

No. 846,725.

PATENTED MAR. 12, 1907.

FRANK H. BROWN & FRED H. BROWN.  
PORTABLE ELEVATOR.

APPLICATION FILED DEC. 23, 1905.

2 SHEETS—SHEET 1.

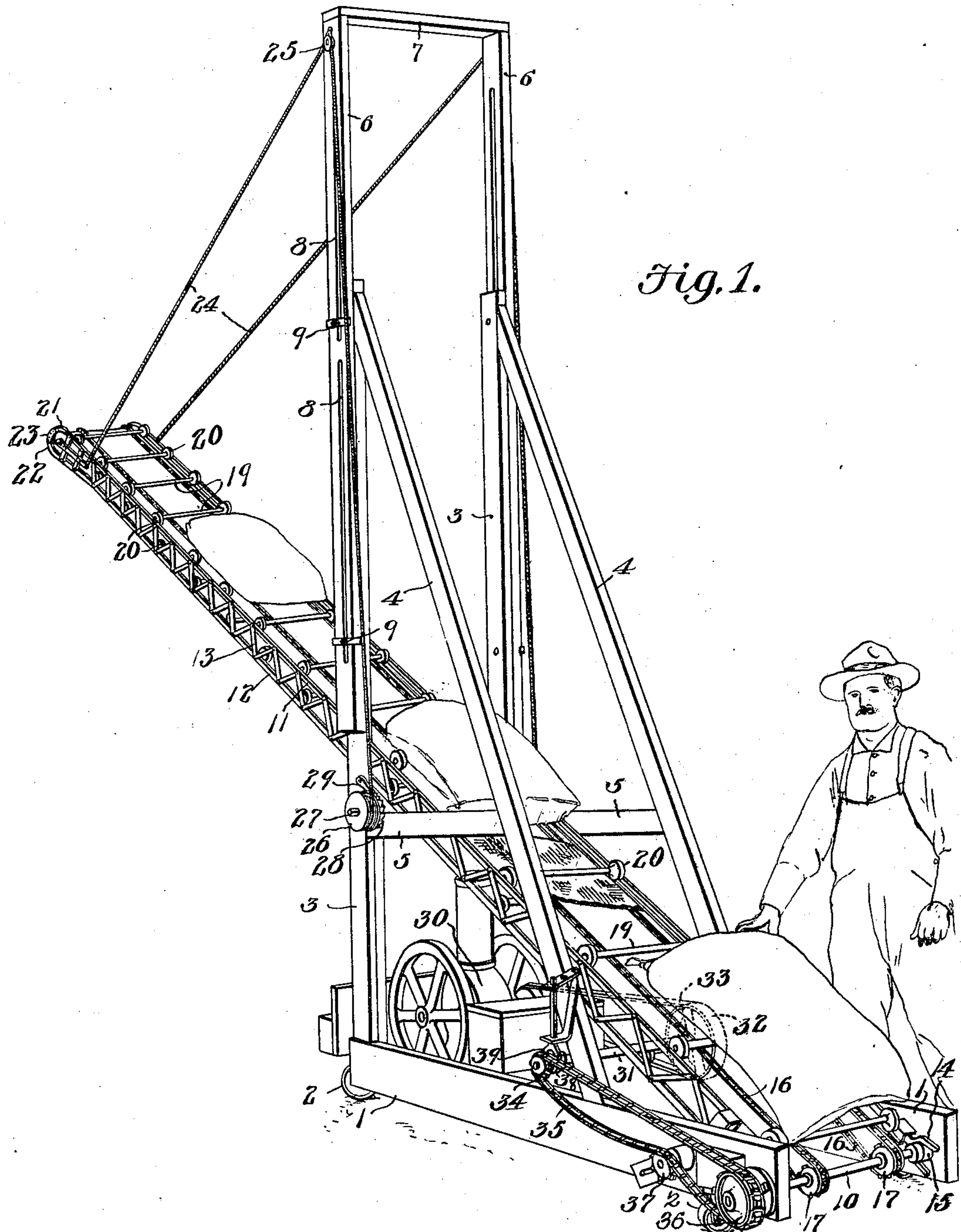


Fig. 1.

