

(No Model.)

2 Sheets—Sheet 1.

H. McDERMOTT.

STOP MOTION FOR CARDING MACHINES.

No. 501,573.

Patented July 18, 1893.

FIG-1-

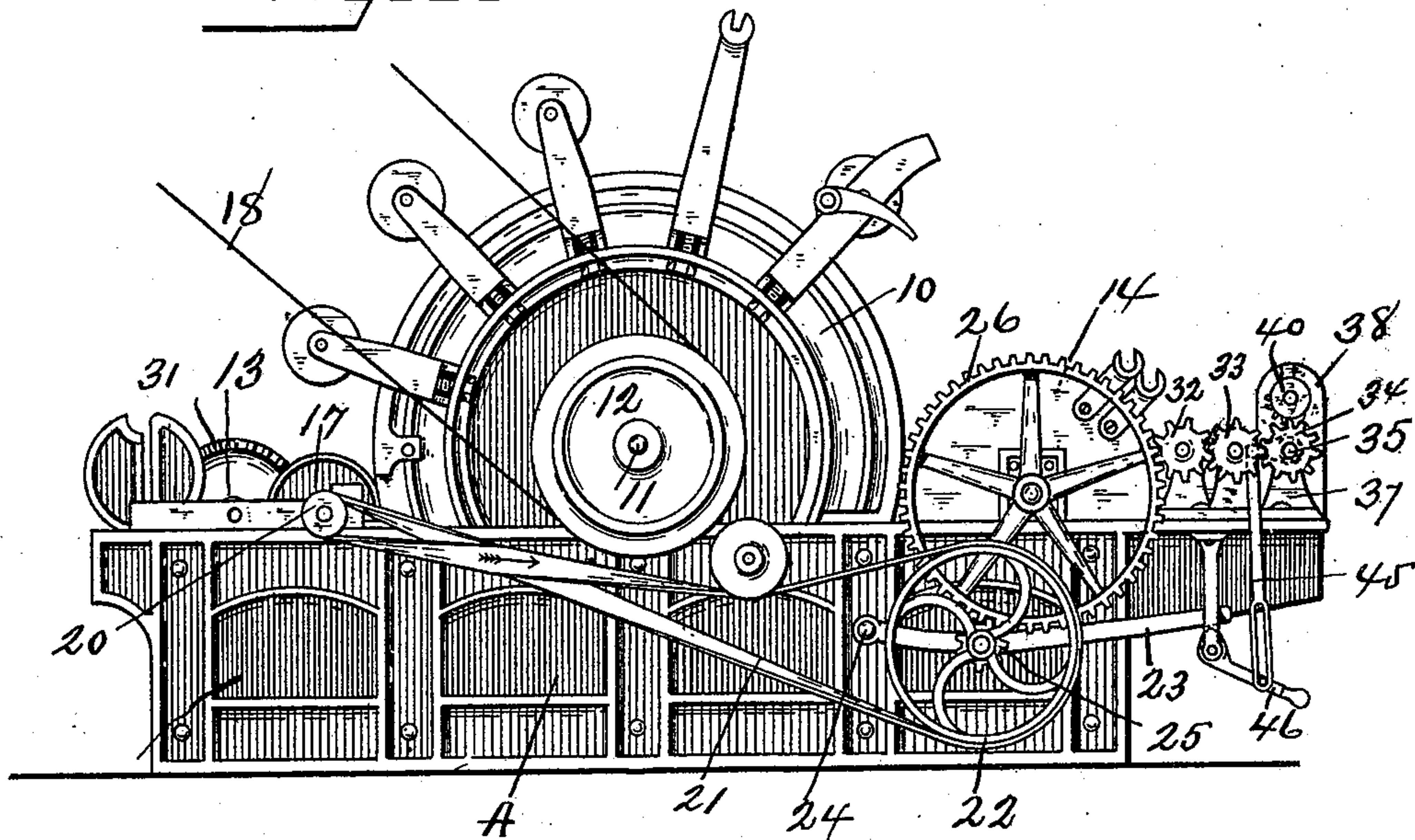
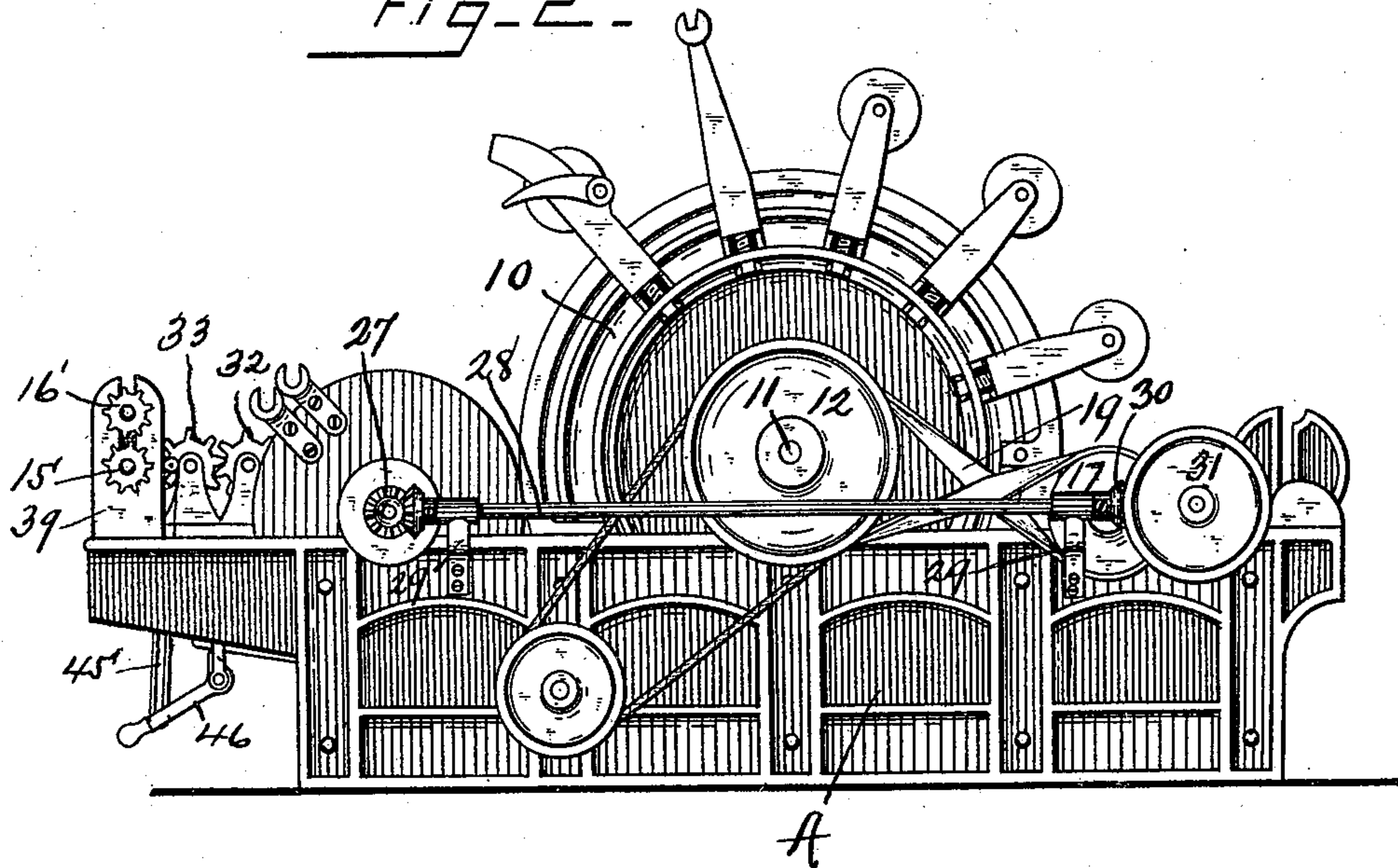


