

(No Model.)

2 Sheets—Sheet 1.

N. WHALLEY.  
SAW COTTON GIN.

No. 506,452.

Patented Oct. 10, 1893.

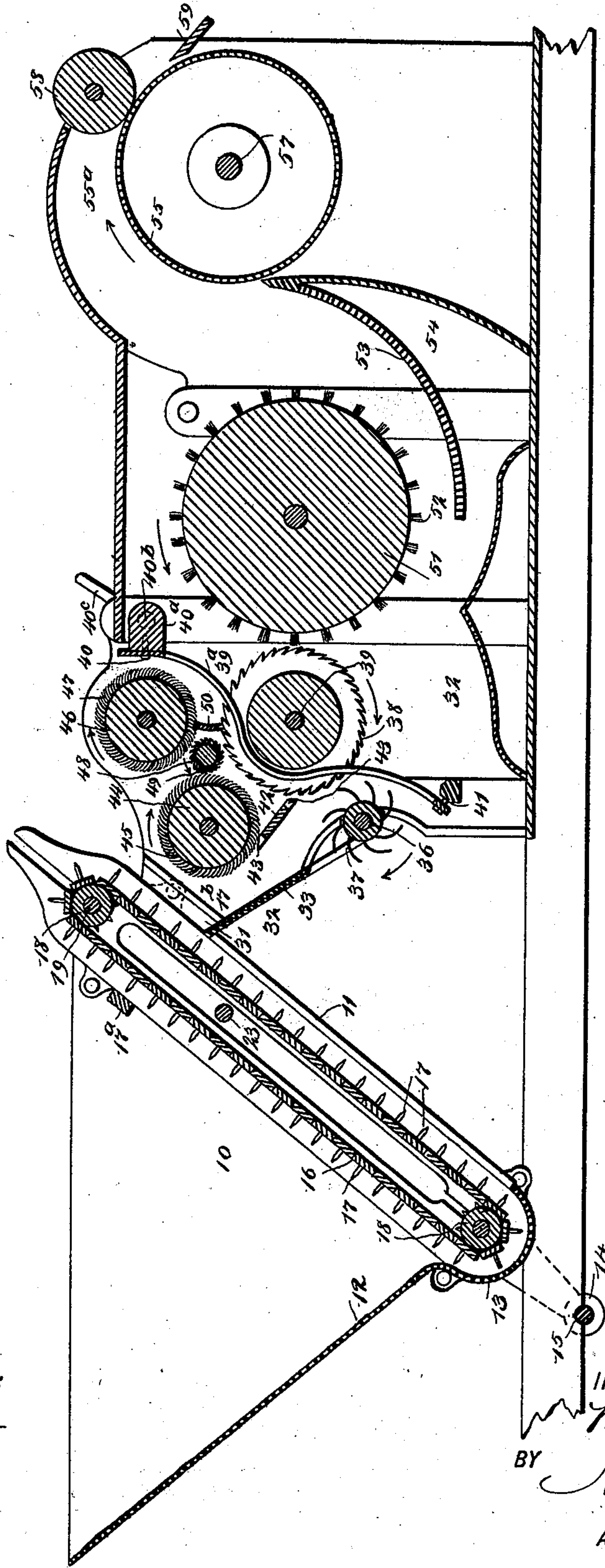


Fig 1

WITNESSES:

H. Walker  
C. Sedgwick

INVENTOR

N. Whalley  
BY Munn & Co

ATTORNEYS.

