

(No Model.)

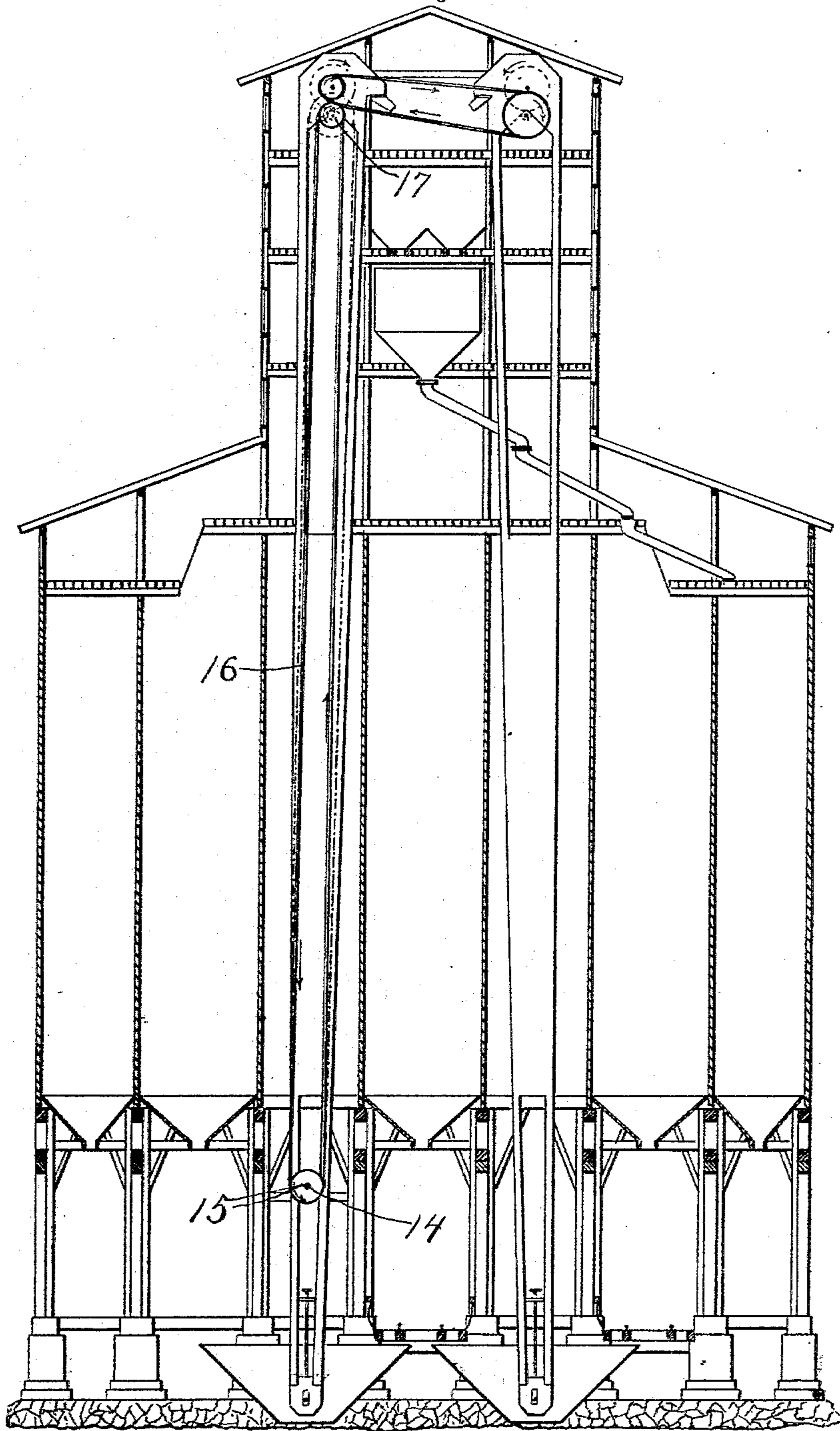
2 Sheets—Sheet 1.

D. A. ROBINSON.
ROPE DRIVE FOR ELEVATORS.

No. 511,213.

Patented Dec. 19, 1893.

Fig. 1.



Witnesses

G. E. Purple
A. S. Lyon

Inventor

Dighton A. Robinson
By Paul M. Munn Atty's.

