H. VELTEN.

CONVEYER.

APPLICATION FILED FEB. 15, 1909.

1,046,511.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

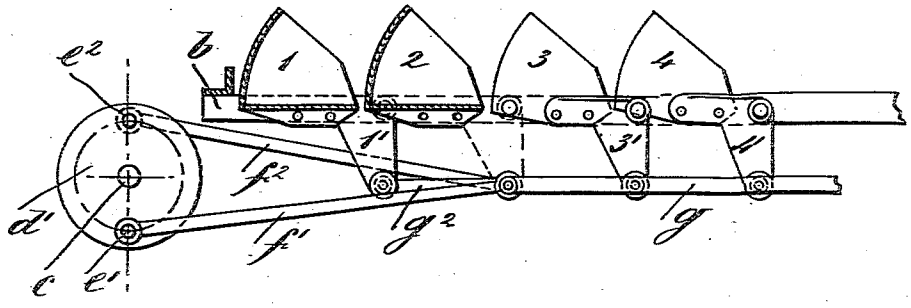


Fig. 2.

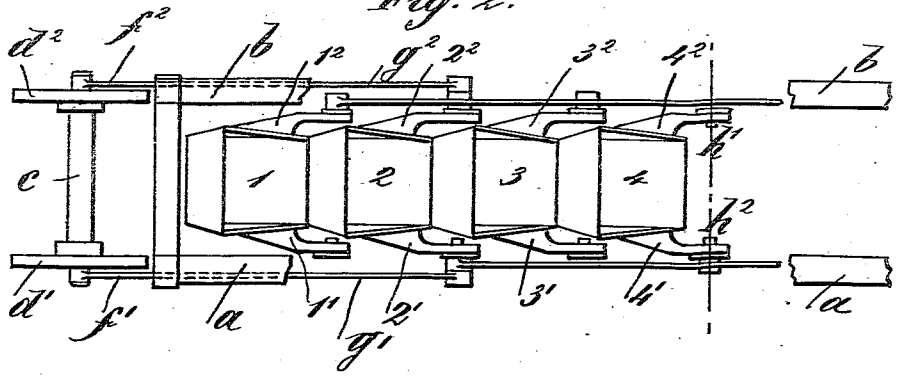
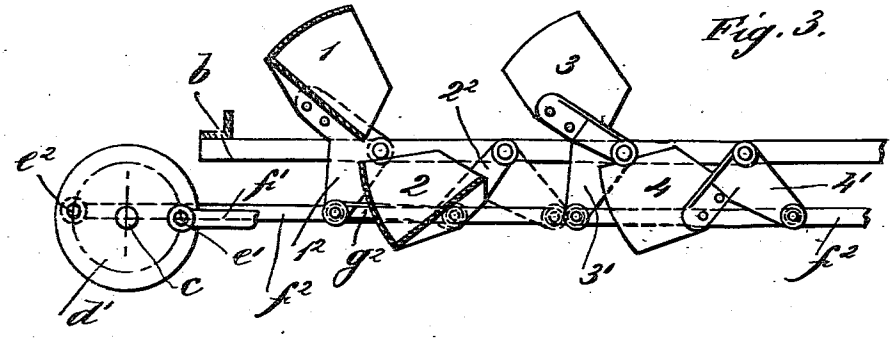


Fig. 3.



Witnesses:

E. G. McCarthy.

E. C. Brown.

Inventor:

Hugo Velten

By Louis Bimelyche

Atty

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2 SHEETS—SHEET 2.

Fig. 5

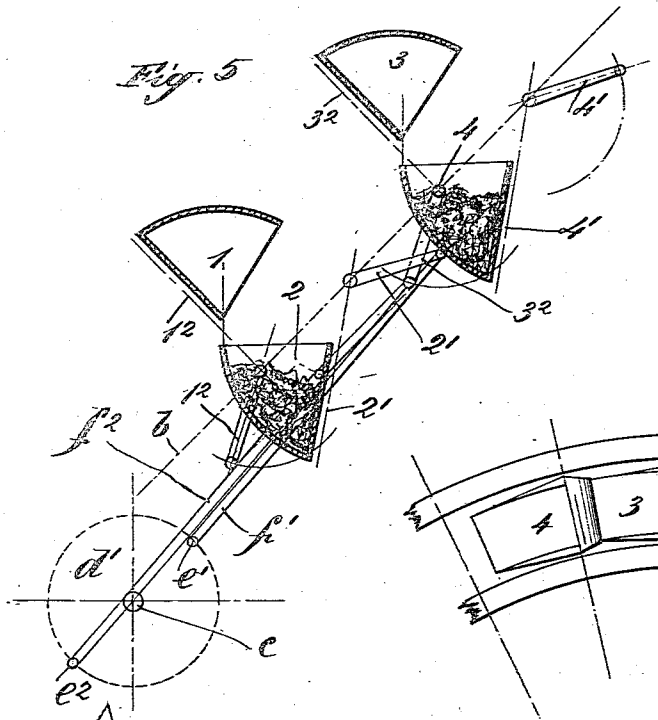

Fig. 4.

