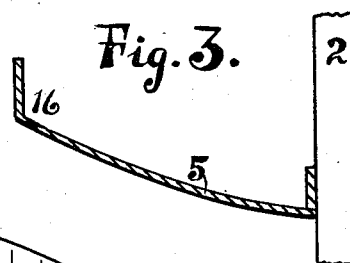
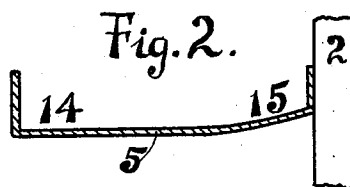
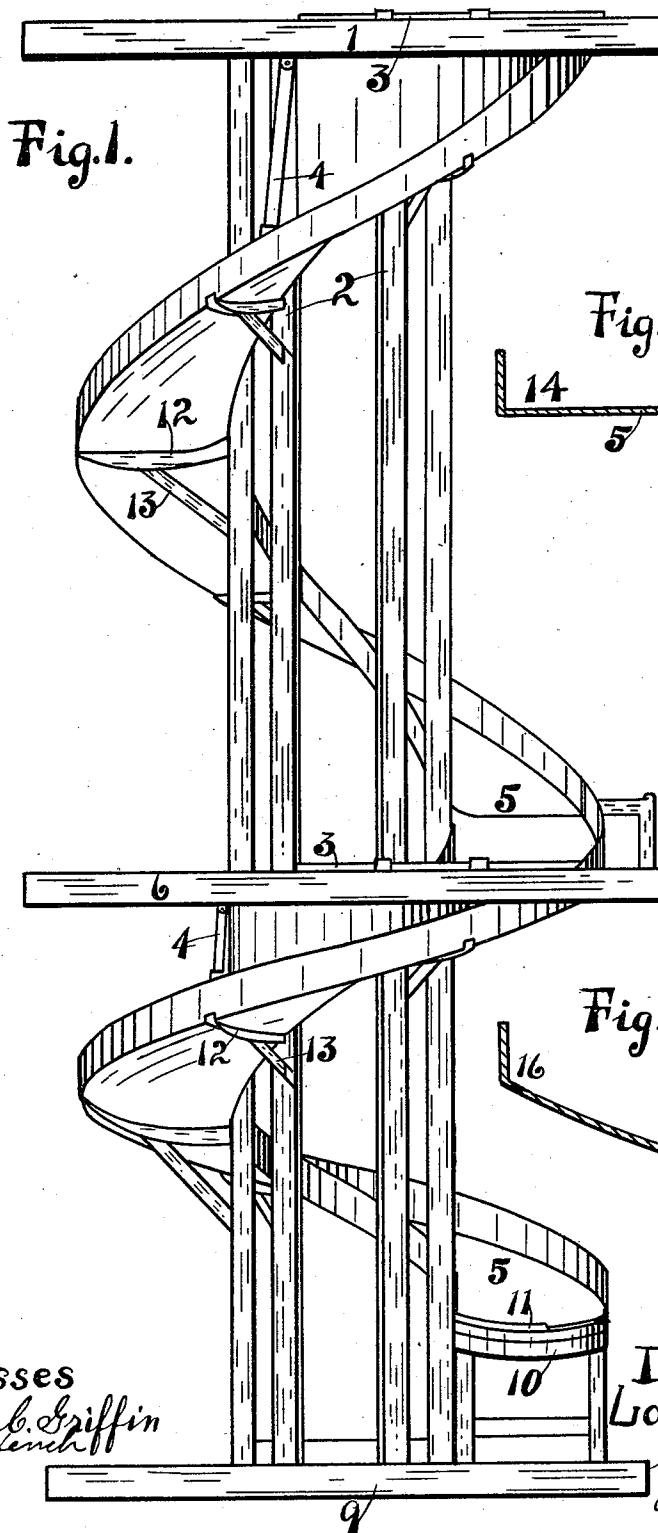


1,013,292.