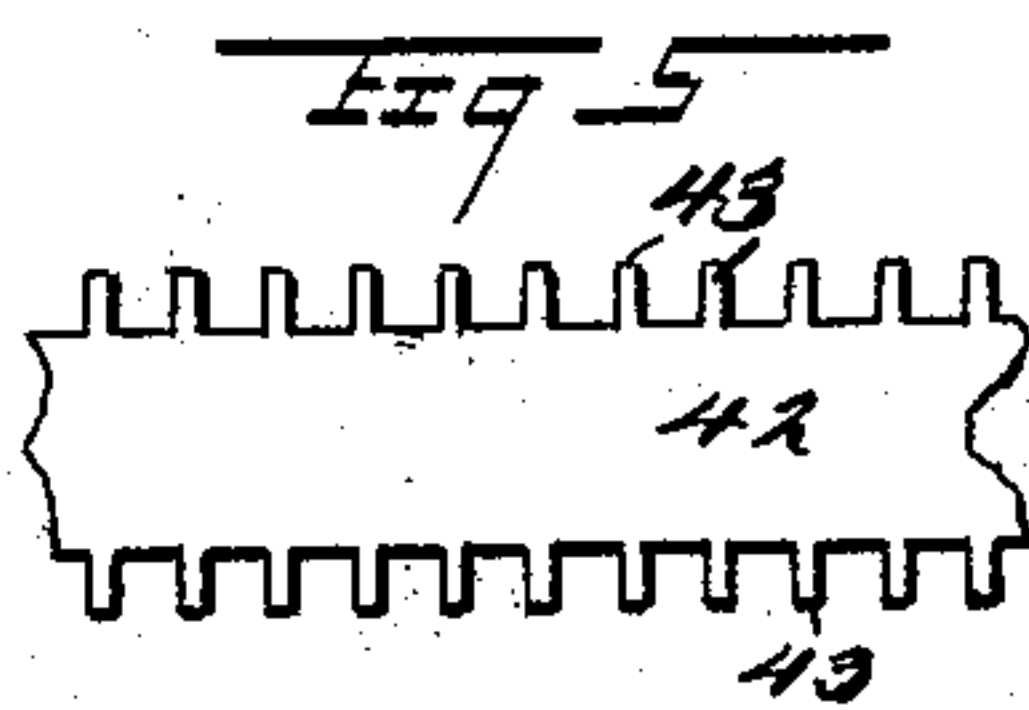
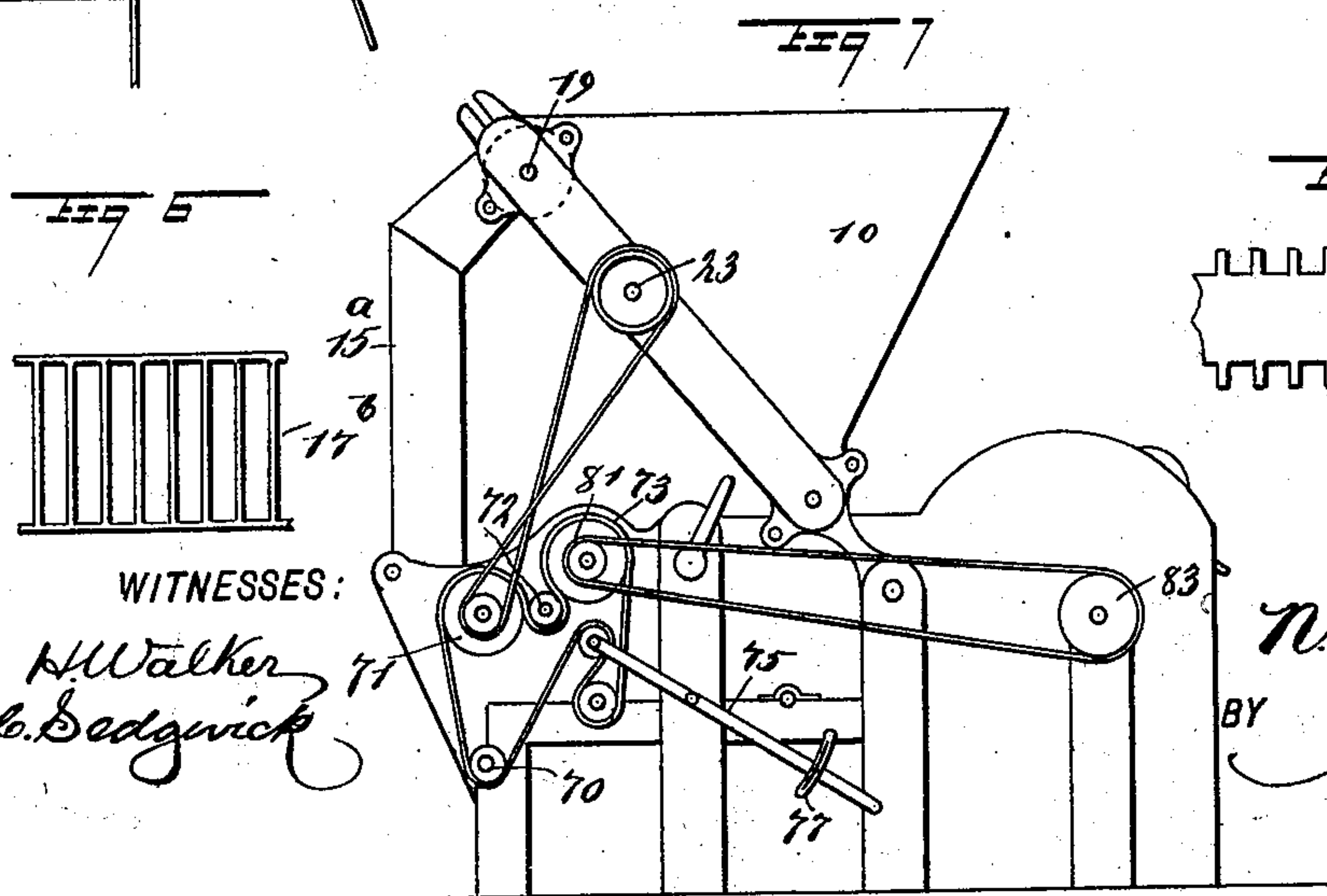
