

(No Model.)

W. M. BROWN.
COTTON GIN SAW.

2 Sheets—Sheet 1.

No. 500,560.

Patented July 4, 1893.

Fig: 1.

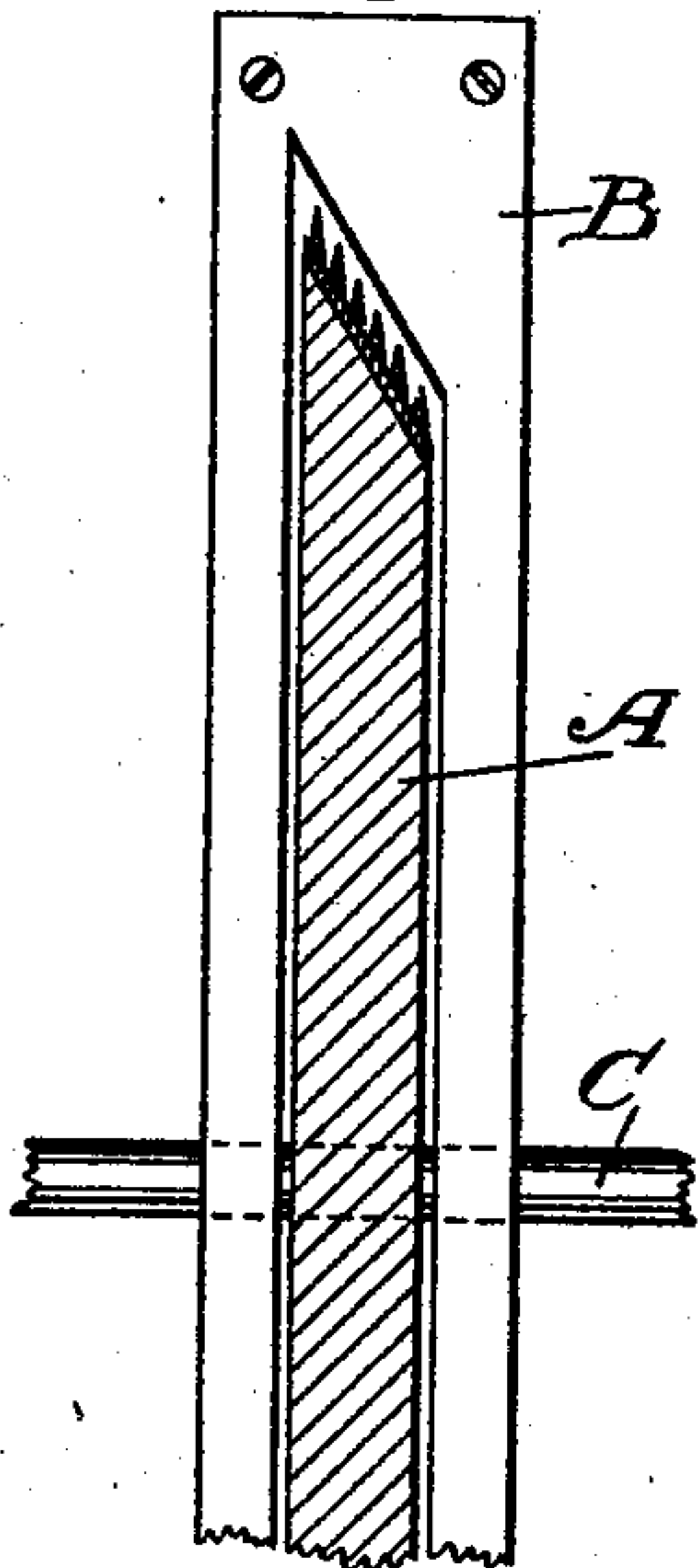


Fig: 2.