FIG-2-



Witnesses

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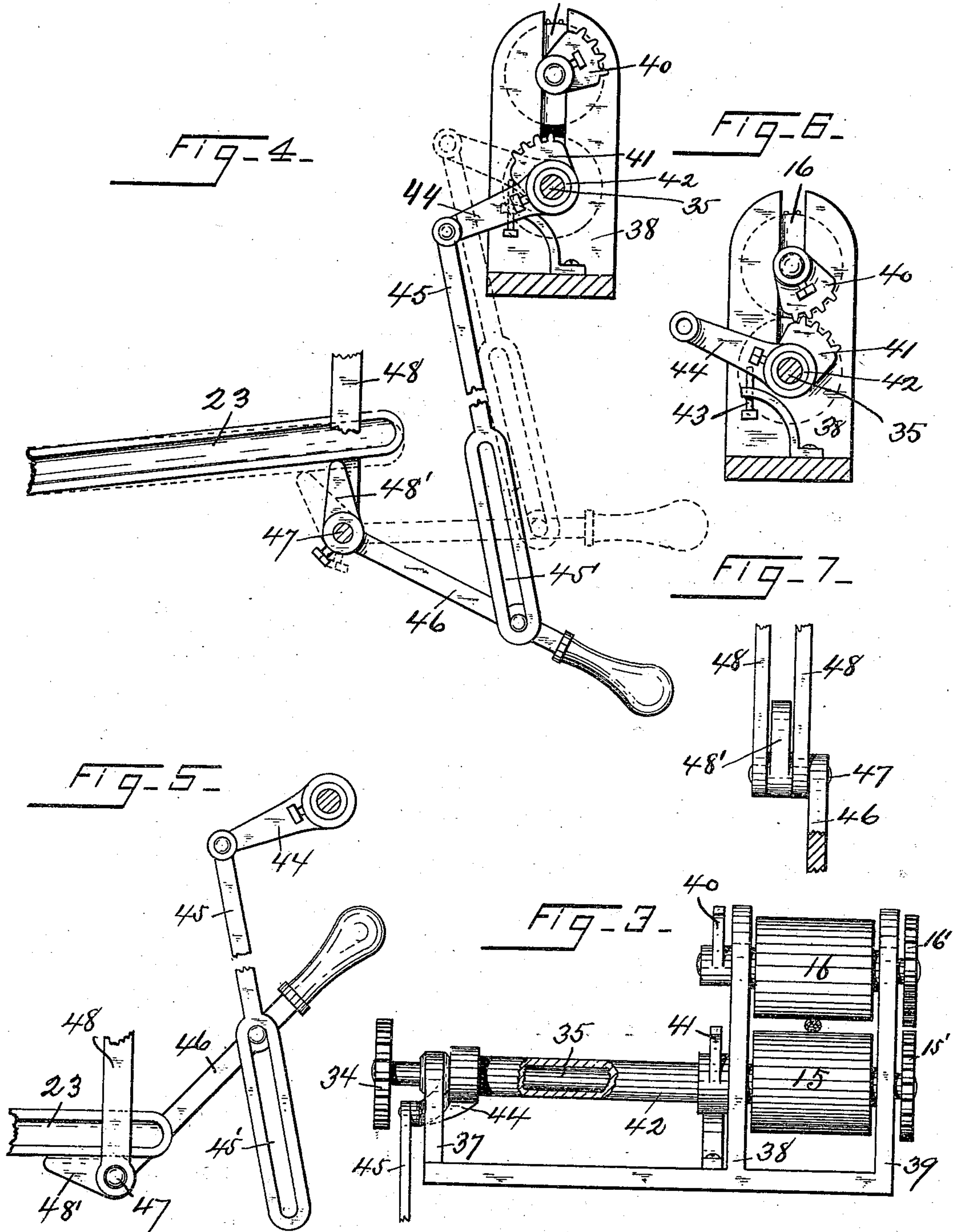
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Witnesses

George M. Luther.
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UNITED STATES PATENT OFFICE.