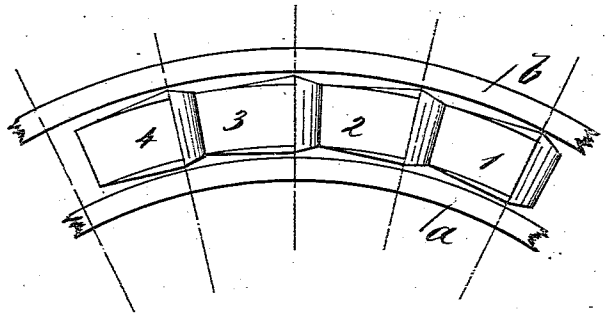

Fig. 6.

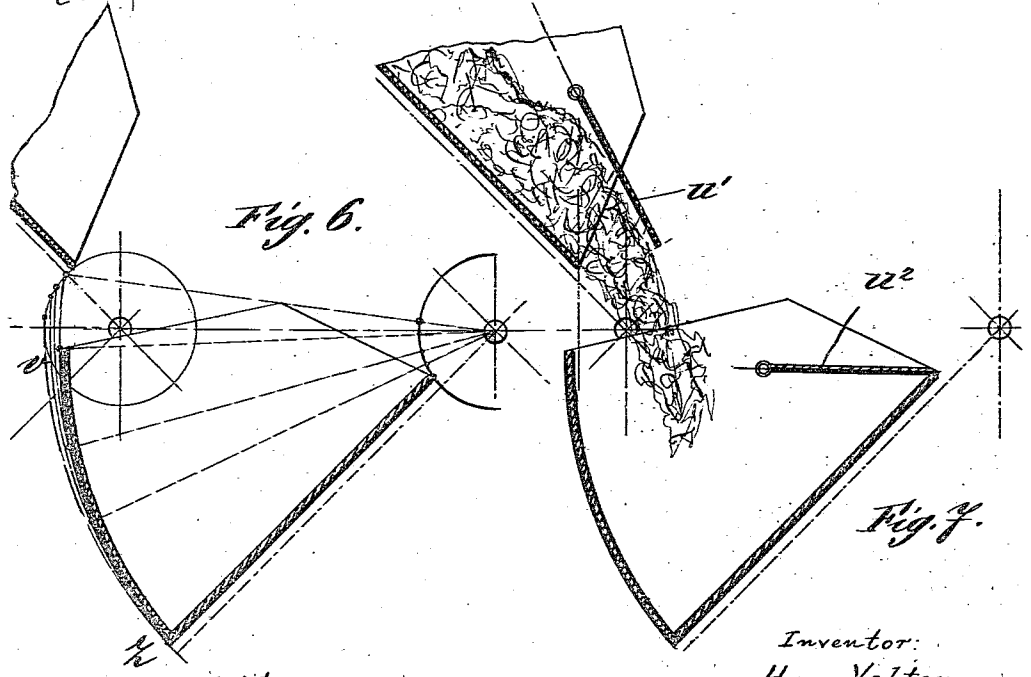

Fig. 7.

Witnesses:

E. G. McCarthy.

E. C. Brown.

Inventor:

Hugo Velten

By Emil Bonnelycke

Atty.

UNITED STATES PATENT OFFICE.

HUGO VELTEN, OF MILAN, ITALY.

CONVEYER.

1,046,511. Specification of Letters Patent. Patented Dec. 10, 1912.

Application filed February 15, 1909. Serial No. 478,064.

To all whom it may concern:

Be it known that I, HUGO VELTEN, subject of the King of Prussia, residing at No. 5 Via Principe Amedeo, Milan, in the Kingdom of Italy, have invented new and useful Improvements in Conveyers, of which the following is a specification.

The present invention refers to conveyers which are designed to transport lumps of any material or any material in pulverulent, granular, liquid or semiliquid state along a path either horizontal or gradient, either ascendant or descendant, either straight or curved. A series of buckets are journaled on supporting beams, which extend all along the path. Each of said buckets, on being raised by causing it to turn around its journals, discharges its contents into the adjacent bucket.

The arrangement is such: 1st that each of the buckets is alternately raised when it discharges its contents into the next following one and lowered when it receives the contents of the preceding one. 2nd that if the buckets are numbered in the ordinary course beginning from the driving shaft toward the end of the apparatus, the buckets bearing an odd number are raised just at the moment when the buckets, bearing an even number, are being lowered and vice versa.