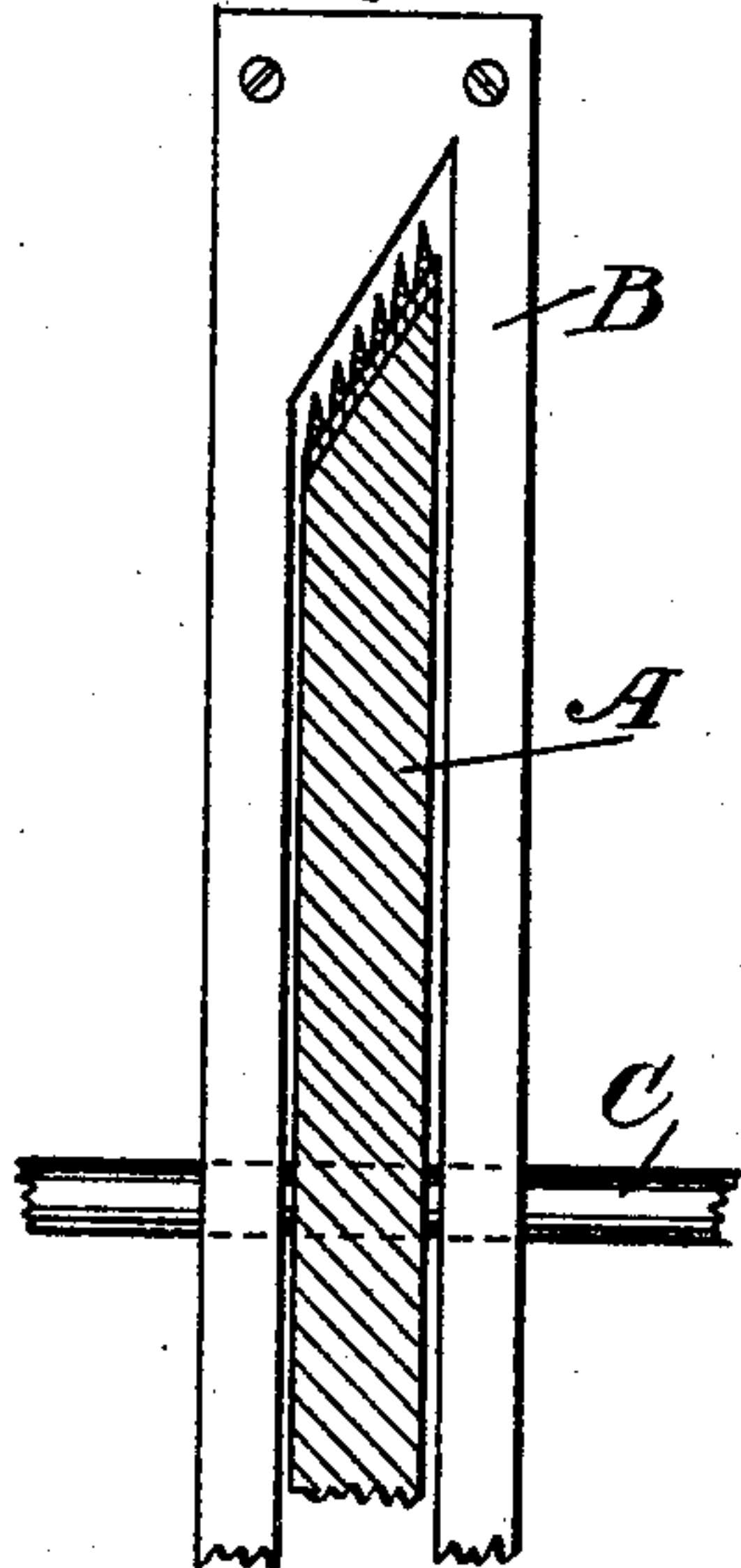


Fig: 3.

