

(No Model.)

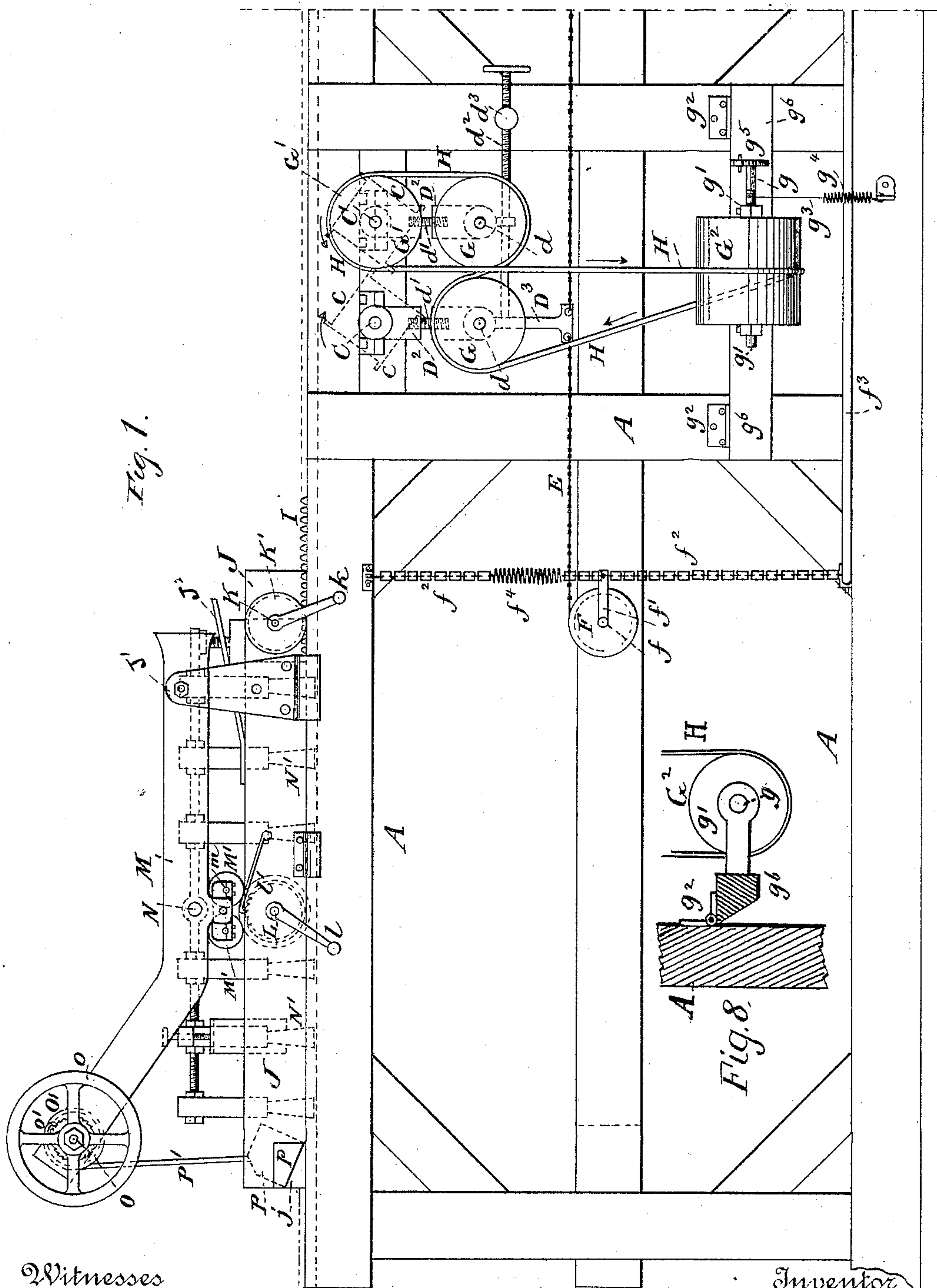
4 Sheets—Sheet 1.

W. C. McBRIDE.

MACHINE FOR CLEANING VEGETABLE FIBER.

No. 436,720.

Patented Sept. 16, 1890.



Witnesses
A. Ruppert.
E. Fruse.

Inventor
William C. McBride,
By his Attorneys
Att. W. J. Howard.

