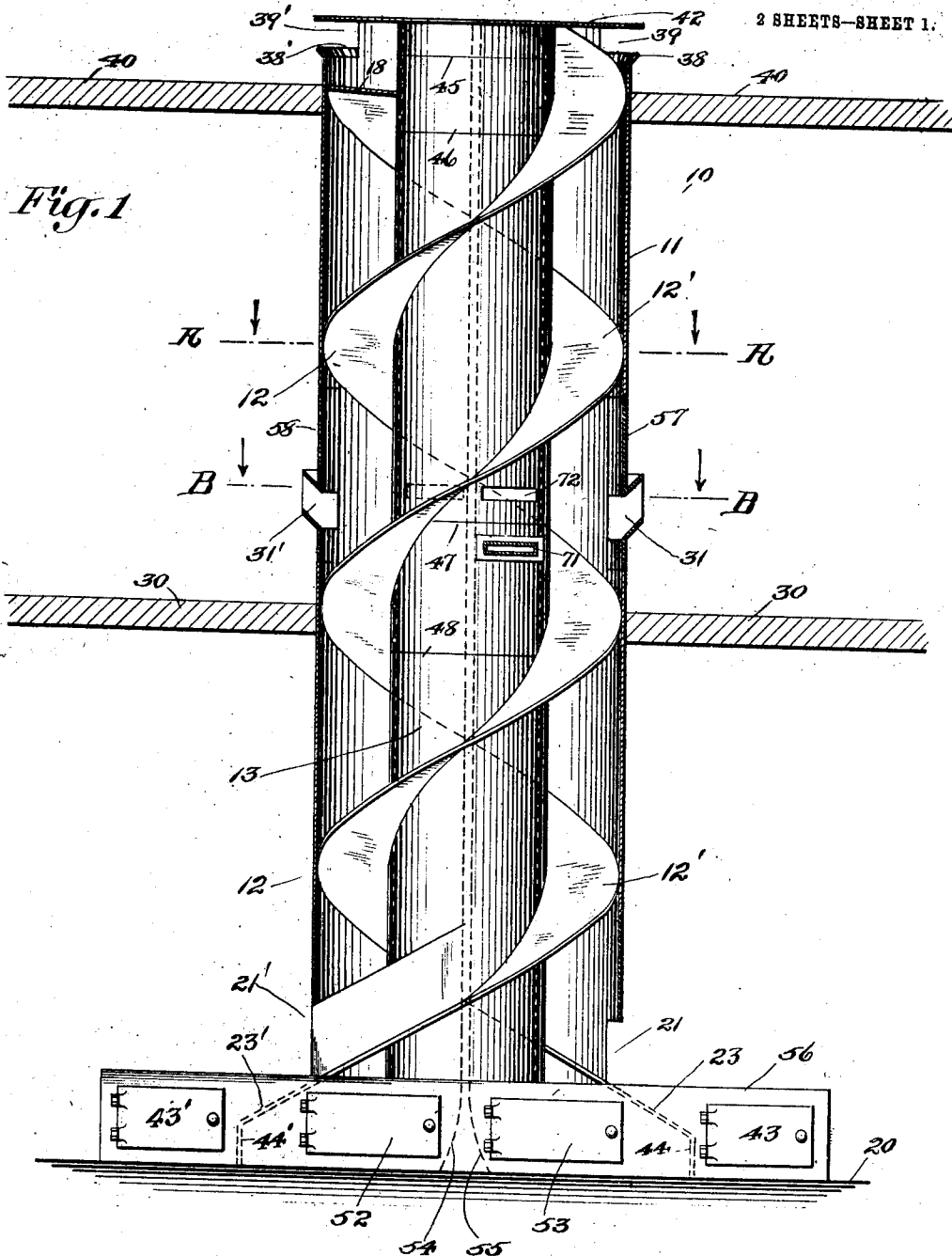


No. 826,613.

PATENTED JULY 24, 1906.

M. C. SCHWAB.  
COMBINED CHUTE AND GRAVITY CONVEYER.  
APPLICATION FILED MAY 29, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

*E. C. Semple*  
E. C. Semple

*Martin C. Schwab* INVENTOR

BY *Brown Darby Hopkins*  
ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 2.

