

(No Model.)

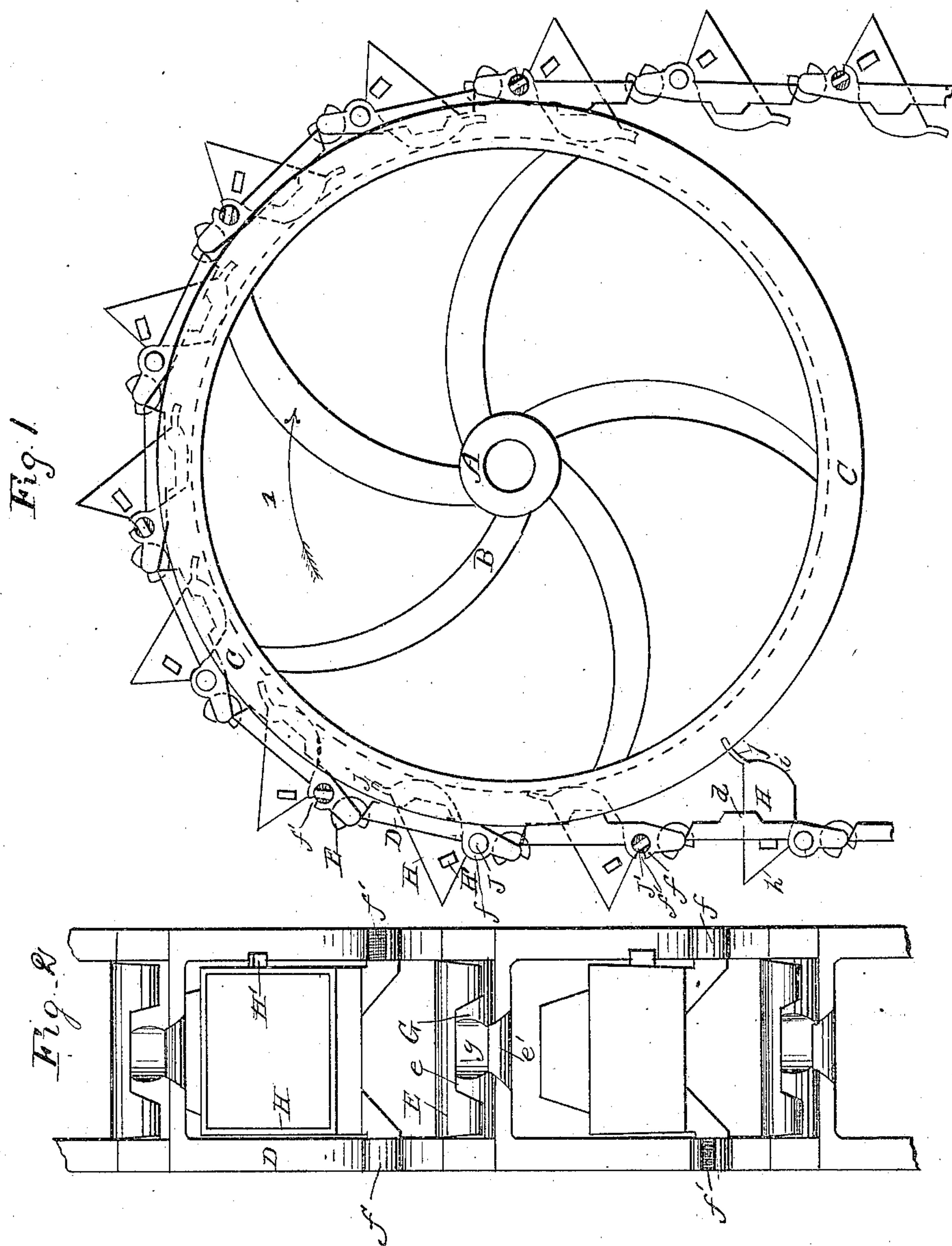
2 Sheets—Sheet 1.

C. W. LEVALLEY.

ELEVATOR.

No. 311,336.

Patented Jan. 27, 1885.



Witnesses:
H. E. Bliss
J. S. Barker

Inventor:
Christopher W. Sevalley
by Ombleday & Bliss
attys.

