

No. 766,515.

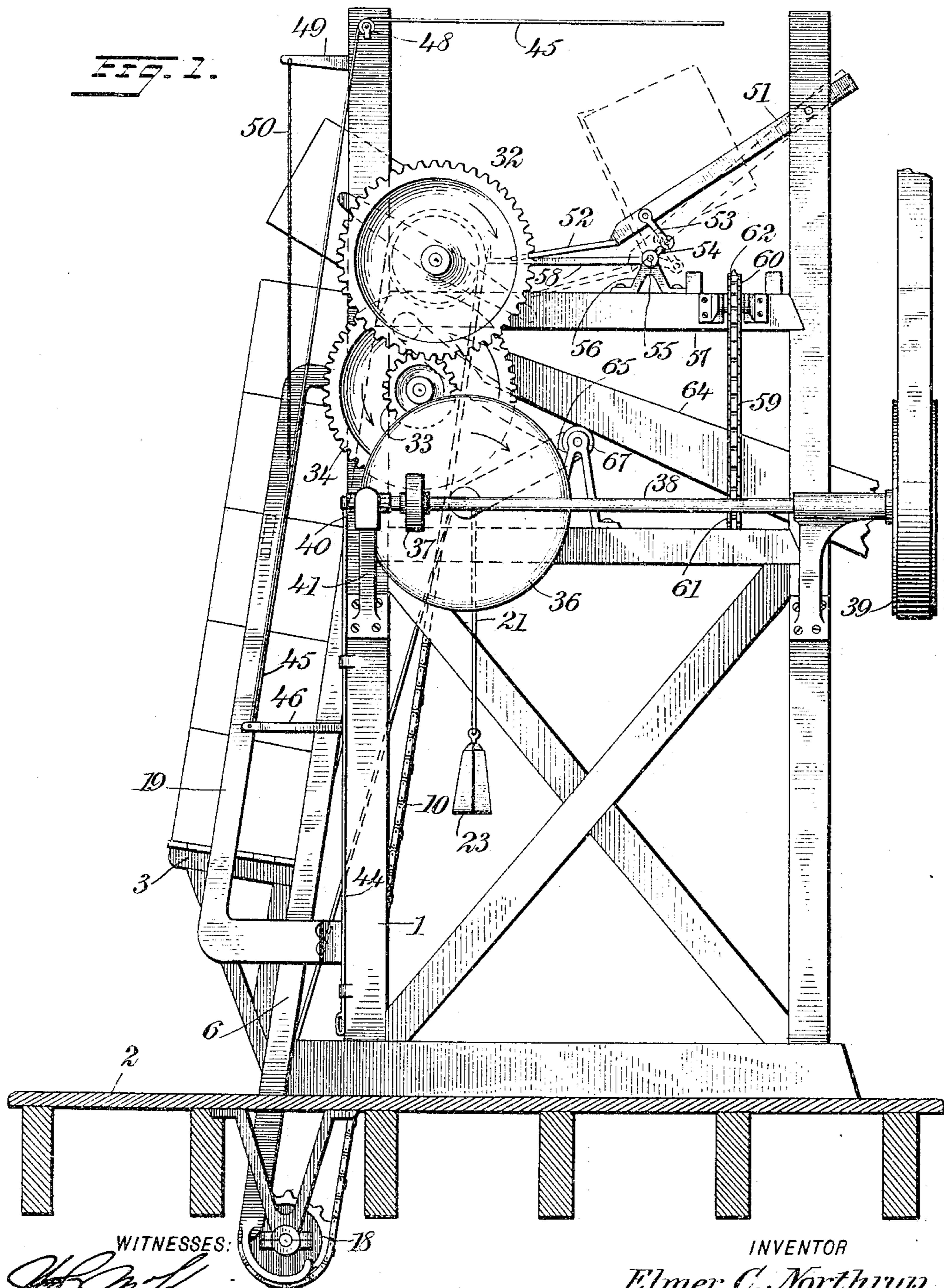
PATENTED AUG. 2, 1904.

E. C. NORTHRUP.  
ELEVATOR.

APPLICATION FILED JAN. 26, 1904.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:

*W. H. M. Ferguson*  
*C. R. Ferguson*

INVENTOR

*Elmer C. Northrup*

BY *M. M. M.*

ATTORNEYS

No. 766,515.

PATENTED AUG. 2, 1904.

