

No. 710,224.

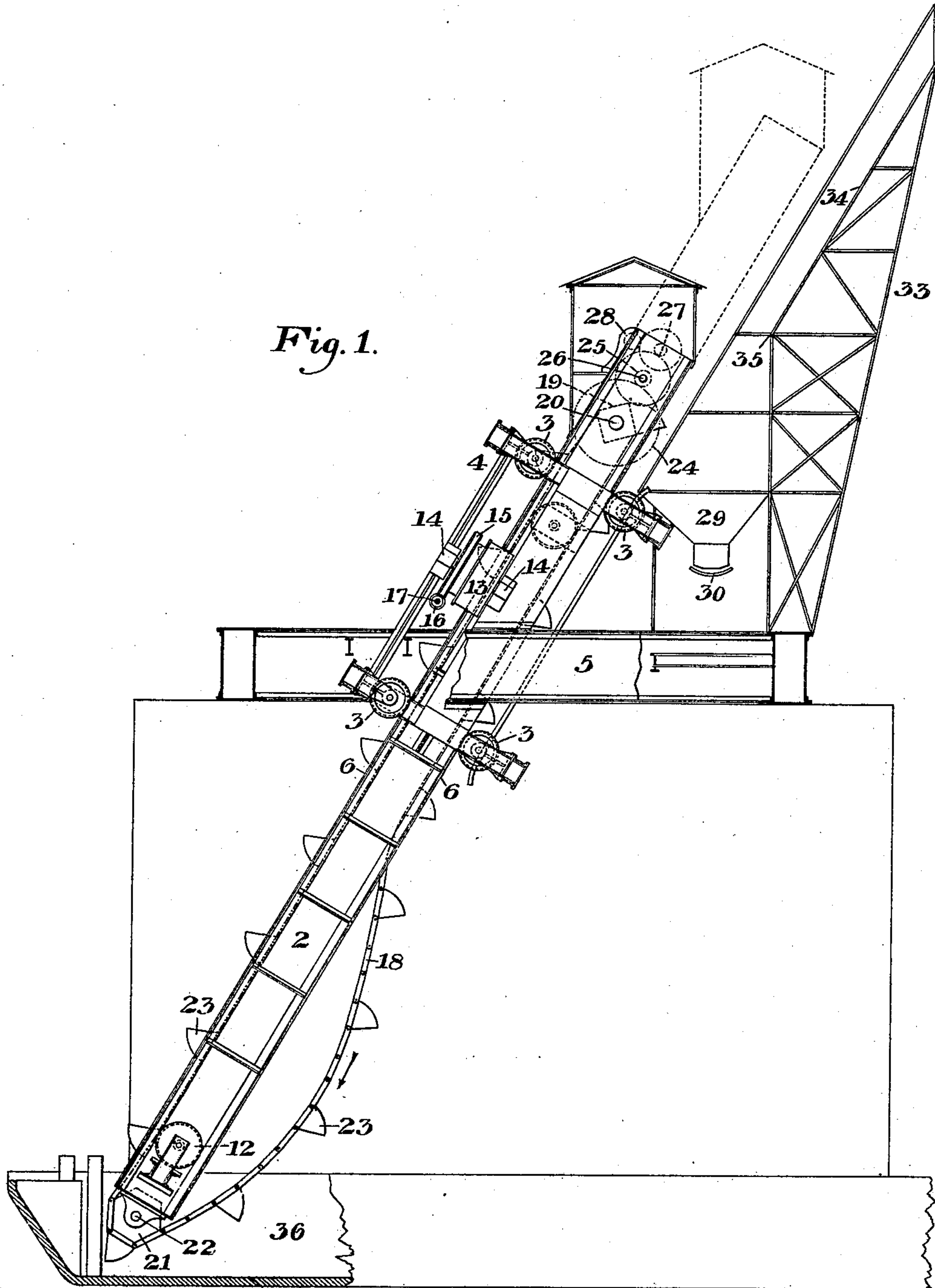
Patented Sept. 30, 1902.

F. H. TREAT.  
UNLOADING APPARATUS.

(Application filed Mar. 14, 1902.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES

Warren W. Swartz  
H. M. Corwin

INVENTOR

Francis H. Treat  
by Russell A. Byrnes  
his Attorneys.

