

(No Model.)

4 Sheets—Sheet 1.

A. HARDWICK.

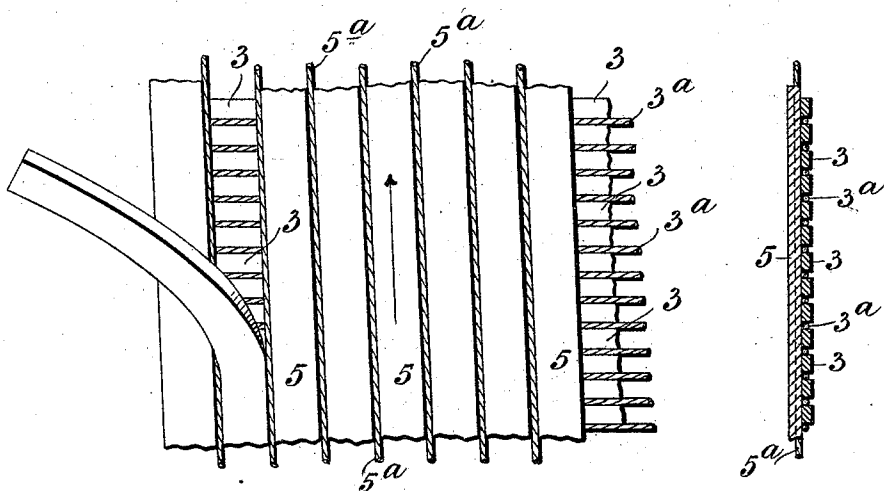
CONDENSING ROLL FOR CARDING ENGINES.

No. 537,386.

Patented Apr. 9, 1895.

Fig. 1.

Fig. 2.



Witnesses.
Wierly Howard
Gerware Appleyard.

Inventor.

Arthur Hardwick

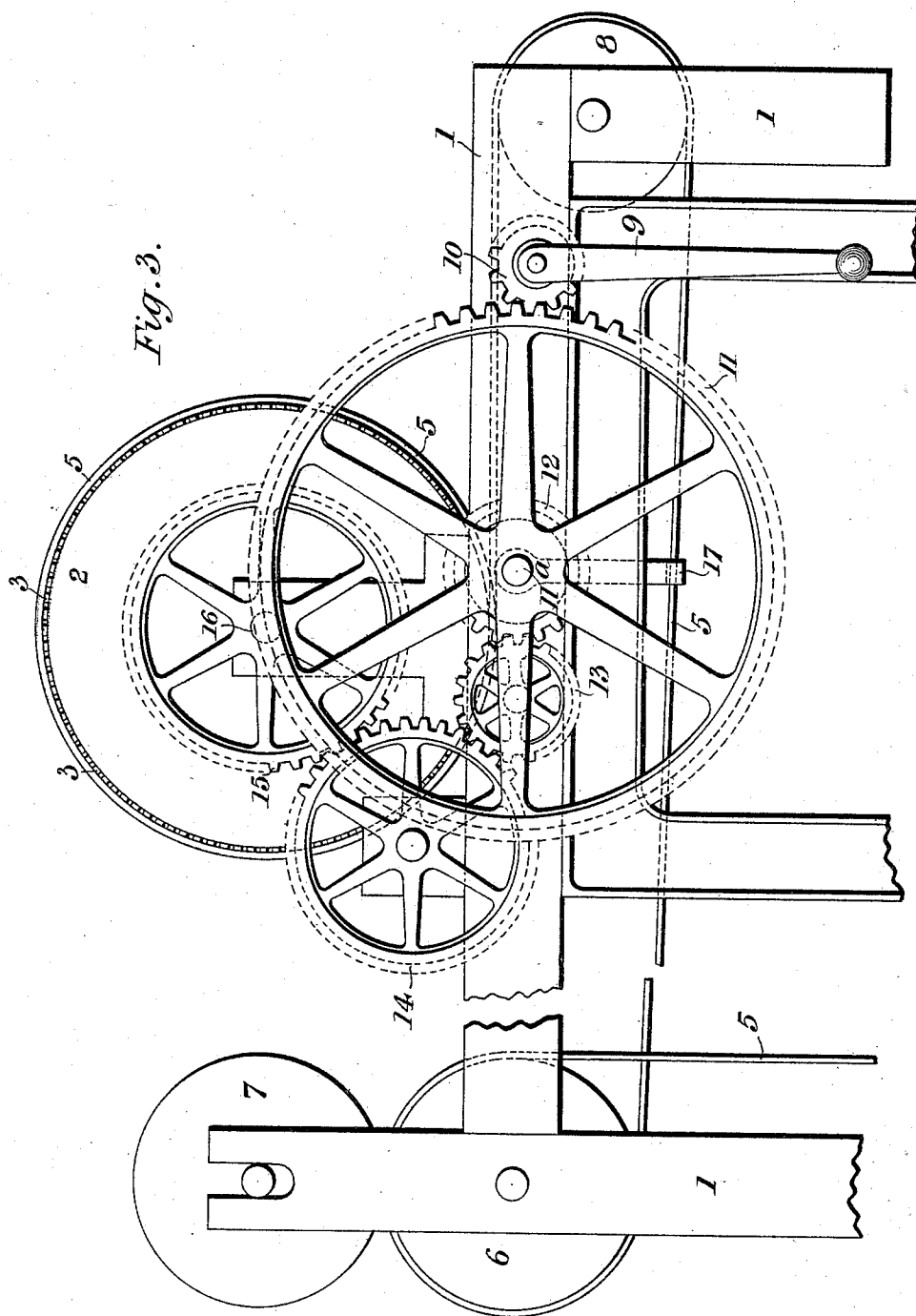
(No Model.)

