

(No Model.)

2 Sheets—Sheet 1.

D. C. FISHER.

FEEDING MECHANISM FOR WOOL CARDING ENGINES.

No. 506,487.

Patented Oct. 10, 1893.

Fig. 1.

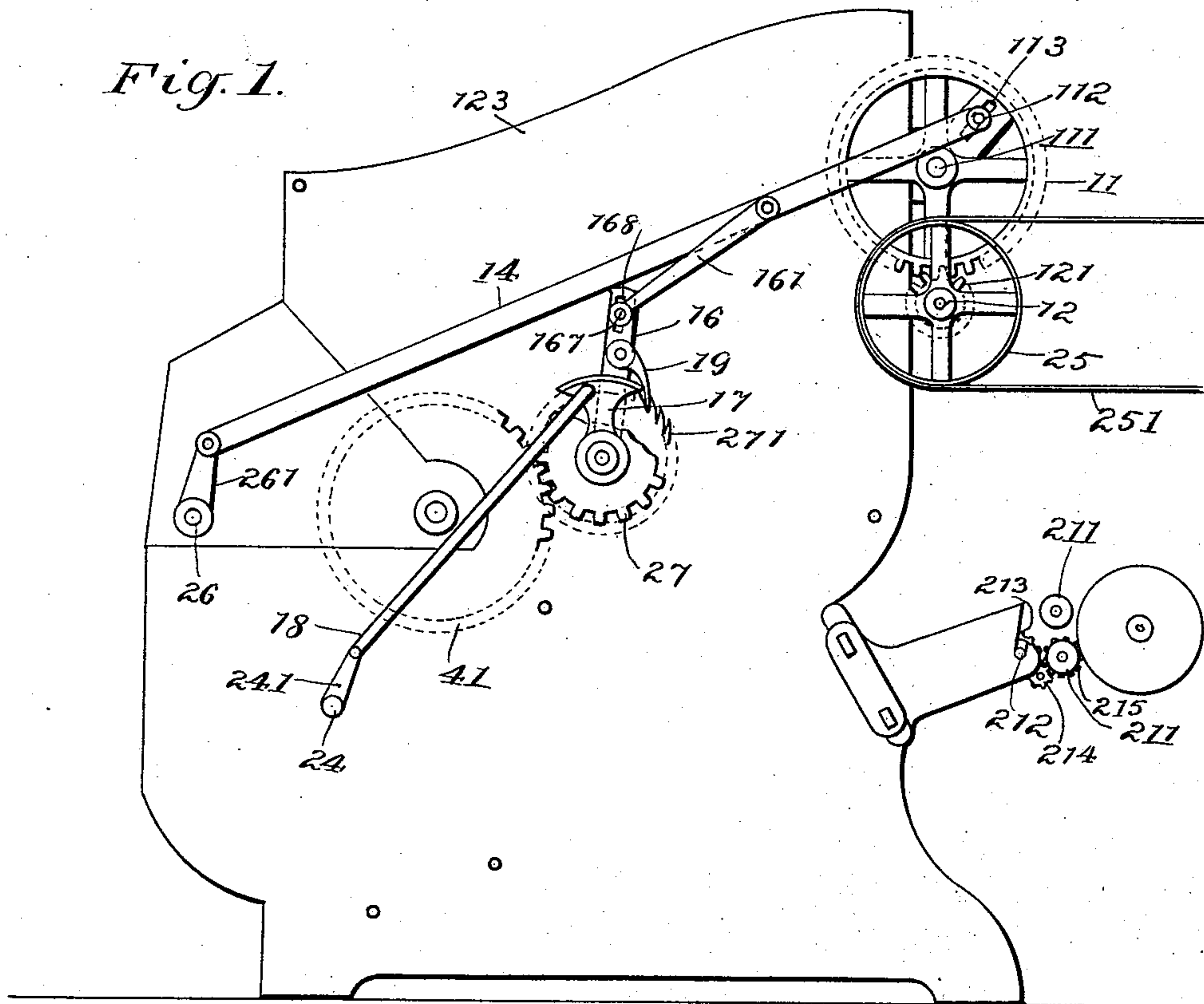
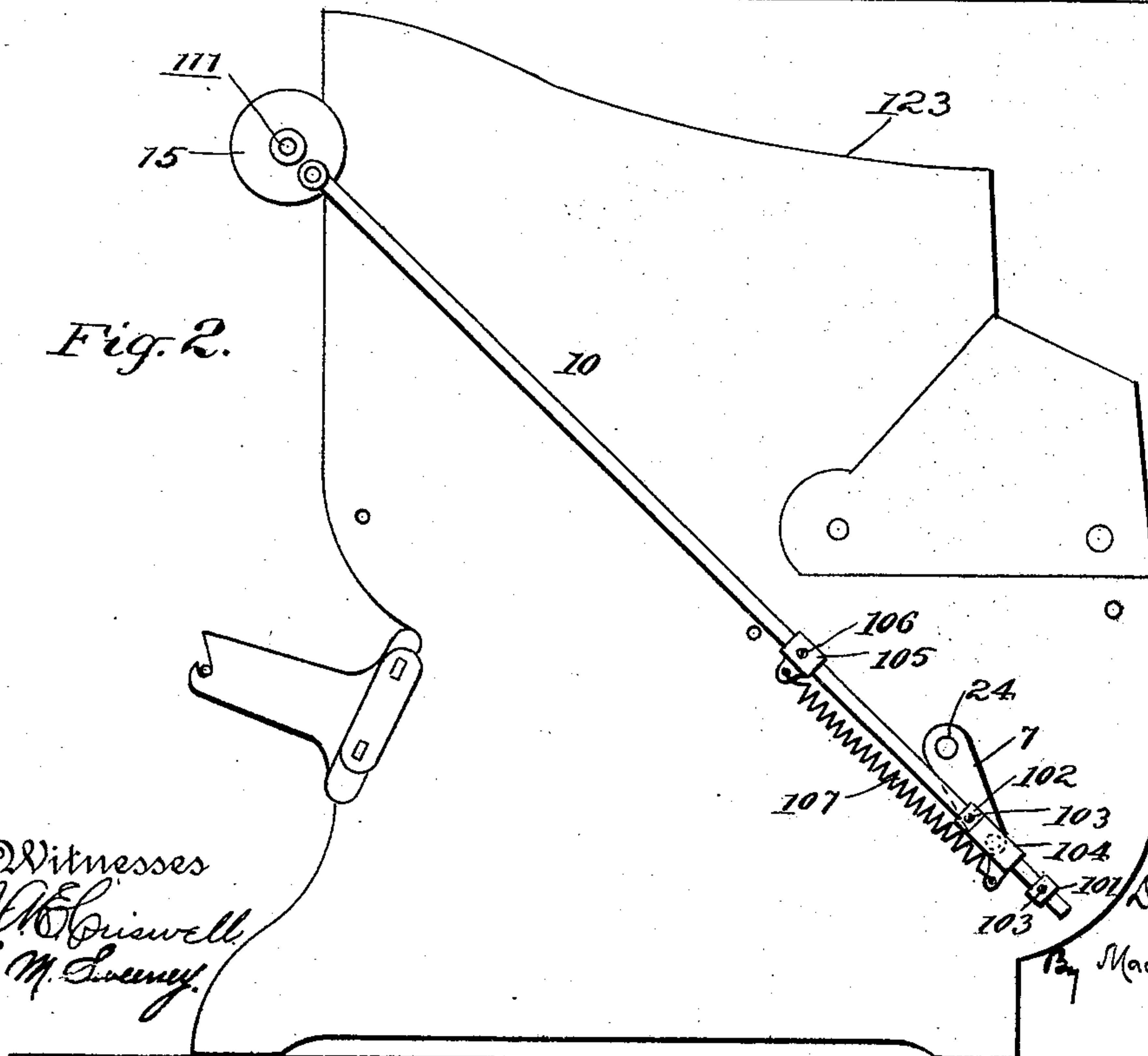