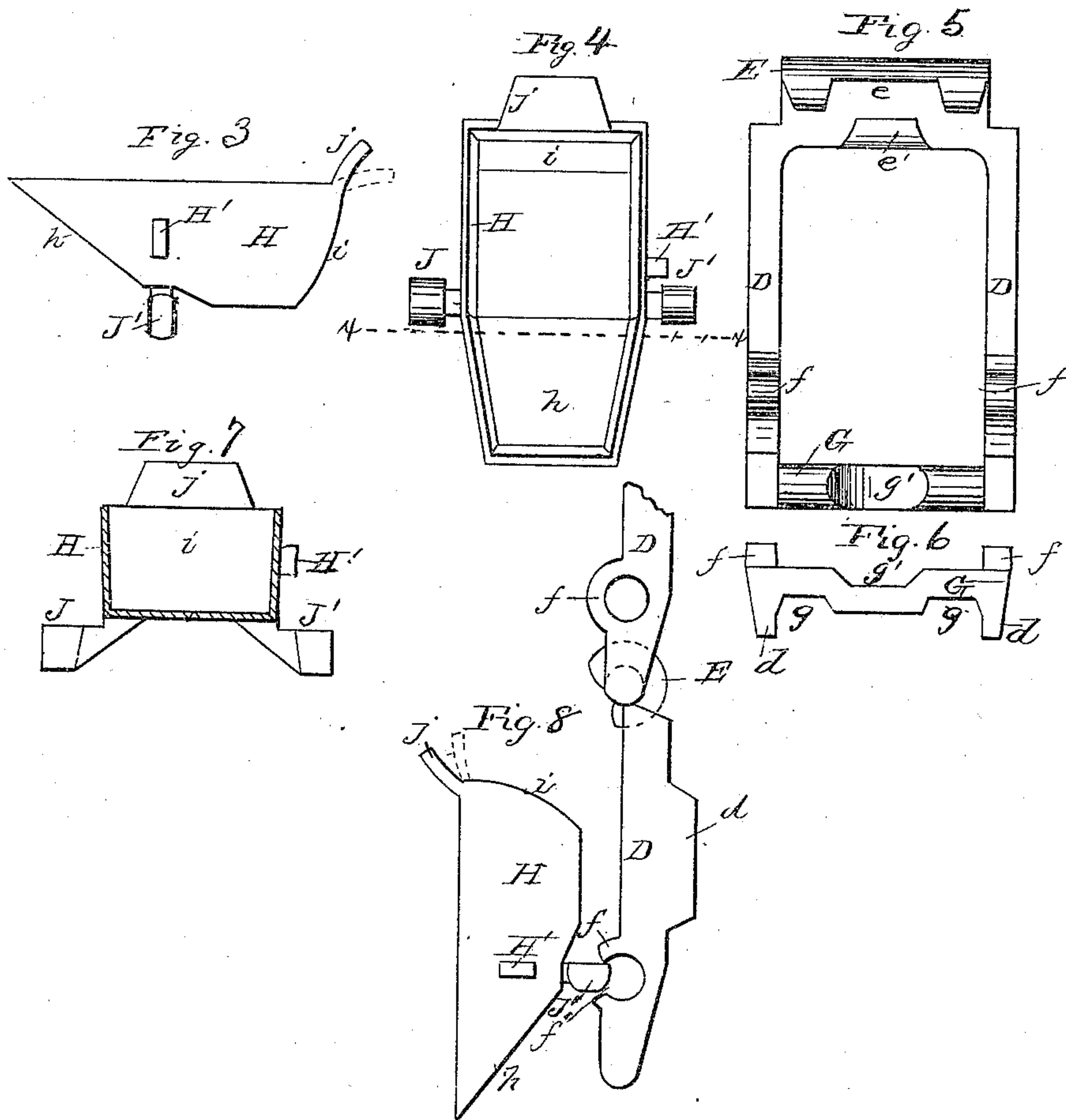
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UNITED STATES PATENT OFFICE.

CHRISTOPHER W. LEVALLEY, OF ST. PAUL, MINNESOTA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 311,336, dated January 27, 1885.

Application filed July 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Elevators, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of a wheel and a chain containing my invention. Fig. 2 is an edge view. Fig. 3 is a side view of one of the buckets. Fig. 4 is a plan or top view of one of the buckets. Fig. 5 is a plan view of one of the links of a chain. Fig. 6 is an end view of one of the links. Fig. 7 is a vertical transverse section of one of the buckets on line *x x*, Fig. 4. Fig. 8 is a side view of one of the links and one of the buckets in position for applying the bucket to the link.

A is the hub, B the spokes, and C the flanges, of a grooved wheel of substantially the ordinary construction.

D D are the side bars, and G E the end bar and hook, of a centrally-open rectangular link. The end bar is formed with three recesses, two of them, *g g*, being upon its under side and one of them, *g'*, upon the upper side, near its center. The hook E, at the opposite end of the link, has a circular seat with an internal diameter about equal to the diameter of the end bar in cross-section, the lip or end of the hook being notched or recessed, as at *e*. (See Fig. 5.) There is a corresponding lip, *e'*, projecting from the base of the hook or the end bar to which the hook is attached. (See same figure.) Each side bar has a downwardly-projecting wing or flange, *d*, the outer faces of these flanges being beveled or inclined, so as to fit closely between the flanges C C of the driving-wheel, substantially as is common in that class of chains which are driven by frictional contact. Each side bar is expanded upwardly, as at *f f*, and perforated to form seats in which the bucket is supported. One of these ears or upward expansions *f f* is provided with a narrow throat, *f'*. (See Fig. 8.) The bucket has two sides, H, an inclined front end, *h*, and a curved rear end, *i*, with a tight bottom.

J J' are trunnions or bearings projecting laterally from the sides of the bucket. The

trunnion J is round in cross-section to fit the closed eye or ear *f*, while the trunnion J' has one of its sides slabbed off or flattened to permit it to pass through the throat *f'*.

j is a wing projecting upwardly from the curved end.

