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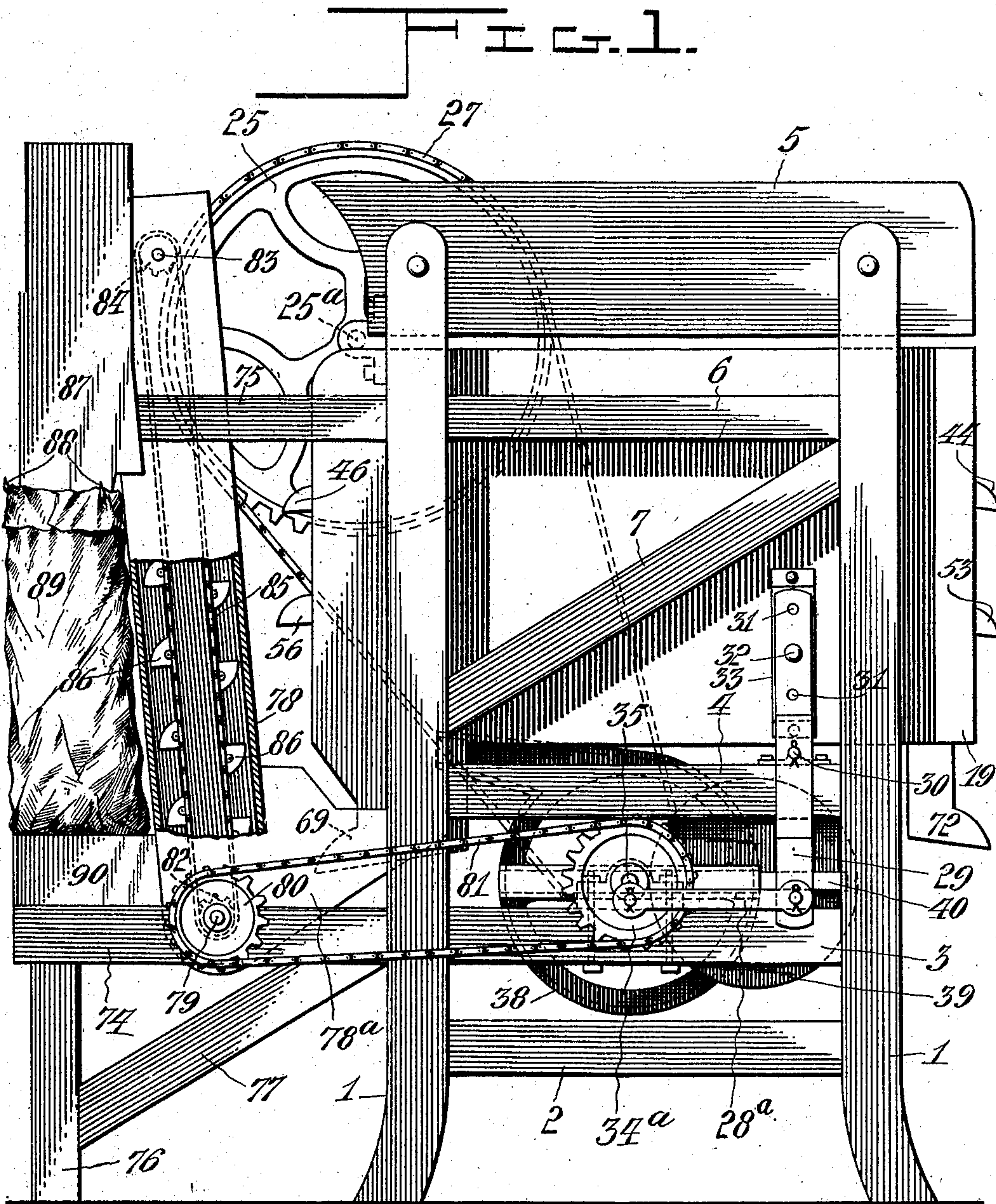
PATENTED MAR. 20, 1906.

P. MOON.

GRAIN-CLEANING AND SEPARATING MACHINE.

APPLICATION FILED DEC. 3, 1904.

