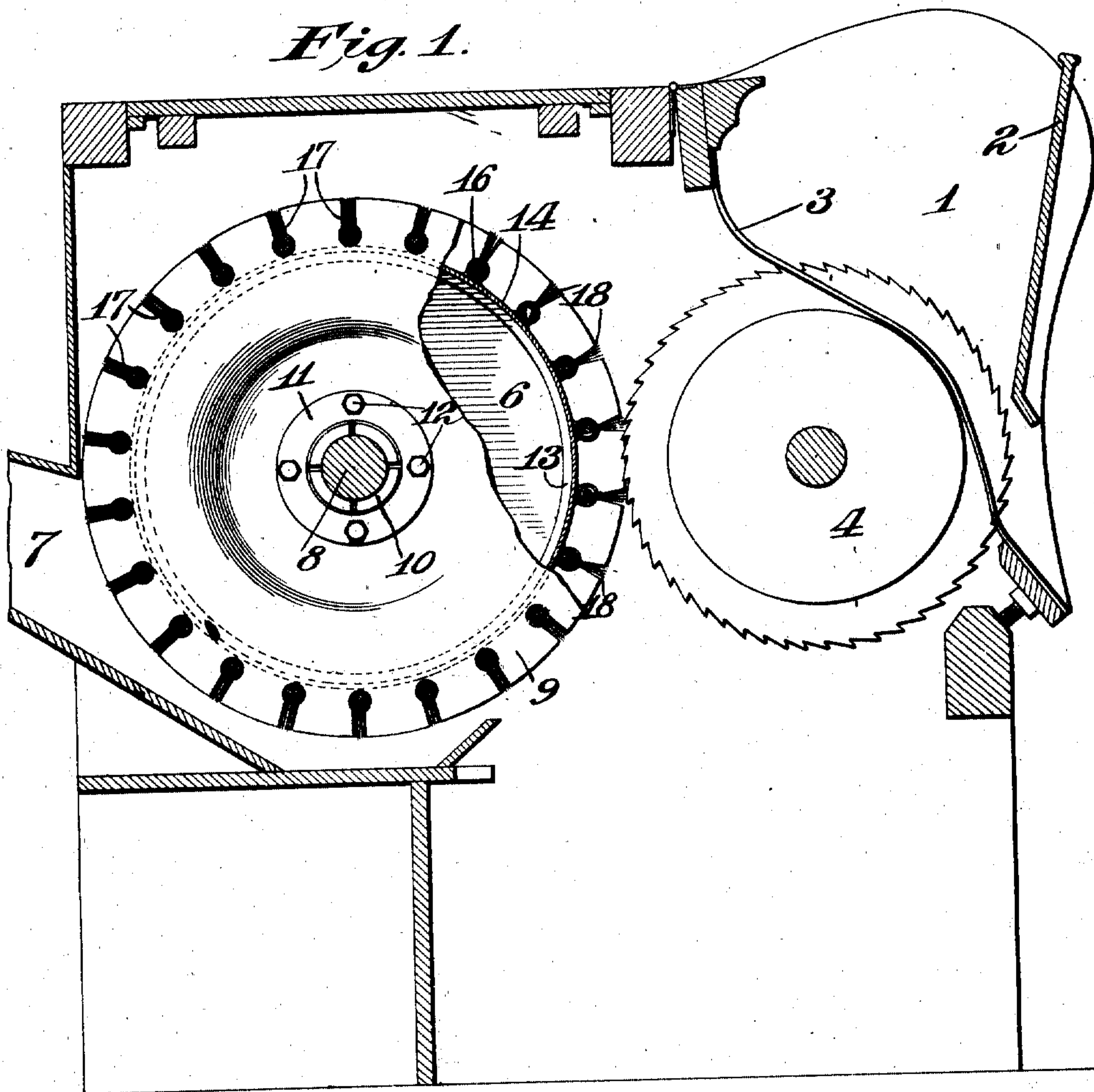


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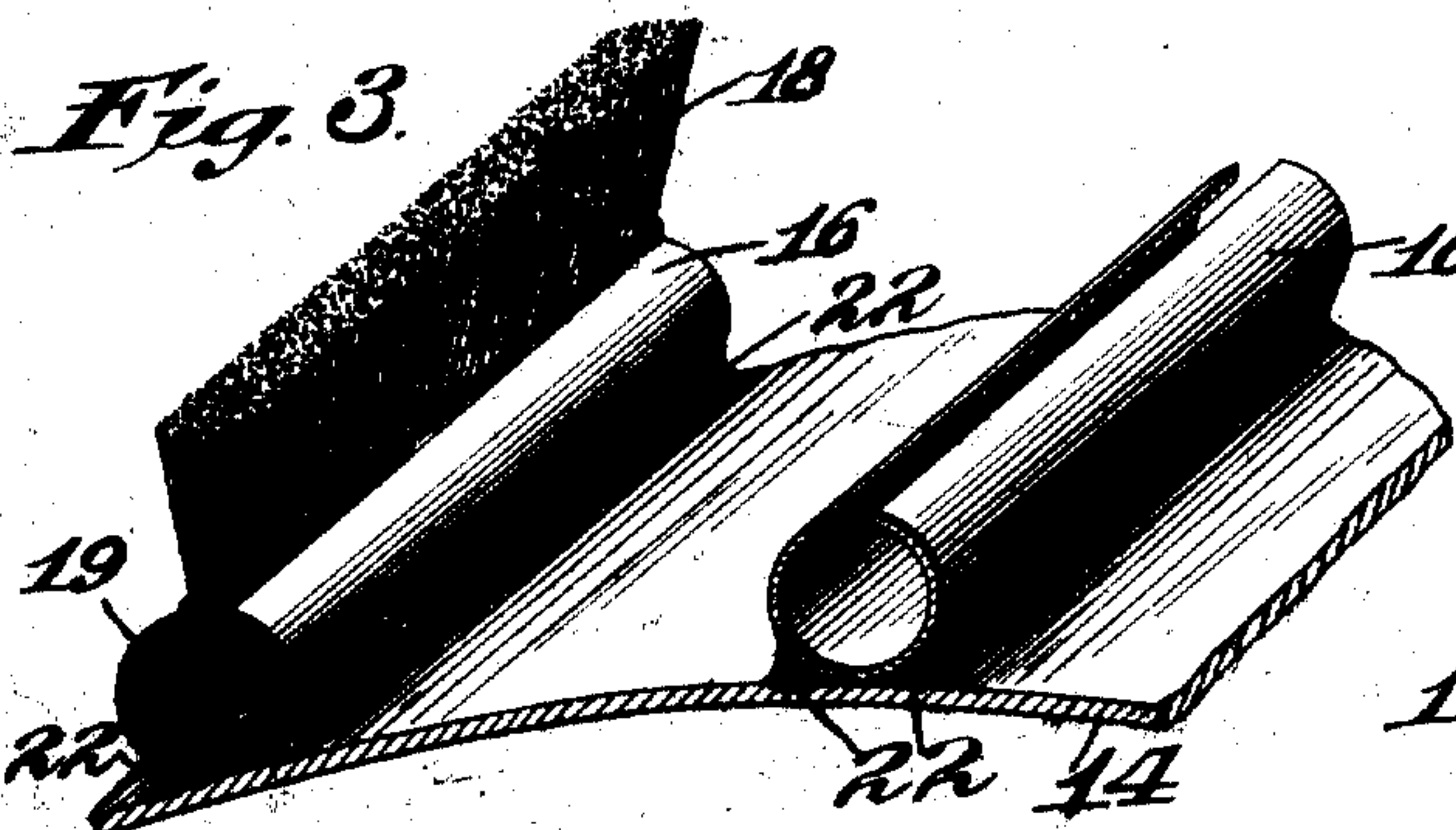
S. D. MURRAY.  
COTTON GIN.  
APPLICATION FILED DEC. 4, 1905.

Patented May 9, 1911.  
2 SHEETS—SHEET 1.

