

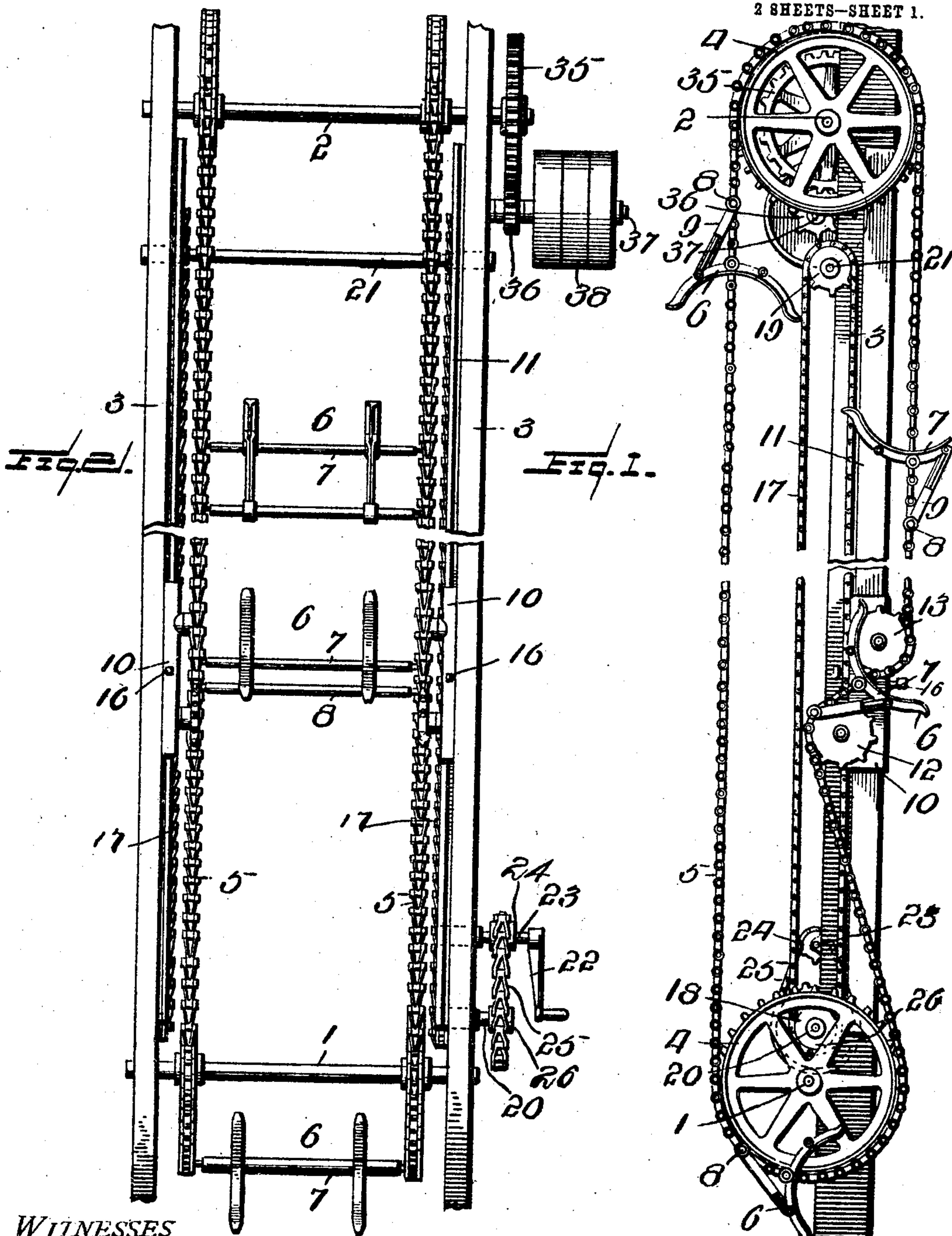
No. 799,477.

PATENTED SEPT. 12, 1905.

C. W. LEVALLEY.
ELEVATOR.

APPLICATION FILED JULY 11, 1904.