4 SHEETS—SHEET 1.



Witnesses:
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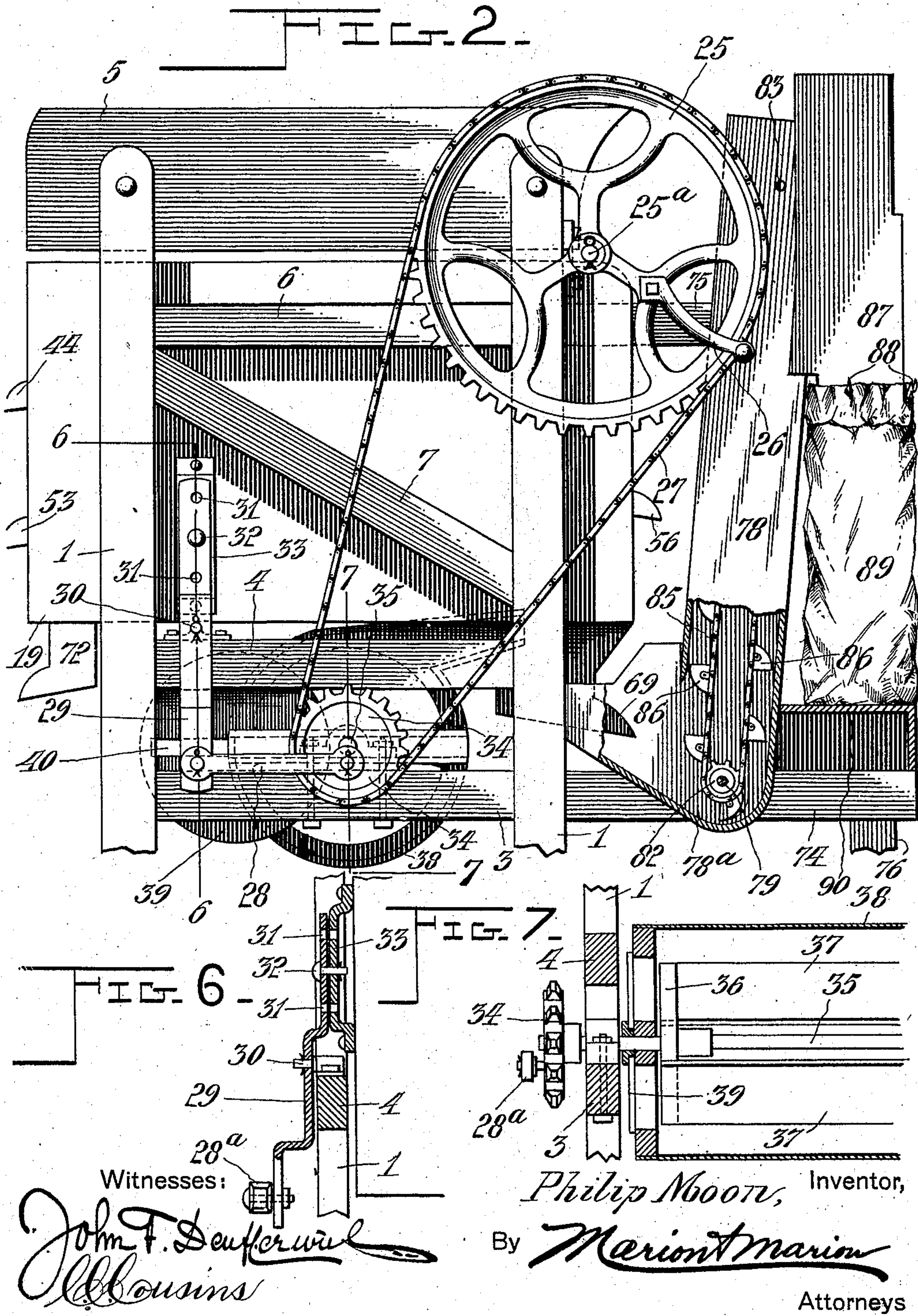