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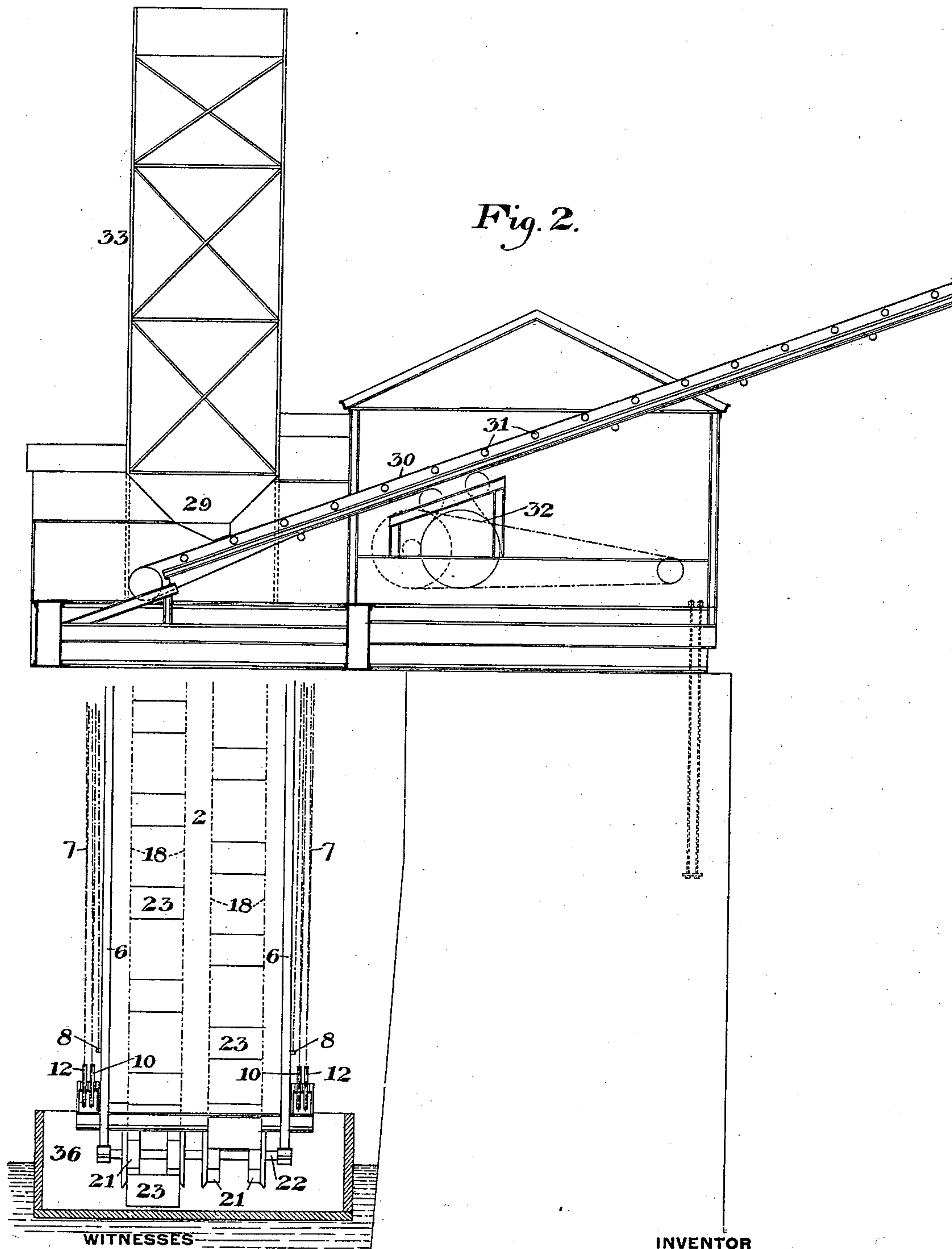
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Warren W. Swartz  
J. M. Corwin

INVENTOR  
Francis H. Treat  
by Baker & Byrnes  
his Attorneys.

