F. V. HETZEL.

ELEVATOR.

APPLICATION FILED SEPT. 26, 1912.

1,266,262.

Patented May 14, 1918.

6 SHEETS—SHEET 1.

Fig. 1.

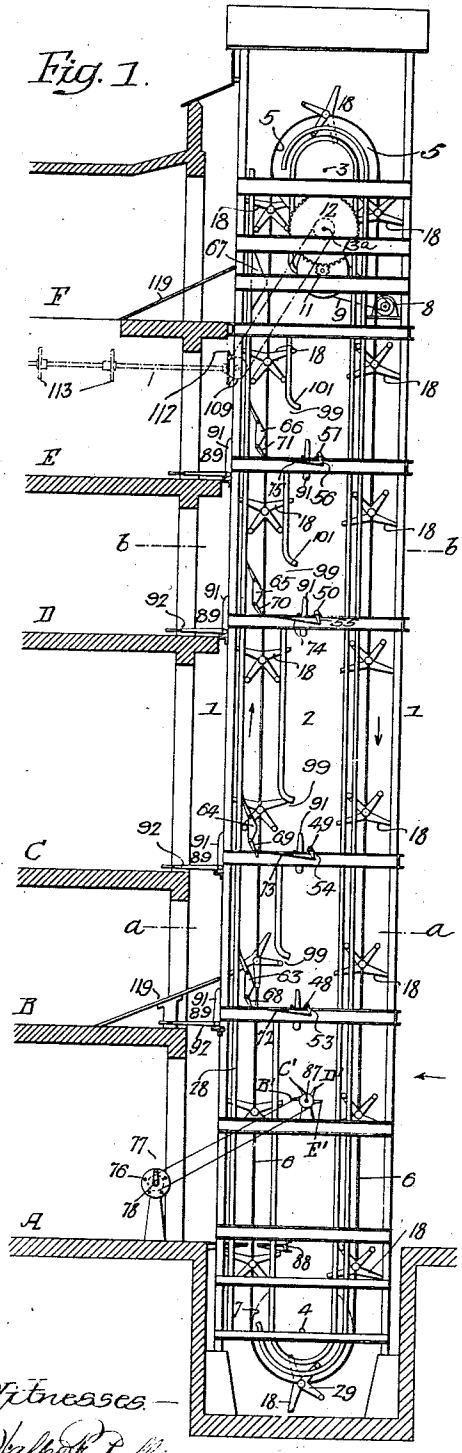
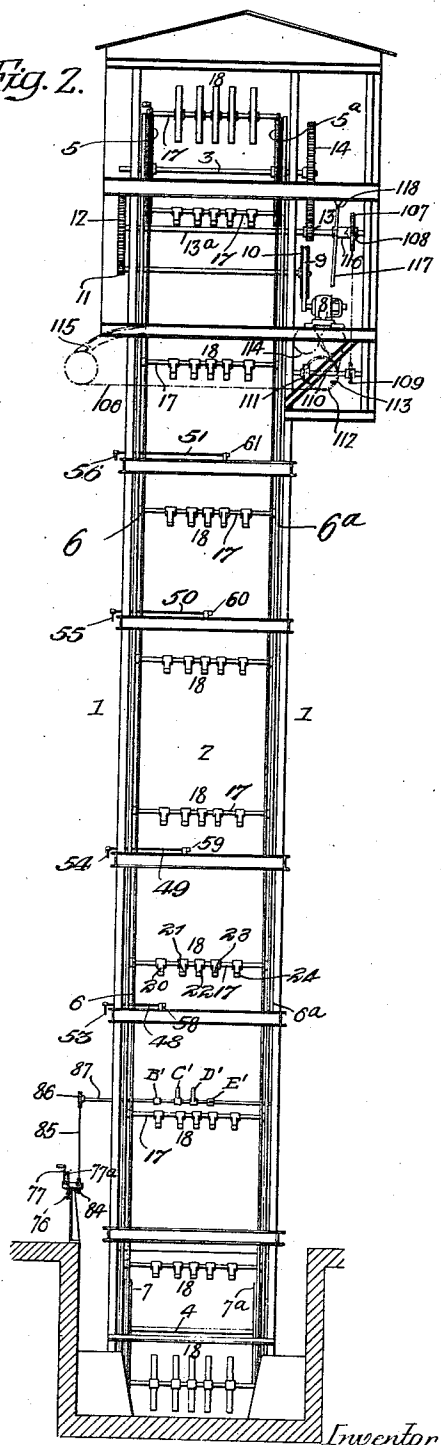


Fig. 2.



Witnesses—

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6 SHEETS—SHEET 2.

Fig. 6.