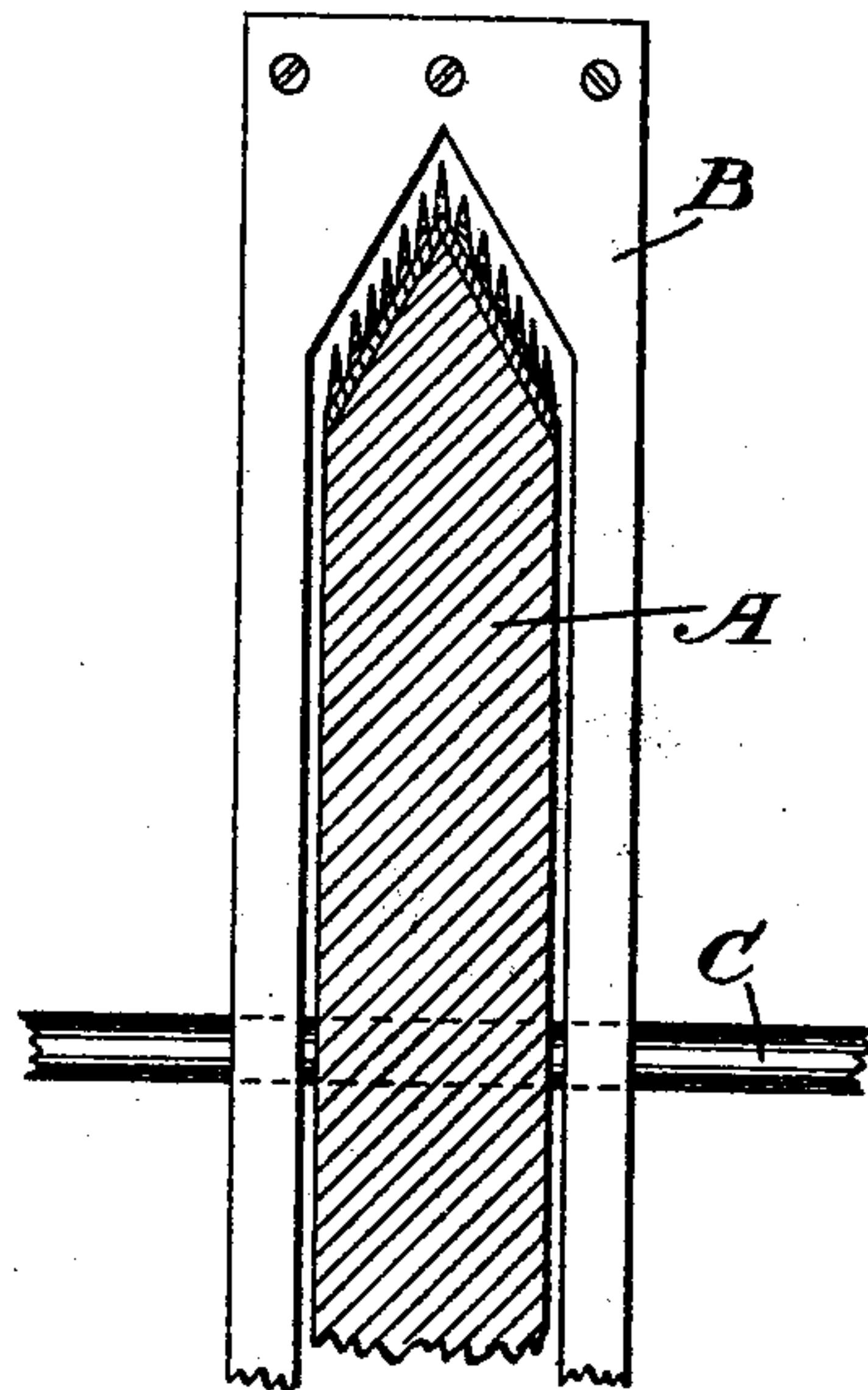


Fig: 4.

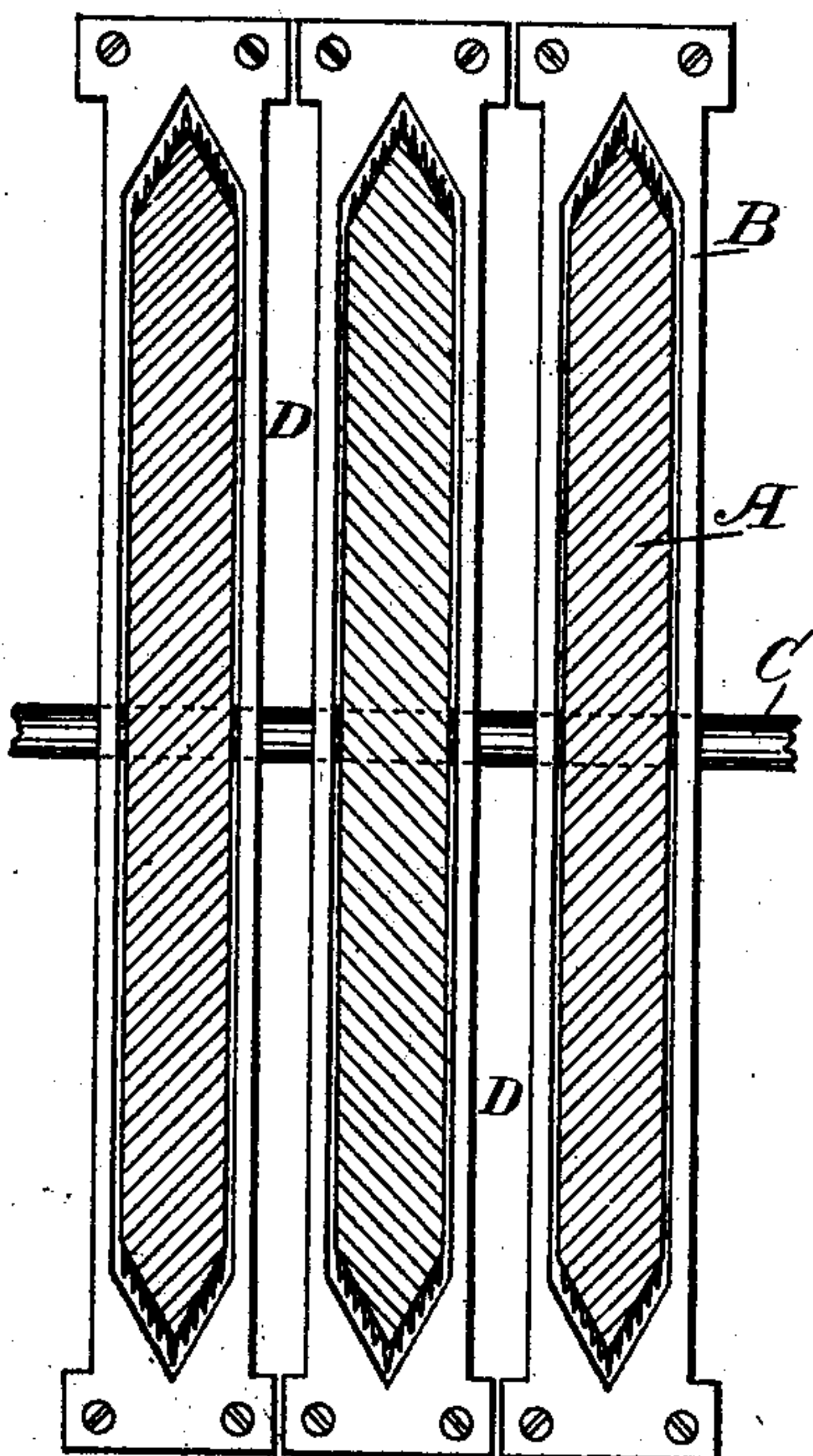


Fig: 5.