*Fig. 1.*

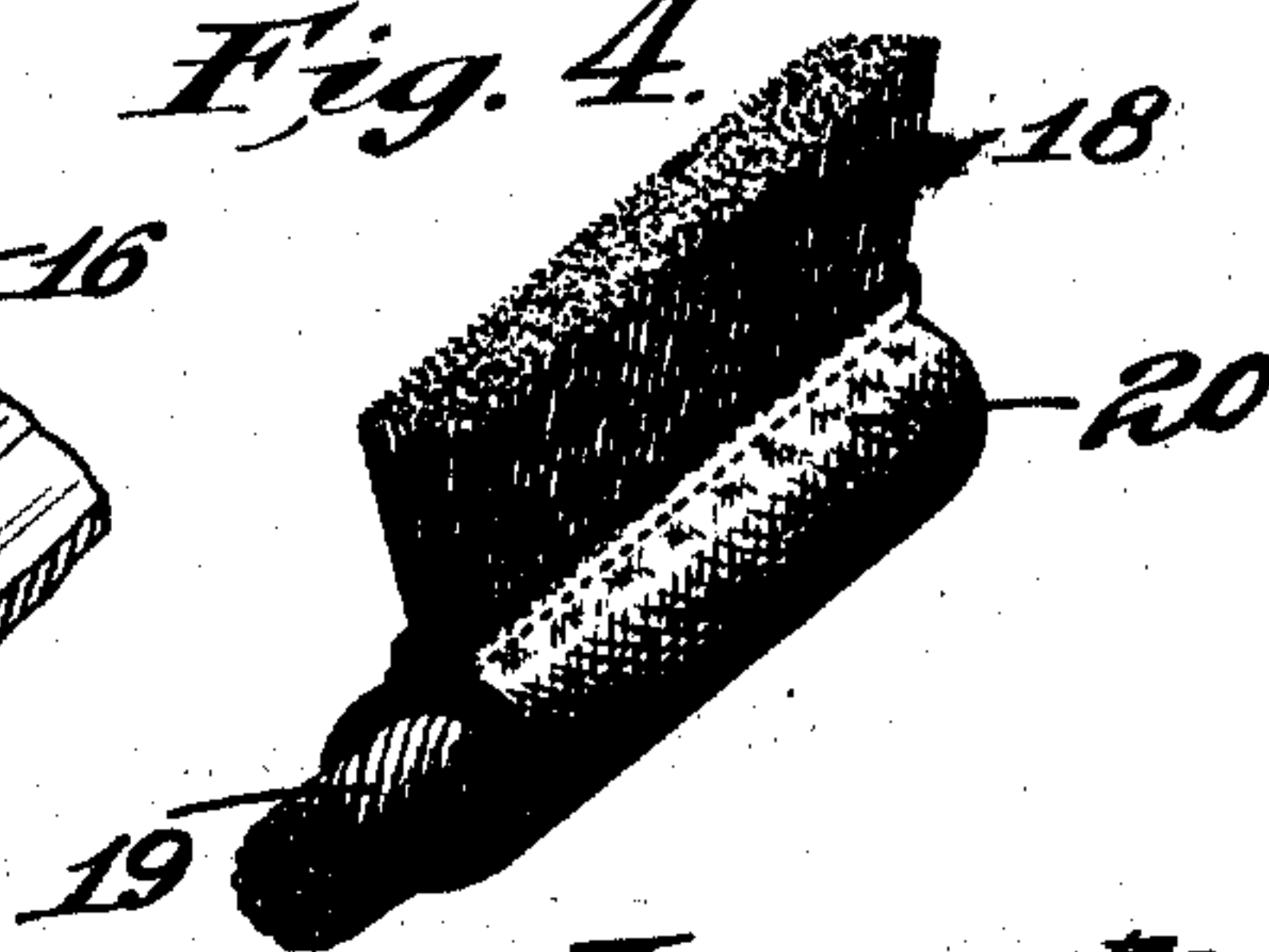


*Fig. 3.*



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*G. A. Remington*  
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*Fig. 4.*



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*Attys.*

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COTTON GIN.