Witnesses

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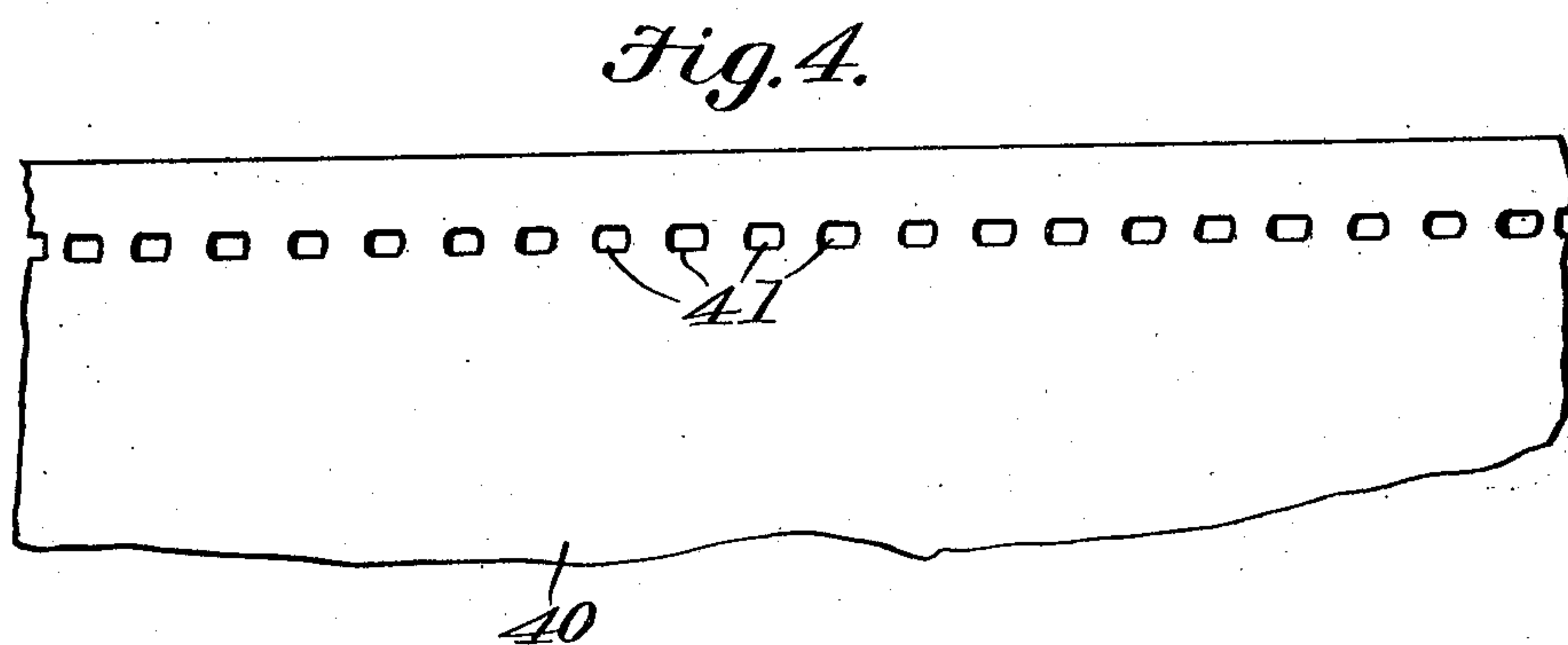
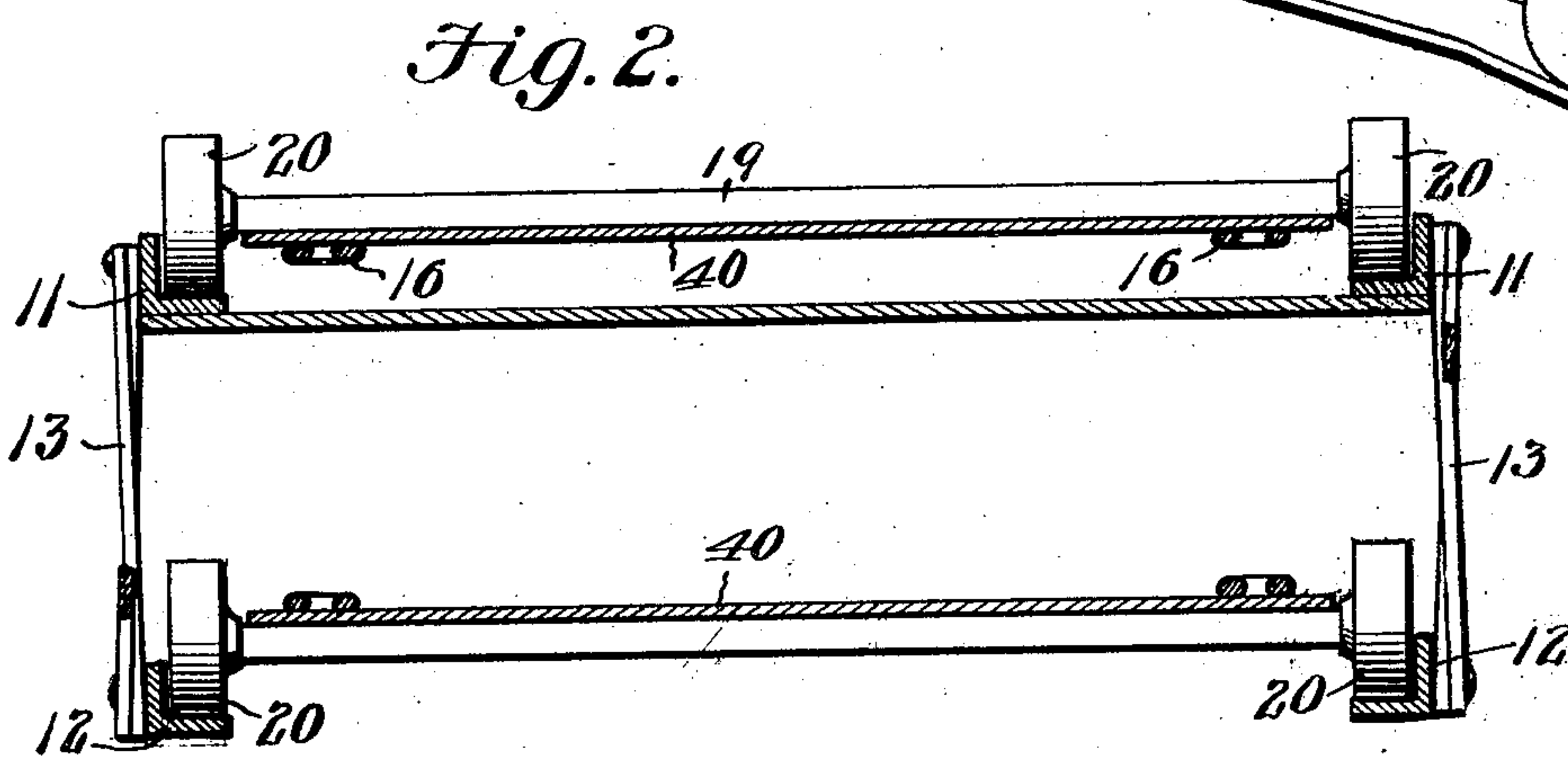