L. GOEHR.
MERCHANDISE CHUTE.
APPLICATION FILED JULY 12, 1909.

Patented Jan. 2, 1912.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

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Fig. 4.

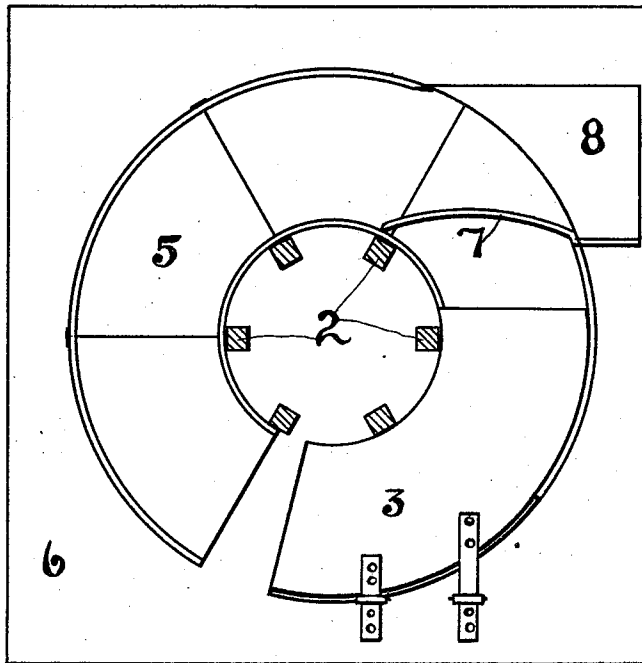
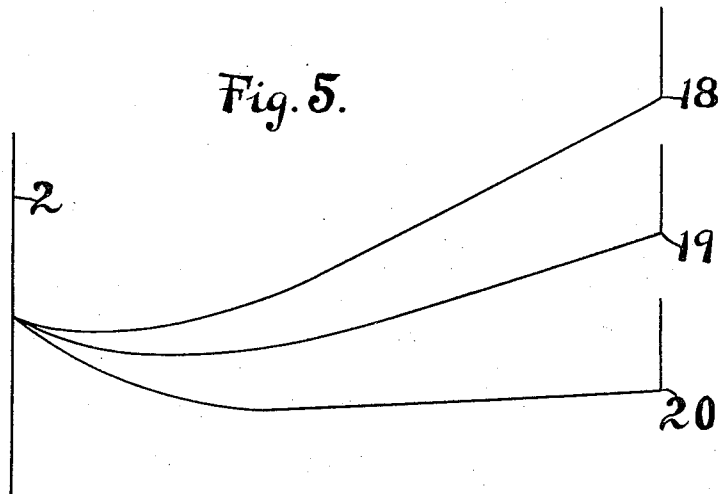


Fig. 5.



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UNITED STATES PATENT OFFICE.

LOUIS GOEHR, OF SAN FRANCISCO, CALIFORNIA.

MERCHANDISE-CHUTE.

1,013,292.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed July 12, 1909. Serial No. 507,250.

To all whom it may concern:

Be it known that I, LOUIS GOEHR, a citizen of the United States, residing at 2168 Fifteenth street, San Francisco, in the county of San Francisco and State of California, have invented a new and useful Merchandise-Chute, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a chute used for the purpose of delivering merchandise from the upper stories of a building to the lower stories thereof an object of the invention being to provide a chute which can have its inlet and discharge doors placed in any desired position.

