

No. 660,451.

Patented Oct. 23, 1900.

G. W. McCASLIN.
CONVEYER.

(Application filed Dec. 30, 1897. Renewed Apr. 20, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

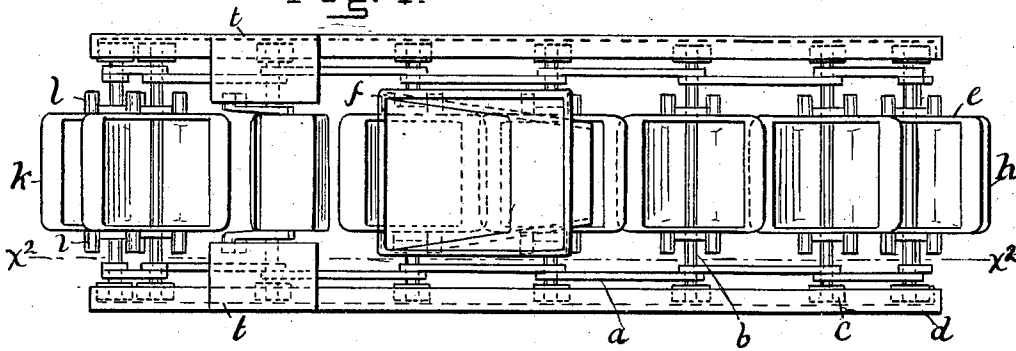
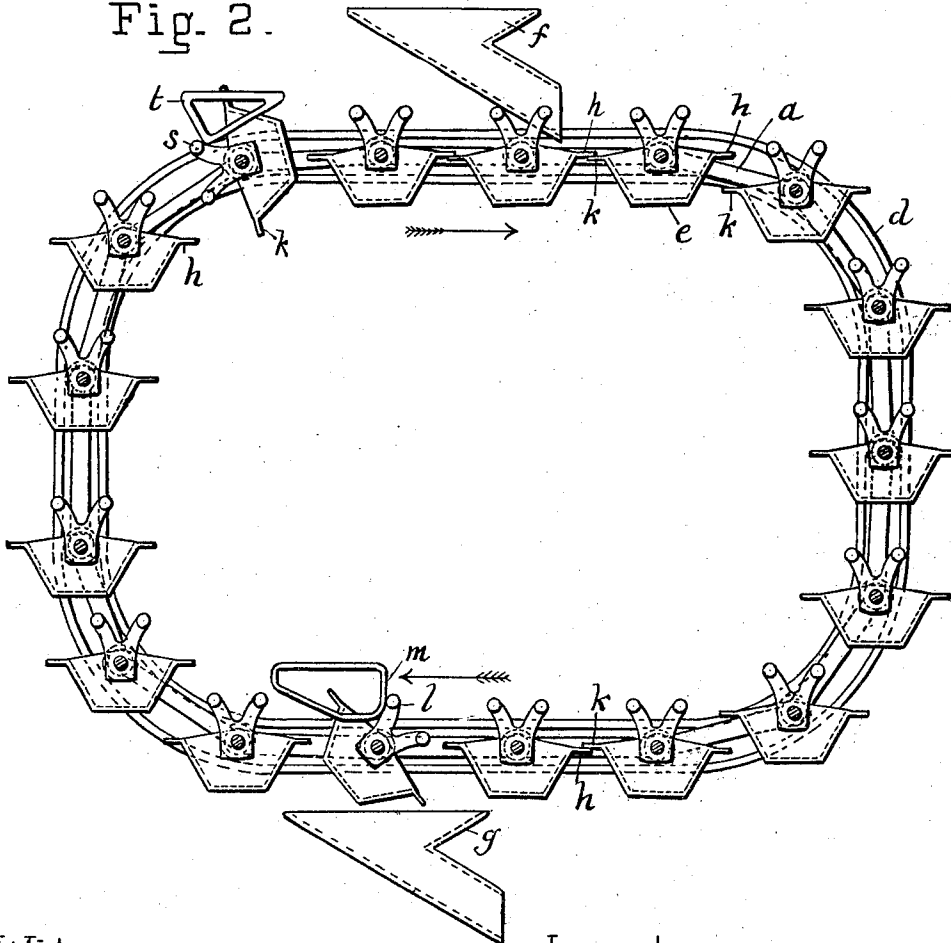


Fig. 2.