2 SHEETS—SHEET 1.



WITNESSES

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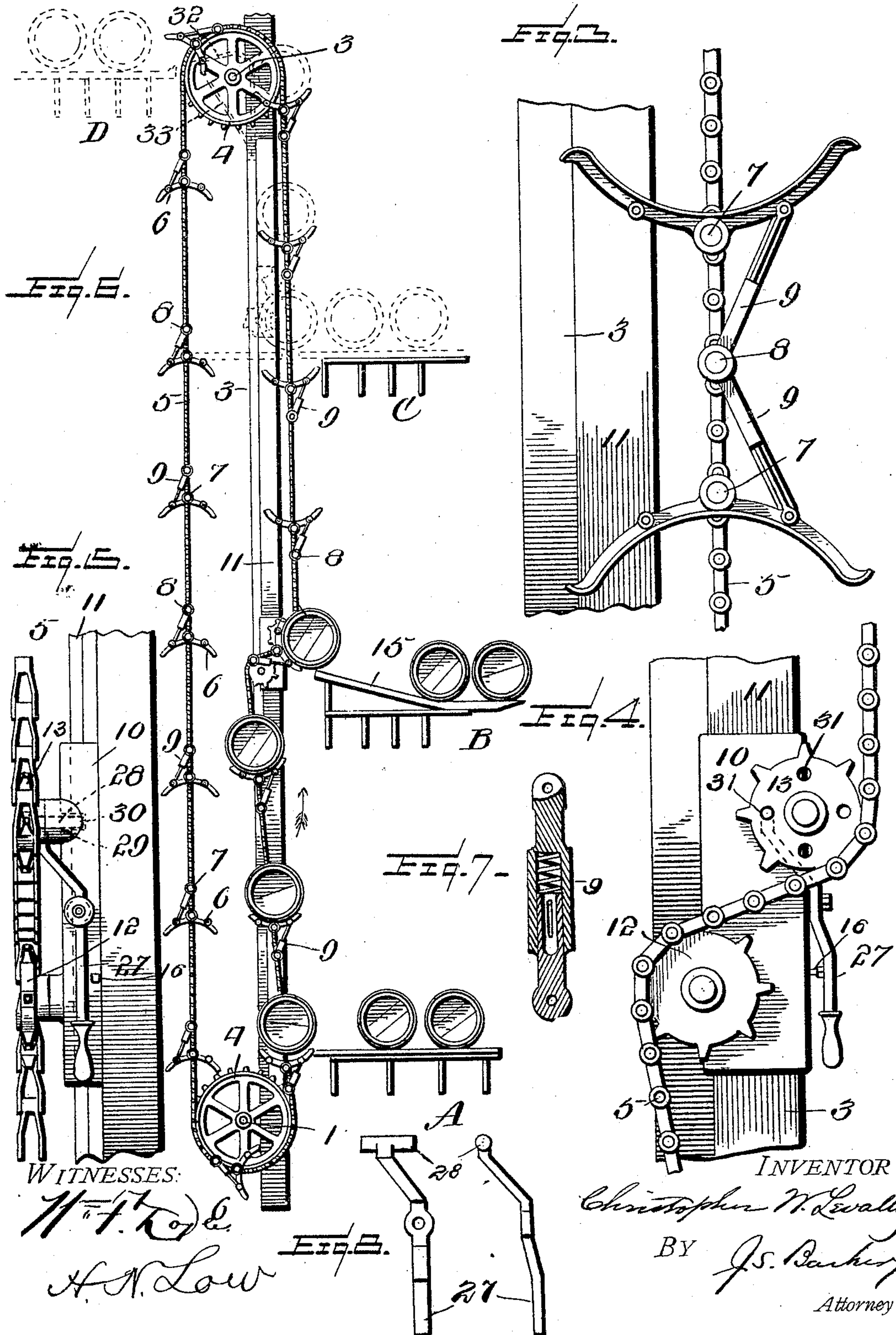
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Fig. 8.

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UNITED STATES PATENT OFFICE.

CHRISTOPHER W. LEVALLEY, OF MILWAUKEE, WISCONSIN.

ELEVATOR.

No. 799,477.

Specification of Letters Patent.

Patented Sept. 12, 1905.

