

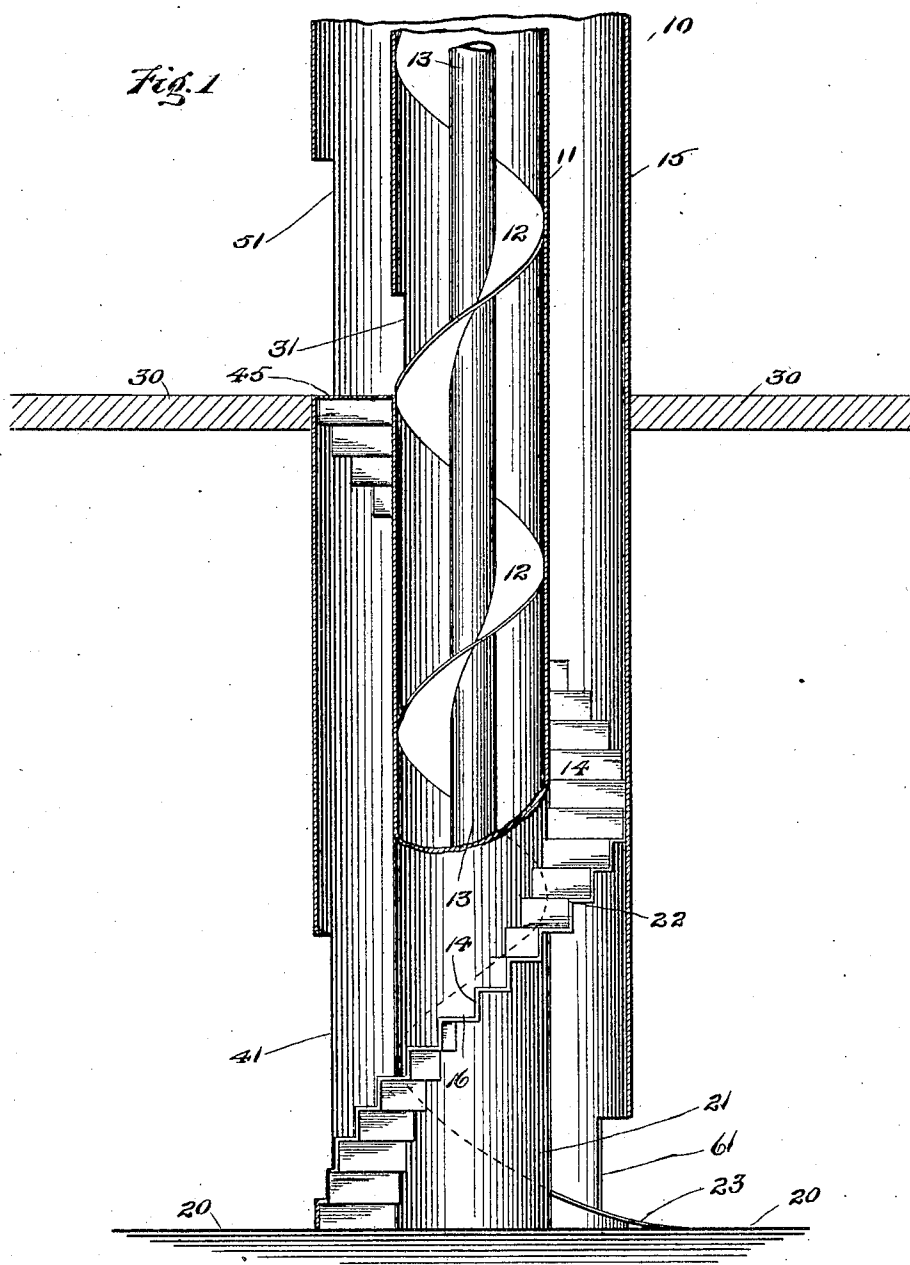
No. 849,340.

PATENTED APR. 2, 1907.