Fig. 2.



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(No Model.)

2 Sheets—Sheet 2.

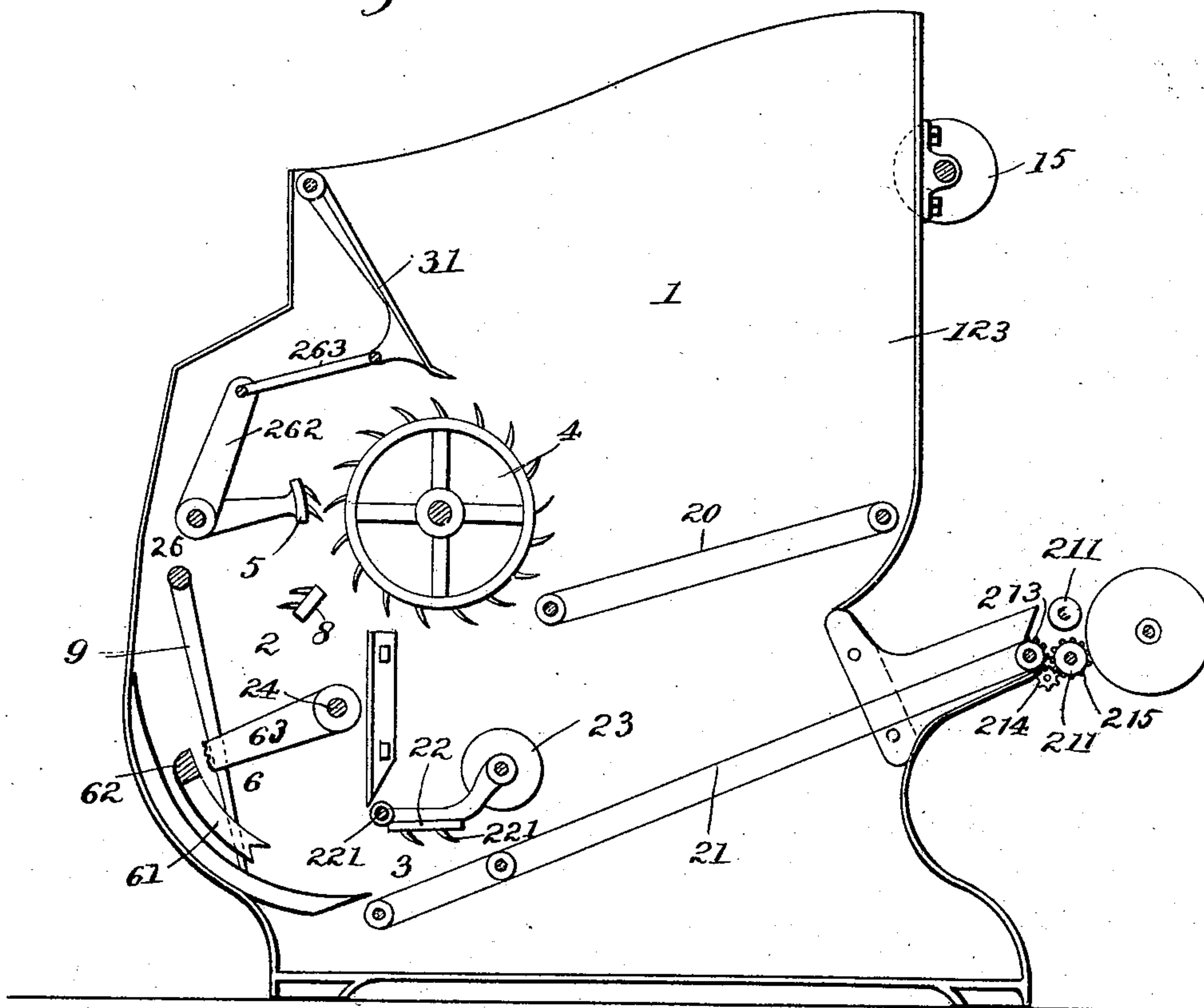
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Fig. 3.



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FEEDING MECHANISM FOR WOOL-CARDING ENGINES.

SPECIFICATION forming part of Letters Patent No. 506,487, dated October 10, 1893.

Application filed March 9, 1893. Serial No. 465,365. (No model.)