The common form of spiral chute must have a given "pitch", for any given class of material, *i. e.* for sacks a certain pitch is used, for boxes a certain other pitch is used, while if a mixture of sacks and boxes is thrown into the chute the pitch must be an intermediate one to prevent the breakage of the boxes or the too rapid travel of the sacks, etc. The result of this is that the pitch must be for all chutes very nearly the same in amount and there can be little variation, since the chute must run the materials rapidly enough to prevent clogging, and yet it must not run them rapidly enough to accelerate them and cause breakages. Since the chutes are usually placed in a corner in order to save space, or adjacent one wall of a building it very often happens that the inlet on a given floor is in an impossible position, while the outlet gate must also be placed in a position that it is impossible to discharge the goods from. This can be illustrated in this manner, suppose a chute of the common form having a pitch of seven feet is used, the chute being placed in the corner made by two walls. The inlet from the upper story is located in a convenient place, but it happens that the distance from story to story is fourteen feet, thus the next inlet would be in the same place as the first one and the outlet gate would be in a good location as well, but the story below happens to be only ten feet. The result of this would be the chute would have completed one turn and started three feet of pitch on another, which would bring the inlet gate into the corner between the two walls, while the outlet would be directly against one of the walls, and since most buildings are con-

structed with stories of different heights, and since these heights are not estimated to be an integral number of the pitches of such a chute as is mentioned every story must have its inlet and outlet gate in a different place.

The word pitch as used herein refers to the distance from one portion of the chute to the next adjacent portion thereof immediately above, or immediately below the first portion; that is to say, where the chute travels through a considerable distance as in the upper part of Figure 1, the chute is said to have a high pitch, while where the chute travels through a much less distance, as shown on the lower part of Fig. 1, the chute is said to have a low pitch.

This invention seeks to and does avoid the necessity of adhering to a given pitch for a given class of materials by altering the configuration of the floor of the chute for different pitches of the spiral whereby the materials thrown into the chute are always moved fast enough, and yet without accelerating their speed even though the pitch of the chute has been changed from five feet to ten feet.

It is to be observed that the determining factors in the case of a sliding body are the distance and friction throughout that distance, that is if the body in moving from the top of a building to the bottom, assuming the speed to be equal at all times, moves 200 feet and the friction is a given amount the tendency to retard the body with a given initial velocity will be twice as great as if the body moves only 100 feet from the top to the bottom of the same building with the same friction. In this invention the chute bottom is so constructed that the distance traveled from the top to the bottom of the building is very small with a low pitch chute, while it is very considerable with a high pitch chute, thus making the velocity of the moving body substantially the same in a chute having a pitch of only five feet, or in a chute having a pitch of ten feet, all intermediate velocities being produced by intermediate changes in the shape of the chute bottom.

In the drawings, in which the same numeral of reference is applied to the same portion throughout the several views, Fig. 1 is a view of such a chute as is herein described in vertical elevation, Fig. 2 is a vertical sectional view showing the shape and

terrestrial position of the bottom of a chute having a pitch of ten feet, Fig. 3 is a vertical sectional view of the chute at a point where it has a pitch of only five feet, Fig. 4 is a sectional plan view of the chute showing the trap door used at the inlet openings and showing one of the discharge gates, or switches, and Fig. 5 is a diagram illustrating the bottom shape of a chute having a pitch of ten feet, a chute having a pitch of seven and one half feet and a pitch of five feet.

The drawing illustrates a chute adapted to discharge merchandise from a three story building, the upper floor of which is ten feet from the second floor while the second floor is only five feet from the lower floor discharge table. It will be noted however, that almost any distance can be readily met by a combination of several turns of a chute having the five foot pitch, or some pitch intermediate between five feet and ten feet, that is if the floors were sixteen feet the inlet and outlets could be arranged in the desired places and the pitch between those two floors could be made 8 feet with two turns of chute, other combinations being constructed to suit any conditions.

The numeral 1 represents the top floor and 2 the posts supporting the same, although, of course, in a building the floors would be supported by the building and not the posts as illustrated in these drawings. The floor has an opening therethrough which is covered with a fire door 3 when the chute is not in use, there being one such door at each floor having an opening therethrough. In order that there may be no danger from fire during the time the chute is in use a swinging fire door 4 is provided below each floor, said door being pushed open by the boxes or sacks as they slide down the chute, the weight being enough to close them after the package has passed through.