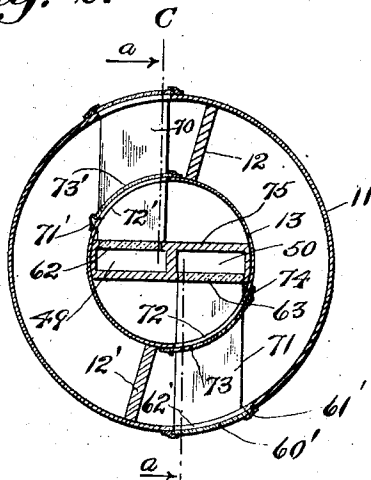


Fig. 3.

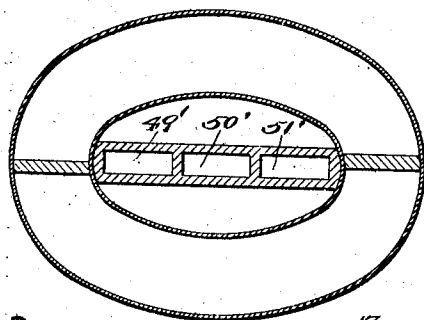
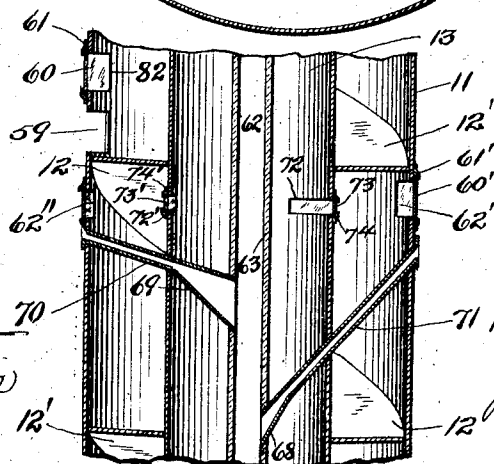


Fig. 4.



WITNESSES:

*E. C. Seem*  
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INVENTOR

*Martin C. Schwab*

BY

*Brown Darby Hopkins*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

MARTIN C. SCHWAB, OF BALTIMORE, MARYLAND, ASSIGNOR TO GRAVITY CONVEYOR COMPANY, A CORPORATION OF NEW YORK.

## COMBINED CHUTE AND GRAVITY CONVEYER.

No. 826,613.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed May 29, 1905. Serial No. 262,835.

*To all whom it may concern:*

Be it known that I, MARTIN C. SCHWAB, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a new and useful Improvement in a Combined Chute and Gravity Conveyor, of which the following is a specification.

The object of my invention is the provision of means for conveying from an upper to a lower elevation packages and large-sized letters and arranging such means in the immediate proximity to a letter-chute.

A further object of my invention is the provision of observation-windows, so that it may be noted when the chute or conveyer becomes obstructed with letters or packages.

Other objects of the invention will appear hereinafter, the novel combinations of elements being pointed out in the claims hereto appended.

Referring to the drawings, Figure 1 represents an elevational view, partly in section, of a complete combined letter-chute and gravity conveyor. Fig. 2 is a horizontal sectional view taken on the line B B of Fig. 1. Fig. 3 is a similar section taken on the line A A, Fig. 1, but showing a modification of Fig. 2 in that the section represents an elliptical casing and core instead of a cylindrical casing and core, as in Fig. 2; and Fig. 4 is a vertical sectional view of a portion of Fig. 1 and taken on the line C C of Fig. 2 looking in the direction of the arrows *a a*.

10 designates the chute and conveyor in general, being supported by the ground-floor 20 and passing through the landing-floors, herein shown as only two, 30 and 40.

13 designates the inner core, and 11 the outer shell or casing, between which are interposed a plurality of spiral blades. I have in this instance shown two such blades 12 12'; but this number may be increased, if desired. The core in cross-section should conform in shape to the outer casing, and in Fig. 2 they are both shown circular, while in Fig. 3 they are elliptical to allow more letter-chutes to be placed in the inner core. The inner core is preferably made in sections, as indicated by the lines 45, 46, 47, and 48.