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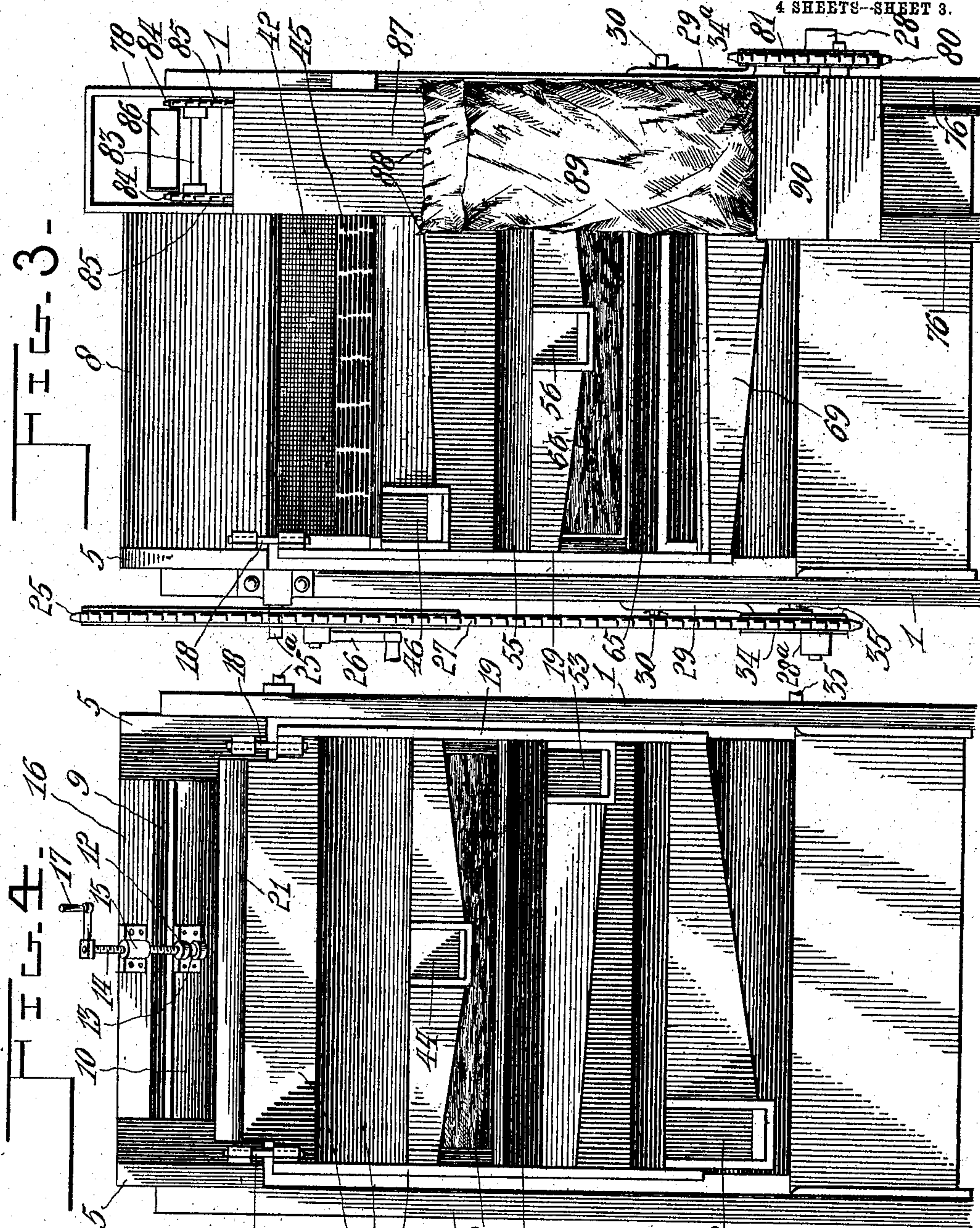
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