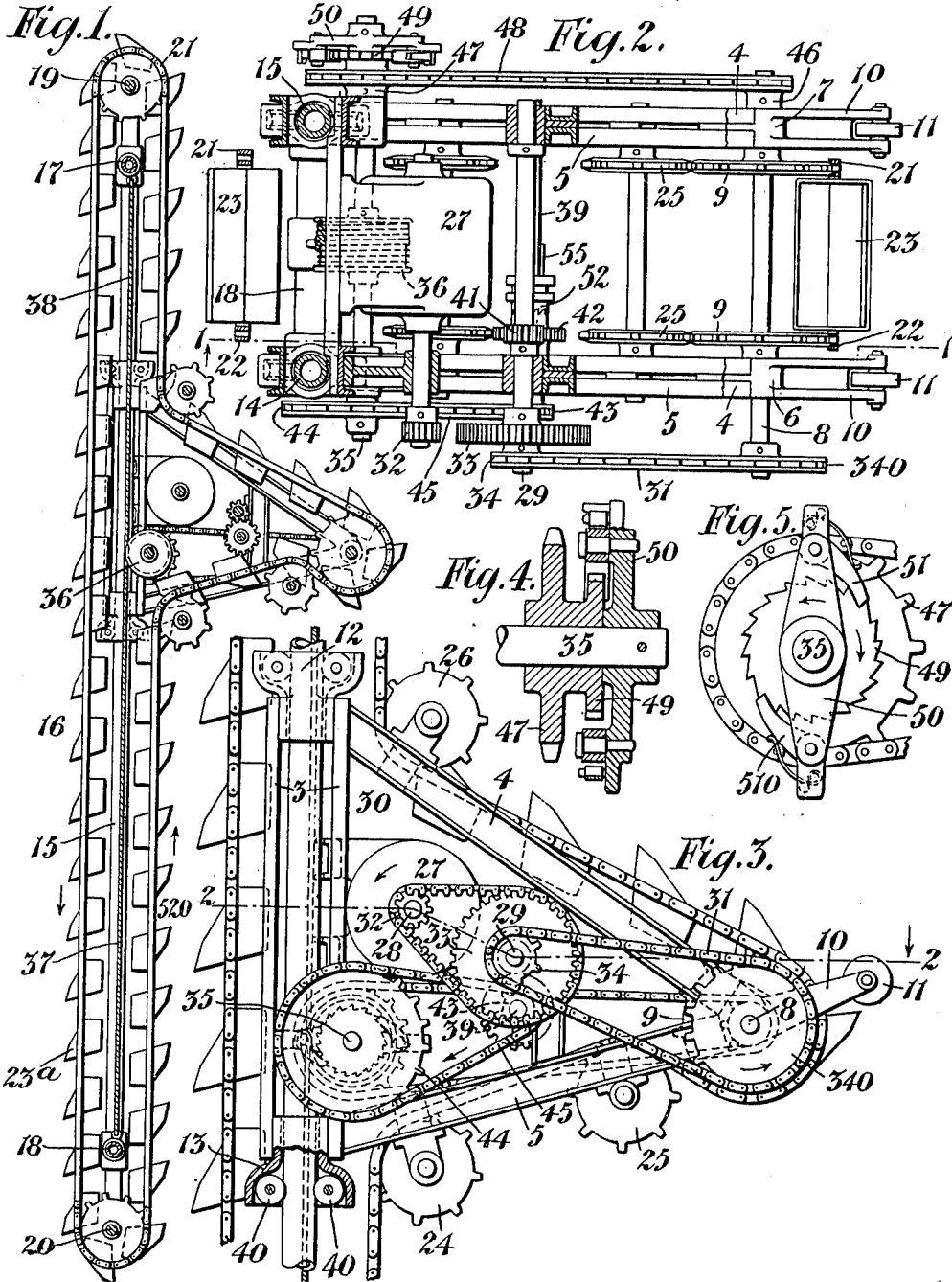


J. H. MICHENER, JR.
CONVEYER.

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1,061,394.

Patented May 13, 1913.



Witnesses

M. Levy

Chas. W. La Rue

Inventor

John H. Michener, Jr.

By Wilbur M. Stone
Attorney.

UNITED STATES PATENT OFFICE.

JOHN H. MICHENER, JR., OF NEW YORK, N. Y.

CONVEYER.

1,061,394.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN H. MICHENER, Jr., a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Conveyers, of which the following is a specification.

This invention relates to elevators and particularly to that class thereof which includes a main member and a movable member or leg slidably mounted in the main member and having an endless load carrying member or bucket chain traversing said main member and said slidable member.

The object of my improvements is to provide, in addition to the usual power means for actuating the bucket chain, means for raising and lowering the slidable member or leg relatively to the main member.

