F. P. PENDLETON.

Toothed Cylinder for Working Cotton, Wool, &c.

No. 210,222. Patented Nov. 26, 1878.

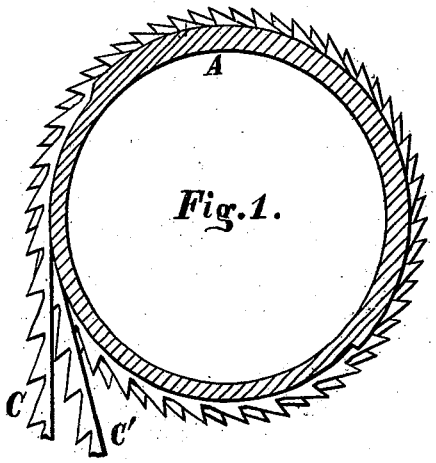

Fig. 1.

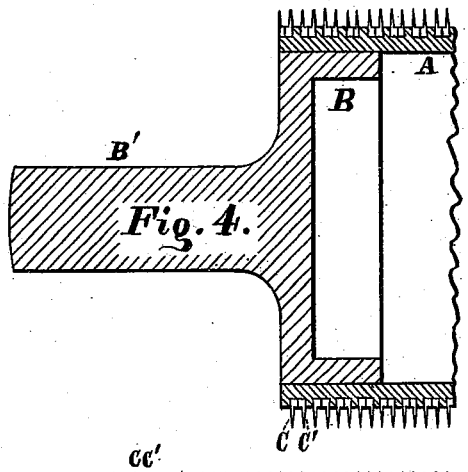

Fig. 4.

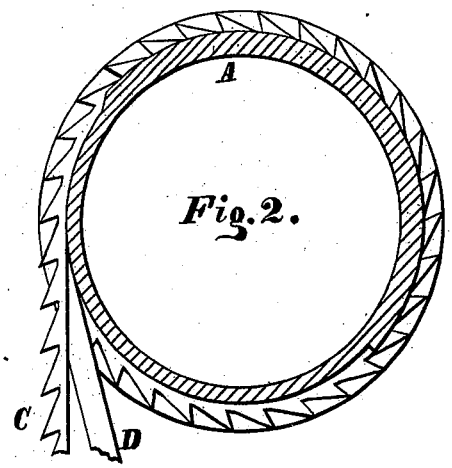

Fig. 2.

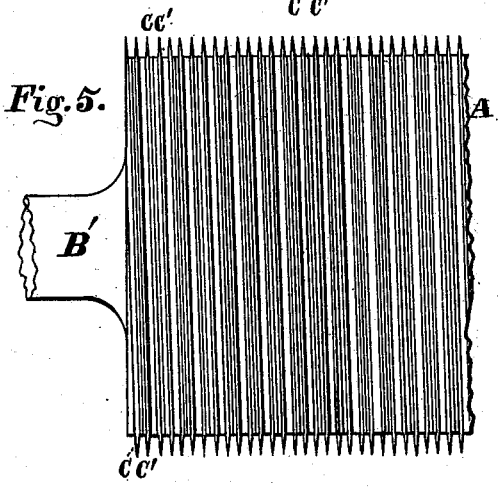

Fig. 5.

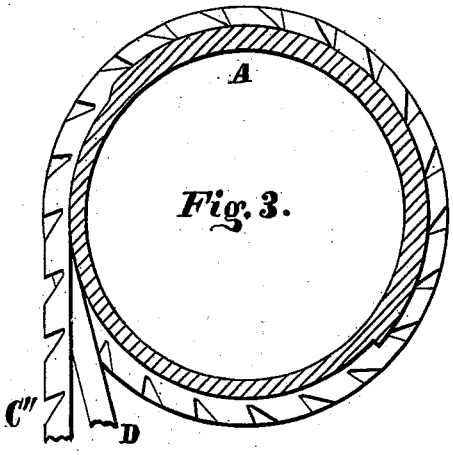

Fig. 3.

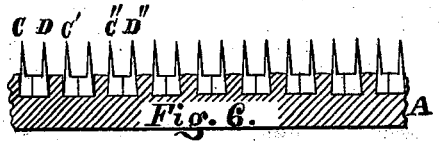

Fig. 6.

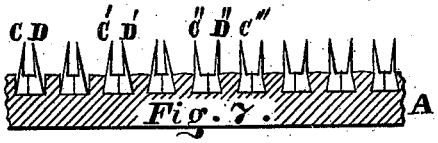

Fig. 7.

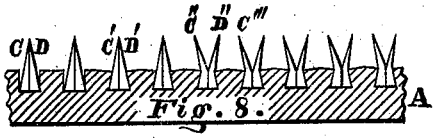

Fig. 8.

WITNESSES:

J. Henry Knowles.

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UNITED STATES PATENT OFFICE.

FRANK P. PENDLETON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TOOTHED CYLINDERS FOR WORKING COTTON, WOOL, &c.

Specification forming part of Letters Patent No. **210,222**, dated November 26, 1878; application filed September 19, 1878.

