

No. 760,479.

PATENTED MAY 24, 1904.

W. J. PATTERSON.
CONVEYER.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

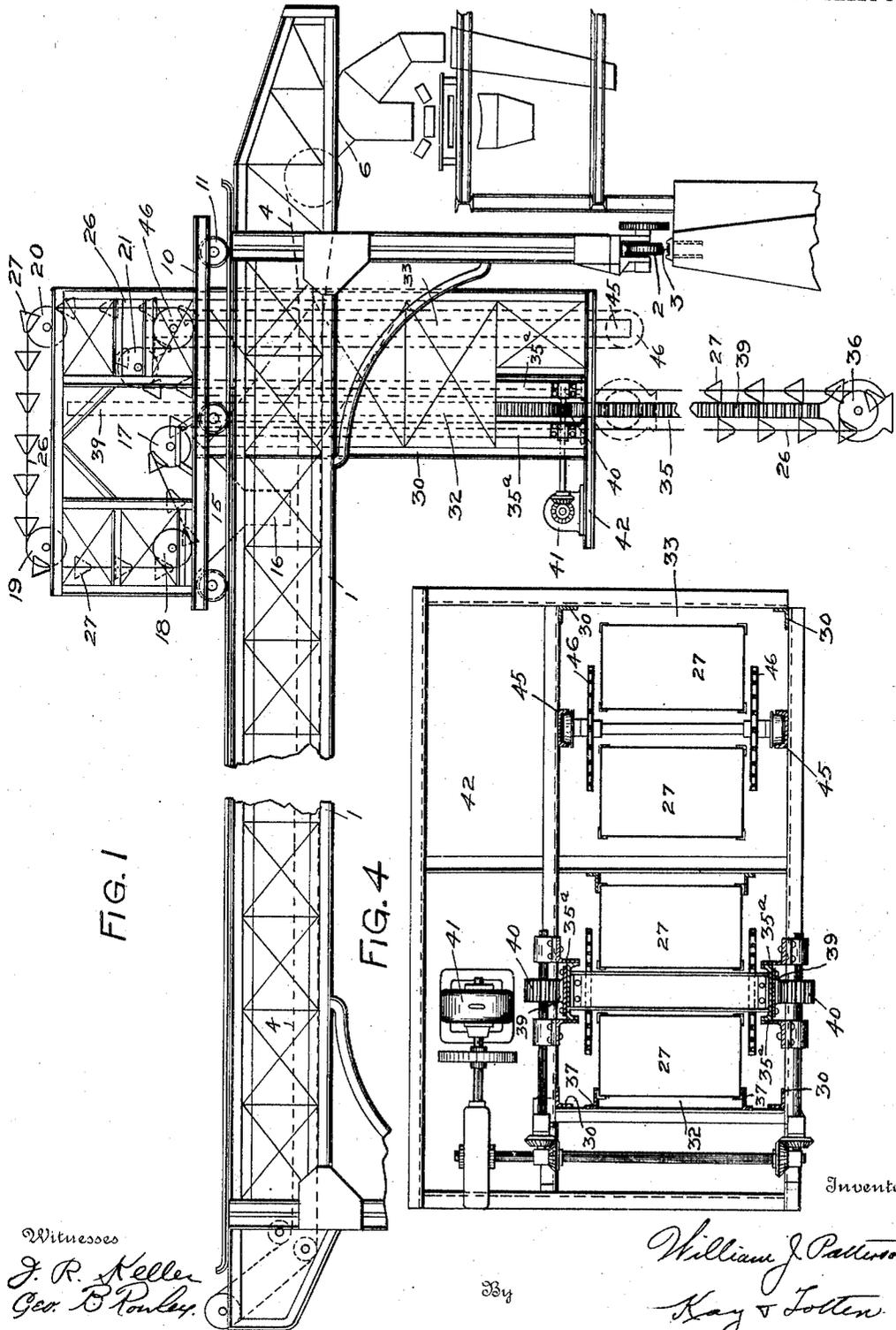


FIG. 1

FIG. 4

Witnesses
J. R. Keller
Geo. B. Rowley.