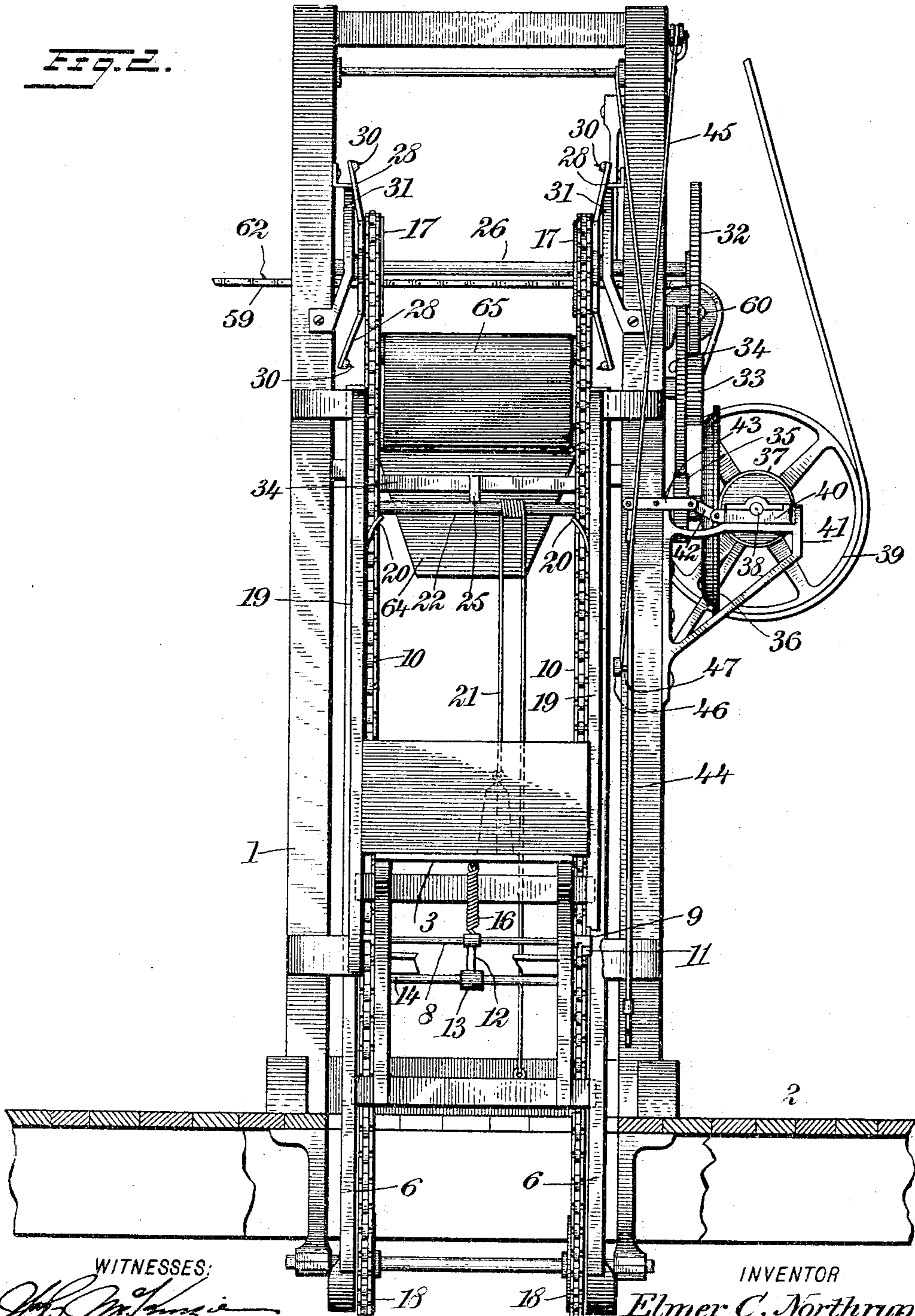
E. C. NORTHRUP.  
ELEVATOR.

APPLICATION FILED JAN. 26, 1904.

NO MODEL.

4 SHEETS—SHEET 2.

Fig. 2.



WITNESSES:

*John M. Ferguson*  
*C. R. Ferguson*

INVENTOR

*Elmer C. Northrup*

BY

*Munn*

ATTORNEYS

No. 766,515.

PATENTED AUG. 2, 1904.

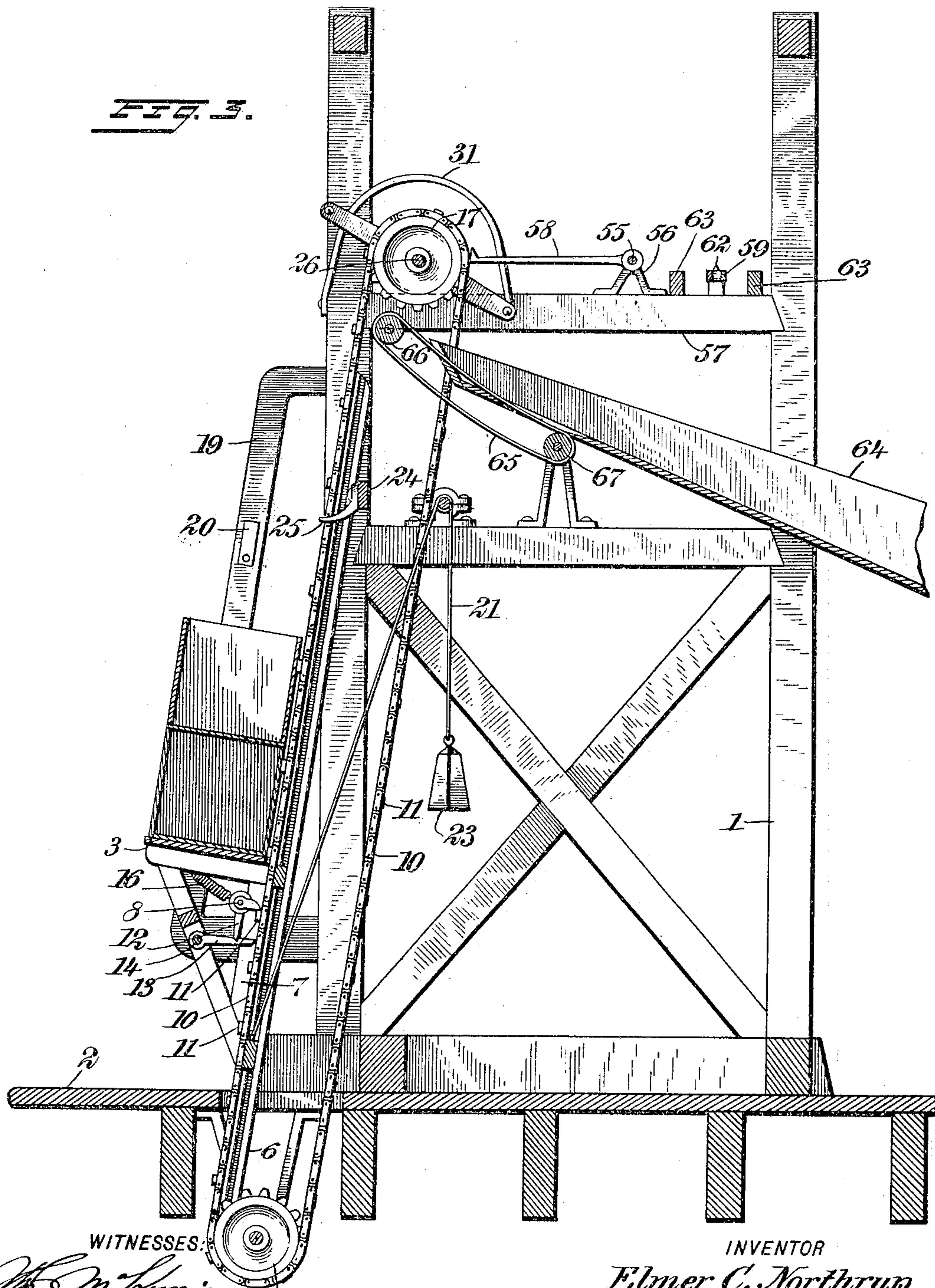
E. C. NORTHRUP.