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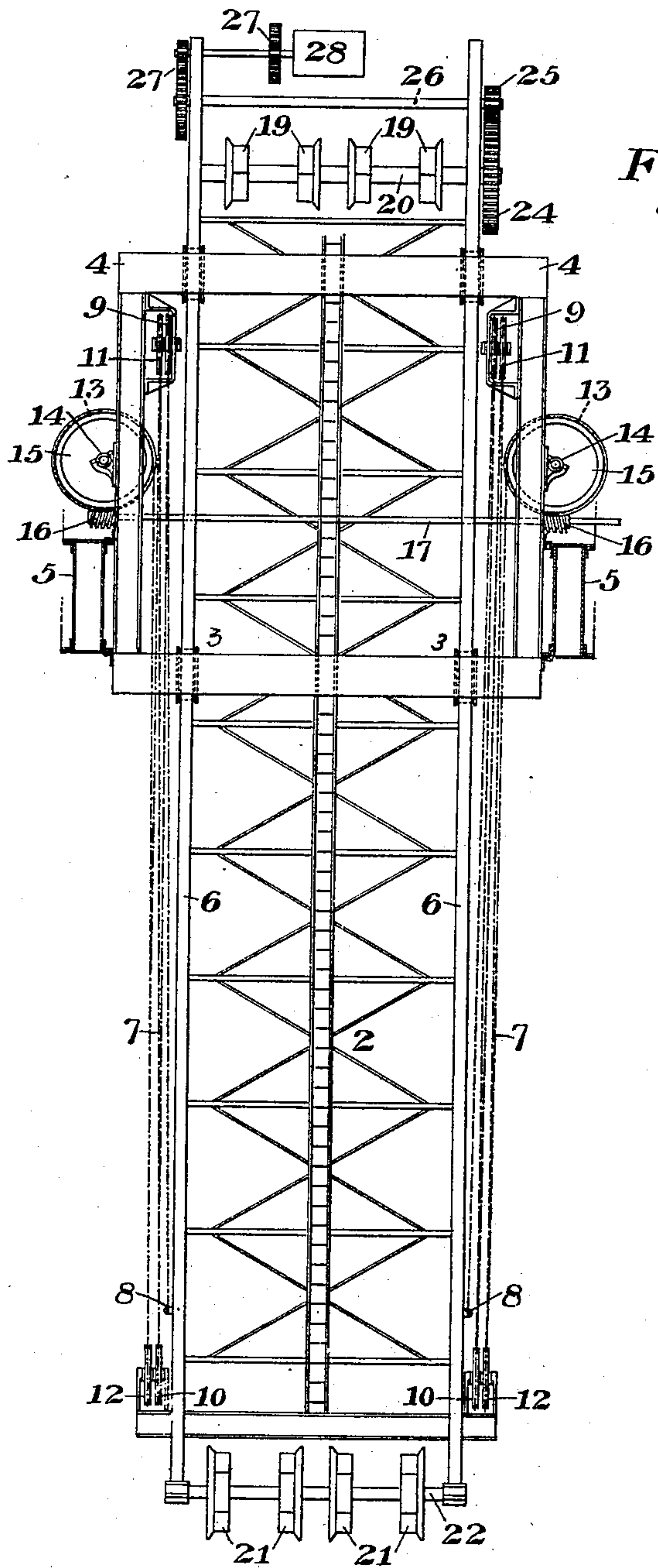
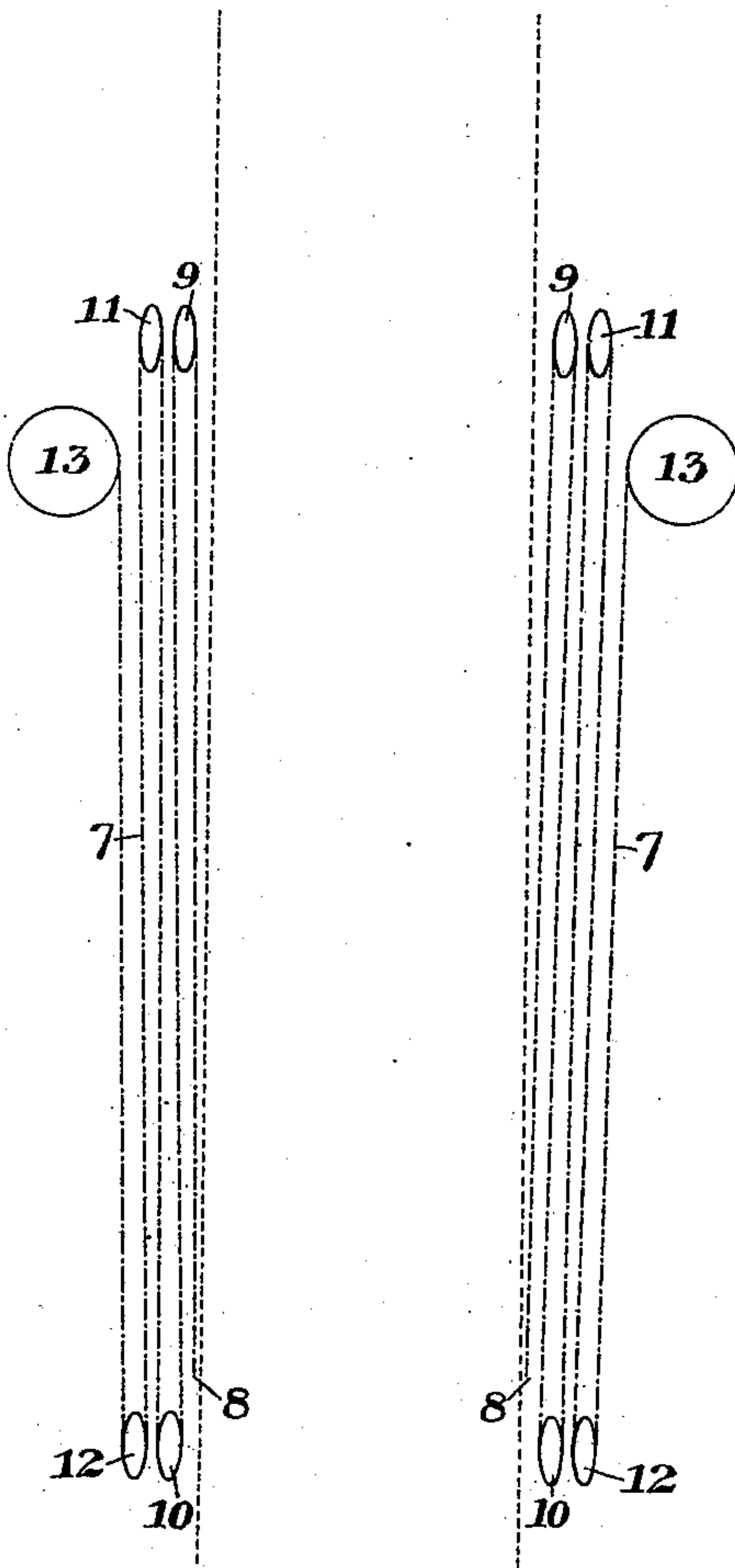


