

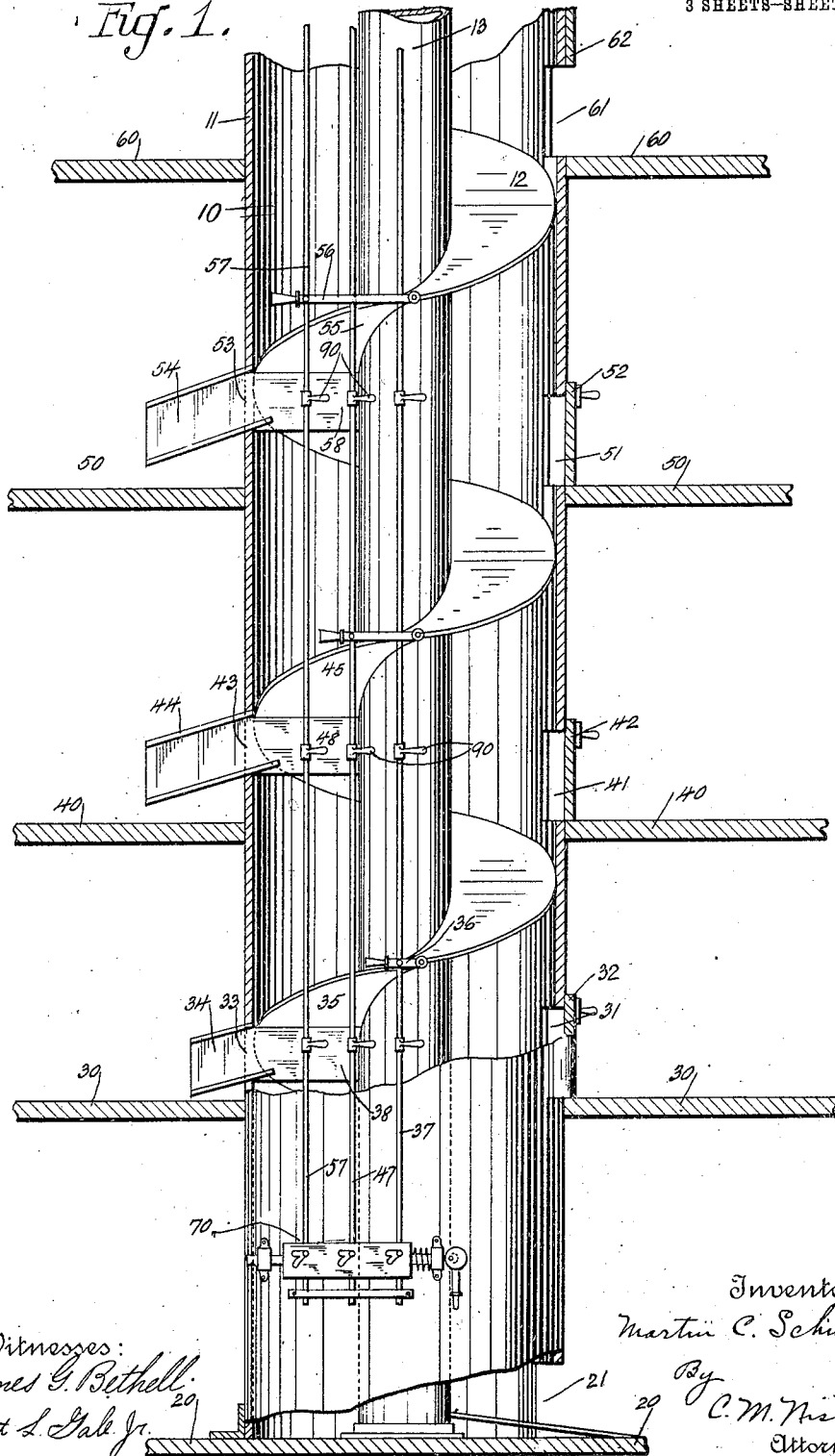
M. C. SCHWAB.
 SWITCH FOR GRAVITY CONVEYERS.
 APPLICATION FILED AUG. 24, 1908.

1,047,309.

Patented Dec. 17, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
 James G. Bethell.
 Ernest L. Gale, Jr.