To all whom it may concern:

Be it known that I, FRANK P. PENDLETON, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Toothed Cylinders for Working Cotton, Wool, and other Fibrous Materials; 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 pertains to make and use it, reference being had to the accompanying drawing, which forms part of this specification, in which—

Figures 1, 2, and 3 are vertical cross-sections taken through the body of my improved cylinder. Fig. 4 is a longitudinal section of a portion thereof. Fig. 5 is a top or side view; and Figs. 6, 7, and 8 are details, to be hereinafter described.

In all the figures like letters of reference indicate like parts.

My invention relates to that class of toothed cylinders where a toothed or serrated wire is wound and secured in a groove cut spirally in the outside surface and from end to end of the cylinder.

Heretofore all such cylinders have been constructed by winding one wire only in one groove on the cylinder. In cylinders of this class the wire is secured in the groove by calking or jamming down tightly against the wire in the groove part of the metal left standing in a ridge between the convolutions of the grooves around the surface of the cylinder.

In cylinders so constructed it has been found impossible to produce a cylinder of more than a limited number of threads per inch, measured in the direction of the length of the cylinder, for the reason that in a fine cylinder the said ridges become so thin that the metal crumbles away under the tool in the process of calking.

For cheapness of construction and other considerations, it is customary to make the body of such a cylinder of cast-iron. With the best cast-iron the limit of fineness has been sixteen threads per inch.

For some uses in working fine fibers it has long been desired to produce a fine cylinder having more teeth or picking-points in a given area of surface.

Now, my improvement aims to supply this want; and consists in winding two wires in one groove, cut as described, whereby I am able to make a very fine cylinder without reducing the thickness of the ridges between the grooves to an extent to cause them to crumble in calking. I have produced in this manner a cylinder of twenty-four wires per inch, and, if necessary, can produce one of thirty-two wires per inch.

A cylinder containing my improvements may be constructed of an outer shell or casing, A, into which may be fitted a head, B, Fig. 4, and the head B may be elongated into bearings or journals B′, or the journals may be separate from and secured into the head B; or any other arrangement may be used, since my improvement does not relate to the construction of the frame-work of the cylinder.

A groove is cut spirally in the outside surface and from end to end of the cylinder, and into this groove are wound and secured two distinct wires. The wires may be of the same or varied character, or have teeth of the same or varied degrees of fineness; but each separate wire must be of the same character and have teeth of the same degree of fineness throughout its entire length. In Fig. 1 are shown two toothed wires, each like the other. When two like wires are thus used the points of the teeth of one wire should be so placed as to intersect the spaces left between the points of the teeth of the other wire, as is the case with wires C and C′ in Fig. 1.

Fig. 2 shows a toothed wire, C, and a blank wire, D, wound in the same groove.

Fig. 3 shows a toothed wire, C″, of a different character than C in Fig. 2, and a blank wire, D.

Although I have shown but two forms of toothed wire, C and C″, yet I may use wires having teeth of other desired shape or fineness.

Figs. 6, 7, and 8 are longitudinal sections through a portion of the shell A, made on a magnified scale, so as to show the manner in which the wire is inserted in the groove.

In Fig. 6 are shown wires C D, whose cross-sections are alike, but which are reversed in winding the wire in the groove, so that the

ribs on the wires shall come together in the center of the groove. The outlines of the wires, starting from their points, slope at the same angle on either side. C D show the wires set in a groove before calking, and C″ D″ after calking. In this case the spaces between the wires are all alike. Thus the space C to D is alike and equal to the space D to C′.

When the wires are calked their sloping sides form a dovetail in the metal and hold them fast.

In Fig. 7 are shown wires similar to those shown in Fig. 6, but constructed with a view to give a sharper angle to the dovetail. C D show the wires in a groove before, and C′ D′ after, calking. After the wires are secured, as at C′ D′, a tool is forced between the wires and the wires bent or forced outward, so as to bring their points at equal distances one from the other, as at C″ D″. In this case the space C″ to D″ between the wires is like C″ to D″ in Fig. 6; but the space D″ to C‴ has its sides perpendicular with the face of the cylinder.

Fig. 8 shows wires of triangular cross-section. C D show the wires wound in a groove before, and C′ D′ after, calking. After securing the wire a tool is forced between the wires, as described in Fig. 7, and the points of the teeth forced outward, as at C″ D″. In this case the space between C″ and D″ is an equilateral triangle, having the point downward, and the space D″ to C‴ is the frustum of such triangle, having the base down.

What I claim as new, and desire to secure by Letters Patent, is—

1. A cylinder or roll for working fibrous materials having a spiral groove cut from end to end in its outside surface, in combination with two wires wound and secured in the groove, for the purpose described.

2. The combination of a toothed and a blank wire, both wound and secured in one groove cut spirally from end to end in the outside surface of a cylinder, as described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of September, 1878.

FRANK P. PENDLETON.

Witnesses:

C. B. WILKINSON,

J. HENRY KNOWLES.