ELEVATOR.

APPLICATION FILED JAN. 26, 1904.

NO MODEL.

4 SHEETS—SHEET 3.



WITNESSES:

*W. M. Lutz*  
*C. R. Ferguson*

INVENTOR

*Elmer C. Northrup*

BY

*Mumford*

ATTORNEYS

No. 766,515.

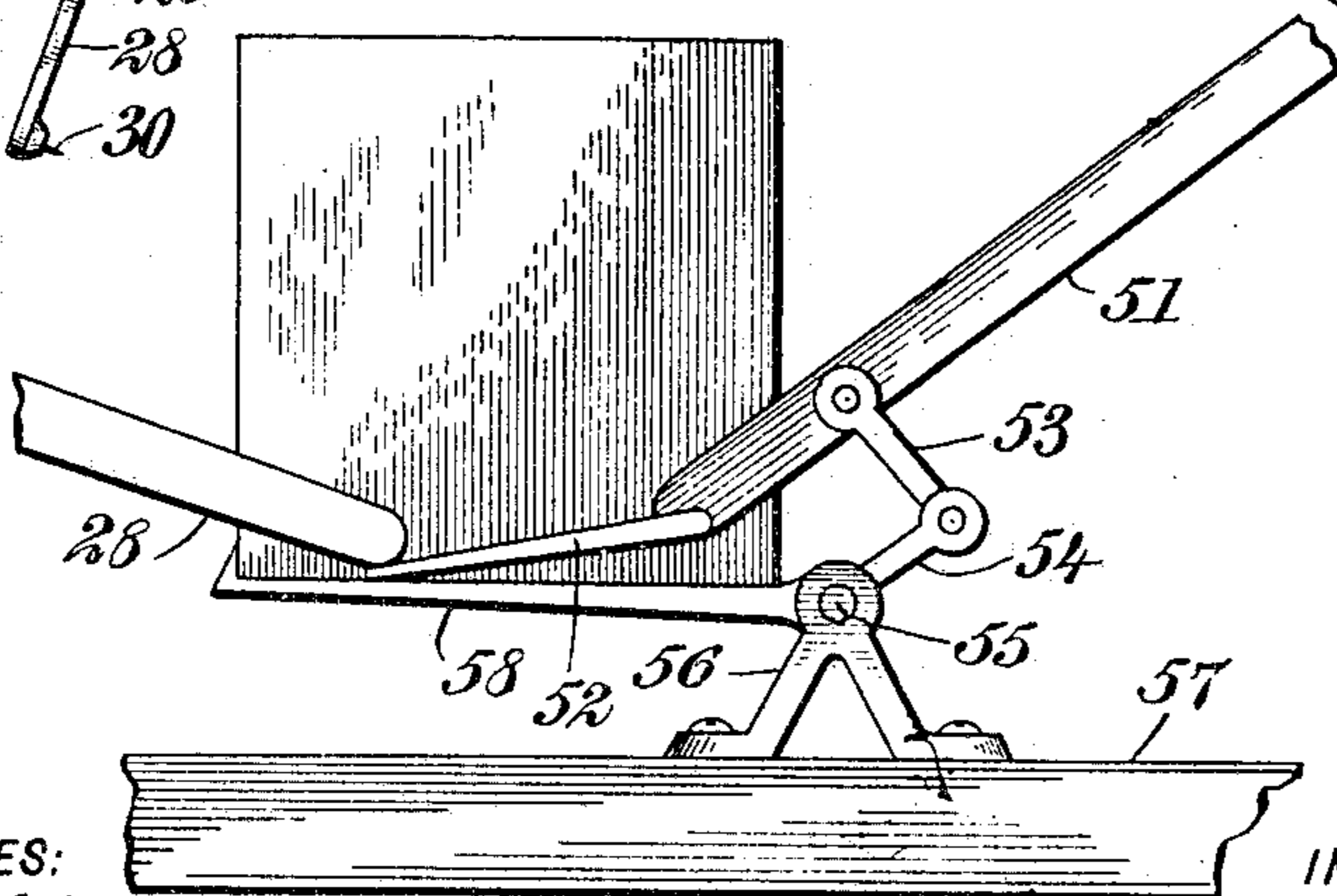