HENRY McDERMOTT, OF NORWICH, CONNECTICUT.

STOP-MOTION FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 501,573, dated July 18, 1893.

Application filed December 21, 1892. Serial No. 455,960. (No model.)

To all whom it may concern:

Be it known that I, HENRY McDERMOTT, a citizen of the United States, residing at Norwich, New London county, State of Connecticut, have invented certain new and useful Improvements in Stop-Motions for Carding-Machines, which improvements are fully set forth and described in the following specification, reference being had to the accompanying two sheets of drawings.

This invention has for its object the production of simple mechanism for use with ordinary carding machinery, by means of which the doffer-roll and feed-roll may be automatically stopped upon the breaking of the sliver. To this end I have produced the mechanism illustrated in the annexed drawings.

Figures 1 and 2 are elevations of the two sides of a top-flat carding machine embodying my invention. Fig. 3 is an elevation (considerably enlarged) of the condensing rolls and their supporting frame, as viewed from the rear end of the machine. Fig. 4 is a view of the same from the left hand end with the journal bearing 37 removed, showing the parts that connect the condensing rolls with the doffer driving gear in the positions which they occupy when the machine is in use. In Fig. 5 I have illustrated the said connections as they appear when my stop-motion has been brought into service to stop the doffer and feed-rolls, as fully described hereinafter. Fig. 6 is a view of the condensing rolls and their supporting frame, similar to Fig. 4, and Fig. 7 is a rear side elevation of the cam 48 and the hanger in which it is pivoted.

In these drawings the letter A indicates the carding machine as a whole; the elements thereof that are shown as essential to my invention being the carding cylinder 10, its shaft 11 and driving pulley 12, the feed roll 13, the doffer roll 14, condensing rolls 15—16, licker-in roll 17 and driving mechanism for said elements.

18 denotes the main driving belt of the machine and 19 a belt by means of which motion is transmitted from the card-cylinder shaft 11 to the pulley of the licker-in. Upon the opposite end of the licker-in shaft is a pulley 20 which is connected by a belt 21 with a large pulley 22 journaled on a stud secured

to a lever 23 that is fulcrumed on the machine frame at 24. Secured to the inner face of pulley 22 is a gear 25 that meshes with and drives the doffer-roll gear 26 when the lever 23 is elevated sufficiently to hold the described gears in mesh. Upon the opposite end of the doffer-roll shaft is a bevel gear 27 that meshes with and drives a similar gear secured to one end of a shaft 28 that extends along the side of the machine, as best seen in Fig. 2, and is supported in stands 29. The rear end of shaft 28 bears a bevel gear 30 that meshes with and drives a large bevel gear 31 secured to the end of the feed-roll 13. It will thus be seen that motion is communicated by gears 25—26 to the doffer-roll shaft and from said shaft to the feed-roll through the agency of the described bevel-gears and shaft.

The parts and arrangement of the same, thus far referred to, are precisely the same as in carding machines now in common use.

32, 33 and 34 indicate a train of small gears connected with the doffer gear 26, the gear 34 being secured to the end of shaft 35 of the lower condensing roll 15. This shaft 35 has a bearing in a stand 37 near the end that bears gear 34 and is also supported in standards 38—39 upon each side of the roll 15. Journaled in said standards immediately over roll 15 is a companion roll 16 whose shaft bears upon one end a gear 16' that may mesh with a like gear 15' on the shaft 35 when the condensing rolls are in contact as in Fig. 6. When however the machine is in service the sliver, passing between said rolls, as seen in Fig. 3, forces the upper one 16 upward thus disengaging the gear-teeth and causing the gear 16' to revolve idly. Upon the opposite end of the shaft of roll 16 is a gear segment 40 (of approximately one eighth of a circle) whose teeth, when the condensing rolls are in contact, may engage the teeth of a like segment 41 secured to a tube 42 on the shaft 35 between the stands 37 and 38. It should be understood that the lower roll 15 and its gear 15' are driven positively by the shaft 35 and that the upper roll 16, when the machine is in operation, is raised by the sliver until its gear 16' is drawn out of meshing contact with the lower gear 15'. The principal office of gears 15' and 16' is to drive positively the