At the top of the conveyor is a flat cover or table 42, in the center of which are openings registering with the vertical chutes 49', 50', and 51', as shown in Fig. 3. These vertical chutes are for the purpose of directing letters

in their fall to the bottom floor 20. As indicated by the dotted lines 54 and 55, the vertical chutes lead to separate compartments in the cabinet or receiving-box 56, provided at the bottom of the conveyor. Independent doors 52 and 53 are shown for these separate compartments. Separate and independent compartments are also provided for the lower ends of the spiral blades 12 12'. An inclined platform 23 connects the spiral blade 12 through the exit-opening 21 with one of these compartments (shown at the right in Fig. 1) and provided with the door 43. The other compartment at the left has a door 43' and is connected with the spiral blade 12' by the inclined platform 23', which passes through the exit-opening 21'. The compartments for the packages are separated from the letter-compartments by the partitions 44 and 44'.

At the upper end of the conveyor suitable intake-openings 39 and 39' are provided, the inclined portions 38 and 38' being for the purpose of facilitating the insertion of packages onto the spiral blades 12 and 12', respectively. Although the vertical section of the spiral blade 12' at 18 shows the blade slightly inclined toward the inner core, the same may be made horizontal, if desired.

At the landing 30 are inclined intake-openings 31 31' in removable sections or doors 57 58, respectively, in the outer shell or casing 11. The intake-openings may be modified to be like that shown at 59 in Fig. 4, or any other type of intake-opening may be used and arranged at a suitable distance above the spiral blades, depending on the size of the packages to be conveyed and the character of their contents.

At suitable points in the outer casing observation-openings, as at 82, Fig. 4, are provided, so that a person desiring to place a package into the conveyor may first determine whether or not the conveyor is obstructed by other packages. Preferably a frame 61 is secured to the outer casing 11 and glass placed in the same to form a window. Although the opening 82 is shown in Fig. 4 above the intake-opening 59, it may be placed at any desirable point above the spiral blades and adjacent each floor.

At other than the top landing the means shown in Fig. 4 are provided for conveying letters into the vertical chutes 49 and 50. These

means comprise the flat tubes or inclined auxiliary chutes 70 and 71, which lead from the outer casing 11 to the vertical chute 50 and 49, respectively, as is shown more clearly in Fig. 2. These tubes may be inclined at different angles; but the portion adjacent the vertical chutes should have a steep inclination, so that the letters may be given an almost vertical position before they enter the vertical chutes. This is accomplished in this instance by having the portions 68 and 69 more inclined, but retaining the upper portion of the tube in a straight line, so that by reason of the enlarged ends longer letters may be placed into the chutes at any floor. When such a construction is used, more space is obtained above the spiral blade for packages, and, furthermore, a larger number of spiral blades may be placed in the conveyer. The tubes 70 and 71 must be placed just below the spiral blades 12 and 12', respectively, and should not have such a steep inclination so as to interfere with packages descending along the spiral surfaces.

In order to observe the letter-chutes to determine whether they are obstructed, observation-openings 62' are provided in the outer casing, covered with glass 60' in a frame 61' and in alinement with an observation-opening 72 in the core 13, the latter opening 72 being also covered with glass 73 in a frame 74. In alinement with the openings 62' and 72 may be provided a similar opening in the chute 50; but I have herein shown one side of the chute 50 constructed of glass 63. So also one side of the chute 49 is formed of glass 62. It will be seen that the section shown in Fig. 4 taken on the line C C, Fig. 2, is taken through the glass sections 62 and 63, so that Fig. 4 shows the vertical letter-chute as if entirely made of glass. Furthermore, only a small portion of each of the openings 62'' and 72' is shown in Fig. 4; while nearly the entire openings 72 and 62' are shown.

Although I have shown the observation openings or windows in horizontal alinement, they may be placed in a line parallel with the conveying-tubes 70 and 71, if desired. Other modifications may also be made without departing from the spirit and scope of my invention.

Having thus fully described my invention and without limiting myself to the precise construction of details and arrangement of parts herein disclosed, what I desire to have protected by Letters Patent of the United States is—

1. The combination of a letter-chute, and a gravity conveyer.
2. The combination of a letter-chute, and a spiral gravity conveyer.
3. The combination of a vertical letter-chute, and a gravity conveyer adjacent thereto.