Inventor:
 Martin C. Schwab
 By C. M. Nissen
 Attorney

M. C. SCHWAB.
 SWITCH FOR GRAVITY CONVEYERS.
 APPLICATION FILED AUG. 24, 1908.

1,047,309.

Patented Dec. 17, 1912.

3 SHEETS—SHEET 2

Fig. 2.

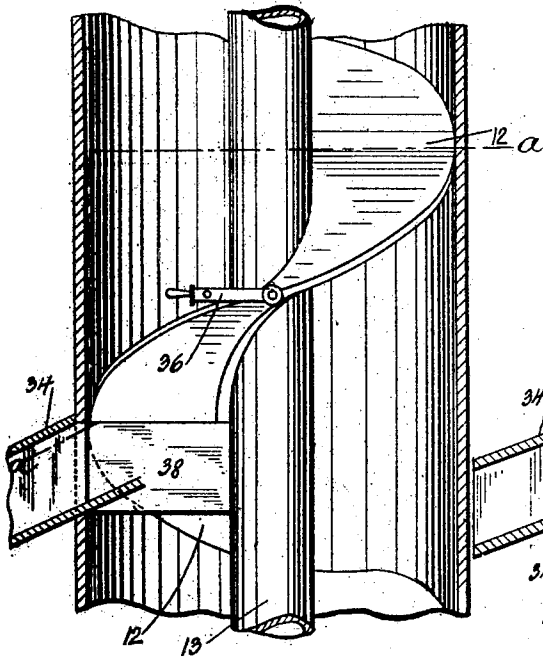


Fig. 3.

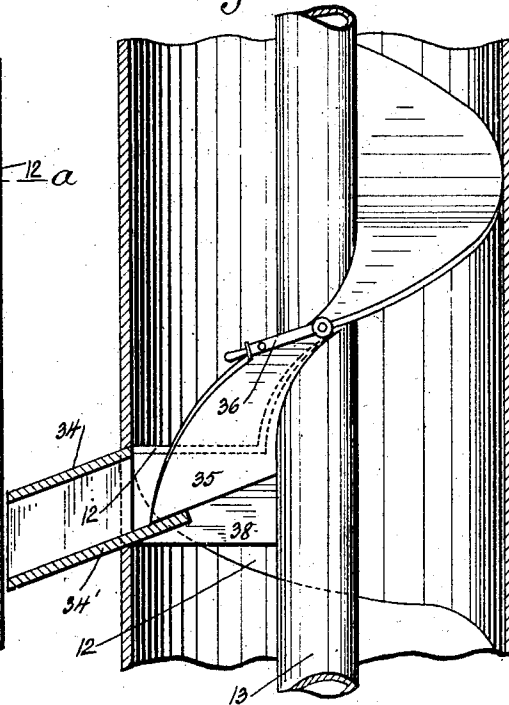
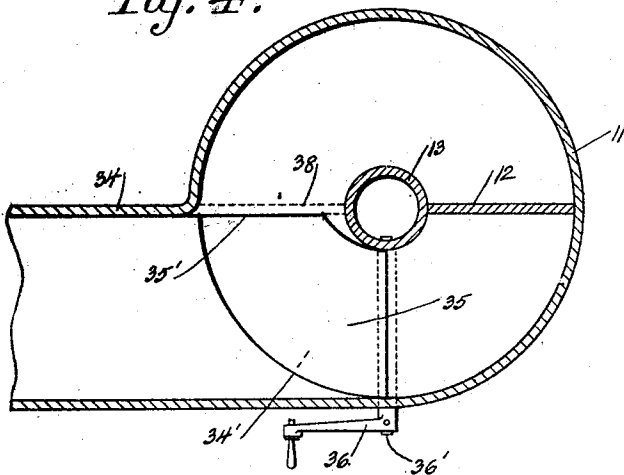


Fig. 4.



