

F. I. DANA.
PRESSURE ROLLER.
APPLICATION FILED MAY 26, 1900.

NO MODEL.

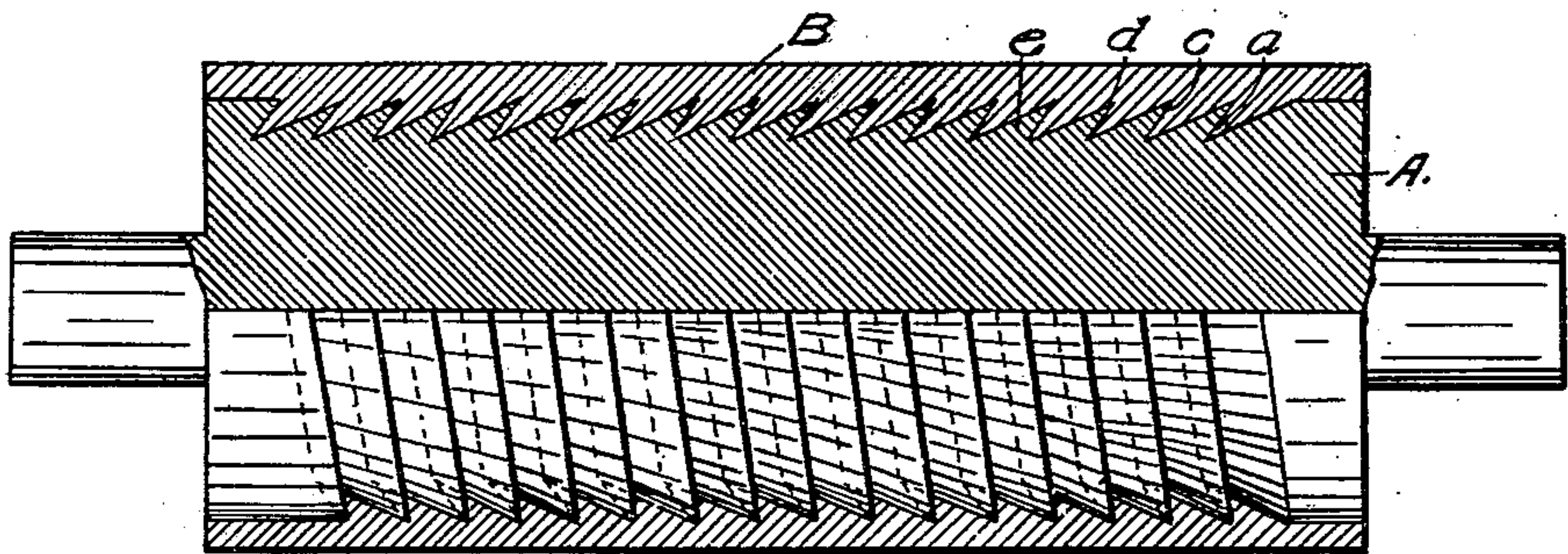


FIG. 1.

