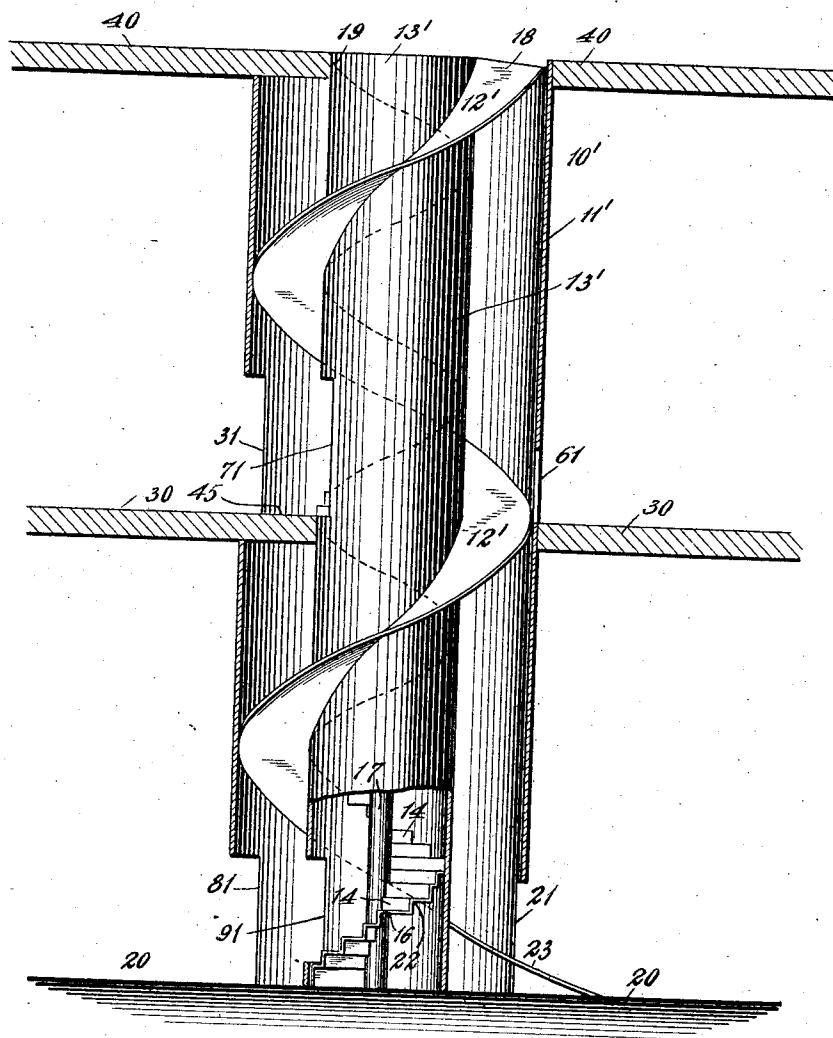


No. 848,774.

PATENTED APR. 2, 1907.

M. C. SCHWAB.
COMBINED CONVEYER AND STAIRCASE.
APPLICATION FILED DEC. 19, 1906.



WITNESSES:

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

COMBINED CONVEYER AND STAIRCASE.

No. 848,774.

Specification of Letters Patent.

Patented April 2, 1907.

Original application filed June 1, 1905, Serial No. 263,328. Divided and this application filed December 19, 1906. Serial No. 348,518.

To all whom it may concern:

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

My invention relates to stairs for conveyers, and particularly to stairs for gravity-conveyers; and one of the objects of my invention is the provision of stairs in the interior of a conveyer, so as to economize space and strengthen the construction of both the conveyer and the stairs.

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

Referring to the drawing, it will be seen that a vertical section has been taken of the exterior casing of the conveyer to show in elevation the construction of the conveyer and that the lower portion of the inner casing of the conveyer has been broken away to show the stairs within such inner casing.

This application is a division of my co-pending application, Serial No. 263,328, filed June 1, 1905, for an improvement in combined chutes and staircases.

10' designates the conveyer, having a vertical tubular inner casing 13', to which is secured the helical spiral blade 12'. This spiral blade is also secured to the vertical exterior casing 11', which is preferably concentric with the inner casing 13'. The inner and outer casings or shells may be cylindrical or elliptical in horizontal cross-section, and the spiral blade may be of any suitable construction and have any desired pitch. The conveyer may pass through a plurality of floors, but is herein shown as resting on the ground-floor 20 and passing through only one floor 30. At or near the latter floor or landing 30 is provided an opening 61 in the outer casing 11', so that the articles may be taken from the surface of the spiral blade 12' as they descend or placed into the conveyer at this point.

Near the bottom floor is shown an exit-opening 21, through which passes the inclined platform 23, which connects the lower end of the spiral blade 12' with the floor 20 or forms an extension or continuation of said spiral blade to said floor 20.

Attached to the interior of the inner casing

13' is shown a series of steps 22 to form winding stairs, preferably in the form of a helical spiral. The stairs may be supplied with a hand-rail, also of spiral shape and supported by balusters; but I have shown a core 17 for reinforcing the stairs, the stairs being suitably secured to the casing 13', as well as to the core 17.