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To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

My invention relates to conveyers, and more particularly to elevators, and has for its object to provide a means for automatically discharging the load that may be carried by the conveyer, such means being adjustable to any desired point in the line of the conveyer, and possessing features of novelty and utility that will be hereinafter pointed out.

In the accompanying drawings I have illustrated my invention applied to a barrel-elevator comprising a pair of endless chains between which are arranged a series of cradles for supporting the barrels. I have chosen this form of elevator as a type, it being evident that my invention is not limited to a conveyer that transports along vertical lines only and that the cradles are but one form of a means for supporting the material or articles to be conveyed. I therefore do not wish to be considered as restricting my invention to barrel-elevators, and when hereinafter I employ the term "cradle" or like term to designate the supports for the material being transported I desire to be understood as using such term merely for convenience to designate the entire class of material-supporting devices that are analogous to a cradle, such as flights or buckets or hooks.

In the accompanying drawings, Figure 1 is a side view of a barrel-elevator embodying one form of my improvements. Fig. 2 is a front view of the same. Fig. 3 is a side view of a short section of the elevator provided with a pair of oppositely-arranged cradles. Fig. 4 is a side view of a short section of a conveyer, illustrating different means for adjusting the discharging devices from that illustrated in Figs. 1 to 3. Fig. 5 is an edge view of the parts shown in Fig. 4, the conveyer being removed. Fig. 6 is a side view of an elevator embodying my improvements drawn to a smaller scale than the other views and represented as passing four floors A B C D of a building. Fig. 7 is a detail view of one of the spring-braces 9. Fig. 8 shows the lever 27 in elevation and edge views, respectively.

In the drawings, 3 3 represent upright

frame-pieces, in which are mounted, respectively, the foot and head shafts 1 and 2. Each of these shafts carries a pair of sprocket-wheels 4, over which pass the conveyer-chains 5, these being parallel with each other and spaced apart sufficiently to permit the cradles 6 being arranged between them. Each cradle is mounted upon a cross-piece 7, preferably of tubular construction, and supported at its ends in the opposite chains 5. Another cross-bar 8, also preferably of tubular construction, is supported in the chains and arranged adjacent to the cross-piece 7. A pair of extensible spring-braces 9 is arranged between each cradle 6 and the cross-bar 8 adjacent thereto. The cradles are preferably secured fast to their supporting-shafts, while the latter are so mounted as to be free to turn in the links of the chain by which they are supported, and the braces 9 are preferably free to turn upon their supporting-shafts and are pivoted to the cradles. The braces are preferably arranged on the outside of the loop formed by the conveyer and are connected with the cradles between their ends and the pivotal connections with their supporting-rods, preferably about midway between such points in order to hold the cradles with sufficient firmness for all practical purposes, and yet permit a certain amount of yielding as the cradles are loaded and discharged.

In order to automatically discharge the barrels from the cradles, I have invented and herein illustrated means for that purpose, such means comprising mechanism that deflects the course of the endless conveyer, and thereby causes the cradles to assume such position that the barrels will pass therefrom by gravity.

10 indicates an adjustable support mounted upon a slideway 11, carried by the upright frame-piece 3. Upon this support are mounted two idler-wheels 12 and 13, past which the conveyer-chain 5 moves and by which it is deflected. In order to cause the cradles to discharge outwardly, the lower of the two wheels 12 13 is arranged inside of the upper one, the preferable arrangement being that shown wherein the wheel 12 is disposed inside of the normal line of movement of the conveyer, while the wheel 13 is arranged in the line that would be normally followed by the conveyer were it not so deflected.

It will be seen by reference to Fig. 1 that

as the conveyer passes one of the discharge devices just described each cradle is caused to assume an inclined or discharging position by reason of the fact that the course of the conveyer is deflected. The distance between the two wheels 12 and 13 is sufficiently great to cause the cradle to assume the discharging position for a length of time sufficient to insure the discharge of its load. By making the braces 9 yielding and spring-actuated the cradle will give the barrel a sort of kick or push on being discharged to cause it to move quickly away from the line of the conveyer.