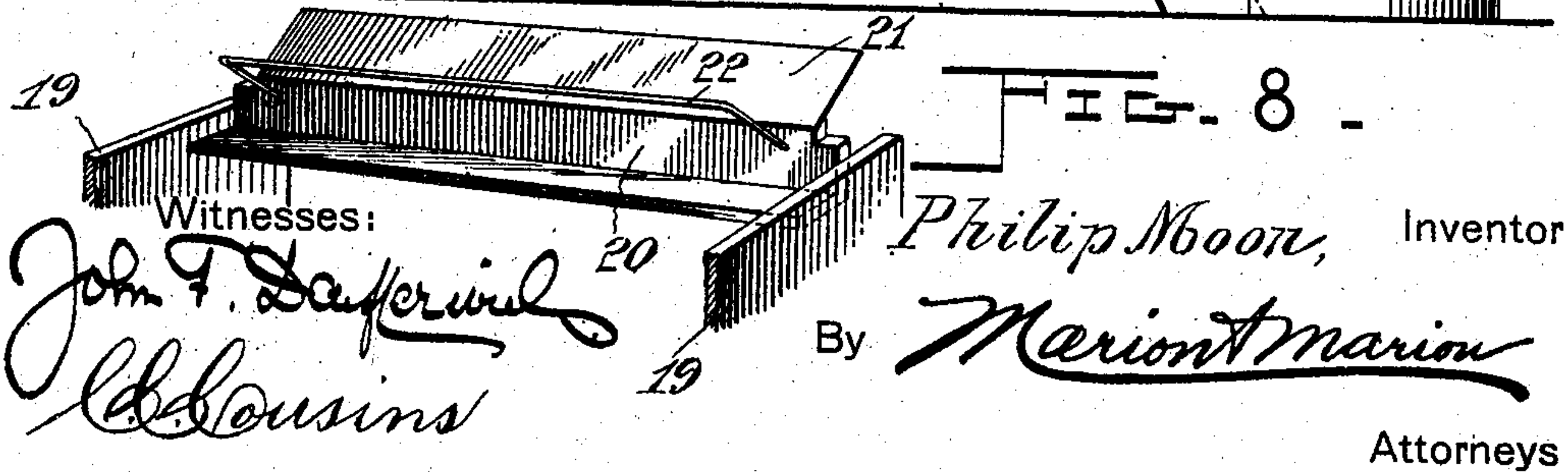
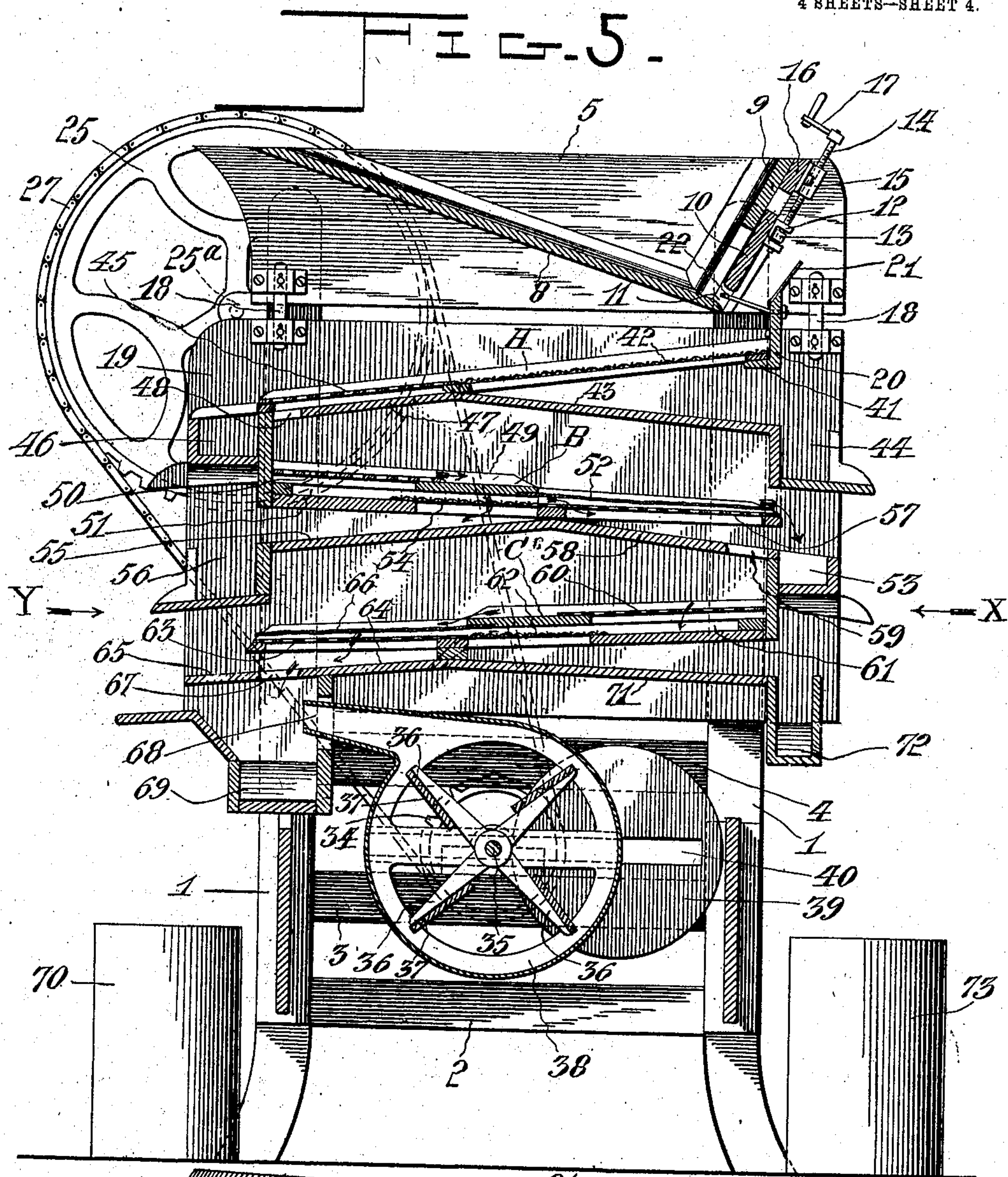
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