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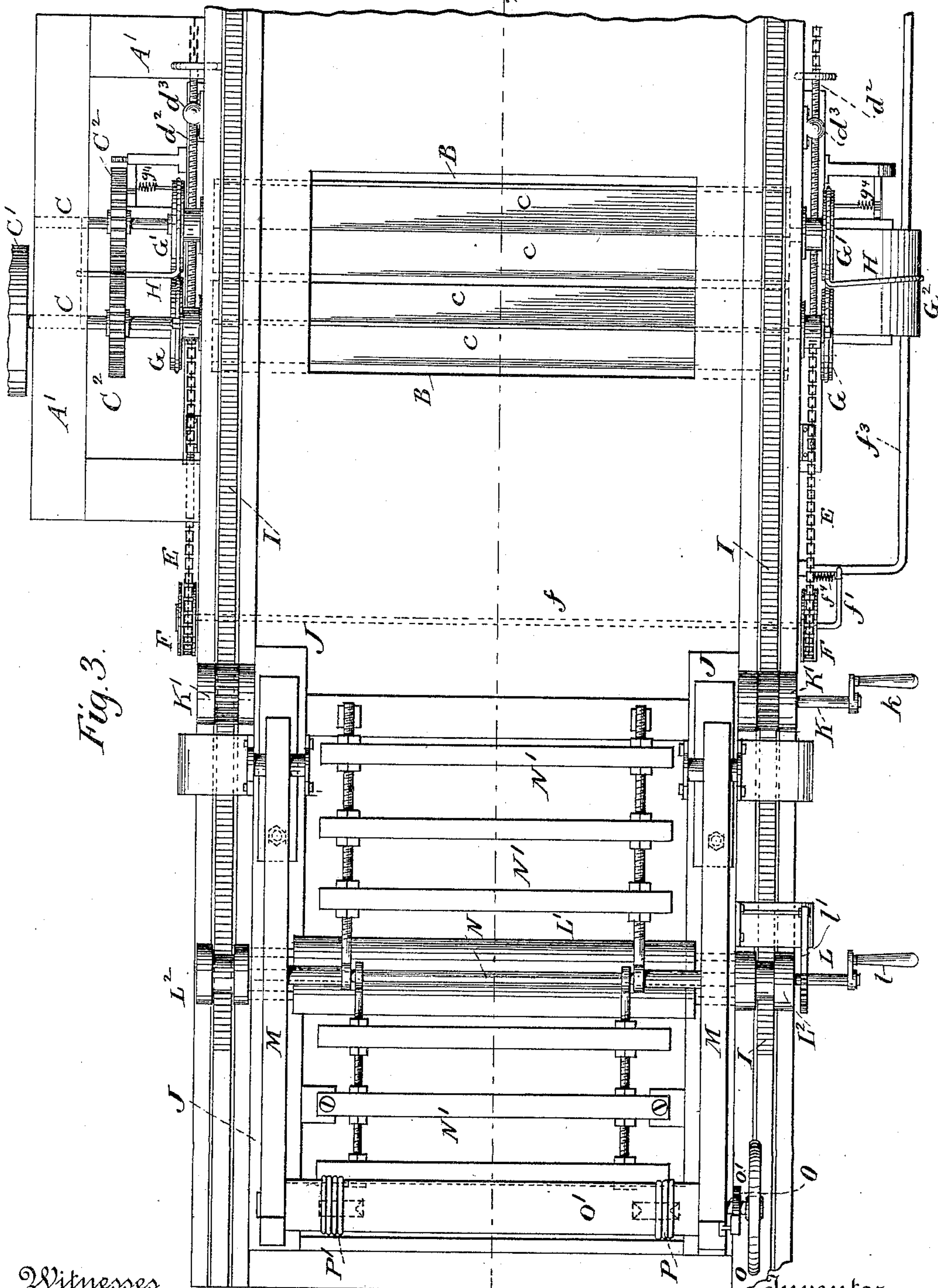
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