Witnesses:

Samuel W. Balch
Hyatt Whitman

Inventor,

George W. McCaslin,
by *Thomas Ewing, Jr.,*
Attorney.

No. 660,451.

G. W. McCASLIN.
CONVEYER.

Patented Oct. 23, 1900.

(Application filed Dec. 30, 1897. Renewed Apr. 20, 1900.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 3.

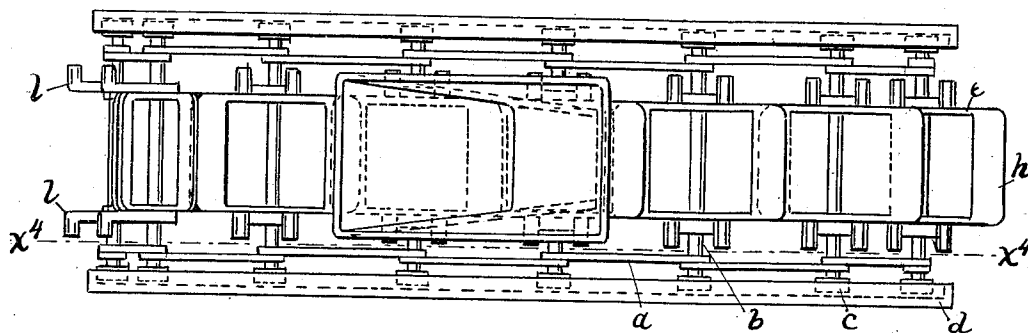
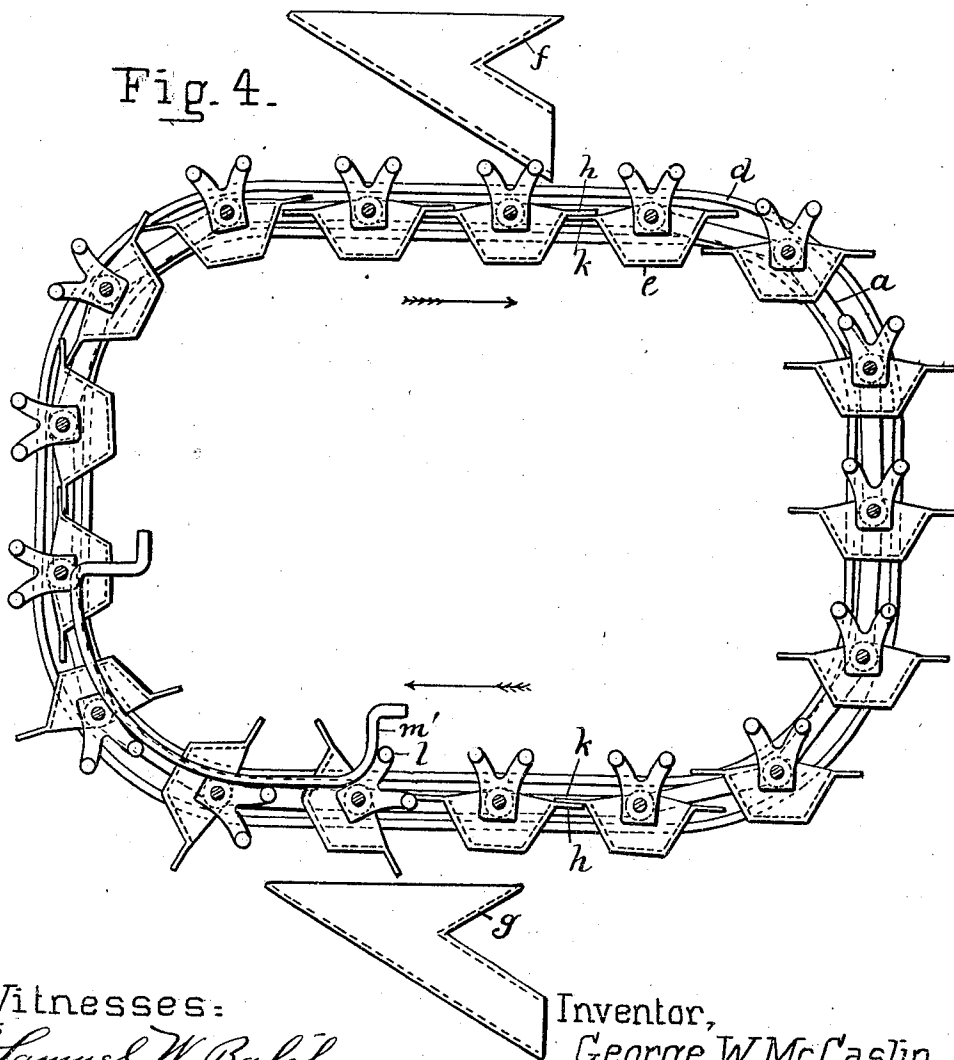


Fig. 4.



