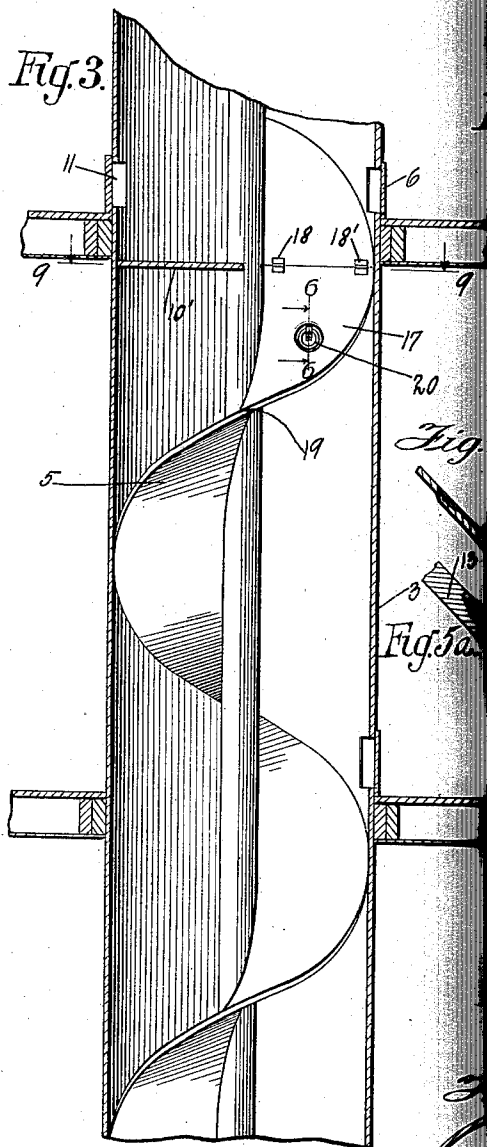


1,011,253.



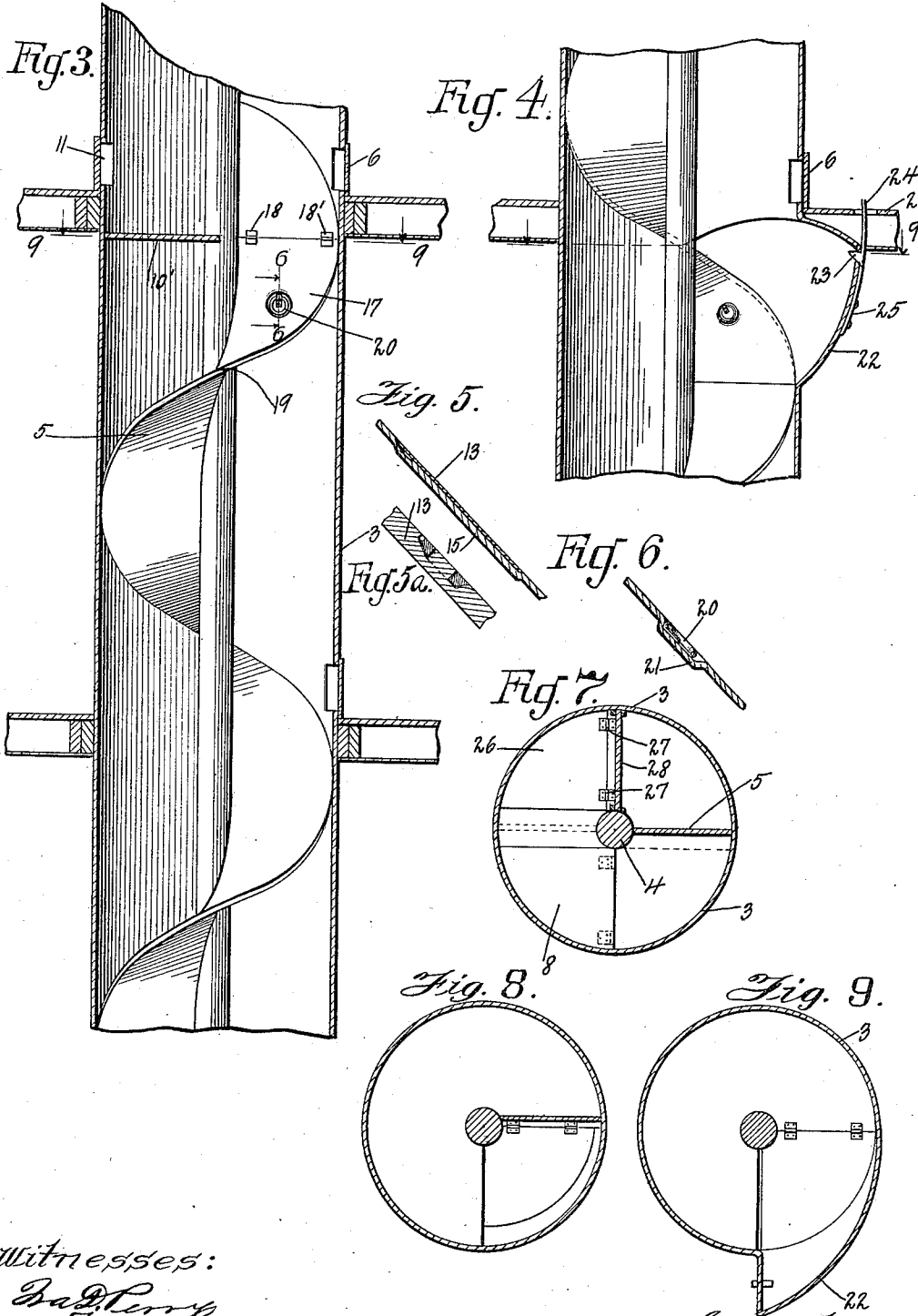
Witnesses:
Wm. J. Perry
James L. Bethell.