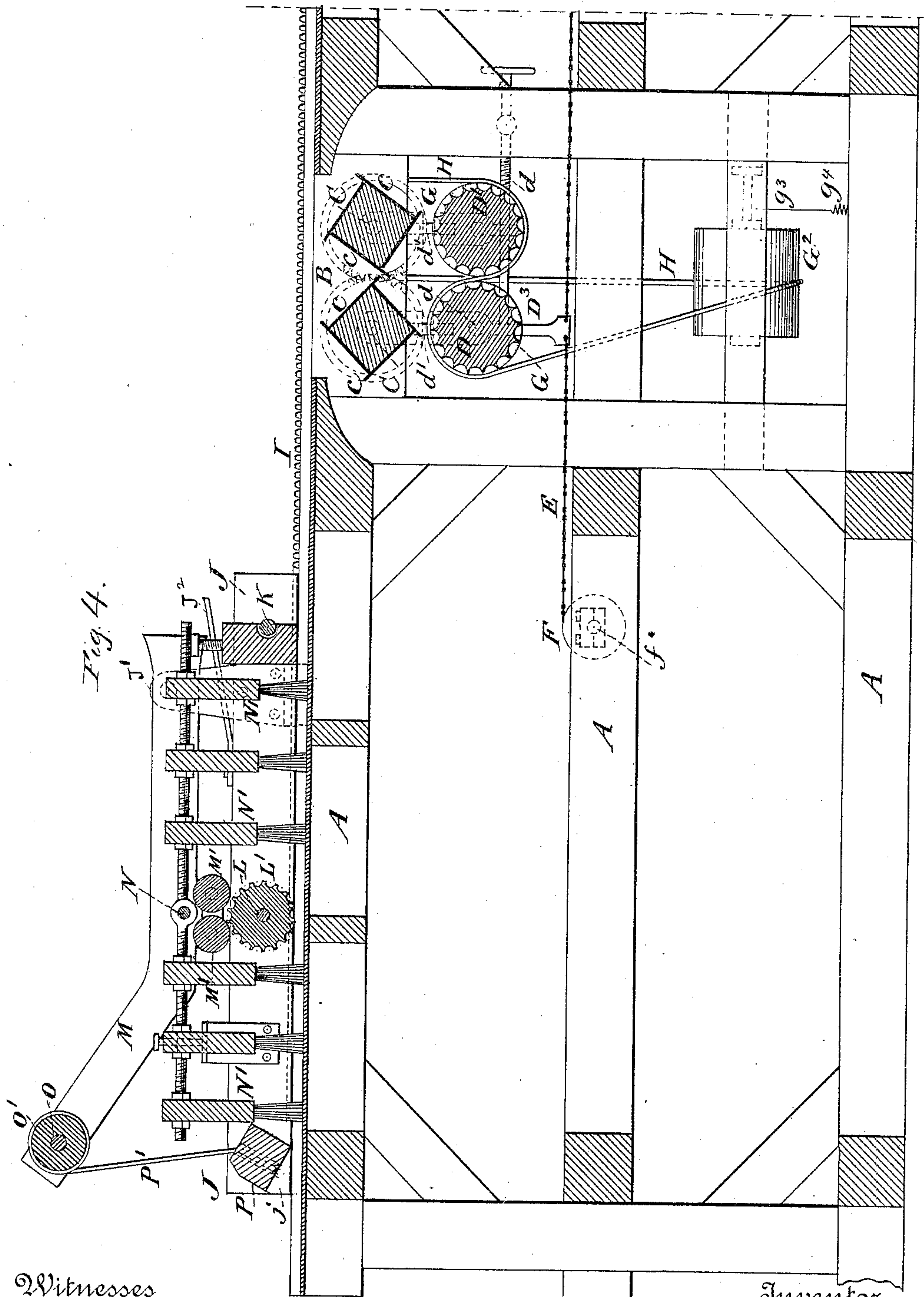
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UNITED STATES PATENT OFFICE.