Witnesses:
Samuel W. Balch
Hyatt Whitman

Inventor,
George W. McCaslin.
by *Thomas Ewing, Jr.,*
Attorney.

No. 660,451.

Patented Oct. 23, 1900.

G. W. McCASLIN.

CONVEYER.

(Application filed Dec. 30, 1897. Renewed Apr. 20, 1900.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 5.

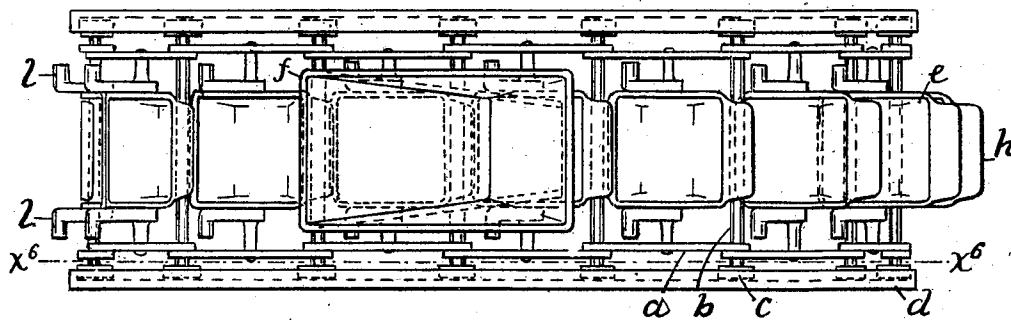
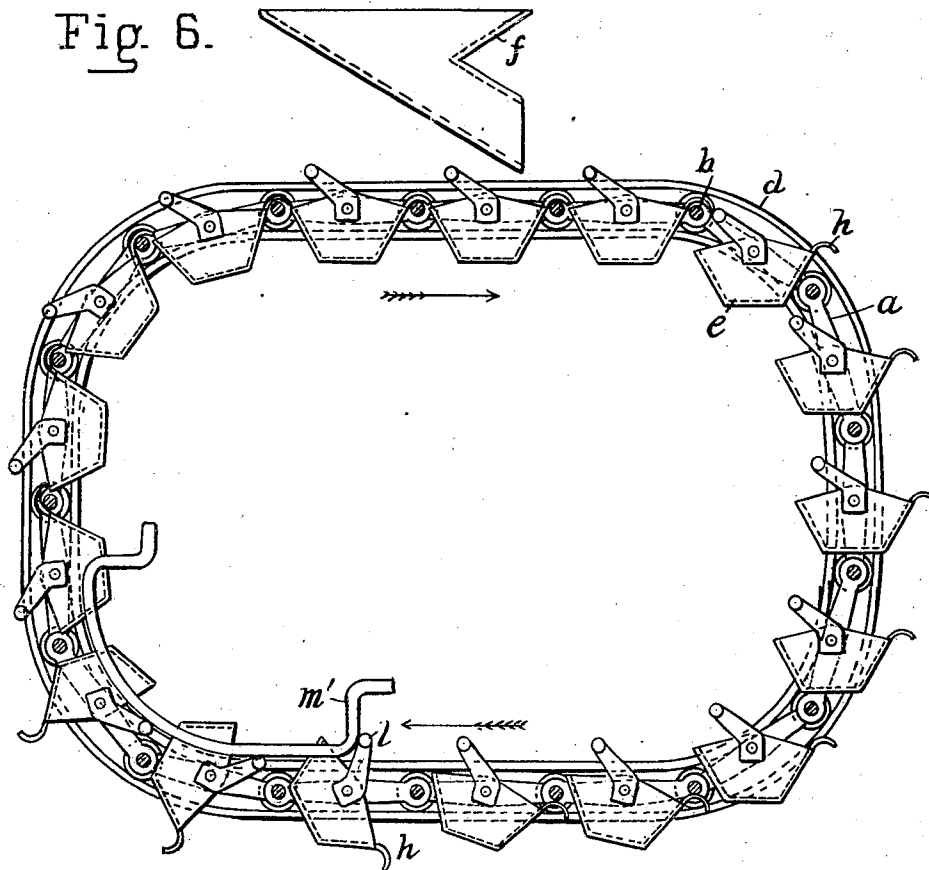


Fig. 6.