Witnesses:
 James G. Bethell.
 Walter C. Strang

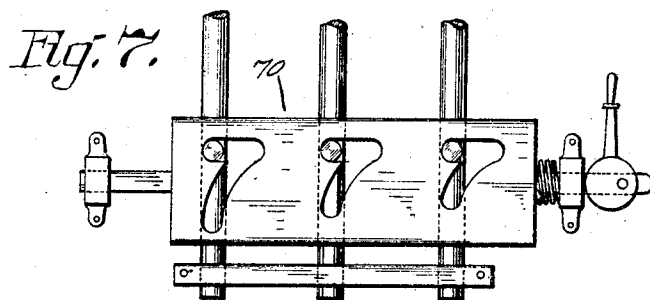
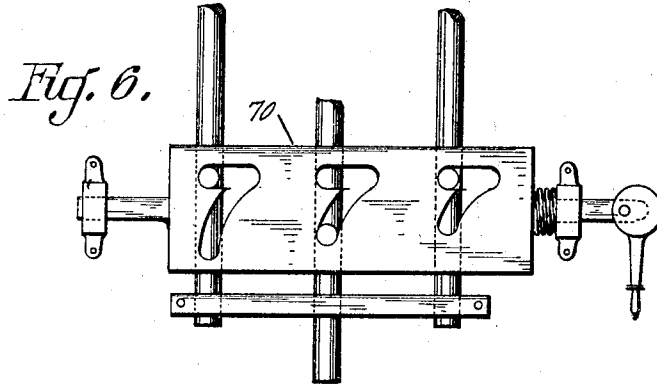
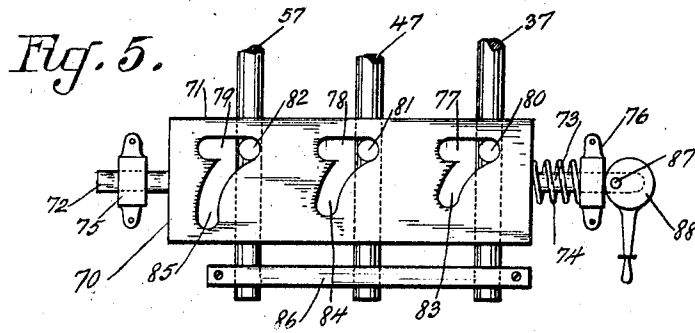
Inventor:
 Martin C. Schwab
 By C. M. Nissen
 Attorney

M. C. SCHWAB.
 SWITCH FOR GRAVITY CONVEYERS.
 APPLICATION FILED AUG. 24, 1908.

1,047,309.

Patented Dec. 17, 1912.

3 SHEETS-SHEET 3.



Witnesses:
 Ernest L. Gale, Jr.
 James G. Bethell.

Inventor:
 Martin C. Schwab
 By C. M. Nissen
 Attorney

UNITED STATES PATENT OFFICE.

MARTIN C. SCHWAB, OF CHICAGO, ILLINOIS, ASSIGNOR TO GRAVITY CONVEYOR COMPANY, A CORPORATION OF NEW YORK.

SWITCH FOR GRAVITY-CONVEYERS.

1,047,309.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed August 24, 1908. Serial No. 449,929.

To all whom it may concern:

Be it known that I, MARTIN C. SCHWAB, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Switches for Gravity-Conveyers, of which the following is a specification.

My invention relates to improvements in gravity conveyers, and has for one of its objects the provision of means for discharging articles at any desired floor.

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

In the accompanying drawings, Figure 1 illustrates in side elevation a well known type of spiral gravity conveyer having my invention applied thereto; Fig. 2 is a detail view of a switching device in normal position; Fig. 3 is a view similar to Fig. 2, showing the switching device in operative position; Fig. 4 is a plan view of Fig. 2 on the section line *a-a*; and Figs. 5, 6 and 7 illustrate in detail various positions of my improved interlocking device.

Similar characters of reference denote similar parts in all of the figures.