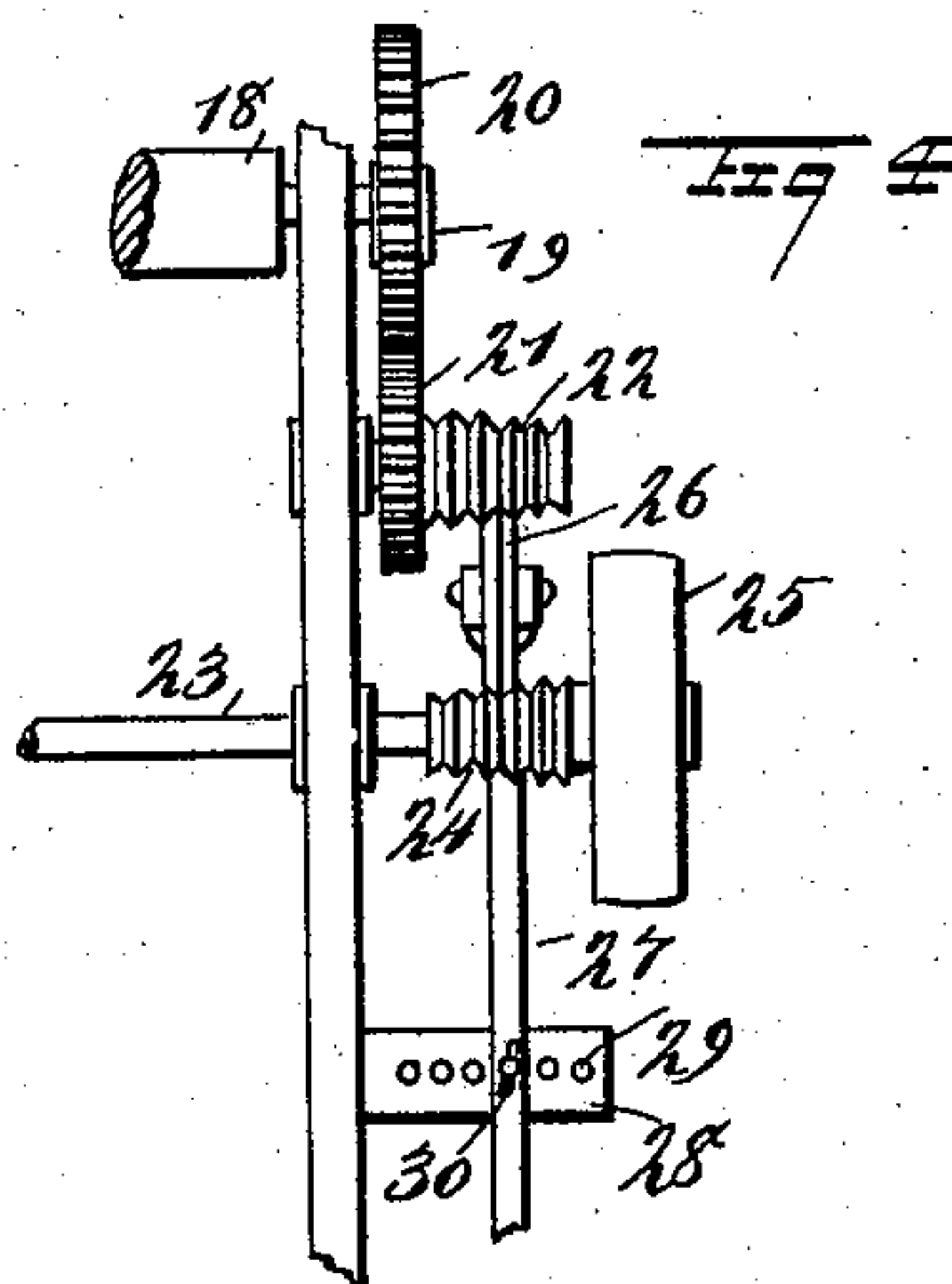
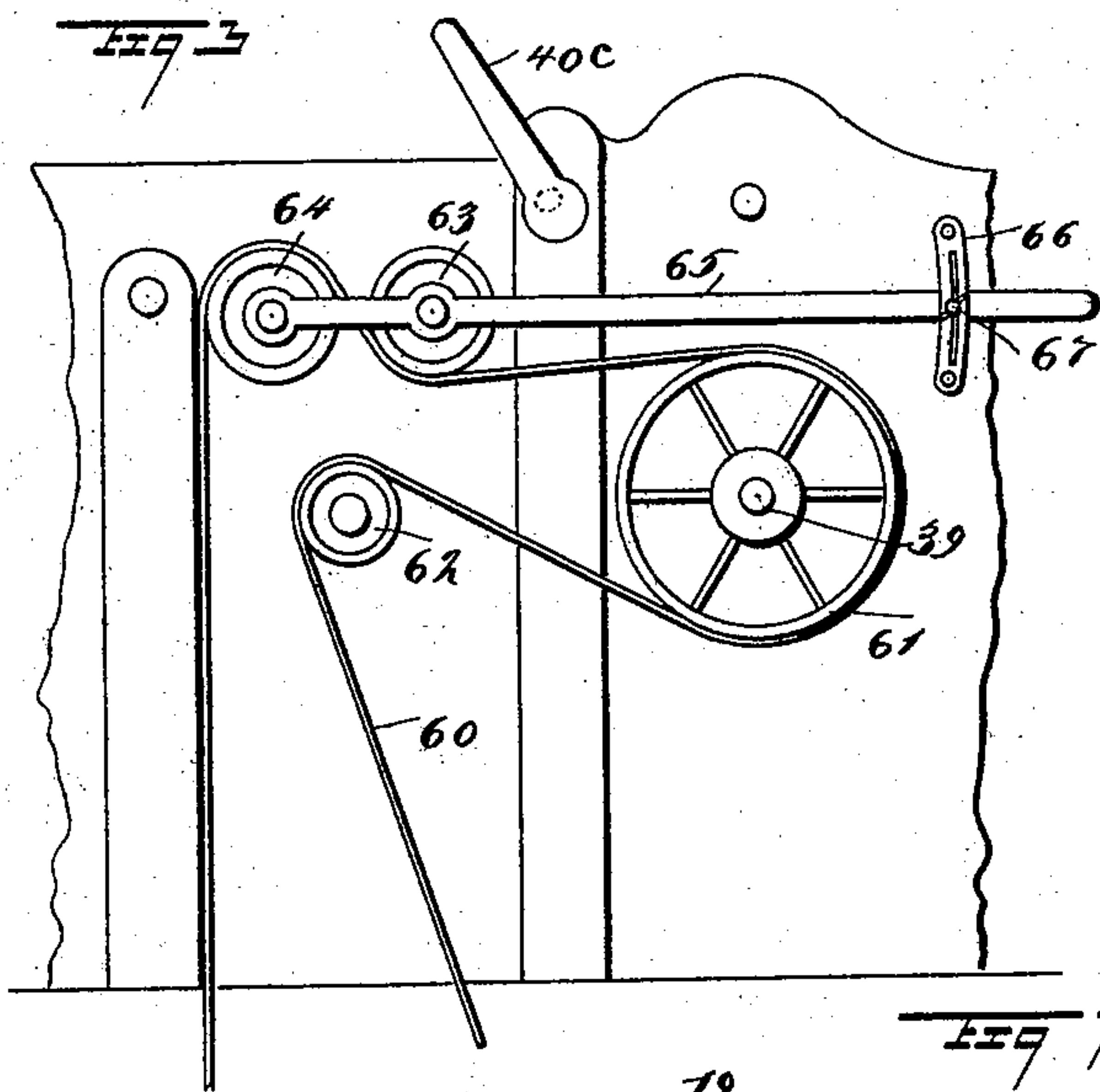