PHILIP MOON, OF BRANDON, CANADA.

GRAIN CLEANING AND SEPARATING MACHINE.

No. 815,457.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed December 3, 1904. Serial No. 235,392.

To all whom it may concern:

Be it known that I, PHILIP MOON, a subject of the King of Great Britain, residing at Brandon, county of Brandon, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Grain Cleaning and Separating Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in grain cleaning and separating machines.

The object of the invention is to provide a power or manually-operable machine of the character described which will separate and clean all kinds of grain and seeds within the one structure by continuous progression of the material passing through the same; and the invention consists of the construction, combination, and arrangement of parts, as herein described, and specifically set forth in the claims.

In the accompanying drawings, forming a part of this application, I have illustrated a form of embodiment of my invention, in which similar reference characters indicate corresponding parts, and in which—

Figure 1 is a side elevation of the machine set up ready for use, certain parts being broken away and shown in section. Fig. 2 is a partial fragmentary elevation of the opposite side of the machine, certain parts being broken away and shown in section. Fig. 3 is an end view looking in the direction of the arrow Y at the left of Fig. 5. Fig. 4 is a view of the opposite end of the machine looking in the direction of the arrow X at the right of Fig. 5. Fig. 5 is a central vertical section of the machine as in operation. Fig. 6 is a detail section taken on the line 6 6 of Fig. 2. Fig. 7 is a detail fragmentary section taken on line 7 7 of Fig. 2, and Fig. 8 is a fragmentary detail illustrating means for keeping the feed-chute from the hopper open at all times during the operation of the machine.

Referring to the drawings, 1 1 are supporting-standards provided with braces 2, 3, 4, and 5 at each side of the machine for the purpose of connecting the standards together, while intermediate braces 6 and 7 are provided for strengthening the main supporting-frame of the device. The brace members 5, as will be noted from the sectional view,

Fig. 5, constitute the side walls of the feeding-hopper, into which grain, &c., to be cleaned in the machine is fed, said hopper comprising the inclined bottom plate 8 and the inclined end-plates 9 and 10, which are adapted to close the discharge end of such hopper. To regulate the supply of grain fed to the machine from the hopper, the plate 10 is made adjustable with relation to the plate 9, so that the size of the opening 11 between the plates 8 and 10 may be adjusted at will, lugs 12 being provided upon the outer face of the plate 10, between which is held the nut or head 13, connected with the screw-threaded rod 14, held in the bearing 15, which, as shown, is supported upon a brace 16, connected with the end plate 9, while a crank 17 is connected with said screw-threaded rod to rotate it for the purpose of raising or lowering the plate 10 to adjust the area of the opening 11 before referred to. Thus the supply of material to the apparatus may be regulated to a nicety upon adjusting said plate 10 by means of the screw-threaded rod 14. The walls 5 are rigidly connected with the uprights 1 1 in any suitable manner, and supported from the walls 5 by means of the links 18 is a shaker-frame, within which are arranged screens and separating means, the details of which will be hereinafter more fully described. The separator comprises the side plates 19, screens and platforms and chutes, so arranged that weeds, dust, and rubbish may be first separated from the grain, after which the various grains which may be mixed before entering the machine may be separated the one from the other. Rising vertically from the plates 19 is a supporting-plate 20, which has at its upper end the deflector-plate 21, which is provided for the purpose of preventing the overflow of grain, &c., passing from the hopper before referred to, and connected with the vertical plate 20 is a looped rod 22, (shown in the sectional view Fig. 5 and in Fig. 8,) which projects into the discharge-opening 11 of the hopper, and it is evident that as the separator is reciprocated, as is common in this class of machines, the clean-out 22 will become effective for the purpose of preventing clogging of the hopper-discharge opening.