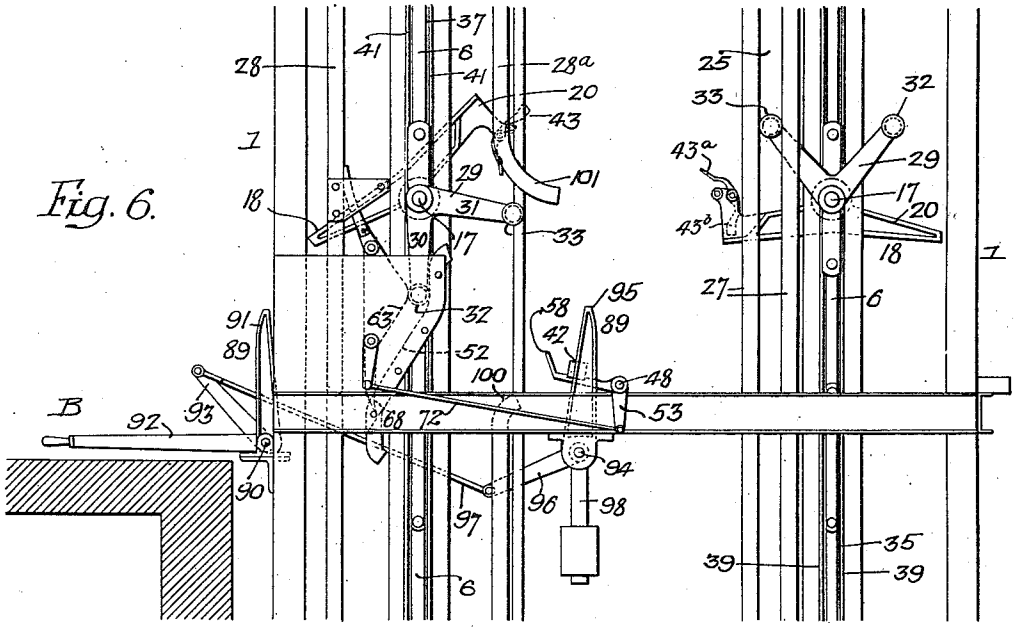
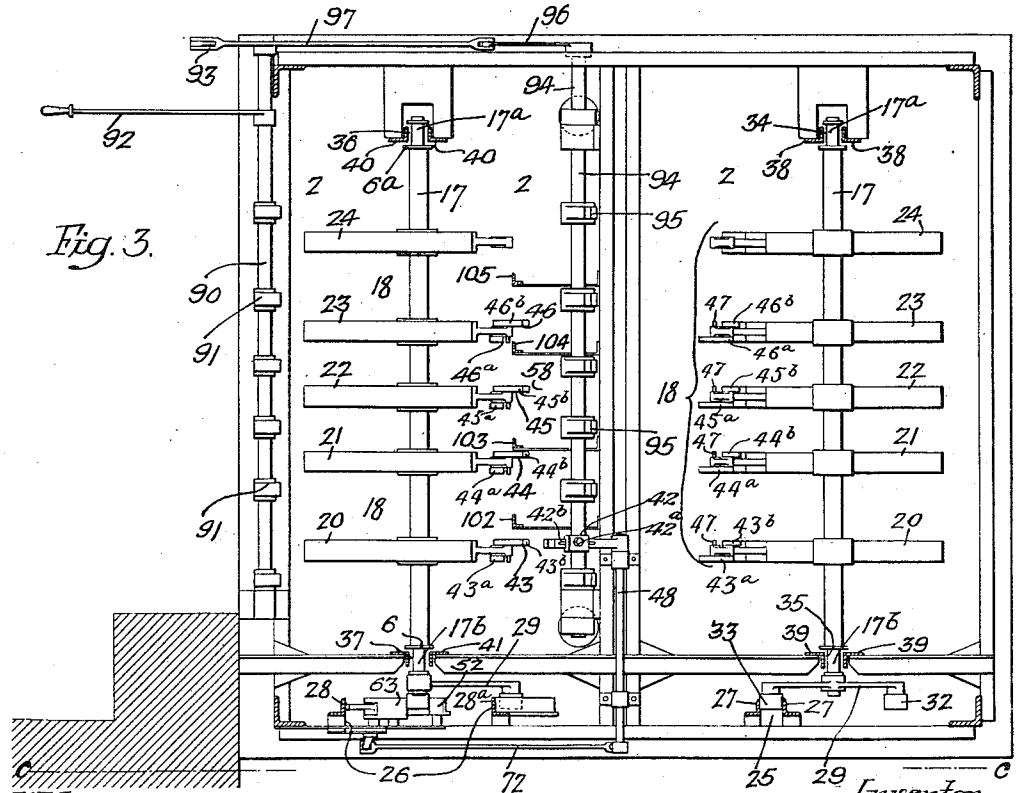


Fig. 3.



Witnesses.
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6 SHEETS—SHEET 3.

Fig. 4.

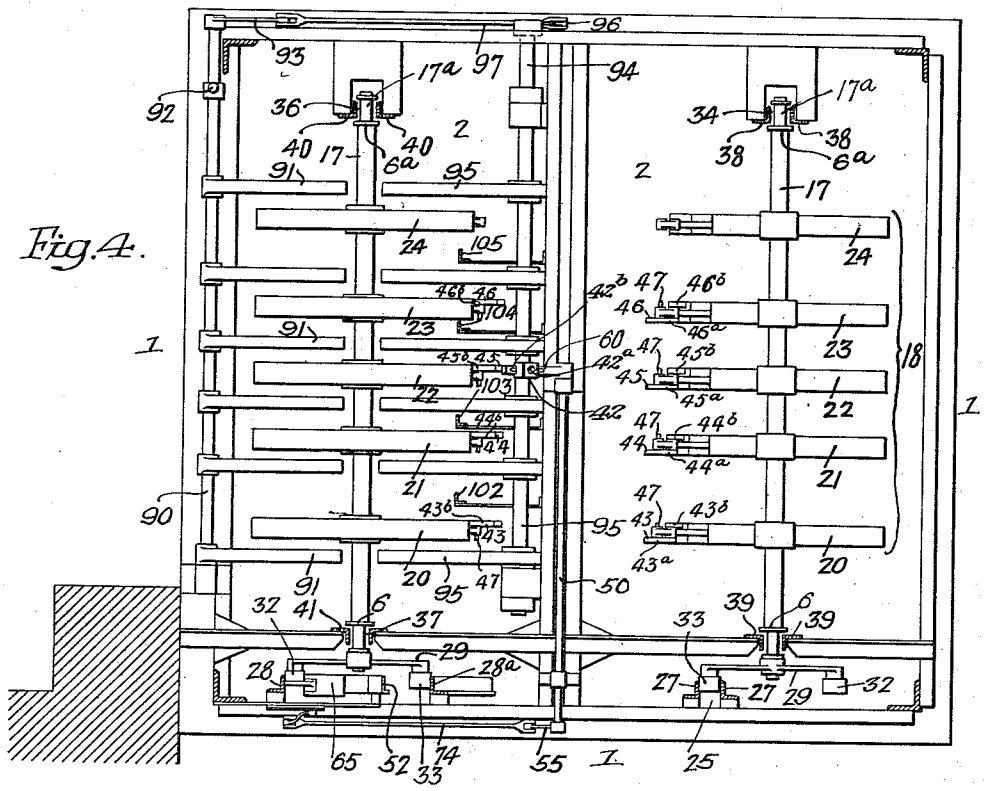


Fig. 13.

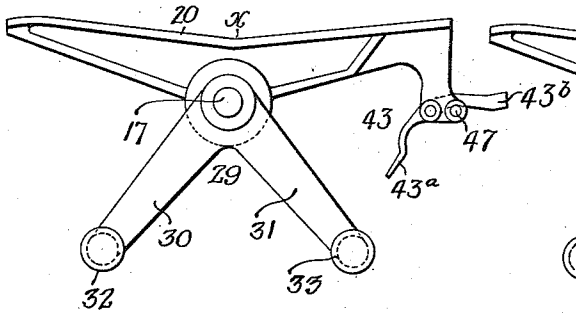
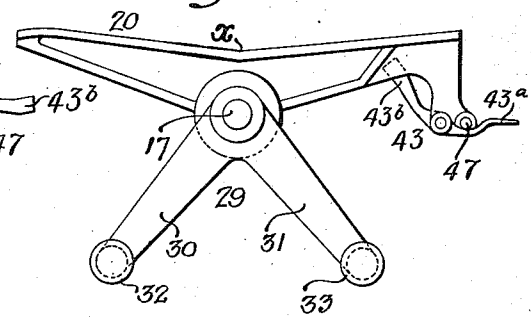


Fig. 12.