To all whom it may concern:

Be it known that I, DANIEL C. FISHER, a citizen of the United States, residing at Allston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Feeding Mechanism for Wool-Carding Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to feeding mechanisms of that class in which the stock is taken from a supply or receiving chamber or space by means of a toothed elevator or transferrer, and, after being discharged from the latter, is passed onward to the feed-rolls of a carding engine by means of a delivering device, the latter usually being in the form of a traveling endless feed-apron on which the wool discharged from the elevator or transferrer is accumulated.

The object of my invention is to provide improved means whereby automatically to secure uniformity and regularity in the bulk and density of the sheet or layer of wool fed or delivered to the feed-rolls of the carding-engine.

My invention consists especially in the combination with a wool-box having a receiving chamber or space into which a supply of wool is thrown, and a secondary chamber or space, a toothed elevator or transferrer taking the wool from the receiving chamber or space, means for discharging the wool from the said elevator or transferrer into the secondary chamber or space, and a deliverer for carrying the wool away from the said secondary chamber or space, of a matter for compacting the wool over the said deliverer, means for actuating the said matter, variable speed devices for driving the elevator or transferrer, and devices controlled by the movements of the matter whereby the action of the said variable speed devices is regulated and the speed of the elevator or transferrer is altered.

The invention will be described fully with reference to the accompanying drawings forming a part of this specification, and then will be particularly pointed out and clearly

defined in the claims at the close of this specification forming a part hereof.

In the drawings, Figures 1 and 2 are opposite end views of a wool-feeding mechanism embodying my invention. Fig. 3 is a view thereof in transverse section, on a plane parallel with the ends of the wool-box.

At 123, in the drawings, is shown a wool-box, which may be of any suitable size or shape, and at 1 is a receiving chamber or space in the said wool-box into which a supply of wool is thrown from time to time, as may be required.

At 20 is an endless apron forming the bottom of the receiving or supply chamber 1, it being operated in known and usual manner for the purpose of leading or directing the wool to the toothed elevating or transferring device 4. The toothed elevating or transferring device 4 may be of the character of any of the known devices for performing a similar function, it operating to take or draw the wool gradually from the receiving or supply chamber and carry it into position to be discharged into a secondary chamber 2.

At 31 is a moving comb or evener for removing surplus material from the surface of the elevator or transferrer and returning it to chamber 1.

At 5 is a moving comb or brush for combing or brushing the wool from the teeth or projections of the elevator or transferrer, and thereby discharging the same into the secondary chamber 2, and at 8 is a stationary comb or brush serving as a stripper for the discharging comb or brush 5.

At 21 is a delivering device by means of which the wool discharged from the elevator or transferrer 4 into the secondary chamber or space 2 is carried onward to the feed-rolls 211, 211, of a carding engine, the said delivering device being shown as constituted by the endless traveling feed-apron usually employed, and which in practice may be actuated by any suitable or known means.

In Fig. 1 I have shown the outer roller 212 of the delivering apron 21 driven by gears 213, 214, 215 from one of the feed-rolls 211, and the said apron thereby operated in unison with the said feed-rolls.

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At 6 is shown a matting device whereby the wool in the secondary chamber or space 2 is pushed forward onto the upper surface of the delivering apron 21 and compacted or matted together thereon, the said matter acting at each advance thereof to push the wool at the bottom of the chamber or space 2 forward onto the apron until it is carried against the wool already accumulated on the apron, and then to compress or compact the whole to a predetermined density. The wool thereby is formed into a compact layer of a thickness dependent upon the height of the throat 3, which is the space existing between the upper surface of the delivering device 21 and the adjacent surface of a plate or board 22 which may be fixed in position but preferably is pivoted at its forward edge, at 221, and at its rear edge is free to swing toward and from the delivering device, the plate bearing downward upon the wool, as it is accumulated upon the delivery device, with a pressure proportionate to its weight.

At 23 is shown a pressure roller journaled in arms at the free edge of plate 22 and bearing by its periphery against the wool, its weight adding to the pressure exerted upon the wool. The latter is pushed by the matter 6 into the throat 3, and compressed or compacted therein into a layer of suitable density. The matter 6 shown in the drawings is formed of a series of fingers 61 which are secured to a transverse bar or strip 62 that is carried by arms 63 on a vibrating shaft 24.