M. C. SCHWAB.
SHELF FOR SPIRAL GRAVITY CONVEYERS.
APPLICATION FILED AUG. 14, 1907.

1,011,253.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 2.



Witnesses:

James L. Bethell.

Inventor:
Martin C. Schwab
By *C. M. Nissen, Atty.*

UNITED STATES PATENT OFFICE.

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

SHELF FOR SPIRAL GRAVITY-CONVEYERS.

1,011,253.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed August 14, 1907. Serial No. 388,547.

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 Shelves for Spiral Gravity-Conveyers, of which the following is a specification.

My invention relates to spiral gravity conveyers, and one of its objects is the provision of a shelf for such conveyers on which articles desired to be conveyed may be placed.

A further object of the present invention is the provision of a movable shelf within the conveyer which may intercept the articles so as to prevent them from descending.

More particularly it is the object of my invention to provide a shelf for a spiral gravity conveyer, which shelf may normally be a part of the spiral blade or resting thereon, and on which shelf when moved to a predetermined position and there held by a latch device may be stored various articles extending from such shelf upwardly through the conveyer.

Other objects of the invention will appear more fully hereinafter, the novel combinations of elements being set forth in the appended claims.

In the accompanying drawings, Figure 1 represents a sectional elevation of a spiral gravity conveyer with one form of my invention applied thereto; Fig. 2 is a similar view showing a modification of the invention shown in Fig. 1; Fig. 3 shows a further modification in that the shelf adapted to be deflected is normally a section of the spiral blade; Fig. 4 is a vertical longitudinal sectional view taken through the central portion of Fig. 3; Fig. 5 is a section taken on the line 5—5 of Fig. 2 looking in the direction of the arrows; Fig. 5^a is a detailed enlarged view of a handle which may be applied to the shelf shown in Fig. 5; Fig. 6 is a sectional view taken on the line 6—6 of Fig. 3 looking in the direction of the arrows; Fig. 7 is a transverse plan sectional view of Fig. 1 looking in the direction of the arrows; Fig. 8 is a transverse sectional view of Fig. 2 looking in the direction of the arrows; and Fig. 9 is a transverse sectional plan view on the line 9—9 of Fig. 3, this line being also indicated on Fig. 4.