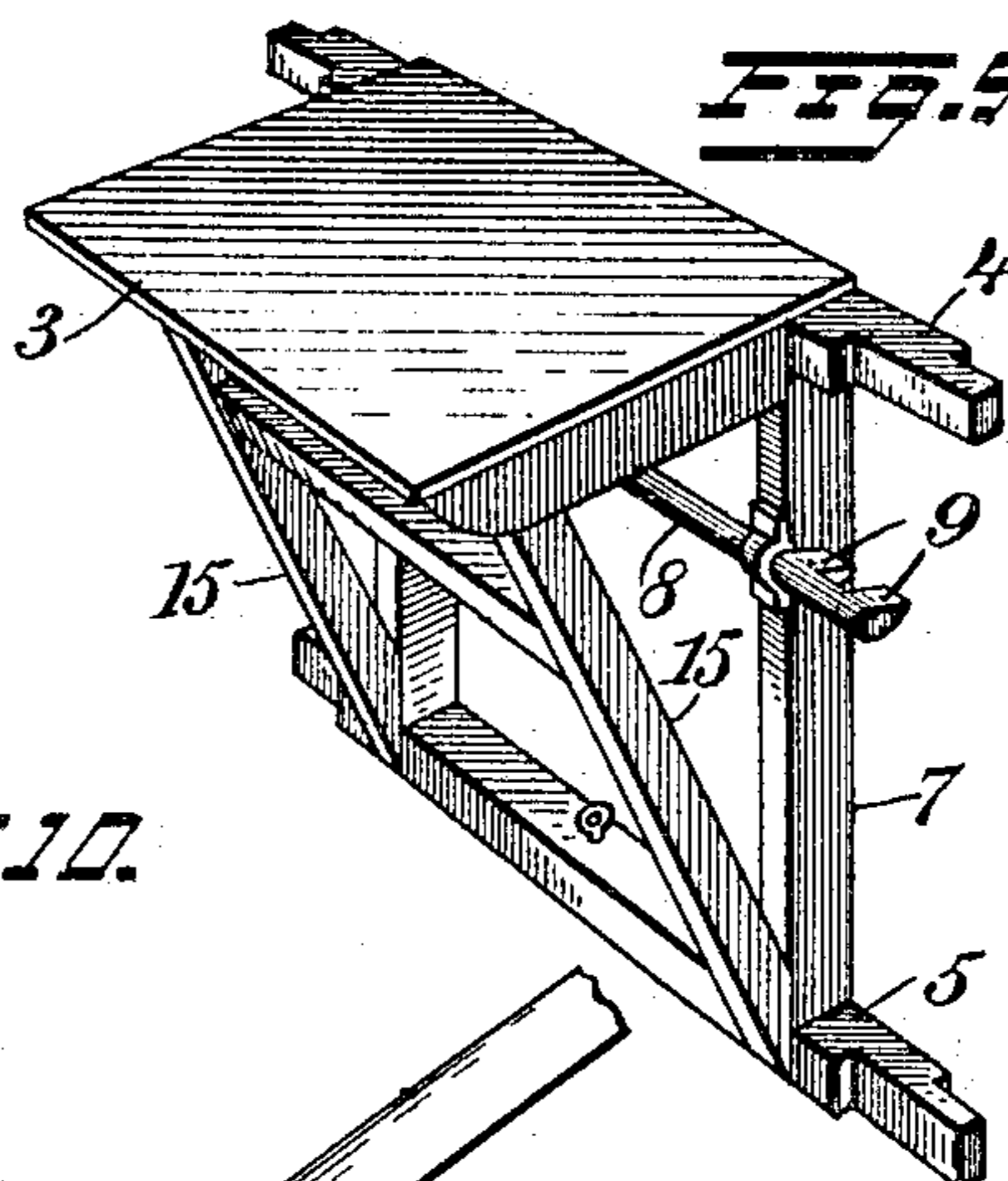
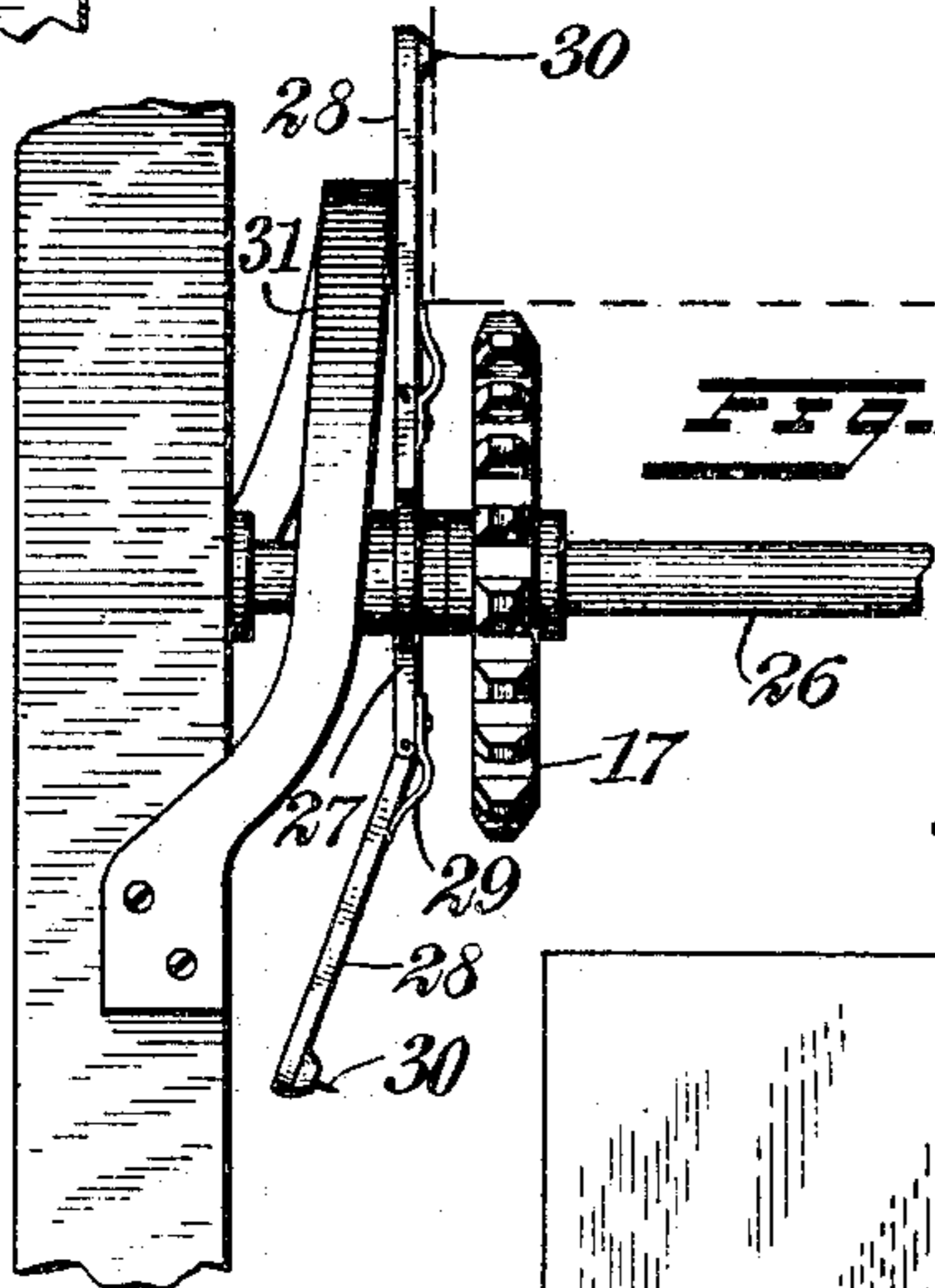
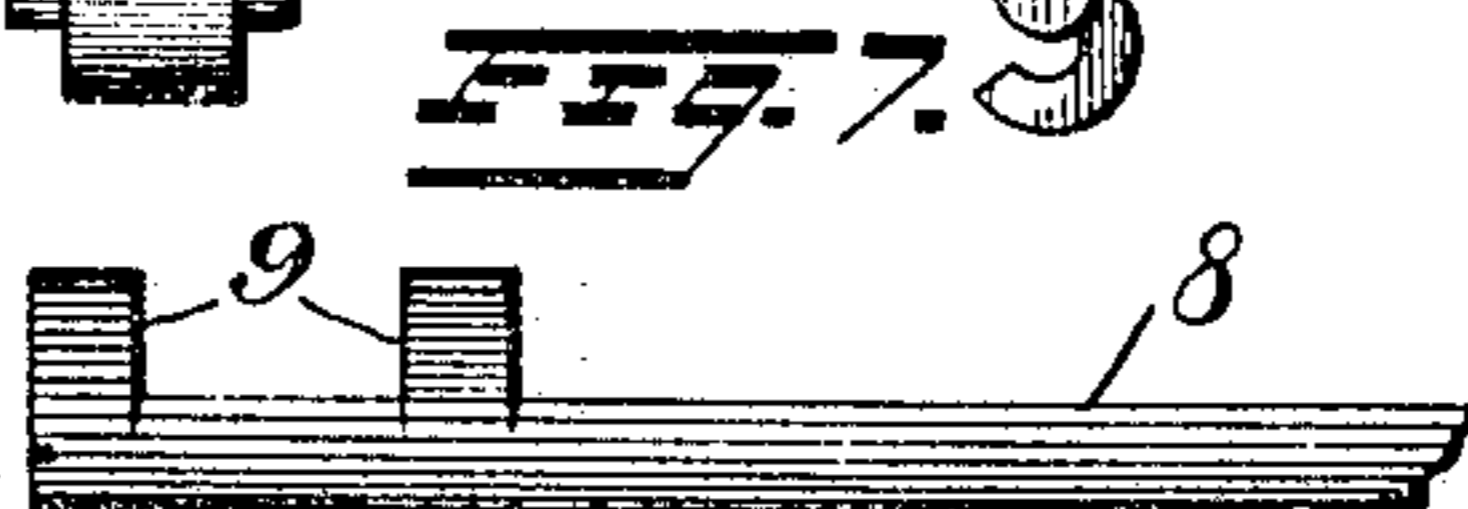
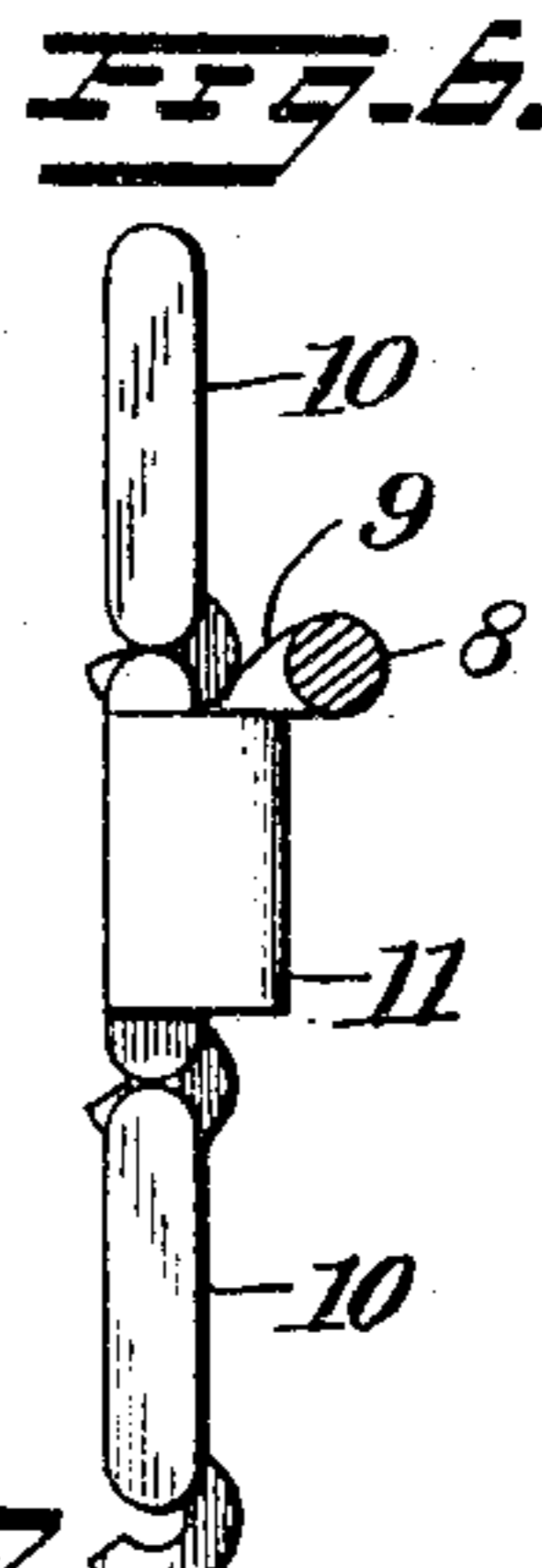