M. C. SCHWAB.
COMBINED CONVEYER AND STAIRCASE.

APPLICATION FILED JUNE 1, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

Henry E. Kirby
Walter C. Strong

INVENTOR

Martin C. Schwab

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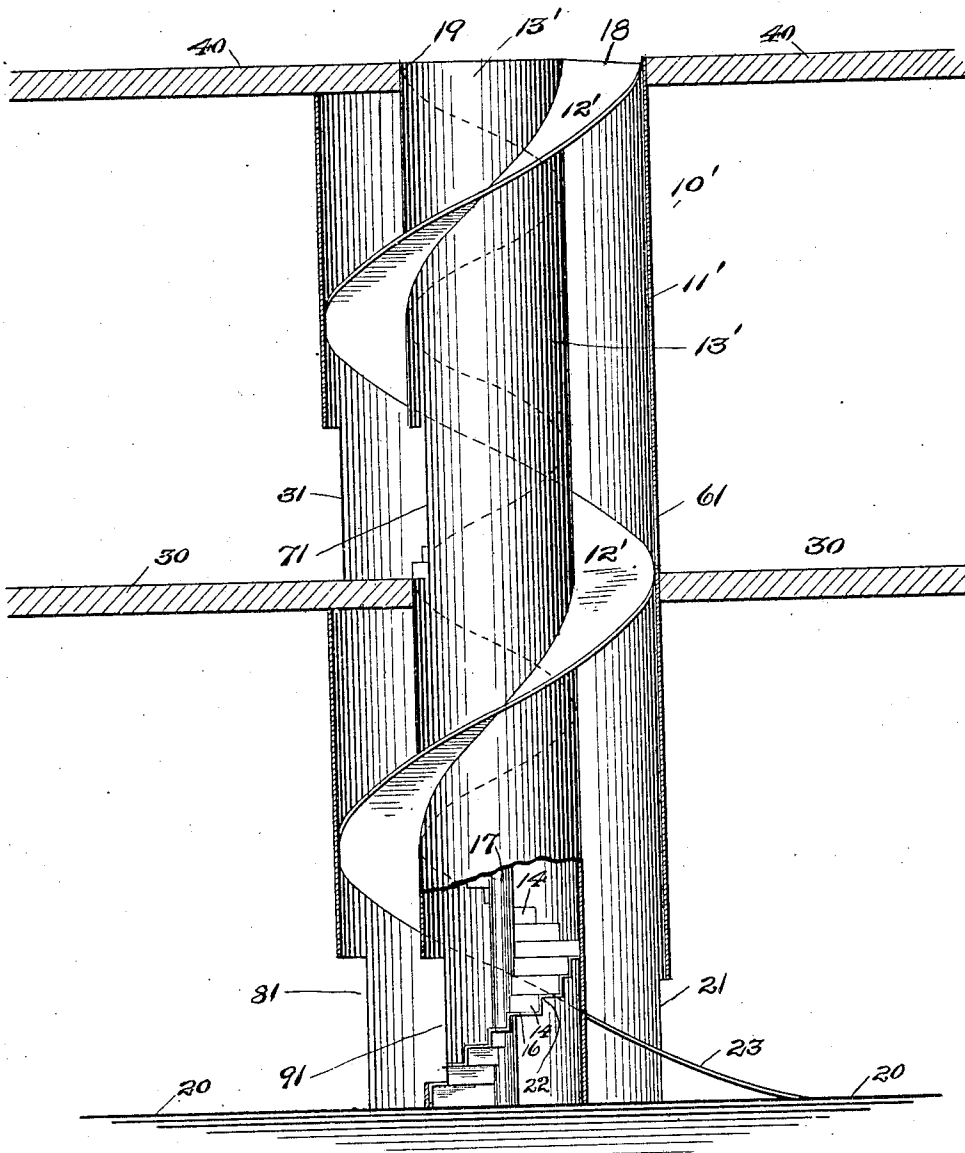
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Fig. 2



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UNITED STATES PATENT OFFICE.

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

COMBINED CONVEYER AND STAIRCASE.

No. 849,340.

Specification of Letters Patent.

Patented April 2, 1907.

Application filed June 1, 1905. Serial No. 263,328.

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

Other objects will appear hereinafter, the novel combination of elements being set forth in the claims.

Referring to the drawings, Figure 1 represents a sectional elevation of a combined stairs, staircase, and gravity-conveyer, the stairs being arranged on the outside of the conveyer; and Fig. 2 represents a similar view of a modified construction in which the stairs and conveyer are reversed as to their positions.

In Fig. 1, 10 designates the conveyer, having a vertical tubular core 13, to which is secured the helical spiral blade 12. This spiral blade is also secured to the vertical tubular shaft, shell, or casing 11, which is preferably concentric with the core 13. The shell 11 may be cylindrical or elliptical in 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 here shown as being supported 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 31 in the casing 11, so that 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 exterior of the shell 11 is shown a series of steps 22 to form winding stairs, preferably in the form of a helical spiral. The stairs may be provided with a hand-rail, also of spiral shape and supported

by balusters; but I have shown a casing 15 for reinforcing the stairs, the stairs being suitably secured to this casing as well as the shell 11. The casing 15 preferably conforms in shape with the shell 11 and is supported by the various floors.

It should be noted that the steps serve as a lateral support for the interior conveyer to maintain the latter in a substantially central position with respect to the outer shell or casing 15.

