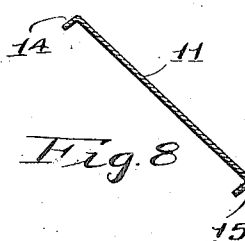
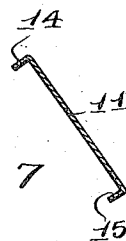
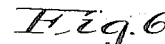
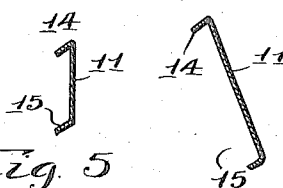
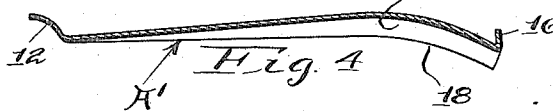
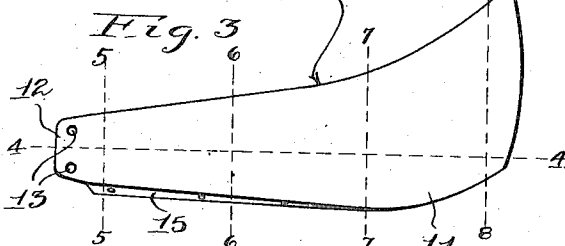
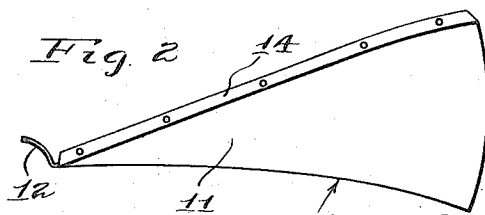
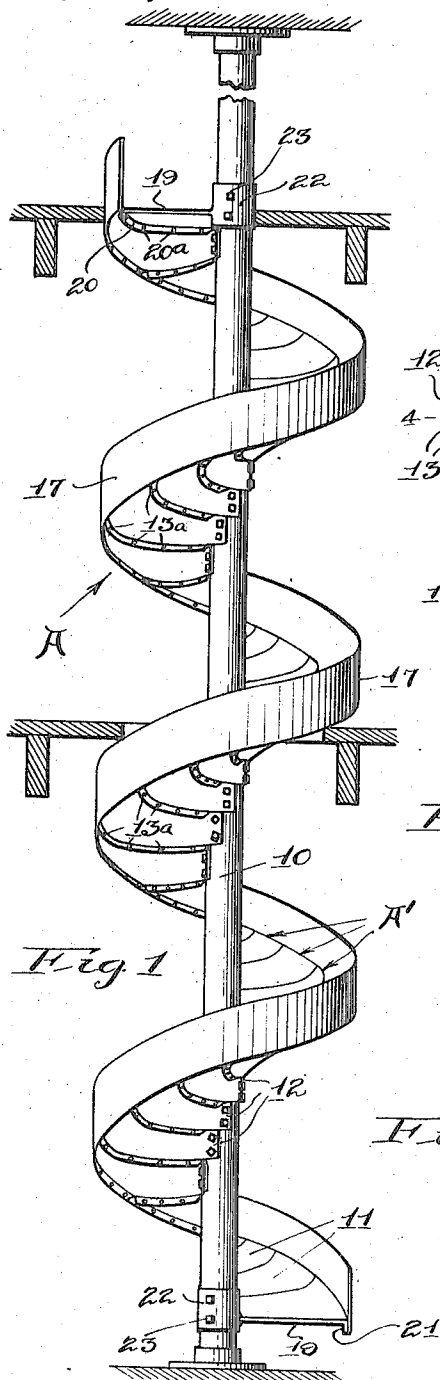


C. M. BEND.
SPIRAL CHUTE.
APPLICATION FILED NOV. 16, 1914.

1,270,366.

Patented June 25, 1918.



Witnesses
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UNITED STATES PATENT OFFICE.

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SPIRAL CHUTE.

1,270,366.

Specification of Letters Patent. Patented June 25, 1918.

Application filed November 16, 1914. Serial No. 872,369.

To all whom it may concern:

Be it known that I, CHARLES M. BEND, a citizen of the United States, residing in the city of St. Paul, county of Ramsey, and State of Minnesota, have invented new and useful Improvements in Spiral Chutes, of which the following is a specification.

Devices of this kind heretofore constructed have proven incapable of efficiently and safely conveying all of various classes of commodities for which they are intended, because some objects of relatively light weight and with large contact surfaces move at an inefficiently low rate of speed, while other objects of greater weight or having less frictional surfaces travel too swiftly, thereby damaging the articles conveyed. Considerable expense has also been caused in the construction of such slide-ways by the necessity of adding heavy guards at the edges of the slideways, to receive the outward thrust of the commodities caused by the centrifugal force acquired in their whirling descent.

Generally the object of my improved device is to provide a simple, durable and inexpensive chute for efficiently and safely conveying various objects from a higher to a lower level.