The main driving-gear 25 is supported on a shaft 25^a, disposed in suitable bearings upon the standard 1, said gear 25 being provided with an actuating-crank 26, as shown,

A chain 27 is run over the driving-gear 25 and over the pinion 34, secured to the shaft 35 for actuating the mechanism hereinafter described. Pitmen 28 28^a are pivotally connected with the lower ends of the links 29, which links are pivoted at 30 and extend thence upwardly, as shown in the detail Fig. 6, where such links are provided with a plurality of openings 31, through either one of which the pin 32 may be projected for connecting said link 29 with the bracket 33, which is rigidly secured upon the side of the plates 19, before referred to. The pin 32 is adjustable, so that as the pitmen 28 actuate the links 29 a greater or less thrust will be obtained of the separator as may be required in separating different kinds of grain. The pitmen 28 28^a are actuated by the pinions 34 34^a, respectively, carried upon the ends of the shaft 35, to which shaft are rigidly connected arms 36, between which are supported the blades 37 of a fan or wind-wheel, as is common in this class of construction. The casing 38 for the fan is preferably left open at both ends, and, as shown in Fig. 1, a disk 39, provided with a slot 40, is supported upon the shaft 35 in a manner that said disk 39 may be moved to such position as will provide a greater or less area of opening into said casing 38, so that the amount of the blast from said fan may be regulated by means of the disk 39. Supported by the plates 19 in any convenient manner, as by means of the bracket 41, are screen-sections which, as shown in Fig. 5, have placed immediately below the discharge end of the hopper a fine screen 42, through which fine screen will pass seeds of weeds and dust which it is desired to eliminate from the grain being cleaned, such dust and small seeds passing upon the inclined platform 43 and passing thence to the discharge-spout 44, from which they may be connected to any suitable place of deposit. Stones, rubbish, and grain will pass over the screen 42 and onto the screen 45, which is of relatively coarser mesh, but of such size as to permit wheat and oats to pass through the meshes thereof, while the stones and rubbish which will not pass through the screen 45 will fall into the chute 46 at the lower end thereof. Below the screen 45 is an inclined chute or platform 47, down which the grain will pass, such grain falling through the port or opening 48 of the platform 47 onto the next screen-section, which comprises a plurality of screens supported within or upon a single removable frame-section 49, as follows: There are three sections of wire, perforated metal, or other suitable screening material within the section 49, the first of which is a coarse screen 50, upon which the grain passing through the port 48 will fall. The mesh of this screen is such that wheat will pass through it into the chamber 51; but if oats should be mixed with the wheat such

oats would be so light that instead of passing through the screen 50 they will continue, as indicated by the arrow, onto the flexible apron 52, over which the oats will be carried, as indicated by the arrow, into the chute 53. Within the chamber 51 wheat, screenings, and chaff will pass, and from such chamber they will pass over the screen 54, through which screenings will pass onto the inclined platform 55, down which they will pass into the spout 56. The whole wheat, however, will not pass through the screen 54, but will be carried onward to the screen 57, through which will pass all grades of wheat onto the inclined platform 58, provided with the port or opening 59, through which the wheat will fall upon the screen 60. The apron 52 will during the operation of the machine rest in substantially the position shown in Fig. 5, and any oats which will be carried onto the screen 57 will pass between the discharge end of the screen and such apron 52 into the oats-receptacle 53. The screen 60 comprises one of a section of screens, as just before described, and below the screen 60 is a chamber 61, provided with an imperforate inclined bottom upon which the wheat may fall, from which it will pass onto the screen 62, which is of such mesh as to permit screenings, broken and small wheat to pass through, while the best grade of wheat will pass over the screen 62 onto the coarser screen 63, through which it will fall to the inclined platform 64, while chaff, &c., which may have passed with the good wheat to this point, will be carried along to the discharge end of the screen 63 and fall upon the tailboard 65 at the discharge end of such screen, while the apron 66 will perform the same function as in the middle screen-section.