The annular space between the casing 15 and shell 11 therefore constitutes a staircase, the stairs being interposed between said casing and said shell, the latter forming the walls, closely surrounding and 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, which is perpendicular to the shell 11 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 for the stairs opposite the large opening 51 in the casing 15. This opening may be at or near the landing 30 and on any side of the casing 15; but I have shown it in this instance as registering with the opening 31 in the conveyer. The landing 45 may then also be used as a platform for the conveyer.

An opening 41, corresponding to the opening 51, is shown at the ground floor 20. This opening 41 serves as a passage-way to those entering or coming from the staircase.

Registering with the opening 21 in the lower part of the conveyer is the opening 61 in the lower part of the casing 15. The platform 23 passes also through this opening 61. Suitable doors may be provided for the openings in the conveyer and outer casing 15, if desired.

Referring now to Fig. 2, it will be seen that the conveyer 10' is here shown on the exterior of the stairs. The spiral blade 12' is of larger dimensions in this case and interposed between the outer casing 11' and the inner shell 13'. I have shown an additional floor at the top and only one intermediate; but it is obvious that I may increase the latter to any desirable number.

The steps 22 are supported between and by the shaft 17 and shell 113' and are arranged,

as before, in the form of a helical spiral. The space between the shell 13' and shaft 17 forms the staircase, which may be entered from the top landing 40 at 19, from the floor 5 30 through the opening 31 in the outer casing 11' and the opening 71 in the shell 13' registering therewith, or from the ground floor 20 through the openings 81 and 91 in the casing 11' and shell 13', respectively.

10 It is clear that since the spiral has larger dimensions larger packages can be conveyed from the landing 40 directly, by the spiral surface, or from the landing 30 through the opening 61 on the casing 11' to the exit-open- 15 ing 21 onto the inclined platform 23, to the ground floor 20, or to a table on the ground floor. Furthermore, I have tilted the spiral blade 12' in Fig. 2 away from the center, as shown at 18. With the same inclination of 20 the blades the number of complete turns or pitch of the spiral in a given distance is not so great in Fig. 2 as in Fig. 1. The centrifugal force is therefore less, and consequently the inclination should be made less. By tilting the 25 spiral blade, however, as shown the tendency of the packages is to slide toward the outer casing 11' in their descent, which with the centrifugal force will produce sufficient friction to prevent the packages from descending 30 too rapidly.

Without limiting myself to the details of construction or arrangement of parts, but reserving the right to vary the same within the spirit and scope of my invention, what I 35 claim, and desire to have protected by Letters Patent, is—

1. The combination of a conveyer, and means comprising steps for supporting said conveyer.
- 40 2. The combination with a conveyer, of stairs secured to the outside of said conveyer.
3. The combination with a conveyer, of a casing outside the conveyer, and stairs inter- 45 posed between said conveyer and casing.
4. The combination with a gravity-conveyer, of stairs on the exterior of said conveyer, and an outer shell.
5. The combination with a gravity-con- 50 veyer, of a casing exterior to the conveyer, and stairs interposed between said conveyer and casing.

6. The combination with a conveyer, of an outer casing inclosing the same, and stairs arranged spirally in the staircase formed by 55 the conveyer and said outer casing.

7. The combination with a conveyer, of an outer casing, stairs inside of said casing and exterior to the conveyer, and a landing for said stairs at or near an opening in said con- 60 veyer.

8. The combination with a conveyer, of stairs secured to the exterior thereof, and a landing for the stairs and opposite an open- 65 ing in the conveyer.

9. The combination with a conveyer, of a series of steps arranged spirally around said conveyer to form spiral stairs, a floor-land- ing; and a landing for the stairs, at or near said floor-landing and at or near an opening 70 in the conveyer.

10. The combination with a conveyer, of a casing surrounding the same, spiral stairs in said casing, a floor-landing, and a landing for the stairs at or near said floor-landing and 75 opposite an opening in the conveyer.

11. The combination with a gravity-conveyer having an outer shell, of a casing surrounding said shell, spiral stairs interposed between said shell and casing and extending 80 between openings in said outer casing at different elevations, and a landing for said spiral stairs at or near one of said openings and opposite an opening in the gravity-conveyer.

12. The combination with a gravity-con- 85 veyer having a spiral surface, of spiral stairs arranged on the exterior thereof, a casing inclosing said stairs and conveyer and having entrance and exit openings for the staircase, and a platform forming a continuation of said 90 spiral surface through an exit-opening in the conveyer and an opening in the casing registering with said exit-opening.

13. The combination with an outer casing, of an inner core, and a spiral blade inter- 95 posed between said casing and core and tilted toward said outer casing.

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,
KENNETH LOCKETT.