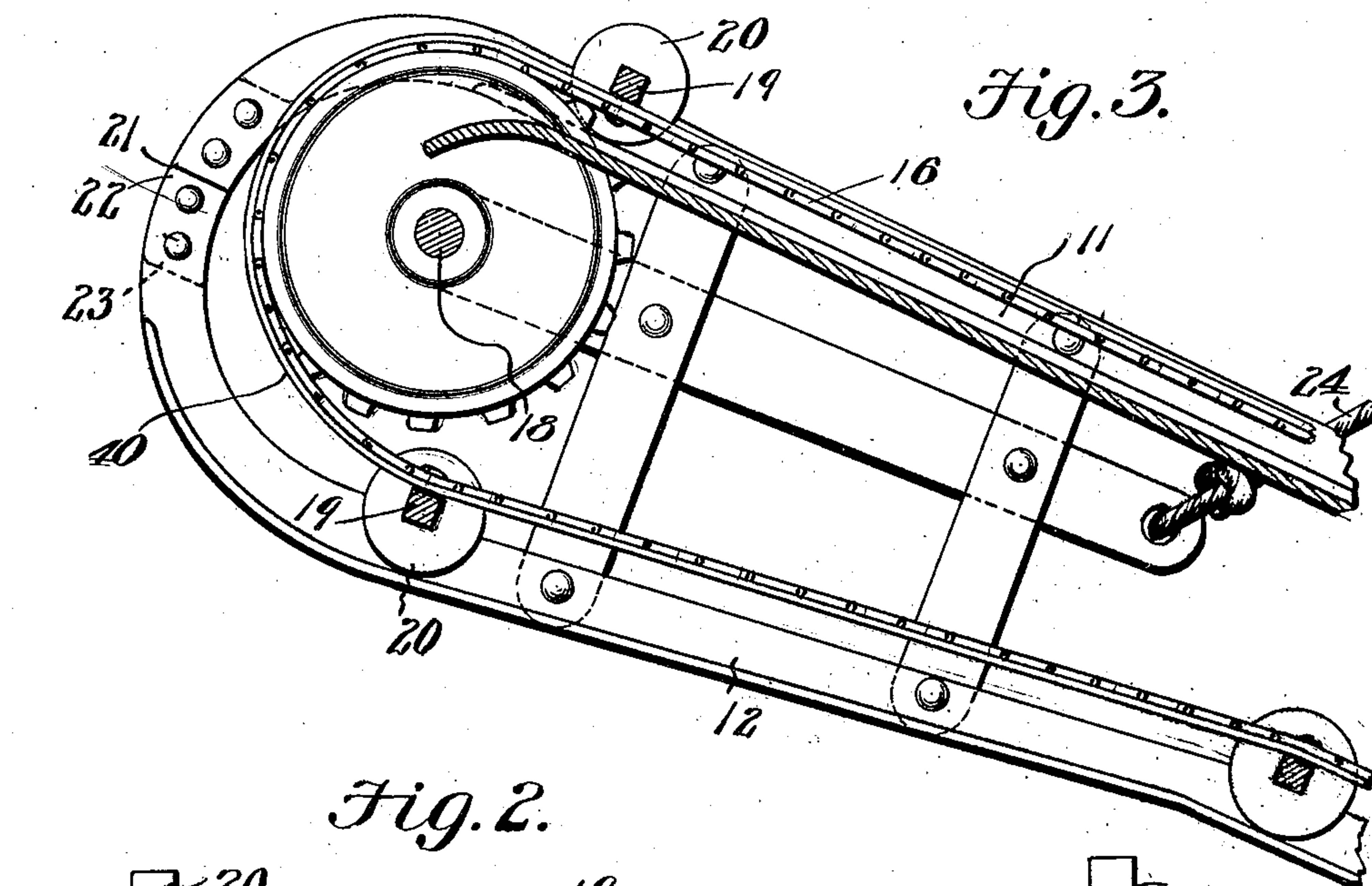
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Witnesses