The platform 64 is provided with a port 67, through which the best grade of wheat will pass into alignment with the discharge-spout 68 from the blast-fan before referred to, and by means of the blast generated by said fan the chaff will fall into the receptacle 70, while the wheat will be permitted to fall upon the spout 69, from which it may be conducted to any suitable place of deposit, while the screenings will fall upon the inclined platform 71, from which said screenings will pass to the discharge-spout 72 to any suitable place of deposit, as the receptacle 73.

The operation of the machine will be understood from the foregoing description of the comparative parts, from which it will be seen that grain may be dumped into the supply-hopper and fed through the discharge from such hopper onto the uppermost screen, from which it will pass in the path of travel hereinbefore indicated, and during its descent from the uppermost to the lowermost level of the separator the weeds, dust, rubbish, screenings, oats, and chaff will be separated from the best grade of wheat, which

will be entirely freed from all foreign impurities when it reaches the discharge-spout of the machine.

As will be noted, the screen-casing has 5 mounted therein three screen-frames A B C, respectively. Frame A has mounted therein a fine and a coarse screen, while frames B C have two coarse screens at different planes, with a fine intermediate screen in each. Be- 10 tween the coarse screens in frames B C are secured the flexible aprons 52 and 66, before referred to, and all of the frames are slidably mounted in the screen-casing, so as to be removable when necessary for repairs, &c.

15 On the braces 3 are provided extensions 74, and on the braces 6 are provided extensions 75. Suitable uprights 76 support the outer ends of the extensions 74, and diagonal braces 77 extend from the uprights to said 20 extensions 74. Suitably supported between said extensions is an elevated casing 78, its lower end terminating in a box-like structure 78^a, disposed adjacent the spout which delivers the cleaned grain. Disposed in the 25 lower end of the elevated casing 78 is a shaft 79, on the outer end of which is provided a gear 80, over which passes a chain 81, which is passed over the gear-wheel 34^a, secured to the shaft 35. Within the casing supported 30 on said shaft 79 is a sprocket-wheel 82, and within the upper end of the casing is mounted the arbor 83, on which is secured the sprocket-wheel 84. A chain 85 is passed over the sprocket-wheels 82 and 84, and suitably 35 secured upon said chain are buckets 86, adapted to convey the cleaned grain from the said box-like receptacle to a chute 87, the lower end of which is provided with hooks 88, adapted to hold a bag 89, the bottom of 40 which is supported by the platform 90.

While I have shown in the accompanying

drawings the preferred form of my invention, it will be understood that I do not limit myself to the precise form shown, for many of the details may be changed in form or position without affecting the operativeness or 45 utility of my invention, and I therefore reserve the right to make all such modifications as are included within the scope of the following claims or of mechanical equivalents to 50 the structures set forth.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, 55 a supporting-frame, a hopper mounted thereon, a reciprocatory screen-casing supported by said hopper, a series of oppositely-inclined platforms in different planes within said casing, an upper screen-frame, a fine screen and 60 a coarse screen in said frame, a lower screen-frame in said casing, a plurality of coarse screens, and a finer screen, in said lower frame, and a flexible apron connected with said frame between said coarse screens. 65

2. In a machine of the character described, a reciprocatory screen-casing, oppositely-inclined platforms in said casing, an upper screen-frame, a coarse and a fine screen in said frame, a plurality of screen-frames at 70 lower planes in said casing, coarse screens in such frames at different planes therein, a finer screen in each of such frames in substantially the plane of one of said coarse screens, and flexible aprons connected with said 75 frames between such coarse screens.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

PHILIP MOON.

Witnesses:

M. DALZIEL,
H. L. ADOLPH.