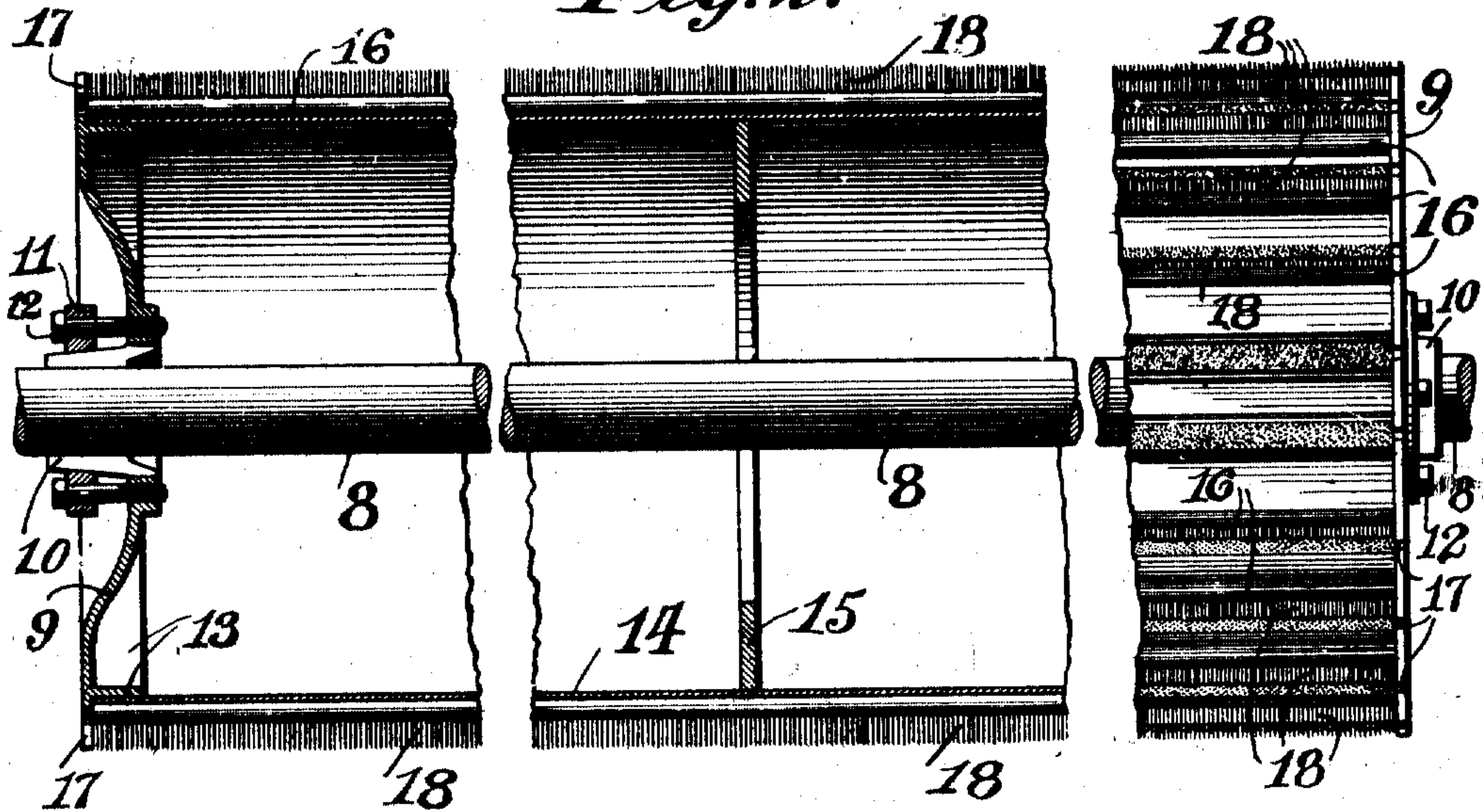
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