The outer casing 11' preferably conforms in shape with the inner casing 13' and is supported by the various floors with reference to any lateral movement and may be so secured thereto to assist in supporting the conveyer vertically, although preferably the entire weight of the stairs and the conveyer comes on the ground-floor. It should be noted that the steps 22 serve as a lateral support for the gravity-conveyer on the exterior thereof to maintain said conveyer in a substantially central position, particularly the inner casing 13', with respect to the outer casing or shell 11'.

The annular space between the core 17 and shell 13' constitutes a staircase, the stairs being interposed between said core and inner casing, the latter forming the walls closely surrounding and assisting in supporting the steps 22. The stairs may be of ordinary construction and comprise the tread 16, which tapers toward the conveyer, and the riser 14, perpendicular to the shell 13' when the latter is cylindrical. The tread may be provided with an outer edge or nosing, as is usual.

Level with the floor 30 I have shown a landing 45 between the opening 31 in the outer casing 11' and the opening 71 in the inner casing 13'. These openings preferably register with each other, so that a person after placing articles onto the blade 12' through the opening 61 may walk onto the landing 45 and thence down the stairs through the openings or doorways 91 and 81 to attend to the articles that have descended to the ground-floor 20. The openings 31 and 71, with the landing 45 between, are preferably located opposite the opening 61, so that the blade 12' will not in any way obstruct the passage to the staircase. Suitable doors may be provided for any one or all the openings leading into or out of the conveyer or staircase.

It should be noted that by reason of the placing of the spiral blade 12' on the exterior of the stairs such spiral blade is of larger dimensions than ordinarily, and therefore this

conveyer may be employed for the conveyance of particularly large packages. It should also be noted that the spiral blade 12' is tilted away from the center casing 13', as indicated at 18. With the same inclination of the blade the number of complete turns or pitch of the spiral in a given distance is lessened. The centrifugal force is therefore less, and consequently the inclination should be made less than when such spiral blade is placed within a stairs, as disclosed in my co-pending application hereinbefore referred to. By tilting the spiral blade, however, as shown, the tendency of the packages is to slide toward the outer casing 11' with their descent, which, with the centrifugal force, will produce sufficient friction to prevent the packages from descending too rapidly.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of my invention, and I desire, therefore, not to be limited to the precise construction herein disclosed.

Having thus fully described my invention, what I claim, and desire to have protected by Letters Patent of the United States, is—

1. The combination of a conveyer and means comprising steps within the conveyer for supporting said conveyer.
2. The combination of a conveyer, and stairs secured to the inside of said conveyer.
3. The combination of a conveyer, having an inner inclosing casing and an outer inclosing casing and a stairs within the inner casing of said conveyer.
4. The combination with a conveyer, of a core substantially centrally disposed within the conveyer, and stairs interposed between said core and said conveyer, entirely within the latter and in an alinement different from that of the parts of the conveyer.
5. The combination of a gravity-conveyer, comprising an outer shell and inner shell with an interposed spiral blade, and stairs on the interior of said inner shell.
6. The combination with a gravity-conveyer, having an outer inclosing casing and an inner inclosing casing of an inner core, and steps interposed between said inner core and said gravity-conveyer wholly within the inner casing.
7. The combination of a gravity-conveyer, and stairs on the interior of said conveyer, wholly within the latter and arranged in an alinement separate from that of the parts of the conveyer.
8. The combination with a conveyer, of an inner core, and stairs arranged spirally in the staircase formed by the conveyer and the inner core, said stairs being wholly within the conveyer and in a vertical alinement separate from the vertical alinement of the parts of the conveyer.

9. The combination with a conveyer comprising an inner casing, a stairs inside of said inner casing, and a landing for said stairs at or near openings in said conveyer.

10. The combination with a conveyer, of stairs secured to the interior thereof, and a landing for the stairs adjacent openings in the conveyer.

11. The combination with a conveyer, of a series of steps arranged spirally within said conveyer to form spiral stairs, a floor-landing, and a landing for the stairs at or near said floor-landing and at or near openings in the conveyer.

12. The combination with a conveyer, of spiral stairs within said conveyer, a floor-landing, and a landing for the stairs between openings in said conveyer.

13. The combination with a gravity-conveyer having an inner shell, of spiral stairs within said inner shell and extending between openings in said inner shell at different elevations, and a landing for said spiral stairs at or near one of said openings and opposite an additional opening in the gravity-conveyer.

14. The combination with a gravity-conveyer having a spiral surface, of spiral stairs arranged on the interior of said conveyer, passage-ways for said stairs and leading into and out of said conveyer, and a platform forming a continuation of said spiral surface through an exit-opening in the conveyer.

15. The combination of a spiral gravity-conveyer, and spiral stairs on the interior of said conveyer and wholly within the latter, the alinement of the parts of the stairs being distinct from the alinement of the parts of the conveyer.

16. The combination with a gravity-conveyer, of landings therefor, of stairs in a spiral staircase on the interior of said conveyer and extending between entrance and exit openings in the conveyer.

17. The combination with a spiral gravity-conveyer, comprising outer and inner shells with a large interposed spiral blade, said outer shell having openings for the insertion and withdrawal of packages or articles, of an inner core within said inner shell, a series of spirally-arranged steps between said inner core and said inner shell and extending between entrance and exit openings in said inner shell, and landings between said entrance and exit openings, and corresponding openings in the outer shell.

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

MARTIN C. SCHWAB.

Witnesses:

W. H. BRADY,
A. M. ZABRISKIE.