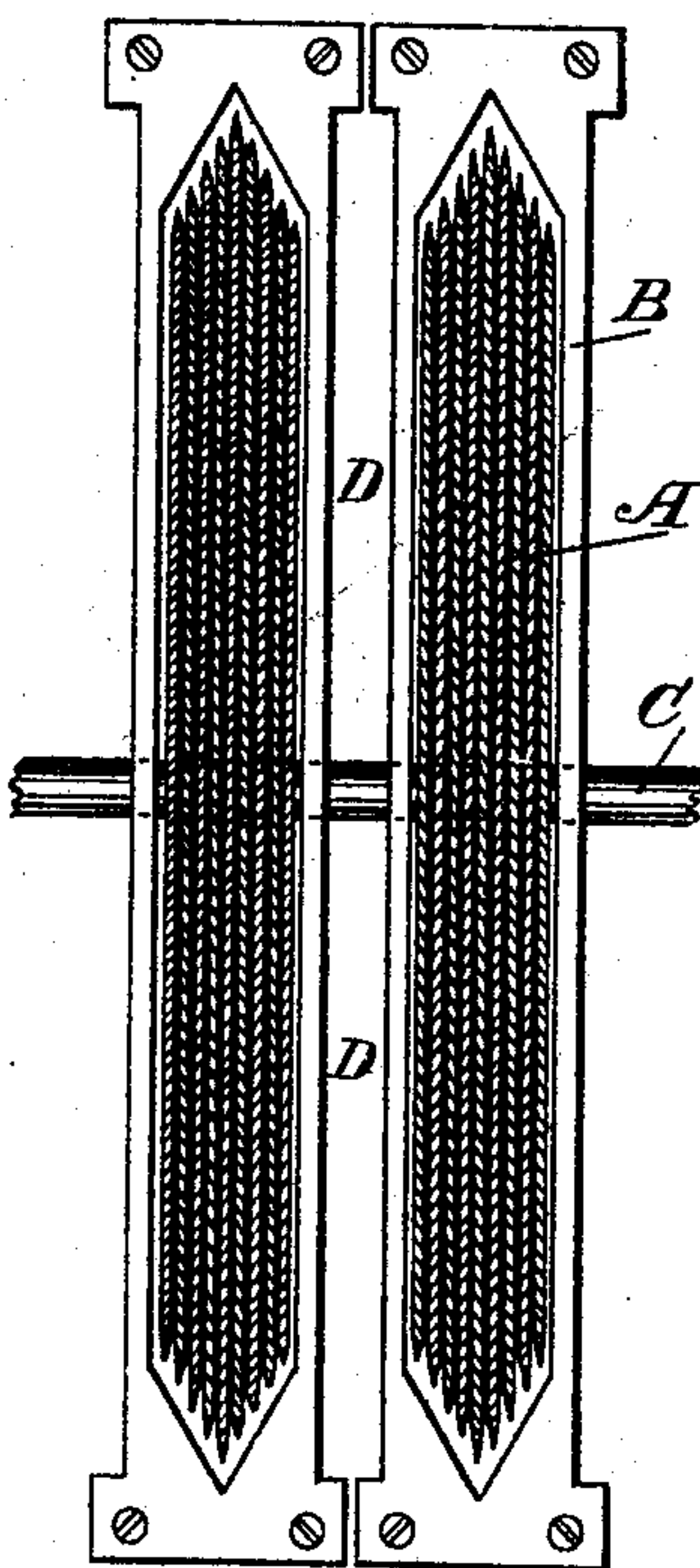
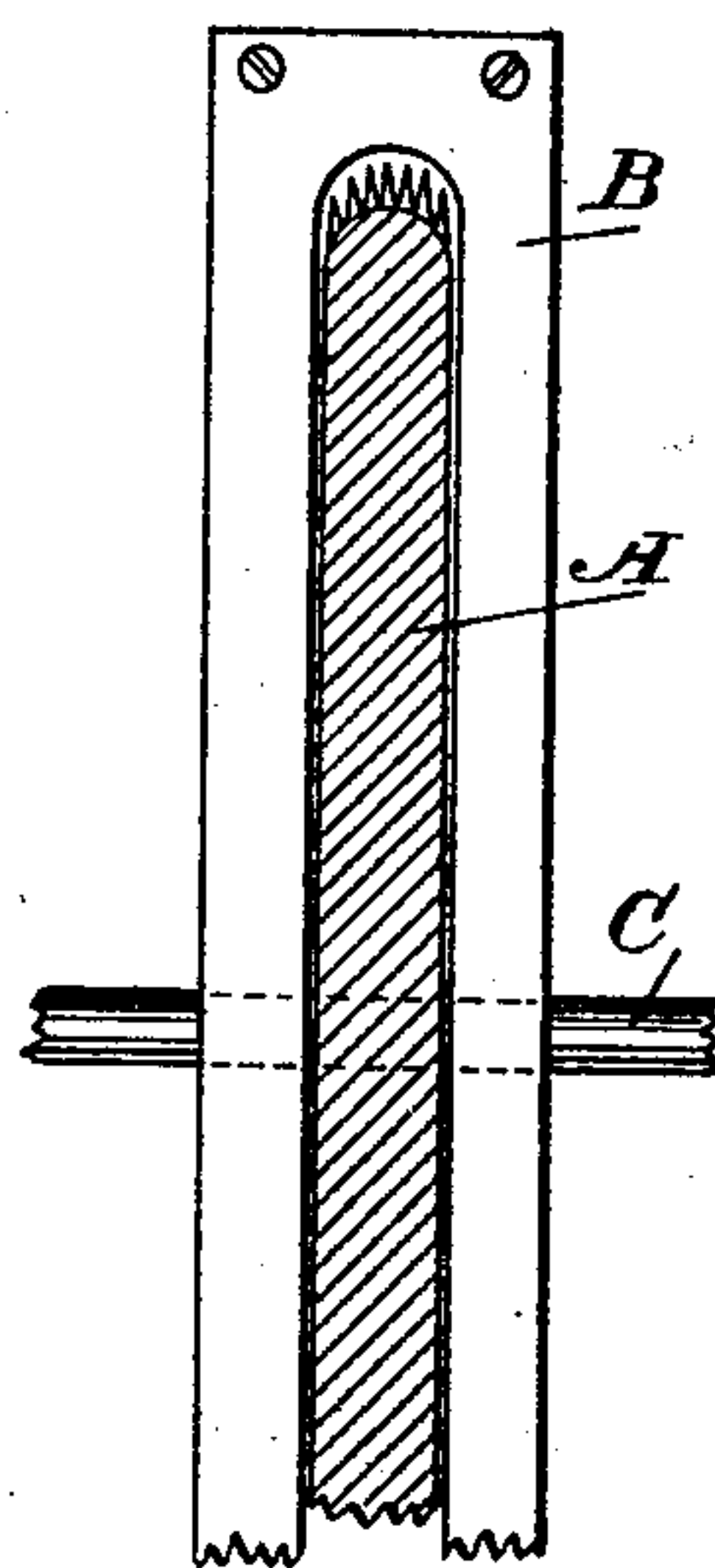