Referring to Fig. 1, it will be seen that I have shown an ordinary spiral gravity conveyer extending upwardly through the floors 1 and 2 and comprising an outer shell or casing 3 and an inner core 4, between 60 which casing and core is interposed a helical blade 5. The outer shell may be provided with openings having doors or other closing devices at any points desired. In this instance I have shown an opening at 6 for the floor landing 1 and at 7 for the floor landing 2. Through these openings the articles may be passed or placed on the surface of the blade 5 and allowed to descend by gravity to a lower floor or the basement, where 70 the articles may be allowed to slide through an opening onto an inclined plane and thence to a table or receptacle for the same. Or such articles may be ejected by centrifugal force through an opening just above 75 the blade at a lower floor. It may sometimes happen that the articles cannot be taken care of where ejected from the conveyer with sufficient rapidity to allow the articles to be placed on the conveyer at an 80 upper landing continuously. This causes delay in the handling of packages at an upper landing and takes up space which should be available for other purposes. Or in some instances where space is to be economized 85 it may be desired to use the conveyer as a storing means for the articles. I have therefore provided a shelf within the conveyer which may be brought to such a position as to intercept the articles and hold the same 90 from descending. In Fig. 1 I have shown a movable shelf 8 pivoted or hinged at 9 between the core 4 and the outer shell 3 to the fixed shelf 10 which as seen in Fig. 7 is quadrant-shaped. As shown in Fig. 1 the 95 shelf 8 is resting on the fixed shelf 10 and the articles passing from the landing 2 to the landing 1 along the spiral blade 5 will have free movement to a point below the landing 1. If, however, the shelf 8 is tipped 100 or deflected to the dotted line position 8' so that its inner straight edge rests on the blade 5, the articles will be stopped in their descent at the floor 1. It is therefore obvious that if the placing of articles into the conveyer through the opening 7 at the landing 2 is continued, such articles may be piled on top of one another until the conveyer is filled to the opening 7 or to an opening at a higher level. The space with- 110

in the conveyer may therefore be utilized for storing the articles if so desired. It will be seen that I have shown an opening 11 in this instance in the outer shell 3 diametrically opposite the opening 6 at the landing 1. Through this opening 11 the articles may be moved from the shelves 8 and 10 onto the auxiliary or supplemental spiral blade 12 which may extend to a lower landing through an opening to the place where the articles are desired to be sent. In some instances I may provide a horizontal shelf at a convenient distance from the floor landing pivoted vertically, preferably to the outer shell 3 at an in-take opening, and arranged to swing in a horizontal plane from a position outside the conveyer to a position inside the conveyer. If such a vertically pivoted and horizontally moving shelf has its plane coinciding with the fixed shelf 10 it is evident that it may be used in place of the pivoted shelf 8 in the manner already stated. Such a horizontally moving shelf may, however, be used in connection with the opening 11 and the articles pushed from such shelf directly onto the supplemental blade 12, or onto a continuous blade if desired, or I may provide a fixed shelf horizontal or inclined at or near an opening in the conveyer. It should be understood that I also contemplate a sliding shelf properly guided in suitable grooves or by other means, and movable for instance through a horizontal slot in the outer shell of the conveyer into such a position as to take the place of the fixed shelf 10 and of the shelf 8 when the latter is in its dotted line position 8'. In such event, when the slide shelf is moved into position to intercept descending articles and hold the same so that they may be stored in the conveyer, the articles may be more easily released by simply pulling the shelf from beneath the articles and thus permitting the latter to slide farther down the blade 5 to an opening or landing below the landing 1.

In Fig. 2 I have shown a shelf 13 which is pivoted or hinged at 14, 14' to the blade 5 itself, and is preferably so arranged that normally it lies in a recess 15 or is countersunk into the upper portion of the blade 5 as shown in Fig. 5 which is a section taken on the line 5—5 of Fig. 2 looking in the direction of the arrows. In Fig. 5^a I have shown an enlarged portion of the shelf 13 showing a pivoted ring countersunk therein, which ring may be lifted by the thumb nail and then grasped to move the shelf 13, to a substantially horizontal position in alinement with the fixed shelf 10'. Some means is intended to be provided for holding the shelf 13 in such horizontal position so that descending articles will be stopped and held at the landing 2 until removed through the opening 7 or the opening 16, or

until the shelf is released and the articles allowed to again descend to lower landings or to the basement.

In Fig. 3 I have shown another modification of my invention, in which a shelf 17 comprises a section of the blade 5 pivoted or hinged at 18, 18' and normally having its free lower beveled end resting on the corresponding upper end of the lower section of the spiral blade 5. I have herein shown the lower end of the shelf 17 beveled at 19, but it should be understood that other interlocking devices may be used if desired, or stops on the inner surface of the outer shell 3 may be used so that normally the shelf 13 lies with its surface continuous with the upper and lower portions of the spiral blade. In order to permit the section 17 to be readily lifted to register with the fixed shelf 10', a ring 20 is provided and normally rests in a recess or countersunk portion 21 of the shelf 17. This is shown in detail in Fig. 6.