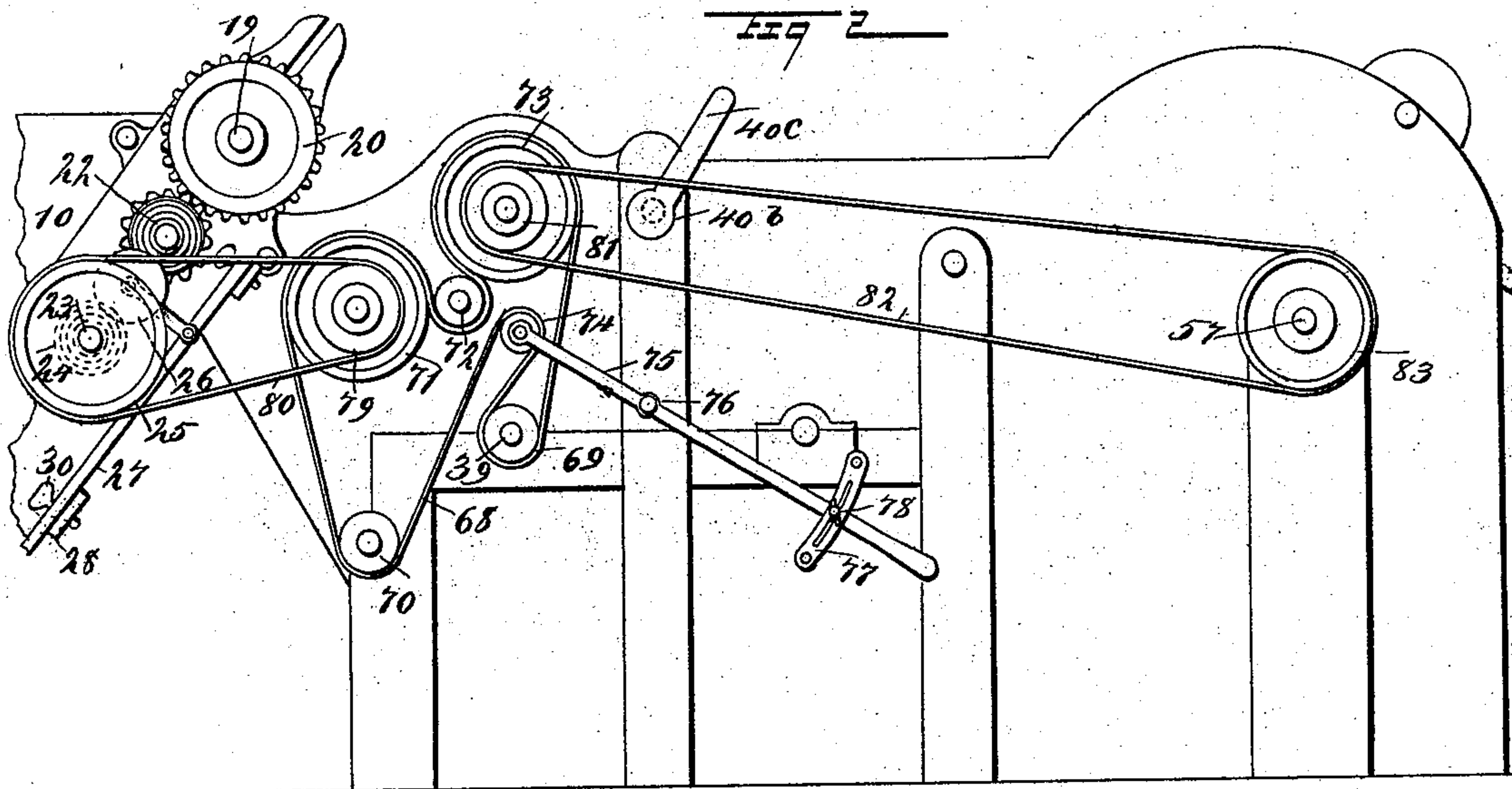
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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