The chute is represented by the numeral 5 and it has a curbing 6 high enough to prevent the packages from being pushed out of the chute when a large mass of miscellaneous packages has piled up on the chute one above another, as often happens when the packages are thrown into the chute faster than they are taken away. Where the chute passes through a floor, as the floor 6 it is provided with a hinged gate 7 which may be used either as the curbing, when articles are to be sent below, or it may be interposed in their path to cause them to be delivered on a table 8 at that floor. The chute continues on to the lower floor 9 at which there is a table 10 placed for the reception of the goods thrown in the chute, said table having a bar 11 across its front end to prevent the goods from being pushed off onto the floor, the goods piling up in the

chute when the table has been filled. The chute bottom is supported by means of arms 12 which are secured to the posts 2, said arms being braced by means of the bars 13. The bottom of the chute between the two upper floors is made on the form illustrated in Fig. 2 and is adapted to cause the objects thrown into the chute to move to the outside of the chute and rub on the curb, the outside of the chute being flat as shown in said figure at 14, while the inside of the chute next the supporting posts is inclined and curved downwardly as shown at 15, the object being to cause the materials to pass down the chute by the longest possible path and thus be retarded the greatest possible amount. Since it is desired to have the discharge table on the lowest floor in the same position as on the other two floors, and since that floor is only one half the distance from the floor above it becomes necessary to have the chute make one complete turn again, but since this pitch is so low that under ordinary circumstances the goods will not move at all, the bottom of the chute is formed as shown in Fig. 3, the outer edge being curved upwardly as shown at 16, thus producing in the chute, a tendency to throw the goods to the supporting posts and cause them to rub the inside curb, and since the path thus produced is as three to eight to the outer curb the friction is only about one half what it is in the first instance and hence the goods will travel at substantially the same speed although the incline is only one half as great, and vice versa. The full sized chute for most establishments is about eight feet across, the posts being spaced about a circle three feet in diameter, but, of course, it is to be understood that the principle applies to chutes of different pitches and sizes. Since it will become necessary to use pitches of different amounts at different places in the same building it will become necessary to alter the configuration of the bottom of the chute as illustrated in Fig. 5. That is where the chute has an intermediate pitch the bottom of the chute will be formed as shown at 19, and in the same manner the bottom may be altered to suit other intermediate pitches. The chute bottom and sides are made of sheet steel in a plurality of sections, the joints of the bottom being immediately over the angles braces, whereby the rivets do not cut off, as they do when the joints are made between the angle braces. An advantage of this construction is that the posts may be set up and the braces secured in place and the bottom simply sprung down onto the braces and riveted in place. The entire chute is shipped in very small compass since the bottom is made up of a plurality of partly circular sections.

Having thus described my invention what

I claim as new and desire to secure by Letters Patent of the United States is as follows:

5 1. A merchandise chute whose pitch is differing in different parts thereof, said chute having its bottom constructed with different transverse inclinations according to the different pitch of the chute; whereby
10 objects passing down the chute will travel in contact therewith a greater distance, for each passage around the chute, when a high pitch is used and a less distance when a low pitch is used, substantially as described.

15 2. A spiral merchandise chute the pitch of which is different in different parts thereof having an inner and an outer curbing, a series of supports which said chute passes, a

series of brackets supporting said chute, the bottom of said chute being inclined outwardly and upwardly where a relative low pitch is used, and transversely inclined downwardly and outwardly where a relatively high pitch is used the transverse inclination of said chute being a like function of the pitch of said chute at intermediate
25 pitches, substantially as described.

In testimony whereof I have hereunto set my hand this 25th day of June, A. D. 1909, in the presence of the two subscribed witnesses.

LOUIS GOEHR.

Witnesses:

C. P. GRIFFIN,
S. B. PRIEST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."