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# UNITED STATES PATENT OFFICE.

FRANK H. BROWN AND FRED H. BROWN, OF COLFAX, WASHINGTON.

## PORTABLE ELEVATOR.

No. 846,725.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed December 23, 1905. Serial No. 293,143.

*To all whom it may concern:*

Be it known that we, FRANK H. BROWN and FRED H. BROWN, citizens of the United States, residing at Colfax, in the county of Whitman and State of Washington, have invented a new and useful Portable Elevator, of which the following is a specification.

This invention relates to elevators, and has for its object to provide certain new and useful improvements therein to render the same portable, and particularly adapted for use in warehouses to elevate bags, boxes, barrels, and the like for convenience in storing the same.

Further objects of the invention reside in the simplification of the endless carrier, the production of a light, strong, and durable pivotal frame for supporting and guiding the endless carrier, and to mount the pivotal frame and to drive the endless carrier in such a manner as to bring the lower end of the carrier close down to the floor, whereby the carrier will automatically take up a bag or the like which is simply placed against the lower portion of the carrier and obviates the necessity of lifting the bag and placing the same upon the carrier.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of a portable elevator embodying the features of the present invention. Fig. 2 is an enlarged cross-sectional view of the pivotal frame and endless carrier. Fig. 3 is an enlarged detail sectional view taken longitudinally through the upper portion of the endless carrier. Fig. 4 is a detailed view showing a portion of the endless belt provided with a series of perforations to receive the teeth of the sprocket-wheels.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

For the support of the operating parts of the present invention there is a base-frame made up of spaced longitudinal sills 1, suitably connected together and supported upon

caster-wheels 2 for convenience in moving the device from place to place. Standards 3 rise from the rear ends of the sills and are braced by inclined braces 4, leading upwardly and rearwardly from forward portions of the sills, there being horizontal brace-bars 5 between the standards and the inclined braces. A vertically-adjustable frame is supported by the standards 3 and is made up of upright bars 6, slidable vertically upon the outer faces of the standards 3 and connected at their upper ends by a cross-bar 7. The upright bars 6 are longitudinally slotted, as at 8, for the reception of bolts 9, carried by the standards, so as to hold the adjustable frame upon the stationary frame and at the same time permit of the convenient raising and lowering of the adjustable frame.