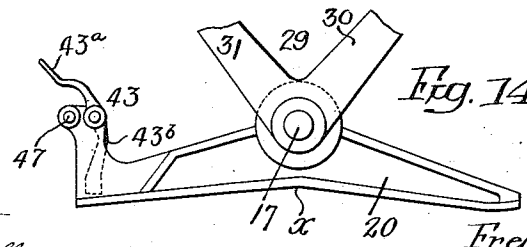


Fig. 14.

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6 SHEETS—SHEET 4.

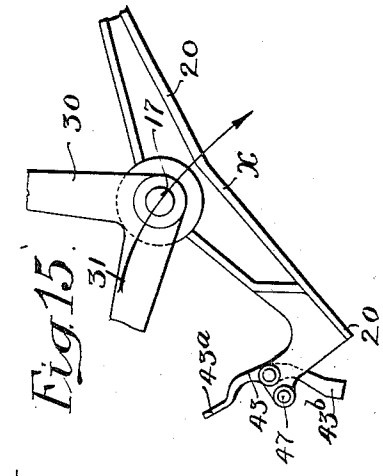


Fig. 15.

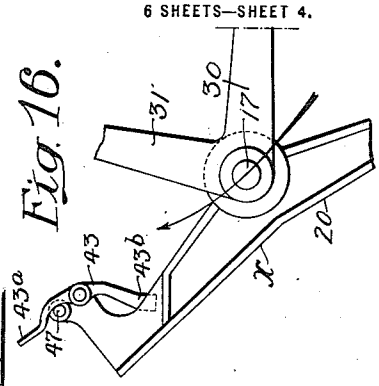


Fig. 16.

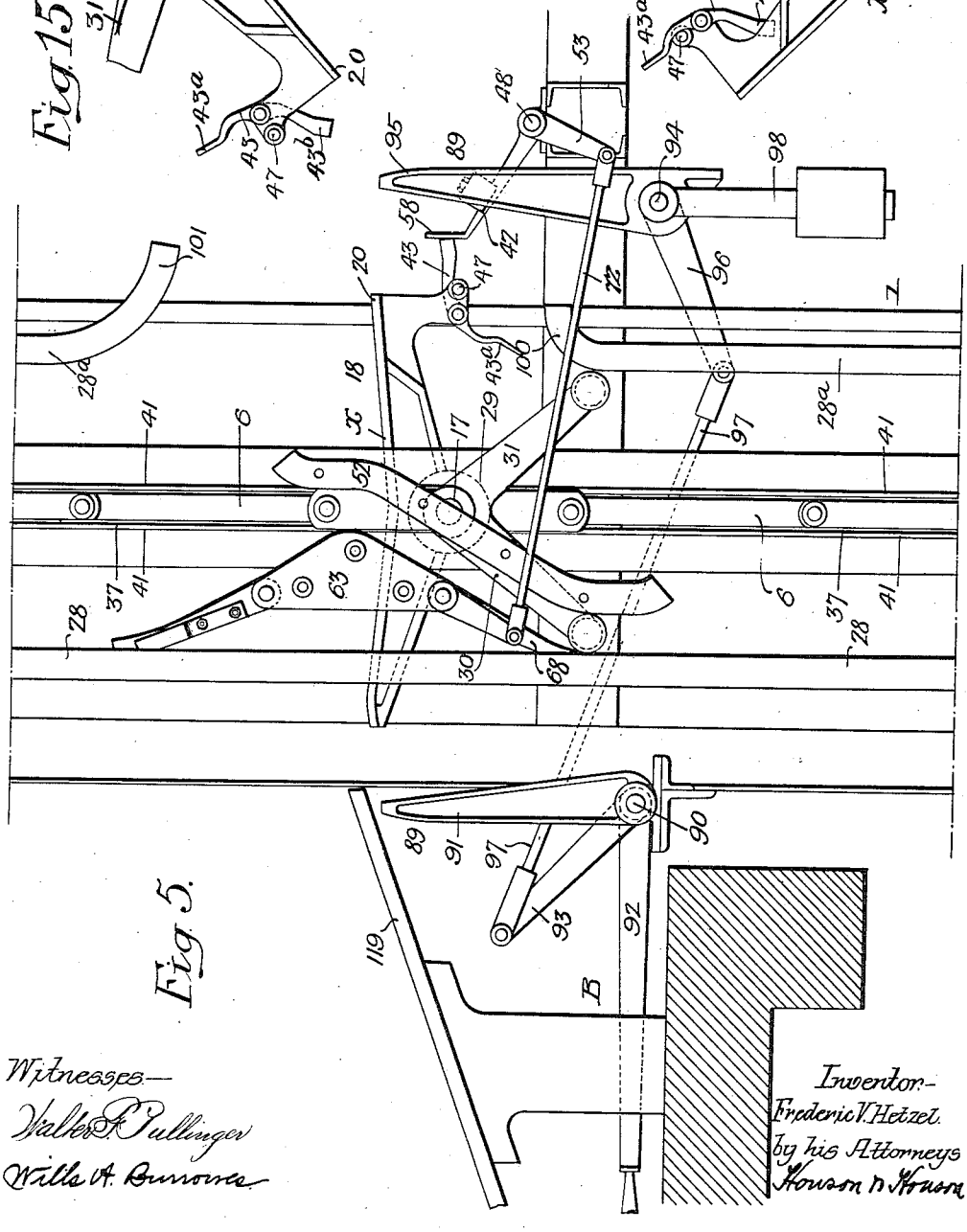


Fig. 5.