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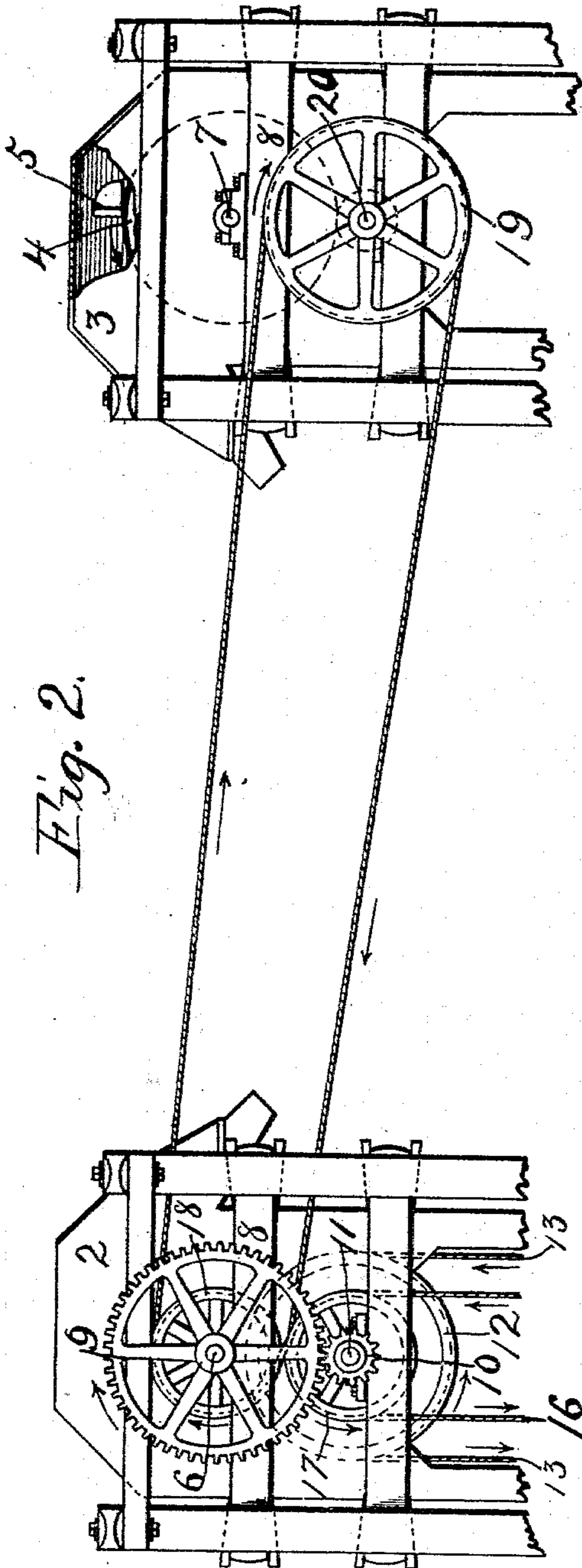


Fig. 2.