4 Sheets—Sheet 2.

A. HARDWICK.
CONDENSING ROLL FOR CARDING ENGINES.

No. 537,386.

Patented Apr. 9, 1895.



Witnesses.
Shirley Howard
Gervase Appleyard.

Inventor.
Arthur Hardwick

(No Model.)

4 Sheets—Sheet 3.

A. HARDWICK.

CONDENSING ROLL FOR CARDING ENGINES.

No. 537,386.

Patented Apr. 9, 1895.

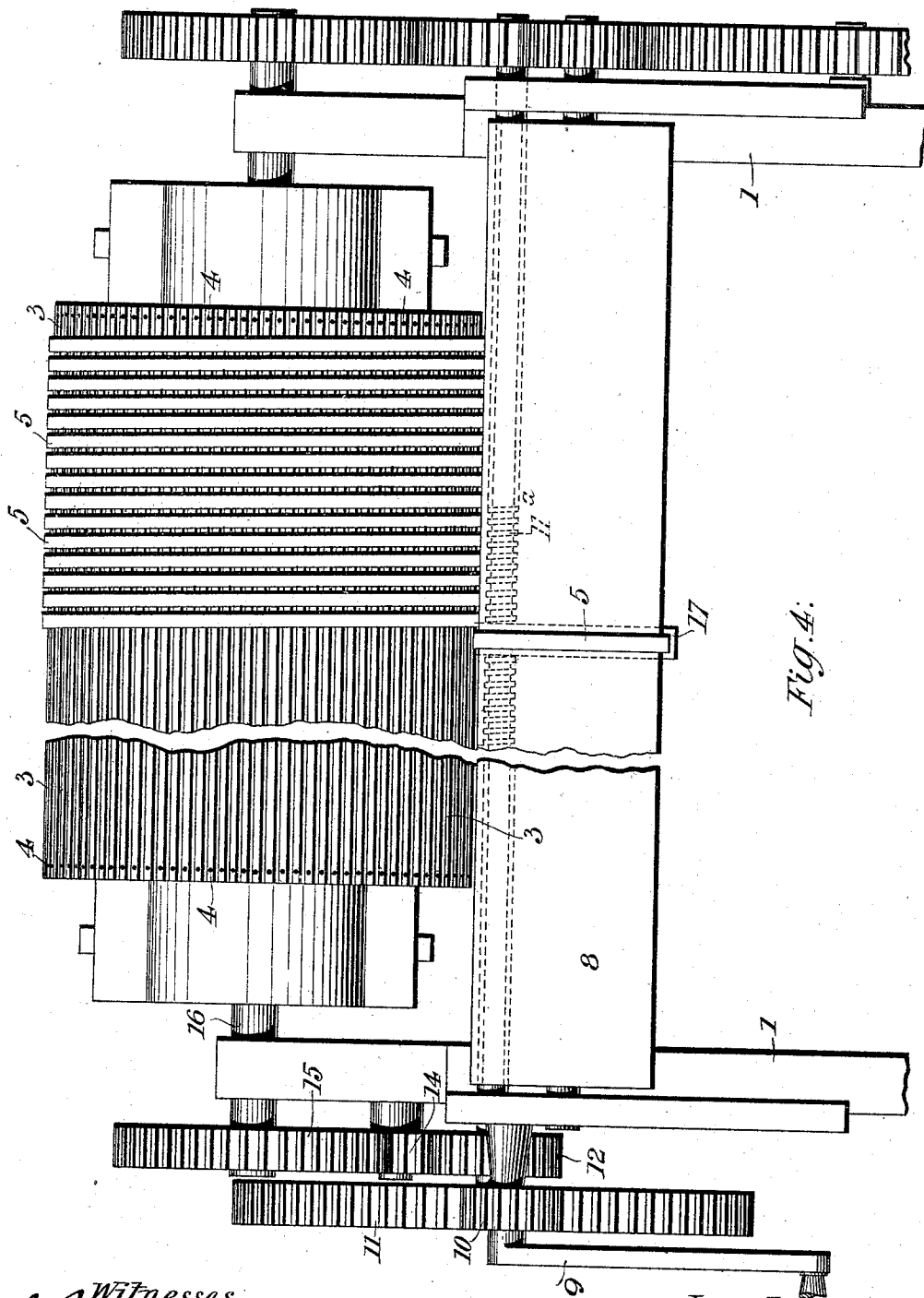


Fig. 4.