In the accompanying drawings: Figure 1 is a side elevation of my conveyer, partly in section; the buckets being shown in their middle position; Fig. 2 is a plan from above of Fig. 1; Fig. 3 is a side elevation partly in section in which the odd numbered buckets are at the end of their upward stroke and the even numbered buckets at the end of their downward stroke; Fig. 4 is a top plan view of a conveyer extending along a circular path; Fig. 5 is a part-sectional side elevation of an inclined conveyer for raising the material; Fig. 6 is a diagrammatic sectional view, showing the construction of the rear wall of a bucket; and Fig. 7 is a fragmental sectional view of a pair of buckets equipped with flap valves.

On each of the buckets are riveted two levers, namely 1^1, 1^2 and respectively 2^1 2^2, 3^1 3^2, 4^1 4^2 ... each of which is journaled on one of the supporting beams *a*, *b*.

On the driving shaft *c* two disk cranks d^1 d^2 are keyed, having their pins e^1 e^2 shifted by 180° with respect to each other. The connecting rod f^1 journaled on the pin e^1 actuates the coupling rod g^1 on which are journaled the levers 2^1, 4^1 of the even numbered buckets, while the connecting rod f^2 journaled on the pin e^2, at the opposite end of the driving shaft, actuates the coupling rod g^2, which is connected to the levers 1^2, 3^2 ... of the odd numbered buckets.

Fig. 3 clearly shows the mode of operation of the apparatus.

If the number of revolutions be properly chosen, the centrifugal force keeps the material to be conveyed pressed against the bottom and rear wall of the bucket up to about the end of the upward stroke, when the action of gravity causes the same to glide down into the adjacent bucket, which has meanwhile reached the downward end of the stroke.

In order to get buckets of the greatest possible storage capacity for a given distance between the journals and a given width between the supporting beams, the edges, along which the discharge from the buckets takes place, are preferably situated between the centers of the corresponding journals and the rear walls of the buckets themselves; an arrangement which allows of the said discharge edge being overlapped by the rear edge of the adjacent bucket (see the recess h^1, h^2 at the front of bucket 4 (Fig. 2).)

The position of journals is always to be chosen in such a way as to cause the buckets to give rise to a momentum bringing forth simple tensile stresses in all parts of the apparatus, whereby the bad influence of play is removed and a quiet noiseless running secured.

Fig. 4 shows my conveyer as applied to a transport along a circular path, when the axes of all journals will have to converge toward the center of the circle.

Fig. 5 is a diagram referring to the case in which the material is to be conveyed along a slope of 45°.

It will be observed that the rear wall of each bucket has a curvature which is less than the curve *v*, *z*, (Fig. 6), described with the pivot axis as a center and the distance from said axis to the lower edge of the rear wall as a radius, this construction preventing the material from falling between the front edges of the raised buckets and the rear walls of the adjacent lowered buckets when the apparatus is driven at a low speed. This would be sufficient for conveying lumps, but for pulverulent or mixed material it

may be advisable to provide the buckets with flap valves which are shown in their end positions at w^1 w^2 (Fig. 7).—Buckets provided with holes or perforations may be used when the conveyer is to be employed for drying or washing materials, chemical products, animal or vegetable substances of different descriptions.

Having thus described my invention and how the same is performed, what I claim is:

1. In a conveyer of the character set forth, the combination with a plurality of pivotally mounted buckets having front discharge ends, of automatically opening valves controlling said ends, and means for swinging the alternate buckets in opposite directions to cause the delivery of material from one to another.

2. In a conveyer of the character described, the combination with a plurality of pivotally mounted buckets, having front discharge ends, of forwardly and automatically opening flap valves pivoted at their upper ends to the buckets, and having free lower ends, and means for swinging alternate buckets in opposite directions to cause the delivery of material from one bucket to the next.

3. In a conveyer of the character described, a plurality of swinging conveying buckets having open tops to receive the material and having discharge ends and outwardly opening means mounted on the discharge end of each bucket for preventing a premature falling of the material out of the buckets.

4. A conveyer of the class specified comprising, in combination, a pair of spaced, parallel supports provided, each, with a series of pivots, a series of buckets disposed between said supports, a pair of bell-crank levers associated with each bucket and disposed upon the opposite sides thereof, each lever being pivoted at its apex to one of said pivots and having one of its arms fastened to the corresponding bucket, and devices respectively connected to the other arms of the levers of alternate buckets for swinging said alternate buckets in opposite directions and alternately delivering material from one bucket to the next.

5. A conveyer of the class specified comprising, in combination, a pair of spaced, parallel supports provided, each, with a series of pivots, a series of buckets disposed between said supports, a pair of bell-crank levers disposed upon opposite sides of each bucket and having, each, one arm secured thereto, each lever being pivoted at its apex to one of said pivots, a pair of connecting rods to which the other arms of alternate buckets are connected, and means for reciprocating said rods simultaneously in opposite directions, to swing said alternate buckets in opposite directions and alternately deliver material from one bucket to the next.

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

HUGO VELTEN.

Witnesses:

MICHAEL SIERSDORFER, Jr.,

B. CARLO SALVOLTI.