Inventor

William J. Patterson
Ray & Totten
Attorneys

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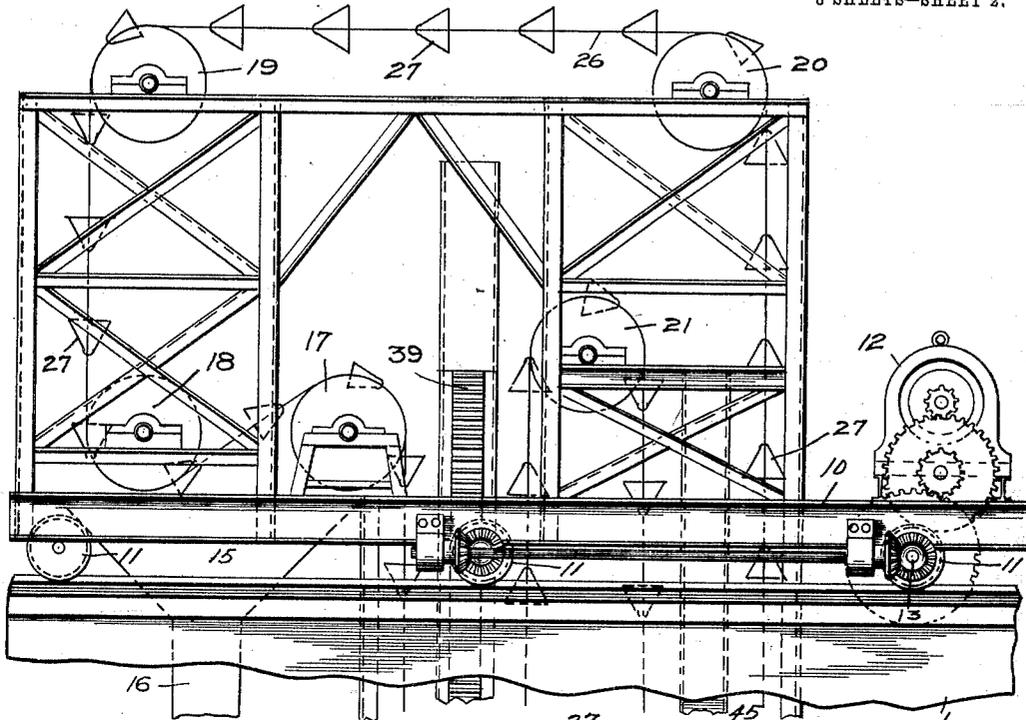
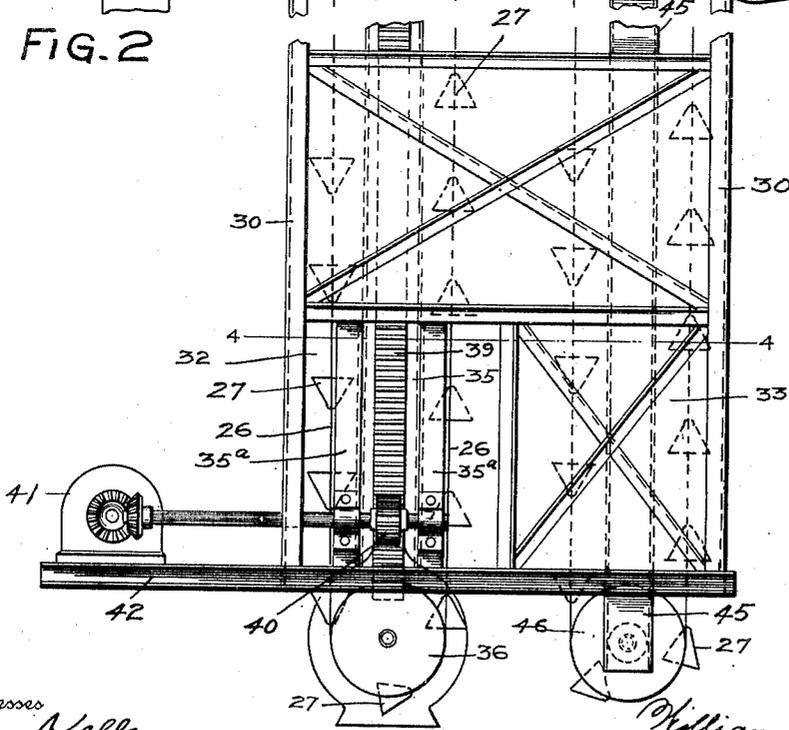