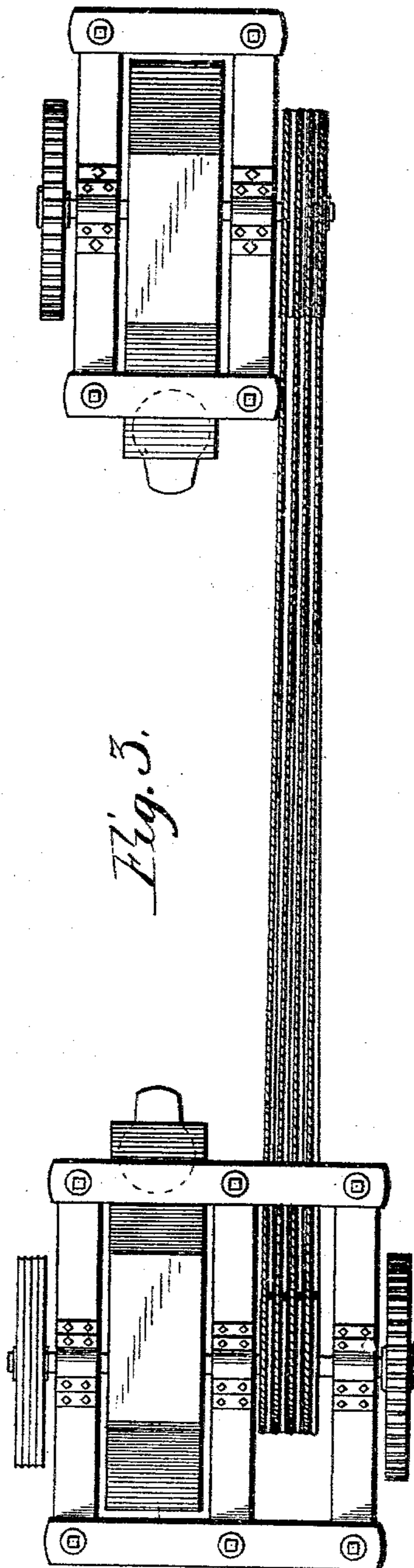


Fig. 3.

Witnesses

G. E. Purple
[Signature]

Inventor

Dighton A. Robinson
By *Paul H. Merwin* Atty's.

UNITED STATES PATENT OFFICE.

DIGHTON A. ROBINSON, OF MINNEAPOLIS, MINNESOTA.

ROPE-DRIVE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 511,213, dated December 19, 1893.

Application filed September 27, 1892. Serial No. 447,028. (No model.)

To all whom it may concern:

Be it known that I, DIGHTON A. ROBINSON, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Rope-Drives for Elevators, (Case No. 4,) of which the following is a specification.

My invention relates to improvements upon means for transmitting power in grain elevators for operating the grain raising belts thereof, and especially to improvements upon those devices shown and described in my patents numbered 460,661 and 481,150, dated respectively October 6, 1891, and August 16, 1892, and my application filed in the United States Patent Office June 26, 1891, Serial No. 397,625, and the object of the invention is to simplify the construction there shown and to greatly lessen the cost of the apparatus in the upper part of the building.

To this end my invention consists in general in the constructions and combinations hereinafter described and particularly pointed out in the claims, and will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a transverse sectional elevation of a grain elevator provided with a rope drive embodying my invention. Fig. 2 is a detail view of the apparatus in the upper part or cupola of the building, showing the means for driving the elevator belts in the opposite sides of the building. Fig. 3 is a plan view thereof.

As shown in the drawings, 2 and 3 represent the housings of opposite elevator head pulleys and belts, one of which 4 is shown in Fig. 2, 5 being one of the cups upon the elevator belt. The head pulleys of the elevator belts are arranged upon the shafts 6 and 7, respectively, in the two heads, which shafts have bearings in the cross-beams 8 of the frame work in the upper part of the building. On the shaft 6 is a large gear wheel 9 which meshes with a pinion 10 arranged beneath it upon the shaft 11 which shaft crosses beneath the head pulley and its housing and having on its other end the large gear pulley 12 from which the several strands of the rope belt 13 pass down to a grooved pulley arranged on the main longitudinal shaft 14 arranged in

the lower part of the building. By following the arrows of the drive-belt 13 and the reversal of direction obtained through the gears, it will be seen that the outside of the elevator-belt will pass upward and the inside downward toward the right. The other elevator belt must run in an opposite direction to that in the left-hand side of the building and consequently means must be provided between the long shaft 14 and the head pulley of the right-hand belt for reversing its movement. To this end I employ a much longer drive belt than is needed for driving the belt directly above the shaft 14 and passed over the grooved pulley 15 on the shaft 14. This belt 16 made up of a number of strands of rope passes up over the inner side of the idler 17 loosely journaled on the shaft 11. From thence the belt passes out over the outside of the idler 18 arranged directly above the first idler and journaled on the shaft 6. Thence the belt passes to the large grooved drive pulley 19 arranged on the shaft 20 of the right-hand device, the head pulley thereof being driven by the pinion and large gear wheel indicated in dotted lines and similar to the pinion 10 and gear 9 shown in the left hand side of the building. From the pulley 19 the belt passes back over the top and outer side of the lower idler 17 and thence down to the pulley 15. Thus it will be seen that the up-going and down-going strands of the belt are crossed between the idlers and in order to make their running as smooth as possible I make the idlers of double width and interlace the strands of the two sides of the belt as shown plainly in Fig. 3. In this manner the two head pulleys and the elevator belts thereof are caused to revolve in opposite directions and fulfill the common requirements of elevator builders.