In Figs. 4 and 9 is shown a suitable latch device which may be used for holding the shelf 17 of Fig. 3 or the shelf 13 of Fig. 2 in its uppermost position, registering with the fixed shelf 10', or in such position as to keep the articles from descending, and consequently storing the same within the conveyer. In order to provide sufficient space for such upward movement of the shelves, the outer shell 3 is enlarged at 22 and the latch device in this instance comprises a catch 23 carried by a spring 24 rigidly attached at 25 to the enlarged portion 22 and having its upper end extending through the floor 2 so that the catch 23 may be released manually and the shelf 17 allowed to fall automatically back to normal position.

It will be observed by an inspection of Fig. 7 that an additional horizontal quadrant-shaped door 26 is provided for the form of conveyer shown in Fig. 1. This door or shelf 26 is shown hinged at 27, 27' to a fixed cross piece 28 extending between the core 4 and the outer shell 3. The position of this fixed cross piece 28 may be such that the shelf 26 may be tipped upwardly and back against the lower surface of the blade 5 and held in such position by gravity. Now, when the shelf 26 is thus tipped upwardly and the shelf 8 occupies a position shown in Fig. 1, the articles may be allowed to descend along the upper surface of the blade 5 past the floor 1. Or articles may be placed onto the blade 12 through the opening 11 at the floor 1. If, however, the shelf 8 is brought to the dotted line position 8' the articles descending from the floor 2 will be stopped, and when the insertion of packages through the opening 7, for instance, is continued those resting on the shelves 8 and 10 may be so crowded or

moved along that some of them will move onto the blade 12. The shelf or door 26 is therefore first closed so that no articles can descend onto the blade 12, and nearly the entire space within the shell 3 above the floor 1 may be used for storing purposes.

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 described my invention and physical embodiments of the same, what I claim and desire to have protected by Letters Patent of the United States is:—

1. The combination with a gravity conveyor comprising an outer shell, an inner core and an interposed helical blade, of a pivoted shelf arranged to intercept and hold articles descending along the blade above the shelf, a fixed shelf with which the movable shelf is arranged to register, means for lifting the shelf, a latch device for automatically locking the shelf in its registering position, and an extension from said latch device to permit the latter to be released manually and the shelf to drop to its normal position automatically.

2. The combination with a gravity conveyor comprising an outer shell, an inner core and an interposed helical blade, said outer shell having an enlarged portion, a shelf movable in such enlarged portion, a latch device for holding such shelf in a position to prevent articles from descending past such shelf, and means for operating the latch device to release the same and permit the shelf to return automatically to normal position.

3. The combination with a gravity conveyor comprising an outer shell, an inner core and an interposed helical blade, of a shelf movable into position to intercept and hold descending articles, and a fixed shelf forming a continuation of said movable

shelf when the latter is in its intercepting position.

4. The combination with a gravity conveyor comprising an outer shell, an inner core and an interposed helical blade, of a shelf movable into a horizontal position in which it extends across said blade, a fixed shelf registering with said movable shelf, and a supplemental blade extending to said fixed shelf.

5. The combination with a gravity conveyor, of a movable shelf on which the articles may be stored, and a fixed shelf between said movable shelf and the egress or out-take opening in the conveyor.

6. The combination with a gravity conveyor comprising an outer shell, an inner core and an interposed helical blade, of a movable shelf on which articles may rest while being stored within the conveyor, a supplemental helical blade, and a fixed shelf connecting the movable shelf and said supplemental blade.

7. The combination with a gravity conveyor comprising an outer shell, an inner core and an interposed helical blade, of a fixed partition or shelf within the conveyor, a shelf movable into and out of position to intercept and hold descending articles to store the same within the conveyor, a supplemental blade interposed between the outer shell and inner core and extending upwardly to said fixed shelf, and an additional door for closing the passageway from said fixed shelf to said supplemental blade and to prevent articles from moving onto such supplemental blade while being stored within the conveyor.

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

MARTIN C. SCHWAB.

Witnesses:

J. F. JEOLICKER,
T. VLADUNOFF.