Witnesses:
Samuel W. Balch
H. H. Whitman

Inventor:
George W. McCaslin
by Thomas Ewing, Jr.
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE W. McCASLIN, OF HOBOKEN, NEW JERSEY.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 660,451, dated October 23, 1900.

Application filed December 30, 1897. Renewed April 20, 1900. Serial No. 13,649. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. McCASLIN, a citizen of the United States of America, residing at Hoboken, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Conveyers, of which the following is a specification.

My invention is an improvement upon the systems shown in my Patents No. 486,809, dated November 22, 1892, for an improvement in conveyers, and No. 503,870, dated August 22, 1893, for an improvement in endless-chain conveyers.

In a conveyer made up of gravity-buckets suspended in an endless chain and moving around a circuit between different levels each bucket passes completely around the following bucket every time it traverses the complete circuit. Where the buckets are provided with overlapping lips, it is necessary in order to avoid interference of the buckets that the lapping of the lips be changed at one or more points in the circuit. This can be done in two ways—first, by tilting the buckets sufficiently to turn them over or end for end with respect to the direction in which they move, as is illustrated in Patent No. 486,809 and in Figures 3 and 4 of Patent No. 503,870, which it is necessary to do at one point of the circuit, and, second, by tilting the buckets only enough to change the lapping of the lips, as illustrated in Fig. 1 of Patent No. 503,870, which it is necessary to do at two points of the circuit. In these patents the devices for changing the lapping of the lips are placed along the descending track or at or near the top and bottom thereof, so that the change in the lapping of the lips occurs during the descent or just before and after the descent of the buckets.

The invention herein described and claimed consists in so arranging the devices and the members on the buckets engaging therewith that the buckets shall be tilted backward to effect the change in the lapping of the lips. This makes it possible to change the lapping of the lips during the ascent of the buckets or just before and just after their ascent.

In the accompanying three sheets of drawings, which form a part of this specification, Fig. 1 is a top view of one form of my invention in which the change in the lapping of the lips is effected just before and just af-

ter the ascent of the buckets. Fig. 2 is a vertical section on the line $X^2 X^2$ of Fig. 1. Fig. 3 is a top view of a modified form in which the change in the lapping of the lips is effected during the ascent by turning the buckets over. Fig. 4 is a vertical section on the line $X^4 X^4$ of Fig. 3. Fig. 5 is a top view of a modified form in which the buckets are turned over as in Fig. 4 and illustrating that each bucket need have but one lip. Fig. 6 is a vertical section on the line $X^6 X^6$ of Fig. 5.

In each of the three forms illustrated in the drawings there is an endless chain formed by two series of chain-links *a*, which are jointed and connected by shafts *b*. The ends of these shafts project outside of the chain-links and carry track-wheels *c*. The wheels run on tracks *d*, which guide the chain throughout the circuit. The tracks are shown on both sides of the wheels throughout their course; but there are places where they may be omitted on one or both sides of the wheels. The buckets *e* are suspended between the two series of chain-links, so that they will maintain a normal position by gravity. They are filled from a chute *f* while on their upper horizontal track or run and are tilted and discharged while on their lower horizontal track into a chute *g*. The exact points of filling and discharging are, however, immaterial; but each of the forms is so arranged that the buckets can be carried downward while loaded and discharged at a level below when they are filled. This conveyer may be driven as shown in my Patents Nos. 486,789 and 486,809, both dated November 22, 1892.

No means are shown to prevent the buckets from oscillating while being loaded; but should this be necessary a guard-rail may be added for the purpose, as shown in Patents Nos. 486,809 and 503,870.