Fig. 3.

Fig. 4.



WITNESSES

Warren W. Swartz  
J. M. Corbin

INVENTOR

Francis H. Treat  
by Baxendell & Byrnes  
his Attorneys.



# UNITED STATES PATENT OFFICE.

FRANCIS H. TREAT, OF PITTSBURG, PENNSYLVANIA.

## UNLOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 710,224, dated September 30, 1902.

Application filed March 14, 1902. Serial No. 98,250. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS H. TREAT, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Unloading Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of the preferred form of my improved unloading apparatus. Fig. 2 is a side elevation of the same, partly broken away. Fig. 3 is a front elevation at right angles to the plane of the leg, and Fig. 4 is a diagrammatic view illustrating the reeving of the cables.

My invention relates to apparatus for unloading granular or lump material, such as coal or ore, from boats, barges, or other receptacles, and is designed to provide a simple, comparatively inexpensive, and effective apparatus for this purpose.

In the drawings, 2 represents an inclined leg built up in truss form of commercial shapes and supported upon upper and lower guides, which I have shown as consisting of flanged wheels 3, mounted in bearings upon a frame or cage 4, which incloses the leg and is supported upon the forwardly-projecting members 5 of a cantaliver, as shown in Fig. 2. The wheels engage upper and lower tracks 6, forming part of the framework of the leg, which is adjusted vertically by means of cables 7. The manner of reeving these cables is shown in Fig. 4. The lower end of each is secured to the lower part of the leg at 8, extends thence upwardly to and over a pulley 9, thence down and over pulley 10, thence upwardly and around pulley 11, thence downwardly and around pulley 12, and thence upwardly to winding-drum 13, to which the other end is secured. The winding-drums 13 are mounted in suitable bearings 14 upon the frame, and each is provided with a worm-wheel 15, these worm-wheels engaging the worms 16 upon a common shaft 17, mounted on the cage and driven through any suitable connections. By actuating the shaft 17 in either direction the leg may be raised or lowered to any desired level and is locked at the adjusted point by the screw-gear connections