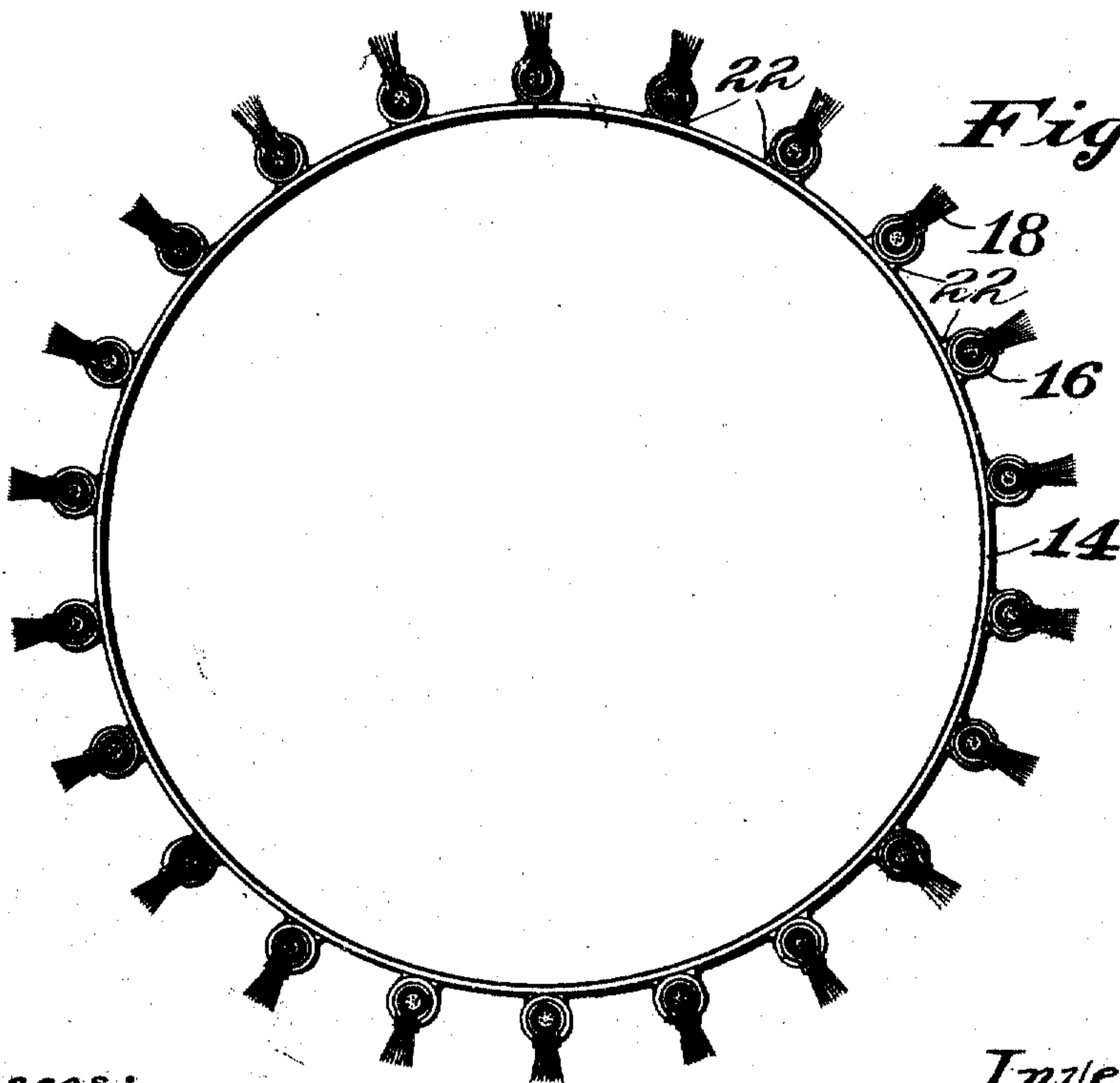
2 SHEETS—SHEET 2.