Referring to Fig. 1, 10 designates a spiral gravity conveyer which comprises an outer shell or casing 11 and an inner central core 13 between which is located a spiral conveying surface 12. The various landings or floors which are connected by the conveyer are designated by 20, 30, 40, 50 and 60. At each of these floors, openings 31, 41, 51 and 61 are provided which are preferably slightly above the floor level and which afford communication between the landings and the interior of the conveyer, and through which articles may be placed in the conveyer. These openings may be closed by suitable doors, as 32, 42, 52 and 62. Other openings for discharging articles from the conveyer may be provided below the surface of the spiral at various floors, or at any desired points, and such openings are designated on the drawings by 21, 33, 43 and 53. Troughs or chutes 34, 44 and 54 may be placed opposite these openings to guide the articles which are discharged through them to the desired location. The spiral 12 comprises movable sections, one of which is located adjacent to each trough or chute, as 34. This sec-

tion is designated by 35, and is clearly shown in Figs. 2, 3 and 4. It is pivoted upon a rod 36 and may be moved by means of a crank arm 36. This movable section of the spiral is reduced in width at its free end 35' so that it will not bind against the central core 13 when rotated into its lowered position. A guide 38 of suitable height may be arranged vertically below the spiral and adjacent to the free end of the movable section 35. The lower surface of the trough or chute 34 designated by 34' extends into the conveyer and acts as a guide for discharging articles, as well as a support for the movable section of the spiral 35 when the latter is in operative position. The movable sections of the spiral are normally held in the position shown in Figs. 1 and 2, so that the spiral blade forms a continuous unbroken conveying surface throughout its entire length. To each crank arm of the several movable spiral sections is connected a vertical rod, as 37, 47 and 57, all of which extend the full length of the conveyer and by means of which a person on any landing or floor may operate the corresponding pivoted spiral section so as to effect the discharge of descending articles either at his own floor or at any other desired floor.

It is readily seen that when all of the movable spiral sections are in normal raised position, descending articles will continue on down the spiral conveying surface and be discharged at the lowermost discharge opening 21 at the floor or basement 20. When, however, a movable section, such as 35, is lowered by means of its connected rod 37 into operative position as shown in Fig. 3, any articles which may be descending from above will be guided out of the conveyer by the chute 34 and discharged onto the floor 30.

In the operation of this apparatus, it is very desirable to prevent interference between the different floors: that is, to have the apparatus so arranged that when a person on any one floor has operated a movable spiral section at the particular landing or floor at which he desires to have articles delivered or discharged, no one can operate any of the other sections of the spiral until the first person is through. For this reason, I have provided a non-interference or interlocking device which I will now describe.

All of the vertical rods 37, 47 and 57 pass through an interlocking device 70. By referring to Figs. 5, 6 and 7, the operation of this interlocking device will be clearly seen. It comprises a locking plate 71 provided at its ends with extension pieces 72 and 73 slidable in the supporting guides 75 and 76, respectively, thereby permitting a horizontal movement of the locking plate. The locking plate 71 is provided with slots, there being as many slots as there are vertical rods 37, 47 and 57. The slots consist of horizontal portions 77, 78 and 79 and downwardly extending curved portions 83, 84 and 85, the right-hand end of each horizontal portion forming also the upper end of the curved portion, and these right-hand portions normally contain pins 80, 81 and 82 which are secured to the corresponding vertical rods 37, 47 and 57. The curved portions of the slots vary in length in a vertical direction, in order to allow for the different lengths of the crank arms 36, 46 and 56 connected to the corresponding movable spiral sections 35, 45 and 55. The horizontal portions of the slots are equal in length and the curved portions extend the same distance to the left as the horizontal portions so that the lower end of each curved portion is in vertical alignment with the end of the horizontal portion. On the extension piece 73 is a compression spring 74 which bears against the support 76 and the locking plate 71 and tends to keep the latter in its left-hand position, as shown in Fig. 5. A cam lever 88 is pivoted at 87 to the extension piece 73 and is normally in contact with the bearing 76, or substantially so. 86 designates a stationary guide for the lower ends of the vertical rods 37, 47 and 57, which allows a free movement of the same in a vertical direction.