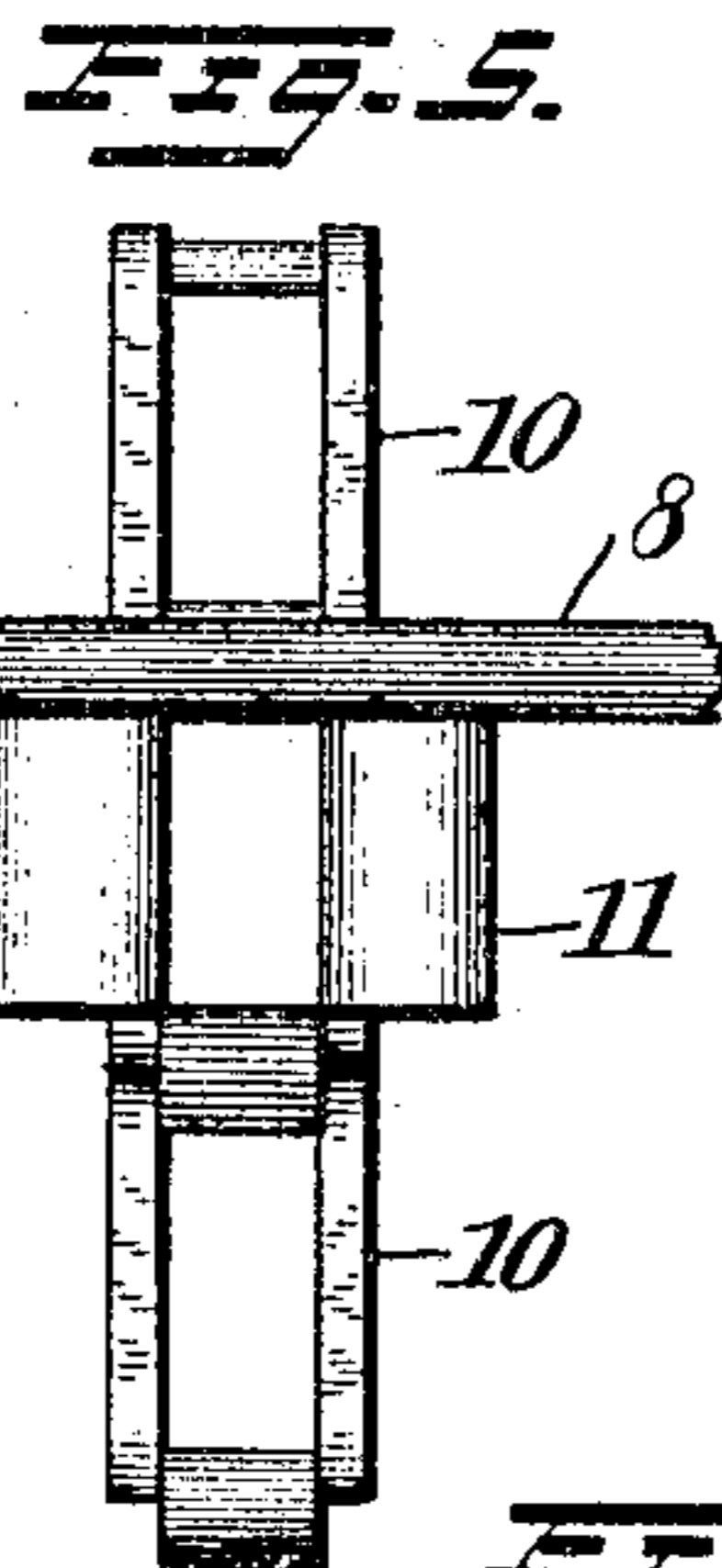
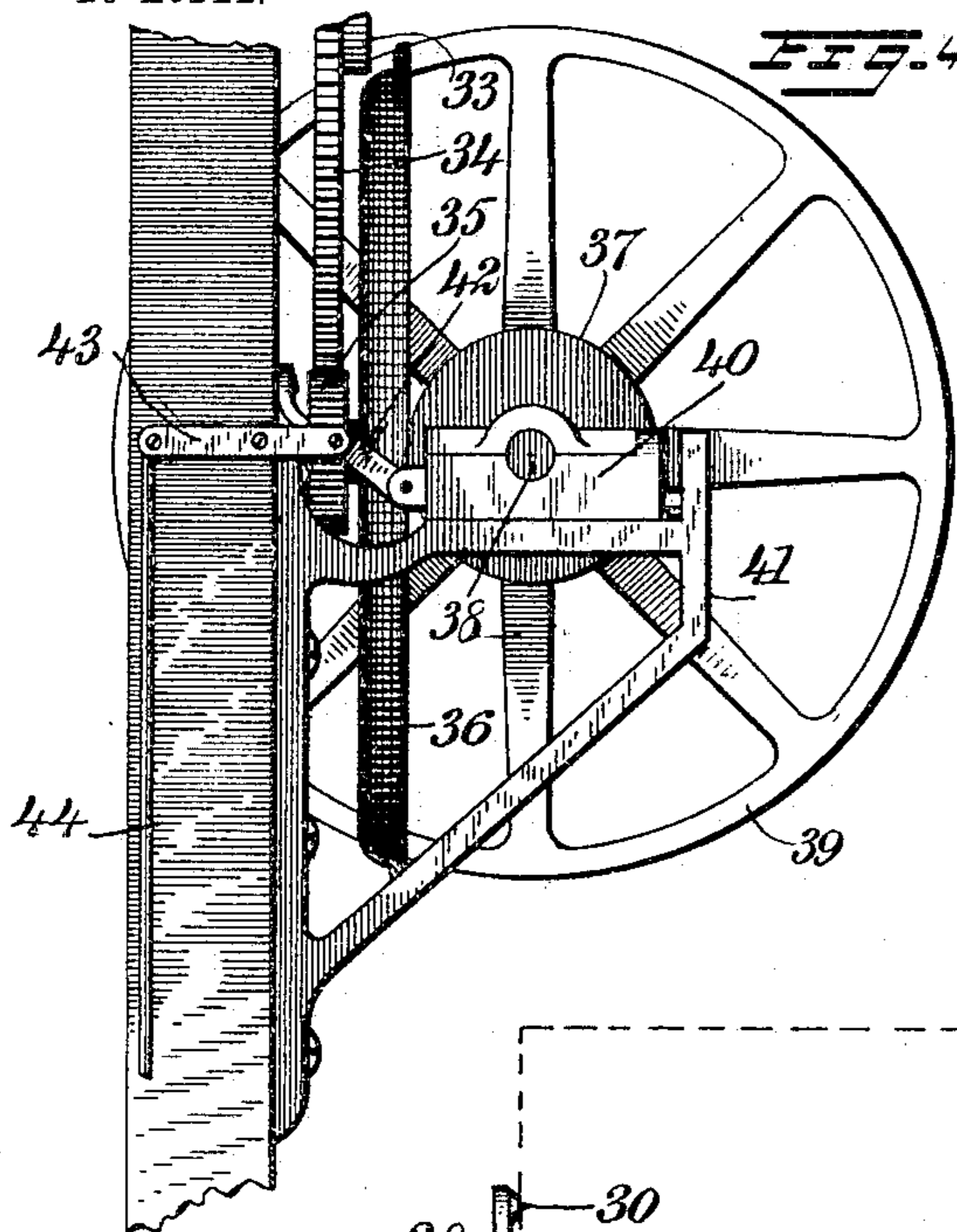
PATENTED AUG. 2, 1904.