991,876.

*Fig. 2.*



*Fig. 5.*



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Inventor:

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# UNITED STATES PATENT OFFICE.

STEPHEN D. MURRAY, OF DALLAS, TEXAS.

## COTTON-GIN.

991,876.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed December 4, 1905. Serial No. 290,055.

*To all whom it may concern:*

Be it known that I, STEPHEN D. MURRAY, a citizen of the United States, and a resident of the city of Dallas, county of Dallas, and State of Texas, have invented a new and useful Improvement in Cotton-Gins, of which the following is a specification.

This invention relates to cotton gins and especially to brush cylinders for cotton gins.

It has for its principal objects to produce a metallic brush cylinder; to produce a brush cylinder that will not get out of balance in use; to produce a brush cylinder having a stable balance and not subject to get out of balance by the varying conditions of the atmosphere; to produce a brush cylinder all diametrically opposite portions of which are symmetrical with relation to the axis of the brush cylinder and are of equal density; to produce a brush cylinder having fixed to its periphery brush-retaining channels adapted to allow of adjustment, removal or replacement of the individual brushing members; to produce a brush cylinder adapted to the ready renewal of the individual brushes without removing the brush from the gin and without disturbing the running balance of the brush, also without undoing any fastening member or taking apart any portion of the cylinder other than the removal and replacement of the brushing members and without injury to said members or any portion of the brush; to produce a brush cylinder in which the centrifugal action of any one portion or brushing member is opposed by an equal centrifugal action or pull of other portions or brushing members to maintain perfect rotundity in the brush cylinder; to produce a cotton gin brush cylinder having no joints or openings to permit the ingress or accumulation of dust; also to provide individual brushing members of novel construction and other objects hereinafter more fully appearing.

The cotton gin brush embodying the features of the present invention has a substantially all-metal structure, the only portions that are not metal being the brushes, or brushing material or bristles, and the means for securing said brushing material or bristles. The cylinder proper of the improved brush is preferably formed of a single sheet of metal, which is rolled in such manner as to cause the two opposite ends of the sheet to abut. On the outer periphery of the cyl-

inder, over and along the abutting ends, and also at equal distances around the periphery of the cylinder, slotted metal tubes are secured, preferably by strips of solder, the slotted tubes constituting in effect stiffening ribs extending longitudinally over the cylinder and giving great rigidity to the latter. The stability of the running balance of the brush is also increased by the use of the slotted metal tubes, owing to the fact that the centrifugal pull on the tubes acts to impose a tensile strain upon the sheet metal cylinder, thus holding the said cylinder in true round form. The cylinder proper is without joints or crevices, and therefore excludes the entrance of dust thereinto, and the brushing material may be adjusted in the tubes to bring unworn portions thereof opposite the saws and thus materially prolong the practical life of the brush structure as an entirety.

In the drawings, Figure 1 is a transverse sectional view through a cotton gin of the common type equipped with the improved brush cylinder. Fig. 2 is a view of the brush cylinder partly in longitudinal section and partly in elevation. Fig. 3 is a perspective view of a portion of the brush cylinder showing the means for holding the brushing material, a part of the means having the said material removed therefrom. Fig. 4 is a perspective view of a portion of an individual brush showing the manner of constructing the same. Fig. 5 is an end view of the cylindrical sheathing or cylinder proper of the brush cylinder showing the holding means for the brushing material fixed thereto and the brushing material therein, the shaft and heads of the cylinder being omitted.

The type of cotton gin chosen for the purpose of illustration comprises a roll-box 1, having downwardly converging sides formed by a seed-board 2 and a grate-fall 3. A cylinder 4 is located below said grate-fall, this cylinder being of any preferred type of saw-cylinder and having its saws projecting into the roll-box between the bars and grate-fall. A brush-cylinder 6 is arranged back of the saw-cylinder in position to brush the lint from the saws of the saw cylinder and carry it back and fan it through a chute 7, which may lead into a conduit or directly into a lint room.

In the cotton gin art, the gin brush is



known as the delicate and limiting member of the gin. It runs at high speed and as formerly constructed has a tendency to get out of balance and it is very difficult to put it in satisfactory balance. When the well known form of gin brush gets out of balance, it is rare that the facilities or skill are at hand to do the work of rebalancing it, as hereinbefore indicated, and consequently it is necessary to send the brush to some point where facilities and skill can be had to rectify the irregularity of the brush or else the latter continues to operate in an unbalanced condition, greatly to the injury of the brush and other parts of the gin. The latter course is the one generally followed, because proprietors of ginneries are loath to lose the work of the gin for even a small part of the short and busy ginning season.

In the present cotton gin, the element embodying the features of the invention or the brush cylinder has been particularly devised to overcome the many disadvantages and inconveniences of previous brush cylinder structures.