gear-segment 40 when the sliver stops rendering between the rolls. A stop-screw 43 limits the movement of segment 41 in one direction, the normal position of said segment being as in Fig. 4. Upon the end of tube 42 nearest the stand 37 is secured an arm 44 to whose free end is hinged a rod 45 that extends downward and is connected with a lever 46 that is secured to a short shaft or stud 47 journaled in the lower ends of hangers 48 attached fixedly to the main frame of the machine.

Fastened to shaft 47, between the described hangers, is a cam 48' upon which rests the free end of the lever 23 which supports the pulley 22 and gear 25 already briefly described. When lever 23 is raised to throw the gears 25—26 in mesh, the lever-arm 23 rests upon the highest point of the cam and said lever is at a right angle, or nearly so, to a line drawn through the center of the length of the cam, as shown in Fig. 4 in full lines, but should the cam be rocked slightly to one side, as in dotted lines in the last named figure, the weight of the lever and its connected parts immediately forces the cam downward to the position shown in Fig. 5. The lower end of the connecting rod or pitman 45 is formed with a slot 45' of sufficient length to permit arm 46 to follow the movements of the cam.

When it is desired to start a carding machine having my invention embodied therein, the handle of the cam-lever 46 is grasped and forced downward. This movement causes the cam to force lever-arm 23 upward, thus throwing into mesh the gears 25 and 26 and starting the doffer-rolls and feed-roll into action. So long as the sliver continues to pass uninterruptedly from the doffer through the condensing rolls the machine runs continuously but should the sliver break and permit the upper condensing roll 16 to drop and thus bring into mesh the gears 15'—16' the segment 40, as it passes around, engages and moves the segment 41 on tube 42 and rocks said tube and its connected arm 44 into the position shown in Fig. 6 and in dotted lines in Fig. 4. Through the assistance of the slotted pitman 45 the cam-lever is raised, the cam is rocked to release the lever-arm 23, the gear 25 is thrown out of mesh with gear 26 and the doffer and feed-rolls stop instantly. The tube 42 and its segment 41 then rock back to

their normal positions by reason of the excess of weight on that side upon which the arm 44 and pitman 45 are hung, leaving the parts in the positions shown in Fig. 5. When it is desired to again start the machine it is only necessary to press down the cam-lever 46 and thus raise the lever arm 23.

Having described my invention, I claim—

1. In a carding machine, the combination with the doffer-roll, of a lever-arm, a cam for supporting the free end of said arm, condensing rolls adjacent to the doffer-roll, segmental gears carried by said rolls and adapted to engage when the sliver breaks, and connections between said gears and cam, whereby the cam is operated upon the breaking of the sliver, substantially as set forth.

2. In combination with the doffer-roll of a carding machine, and driving mechanism therefor consisting of a lever-arm, a gear mounted upon said lever-arm as set forth, a cam for supporting said lever-arm in its operative position, condensing rolls having gear segments adapted to engage each other only upon the breaking of the sliver, and a slotted pitman connecting one of said gear segments with the said cam, substantially as and for the purpose specified.

3. In combination with the doffer-roll of a carding machine, a lever-arm, a gear mounted upon said lever-arm, condensing rolls movable toward and from each other, one of which is positively driven and its shaft provided with a sleeve, a segmental cam upon the sleeve, and a corresponding cam upon the shaft of the other roll, and a pitman connecting said sleeve to the lever-arm, substantially as set forth.

4. In combination with the doffer-roll of a carding machine, a lever-arm, a gear mounted upon said lever-arm, condensing rolls movable toward and from each other, one of which is positively driven and its shaft provided with a sleeve, a segmental gear wheel on the sleeve, an adjustable stop for engaging with said segmental gear, a corresponding gear upon the other roll, and means for connecting said sleeve with the lever-arm, substantially as set forth.

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Witnesses:

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