E. C. NORTHRUP.  
ELEVATOR.

APPLICATION FILED JAN. 26, 1904.

NO MODEL.

4 SHEETS—SHEET 4.



WITNESSES:

*W. M. Lang*  
*C. R. Ferguson*

INVENTOR

*Elmer C. Northrup*

BY

*Wm. M. Lang*

ATTORNEYS

# UNITED STATES PATENT OFFICE.

ELMER C. NORTHRUP, OF SAN JOSE, CALIFORNIA.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 766,515, dated August 2, 1904.

Application filed January 26, 1904. Serial No. 190,737. (No model.)

*To all whom it may concern:*

Be it known that I, ELMER C. NORTHRUP, a citizen of the United States, and a resident of San Jose, in the county of Santa Clara and State of California, have invented a new and Improved Elevator, of which the following is a full, clear, and exact description.

This invention relates particularly to improvements in devices for elevating boxes of oranges or other fruit and dumping the fruit into a chute leading to a grader, an object being to provide an elevator so arranged as to be practically automatic in its operation of dumping the fruit and carrying off the empty boxes.

I will describe an elevator embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of an elevator embodying my invention. Fig. 2 is a front view thereof. Fig. 3 is a sectional elevation. Fig. 4 is a detail showing the driving mechanism employed. Figs. 5 and 6 are front and side views of the elevator-chains. Fig. 7 shows a portion of a gripping-rod carried by the elevator-platform. Fig. 8 illustrates a portion of the dumping mechanism. Fig. 9 is a perspective view of the elevator-platform, and Fig. 10 shows a means for placing the empty boxes on a carrier for transferring the same to a stacker.

Referring to the drawings, 1 designates the frame of the machine, here shown as supported on a platform 2. Movable along the front of the frame is the elevator-platform 3, having cross-bars 4 5 at its upper and lower ends, the said cross-bars being projected to engage in guides 6. Mounted to turn in bearings secured to uprights 7 of the elevator-platform is a gripping-shaft 8. At its ends this gripping-shaft has lugs 9, between which sprocket-chains 10 pass, permitting the said lugs to engage on blocks 11, attached at suitable distances apart to the chains 10. Attached to the center of the shaft 8 is a finger 12, designed to engage in a notch formed in a locking-arm 13,

extended from a shaft 14, the said shaft 14 having bearings in bracket members 15 of the elevator-platform. A spring 16 connects the upper end of the finger 12 with the under side of the platform 3, the object of which will hereinafter appear. The sprocket-chains 10 pass over upper sprocket-wheels 17 and around lower sprocket-wheels 18, and attached to the front uprights of the frame 1 are guides 19, against which the ends of the boxes placed on the elevator-platform will engage. Near the upper end these guides 19 are provided with inwardly-extended spring-yielding fingers 20, designed to engage with the under side of a box and support the same as the elevator descends and as will be hereinafter described.

From the elevator a rope or cable 21 extends up and around a shaft 22, and the free end of this rope or cable is provided with a weight 23, which will regulate the downward movement of the elevator-platform when released. Connected to a cross-bar 24 in the front portion of the frame is a finger 25, designed to engage with the arm 13 and release it from the finger 12. Carried on a shaft 26, arranged in the upper portion of the frame, are collars 27, to which box gripping and dumping arms 28 are pivoted. There are two arms on each collar 27 and extended obviously in each direction, and the said arms are pressed outward with relation to the collars by means of springs 29. The free ends of the arms are provided with sharpened lugs 30 for engaging in a box.

Arranged outward of the arms and attached to the frame are cam-bars 31, which are designed to press the points of the arms into the boxes. These cam bars or rods are curved and have their greatest inclination inward at the top. It will be noted that the sprocket-wheels 17 are attached to the shaft 26, and on the outer end of this shaft is a gear-wheel 32, meshing with a pinion 33, on the shaft of which is a gear-wheel 34, meshing with a pinion 35 on the shaft of a friction-disk 36, designed to be engaged by a friction-wheel 37, attached to a counter-shaft 38, on which is a band-wheel 39. This shaft 38 at its end adjacent to the friction devices has its bearing in a box 40, mounted to slide in a bracket 41,

and this box has a link connection 42 with a short lever 43, pivoted to one of the front uprights of the frame, and from the inner end of this lever an operating-rod 44 extends downward through suitable guides, and at its lower end it is provided with a suitable handle.

In order that the machine may be set in motion or stopped by a man attending the grader, a cable 45 is connected to an arm 46, pivoted to the front upright of the frame and having a pin connection 47 with the rod 44. This rope or cable 45 extends over a pulley 48. In order to stop the machine should a tier of boxes be raised too high, I provide a safety device, which consists of a pivoted arm 49, from which a cord 50 extends to a connection with the cable 45.

Mounted to swing on one of the rear uprights of the frame is an arm 51, having a projection 52, designed to be engaged by one of the arms 28. This arm 51 has a link connection 53 with a finger 54, extended from a shaft 55, supported in bearings 56 on cross-bars 57 of the frame, the said shaft 55 being rearward of the elevator-chains, and on this shaft 55 are carriers or arms 58 for dumping the boxes onto an endless carrier-chain 59, which carries the empty boxes to a stacker. This carrier-chain 59 extends around sprocket-wheels 60 61 and also around sprocket-wheels near the stacker. The carrier-chain is provided with a pointed lug 62 for engaging in a box, and at the sides of the carrier are rails 63, along which the boxes are drawn. Underneath the cross-bars 57 is a chute 64, through which the oranges pass to a grader, and arranged in the upper portion of this chute is an endless belt 65, on which the fruit first falls, so as to prevent damaging the same. This endless belt may be of canvas or any other suitable material, and it passes around rollers 66 67.