FIG. 2



Inventor

Witnesses
J. R. Keller
Geo. B. Rowley

By

William J. Patterson
Ray & Totten
Attorneys

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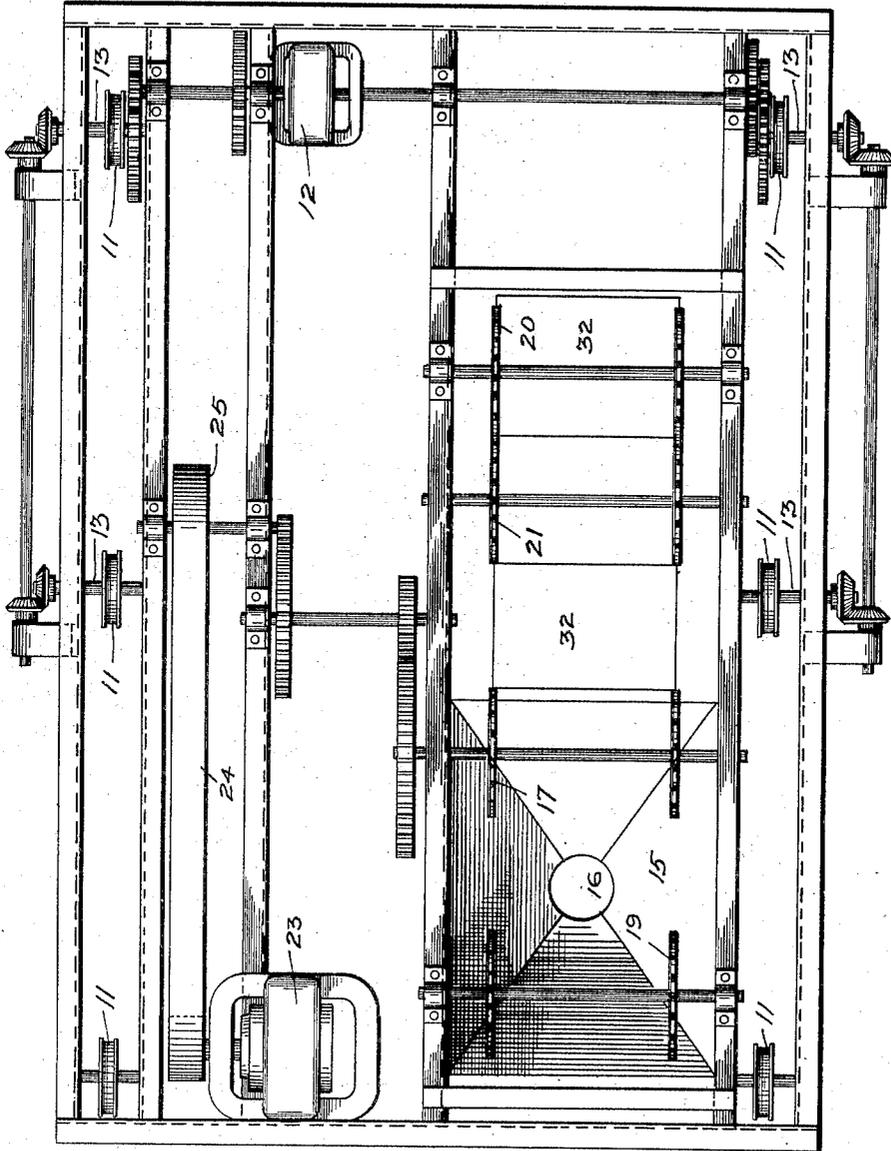
W. J. PATTERSON.
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3 SHEETS—SHEET 3.

FIG. 3



Witnesses
J. R. Keller
Geo. B. Rowley.

384

Inventor
William J. Patterson
Ray & Lottin
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM J. PATTERSON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HEYL AND PATTERSON, OF PITTSBURG, PENNSYLVANIA, A COPARTNER-SHIP OF PENNSYLVANIA.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 760,479, dated May 24, 1904.

Application filed February 5, 1903. Serial No. 141,958. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. PATTERSON, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Conveyers; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to elevating and conveying apparatus; and its object is to provide mechanism for this purpose whereby material can be removed from a storage place of extended area.

In my application filed June 9, 1902, Serial No. 110,795, I have shown, described, and claimed elevating and conveying mechanism comprising, generally stated, a movable bridge or crane having a transverse conveyer thereon, together with a carriage or trolley moving on said bridge and carrying an extensible elevator-leg which will elevate the material and deposit it in the conveyer on the bridge.

The present application has for its object to cover an improvement upon the mechanism shown and described in said application above referred to, the essential feature of which improvement consists in so arranging the carriage on the bridge and the endless conveyer of the elevator as to greatly shorten the carriage, thus enabling the use with a storage-space of a given area of a bridge or crane of less length than is necessary with old forms of apparatus.