4. The combination of a letter-chute, and a multiple spiral gravity conveyer.

5. The combination with an outer casing, of an inner core, a spiral blade interposed between said casing and core, and a letter-chute extending through said inner core.

6. The combination with an outer casing, of an inner core, and a spiral blade interposed between said casing and core, said casing having an observation-opening and an intake-opening.

7. The combination of a gravity conveyer having an observation-opening and an intake-opening, and a letter-chute extending through the interior of said conveyer.

8. The combination of a gravity conveyer, and a letter-chute of rectangular cross-section extending longitudinally through the interior of said conveyer.

9. The combination of a multiple spiral gravity conveyer, and a plurality of letter-chutes extending longitudinally through the interior of said conveyer.

10. The combination with a gravity conveyer, of a letter-chute, and receiving-boxes for said conveyer and chute.

11. The combination with a multiple spiral gravity conveyer, of receiving means for each spiral, a letter-chute and additional receiving means for said chute.

12. The combination with a multiple spiral gravity conveyer, of a plurality of letter-chutes extending longitudinally through the interior of said conveyer, and a box at the lower end of the conveyer and chutes and provided with separate compartments for each of the spirals and chutes.

13. The combination with a conveyer, of an inner letter-chute, and means affording communication between the outer portion of the conveyer and said inner chute.

14. The combination with a conveyer, of an inner chute, means affording communication between the outer portion of said conveyer and said inner chute, and observation-openings adjacent said means.

15. The combination with a gravity conveyer, of an inner chute having one of its walls composed of transparent material, and an auxiliary chute extending from the exterior of said conveyer to said inner chute, said conveyer being provided with observation-openings in alinement with the transparent wall of said inner chute.

16. The combination with a conveyer, of an inner chute, and an auxiliary chute extending from the exterior of said conveyer to said inner chute, said conveyer and inner chute being provided with observation-openings.

17. The combination with an outer casing, of an inner core, an interposed spiral blade, and an inner chute, said casing and core being provided with openings in substantial alinement with each other.

18. The combination with an outer casing, of an inner core, an interposed spiral blade, an inner chute and an auxiliary chute connecting an opening in said outer casing with an opening in said inner chute, said casing, core and inner chute being provided with openings in substantial alinement with each other.

19. The combination with an outer casing, of an inner core, an interposed spiral blade, an inner letter-chute, and an auxiliary letter-chute below said blade and connecting an opening in the outer casing with an opening in the inner chute, through an opening in the inner core, said casing, core and inner chute being provided with observation-openings between said blade and said auxiliary chute.

20. The combination with a gravity conveyer, of an inner chute, and a plurality of auxiliary chutes extending between the exterior of said conveyer and said inner chute, said conveyer and inner chute being provided with observation-openings adjacent each of said auxiliary chutes.

21. The combination with a gravity conveyer, of landing-floors therefor, an inner chute, auxiliary conveying means adjacent a landing and extending between the exterior of said conveyer and said inner chute.

22. The combination with a gravity conveyer, of landing-floors therefor, a plurality of inner chutes, and auxiliary conveying means extending from the exterior of said conveyer adjacent a floor-landing to the said

inner chutes, said conveyer and chutes being provided with observation-openings.

23. The combination with a multiple spiral gravity conveyer, of landing-floors therefor, an inner chute, and means affording communication between the exterior of said conveyer and said inner chute at a point adjacent a floor-landing, said conveyer and chute being provided with openings in substantial alinement with each other.

24. The combination with an outer casing, of an inner core, a plurality of spiral blades interposed between said casing and core to form conveying-surfaces for packages, a plurality of letter-chutes extending longitudinally through said inner core, means affording communication between said outer casing at points adjacent a floor-landing and the said letter-chutes; said outer casing having intake-openings and observation-openings adjacent the spirals of the conveyer, and the letter-chute being provided with additional observation-openings for the letter-chutes; and individual receiving means for the letter-chutes and for the package-conveying spirals.

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

MARTIN C. SCHWAB.

Witnesses:

CARL P. SCHROEDER,  
CHAS. H. SEEM.