In order to illustrate the operation of the locking device, we will assume that a person on the floor 40 moves the vertical rod 47 in a downward direction, the parts of the locking device being in the position shown in Fig. 5. Upon such movement the pin 81 connected to the rod 47 moves downward in the curved slot 84, and thereby effects a movement of the locking plate 71 in a right-hand direction against the action of the compression spring 74, the extent of movement of the rod being limited by the length of the slot 84. As the locking plate is thus moved to the right, the pins 80 and 82 corresponding to the rods 37 and 57 take up a position at the left-hand end of the corresponding horizontal slots 77 and 79, in which position they as well as the corresponding rods 37 and 57 and connected movable spiral sections are securely locked against movement in any direction. This position is shown in Fig. 6. In case either of the rods 37 or 57 are operated so as to cause descending articles to be discharged at the corresponding floors 30

and 50, the other rods and connected parts would be securely locked against movement in a similar manner. When it is desired to have articles discharged at the lowermost or basement landing 20, the cam lever 88 is raised by the operator at that floor to the position shown in Fig. 7. The locking plate 71 is thereby moved over to the right, securely locking all of the rods and connected spiral sections against movement until released by returning the cam lever 88 into its normal position as shown in Figs. 5 and 6.

The locking device 70 is preferably arranged toward the lower part of the conveyor so as to be within easy reach of an operator on the basement floor 20. This device could just as well be arranged elsewhere if so desired, in which case it would be well to arrange the cam lever 88 so that it would be under the control of an operator in the basement.

I sometimes provide handles 90 upon the vertical rods 37, 47 and 57 which are normally in alignment with each other and which are within convenient reach of an operator at each floor. These handles not only facilitate the operation of the rods and their connected parts, but also act as indicators to determine at any time which particular outlet is being used for discharging articles from the conveyor. When the basement outlet alone is being used and all of the rods are locked against movement, it is only necessary to ascertain that fact by attempting to move any one of the rods.

Gravity conveyers of the type here shown are in common use. They are arranged to transport articles from any floor of a building to any other floor below.

Manifestly my invention greatly increases the usefulness of any conveyor to which it is applied, as by it one is enabled to place articles in the conveyor and have them delivered automatically at any one of several desired points.

While I have illustrated and described a construction embodying a preferred form of my invention, it is capable of many modifications.

I desire not to be limited to the precise construction and arrangement of parts herein disclosed, since it is obvious that those skilled in the art could readily make various changes in details without departing from the spirit and scope of my invention.

What I claim as new and desire to have protected by Letters Patent of the United States is:—

1. In a gravity conveyor, a spiral conveying surface comprising an upper section and a lower section spaced apart and an intermediate section bridging said space and movable downwardly into position to deflect articles from the conveying surface.

2. In a gravity conveyor, the combination

with a casing having a discharge opening therein, of a spiral conveying surface comprising sections extending above and below said opening and an intermediate hinged section, and means for swinging the hinged section downwardly into position to break the continuity of the conveying surface.

3. In a gravity conveyer, the combination with a casing, of a spiral conveying surface comprising upper and lower fixed sections and an intermediate section connected by a horizontal hinge to the upper fixed section, and means for swinging the hinged section downwardly below the normal line of the spiral surface.

4. In a gravity conveyer, the combination with an outer casing, of a central core, an intermediate spiral conveying surface, comprising an upper section and a lower section spaced apart, a horizontal hinge rod journaled in the core and casing at the lower end of the upper section, a hinged section connected to said rod and normally in position to connect said upper and lower sections, and means for swinging said hinged section downwardly below its normal position.

5. In a gravity conveyer, the combination with a casing having a discharge opening, of a chute located at said opening, a spiral conveying surface comprising an upper and a lower section extending respectively above and below said opening and an intermediate hinged section normally in alinement with said upper and lower sections, means for swinging the hinged section below its normal position, and a partition extending

downwardly from the upper end of the lower section and forming with the hinged section means for deflecting articles from said conveying surface into the chute.

6. In a gravity conveyer, the combination with a casing, of a spiral conveying surface comprising a plurality of sections and intermediate hinged sections normally in alinement with the stationary sections, separate means for swinging the hinged sections downwardly below their normal positions, and interlocking mechanism for preventing the operation of more than one section at a time.

7. In a conveyer, the combination with a slide-way, of a section normally completing the continuity of said slide-way, and a guide depending from said slide-way and co-acting with said deflecting device to direct descending articles from said slide-way.

8. In a gravity conveyer, the combination with an outer shell, an inner core, and an interposed spiral blade, of a section normally forming a part of said blade but capable of being tilted to form a break in the spiral surface of said blade, and a fixed vertical guide wall at the lower end of such break to assist in directing articles out of the conveyer.

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,
VERNA A. WALL.