NATHAN WHALLEY, OF FORT PAYNE, ALABAMA, ASSIGNOR TO HIMSELF, STEWART H. CONGDON, OF SHELTER ISLAND, NEW YORK, JOHN CRITCHLEY, OF PORTSMOUTH, NEW HAMPSHIRE, GILBERT E. RUSSELL, OF HOLYOKE, AND FRANK H. WARE, OF MELROSE, MASSACHUSETTS.

## SAW COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 506,452, dated October 10, 1893.

Application filed March 6, 1893. Serial No. 464,759. (No model.)

*To all whom it may concern:*

Be it known that I, NATHAN WHALLEY, of Fort Payne, in the county of De Kalb and State of Alabama, have invented a new and  
5 Improved Saw Cotton-Gin, of which the following is a full, clear, and exact description.

My invention relates to improvements in cotton gins, and the object of my invention is to produce a gin arranged to use the ordinary gin saws, and constructed in such a  
10 manner that its feed and speed generally may be perfectly controlled, but the cotton may be cleaned of foreign matter before it is delivered to the saws, thus obviating danger of  
15 fire by friction and damage to the saws; which is provided with a very perfect means of removing the lint from the saws and delivering it in a clean and partially compressed condition at the tail of the machine, and which  
20 is also arranged so that the saws are not necessarily forced deeply into the roll of seed cotton, thus providing against kinking or otherwise injuring the lint.

To this end my invention consists in certain  
25 features of construction and combinations of parts, which will be hereinafter described and claimed.

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

Figure 1 is a central longitudinal section of the machine embodying my invention. Fig. 2 is a broken side elevation, showing the  
35 mechanism for driving the feed apron and carding rolls. Fig. 3 is a broken side elevation on the opposite side of the machine from that shown in Fig. 2, and illustrates in detail, the mechanism for driving the brush and  
40 saws. Fig. 4 is a broken detail view of the mechanism for driving the feed apron and for regulating its speed. Fig. 5 is a broken plan view of the huller bar which is arranged near the saws. Fig. 6 is a broken detail plan view  
45 of the grate bar which is arranged in the inlet of the main case; and Fig. 7 is a side elevation of the machine on a reduced scale, and showing a preferred arrangement of the hopper.

The machine is provided with a feed hopper 50 10, having inclined sides, one side 12 being perforated or made of screen wire, and the other side 11 being formed of parallel slats. The hopper has a rounded lower portion, as shown at 13, so that the feed apron may turn readily  
55 therein, and on opposite sides are depending lugs 14, adapted to be secured by a bolt or rod 15 to a support. If desired, the hopper may be arranged on top of the machine, as shown in Fig. 7, instead of at the end, and  
60 may be arranged to deliver into the gin through a suitable feed spout 15<sup>a</sup>, also shown in dotted lines in the same figure. This construction enables the cotton to be fed to the machine from a story above, an arrangement  
65 which is frequently desirable.