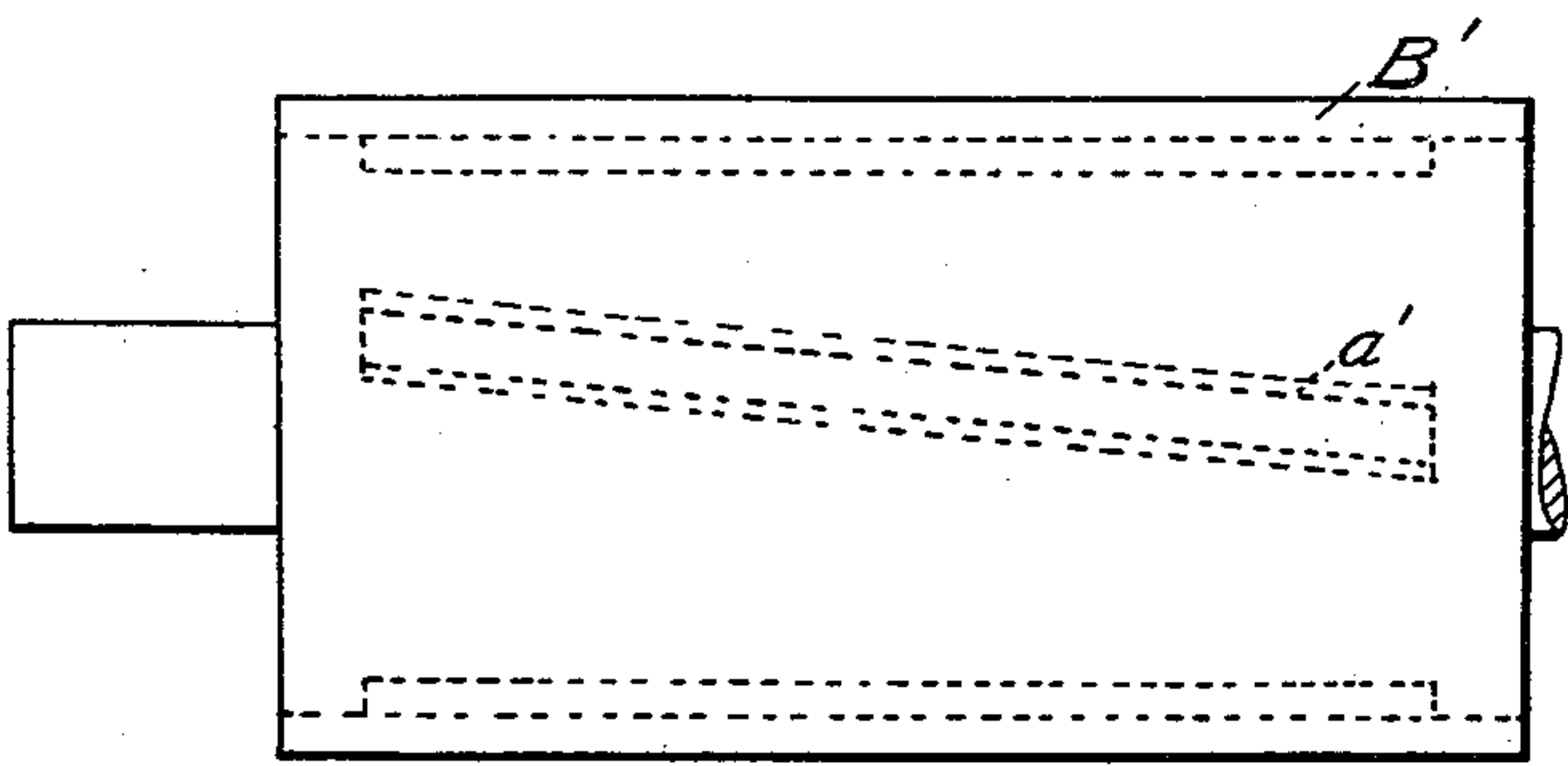


FIG. 2.