In Fig. 6 of the drawings I have illustrated the conveyer as being loaded at the first floor A and discharging at the floor above, B. I prefer to place an inclined skid 15 adjacent to the place of discharge to insure that the barrels shall be carried sufficiently far away from the path of the elevator not to interfere therewith.

It will be understood that there should be two of the discharging devices just described, one for each of the conveyer-chains 5. Each discharge device is adjustable vertically along the ways 11—that is, in a direction substantially parallel with the leg or run of the conveyer where the discharge is to be effected—and is provided with set-screws 16 or other means for holding it securely in place. In Figs. 1 and 2 I have represented one means for adjusting the two opposite discharging devices simultaneously. 17 indicates an endless chain connected with the support or carrier 10 and passing around the wheels 18 and 19, situated, respectively, near the bottom and top of the elevator. The lower wheels 18 are preferably mounted upon independent stud-shafts 20, while the upper wheels 19 are supported upon a common cross-shaft 21, by means of which the two chains 17, that are connected, respectively, with the opposite supports 10, are caused to move together. 22 is a crank-handle mounted upon a shaft 23, that carries a sprocket wheel or pinion 24, that is in turn connected by a chain 25 with a sprocket-wheel 26, mounted upon one of the stud-shafts 20. It will be evident that whenever the set-screws 16 are loosened the discharge devices may be adjusted either up or down by operating the crank-handle 22.

In Figs. 4 and 5 I have shown another form of adjusting device. It consists of means for locking one of the wheels carried by the bracket or support 10 against rotation, thereby causing the support to move with the conveyer. Referring to these figures, 27 is a lever fulcrumed upon the adjustable support 10 and provided with a cross or T head 28. One of the arms of the cross-head of the lever is constantly seated in an aperture 29 in the bracket or support 10. When the parts are at rest and it is wished to lock the support 10, the lever is swung so as to carry the inner arm

of the cross-head through the aperture 29 and into a socket or recess 30, formed in the way upon which the sliding support is mounted. Whenever it is desired to adjust the discharging device, the lever 27 is thrown in the opposite direction, withdrawing the cross-head from the socket 30 and carrying the opposite arm thereof into an aperture 31 in the sprocket-wheel 13. This locks the wheel to its bracket or support and necessarily causes the bracket and the parts carried thereby to move in the direction in which the chain may be moving. If the adjusting devices for the opposite chains of the elevator are disconnected, as they ordinarily are, each will be adjusted independently of the other.

At the head of the elevator I have, in Fig. 6, represented means for automatically discharging. It will be understood that as the elevator passes over the head-wheels and its course is thereby deflected the cradles will be caused to take a discharging position and finally inverted as they reach the down-moving leg or run of the elevator. Adjacent to the head-wheels and extending over their shafts are arranged the skidways 32, that receive the barrels or packages as they are discharged from the cradles. These skidways are arranged to discharge to the upper floor D and are suitably braced, as I have indicated at 33.

In Fig. 3 I have represented a double arrangement of cradles or supporting devices for packages, whereby the conveyer or elevator is adapted to be loaded and discharged on both its up and down run. The arrangement described comprises two of the cross bars or shafts 7, arranged upon opposite sides of a single cross bar or shaft 8. The cradles 6 are supported on the cross-bar 7 in the manner already described, but are arranged oppositely. The braces 9, one set for each cradle, extend to the shaft 8, which serves for both sets. The forward cradle is to be used on the up run of the elevator and the rear cradle on the down run. Any suitable driving mechanism may be employed in connection with the conveyer. I have shown the head-shaft 2 as being provided with with a spur-wheel 35, with which gears a pinion 36, mounted on a shaft 37. On this shaft are arranged the driving-pulleys 38, which are belted to any suitable motor or source of power. I have shown three such pulleys, two of them tight and one loose, upon their shaft 37, and with these I employ two belts, one crossed and the other open. By this arrangement the elevator or conveyer may be driven in either direction, so that if provided with the arrangement of supports shown in Fig. 3 either leg of the elevator may be used for elevating purposes, according to the direction in which the elevator may be run.