WILLIAM C. McBRIDE, OF BROOKLYN, NEW YORK.

MACHINE FOR CLEANING VEGETABLE FIBER.

SPECIFICATION forming part of Letters Patent No. 436,720, dated September 16, 1890.

Application filed December 9, 1889. Serial No. 333,111. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. McBRIDE, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Cleaning Vegetable Fiber, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is to remove extraneous matter from the fiber of fibrous vegetable substances which have been subjected to a crushing process; and my invention consists in the details of construction and arrangement hereinafter set forth in the specification and claims.

In the drawings, Figure 1 is a side elevation of a portion of my improved machine. Fig. 2 is a similar view of the remainder of the machine. Fig. 3 is a plan view of Fig. 1. Fig. 4 is a vertical longitudinal section through the line xx of Fig. 3; and Figs. 5, 6, 7, and 8 are views of parts of the machine detached, Fig. 5 being in section and Fig. 8 partly in section.

Similar letters of reference indicate similar parts in the respective figures.

A represents the frame of the machine, oblong in form and preferably made of wood. The frame is decked over, an opening B being made in the deck about midway of the length of the machine.

Immediately below the opening B two shafts C C are journaled in suitable bearings in the frame, and on each of these shafts are secured scrapers c . (I use, preferably, four scrapers on each shaft, but do not limit myself to this number.) The shafts C C extend outwardly beyond the machine on each side, and on one side they have additional bearings in a frame A', laterally extending from the main frame, and one of the shafts C extends beyond the frame A' and carries a pulley C', by which motion is imparted to the shaft from any suitable source.

Between the two frames A A' are two gear-wheels $C^2 C^2$ —one on each shaft—which engage with each other and cause the scrapers to revolve in opposite directions, the scrapers

being so arranged that they interlock or overlap each other in a slight degree.

Immediately under the scrapers are two tension-rollers D D', the shafts d of which are supported in suitable bearings D², hung on the shafts C C. The bearings D² are each made in two parts connected by a threaded pin d' . This construction enables the bearings to be lengthened or shortened to a small extent, and also prevents the shafts binding in these bearings should the rollers not lie exactly parallel with each other during the operation of the machine. Each bearing of the roller D' is held rigidly in a vertical position by means of a threaded pin d^2 , passing through a boss d^3 , provided with a threaded opening and secured to the frame of the machine, and also through a threaded opening in the lower part of the bearing. The bearings of the roller D are, however, free to swing on the shaft C, and the minimum space between the rollers D and D'—that is, the extent of approach of the roller D to roller D'—can be adjusted by means of the pins d^2 , engaging with extensions D³ on the bearings of the roller D.

E E are chains, one on each side of the machine. Each of these chains at one end passes partly around a pulley F and is fastened thereto, the other ends of the chains being each secured to a spiral spring F', which springs are in turn secured to a bar F², one at each end thereof. The bar F² extends transversely of the machine, and is connected to the main frame by means of a threaded pin F³, firmly secured to the bar F² midway of its length, said pin passing through a boss F⁴ on the frame A. A thumb-nut F⁵ works on the threaded pin and serves to adjust the tension on the springs F' as well as to hold the bar F² in position. The pulleys F are rigidly secured to a shaft f , extending across and having suitable bearings in the frame A. One end of the shaft f is provided with a crank f' , the end of which is secured to a chain f^2 , extending vertically in both directions from the crank and secured at its upper end to the frame A and at its lower end to a treadle f^3 , hinged to the main frame. The

chain f^2 is in two sections, a tension-spring f^4 being interposed between the sections at any point above the crank-arm.

The extensions D^3 of the bearings for the roller D are attached to the chains E, and it will be observed that the chains E are held taut by the opposing forces of the tension-springs F' and f^4 , for the springs F' have a tendency to pull the chains away from the pulleys F, while the spring f^4 tends to elevate the crank f' and so wind the chains on the pulleys F. The extensions D^3 are so attached to the chains E as to normally hold the roller D a short distance from the roller D' , and when it is desired to bring the rollers more closely together it is only necessary to depress the treadle f^3 , which will permit the chains to unwind from the pulleys F, and the springs F' by their contraction will draw the chains E, and with them the bearings of the roller D, toward them.

The shafts d extend beyond their bearings, each carrying at each of its ends a pulley G. One of the shafts C also carries at each end a pulley G' , similar to the pulleys G, and a rope H is rove around the pulleys G and G' and a pulley G^2 on each side of the machine, in such a manner as to cause the rollers D and D' to revolve in the same direction as the scrapers immediately above them. The pulleys G^2 turn on their shafts g , and the shafts g are capable of revolving in their bearings g' , the latter being attached to a bar g^6 , hinged to the main frame at g^2 . A chain or cord g^3 is attached to and wound around each of the shafts g and connected to one end of a spiral spring g^4 , the other end being connected with the main frame. One end of each shaft g is provided with a ratchet-and-pawl mechanism g^5 , and by winding or unwinding the cord g^3 on the shaft g the tension on the rope H may be regulated. The hinged connection of the bearings of the pulleys G^2 to the frame also compensates for the unequal strain on the rope H, caused by the rollers D D' occupying different positions relative to each other.