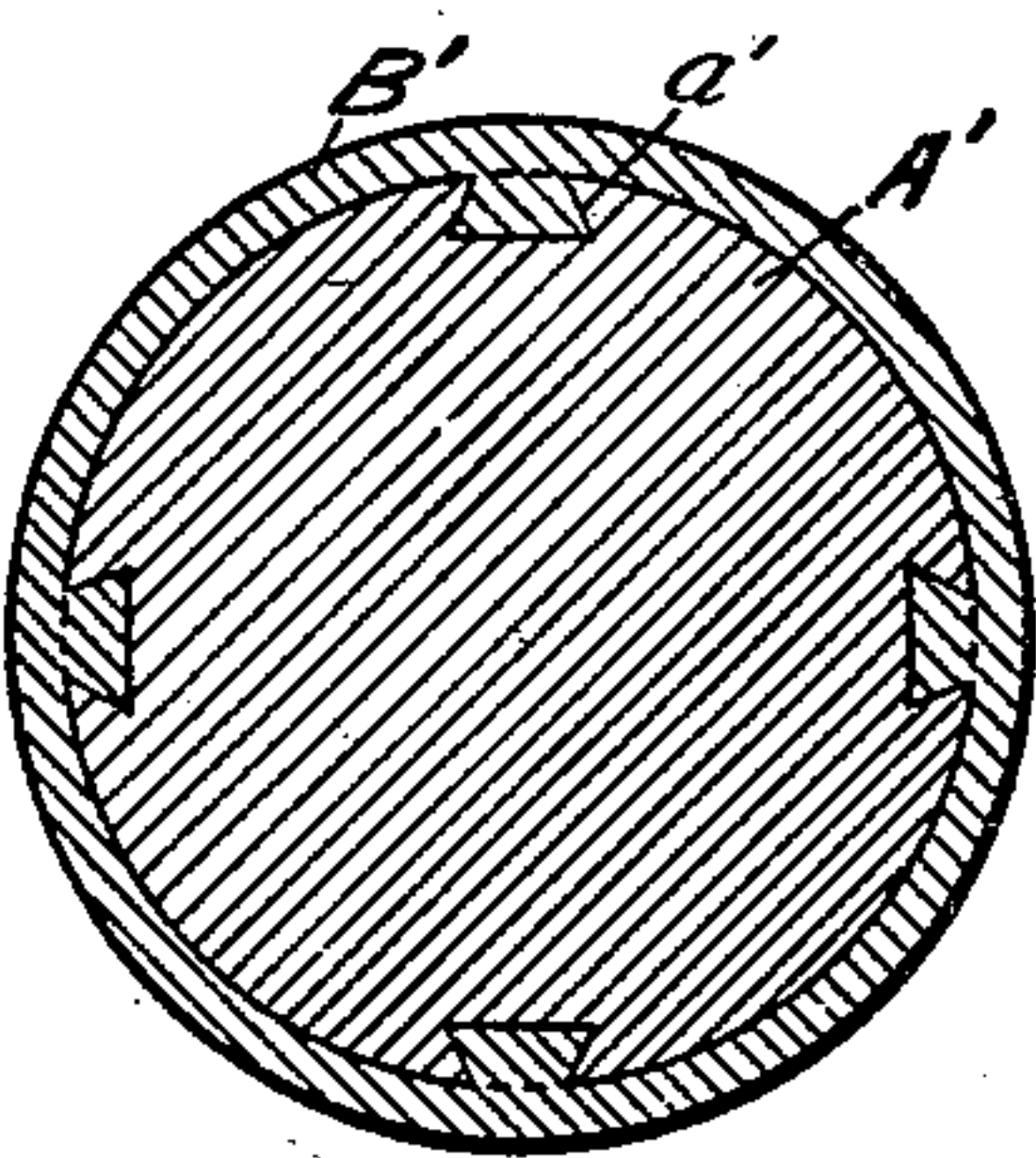


FIG. 3.

WITNESSES,

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FREDERICK I. DANA, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO THE TEXTILE FINISHING MACHINERY
COMPANY, A CORPORATION OF RHODE ISLAND.

PRESSURE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 733,630, dated July 14, 1903.

Application filed May 26, 1900. Serial No. 18,063. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK I. DANA, of the city and county of Providence and State of Rhode Island, have invented certain
5 new and useful Improvements in Pressure-Rollers and Methods of Making the Same; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same,
10 to be a full, clear, and exact description thereof.

The invention relates to pressure-rollers, and is more especially intended for use in connection with rollers used in cloth-printing
15 machines and various cloth-finishing machines—such as mangles, calenders, &c.—to apply a heavy pressure to the material being treated. Such rolls have usually been provided with a copper surface supported on an
20 iron core, and the most serious objection to this class of rollers has been the stretching and lifting of the copper away from the iron core when the surface of the roller was subjected to heavy pressure. The present in-
25 vention is intended to overcome this objection and to provide a roller having a core and a surrounding sleeve of copper or other desired metal firmly united to the core, so that it will not be separated from the core or distorted by heavy pressure upon the surface of
30 the roller. This roller embodies a core having grooves on its periphery and a surrounding sleeve of electrodeposited metal which is firmly united with the core not only by the
35 adhesion of the deposited metal, but also by the interlocking parts of the core and the deposited metal. In producing such a roller for use in textile machinery an iron cylinder is first formed which is somewhat smaller in
40 diameter than the finished roller, which iron cylinder is provided with trunnions for supporting the roller and forms the core upon which the copper facing is carried. One or more undercut grooves are then formed in
45 the periphery of the iron core. These grooves may be formed in any desired manner to accomplish the desired result, but are preferably formed by cutting in the surface of the core a spiral groove in the nature of a screw-

thread, extending nearly from end to end of
the core and having one side of the thread
undercut, so that the top of the thread over-
hangs the bottom thereof. After the grooves
are formed the copper is deposited upon the
periphery of the core by electrolysis, the
55 electrodeposition being continued until the layer of copper is the desired thickness. The copper fills the grooves, and is thus firmly
united with the core and is prevented from
60 lifting away from or separating from the core by the overhanging side of the groove or grooves.

In Figure 1 of the drawings is shown a roller embodying the invention in its preferred
65 form, one-half of the core being shown in section and one-half in elevation. Fig. 2 shows an elevation of a modified arrangement of grooves, and Fig. 3 is a sectional view of the roller shown in Fig. 2.

Referring to Fig. 1, the core of the roller is
70 indicated at A, said core being provided with trunnions for supporting the roller. The core A is provided on its periphery with an undercut groove *a*, extending spirally nearly the
75 entire length of the core. This groove is substantially like a screw-thread and has one side *c* of the thread undercut, so that the top *d* of the thread overhangs the bottom *e*. The electrodeposited copper B fills the groove *a* and
80 is prevented from moving outward away from the core by the overhanging sides *c* of the groove *a*. The copper sleeve is also prevented by the interlocking parts of the core and sleeve
85 from moving either longitudinally or circumferentially on the core, and thus the copper sleeve is firmly and securely united and anchored to the core, so that it will not stretch
and become detached from the core when sub-
jected to heavy pressure.

In Fig. 2 the core A' is provided with a se-
90 ries of undercut grooves *a'*, which extend spirally from one end of the roll to the other. The electrodeposited copper B' fills these grooves and this firmly unites or anchors the
copper sleeve to the core. To hasten the de-
95 positing of the copper about the core, the grooves may be filled or partially filled with copper prior to the electrodeposition of the

copper. In this case the electrodeposited copper will unite with the copper placed in the grooves and become integral therewith.

What I claim as my invention, and desire
5 to secure by Letters Patent, is—

1. A roll consisting of a core having a spiral groove in its periphery in the form of a screw-thread, and a surrounding sleeve of electrodeposited metal.

10 2. A roll consisting of a core having a spiral

groove in its periphery in the form of a screw-thread, and having one side of the thread undercut so that the top of the thread overhangs the bottom thereof, and a surrounding sleeve of electrodeposited metal.

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Witnesses:

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