Fig: 6.



Witnessed
A. M. Turner.
J. F. Harris.

INVENTOR
Walter Morton Brown.

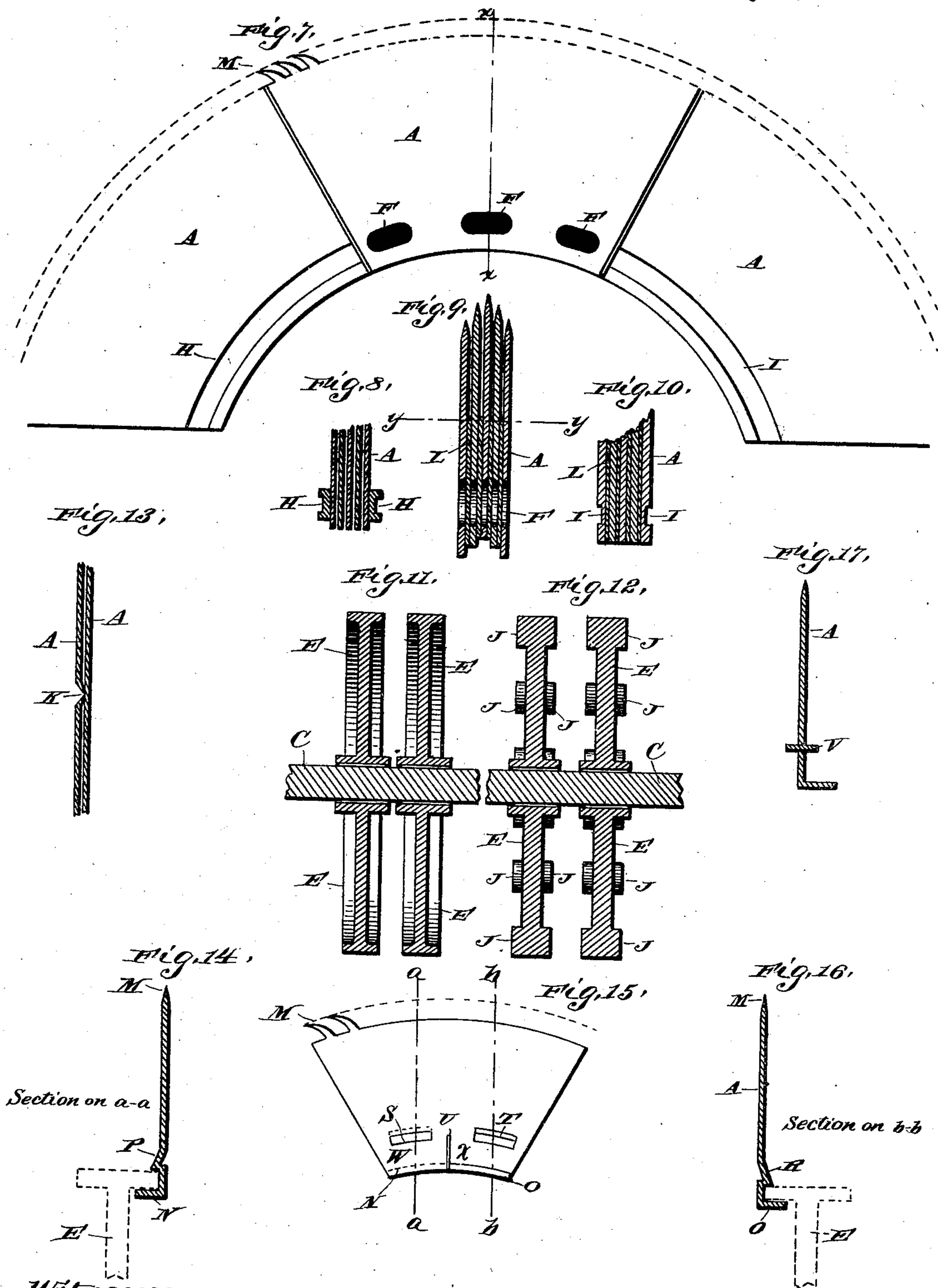
(No Model.)