In operation when the elevator-platform is in its lowermost position a tier of boxes containing fruit is placed thereon, of course one upon another. The driving mechanism will be idle at this time. After placing the boxes on the elevator a downward pull on the rod 44 will move the friction-wheel 37 into engagement with the friction-disk 36. Then through the gear mechanism the sprocket-chains will be moved, consequently carrying the elevator-platform, with its load, upward. As the upper box reaches the upper end it will pass between the opposite arms 28. Then by a slight continued motion the cam bars or rods 31 will force the points of the arms 28 into the boxes, and then these arms will overturn the box, dumping its contents into the chute 64. As the said arms, however, reach a dumping position they will be moved out of engagement with the box by means of the springs 29. The box will fall upon the arms 58, and then as the end of an arm 28 engages

with the projection or extension 52 the arm 51 will be rocked downward and through the link-and-finger connection with the shaft 55 will rock said shaft so that the arms 58 will be carried upward to discharge the box onto the carrier 59. As the elevator-platform reaches the projection or finger 25 the said finger by engaging with the arm 13 will move it out of engagement with the finger 12, permitting the spring 16 to rock the shaft 8 and move the lugs 9 out of engagement with the blocks on the chains, and the elevator will gradually fall, its descent being controlled by the weight 23. As the elevator-platform does not ascend sufficiently to pass all of the boxes between the gripping-arms, a box or boxes remaining will be supported by the spring devices 20. Then as the next lot of boxes comes up with the elevator-platform these suspended boxes will be moved over to the dumping position, as above described. When it is desired to stop the elevator, an upward push on the rod 44 will move the friction-wheel 37 out of engagement with the friction-disk, and, as before stated, should a tier of boxes be raised too high the upper one will engage with the part 49, which will cause a shifting of said friction-wheel and the stopping of the machine. This may also be done, as before stated, by the man at the grader by drawing upon the cable 45.

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

1. An elevator comprising a frame, a platform movable vertically on the frame, endless chains, automatically-released devices carried by the platform for engaging with said chains, and means at the upper portion of the frame for inverting and emptying boxes.

2. An elevator comprising a frame, a platform movable vertically thereon, endless sprocket-chains, blocks arranged at intervals on said chains, a gripping-shaft carried by the platform and having lugs for engaging with said blocks on the chains, a locking device for said shaft, and means for automatically releasing the locking device to disengage the lugs from the chains.

3. An elevator comprising a frame, a platform movable vertically thereon, sprocket-chains for carrying the platform upward, upper sprocket-wheels around which the said chains pass, oppositely-extended spring-yielding arms carried by the shaft of said sprocket-wheels, the said arms having points for engaging in boxes, and cams for forcing the points into the boxes.

4. An elevator comprising a frame, a platform movable vertically on said frame, sprocket-chains on the platform, means for automatically releasing the platform from the chains, and guides at the opposite sides of the platform.

5. An elevator comprising a frame, an ele-

vator - platform movable vertically on said frame, a shaft in the frame, a cable extended from said platform around said shaft, a weight on the free end of said cable, endless chains  
5 operating in the frame, and an automatically-released device for engaging the platform with the chains.

6. An elevator comprising a frame, a platform movable vertically thereon, endless  
10 sprocket-chains, blocks on said chains, a gripping-shaft carried by the platform and having lugs for engaging with said blocks, a spring connection between said gripping-shaft and the platform for rocking the shaft in one  
15 direction, a finger extended from said shaft, an arm mounted to swing and having a notch for receiving said finger, and a tripping device connected to the frame for engaging with said arm to release it from the finger.

20 7. An elevator comprising a frame, a platform movable vertically thereon, means at the upper portion of the frame for inverting boxes and dumping the contents therefrom, a carrier for transporting empty boxes from the  
25 elevator-frame to a stacker or the like, and means for placing empty boxes on said carrier.

8. An elevator comprising a frame, a platform movable vertically thereon, a shaft at  
30 the upper portion of the frame, sprocket-wheels on said shaft, lower sprocket-wheels, chains extending around the upper and lower sprocket-wheels, means for engaging the platform with said chains, collars on said shaft,  
35 arms having spring-yielding connection with said collars, the arms of a collar being extended in opposite directions, points on the outer ends of said arms for engaging in boxes, cam-bars for forcing the said points into the  
40 boxes, an arm having swinging connection with the rear portion of the frame, a projection on said arm arranged in the line of movement of one pair of the point-carrying arms, a rock-shaft, a finger extended from said rock-  
45 shaft, a link connection between said finger and the said arm pivoted to the frame, and arms extended from said rock-shaft for receiving a box and carrying the same to a conveyer.

50 9. An elevator comprising a frame, a platform movable vertically thereon, chains for causing the upward movements of said platform, means for automatically releasing the platform from the chains, guides at opposite  
55 sides of the platform, and spring-yielding de-

vices on said guides for suspending boxes while the elevator moves downward.

10. An elevator comprising a frame, a platform movable vertically thereon, sprocket-wheels at the upper portion of the frame, 60 chains extending around said sprocket-wheels for carrying the platform upward, a gear-wheel on the shaft of said sprocket-wheels, a friction-disk, gear connections between said friction-disk and the first-named gear, a counter or driving shaft, a sliding bearing for one  
65 end of said shaft, a friction-wheel on said shaft for engaging with the friction-disk, and means for moving said sliding shaft.

11. An elevator comprising a frame, guides 70 arranged at the front portion of the frame, an elevator-platform having portions engaging in said guides, endless chains, blocks on said chains, and devices carried by the platform and removably engaging with said blocks. 75

12. An elevator comprising a frame, a platform movable vertically thereon, devices at the upper portion of the frame for inverting and dumping boxes carried upward by the platform, a chute into which the contents of 80 the boxes is dumped, and means for moving empty boxes from their dumping position.

13. In an elevator, a frame, a platform movable vertically thereon, endless carrying-chains for said platform, a friction-disk, gear 85 connections between said disk and chains, a counter-shaft, a sliding bearing for one end of said counter-shaft, a friction-wheel on the sliding end of the shaft adapted to engage in said friction-disk, a lever pivoted to the frame, a 90 link connection between the said lever and the bearing-box, and an operating-rod extended from said lever.

14. An elevator comprising a frame, a platform movable vertically thereon, means at the 95 upper portion of the frame for inverting and dumping the boxes carried upward by the platform, an endless conveyer, means for transferring the empty boxes to said conveyer, a chute into which the fruit is designed to be 100 dumped, and a flexible part at the upper end of said chute.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELMER C. NORTHRUP.

Witnesses:

LYMAN EVANS,  
H. C. HIBBARD.