On the shaft 8 the brush cylinder 6 is mounted, and comprises cast metal heads 9, having split hubs 10 which engage the shaft. The periphery of each hub tapers and has a fastening ring 11, provided with a corresponding taper fitted thereupon, screws 12 extending through each ring and head and operative to draw the ring upon its respective hub, and thus the shaft will be clamped by the hub. The maximum diameter of the heads is equal to or a little greater than the maximum diameter of the brush cylinder is intended to be, measured from the outer ends of the brushes, so that the said heads will support the cylinder when the latter is removed from the gin and the brushes or brushing material will not be mashed by the weight of the cylinder upon the same. On the inner side of each head, and at a distance from the periphery thereof, equal to the length of the brush or brushing material when in its holding means, and the thickness of the sheathing of the cylinder, a cylindrical flange 13 is integrally formed or arranged. The cylindrical sheathing or cylinder proper 14 formed of suitable sheet metal, preferably tin, has its opposite ends fitted over and supported by the said cylindrical flanges 13 of the two heads. The cylinder is held in shape between the heads by rings 15 of which there may be one or more, the number of rings used depending upon the length of the cylinder.

The sheathing 14 is preferably made of a single sheet of metal, which is rolled into the form of a cylinder, the edges thereof abutting to form a butt joint. Upon the exterior of the cylinder so formed, brush receiving channels 16 are secured by soldering or riveting, or by any suitable means.

These channels are preferably slitted cylindrical tubes, as shown, though they may be given different cross sections if desired. One of the tubes is soldered immediately over the meeting edges of the sheet forming the sheathing, and thus the edges are secured together at the same time that the tube is secured to the cylindrical sheathing. The remainder of the tubes are equally spaced around the periphery of the cylinder and are soldered to the sheathing. The tubes are preferably in contact with the sheathing throughout their length and the solder extends from one end to the other of said tubes. In soldering the slitted tubes to the cylinder, wires of solder of uniform diameter are used. Pieces of such wire of even length with the tubes are fused into and along the angles formed near the contact point of the tubes with the periphery of the cylinder, one such piece of wire being used to each of the angles. This gives great stiffness and rigidity to the base or contact point of the tube with the cylinder while, at the same time, the edges of the tube will be permitted to spring apart along the slot as may be required by the drawing in of a new tight-fitting brush. The tubes or channels 16 being rigidly secured to the sheathing of the cylinder constitute in effect stiffening ribs and thus the brush cylinder is given greater strength and rigidity.

The brushes are inserted in the brush receiving channels endwise. To permit this, the heads are provided with radial notches at their peripheries in line with said brush receiving channels and having the same cross section as the brush it is proposed to insert.

The brushes 18 are of novel construction and have heads fitting in the brush receiving channels. The head of each brush has a round core which, in the case illustrated, consists of a cord 19. The bristles are folded around this cord and are secured by a canvas covering folded around the bristles and cord and having its edges sewed together by threads passing through the bristles. The seam is made as close to the core as possible in order to secure the bristles by the binding effect of the covering and to give firmness to the head, though it will still be pliable. The canvas covering should extend along the bristles far enough to project out of the brush receiving channel so that it can be grasped with nippers or pliers in order to draw the brush into the channels. The brushes are preferably made the full length of the channels in which they are intended to be used, although they may be made shorter and the channels may be filled with as many sections as may be desired. This brush may be made very cheaply and all brushes are interchangeable. When a brush becomes worn by the saws it need not be thrown



away but may be moved along the channel until unworn portions are brought into position opposite the saws. When a brush is entirely worn out it may be withdrawn from its channel and a new brush may be substituted for it.

From the foregoing it will be seen that the brushes are flexible or pliable, and are also endwise adjustable in the holding means therefor or channels 16. By moving each brush endwise in its holding means or channel, a part thereof, or portions thereof throughout its entire length, that may have been primarily opposite the spaces between the saws and unworn, may be shifted into alinement or operative relation to the saws, and thereby prolong the practical life of the entire cylinder with material economy in brush cylinder construction and use. When a brush is drawn into its tube or channel, it will remain securely fixed and unmoved by use in the channel, because it snugly fits the latter, and furthermore, the brush by its yielding construction will set up a practical immovable assemblage with relation to the holding means or channel therefor. As a matter of fact, when the brush is drawn into its holding means or channel, it cannot move endwise when the brush cylinder is revolving, even though the individual brush was loosely drawn into the channel, because centrifugal force comes into play when the brush cylinder revolves, and causes the individual brush to remain securely fixed in its holding means or channel. The individual brush may, however, as above noted, be adjusted or shifted in its holding means or channel or completely withdrawn from the latter by means of nippers or other suitable instrument which is caused to grasp the brush close to the tube or channel so as to clasp or engage the projecting edges of the canvas covering on the bristles.