H' is a stop projecting laterally from the part H of the side of the bucket, and, when desired, there may be a similar stop upon the opposite side of the bucket.

It will be readily understood from an examination of the drawings that when two links are placed at a right angle to each other they can be either coupled or uncoupled, but when they are straightened out or in ordinary working position they are not liable to casual separation. It will also be seen that by placing one of the buckets in an unusual relative position, as shown in Fig. 8—that is, a position differing from that which the buckets occupy when in working relation—it can be attached to one of the links by thrusting the trunnion J into the closed eye and then passing the trunnion J' through the throat *f'*, after which the bucket may be turned into the position shown in Figs. 1 and 2—that is to say, with the wing *j* on the opposite side of the side bars and hook, in which latter position it may be confined by bending the wing into the position shown in Fig. 1, it having been bent into a position more nearly parallel with the upper edge of the bucket at the time the trunnions are inserted into the eyes or bearings *f f*. When the chain is running in the direction indicated by arrow 1, Fig. 1, the buckets will remain in a substantially horizontal position, with the stops H' engaged with the side bars, D D, because the inner end, *i*, of each bucket is heavier than the opposite end, *h*; but as the bucket begins to traverse the wheel the wing *j*, and afterward the curved end *i*, engages with the bottom of the groove, and thus tilts the bucket into the position indicated in Fig. 1, thereby discharging the contents over the end *h* and into a chute prepared to receive it. This bucket-chain is specially adapted as a water-elevator, although I do not wish to be limited to such use. When the buckets are descending on the opposite side of the drive-wheel, they will, as they enter the water or other material into which the lower doubled end of the chain

reached, be again shifted into a position substantially at right angles to the chain, and will therefore fill themselves with water or other material; and in practice this chain can be successfully run without the use of a guiding-wheel at the lower end of the chain.

While in practice I prefer to make one of the eyes or bearings closed and the other one with a narrow throat, I do not wish to be limited to such structure, because both bearings might be formed with throats without departing from the spirit of my invention.

I am aware that it is old to pivotally support an elevator-bucket in the side bars of an open rectangular chain-link in such manner that it may tilt or rock upon its pivots, said buckets being provided with stops, one of which engages with a stationary bearing-piece in order to retain the bucket in an upright position, said stationary bearing-piece being situated adjacent to the line of chain, and the other stop situated upon one end of the axis or upon one of the trunnions of the bucket, it being adapted to engage with the bearing on the side bar which receives the trunnion of the bucket; and hence I do not claim, broadly, an elevator-bucket pivotally supported upon the side bars of a chain, nor an elevator-bucket pivoted upon the side bars of a chain and having stops adapted to limit its rocking or tilting motion; but my arrangement differs radically from such construction, and possesses certain advantages not incident to any prior device of which I have knowledge. By placing the stop which holds the bucket in an upright working relation upon the bucket itself, and having it engage with the side bars of the link, I am enabled to arrange it at such distance from the pivotal line of the bucket that there is no danger of its becoming broken off, which would be the case should I form it upon either of the trunnions J J', as in that case the stop would necessarily be small and have to sustain a great strain, from being placed so near the pivotal line of the bucket. Again, by causing the stop which holds the bucket in an upright working position to engage with the link, I am enabled to dispense with a stationary bearing adjacent to the line of the chain, I being enabled to produce as satisfactory results with simply a chain and bucket as have heretofore been obtained by using a chain, a bucket, and a separate bearing-piece.

What I claim is—

1. A central open rectangular link provided with bearings in its side bars, in combination

with a bucket pivoted in the side bars, and adapted to be inserted in and removed from said bearings when placed in an unusual position, substantially as set forth.

2. A centrally-open link having side bars provided with bearings, in combination with a bucket pivoted in the side bars, and provided with stops engaging with opposite sides of the link, for limiting the vibration of the bucket.

3. A centrally-open rectangular chain-link provided with bearings in its side bars, in combination with a bucket pivoted in the side bars, and provided with stops adapted to engage with the bars of the link and to hold the bucket in proper working position, substantially as set forth.

4. The combination of the drive-wheel, a drive-chain passing around said wheel, and buckets pivoted in the side bars of the links of said chain, said buckets being provided with stops adapted to engage with the side bars of the links and hold the buckets in proper working relation, said driving-wheel being adapted, substantially as set forth, to tilt the buckets and discharge their contents, as described.

5. A centrally-open chain-link having its side bars provided with bearings, in combination with a bucket pivoted in the bearings in the side bars, and provided with a stop situated at a distance from the pivotal support of the bucket, and adapted to engage with the link for limiting the vibration of the bucket, substantially as set forth.

6. A centrally-open link having one of its side bars provided with a closed eye, and the other side bar provided with an eye having a narrow throat, in combination with a bucket having a trunnion adapted to fit closely the closed eye, and a trunnion adapted to pass through the throat of the opposite eye, substantially as set forth.

7. A centrally-open link having side bars provided with bearings, in combination with a bucket mounted in bearings, and provided with a stop which engages with the upper face of the link, and a stop which engages with the opposite face of the link, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTOPHER W. LEVALLEY.

Witnesses:

A. L. FAULKS,
GEO. S. BENNETT.