The front end portions of the sills 1 are pierced by a shaft 10. Upon this shaft as a pivot-support is mounted the lower end of the adjustable elevator-frame, each side of the frame comprising upper and lower parallel angle-bars 11 and 12, which are braced and connected by a lattice-work consisting of an angular arrangement of bars 13, which produces a strong and at the same time light frame structure. The lower end of each side of the frame is provided with a fork 14, which loosely embraces the adjacent bearing 15 of the shaft 10, which is projected at the inner side of the adjacent sill, whereby the elevator-frame may be swung up and down upon the shaft 10 as a pivotal support.

The endless carrier consists of a pair of spaced endless sprocket-chains 16, which engage sprocket-wheels 17 upon the shaft 10 and also engage other sprocket-wheels upon a shaft 18, connecting the tops of the sides of the elevator-frame. At regular intervals the two chains are connected by cross-bars or axles 19, provided upon their ends with loosely-mounted wheels 20, running in the angle-bars 11 and 12 as tracks, whereby the endless carrier is guided and directed. It will here be explained that the horizontal member or flange of each angle-bar is at the lower side of the bar, so as to support the wheels when ascending and descending the frame. At the upper end of the frame, as best shown in Fig. 3 of the drawing, each upper bar 11 is bowed downwardly, as at 21, so as to meet the upwardly-bowed portion 22 of the corresponding lower angle-bar, the meeting ends of the angle-bars being connected in some suitable manner—for instance,



by a plate 23, which is riveted, bolted, or otherwise secured to the bars.

For the purpose of adjustably raising and lowering the elevator-frame ropes 24 are connected to opposite sides of the frame at the upper end thereof and extend upwardly through guides or pulleys 25, carried by the top portion of the adjustable frame 6. Each of these ropes extends downwardly to a drum 26, which is mounted upon a shaft 27, that extends between the standards 3, it of course being understood that there is a drum upon each end of the shaft. Each drum is provided with ratchet-teeth 28, engaged by a dog 29, pivoted upon the stationary frame. By applying any form of removable crank to the polygonal projected terminal of the shaft the latter may be rotated to wind the ropes 24 upon the drum, and thereby swing the elevator-frame upwardly upon the shaft 10 as a center.

The endless carrier is driven by means of a suitable engine 30, mounted between the rear portions of the sills 1. In front of the engine there is a shaft 31, mounted transversely across the sills in rear of the inclined braces 4, and upon this shaft is a pulley 32, which is driven from the engine by a belt 33. Upon one end of the shaft 31 there is a sprocket-wheel 34, engaged by an endless sprocket-chain 35, which in turn engages a larger sprocket 36 upon the adjacent end of the drive-shaft 10. A suitable idler 37 is adjustably mounted upon the adjacent sill 1 to support the lower ply of the chain 35. For the purpose of stopping the endless carrier a clutch 38 is mounted upon the shaft 31 and is controlled by a forked lever 39, said clutch including a back gear, so as to drive the endless carrier in the desired direction.

Suitably attached to the under sides of the axles 19 is a broad belt 40, which is of a width to project beyond the sprocket-chains and is provided adjacent its edges with a series of openings 41 to receive the teeth of the sprocket-wheels at the top and bottom of the adjustable elevator-frame. The purpose of this belt is to enable the carrying of boxes, sand, gravel, and other things which could not be carried by the axles 19 alone. While the elevator will operate satisfactorily for elevating bags and the like, which will hang upon the axles, the provision of the belt of course enables the elevation of material that could not be elevated by the axles alone, and at the same time the belt does not interfere with the elevating of boxes and the like.

From the foregoing description it will be noted that the endless carrier is driven from the lower end thereof and the elevator-frame is adjustable around the shaft 10 as a center, whereby the adjustment of the elevator-frame does not interfere with the operation of the carrier and may be accomplished without stopping the movement of the latter.

Moreover, the shaft 10, and consequently the lower portion of the carrier, is let down close to the floor, whereby a bag or the like may be placed upon the floor at the lower end of the elevator and then pushed over upon the carrier, which will pick it up and carry it upwardly along the elevator-frame until it is discharged at the upper end thereof.