At 9 is a guard or grating between the bars or strips whereof the fingers 61 pass, the said guard or grating serving to strip the wool from the fingers 61 as they are retracted, and permitting it to fall from the elevator or transferrer into position to be engaged by the said fingers when projected and caused to move rearwardly.

The various operative parts are actuated as follows: At 12 is a shaft carrying a pulley 25 around which passes a driving band 251. Shaft 12 is provided with a pinion 121 meshing with a gear 11 on a shaft 111. At 113 is a radial slot in an arm of gear 11 in which is adjustably secured a crank pin 112 with which is connected one end of a rod 14, which rod at its opposite end is connected to an arm 261 on one end of the shaft 26 of the discharging comb or brush 5. Thereby the said comb or brush is vibrated. An arm or arms 262 on the said shaft 26 is or are connected with the pivoted evener 31, by a rod or rods 263, and thereby the said evener is actuated. On one end of the shaft of the elevator or transferrer 4 is a gear 41 which is engaged by a pinion 27 fast with a ratchet-wheel 271. The teeth of the said ratchet-wheel are engaged by a pawl 19 pivoted to an arm 16 which is free to turn around the stud supporting the pinion 27 and ratchet-wheel 271, the said arm being connected by a link 161 to the rod 14. By these

devices the elevator or transferrer is actuated. The pin 167 connecting the rod 161 to the arm 16 is placed in a radial slot 168 to permit adjustment. On the end of the shaft 111 opposite to that carrying gear 11 is mounted a crank-disk 15, the pin whereof has connected thereto one end of a rod 10. At or near its other end the said rod has slipped thereon collars 101, 102 which are secured in place at a short distance apart by clamping screws 103, 103, as shown. Between these collars there is mounted on the rod a sliding collar 104 which is pivotally connected with the arm 7 on one end of shaft 24 of the matter 6. A fourth collar 105 is mounted on the rod 10 at a suitable distance from the collars 101, 102, and 104, it being held in place by a clamping screw 106, and to the collar 105 is attached one end of a spring 107 having its other end attached to the sliding collar 104, the said spring being of sufficient strength to hold the collar 104 normally drawn against collar 102, as shown. On the other end of shaft 24 is an arm 241 which is connected by a rod 18 to a shield or guard 17 that is pivoted on the same stud with the pinion 27 and ratchet wheel 271. The connection between the arm 241 on the shaft 24 of the matter 6 and the shield or guard 17 is such as to cause the matter and guard or shield to move in unison. The connections are so arranged, and the movements of the various parts are so timed, as will be apparent, that during the regular working of the mechanism, and as long as the matter is permitted to move unobstructedly through its usual length of stroke, the guard or shield 17 will be withdrawn or moved away from the pawl 19 just prior to the advancing movement of the latter in which it engages with and turns the ratchet wheel 271, leaving it free to engage with the ratchet-wheel and advance it the predetermined maximum number of teeth, thereby rotating the elevator or transferrer at its highest or maximum rate of speed.

It will be observed that in the case of the wool accumulating in the throat 3 at a rate faster than the delivery device passes it onward to the feed-rolls of the carding-engine, the advance of the matter will be resisted until the point is reached at which the spring 107 yields, when the matter will be arrested in its advance, the extent to which it is advanced depending upon the amount of wool which has accumulated in the throat 3. In consequence of the arrest of the advancing movement of the matter, the guard or shield will be withdrawn only partially from the arc of movement of the pawl, and, in consequence, the number of teeth by which the ratchet-wheel will be advanced by the pawl in its next forward movement will be proportionately lessened, and the speed of rotation of the elevator or transferrer will be reduced, thereby reducing the amount of material transferred to the secondary chamber or

space 2. The elevator or transferrer will continue to be rotated at a reduced rate of speed proportionate to the extent of the accumulation of wool in the throat 3, as will be understood, until the wool on the delivery device has been passed on to a sufficient extent to permit of the matter being moved by its actuating devices throughout its full sweep.

Although in the drawings I have shown an elevator or transferrer formed as a toothed cylinder, I wish it to be understood that I contemplate employing in lieu of such cylinder any other known and suitable elevating or transferring device; also, I wish it to be understood that the illustrated forms of variable-speed devices whereby said elevator or transferrer is actuated, the matter itself, the means for operating the same, and the connections through which the matter in its movements serves to control the action of the said variable-speed devices, may variously be modified in minor mechanical respects and replaced by their mechanical equivalents without any departure from the spirit of my invention.