The preferred embodiment of my improvements is shown in the accompanying drawings wherein—

Figure 1 is a side elevation thereof, partly in section on line 1, 1 of Fig. 2. Fig. 2 is a sectional plan view, on line 2, 2 of Fig. 3. Fig. 3 is a side elevation of a portion of my apparatus, corresponding with Fig. 2. Figs. 2 and 3 are drawn to a larger scale than that of Fig. 1. Figs. 4 and 5 are, respectively, a cross sectional elevation and a side view, to a still larger scale, of details of my apparatus.

The main member of my apparatus is preferably triangular in side elevation and may comprise opposite pairs of uprights as 3, 3, upper members as 4 and lower members as 5, said upper and lower members meeting in bearings 6, 7 for shaft 8. To said shaft are fixed sprockets as 9 for the bucket chains. Projecting forwardly from said bearings 6, 7 are brackets 10, 10 carrying fender rolls 11, 11. Uprights as 3 are provided at their top and bottom ends with guides 12, 13 for side members 14, 15 of the movable leg indicated in a general way by 16. Said side members 14, 15 are connected together near their upper and lower ends by cross members 17, 18 respectively and at their extreme upper and lower ends are provided with bearings for sprocket shafts 19, 20, respectively, for the bucket chains as 21. Said bucket chains are preferably two in number 21, 22 and support at intervals therebetween a series of buckets as 23. The main

member, indicated in a general way by 30, is also provided with lower sprockets as 24, 25 supported on members 5, 5 and with upper sprockets as 26 supported on members 4, 4. Said sprockets are efficient to support and direct bucket chains 21, 22.

Power is supplied from motor 27 supported from uprights as 3 of main member 30. Said power is transmitted from motor shaft 28 to intermediate shaft 29 by gear wheels and gear chain of well known construction; gear wheel 32 on motor shaft 28 being smaller than gear wheel 33 on intermediate shaft 29, whereby the speed of intermediate shaft 29 is less than that of the motor shaft. Small sprocket 34 on intermediate shaft 29 transmits power to large sprocket 340 on shaft 8 by means of chain 31. Shaft 35 suitably mounted in bearings in the main frame is located below motor 27 and fixed thereto is winding drum 36. Fixed to lower cross member 18 of movable member 16 is one end of rope or chain 37 and the other end of said rope is wrapped about and secured to drum 36. To upper cross member 17 of said slidable member is fixed one end of another rope 38 and the other end of said rope is wrapped about drum 36 in the direction opposite to that of rope 37 and secured to said drum. Said guides 12, 13 may be provided with anti-friction rolls as 40, 40. Located below intermediate shaft 29 is another intermediate shaft 39 driven from said first intermediate shaft 29 by gears 41, 42 fixed to said shafts respectively. Gear 42 is loosely mounted on shaft 39 and may be caused to rotate with that shaft by means of clutch 52 which may be moved endwise shaft 39 on key 55 into and out of engagement with corresponding clutch teeth on the hub of gear 42. Said clutch 52 will be manually operated by some convenient means not shown. Intermediate shaft 39 has also fixed thereto small sprocket 43 which drives sprocket 44 on drum shaft 35 by means of chain 45. Said driving mechanism is efficient to rotate drum 36 to wind up rope 37 to lift leg 16. On the opposite side of main member 30 to that on which the just described driving mechanism is mounted is other driving mechanism comprising sprocket 46 on shaft 8 and sprocket 47 on drum shaft 35. Power is transmitted from said sprocket 46, to sprocket 47 by chain 48. Fixed to sprocket 47 is ratchet 49, and said

sprocket and ratchet turn freely together on drum shaft 35. Outboard sprocket 49 and fixed to drum shaft 35 is pawl arm 50. Said pawl arm preferably comprises two members diametrically opposite, relatively to shaft 35, and said members have pivotally mounted near their outer ends pawls 51, 510, respectively, spring urged to engagement with ratchet 49.