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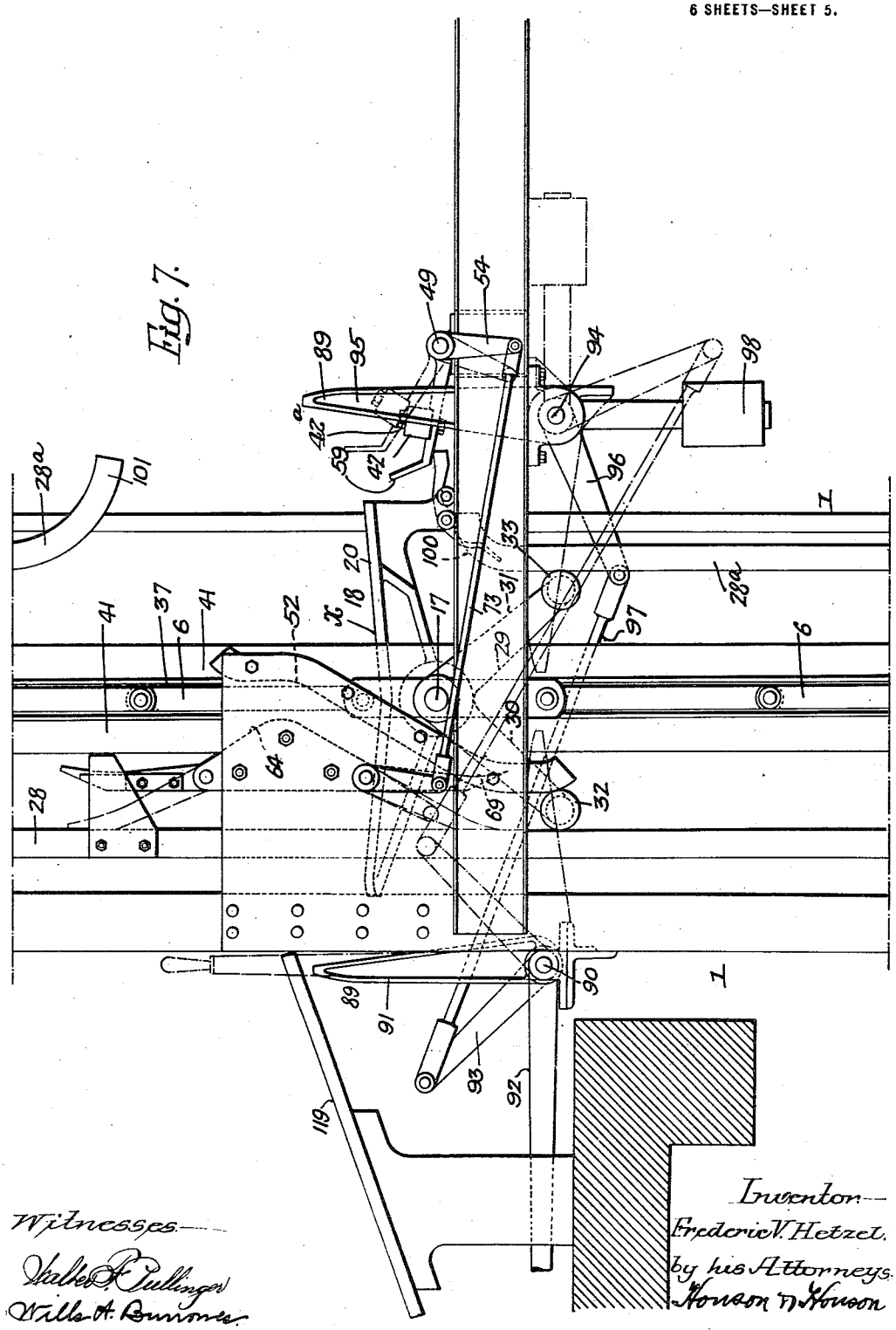
APPLICATION FILED SEPT. 26, 1912.

1,266,262.

Patented May 14, 1918.

6 SHEETS—SHEET 5.

Fig. 7.



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1,266,262.

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6 SHEETS—SHEET 6.

Fig. 8.

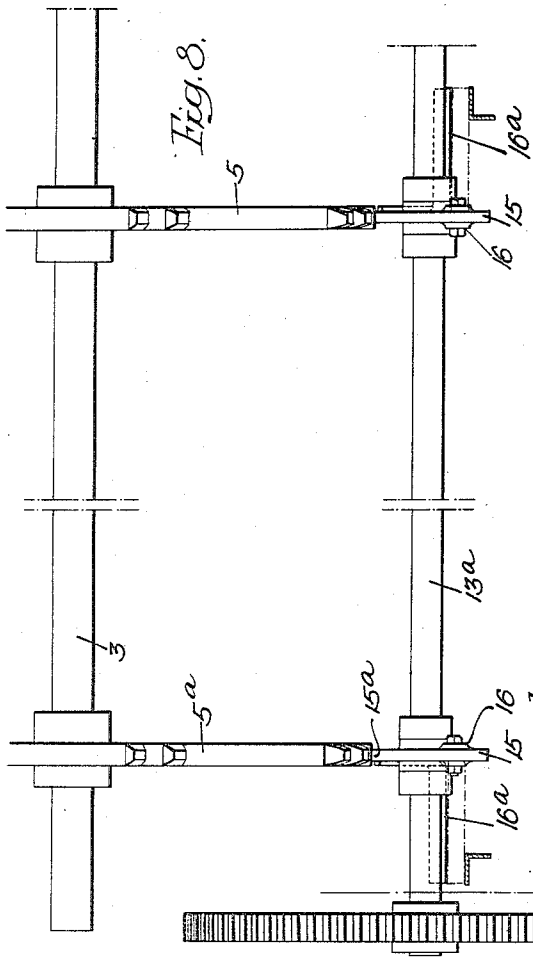
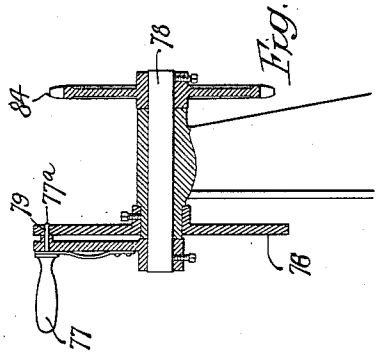


Fig. 11.



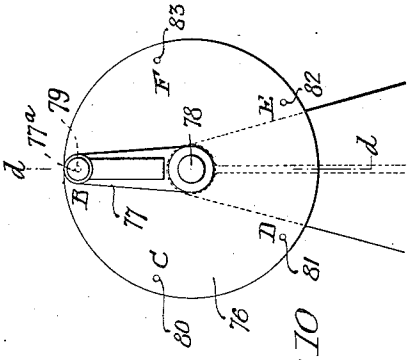


Fig. 10

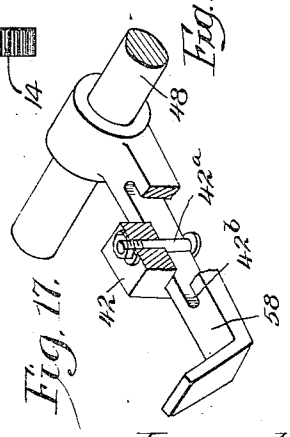
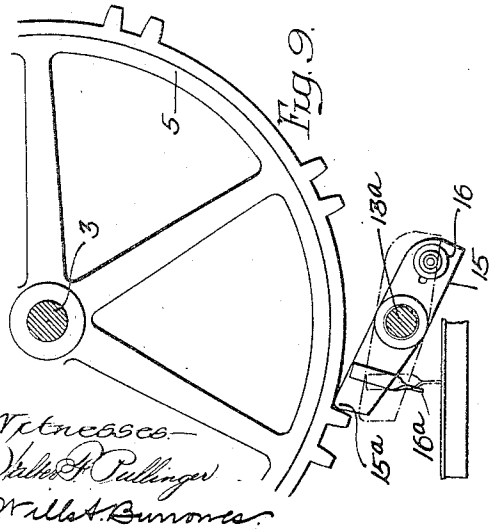


Fig. 17.