2 Sheets—Sheet 2.

W. M. BROWN.
COTTON GIN SAW.

No. 500,560.

Patented July 4, 1893.



Witnesses:
A. M. Turner.
J. M. Culver.

Inventor:
Nathl. M. Brown

UNITED STATES PATENT OFFICE.

WALTER M. BROWN, OF ALBANY, NEW YORK.

COTTON-GIN SAW.

SPECIFICATION forming part of Letters Patent No. 500,560, dated July 4, 1893.

Application filed May 24, 1892. Serial No. 434,215. (No model.)

To all whom it may concern:

Be it known that I, WALTER M. BROWN, a citizen of the United States, residing at Albany, Albany county, New York, have invented certain new and useful Improvements in Cotton-Gin Saws; and I do hereby declare the following to be 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide an improved saw for cotton gins.

Figure 1 shows a vertical sectional view of one form of my saw having a beveled periphery; Fig. 2 a similar view with the bevel sloping in the opposite direction; Fig. 3 a similar view showing a double bevel; Fig. 4 a similar view of a set of double beveled saws set in the ribs of a gin; Fig. 5 a similar view of a set of single saws massed, the center one being greatest in diameter and the following ones diminishing in diameter until the outer ones are reached; Fig. 6 a similar view showing a rounded periphery; Fig. 7 a side elevation of a portion of a saw made of segments, showing three of the segments; Fig. 8 a vertical sectional view of the left hand segment shown in Fig. 7, showing five segments massed and the holding rib or gutter; Fig. 9 a vertical sectional view of the central segment shown in Fig. 7, taken on line X. X. showing an opening through them; Fig. 10 a similar view of the right hand segment showing the groove or gutter in the outside segments by which they are held between the collars of the gin cylinder; Fig. 11 a vertical sectional view of a set of the collars fitted to hold the massed segments shown in Figs. 8 and 10; Fig. 12 a similar view of a set of collars fitted to hold the massed segments shown in Fig. 9; Fig. 13 a similar view of a portion of two blades having a punch mark forming a slight point on the back of one of the blades; Fig. 14 a similar view of a single blade taken on line *a-a* Fig. 15 showing its foot turned at right angles and having a protuberance in the blade; Fig. 15 a side elevation of a section showing the foot and protuberances and a slit in the section; Fig. 16 a vertical sectional

view of a portion of Fig. 15 taken on line *b. b.*; Fig. 17 a similar view showing a pin set through the blade.

The saws A. shown in Figs. 1, 2, 3, 4 and 6, are made by affixing the teeth upon the rim or periphery of a pulley or drum and in such a manner that the periphery of the teeth will be beveled or sloping.

In Fig. 5 I show a form of saw made by taking blades of different diameters and making an opening through their center and affixing them on a gin shaft as is ordinarily done with a single saw, and train them to run true, *i. e.*, revolve in true circles, and they may be left without otherwise fastening them if desired, or they may be connected the one to the other.

In Fig. 7 I show a portion of a saw made of segments and having teeth made in hooked form as at M. and provided at their feet or bottoms with means H, for holding them between the collars of the gin shaft, and this means for holding them is shown as being different in each of the sets of segments, thus showing three different forms of holding devices.

In Fig. 8, H. shows a groove or guttered offset affixed to the outer segment of the mass and these offsets may be cast, cemented or riveted on as desired; Fig. 8 showing a vertical cross section of the holding device H. shown in the left hand segment of Fig. 7.