The improvement, generally stated, consists in a suspended elevator-leg comprising telescoping members and having therein an endless conveyer, together with mechanism operatively connected to the lower telescoping member for raising and lowering the same, the arrangement being such that the loop of the endless conveyer extends horizontally, as in the old apparatus.

The invention also comprises certain details in the arrangement of the parts and the mechanism for actuating the same, which will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side view, partly broken away, of my improved hoisting and conveying apparatus.

Fig. 2 is a side view, on an enlarged scale, of a portion thereof. Fig. 3 is a plan view of the carriage carrying the elevator-leg; and Fig. 4 is a horizontal section on the line 4 4, Fig. 2.

In my improved apparatus I employ a suitable bridge or crane 1, extending across the storage area, said bridge or crane being suitably mounted so that it can be propelled back and forth along said storage area—as, for instance, by being provided with wheels 2, running on tracks 3. On this bridge or crane is a suitable transverse conveyer 4, that shown in the drawings comprising an endless belt, although any other form of conveyer might be used. This transverse conveyer will be driven in any suitable manner, preferably from a motor mounted on the bridge, and will convey the material to one end of the bridge and deposit the same in a hopper 6, from which it is conveyed by suitable spouts or chutes to another conveyer, by which it is carried away, or to a suitable car. All of these parts, however, are or may be of the construction shown in my prior application or of any other suitable or desired construction.

Mounted on the bridge or crane 1 so as to move along the same or transversely of the storage area is a carriage or trolley 10, provided with suitable wheels 11, running on tracks on the bridge, and which trolley may be propelled along the same by any suitable mechanism. I have shown for this purpose an electric motor 12, mounted on the carriage and connected, by means of suitable intermediate gearing, with the axles 13 of two pairs of the wheels of the carriage. This intermediate gearing may be of any suitable construction, and detailed description of that shown is not given; but it will be readily understood that by means of the motor 12 the carriage is propelled along the bridge or crane 1.

Mounted on the carriage 10 is a hopper 15, having a spout 16 leading to the transverse conveyer 4 on the bridge. Also mounted in said carriage are several pairs of guide-wheels for the endless elevator hereinafter described, five pairs of such guide-wheels being shown

and numbered 17, 18, 19, 20, and 21. One or more of these guide-wheels are driven by any suitable mechanism so as to impart movement to the endless conveyer of the elevator. I have shown the guide-wheels 17 driven from an electric motor 23, mounted on the carriage and connected by a belt 24 to a pulley 25, which is connected to the wheel 17 by a train of intermediate gearing. Any other mechanism, however, for positively driving one or more sets of the guide-wheels may be employed. The guide-wheels shown each comprise two disks or sprockets spaced apart on a single shaft, this being necessary by reason of the particular type of endless conveyer shown—namely, one comprising two chains 26, carrying between them buckets 27. These guide-wheels, however, will be changed in character according to the kind of endless conveyer employed.

Depending from the carriage 10 is a frame or casing 30, which is provided with vertical shafts or openings 32 and 33. The shaft 32 forms the upper member of a telescoping elevator-leg, the lower member 35 of which extends upwardly into said shaft 32 and is adapted to telescope therein. This lower member comprises a rigid beam-like structure practically of the width of the shaft 32 and is guided in ways formed by guiding-angles 35^a, secured to the shaft or casing 32. This telescoping member carries at its lower end a set of guide-wheels 36, around which the endless conveyer 26 passes. The buckets 27 of the conveyer are guided in the shaft 32 by means of flanges or angles 37, secured to the walls of said shaft. In order to lengthen or shorten this telescoping elevator, the lower member thereof has formed on or secured to its sides the rack-bars 39, which are engaged by gears 40, mounted on the depending frame or casing 30 near its lower end and driven by any suitable mechanism—such, for instance, as from an electric motor 41, mounted on a platform 42, secured to the lower end of the frame or casing 30 and connected to the gears 40 by means of suitable intermediate gearing, such as shown in Fig. 4 of the drawings. This gearing may be varied within wide limits, and consequently detailed description thereof is not given.