Fig. 9.



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UNITED STATES PATENT OFFICE.

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ELEVATOR.

1,266,262. Specification of Letters Patent. **Patented May 14, 1918.**

Application filed September 26, 1912. Serial No. 722,510.

To all whom it may concern:

Be it known that I, FREDERIC V. HETZEL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Elevators, of which the following is a specification.

My invention consists of an elevator, which is particularly adapted for handling packages, such as bales, barrels, etc.

One object of my invention is to provide an efficient elevator of the above described type which is capable of automatically discharging material carried thereby at predetermined floors or heights.

Another object is to control the discharging of the material at any floor from a single point.

These objects and other advantages which will be hereinafter described, I attain in the following manner, reference being had to the accompanying drawings, in which:—

Figure 1, is a sectional elevation showing my improved elevator in connection with a building;

Fig. 2, is a view looking in the direction of the arrow at the side of Fig. 1;

Fig. 3, is a sectional view taken on the line *a*—*a*, Fig. 1;

Fig. 4, is a sectional view taken on the line *b*—*b*, Fig. 1;

Fig. 5, is an enlarged view illustrating mechanism at a floor and at the upper run of the elevator, showing a tripping cam set to tilt the carriers which I employ;

Fig. 6, is a fragmentary view taken on the line *c*—*c*, Fig. 3, showing a carrier being tilted on the upper run of the elevator and also the position occupied by a carrier on the downward run of the elevator.

Fig. 7, is an enlarged view at a floor showing the position in full lines that the tripping cams normally occupy and also showing a position, in dot-and-dash lines that they occupy when set to tilt a carrier;

Fig. 8, is a detail view showing a detent pawl construction which I employ;

Fig. 9, is an end view of Fig. 8;

Fig. 10, is a face view of a selective dial construction which I employ;

Fig. 11, is a sectional view taken on the line *d*—*d*, Fig. 10;

Fig. 12, is a view of a carrier arm having a tripping finger thereon and in its normal position during an upward run;

Fig. 13, is a view similar to Fig. 12, but in which the finger has been overbalanced to discharge the carrier;

Fig. 14, is a view of a carrier arm inverted and showing the position of the tripping fingers during its downward run;

Fig. 15, is a view showing the position of a carrier in passing from the upward run to the downward run; and

Fig. 16, is a view showing the position of a carrier in passing from the downward run to the upward run; and Fig. 17 is a view partly in section of a tripping lever which I employ.

Referring to the drawings, 1 is the supporting structure made of steel or other material and forming an elevator well 2. Journaled at the top and the bottom of the supporting structure are two shafts 3 and 4 respectively. A sprocket wheel 5 having an endless chain 6 passing thereover is keyed adjacent one end of the shaft 3, and the said chain 6 passes around a sprocket wheel 7 keyed adjacent one end of the shaft 4. In like manner a sprocket 5^a having an endless chain 6^a is keyed adjacent the opposite end of the shaft 3 and the chain 6^a passes around a sprocket 7^a; the latter being keyed adjacent the opposite end of the shaft 4. The shaft 3 is driven, in the present instance, by means of a motor 8 through the medium of a chain of gearing, comprising a chain belt 9, a sprocket 10, and gears 11, 12, 13, and 14.

A shaft 13^a (see Figs. 8 and 9) which forms a support for the gear 13 has mounted thereon two automatic detent pawls 15, each having an adjustable counterbalance weight 16 adjacent one end and a stop 16^a.

As the sprocket 5 and 5^a are of like diameter and have the same number of teeth, both chains 6 and 6^a will move in unison and at the same speed. Each of a series of rods 17 (see Figs. 3, 4 and 7) has its ends 17^a and 17^b journaled within corresponding links in

the chains 6 and 6ª respectively in a manner that the rods 17 always occupy a substantially horizontal position but will be free to rotate or rock. Any number of these rods 17 may be carried by the chains 6 and 6ª and may be spaced apart to serve the specific purpose to which the elevator is to be applied. Each rod 17 has keyed thereto a carrier 18 comprising a series of carrier arms 20, 21, 22, 23, and 24; each carrier being keyed to its respective rod 17.

Guideways 25 and 26 are formed by angle strips or channels 27, 28 and 28ª, running the height of the elevator well and adjacent the ends 17ᵇ of the rods 17. Keyed to each rod 17 adjacent the ends 17ᵇ is a rocking or tilting lever 29, having radially disposed arms 30 and 31. The arms 30 and 31 form the support for anti-friction rollers 32 and 33; the latter being adapted to travel in the guideway 26 while in the carrying run, the rollers resting against the rails 28 and 28ª and tending to keep the carriers steady and level during their upward movement. The angle strips 27 are curved at the top and bottom of the elevator well substantially concentric to the sprockets to form a continuation of the guideway 25 for the rollers 32 on the arms 31. The arms 31 are the only arms controlled on the return run.

The chains 6 and 6ª move within guide ways 34, 35, 36 and 37 formed by angle strips 38, 39, 40, and 41; the said guideways extending from the bottom to the top of the elevator well.

The upper face of each carrier arm, is shaped as at *a*, so that during its upper run any material placed thereon will tend to lie directly over the respective supporting rod 17; thus insuring steady and easy running. Tripping fingers 43, 44, 45, and 46 are pivotally attached to the arms 20, 21, 22, and 23 respectively of each carrier 18 and have light-weight ends 43ª, 44ª, 45ª and 46ª and heavy tripping ends 43ᵇ, 44ᵇ 45ᵇ and 46ᵇ respectively.

The pivot pins for the tripping fingers are of such a length as to pass through the carrier arms so that the light-weight overbalancing ends of the tripping fingers will be adjacent one side of the carrier arms and the heavy weight ends will be adjacent the opposite side of the carrier arms, as clearly shown in Figs. 3 and 4.

Each of the carrier arms 20, 21, 22, and 23, has a tripping finger abutment illustrated in the form of a pin 47 which is fixed therein and extends beyond each side and acts as a stop for either end of a respective tripping finger in a manner more fully described hereinafter.