More particularly, however, it is my object to provide in a device of this kind a smooth spiral slideway decreasing in pitch from its inner edge and formed with an upwardly curved margin at its outer edge, upon which slideway an article is caused by centrifugal force to select a spiral path in its descent wherein it will travel at a substantially uniform and safe rate of speed.

A further object is to provide a spiral chute so constructed as to prevent the contact of packages with the guard at the outer edge of said chute, in the ordinary course of travel.

A still further object is to provide a spiral chute having a slideway made up of a plurality of identical sections which may be conveniently constructed at and shipped from a factory and assembled upon the desired site without requiring the selection of particular sections for certain positions in the slideway.

In the drawings Figure 1 is a side elevation of my improved spiral chute; Fig. 2

is a plan view in detail of one of the sections, which form the slideway of said chute; Fig. 3 is a front elevation thereof, and Figs. 4, 5, 6, 7 and 8 are sectional views taken respectively on the lines 4—4, 5—5, 6—6, 7—7 and 8—8 of Fig. 4.

Referring to the drawings, I have used the reference numeral 10 to indicate a vertical central supporting column, which is securely fixed in any convenient manner to extend from the higher level to the lower level, between which it is desired to convey commodities. My smooth spiral slideway A is mounted upon said central column 10 and said slideway forms concentric spiral paths gradually decreasing in pitch from the inner edge toward the outer edge thereof. The outer margin of said slideway is dished or inclined upwardly toward the outer edge like a circular race-track to retain swiftly moving articles in their whirling descent upon said slideway. This slideway A is formed of a series of identical sections A', one section being illustrated in detail in Figs. 2 and 3. These sections are preferably formed from sheet metal blanks and shaped as shown in the drawings. Each section comprises a curved sliding surface 11, having a clip 12 at its inner end formed with perforations 13 therein, and inturned perforated flanges 14, 15 and 16 respectively at its upper, lower and outer edges. The clip 12 is curved rearwardly to embrace a portion of the periphery of the column 10. The flanges 14 and 15 of adjacent sections fit closely together and rivets 13^a or the like are passed through the registering perforations of said flanges to join the sections A', and thereby form a continuous slideway. The outer edge of each section A is rounded and the flange 16 thereon forms means of attachment for the emergency guard 17, which is secured thereto by rivets, bolts or the like and serves in exceptional cases to retain objects upon the slideway A. Each section is dished longitudinally to form an upwardly inclined margin 18, as clearly shown in Fig. 4, and the transverse cross sections of each section A' gradually decrease in pitch from nearly ninety degrees at its inner end to substantially thirty degrees at its outer end. In addition to furnishing means of attachment, said clip 12

and flanges 14, 15 and 16 strengthen or reinforce said slideway sections A' to provide in each a substantially rigid structure.

To strengthen the slideway and furnish a rigid shelf to receive articles at the top and bottom thereof, I provide cast iron sections or blades 19, formed with sliding surfaces, similar in shape to the sheet metal sections A'. Said blades 19 are each formed with a side flange 20 which is secured by rivets 20^a or the like to the adjacent side flange of the adjoining sections A', and with an end flange 21, to which one of the ends of the guard 17 is riveted or bolted. The inner ends of said blades are each formed with a collar 22 surrounding the column 10, said collar being rigidly secured to said column by set screws 23.

The chute may be readily constructed in any length desired by securing more or less of the sections A' upon the central column 10.

In use, articles are placed upon the heavy blade 19 at the top of the chute by hand or by gravity, or any other convenient method, and started down the inclined slideway. During the initial movement of an object upon the slideway A it has a tendency to seek a path at the extreme inner edge of the said slideway. This portion of the slideway is very steep and if the object is one that travels slowly on this steep incline, it will maintain a spiral path near the column 10. If, however, the article be heavy and with small frictional surfaces, it is urged by centrifugal force, as it gains momentum in its whirling descent, toward the outer edge of

the slideway, where it finds a path in which it travels at an efficient and safe rate of speed.

Any convenient means (not shown) may be employed to receive articles at the lower end of the chute.

The advantages of my present device reside in the cheapness of manufacture, ease of shipping and assembling, and the adaptation of said device for use in conveying substantially all kinds and sizes of objects at a safe and relatively uniform rate of speed.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

In a spiral chute, a central supporting column, a spiral slideway passing around the column and composed of a series of identical sections secured at their inner ends upon said column, each section presenting a sliding surface gradually decreasing in pitch from its inner toward its outer end, and connecting and reinforcing flanges turned back from the edges of the sliding surface, the transverse sections throughout the entire length of said flanges being inclined downward at the same pitch, thus securing the greatest reinforcing effect against downward stress at the inner end of the section where weight is concentrated.

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

CHARLES M. BEND.

Witnesses:

J. E. STRYKER,
F. C. CASWELL.

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