The drive pulleys on the main shaft 14 are connected therewith by friction clutches of any desirable form and consequently one of the elevator belts may be driven while the other is stationary. When both are running the idlers 17 and 18 and the pinion and gear shafts revolve in the same direction so that there is but little difference in their speeds and consequently slight wear.

The simplicity, low cost, ease of regulation, and its convenient construction with respect

to the regular frame-work employed in elevator buildings are the principal advantages which I claim for my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with two elevator belts oppositely situated in a building, of a main drive shaft arranged in one side of the lower part of the building, the head pulleys and boot pulleys of said belts, the shafts of said head pulleys, a large gear arranged upon each shaft, a second shaft arranged beneath each head pulley and provided with a pinion to mesh with said gear, grooved driving pulleys provided upon said second or lower shafts, and a rope drive belt extending from a pulley upon said main shaft over the said drive pulley immediately above the same, grooved idler pulleys provided upon the two short shafts of one of the elevator belts, and a second rope drive belt extending from a grooved pulley on said main shaft over said idlers, and over the drive wheel of the other elevator belt, said belt having its sides crossed upon said idlers to change the rotative direction of the second elevator belt with respect to the first belt, substantially as described.

2. The combination, with two oppositely situated elevator belts and the head and boot pulleys thereof, of a main drive shaft arranged in the lower part of a building and extending between the legs of one of said belts, short shafts projecting beneath said head pulleys, a power connection between the same and the head pulleys, the idler pulleys 17 and 18, grooved drive pulleys provided upon said short shafts, a rope drive belt extending from a drive pulley on the main shaft over the drive pulleys upon the short shafts immediately above the same, a second rope drive belt extending from a pulley on said main shaft and crossed upon said idlers and extending thence over the drive pulley of the other elevator belt, whereby both elevator belts are driven independently from one side of the building, substantially as described.

3. The combination with two oppositely situated elevator belts, of a main drive shaft arranged in the lower part of a building and extending between the legs of one of said belts, the head pulleys and the shafts 6 and 7 thereof, the short shafts 11 and 20 extending beneath said head pulleys, means for driving

said head pulleys therefrom, a grooved drive pulley arranged upon each of said short shafts, the grooved idler pulleys 17 and 18, loosely journaled upon the shafts 6 and 11, the rope drive belt 13 extending from a grooved pulley on said main shaft over the drive pulley mounted upon the shaft 11, and the second and longer drive belt extending also from a drive pulley on the main shaft over said idlers and crossed thereon, and extending from thence over the drive pulley upon the shaft 20, substantially as described and for the purpose specified.

4. The combination, with the two elevator belts, and the head and boot pulleys thereof, of the head pulley shafts 6 and 7, a large gear wheel arranged upon each of said shafts, the shafts 11 and 12 projecting beneath said head pulleys and provided with pinions meshing with said large gear, grooved drive pulleys arranged upon the shafts 11 and 12, the idler pulleys 17 and 18 loosely mounted on the shafts 11 and 6, the rope drive belt 13 extending from the main shaft over the drive pulley on the shaft 11, and the other and longer rope drive belt extending from the main shaft and crossed and interlaced upon said idler pulleys, extending thence over the drive pulley upon the shaft 20, all substantially as and for the purpose specified.

5. The combination with two elevator belts, of a main drive shaft, the head pulleys and boot pulleys of said belts, the shafts of said head pulleys, a gear arranged upon each head pulley shaft, a second shaft provided in proximity to each head pulley shaft and having a pinion to mesh with the gear thereof, driving pulleys provided on said second shaft and a drive belt extending from a pulley upon said main shaft over one of said drive pulleys, idler pulleys provided on the two short shafts of one of the elevator belts, and a second drive belt extending from a pulley on said main shaft over said idlers and over the drive wheel of the other elevator belt, substantially as described.

In testimony whereof I have hereunto set my hand this 19th day of September, A. D. 1892.

DIGHTON A. ROBINSON.

In presence of—

F. S. LYON,

C. G. HAWLEY.