In Fig. 9 I show five segments massed and having an opening F. through them in which the spurs J. on the collars E. enter and fit closely enough to hold the segments.

In Fig. 10 I show five segments massed and having a gutter or groove I. cut in the faces of the outside segments, by which the mass is held between the collars. These segments are preferably made of steel, and their teeth formed, preferably, by dies, and when ready for use they are plated with nickel or coated with tin, or otherwise washed, so as to "take" solder or its equivalent, from their feet to a point about the height indicated by the line Y. Y. in Fig. 9. An indentation, made by a punch or other instrument, is made in each segment as shown at K. in Fig. 13, and when the segments are massed, the point raised by the punch mark keeps the segments slightly apart (but any other separating device may

be used if desired), and when thus prepared to "take" solder or its equivalent, they are dipped in a fluid mass of the cement used, and thus firmly bound together. The solder or cement is indicated at L. in Figs. 9 and 10. When thus massed and cemented if the holding device H. shown in Fig. 8 is used or that shown in Fig. 10 at I., the form of collar therefor is shown at E. in Fig. 11. These collars are simply wheels having a rim of thickness enough to enter the gutter or groove H. shown in Fig. 8, or I. shown in Fig. 10, and when the gin shaft is filled with these collars and the massed segments, the collars are squeezed or pressed tightly together by means of a nut on the end of the shaft (nut not shown), when the segments will be tightly pinched and held between the rims of the collars E. This is clearly seen by supposing the segments shown in Fig. 8 dropped down between the rims of the collars in Fig. 11 and the collars squeezed together, the rim of the collar fitting into the gutter or groove H. or the gutter I. The collars are seen, therefore, to answer for the gutters H. and also for I. When that form of holding device is used shown in Fig. 9 (which is a cross section of the central segment shown in Fig. 7 but having the opening F. somewhat enlarged), a special form of collar is provided as shown in Fig. 12, where J. shows spurs upon the rims of the collars E. and these spurs J. fit into the openings F. in the segments, and when the collars are squeezed together on the gin shaft, the segments are firmly held in place.

In Fig. 7 I have shown three openings F. but there may be more or less, and instead of passing entirely through the segments, they may be little more, if anything, than simple indentations in the outer segments, providing they are deep enough to hold the spurs J. or their equivalents, on the rims of the collars. These collars should not be confounded with the ribs of the gin. Ribs are shown at B. in Figs. 1, 2, 3, 4, 5 and 6, and are not attached to the gin cylinder shaft, while the collars E. are, and holding these segments of teeth revolve with the shaft, but as collars in other forms than here described are old in other forms of gins and in the art, further explanation concerning such collars is unnecessary.

In Fig. 13, I show a punch mark K which raises a point on the rear of the saw blade or segment A, and this is used to keep the segments apart, so that when dipped or otherwise brought in contact with cement, the cement enters between the blades or segments and binds them together, but a strip of cardboard or other body may be used to separate them if desired.

Heretofore, cotton gin saw sections have been made both of separate needles and of solid steel sections, and in order to hold them between the collars of the gin shaft curved flanges forming a curved channel were formed on their faces by casting on them soft and easily fused metal, usually Babbitt metal, but

this soft metal was soon badly cut away by the sand and grit in the cotton when the gin was operated, and the soft metal was, therefore, not only very expensive in first cost and in handling, but did not withstand the erosive action of the sand and grit common to all rough seed cotton, and the rapid erosion and wasting away of the sections was a common complaint and a great disadvantage. To avoid this difficulty, therefore, in Figs. 14, 15, 16 and 17, I show another method of forming the segments, so they may be held by the collars of the gin. N. shows the foot of the segment turned over at right angles with the body, and P. an indentation in the body of the segment, and between the indentation P. and the turned over foot N., the rim of the collar E fits, as shown by the dotted lines in Fig. 14. In Fig. 15, a side elevation of the segment shown in section in Fig. 14 is seen, showing that the turned over foot N. only forms a foot for one-half the segment, and that there is also a turned over foot at O. and turned in the opposite direction to N. so that one foot N. is on one side the section and the other foot O. on the opposite side. There may be two or more of these feet. At S. and T. are shown indentations, being simple openings made through the segment and the cut out piece standing at practically right angles with the body of the segment, one on one side and the other on the other, forming an offset on each side the section which perform the same office as the indentations P. and R. It will be seen also, by Fig. 15 that there is a slit or cut U. in the foot of the segment, one of the divisions made thereby being marked W. and the other X. This division of the foot of the section is made to especially accommodate that class of gins using only one row of teeth on a saw, and, as shown, the division or leg W. is slightly sprung back, while the leg X. is sprung slightly forward, causing the slit U. to assume a V shape. This is done so that when the section is set between the collars of the gin, the collars will be obliged to spring the parts W. and X. in line with the body of the segment, and as there is considerable spring or resilience in the metal, they will re-act on the rim of the collars, thus preventing them from rattling or shaking, and this is necessary, as experience shows that when metal segments are set in the collars, metal to metal, there will be found some of the segments which are not quite so thick as others, and the thinner ones rattle and cannot be made tight.