The shaft 33 is provided with a pair of oppositely-arranged guide-grooves 45, in which move the ends of the shaft of a pair of guide-wheels 46, around which the endless conveyer 26 passes. These guide-wheels are entirely free to move up and down in the shaft 33, being guided by the grooves 45 and being limited in their position entirely by the endless conveyer 26, in the loop of which they are suspended. The endless conveyer 26, it will be observed, has one loop passing downwardly in the telescoping elevator-leg and around the guide-wheels 36 at the lower end thereof. The upwardly-traveling reach of said conveyer passes over the driven guide-wheels 17 on the car-

riage 10, whereby motion is communicated to the conveyer in order to lift the material. After passing over the wheels 17 the conveyer passes under the guide-wheels 18, thus inclining the buckets 27, so as to deposit the contents into the hopper 15. Thence the conveyer passes upwardly around the guide-wheels 19 and 20, thence downwardly into the shaft 33, and thence upwardly again over the guide-wheels 21, thus forming a loop which hangs down in the shaft 33. This loop passes around and is guided by the wheels 46, which ride up and down in said shaft as the loop is shortened and lengthened. The length of this depending loop depends upon the extent to which the lower telescoping member 35 of the elevator-leg is lowered, this loop being merely provided in order to take up the slack of the endless conveyer when said telescoping member is raised.

The operation of the mechanism will be readily understood from the foregoing description. It will be observed that the bridge or crane 1 travels longitudinally over the storage area, while the carriage 10 travels transversely of said area on the bridge 1, and the telescoping elevator-leg shown enables the apparatus to reach material at various heights on said storage area. In this way all portions of the storage area can be reached. By having the loop of the endless conveyer extending downwardly at the side of the elevator-leg the carriage 10 can be made comparatively short, so that for a given width of storage area the bridge 1 can be made shorter than it otherwise could be.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In hoisting apparatus, the combination with a frame, of an elevator-leg suspended therefrom and comprising telescoping members, an endless conveyer extending downwardly into said elevator and having a downwardly-hanging loop, and mechanism operatively connected to the lower member of the telescoping leg for raising and lowering the same.

2. In hoisting apparatus, the combination with a frame, of an elevator-leg suspended therefrom and comprising telescoping members, an endless conveyer passing over a guide-wheel in the lower end of said leg, over stationary guide-wheels in the frame and having a downwardly-hanging loop, means for guiding said loop, and mechanism operatively connected to the lower member of the telescoping leg for raising and lowering the same.

3. In hoisting apparatus, the combination with a frame, of an elevator-leg suspended therefrom and comprising telescoping members, an endless conveyer passing over a guide-wheel in the lower end of said leg, over guide-wheels in the frame and having a downwardly-hanging loop, a shaft into which said loop extends, guide-wheels suspended in said loop

and guided in said shaft, and mechanism for causing the extension and contraction of the telescoping members.

4. In hoisting apparatus, the combination with a frame, of an elevator-leg suspended therefrom and comprising telescoping members, an endless conveyer passing over suitable guide-wheels in the lower end of said leg and in the frame and having a loop for taking up the slack, and mechanism connected to the lower member of the telescoping leg for raising and lowering the same.

5. In hoisting apparatus, the combination with a frame, of an elevator-leg suspended therefrom and comprising telescoping members, an endless conveyer passing over suitable guide-wheels in the lower end of said leg and in the frame and provided with a loop for taking up the slack, a rack or racks on the lower telescoping member, and a power-driven pinion or pinions engaging the same for elevating and lowering said member.

6. In hoisting apparatus, the combination with a frame provided with a depending portion provided with a platform, a shaft formed in said depending portion, a telescoping member in said shaft, a suitable conveyer passing through said shaft and over said telescoping member, a motor on said platform, and connections between said motor and the telescop-

ing member for raising and lowering the same.

7. In hoisting apparatus, the combination with a suitable bridge, of a carriage movable thereon, an elevator-leg suspended therefrom and comprising telescoping members, an endless conveyer passing over a guide-wheel in the lower end of said leg over guide-wheels in the carriage and having a downwardly-hanging loop, and mechanism for causing the extension and contraction of the telescoping members.

8. In hoisting apparatus, the combination with a bridge, of a carriage movable along the same, a depending frame secured to said carriage, an elevator-leg formed in part by a telescoping member in said shaft, an endless conveyer passing through said shaft and over said telescoping member, a rack formed on said telescoping member, and a power-driven gear mounted on the lower end of said depending frame and engaging said rack.

In testimony whereof I, the said WILLIAM J. PATTERSON, have hereunto set my hand.

WILLIAM J. PATTERSON.

Witnesses:

ROBERT C. TOTTEN,
FRED D. SWEET.