While I have shown and described my in-

vention as applied to an endless conveyer having two lines of chain, it is evident that it is clearly adapted for use in connection with a conveyer in which the supports for the material to be transported are carried by a single line of chain. It is also evident that the direction in which the conveyer may be running at the time the discharge is effected is not material to my invention, though the invention is particularly adapted for use in elevators where the loading and discharge takes place along a vertical run of the conveyer.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a conveyer arranged to carry material in substantially vertical directions, the combination of an endless chain or belt, supports for the material secured to the chain or belt and disposed substantially at right angles thereto, means for maintaining the supports in said relation at all times, and means arranged adjacent to a vertical run of the conveyer along which the material is being carried for deflecting the chain or belt and causing the supports for the material to be inclined outward whereby the material is delivered away from the line of the conveyer, substantially as set forth.

2. The combination with an endless conveyer provided with supports for the material to be transported, the conveyer being arranged to convey along substantially vertical lines, of a device for deflecting the course of the conveyer to cause the material to be discharged, arranged adjacent to a vertically-disposed run of the elevator, the said deflecting device comprising two wheels with which the conveyer engages, the lower wheel being set inward relative to the upper wheel, whereby the load is discharged outward away from the conveyer, substantially as set forth.

3. The combination with an endless conveyer having supports for material to be transported, of an adjustable discharging device having a pair of wheels with which the conveyer engages and arranged to deflect the conveyer from its normal course, whereby the supports are brought to a discharging position, substantially as set forth.

4. In a conveyer, the combination of an endless chain, supports carried by the chain for the material to be transported arranged substantially transverse thereto, means for maintaining the said supports in said relation to the chain, and adjustable means for deflecting the course of the chain and the transversely-arranged supports, whereby the supports are caused to assume a position to discharge their loads in a direction away from the line of the conveyer where the discharge takes place, substantially as set forth.

5. In a conveyer, the combination of an endless chain, a support for the material to be

transported, a brace for holding the support firmly in position to carry its load said brace being connected with the support between its outer edge and its connection with the chain and also connected with the chain at a point somewhat distant from the connection of the chain and support and means for diverting the course of the chain to cause the support to assume a position to discharge its load, substantially as set forth.

6. In a conveyer, the combination of the endless chains, the supports for the material to be transported carried thereby, the spring-braces for the supports, and the means for deflecting the course of the chains to cause the supports to assume an inclined position, the spring-braces operating to push the load as it is being discharged and thereby assist in its delivery, substantially as set forth.

7. The combination of an endless conveyer having the cradles 6 and the braces therefor, the adjustable brackets or supports 10, and the wheels 12 and 13 carried by the brackets, such wheels being arranged to deflect the course of the conveyer, substantially as set forth.

8. In a conveyer, the combination with the endless chains, of the double supports for the material to be transported, consisting of a pair of oppositely-arranged cradles 6, the cross-shafts 7 extending between the chains upon which the cradles are supported, another cross-shaft 8 extending between the chains and disposed intermediate the cross-shafts 7, and the braces extending from the cross-shaft 8 to the two cradles, substantially as set forth.

9. The combination with an endless conveyer having supports for the material to be transported, of an adjustable discharging device for the conveyer, an endless chain connected therewith, arranged substantially parallel with one leg or run of the conveyer, and means for moving the chain to adjust the discharging device, substantially as set forth.

10. The combination with an endless conveyer having supports for the material to be transported, of a discharging device for the conveyer adjustable along a path adjacent to one run of the conveyer, an endless chain connected with the discharging device for adjusting it, a crank-handle 22, and gearing between the crank-handle and the chain for adjusting the discharging device, substantially as set forth.

11. The combination with a conveyer comprising a pair of endless chains, and supports for the material to be transported carried by the chains, of a pair of discharging devices arranged to be engaged by the chains of the conveyer and to deflect the course of the latter to cause the material-supports to assume a discharging position, the endless chains 17 connected with the discharging devices, and

means for operating the chains 17 simultaneously to adjust the position of the discharging devices, substantially as set forth.

12. The combination of an endless conveyer
5 having supports for the material to be transported, a head-wheel around which the conveyer passes, and the skid-irons 32 disposed

adjacent to the head-wheel and arranged to receive the loads from the carriers as they pass such wheels, substantially as set forth.

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Witnesses:

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V. I. KLOFANDA.