In Fig. 1, I have shown my invention as applied to a building having six floor levels, the lower or main loading floor A, and upper floors B, C, D, E, and F. Also the construction herein shown is such that the shaft 4 and sprocket wheels 7 and 7ª are below the main loading floor; the upper run of the chains being adjacent the ends of the floors.

Journaled on the supporting structure at points adjacent the floor levels with the exception of the floors A and F, are rock shafts 48, 49, 50 and 51, having arms 53, 54, 55, and 56 keyed on their respective outer ends, and tripping levers 58, 59, 60 and 61, respectively keyed thereto adjacent their inner ends; each of the said tripping levers having counterbalance weights 42 (see Figs. 5, 7 and 17) adjustably mounted thereon one form of adjustment being bolts 42ª which pass through slots 42ᵇ in the said tripping levers. These tripping levers are so arranged on their respective shafts as to register or be engaged by the heavy ends of respective tripping fingers 43, 44, 45, and 46 under conditions which will be hereinafter described.

A series of tripping cams, 63, 64, 65, 66 and 67, are fixed within the guideway 26 and slightly above respective floors B, C, D, E and F, as clearly shown in Fig 1. Guide cams 52 parallel the lower swell face of each of the said cams and are so placed as to cause the anti-friction rollers 32 to take a prescribed path under certain conditions during the operation of the machine. Switch latches 68, 69, 70 and 71 are pivotally attached at the lower ends of the respective tripping cams 63, 64, 65, and 66, in such a manner that they may be moved either into engagement with the inner face of the channel 28 or their respective guide cams; the latter position being shown in dotted lines Fig. 6, and the former position being shown in full lines, Fig. 5. Links 72, 73, 74, and 75 respectively connect the arms 53, 54, 55 and 56 with respective switch latches 68, 69, 70 and 71

Adjacent the main loading floor A, or at any other convenient position, is a dial 76 (see Fig. 10) having numbers or letters thereon indicating the floors B, C, D, E and F. A handle 77 is keyed to a shaft 78 concentrically journaled within the dial 76, and is provided with a spring-pressed pin 77ª adapted to engage apertures 79, 80, 81, 82 and 83 adjacent the indicating mark for the respective floors B, C, D, E and F. A sprocket wheel 84 is keyed to the shaft 78, and an endless chain belt 85 (see Fig. 2) connects the sprocket 84 to another sprocket 86 keyed on a gage shaft 87 which is journaled on the supporting structure between the main loading floor A and the floor B. Gage arms B′, C′, D′ and E′ are keyed to the gage shaft 87, so that each may be turned into a substantially horizontal position and extend toward the upper run of the

chains 6 and 6ª, as, for example, into the position occupied by the arms B′, in Fig. 1. The said gage arms are in such a position that only one occupies this horizontal or "set" position at any one time; the remaining arms being entirely out of the path of the tripping fingers on the carriers during their upward movement; and these gage arms are so positioned and constructed that it is possible to turn all of the arms so that no one of them will extend into the path of the tripping fingers during the upward run of the carriers, such a position as occurs when the pin 77ª is in engagement with the aperture 83 for discharging at the top floor.

Stationary loading fingers 88 extend from the level of the bottom or main loading floor, and also from the supporting structure at the same floor level in a manner as to form a partial closure or grate flooring for the portion of the elevator well occupied by the upper run of the carriers, however, there is sufficient space left between the loading fingers to permit the passage of the carrier arms, so that if a bale or other object to be lifted is slid or placed on the loading fingers the same will be raised therefrom by the carriers, as the arms of the latter pass through the spaces between the loading fingers.

As it is often desirable to raise material from one upper floor to another upper floor, I provide a series of movable auxiliary loading floors 89 adjacent each floor with the exception of the top floor, and as each floor 89 acts to form a temporary loading flooring or platform for each floor and as they are of similar construction, I will only describe the construction and operation of one. Mounted adjacent the flood level (see Figs. 5, 6 and 7) is a rock shaft 90 having keyed thereon a series of loading fingers 91; a hand lever 92; and an arm 93; said fingers 91 being spaced apart similar to the stationary fingers 88. A second rock shaft 94 is pivotally mounted on the supporting structure and forms a support for a second series of loading fingers 95 keyed thereon and which are in alinement with respective fingers 91. A second arm 96 is keyed to the rock shaft 94 and a link 97 connects the arm 93 with the arm 96, as clearly shown in Figs. 5, 6 and 7. When any of the upper floors are not being used as a loading floor, the hand lever will occupy a position substantially parallel with the floor and the weighted arms 98 tend to keep the loading fingers in a vertical position so as not to interfere with any material which is loaded at a lower floor. However, when it is desired to use any one of the upper floors as a loading floor, the respective hand lever on the floor is raised into a substantially vertical position which causes both series of loading fingers 91 and 95 to be lowered into the position shown in full lines Fig. 4, and dot-and-dash lines in Fig. 7.

The angle bar 28ª has openings 99 cut in its lengths adjacent the floors B, C, D, E and F and the ends 100 and 101 are deflected so as to permit a deflecting movement of the dumping or tilting arms 30 and 31 on each rod 17; the ends 101 also serving as cams to return the carriers to a level position.

Guard strips 102, 103, 104 and 105 extend from points below the main loading floor level to the top of the well, and serve as back stops and guards to prevent any of the material from being rolled over the rear ends of the carriers while being loaded or during the upward path of the material.

An endless chain conveyer 106 may be located at the upper floor and may be extended in length to any part of the building, or other building or buildings, and is driven from a sprocket wheel 107 on a clutch collar 108, loosely mounted on the shaft 13ª in the following manner:—A sprocket 109 is keyed on a counter-shaft 110; the latter having a pinion 111 which meshes with a gear 112 on a driving sprocket 113; the latter meshing with the chain of the conveyer. In the present instance, I have shown the conveyer passing over anti-friction rollers 114 and 115, but it will be understood that the same may be of any construction. The clutch jaw 116, which is slidably keyed on a shaft 13ª may be moved out of engagement with the clutch collar 108 by means of a hand lever 117 pivotally supported at 118 and connected to the said jaw 116 so that the conveyer may be actuated or stopped by movement of the lever 117.