In the form shown in Figs. 1 and 2 the buckets are suspended from the connecting-shafts *b*, which connect and join the chain-links. The buckets are carried in the direction of the arrows, and each is provided with lips *h k* on their ends. Commencing with the buckets on the upper horizontal track and following them around the circuit in the direction of the arrows, it will be seen that the buckets pass under the point of loading, with the lips *k* at the left-hand end of each bucket as shown, lying under the lip *h* at

the right-hand end of each following bucket, so that the lips will not prevent the buckets from keeping their normal position by gravity as they pass to the descending track and from the descending vertical track or run to the lower horizontal track. This brings the lip *h* at the right-hand end of each bucket under the lip *k* at the left-hand end of each following bucket. If while thus lapping the buckets should be carried to the ascending vertical track or run, the interference of the lips would keep the buckets from preserving their normal position by gravity and they would reach the upper horizontal track in an inverted position. To prevent this, each bucket is tilted backward just before passing to the ascending track, so that the preceding bucket can rise past on the ascending track and preserve its normal position by the engagement of lugs *l* with fixed cams *m*, which are located on each side where the buckets approach the ascending track. Since the lugs project above the pivots of the buckets to which they are attached, the tilting is backward as the buckets pass under the cams. The tilting, as shown, is sufficient to dump the buckets and discharge their contents; but this is not essential, since the dumping may be effected by a separate cam located at any point of the circuit where the buckets will discharge clear of each other. As the buckets arrive at the upper horizontal track they are again tilted, this time by lugs *s*, which ride under the cams *t* and in turn tilt each bucket and hold it tilted until the lips of the following bucket can come above, so that the lapping of the lips will be such that the buckets when located can pass to the descending track without being again tilted, as is desirable in view of their being loaded. This form is similar to the form in which the buckets are tilted at two points of the circuit just enough to change the lapping of the lips, shown in Fig. 1 of Patent No. 503,870, except that the buckets are tilted and dumped backward. If at the points where the lapping of the lips is exchanged the cams are so set that the buckets will be tilted only sufficiently to permit the lips to pass, the loaded buckets may be carried over any part of the circuit and loaded and discharged at any suitable point on the tracks.

In the form shown in Figs. 3 and 4 the action of the buckets is the same as in the preceding figures as they pass from the upper horizontal track around to the lower horizontal track; but before reaching the ascending track their lugs engage with a fixed cam *m'*, which is continued along a portion of the track and tilts the buckets to such an extent that they will be turned over and the lips will properly overlap on arriving at the upper horizontal track. The extent to which the fixed cam is carried along the track need not be precisely as shown. This form, in which the brackets are tilted at one point of the circuit enough to turn them over or end for end

with respect to the direction in which they move to reverse the lapping of the lips, is similar to the form shown in Fig. 4 of Patent No. 503,870, with substantially the same exception above noted.

In the form shown in Figs. 5 and 6 the action of the buckets is substantially the same throughout as in the form discussed in connection with the two preceding figures. These figures illustrate that each bucket need be provided with but one lip and that the buckets may be hung from the middle points of the chain-links instead of from the connecting-shafts. This form is similar to that shown in Fig. 3 of Patent No. 503,870 and Fig. 1 of Patent No. 486,809, with the exception above noted.

In the claims the expression "tilting the buckets" is intended to cover the invention broadly, whether the buckets are tilted enough to turn them over, necessitating but one cam, or only enough to permit the lips to pass, necessitating two cams, and the expression "tilting the buckets sufficiently to turn them over" is intended to describe the forms wherein the buckets are turned end for end and but one cam is required.

In all of the several forms of my invention herein shown it will be seen that the buckets are tilted backward only in effecting the change in the lapping of the lips, as distinguished from a system in which two adjacent buckets are simultaneously tilted in opposite directions, the one forward and the other backward, to effect the change in the lapping.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a conveyer an endless chain and buckets pivotally suspended therefrom and provided with overlapping lips, and means to effect the change in the lapping of the lips by tilting the buckets backward only, substantially as described.

2. In a conveyer, an endless chain and buckets pivotally hung therefrom and provided with overlapping lips, and means for tilting the buckets backward sufficiently to turn them end for end to effect the change in the lapping of the lips, substantially as described.

3. In a conveyer comprising horizontal and vertical runs, an endless chain, gravity-buckets pivotally suspended from the chain and provided with overlapping lips, a lug on each bucket extending above the pivot of the bucket, and a fixed cam so located as to be engaged by the lugs while the buckets are passing from the lower horizontal run to the ascending vertical run, whereby the buckets are tilted backward sufficiently to turn them end for end to effect the change in the lapping of the lips, substantially as described.

Signed by me in New York city, New York, this 24th day of November, 1897.

GEO. W. MCCASLIN.

In presence of—

THOMAS EWING, Jr.,
SAMUEL W. BALCH.