It will be obvious that the brush cylinder embodying the features of the invention is capable of considerable modification within the scope of the invention, and therefore it is to be understood that the specific construction shown and described is not to be considered a limitation of the invention to the precise forms shown.

Having thus described the invention, what is claimed as new, is:

1. In a cotton gin, a brush cylinder comprising heads, a cylindrical sheathing mounted on said heads, said sheathing having brush receiving channels longitudinally continuous over and projecting outwardly from its periphery and fixed thereto and having a permanent form, and brushes shiftably mounted in said channels.

2. In a cotton gin, a brush cylinder having end supporting devices, an outer sheet metal sheathing engaging the supporting devices and provided with brush receiving channels

continuously extending thereover, and flexible brushes mounted and solely held in the said channels by friction.

3. In a cotton gin, a brush cylinder provided with a cylindrical sheet metal sheathing forming the outer covering therefor and having peripheral brush receiving channels continuously extending thereover and projecting outwardly therefrom, and brushes having a normal frictional retentive association with and removably mounted in the said channels.

4. In a cotton gin, a brush cylinder having an outer imperforate sheet metal sheathing provided with brush receiving slots continuing thereover from end to end, and brushes frictionally held and movable in the said slots.

5. In a cotton gin, a brush cylinder comprising heads and a cylindrical sheathing mounted on said heads, said sheathing having continuous peripheral brush receiving channels, and brushes adjustably mounted therein.

6. In a cotton gin, a brush cylinder having a continuous sheathing of sheet metal provided with fixed peripheral brush receiving channels continuing thereover, and brushes mounted in the said channels subsequent to the association of the latter with the sheathing and frictionally held in said channels.

7. In a cotton gin, a brush cylinder having continuous brush receiving channels extending longitudinally thereover, and brushes longitudinally shiftable in the said channels.

8. In a cotton gin, a brush cylinder having brush receiving tubes secured to its periphery, said tubes having longitudinal slits in their outer portions, and brushes having yielding body portions mounted in and frictionally engaging the tubes, the brush material radially projecting through the slits of the tubes.

9. In a cotton gin, a brush cylinder comprising a sheet metal sheathing, longitudinally slitted metal tubes soldered to the periphery of said sheathing, and brushes adjustably mounted in the tubes.

10. In a cotton gin, a brush cylinder comprising a cylindrical sheathing, a plurality of brush receiving members mounted upon the exterior of said sheathing and having longitudinal channels with a fixed contour, and brushes endwise insertible in and freely removable from the channels and also adjustable in the latter.

11. In a cotton gin, a brush cylinder comprising a cylindrical sheathing, a plurality of brush receiving members secured fully upon the exterior of said sheathing and having longitudinal channels, and brushes having flexible heads conforming to the cross sectional contour of said channels and frictionally held in the latter.

12. In a cotton gin, a brush cylinder com-



prising heads, a cylindrical sheathing connected to the heads, and brushes mounted upon the exterior of said sheathing, the said heads extending radially, substantially to the outer free terminals of said brushes.

13. In a cotton gin, a brush cylinder comprising heads having cylindrical flanges on their inner faces at distances inwardly from the peripheries of the heads, a cylindrical sheathing engaging said flanges, and brushes mounted on the said sheathing and movable through the portions of the heads projecting outwardly beyond the sheathing and protected against crushing by said outwardly projecting head portions.

14. In a cotton gin, a brush cylinder comprising heads, a cylindrical sheathing connected to said heads, brush receiving members mounted upon and continuous longitudinally over said sheathing, and brushes in-

sertible in and freely withdrawable from said members by longitudinal movement, the heads extending radially beyond the members and having notches arranged to admit brushes to the members.

15. In a cotton gin, a brush cylinder having brush holding means extending continuously thereover and a plurality of brushes frictionally held in and mounted in said brush holding means and longitudinally adjustable in the latter and also applicable and removable at one of the ends of the cylinder.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 29th day of November, 1905.

STEPHEN D. MURRAY.

Witnesses:

E. E. McLEMORE,  
LEM BRALEY.