Assuming that material is to be conveyed from the main loading floor A to one of the upper floors, for example, the floor B, the operation is as follows:—The motor is started by throwing in a switch of any well known form, not shown, and the chains 6 and 6ª are driven in the direction of the arrow shown in Fig. 1. The handle 77 is then turned until the spring-pressed pin 77ª comes opposite the aperture 79, the handle 77 is then released and the spring-pressed pin is forced within the said aperture 79, thereby locking the gage shaft 87. The construction is such that this movement of the handle 77 moves the gage arm B′ into a horizontal position and into the path of the ends 43ª of the tripping fingers 43 on the carrier arms 20, so that as each carrier passes the gage arms B′, the latter will engage and overbalance the tripping finger on each carrier arm 20. This overbalancing of the tripping fingers 43 causes the heavy ends 43ᵇ to project a sufficient distance beyond the inner ends of the carrier arms 20 and abut the pins 47 so that when the said ends 43ᵇ reach a

point opposite the tripping lever 58 they will raise the said tripping lever 58 (see Fig. 5), and by rocking the shaft 48 will cause the switch latch 68 to be moved into contact with the inner face of the angle strip 28, then each anti-friction roller 32, while each respective tripping finger 43 is engaging the tripping laver 58, will be deflected by the switch latch 68 into the path prescribed by the swell portion of the cam 63 and the guide cam 52, as clearly shown in Figs. 5 and 6; thereby causing the carriers to tilt and discharge the packages on the floor B. After the tripping lever 58 is released by each tripping finger 43, the weight 42 will cause the said tripping lever 58 to drop and thereby move the switch latch 68 into engagement with the cam guide 52, where it will remain until the tripping lever 58 is again actuated by a tripping finger 43 in the manner just described. Therefore, every carrier will discharge its burden at the floor B while the gage arm B′ is set to overbalance the tripping fingers 43. After each carrier has discharged its burden, its anti-friction roller 33 engages the end 101 of the rail 28ª and thereby causes the carrier to resume its original position. The weight 42 on the tripping levers 58, 59, 60 and 61 normally keeps the said levers down to thereby hold their respective switch latches in engagement with the respective cam guides so that it will be understood that if any one of the tripping levers is not affected by a tripping finger, each respective switch latch will cut off the passage to its respective cam swell and the anti-friction rollers will continue on their direct upward movement without being deflected or without tilting the carriers as they pass; such a position being shown in full lines in Fig. 7.

In like manner the bales may be discharged at any other floor desired by setting the handle 77 of the dial 76 so that the spring-pressed pin 77ª engages the aperture indicated for that respective floor.

The cam 67, which is adjacent the top floor F, is not provided with a switch latch, but is so shaped as to cause all the anti-friction rollers 32 to be deflected at all times irrespective of the position of the dial or gage shaft 87. Therefore, if it is desired to discharge at the top floor, it is necessary to turn the gage shaft into such a position that there are no gage arms projected to affect the overbalancing of any of the tripping fingers, so that the anti-friction rollers 32 and 33 will not be deflected by any of the cams until they pass over the cam 67. The latter cam will cause the carriers to be turned on their pivots, and thus discharging the load at the top floor. This cam 67 acts also as a safety device, for the reason that should any of the lower floor cams become out of order and allow the packages to pass, they would be discharged at the top floor.

As each of the carriers passes around the head of the elevator the abutment pins thereon move away from their tripping fingers because the heavy ends of the latter tend to hang when the tripping fingers are not in contact with the pins. Fig. 14 shows a carrier in a position occupied in passing from the upward run to the downward run and showing the abutment pin 47 moving away from the heavy end 43ᵇ and allowing the latter to hang. Fig. 15 shows the position of a carrier during its downward run being held in this position by the roller on the arm 31 traveling in the guideway 25, and all of the tripping fingers swing clear of the abutment pins. When each carrier passes from the return run to the carrying run at the bottom of the elevator, the rollers on the arms 30 and 31 enter the guideway 26 and all the abutment pins contact with the light-weight ends of their tripping fingers and act during the upward travel of the carriers to hold the fingers in the position shown in Fig. 12, unless they are tripped into the position shown in Fig. 13 by coming in contact with a gage arm. Thus when each carrier starts its upward run, every light-weight end of each tripping finger is projected into a position for contacting with a set gage arm. If any one of the gage arms is set as hereinbefore described, the light-weight end of respective tripping fingers will strike against the said gage arms and as the carrier continues to move upward, the heavy end of the tripping finger will be forced over the center and will fall onto its respective pin 47 and in a position to actuate its tripping lever which will operate a cam latch which in turn will tilt the carrier.

If it is desired to convey packages from one upper floor to another upper floor, for example, the floor C to the floor E, the hand lever 92 on the floor C is raised into the position shown in dot-and-dash lines, Fig. 7, and full lines in Fig. 4, and thereby lowers the loading fingers 91 and 95 to form a loading floor, as above described. The bales are then successively moved onto the loading floor and the handle 77 is moved so as to have the spring-pressed pin engage the aperture 82. In the manner previously described, the packages will now be discharged at the floor E.

As each floor B, C, D and E is provided with a loading floor which may be moved into position by the raising of the hand levers 92, it will be understood that the material may be taken from any of these floors and deposited on any of the floors above.

In order to prevent injury to merchandise being handled, I preferably use portable in-

clined trucks or chutes 119, which may be of such a height as to register with the carriers while they are discharging.

If it is desired to carry material from any one of the lower floors of the building having the elevator therein to another building, the material is discharged at the top floor F on to the conveyer 106 which may be thrown into operation by means of the hand lever 117. The material may then be carried and deposited at the will of the operator into any other building into which the conveyer extends.

In the accompanying drawings, I have shown the elevator in connection with a six floor building, but it will be understood that the same can be used with a building having any number of floors of equal or unequal distances apart without changing the principle of my invention.

Any form of housing may be employed for the elevator supporting structure and the elevator can be built in any portion of a building, or independently of a building, if desired. However, I preferably construct my elevator at the outside of a building and house the same in any well known housing, such for example as one made of corrugated metallic plates. By this arrangement I use none of the storage space of the building proper. Also, I preferably construct the supporting structure so as to extend beyond the upper level of the building proper, so that the upper sprocket wheels 5 and 5^a and their driving means are located above the top floor of the building. In like manner, the lower sprocket wheels 7 and 7^a may be placed below the surface of the main loading floor by having a pit formation within which the supporting structure rests.

My invention is capable of handling packages or material of very delicate nature, as the loading and discharging means are of such construction that they will not in any way injure goods carried or discharged thereby. An elevator constructed in accordance with my invention is extremely easy of operation and control; the tripping fingers, gage arms, and tripping levers being controlled by a handle 77 which is moved to a position on the dial indicating a particular floor at which it is desired to discharge the material being elevated.

While I have shown the driving mechanism located adjacent the top floor, the same may be controlled from a switch located adjacent any one of the other floors, or the driving mechanism may be located at a different position within the elevator well or adjacent the handle 77, if so desired.

Also, in the drawings, the tripping fingers are shown pivoted directly on the carriers and only one finger on an arm, but it will be understood that the tripping fingers may be carried by any member moving together with the carriers.