with the drum. The cable system forms an effective block and tackle for lifting the leg or allowing it to move down through the supporting and guiding cage. The leg is provided with sprocket-chains and buckets, and I have shown four such chains 18 passing over upper sprocket-wheels 19 on shaft 20 and lower sprocket-wheels 21 on shaft 22 at the lower end of the leg. Each pair of chains is provided with buckets 23, supported between them in the usual manner of endless conveyers. The shaft 20 is provided with a toothed wheel 24, intermeshing with a pinion 25 on shaft 26, having slow-motion gearing connections 27 with an electric motor 28, supported in bearings at the upper end of the leg. This motor through the connecting-gearing drives the endless bucket conveyers in the direction shown by the arrow in Fig. 1. A receiving-hopper 29 is provided upon the overhanging cantaliver at one side of the leg, this hopper directing the material upon an endless conveyer, which I have shown in the form of a belt 30, passing over rollers 31 and driven by connections, (indicated at dotted lines 32 in Fig. 1.) The material is thus carried back to the point of dumping and dropped upon the pile and into a receptacle therefor. At the side of the hopper a skeleton tower 33 is supported upon the cantaliver, this tower having on the hopper side an inclined apron 34, extending preferably from the top to about the point marked 35. When the leg is in the position shown in Fig. 1, the material will drop from the buckets into the hopper. If the leg is moved up to the position indicated in dotted lines in Fig. 1, the material will drop upon the inclined apron and slide down into the hopper. I am thus enabled to direct the material into the hopper in any adjusted position of the inclined leg.

In the operation of my apparatus the leg is moved down into the barge or other receptacle, (indicated at 36,) and the motor 28 being actuated the barge may be moved along, the endless conveyer cutting its furrow as the boat is moved along. The material lifted by the buckets drops into the hopper and is carried back over the pier or wharf and deposited at the desired point. The boat may be then returned to its first position and another



furrow cut, the material being thus scooped up and lifted.

The advantages of my invention result from the simplicity, compactness, and cheapness of the apparatus. The leg moves up and down in parallel lines and deposits the material at the same point irrespective of its position. The mechanism for adjusting the leg and for driving the bucket conveyers is simple, under full control, and not liable to get out of order.

Many changes may be made in the form of the leg, the conveyers thereon, the means for supporting and adjusting the leg, and the apron without departing from my invention.

I claim—

1. In unloading apparatus an outwardly-extending bridge arranged to receive a boat or receptacle beneath it, an inclined leg mounted upon and extending laterally from the bridge, and means for adjusting the leg up and down in the plane of its inclination; substantially as described.

2. In unloading apparatus, a cantaliver, a supporting-cage thereon, an adjustable leg supported in inclined position in the cage and projecting sidewise from the cantaliver, said leg carrying hoisting mechanism, and means for adjusting the leg up and down in the plane of its inclination; substantially as described.

3. In unloading apparatus an outwardly-projecting bridge arranged to receive a boat or receptacle beneath it, a stationary cage mounted on the bridge and having guides, an inclined leg projecting sidewise from the bridge, said leg being supported and held by the guides, scooping and hoisting mechanism mounted on the leg, and mechanism for adjusting the leg up and down in its inclined

plane and for holding it in adjusted position; substantially as described.

4. In unloading apparatus a projecting bridge, an inclined leg mounted thereon, mechanism for adjusting the leg up and down in its inclined plane, and a stationary inclined apron extending parallel with the leg and arranged to receive the material directly therefrom; substantially as described.

5. In unloading apparatus, an inclined leg supported between guides, mechanism for adjusting the leg up and down in its plane, conveyor mechanism on the leg, a hopper arranged to receive the material directly from the conveyor when the leg is in its lower position, and an inclined apron parallel with the leg and arranged to receive the material when the leg is adjusted to a higher position; substantially as described.

6. In unloading apparatus, an overhung cantaliver a vertically-adjustable inclined leg supported on the cantaliver and arranged in a plane transverse to the cantaliver, conveyor mechanism on the leg, and connections for adjusting the leg up and down in its inclined plane and holding it in adjusted position; substantially as described.

7. In unloading apparatus, a cage having upper and lower guides, an inclined leg supported between the guides and having conveyor mechanism, winding-drums on the cage having cables connected to the leg, and mechanism for actuating the drums to adjust the leg; substantially as described.

In testimony whereof I have hereunto set my hand.

FRANCIS H. TREAT.

Witnesses:

H. M. CORWIN,  
GEO. B. BLEMING.