Extending parallel with the inclined side 12, is an endless carrying apron 16, which is arranged like the usual spike apron and has projecting pins or spikes 17, the apron being  
70 carried by drums 18 journaled in the upper and lower portions of the hopper, and the shaft 19 of the upper drum is provided at one end with a gear wheel 20, which drives it, and this gear wheel meshes with an idler gear 21,  
75 see Figs. 2 and 4, on a cone 22, the latter being journaled on one side of the hopper and having parallel grooves or corrugations therein, as shown clearly in Fig. 4. Parallel with  
80 the shaft 19, is a shaft 23, on which is a cone 24, similar to the cone 22, but oppositely inclined, and the shaft 23 is driven by a pulley 25 in a manner hereinafter described. A disk 26, having a beveled edge is adapted to fit in the grooves of the two cones, and trans-  
85 fer motion from one to the other, and by adjusting it in two grooves, the speed of the driven cone 22 may be nicely regulated.

The disk 26 is carried by a lever 27, which is fulcrumed on the side of the hopper and is  
90 fastened in place by securing its free end to an arm 28 on the hopper, this arm having perforations 29 therein adapted to receive a fastening pin 30, which projects through the lever and into the perforations of the arm. 95

The seed cotton which is placed in the hopper is carried upward by the spiked apron and beneath the bar 17<sup>a</sup> near the top of the



hopper, which bar extends across the hopper and knocks off any lumps of cotton or superfluous material, and the cotton which is carried over the top of the apron falls through a coarse grate bar 17<sup>b</sup> in the inlet chute 31 of the main gin case or frame 32, which frame or case is arranged in substantially the usual way. The inlet chute 31 has an inclined perforated floor 33, which delivers upon the revoluble huller 36, having projecting fingers or teeth 37 which are preferably curved, and which are adapted as they tear their way through the cotton, to knock out the hulls and seeds.

It will be seen that the feed apron will cause the cotton to be revolved in the hopper so that the fine dust will be shaken between the slats 11 or through the screen 12, the coarse and heavy materials, such as stones, nails or other matter which may be in the cotton will drop through the slats 11, or through the pocket 13, and much other foreign matter will drop down through the perforated chute and out through the lower portion of the main case or frame.

Behind the huller, and preferably a little above the same, is a series of saws 38, like the usual gin saws, these being carried on a mandrel or shaft 39, and turning through a breast plate 39<sup>a</sup>, this being arranged to clasp the saws in the usual manner, but the arrangement for moving the breast plate to clean the saws is novel and a part of this invention. The breast plate at its upper end is secured to a movable block 40<sup>a</sup>, as shown at 40, this block being secured to an eccentric rod 40<sup>b</sup>, which has levers 40<sup>c</sup> at its ends, by which it may be moved. The lower end of the breast plate is pivoted, as shown at 41, to a suitable support, and by oscillating the levers 40<sup>c</sup>, the breast plate may be moved in and out so that when necessary it may be pushed to the outer edges of the saws and force any matter thereon off the saw teeth.

In front of the saws, and placed diagonally, is a huller bar 42, which extends transversely across the main frame or case, and this has fingers 43 on its opposite edges, the lower fingers registering with the spaces between the saws and the upper fingers extending into the path of the teeth 45 of a carding roll 44, which is arranged above the saws and near the inlet of the gin. Parallel with the carding roll 44, is a similar roll 46, which is placed behind and a little above the roll 44, and the carding roll 46 has also the usual teeth 47. A third and similar carding roll 48, having teeth 49, is arranged below the two large carding rolls 44 and 46, and at a point between the two, and the small carding roll serves as a cleaner for the larger carding rolls. Behind the carding roll 48 and between the saws and the carding roll 46, is a guard or finger bar 50, constructed substantially like the huller bar, and extending transversely across the main case, as shown in Fig. 1.

It will be seen that the cotton which enters

the case will be caught by the saws after it has passed the huller, and the saws will carry the seed cotton upward through the huller bar 42 and to the guard or finger bar 50. The seed cotton will, in part, be picked up by the carding roll 45, and delivered by the said roll to the roll 46, and the roll 46 delivers partly to the saws and partly to the carding roll 48, the latter serving to keep the rolls 46 and 44 clean. The seed cotton which drops from the back of the roll 46 will fall upon the saws, and the seed cotton dropped from the roll 48 will also fall upon the saws, while the seed cotton which is carried backward by the saws will be taken off by the brush 51, the bristles 52 of which project into close proximity to the saw teeth.