In the claims, I have used the term "common point" and by this is meant the handle 77 on the dial 76 or equivalent common member.

I claim:

1. The combination in an elevator, of a carrier; a plurality of two armed levers, one arm of each lever being of greater weight than the other; means for overbalancing one of said levers controlled from a common point; means for tilting the carrier; and means in the path of the overbalanced lever to shift the tilting means and to discharge the load.

2. The combination in an elevator, of a series of carriers; means for moving the carriers; tripping fingers mounted on each carrier; tripping levers placed at definite positions along the path of movement of the carriers; cams actuated by said tripping levers to cause the carriers to tilt and discharge their loads; means for actuating any of the tripping fingers to cause them to project into positions to operate the tripping levers as they pass the same.

3. The combination in an elevator, of a carrier; means for moving the carrier; a plurality of independently movable weighted selective levers connected to the carrier; means for moving one of said levers into operative position; and means, actuated by a projected lever, to cause the carrier to discharge its load at a predetermined point, said levers being so balanced that they will be automatically reset in the inoperative position as the carrier is inverted at the upper end of the elevator.

4. The combination in an elevator, of a carrier; means for moving the carrier; a plurality of selective levers pivotally mounted on the carrier, each having a light-weight end and a heavy end; abutment members on the carrier, said light-weight ends of the levers being normally held against their respective abutment members by the weight of their heavy ends; means operable during the movement of the carrier to trip the selective levers to cause their heavy ends to rest against the respective abutments to effect the discharge of the carrier; and means for overturning the carrier to cause said heavy ends to reset the levers in their normal positions.

5. The combination in an elevator, of a series of carriers; a plurality of selective levers carried by each carrier, each of said selective levers having a light-weight end and a heavy end; means for moving the carriers in an elevating and a return run; means for inverting the carriers as they pass from the elevating run to the return run and for reverting the carriers as they pass from the return run to the elevating run;

abutments on each carrier, said heavy ends of the levers, during the upward run of the carriers, tending to normally hold the lightweight ends against the abutments; means operable during the movement of the carriers to trip the selective levers out of their normal position and to cause their heavy ends to rest against the abutments; and means, actuated by said end, for effecting the discharge of the carriers at predetermined positions, the said inverting and reverting movements of the carriers causing the levers to reset in their normal position.

6. The combination in an elevator, of a series of landings; a carrier; driving means for moving the carrier past the landings; means located at each landing for engaging and tilting the carrier; selectors moving in conjunction with the carrier; tripping means located in position to be actuated by the projected selector on a carrier; and connections between the said tripping means and the means for tilting the carrier so that as the carrier passes the tripping means, and said means is actuated by the projected selector, it will cause the carrier to discharge its load.

7. The combination in an elevator, of a series of landings; a carrier; driving means for moving the carrier past the landings; a series of selectors on each carrier; a manually operated shaft; means on said shaft for engaging and shifting any one of the selectors on a carrier so as to move it into operative position; means for locking the shaft; a device, at each landing, located in the path of a projected selector and so arranged with respect to the carrier that when a selector is projected a device at a given landing will be actuated; means, located at each landing, for tilting the carrier; and a connection between the said device and its tilting mechanism so that, when a selector is projected, it will tilt the carrier at a given landing.

8. The combination of a series of carriers; means for moving the carriers; selective members on the carriers; a rotatable shaft mounted independently of the carriers; arms on the shaft; means for moving the shaft so as to bring one of the arms in the path of the selective members to actuate the same; and means, operable by the selectors, for discharging the loads of the carriers.

9. The combination in an elevator, of a series of landings; a carrier; means for moving the carrier past the landings; means, at each landing, for tilting the carrier; a plurality of selective members on the carrier; means, located in a fixed position, having arms in the path of the selectors for automatically actuating any one of the selectors; and a device, at each landing, connected to the tilting means for the carriers, said operative device being in the path of an actuated selector, whereby, as the selector passes the device, the carrier will be tilted to discharge its load.

10. The combination in an elevator, of a series of carriers; a guideway therefor; a plurality of selective levers on each carrier; means for shifting any one of said levers into operative position; cams in the guideway; and means, actuated by the selected lever, for shifting a cam to cause a carrier to tilt and discharge its load.

11. The combination in an elevator, of a series of carriers; means for moving the carriers; means for guiding the carriers; a series of tripping levers; cams; means connecting the tripping levers with respective cams; a series of gage arms; a series of tripping fingers mounted on each carrier, each of said tripping fingers being arranged to actuate a certain tripping lever; and means for moving any one of the gage arms into the path of a tripping finger to project it to actuate its cam and thereby discharge the carriers as they pass by said actuated cam.

12. The combination in an elevator, of a series of carriers; means for moving the carriers; means for guiding the carriers; a series of tripping cams; a tripping lever for each cam; means connecting each of the cams with its tripping lever; tripping fingers carried by the carriers, each of said tripping fingers being arranged to actuate a certain tripping lever; a series of gage members, each of said gage members being movable into the path of and to actuate a specific tripping finger on each carrier; and means for moving any one of the gage members into the path of a tripping finger to project the same so as to come in contact, during the course of its travel, with a tripping lever to actuate the cam which is connected to the latter to discharge the carriers.

13. The combination in an elevator, of a series of carriers; means for moving the carriers; a carrier discharging cam located at each discharge point; a tripping lever for each cam; means connecting each cam with its tripping lever; a plurality of tripping fingers carried by each of said carriers, each of said tripping fingers arranged to engage a particular tripping lever; a series of gage members, each gage member acting upon a specific finger on each carrier; and means for moving any one of the gage members into the path of its tripping finger on a carrier so that said finger will actuate a specific cam through its tripping lever to discharge the carrier.

14. The combination in an elevator, of a series of carriers; means for moving the carriers; selective means movable in conjunction with the carriers; a rotatably mounted gage shaft; arms on said shaft for actuating the selective means; means for rotating the shaft; a lock therefor; and means, actuated

by the selective means, for discharging the carrier at a predetermined point.

15. The combination in an elevator, of a series of landings; a carrying run and a return run extending past the landings; a cam at each landing; a series of connected carriers arranged to travel in the carrying and return runs; an arm on each carrier; means for directing the arms into the path of the cams to tilt the carriers; a series of selectors on each carrier; means for projecting any one of the selectors into operative position; and mechanism actuated by the projected selectors to operate the directing means for the arms of the carrier so that the carrier will tilt at a given landing and discharge its load, the selector being returned to its normal position as the carrier travels on the return run.

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

FREDERIC V. HETZEL.

Witnesses:

WM. E. SHUPE,

WM. A. BARR.