On the under side of the board 22 are provided teeth 221 for holding the wool which has been crowded into the throat 3 by the matter from returning with the said matter.

I claim as my invention—

1. The combination with a wool-box having a receiving chamber or space into which a supply of wool is thrown and a secondary chamber or space, a toothed elevator or transferrer taking the wool from the receiving chamber or space, means for discharging the wool from the said elevator or transferrer into the secondary chamber or space, and a deliverer for carrying the wool away from the said secondary chamber or space, of a matter for compacting the wool upon the said deliverer, means for actuating the said matter, variable speed devices for driving the elevator or transferrer; and devices controlled by the movements of the matter whereby the action of the said variable speed devices is regulated and the speed of the elevator or transferrer is altered, substantially as described.

2. The combination with a wool-box having a receiving chamber or space into which a supply of wool is thrown and a secondary chamber or space, a toothed elevator or transferrer taking the wool from the receiving chamber or space, means for discharging the wool from the elevator or transferrer into the secondary chamber or space, a deliverer, and an opposing surface forming between the same and the deliverer a throat, of a matter for crowding the wool into said throat, means for actuating the said matter, variable speed devices for driving the elevator or transferrer, and devices controlled by the movements of the matter whereby the action of the said variable speed devices is regulated and the speed of the elevator or transferrer is altered, substantially as described.

3. The combination with a wool box having a receiving chamber or space into which a supply of wool is thrown and a secondary chamber or space, a toothed elevator or transferrer taking the wool from the receiving chamber or space, means for discharging the wool from the said elevator or transferrer into the secondary chamber or space, and a deliverer for carrying the wool away from the said secondary chamber or space, of a matter for compacting the wool over the deliverer, yielding means for actuating the matter, variable speed devices for driving the elevator or transferrer, and devices connected with the matter whereby the action of the said variable speed devices is regulated and the speed of the elevator or transferrer is altered, substantially as described.

4. The combination with a wool-box having a receiving chamber or space into which a supply of wool is thrown and a secondary chamber or space, a toothed elevator or transferrer taking the wool from the receiving chamber or space, means for discharging the wool from the elevator or transferrer into the secondary chamber or space, a deliverer, and an opposing surface forming between the same and the deliverer a throat, of a matter for crowding the wool into said throat, yielding means for actuating the matter, variable speed devices for driving the elevator or transferrer, and devices connected with the matter whereby the action of the said variable speed devices is regulated and the speed of the elevator or transferrer is altered, substantially as described.

5. The combination with a wool-box having a receiving chamber or space into which a supply of wool is thrown and a secondary chamber or space, a toothed elevator or transferrer taking the wool from the receiving chamber or space, means for discharging the wool from the said elevator or transferrer into the secondary chamber or space, and a deliverer for carrying the wool away from the said secondary chamber or space, of a matter for compacting the wool over the said deliverer, means for actuating the said matter, a ratchet-wheel and pawl for actuating the said elevator or transferrer, means for moving the pawl, and a movable shield or guard adapted to be interposed between the ratchet and pawl and controlled in its position by the movements of the said matter, whereby the speed of the elevator or transferrer may be varied, substantially as described.

6. The combination with a wool-box having a receiving chamber or space into which a supply of wool is thrown and a secondary chamber or space, a toothed elevator or transferrer taking the wool from the receiving chamber or space, means for discharging the wool from the said elevator or transferrer into the secondary chamber or space, and a deliverer for carrying the wool away from the said secondary chamber or space, of a matter for

compacting the wool over the said deliverer,
yielding means for actuating the matter, a
ratchet-wheel and pawl for actuating the said
elevator or transferrer, means for moving the
5 pawl, and a movable shield or guard adapted
to be interposed between the ratchet and
pawl and controlled in its position by the
movements of the said matter, whereby the

speed of the elevator or transferrer may be
varied, substantially as described. 10

In testimony whereof I affix my signature in
presence of two witnesses.

DANIEL C. FISHER. [L. S.]

Witnesses:

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FRANK C. HYDE.