The top of the frame is provided with two rack-bars I I—one on each side thereof—and these rack-bars form rails on which the holders travel. I prefer to use two holders—one moving from each end of the machine—in order that they may be used alternately to convey the fibrous stock to the scrapers. In construction the holders are alike, and consist of a frame J in which a shaft K is journaled. This shaft carries at each end a pinion K' , which engages with the teeth of the rack-bars I. The shaft is also provided with a crank k , by turning which the holder can be propelled in either direction. About midway of the frame another shaft L is journaled and carries within the frame a fluted roller L' .

$L^2 L^2$ are grooved wheels loosely mounted on the shaft L and adapted to run on the rack-bars I. The shaft L is also provided with a

crank k , by means of which the fluted roller L' can be revolved. A ratchet-and-pawl mechanism l' is also provided to prevent, when necessary, the turning of the fluted roller.

M M are the two sides of a jaw hinged to the standards J' at the front end of the frame J. The ends of the sides M M extend a short distance beyond the standards and are square. $J^2 J^2$ are plate-springs, each secured at one end to the frame J, and with their free ends extending slightly beyond and in close proximity to the lower corners of the square ends of the sides M M. When it is desired to elevate the jaw, the ends of the sides extending beyond the standards will depress the springs, and when the sides are in substantially a vertical position the springs will bear on the square ends and hold the sides in that position.

$M' M'$ are two elastic rollers journaled in bearings m , pivoted on the sides M M, the rollers being adapted to rest saddlewise on the fluted roller L' .

A rod N extends across from one side of the jaw to the other, and on this rod are hinged two pairs of rods, each pair carrying dabbling-brushes $N' N'$, one set of brushes being on each side of the rollers M' and L' . The brushes are of sufficient length to extend below the roller L' and in close proximity to the deck of the machine.

The rear ends of the sides M are bent upwardly, and a shaft O, carrying a roller O' , is journaled in them. The shaft O is provided at one end with a hand-wheel o and a ratchet-and-pawl mechanism o' .

P is a yoke notched out at each end at p to adapt it to the notched ends j of the sides of the frame J. The yoke p is mortised through at $p' p'$, and hollowed out on its under side between the two mortises, as shown at p^2 . In each mortise a pulley p^3 is journaled, and a rope P' runs around them and under the yoke P, the ends of the rope being secured to the roller O' . In the hollow p^2 a spiral spring p^4 is placed, both ends of the spring being attached to the rope P' . A small amount of slack is left in the rope between the ends of the spring, and the rope is thus made elastic to the extent of the slack. The rope P' is of sufficient length to allow the yoke to swing clear of the end of the frame when necessary to turn the jaw up. When the holder is turned down, the yoke is made to engage with the notched ends j of the frame, and by turning the hand-wheel o the rope P' will wind on the shaft at each end and hold the jaw down on the frame J.

The operation of the machine is as follows: The jaw of the holder is elevated and a suitable quantity of the crushed fiber placed in the holder across the corrugated roller L' . The jaw is then shut down and the yoke P made to engage with the notched ends j of the frame J, and by turning the hand-wheel o the rope P' will wind on the roller O and hold the jaw in position. The rollers M' will bear uni-

formly upon the top of the fiber, their pivoted bearings enabling them to adjust themselves to any irregularity in the thickness of the layer of fiber. The brushes N bear on the fiber, pressing it down on the deck on each side of the roller L', and when the holder is moved over the deck will direct the ends of the mass of fiber into the opening B, and so between the scrapers. By turning the fluted roller the fiber will be fed down between the scrapers until it reaches the tension-rollers D D', when by depressing the treadle f^3 these rollers will approach each other and grip the end of the mass of fiber between them, and then by causing the holder to travel back and forth over the opening B, and by a proper manipulation of the fluted roller L' and the tension-rollers D D', the whole mass of fiber can be subjected to the action of the scrapers. When the fiber is sufficiently cleaned, the holder is moved to its end of the machine to be doffed and refilled, during which operation the other holder can carry its mass of fiber to be operated upon by the scrapers.

The elasticity given to the rope P', as described, and the pivoted bearings of the rollers M' M' allow the latter to adjust themselves to any irregularities in the thickness of the mass of fiber passing between them and the fluted roller L'. The adjustable features in the bearings of the roller D also enable it to adjust itself to any irregularities in the thickness of the mass of fiber passing between it and the roller D'.