In Fig. 12, I show spurs J., which may be simple offsets or enlargements at the ends of spokes, and in some constructions they will be preferred to spurs on the rim of a wheel or collar, it being immaterial whether a wheel or a collar without a rim and consisting of only spokes be used or whether a wheel or collar with a rim and spurs thereon be used, but I prefer the collar with a spur J. on its rim.

Fig. 16 shows a sectional view of Fig. 15,

taken on line *b. b.* and shows the foot O. and indentation R. as on the opposite side of the segment from P. and N.

In Fig. 17 I show the pin V. which takes the place of the devices P. and R. and S. and T. when desired. This pin is in all cases forced into the hole in the section so as to become rigidly fixed in place and immovable and practically a part of the section which may be accomplished by first heating the plate and then driving the pin when the plate will shrink upon the pin and make it practically a part and portion of the section and hold it rigidly and immovably.

The herein described method of forming a cotton gin saw of sections, held between the collars of a driving shaft by means of offsets formed from the material of the sections themselves, some of said offsets being more or less resilient to take up any rattle that might occur on account of the varying thickness of the sections, and some being for the purpose of catching upon the collars of the shaft to prevent the section from being drawn out from between them, is not necessarily confined to a cotton gin saw, but may be used with advantage in the construction of an ordinary circular wood or other cutting saw, where it is desirable to form the same of sections, and I therefore, do not confine myself to any form of saw so made, nor do I confine myself to a resilient offset formed of a part and portion of the saw or any of its sections, as I claim it to be new to use resilient offsets of any kind or form, however made, for the purpose herein described.

In the drawings I have shown holding devices for the sections, consisting of offsets formed by turning over a portion of the section or forcing a portion of the section to stand out from the face thereof, and also I have shown a pin, passing through a hole in the section, which performs the same office, as the bent over portion, and these offsets however formed, are mere projections projecting out from the face of the sections and are composed of refractory material, in contradistinction to that material which has heretofore been used, such as Babbitt metal and other soft substances, and I claim broadly, as new and patentable, any hard, enduring, unwearable, permanent or refractory substance, used in the forming of these offsets or projections, as such have never heretofore been used for a like purpose, to my knowledge.

Having fully described my invention, what I claim is—

1. A cotton gin saw, having two or more rows of teeth, said teeth being arranged to produce a beveled or sloping surface on their peripheries, for the purposes described.

2. A cotton gin saw, composed of two or more sections, each section having teeth upon its periphery, said sections being set side by side and held securely in a mass, the teeth on the sections being arranged to produce a beveled surface on their peripheries, for the purposes described.

3. A cotton gin saw, composed of two or more sections, each section having teeth, said sections being set side by side and held securely as in a mass, and having grooves, openings or gutters in or on the outer sections, and cylinders or shafts having collars fitting in said grooves, openings or gutters, whereby the massed sections may be held securely, for the purposes described.

4. Sections for a saw, having their bottoms or feet divided or separated, the portions of the feet or bottoms made by this division being sprung away from the body of the section, in combination with a cylinder or shaft having collars between which the bottoms or feet of each of such sections with their divided parts may be securely held, and arranged so that the portions of said sections thus sprung away from the body of the sections shall re-act upon the collars when so securely held, for the purposes described.

5. Sections for a saw, having their feet or bottoms divided or separated, the portions made by this division being turned over, forming offsets to the bodies of the sections, in combination with a shaft having collars between which said sections may be securely held, and arranged so that the offset shall catch upon said collars, preventing the sections from being drawn from between them, for the purposes described.

6. Sections for a saw, having a portion of their blades turned, forming an offset to the blades, in combination with a shaft having collars between which the sections may be securely held, the offset arranged to catch upon the collars, for the purposes described.

7. In combination with the collars of a driving shaft, a saw composed of sections, each section having a projection on its face formed by turning or forcing up a portion of the material of the section, said projection being arranged to lie over or upon the periphery of the collars, and prevent the sections from dropping or being forced down between the collars, for the purposes described.

8. In combination with the collars of a driving shaft, a saw composed of sections, each section having an offset at or near its base, formed by turning or forcing up a portion of the blade arranged to lap under or catch upon the collar, and an offset above the one at or near the base, and formed by forcing or turning up a portion of the blade, and arranged to lap over or catch upon the collar and arranged to keep the sections between the collars, for the purposes described.

9. In combination with the collars of a driving shaft, a saw composed of sections set between the collars, each of said sections having a portion of its blade standing out from the face of the saw, said portions so standing out being resilient, for the purposes described.

10. A saw composed of sections, each section having rigidly connected therewith, when separated from the saw as a whole, refractory bodies standing out from the faces of the sections, in combination with section holding devices attached to the driving shaft, said refractory bodies being arranged to hold the sections firmly to the section holding devices by coming in contact with the outer

surface of said holding devices for the purposes described.

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

WALTER M. BROWN.

Witnesses:

I. F. HARRIS,
A. M. TURNER.