Witnesses.
J. Brierley Howard
Gervase Appleford.

Inventor.

Arthur Hardwick

(No Model.)

4 Sheets—Sheet 4.

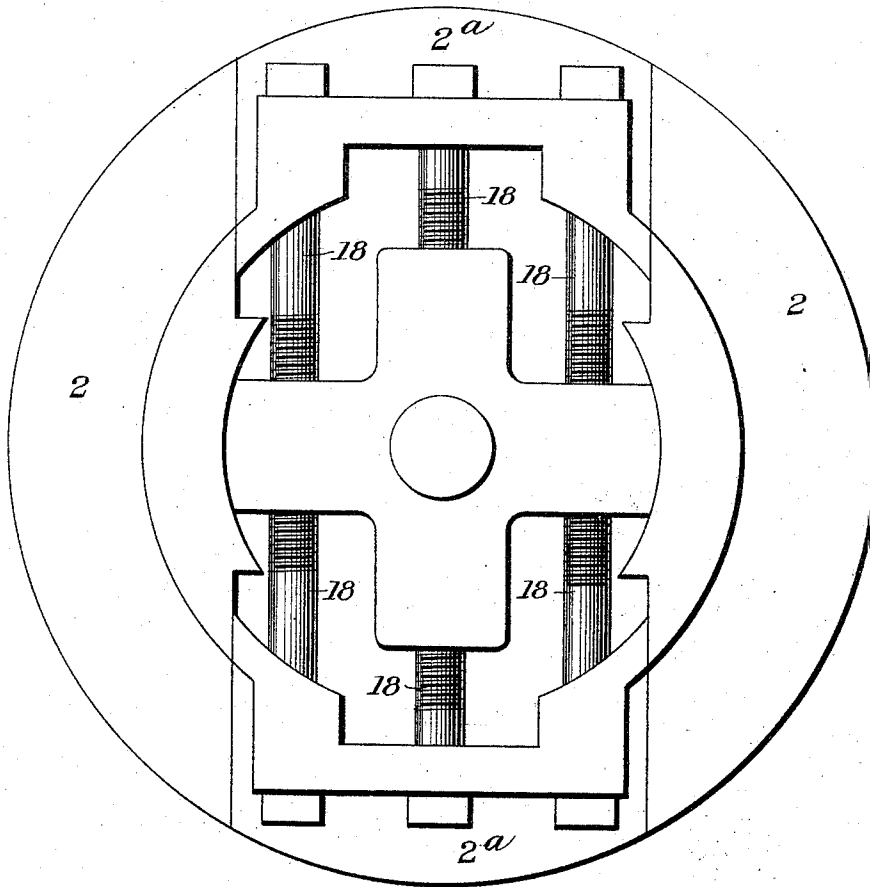
A. HARDWICK.

CONDENSING ROLL FOR CARDING ENGINES.

No. 537,386.

Patented Apr. 9, 1895.

Fig. 5.



Witnesses.
Brierley Howard
Gerware Appleyard.

Inventor.
Arthur Hardwick

UNITED STATES PATENT OFFICE.

ARTHUR HARDWICK, OF HECKMONDWIKE, ENGLAND.

CONDENSING-ROLL FOR CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 537,386, dated April 9, 1895.

Application filed July 24, 1894. Serial No. 518,463. (No model.) Patented in England November 10, 1893, No. 21,376.

To all whom it may concern:

Be it known that I, ARTHUR HARDWICK, a subject of Her Majesty the Queen of Great Britain, residing at Heckmondwike, in the county of York, England, have invented a certain new and useful Improvement in Condensing-Rolls for Carding-Engines, (for which I have obtained Letters Patent of Great Britain numbered 21,376 and dated November 10, 1893,) of which the following is a specification.

My invention relates to an improvement in the condensing rolls of carding engines the object being to produce a rubber of uniform thickness, practically of uniform texture and seamless throughout, the improved rubber being more effective and durable than those heretofore produced, my end being attained by constructing a rubber on which the leather of various textures (which variations occur in all hides) is blended or distributed so as to produce a rubber even in all respects throughout.