The arrangement of the saws and carding rolls is such that a small roll of cotton is kept above the huller, and the saws are kept clean by the carding rolls, so that they need not bury themselves deeply in the roll of seed cotton, and the lint is picked off rapidly and with little power.

The brush 51 turns behind the saws and its axis is parallel with the axis of the saws. The brush 51 carries the lint backward and upward over the perforated top 53 of a dust-box 54, and the brush serves as a blower as well as a brush, and blows the lint upward above the top of the dust-box while the dust drops through into the box. The lint is blown rearward through a chute 55<sup>a</sup>, and over a condenser 55 which is carried by a shaft 57 in the rear end of the main case, and the face of which is made of woven wire or similar screening material, so that any dust which may have reached the condenser will fall through it. The lint passes onward beneath the compressing roller 58, which is arranged at the rear end of the chute 55<sup>a</sup>, and finally passes out in a thin sheet over the delivery slide or plate 59.

The brush and saws are driven by a single belt, as illustrated in Fig. 3, the belt 60 passing over the pulley 61 on the saw shaft or mandrel 39, thence around a pulley 62 on the brush shaft, thence beneath an idler 63 and over an idler 64, the latter being journaled on the side of the main frame or case, and thence back to its driving pulley. The idler 63 is carried by a vertically movable lever 65, which is fulcrumed on the pivot of the idler 64, and the lever is held to move through a quadrant 66, on which it may be fastened by a pin 67, and this arrangement enables the belt 60 to be tightened so as to drive the brush and saws, while it also provides for instantly stopping the brush and saws without stopping the rest of the machinery, the latter result being effected by simply raising the lever 65. The card rolls are all run by a single belt and may likewise be stopped without stopping the saws or the brush, as shown in Fig. 2.

The driving belt 68 extends beneath a pulley 69 on the saw shaft 39, and beneath a pulley 70 on the huller shaft, thence over a pul-



ley 71 on the shaft of the card roll 44, thence beneath a pulley 72 on the shaft of the card roll 48, and thence over a pulley 73 on the shaft of the card roll 46. The belt also runs over an idler 74, which is arranged between the pulleys 69 and 70, and a little above the former, the idler being carried by a lever 75 which is fulcrumed, as shown at 76, on the side of the main case or frame, and the lever moves through a quadrant 77, in which it is fastened by a pin 78, and it will be seen that by means of the lever, the belt may be tightened so as to run the card rolls and huller, or so as to permit the same to stop.

On the shaft of the card roll 44 is a pulley 79, and a belt 80 leads from this to the pulley 25 which drives the feeder, so that the feeder is operated in unison with the carding mechanism. On the shaft of the card roll 46 is a pulley 81, and from this runs a belt 82, which drives a pulley 83 on the shaft 57 of the condenser, and it will be seen that the above arrangement affords means for conveniently driving all the parts of the machine except the saws and brush, and for instantly stopping said parts.

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

1. In a cotton gin, the combination, with the main case having a suitable inlet chute, the revoluble saws held to turn therein, and the revoluble toothed huller arranged near

the saws and beneath the chute, of fingered or toothed huller bars arranged near the saws and near the back portion of the chute, a pair of revoluble carding rolls arranged above the saws and parallel with each other, and a third carding roll arranged between the pair of rolls and the saws and adapted to clean the larger rolls, substantially as specified.

2. In a cotton gin, the combination with the revoluble saws, the revoluble huller, and a huller bar arranged above the huller, in front of the saws, of a series of three carding rolls arranged above the saws, one of the three being arranged below the other two and close to the saws, substantially as described.

3. The combination, with the revoluble saws, of the breast plate arranged to span the saws and pivoted at its lower edge, an eccentric rod journaled above the saws and forming the support for the top of the breast plate, and a lever for turning the eccentric rod, substantially as specified.

4. In a cotton gin, the combination with the revoluble saws, the transverse fingered huller bar, a plurality of card rolls above such fingered bar, and a second fingered bar disposed between the rear most card roll and the saws, substantially as described.

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Witnesses:

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JOHN CRITCHLEY.