section of a portion of the apparatus and looking in the same direction as Fig. 1; Fig. 3 is a horizontal section on the line 3—3 Fig. 2; Fig. 4 is a detail side elevation of the rebound rack; and Fig. 5 is a view, similar to Fig. 1, of a modification.

In my invention I provide means whereby the crushed ore containing both the fluffed and unfluffed fiber may be caused to impact against a suitably disposed surface, causing a rebound of the harder particles, *i. e.* the rock and unfluffed asbestos,—which are carried by their rebound to a position away from, or separated from, the fluffed fibers.

The preferred apparatus for accomplishing the separation as above set forth comprises a chute inclined slightly to the vertical as shown and having unbroken side walls 2 and front wall 3, the rear wall being constituted largely by the rebound devices upon

which the ore falls, or against which it impacts. These rebound devices, which I term rebound racks, each comprises a series of inclined strips or narrow plates 4 preferably of sheet metal (or other material suitable to cause a rebound of the rocky particles therefrom) extending across from side wall to side wall and arranged, as clearly shown in the drawings, in a louver or stepped formation with each strip overlapping the one below it on the inside and spaced slightly therefrom, these strips being secured at their ends upon angle irons 5 which are secured in turn to the side walls 2. These rebound racks are inclined forwardly and downwardly as shown with respect to the chute and are arranged in a series one below the other from top to bottom of the chute in echelon or stepped formation, the bottom of each rack being connected to the top of the adjacent one by plates 6 which complete the rear wall of the chute and prevent air being drawn into the latter and interfering with the action of the apparatus. A second similar row of rebound racks is arranged in front of the rear row, the spaces between the upper and lower ends of adjacent ones of these racks being left open to allow material to pass therebetween.

Disposed at a distance in front of the rebound racks are separating or take-off plates 8 secured to the side walls 2 by angle irons 9 and which are preferably arranged at a greater angle to the vertical than the rebound racks to incline downwardly and outwardly therefrom (the angle of inclination of these plates 8 being here shown as the same as that of each individual strip of the rebound rack). These plates serve to separate the rocky material from the opened fiber. Projecting inwardly from the front wall 3 are a series of baffle plates 10 disposed slightly above the lower ends of the plates 8, these baffle plates serving to break the fall of the rock down the take-off plates and so prevent unnecessary wear.

The chute may be supported by any suitable frame, being here shown as supported at intervals by the floors 11 of the building in which the chute is located and through which floors it extends.

It will be obvious of course that the number of rows of rebound racks could be varied if desired, the double row here shown having been found very effective.

The ore is fed in a comparatively thin

stream upon the top rear rack and as it falls the rocky material and unfluffed fiber, when they impact against the strips 4, are caused to rebound from the rear racks and through the openings between the front racks and onto the adjacent lower front racks and from the front row of racks the rocky material rebounds over the take-off plates. The material, as it falls down the chute, may be collected by any suitable devices arranged at the bottom of the chute, the material falling in three streams; the concentrates falling between the front and rear racks, middlings between the front racks and the take-off plates, and tailings between the take-off plates and the front wall of the chute.

In Fig. 5 I have illustrated diagrammatically a modified arrangement in which a corrugated sheet metal plate 12 forms the back of the chute and constitutes the rebound rack, a series of downwardly and outwardly inclined take-off plates 13 being disposed in front of such rack, the chute having the usual side walls 2 and front wall 3.

What I claim is as follows:

1. An ore separator comprising a chute having two or more rebound devices disposed laterally across the chute, each of such devices comprising a plurality of plates arranged in louver formation; and means disposed laterally beyond such devices for separating the material rebounding therefrom from the remainder of the ore.

2. An ore separator comprising a chute having a series of separating devices, each of said series including two or more rebound devices disposed laterally across the chute, the rebound devices of one series being arranged in staggered relation to the devices of another series.

3. An ore separator comprising a chute having a series of separating devices, each of said series including two or more rebound devices disposed laterally across the chute and each comprising a plurality of plates arranged in louver formation, the rebounding devices of one series being arranged in staggered relation to the devices of another series.

4. An ore separator comprising a chute having two or more inclined rebound devices disposed laterally across the chute, each of such devices comprising a plurality of plates arranged in louver formation, and said devices being so spaced that each after the first receives part of the material rebounding from the laterally preceding device, and a take-off plate adjacent to the inclined rebound devices, such take-off plate being inclined at a greater angle to the vertical than the rebound devices.

5. An ore separator comprising a chute having a series of separating devices, each of said series including two or more re-

bound devices disposed laterally across the chute and each comprising a plurality of plates arranged in louver formation, and said devices being so spaced that each after the first receives part of the material rebounding from the laterally preceding device, the rebound devices of one series being arranged in staggered relation to the devices of another series; and a take-off plate adjacent to each laterally disposed series, for separating the material rebounding therefrom from the remainder of the ore.

6. An ore separator comprising a chute having a series of separating devices, each of said series including two or more rebound devices disposed laterally across the chute and each comprising a plurality of plates arranged in louver formation, the rebound devices of one series being arranged in staggered relation to the devices of another series, a take-off plate adjacent to each laterally disposed series, for separating the material rebounding therefrom from the remainder of the ore and a baffle plate disposed above the lower end of each take-off plate and adapted to break the fall of material down the latter.

7. An ore separator comprising a chute having two or more rebound devices disposed laterally across the chute, each of such devices comprising a plurality of plates arranged in louver formation, a take-off plate adjacent such rebound devices and a baffle plate above the lower end of the take-off plate and adapted to break the fall of material down the latter.

8. An ore separator comprising a chute inclined to the vertical, a series of rebound racks arranged one below the other in echelon to incline downwardly and forwardly with respect to the chute, each of such racks comprising a plurality of strips extending across the chute and arranged in a louver formation, wall plates closing the spaces between adjacent ones of the said racks, a series of separating plates disposed in front of the said racks and having a greater inclination to the vertical than such racks, and baffle plates projecting inwardly from the front wall of the chute toward such separating plates.

9. An ore separator comprising a chute inclined to the vertical, a series of rebound racks arranged one below the other in echelon to incline downwardly and forwardly with respect to the chute, each of such racks comprising a plurality of strips extending across the chute and arranged in a louver formation, a second series of similar rebound racks arranged in front of the first mentioned series, wall plates closing the spaces between adjacent ones of the first mentioned series of racks, a series of separating plates disposed in front of the second series of racks and having a greater in-

clination to the vertical than such racks, and baffle plates projecting inwardly from the front wall of the chute toward such separating plates.

5 10. An ore separator comprising a chute having two or more inclined rebound devices disposed laterally across the chute, each of such devices comprising a plurality of plates arranged in louver formation and said de-
10 vices being so spaced that each after the first receives part of the material rebounding from the laterally preceding device, and a take-off plate adjacent to the inclined rebound devices.

15 11. An ore separator comprising a chute having a separating apparatus comprising an inclined rebound device, an inclined take-off plate in front of the rebound device and a baffle plate in front of and disposed

slightly above the lower end of the take-off 20 plate.

12. An ore separator comprising a chute, a series of rebound racks arranged one below the other in echelon to incline downwardly and forward with respect to the chute, each 25 of such racks comprising a plurality of strips extending across the chute and arranged in louver formation, wall plates closing the spaces between adjacent ones of said racks and separating plates disposed in 30 front of said racks.

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

EDWARD TORREY.

Witnesses:

ALEXINA JONCAS,
H. ROSS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."