The operation of my improved machine is as follows: Prior to beginning the operation main member 30 will be supported by some convenient means, not shown, contiguous to the desired point of discharge of the loaded buckets and the lower part of leg 16 will be lowered into engagement with the material to be elevated, clutch 52 and gear 42 being disengaged. Motor 27 being then started in rotation, the bucket chains travel in the direction of their arrows, elevating the material along run 520 of said chains and discharging said material as the buckets pass under sprockets 9. At this time leg 16 is free to move downwardly into the mass of material as that mass is carried upwardly away by the buckets 23. During this normal operation of the mechanism, ratchet 49 is being driven slowly in the direction of its arrow by means already described and its teeth travel idly under pawls 51, 510, which remain at rest with arm 50 or rotate slowly with that arm in the same direction as the ratchet if leg 16 is slowly settling into the mass of material. If now one of the descending buckets as 23^a encounters an obstruction that run of the bucket chains to which said bucket is attached will be halted in its downward movement and leg 16 will be moved bodily upward by the pull of run 520 of said bucket chains, thereby unwinding rope 38 from drum 36 and winding rope 37 thereon, thus rotating shaft 35 in the direction of the arrow on arm 50, Fig. 5, whereby pawls 51, 510 will move backwardly over the teeth of ratchet 49. When leg 16 has been elevated high enough to free bucket 23^a from its obstruction and permit that bucket to pass around shaft 20 the tendency of leg 16 will be to immediately fall and which tendency is checked by the instant engagement of pawls 51, 510 with the teeth of ratchet 49, but said ratchet, being slowly driven in the direction of its arrow, Fig. 5, will permit rope 37 to unwind only slowly from drum 36, thereby slowly lowering member 16 to permit free engagement of buckets 23 with the mass of material. If now it is desired to hoist leg 16 for the removal of the apparatus or for the transfer of the lower end of said leg to a fresh supply of material, clutch 52 is thrown into engagement with the clutch of gear 42, thereby rotating shaft 39 and driving drum 36 in a clockwise direction, Fig. 3, whereby rope 37 is wound onto said drum

and leg 16 is raised. When said leg has been raised a desired amount clutch 52 is disengaged and said leg is lowered slowly into operative engagement with the mass of material.

I claim:

1. An elevator including in combination, a main member, a movable member slidably mounted in the main member, hand governed power actuated means for raising the movable member relatively to the main member, and automatic means for slowly lowering the movable member, after said member has been raised.

2. An elevator including in combination, a main member, a movable member slidably mounted in the main member, a rotatable drum operably connected with the movable member, and automatic means for rotating said drum for lowering the movable member.

3. An elevator including in combination, a main member, a movable member slidably mounted in the main member, an endless load-carrying member supported for movement on said main member and on said slidable member, said load-carrying member being mounted for movement simultaneously in opposite directions on said slidable member, means for actuating the load-carrying member, hand governed power actuated means for raising the movable member relatively to the main member, and automatic means for slowly lowering the movable member, after said member has been raised.

4. An elevator including in combination, a main member, a movable member slidably mounted in the main member, an endless load-carrying member supported for movement on said main member and on said slidable member, said load-carrying member being mounted for movement simultaneously in opposite directions on said slidable member, means for actuating the load-carrying member, a rotatable drum operably connected with the movable member and automatic means for rotating said drum for lowering the movable member.

5. An elevator including in combination, a main member, a movable member slidably mounted in the main member, an endless load-carrying member supported for movement on said main member and on said slidable member, said load-carrying member being mounted for movement simultaneously in two opposite directions on said slidable member, means for actuating the load-carrying member, a rotatable drum operably connected with the movable member and automatic means for rotating said drum for lowering the movable member, a connection between said drum and said automatic rotating means, for permitting said drum to be rotated in the opposite direction by the hand governed power actuated means or by other means.

6. An elevator including in combination, a main member, a movable member slidably mounted in the main member, an endless load-carrying member supported for movement on said main member and on said slidable member, said load-carrying member being mounted for movement simultaneously in opposite directions on said slidable member, means for actuating the load-carrying member, a rotatable drum operably connected with the movable member, hand governed power actuated means for rotating said drum in one direction for raising the movable member relatively to the main member, and automatic means for rotating said drum in the opposite direction for slowly lowering the movable member, after said member has been raised either by power or by the stoppage of the downwardly moving portion of the load-carrying member, a connection between said drum and said automatic rotating means, for permitting said drum to be rotated in opposite directions.

7. An elevator including in combination, a main member, a movable member slidably mounted in the main member, a rotatable drum operably connected with the movable members and automatic means for rotating said drum for lowering the movable mem-

ber, a connection between said drum and said automatic rotating means, for permitting said drum to be rotated in the opposite direction by the hand governed power actuated means or by other means.

8. An elevator including in combination, a main member, a movable member slidably mounted in the main member, a rotatable drum operably connected with the movable member, hand governed power actuated means for rotating said drum in one direction for raising the movable member relatively to the main member, and automatic means for rotating said drum in the opposite direction for slowly lowering the movable member, after said member has been raised either by power or by the stoppage of the downwardly moving portion of the load-carrying member, a connection between said drum and said automatic rotating means, for permitting said drum to be rotated in opposite directions.

Signed at New York, N. Y., this 9th day of May, 1912, before two subscribing witnesses.

JOHN H. MICHENER, JR.

Witnesses:

WILBUR M. STONE,
CHAS. W. LA RUE.