Having described my invention, I claim—

1. In a machine for cleaning fiber, the combination, with the main frame and scrapers journaled therein, of tracks on the main frame and holders movable forward and backward upon the tracks to carry fiber to the scrapers, substantially as specified.

2. In a machine for cleaning fiber, the combination, with the main frame and scrapers and tension-rollers journaled therein, of holders movable forward and backward upon the machine to carry fiber to the scrapers and tension-rollers, substantially as set forth.

3. In a machine for cleaning fiber, the main frame, a deck on the top thereof, said deck having an opening, rack-bars on top of the frame, and scrapers and tension-rollers journaled in the frame immediately under the opening in the deck, combined with holders movable forward and backward upon the rack-bars to carry fiber to and from the scrapers and tension-rollers, substantially as set forth.

4. In a holder adapted to carry fiber to the scrapers of a fiber-cleaning machine, a frame movable on the frame of the machine, and a fluted roller journaled in said frame, combined with a jaw hinged to one end of the frame, and two rollers journaled in the jaw and adapted to rest saddlewise over the fluted roller when the jaw is closed, substantially as specified.

5. In a holder for the purpose specified, the combination, with the frame and a fluted roller journaled therein, of a jaw hinged to one end

of the frame, and two rollers journaled in bearings pivoted on said jaw, substantially as set forth.

6. In a holder for the purpose specified, the combination, with the frame and a fluted roller journaled therein, of a jaw hinged to one end of the frame, two rollers journaled in said jaw and adapted to rest saddlewise over the fluted roller when the jaw is closed, and two sets of brushes hinged to said jaw, one on each side of the rollers, substantially as set forth.

7. In a holder for the purpose specified, the combination, with the frame and a yoke adapted to loosely engage one end of the frame, of a jaw hinged to the opposite end of said frame, the free ends of the sides of said jaw being bent upwardly, a roller journaled in said upwardly-bent ends, and a rope connecting the yoke to the said roller and adapted to wind on the latter, substantially as and for the purpose set forth.

8. In a holder for the purpose specified, the frame, a yoke adapted to loosely engage one end of the frame, said yoke being provided with mortises, and pulleys journaled in the mortises, combined with a jaw hinged to the opposite end of the frame, a roller journaled in the free end of the jaw, and a rope passing under the pulleys and attached at each end to the said roller, substantially as set forth.

9. In a holder for the purpose specified, the frame and a yoke adapted to loosely engage one end of the frame, combined with a jaw hinged to the opposite end of the frame, a roller journaled in the free end of the jaw, a rope connecting said yoke to the roller, and a spiral spring attached at each end to the rope, the rope between the ends of the spring having a certain degree of slack, substantially as set forth.

10. In a machine for cleaning fiber, the combination, with the main frame and shafts carrying scrapers journaled therein, of bearings hung on said shafts, threaded pins passing through the bearings on one shaft and bosses on the main frame, whereby said bearings are rigidly held in position, chains attached to the other bearings and leading in opposite directions therefrom, tension-springs acting on the opposite ends of said chains, and tension-rollers mounted in said bearings, substantially as specified.

11. In a machine for cleaning fiber, the combination, with the main frame and shafts carrying scrapers journaled therein, of bearings hung on said shafts, each of said bearings being in two sections adjustably connected together with a threaded pin, and tension-rollers journaled in said bearings, substantially as and for the purpose specified.

12. In a machine for cleaning fiber, the combination, with the main frame, shafts carrying scrapers journaled therein, and means, substantially as described, for revolving said shafts and scrapers in opposite directions, of bearings hung on said shafts, tension-rollers journaled in said bearings, pulleys at the

ends of said tension-rollers and at the ends of
one of said shafts, pulleys journaled in bear-
ings hinged to the main frame, one on each
side thereof, a cord rove around the pulleys
5 on each side of the machine, so as to revolve
the tension-rollers in the same direction as
that of the scrapers immediately above them,
and a spring-adjusting device attached to the

hinged bearings and the main frame, as and
for the purpose set forth. 10

In testimony whereof I have hereunto set
my hand and seal.

WILLIAM C. McBRIDE. [L. S.]

Witnesses:

JOSEPH H. PORTER,
WM. E. MILLARD.