It will be observed from Fig. 2 that the endless belt 40 is mounted between the sprocket-chains 16 and the axles 19, so that said chains serve as a simple and practical means for holding the endless belt against the axles 19, and said axles in turn serve to produce transverse ribs on the outer surface of the belt to prevent the slipping of any articles which may be placed thereon for transportation.

As shown in Fig. 4, the belt 40 is provided adjacent each of the sprocket-chains 16 with a longitudinal series of perforations 41, through which the teeth of the sprocket-wheels 17 can project.

As shown clearly in Fig. 1, the diameter of the sprocket-wheels 17, which engage the sprocket-chains 16, is very much less than the height of the longitudinal sills 1, which comprise part of the base-frame. For this reason the small sprocket-wheels 17 can be disposed close down to the surface of the floor on which the portable elevator rests, so that when it is desired to handle sacks or other packages it is only necessary to place them on the floor adjacent the lower end of the elevator and tip them over onto the endless belt, which will immediately grip them and carry them upward without necessitating any lifting of the bag to place it upon the lower end of the belt. It will be obvious that where large quantities of bags are handled in a storehouse or upon a wharf each man can work more rapidly and easily when it is only necessary to tip the bags onto the belt than when it is necessary to lift the same. For instance, when bags are being moved by means of hand-trucks it is only necessary to wheel the truck up to the lower end of the belt and tip it forward, so that the bags will fall onto the belt and be carried upward without the necessity of handling the same to remove them from the truck and place them on the elevator. A further reason why the present device is enabled to pick up bags by itself is that the use of the transverse shafts 19, extending transversely across the outer face of the belt and having the small wheels 20, avoids the necessity of having rigid cars upon the belt to receive the bags, as shown, for example, in the United States patent to Eugene Brown, No. 668,971, dated February 26, 1901. The shafts 19 in applicants' device move readily around the sprocket-wheels 17 in close proximity to the floor, and thus grip the bag adjacent the lower end thereof. In this connection it will be noted



that the wheels 20 on the shafts 19 are of approximately the same diameter as the sprocket-wheels 17, so that when each shaft 19 is moved around the periphery of the sprocket-wheels 17 its wheels 20 will continuously contact with the shaft 10, so as to brace the shafts 19 and prevent the weight of the bags from forcing them hard down against the periphery of the sprocket-wheels 17. As soon as the shafts 19 move upward away from the sprocket-wheels 17 the wheels 20 engage the tracks 11, so as to support the shafts.

Having thus described the invention, what is claimed is—

1. A portable elevator comprising a base-frame, an elevator-frame pivotally mounted thereon and having tracks, an endless conveyer carried by said elevator-frame, transverse shafts extending across the outer side of said conveyer and having wheels to engage said tracks, and an operating-shaft journaled in said base-frame closely adjacent to the ground and having sprocket-wheels to operate the endless conveyer and guide the same close to the ground, the wheels on the transverse shafts of the conveyer being of approximately the same diameter as the sprocket-wheels on the operating-shaft, whereby said wheels on the transverse shafts will contact with the operating-shaft to prevent said transverse shafts from being forced against the periphery of said sprocket-wheels.

2. A portable elevator having an inclined frame provided with tracks, a plurality of

axles provided with wheels to run on the tracks, sprocket-chains secured to the inner sides of the axles for operating the same, and an endless belt mounted between the axles and the sprocket-chains, said chains serving to hold the belt against the axles, and said axles serving to produce transverse ribs on the outer surface of the belt to prevent slipping of articles carried thereon.

3. A portable elevator having an inclined frame provided with angular tracks, a plurality of axles provided with wheels to run on the tracks, sprocket-chains secured to the inner sides of the axles, an endless belt mounted between the axles and the sprocket-chains and having a series of perforations adjacent each chain, said chains serving to hold the belt against the axles, and said axles serving to produce transverse ribs on the belt to prevent slipping of articles carried thereon, and sprocket-wheels having teeth adapted to engage the sprocket-chains and to project through the perforations of the endless belt.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FRANK H. BROWN.  
FRED H. BROWN.

Witnesses as to Frank H. Brown:

GEO. L. PATTERSON,  
W. W. PATTERSON.

Witnesses as to Fred H. Brown:

JOHN PATTISON,  
JAMES CAIMS.