In carrying out my invention I employ strips of leather which are cemented or glued together at the ends so as to form a long or continuous strip and a series of narrow strips which are laid nearly together and parallel to one another. Over these narrow strips and at right angles thereto the long strip is laid or wound and cemented or glued thereon so that the rubber consists of a series of internal strips surrounded by practically one long strip wound round and round, the joints of the long strip when the rubber is completed not being in line across the rubber so that the latter is practically seamless. The long strip may be laid or wound on the strips so that the edges of the long strip are touching one another or they may be at a short distance apart so that the rubber when completed has grooves, spaces or lines in it in the direction in which it travels and these grooves as well as the grooves between the narrow strips if any are left may if desired be filled or partially filled with yarn, string or like material to render the rubber more pliable by preventing the spaces becoming filled with dirt.

I have illustrated in the accompanying drawings a portion of my improved rubber and also for the sake of rendering my invention clear and enabling it to be carried out

machinery which I have found suitable for producing same.

In the drawings Figure 1 is view of a portion of one form of my improved rubber looking at the working face, parts being removed and broken away to show its construction. Fig. 2 is an edge view of same. Fig. 3 is a side elevation of the machine. Fig. 4 is an end elevation of same, and Fig. 5 is an end view of the drum of same on an enlarged scale.

The construction of the rubber illustrated in Figs. 1 and 2 will be best explained by describing the machinery by which it is made and the process of production.

The machine it will be seen consists of a framework 1 supporting a main cylinder or drum the outer shell 2 of which may be of wood. Upon this drum narrow strips 3 of leather are laid longitudinally and are temporarily fixed thereon by pins or nails 4 such nails or pins being preferably without heads so that the strips 3 can be pulled off when the rubber is completed.

A long strip of leather 5 composed of a series of shorter strips cemented end to end of one another is passed over the roller 6 and between it and a pressing roller 7, thence around the roller 8 at the back of the machine and to the cylinder or drum 2, the end of the strip 5 being secured to the cylinder or drum and above the narrow strips of leather 3. The cylinder or drum is now revolved by turning the handle 9 which through the train of wheels 10, 11, 12, 13, 14, 15, gives the required motion to the shaft 16 of the cylinder or drum and also the screwed shaft 11^a which extends across the machine beneath the cylinder or drum 1. On this shaft 11^a is a screwed block or carriage having a guide eye 17 through which the strip 5 is passed so that as the cylinder revolves the carriage and guide eye travel along the screwed shaft 11^a and the strip 5 is thereby laid evenly and spirally around the cylinder 1 and over the strips 3 at about right angles thereto. Before laying the strip 5 over the strips 3 the latter are covered with cement or glue so that the strips 3 and 5 are cemented together.

When the cement or glue has set, the drum or cylinder 1 is removed from the machine and collapsed or rendered of slightly less diameter

by turning the screws 18 on the ends of same as shown in Fig. 5 such screws causing the parts 2^a of the drum to approach each other slightly so that the combined strips 3 and 5 forming the complete rubber can be drawn off the end of the drum or cylinder 1 after which the outer edges of the endless rubber are trimmed or cut straight and it is ready for use. The long strip 5 forms the working face of the rubber such rubber traveling when in use in the direction of the arrow Fig. 1—that is, in the direction of the lines of same.

When yarn or string as 3^a, 5^a, Figs. 1 and 2 is laid between the strips 3, 5, the yarn or string 5^a is passed through the eye 17 of the carriage together with the strip 5, the yarn or string 3^a being previously laid on the cylinder between the strips 3 and slightly cemented if required to cause it to adhere to them.

By the strip 5 passing under the pressure roller 7 (which latter may be weighted by a spring or otherwise) the necessary tension can be put upon the strip as it passes through the machine.

The strip instead of being continuously wound round and round the drum may be put on in separate strips or rings, each one extending once round the drum.

It will be evident that my improved rubber may be prepared by machines varying in construction from that above described.

What I claim is—

1. A condensing roll for carding engines provided with a rubber or covering consisting of a plurality of longitudinal strips of leather or like material laid parallel with each other and with the axis of the condensing roll, and a slight distance apart, and a yarn or string interposed between adjacent strips; and a single continuous strip composed of short strips also of leather or like material cemented together at their ends, wound spirally on and cemented to said longitudinal strips, with a space between the coils of the said continuous strip; and a yarn or string laid in the said space alongside of said continuous strip, substantially as and for the purposes described.

2. A rubber for carding engine condensers consisting of two belts, each belt composed of a series of narrow strips parallel to one another and a working face composed of a number of strips made up from a long or continuous strip laid on and cemented at approximately right-angles to the narrow strips, substantially as described.

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

ARTHUR HARDWICK.

Witnesses:

J. BRIERLEY HOWARD,
GERVASE APPELYARD.