

P. E. PRESCHLIN.
 METHOD OF GIVING PRINTING ROLLS DEPRIVED OF THEIR ETCHING OR ENGRAVING
 THEIR ORIGINAL DIAMETER.
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1,005,305.

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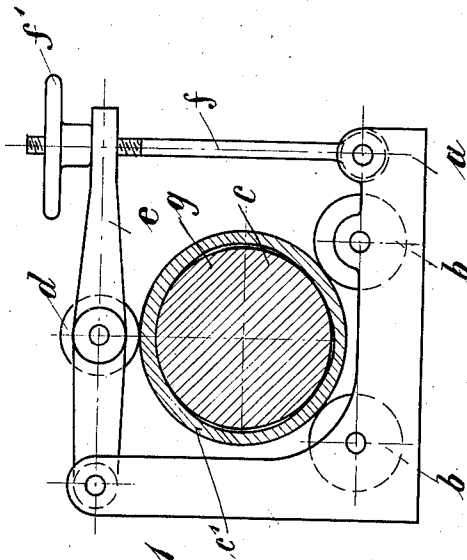


Fig. 1.

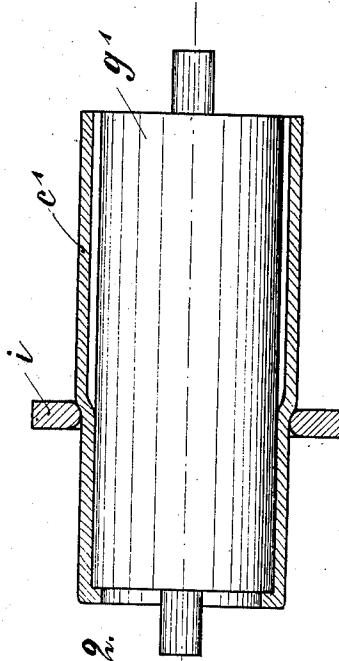


Fig. 2.

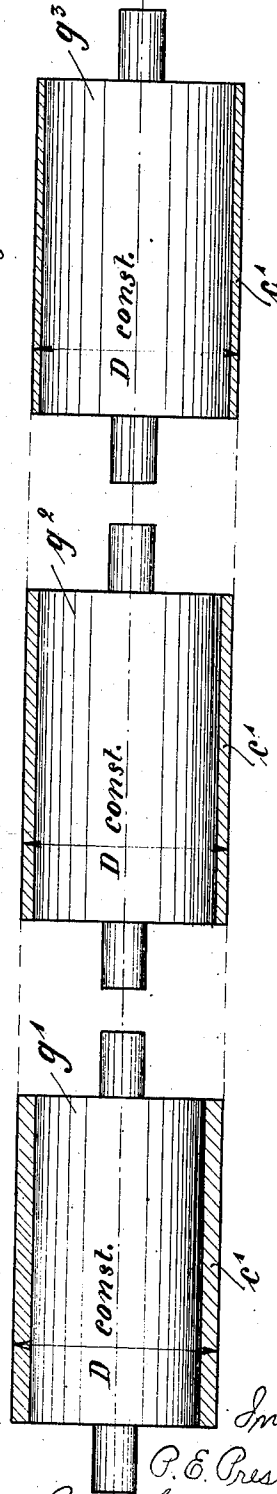


Fig. 3.

Fig. 4.

Fig. 5.

Witnesses
 M. Sommers
 May Ellis.

Inventor
 P. E. Preschlin
 By *Henry O. H. Att.*

UNITED STATES PATENT OFFICE.

PAUL ERNST PRESCHLIN, OF SCHLADERN-ON-THE-SIEG, GERMANY.

METHOD OF GIVING PRINTING-ROLLS DEPRIVED OF THEIR ETCHING OR ENGRAVING THEIR ORIGINAL DIAMETER.

1,005,305.

Specification of Letters Patent. Patented Oct. 10, 1911.

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To all whom it may concern:

Be it known that I, PAUL ERNST PRESCHLIN, a subject of the Emperor of Germany, and resident of Schladeren-on-the-Sieg, Germany, have invented a new and useful Method for Giving Printing-Rolls Deprived of Their Etching or Engraving Their Original Diameter, of which the following is a specification.

Heretofore it was usual to employ printing rolls, which had been reduced in diameter by cutting or turning away the engraving or etching, that had to be done to about twice the depth of the incisions or corrosions created by engraving or etching. The rolls thus reduced in diameter could not be used for designs or pictures of the same size, but had to be employed for other printing purposes for instance for designs of smaller size. This drawback is seriously felt when making use of printing rolls for printing fabrics, because it becomes necessary to replace the rolls by new ones even though they have been reduced only a few millimeters, so that a large number of spare rolls had to be kept on stock. The reduction in the size of the roll after each refacing is however of special inconvenience in rotatable printing machines for newspapers, because here it is indispensable to retain the form or the circumference of the printing rolls of a certain size. Heretofore, when it was desired to give the rolls deprived of the skin containing the engraving or etching their original diameter there was only one very expensive way known and that is the enlarging of the roll by electrometallurgy.

These drawbacks are done away with by the present invention in this way, that the roll to be renewed, which generally consists of a mantle of copper having an iron- or steel core is first loosened on its core, preferably after depriving it of its engravings or etchings, by exerting a pressure progressively on the outer surface whereby the diameter of the mantle at the same time is increased. Hereupon the core is taken out and the copper mantle is driven on a new core of a larger size and then drawn together with this new core through a matrix-ring of such diameter as to press the enlarged mantle tight against the core and to bring it at the same time to the desired diameter.

The loosening of the mantle on the old core is carried on preferably by aid of rollers, in a kind of rolling mill.

A rolling mill of this description is illustrated in Figure 1 of the accompanying drawings in end view, the roll operated upon being shown in section. Fig. 2 shows an enlarged mantle half way pressed down on a core by aid of a matrix-ring. Figs. 3, 4 and 5 show a mantle on three different cores of increasing diameter on which it is successively placed after each renewal.

The mill shown in Fig. 1 consists of a frame *a* on which two rollers *b* are journaled. Pivoted to the upper part of the frame *a* are two levers *e* in which a third or pressure roller *d* is journaled. Eye-bolts *f* are pivoted to the lower part of the frame under the outer ends of the levers *e*. These eyebolts are threaded on their upper part and adapted to project through the ends of the levers *e*, which for this purpose are bifurcated or provided with a longitudinal slot not seen in the drawing. A nut or internally threaded hand-wheel *f*¹ is screwed on the threaded portion of each eye-bolt and when screwed down presses against the lever *e*.

When the mantle of a printing roll is to be enlarged and loosened on its core, the roll *c* is placed on rollers *b* and the roller *d* is then pressed down upon it by aid of the levers *d* and the nuts *f*¹, which when properly tightened exert a pressure on the levers *e* to firmly press the roller *d* down on the roll *c*. By rotating the rolls *b*, which can be done by any desired means not shown in the drawing, the roll *c* and also the roller *d* is rotated and the progressing pressure thus acting on the roll *c* serves to loosen the mantle *c*¹ on its core *g* and to enlarge its diameter. When this is done in a sufficient manner, the mantle *c*¹ is drawn off the core *g* and slipped over a new core *g*¹ of a larger diameter and then drawn through a matrix ring *i*, Fig. 2, of such diameter to press down the mantle to the size, which it had, before the engravings or etchings were removed. In thus pressing down the mantle snugly clings to the new core. Printing rolls or mantles can be treated repeatedly in this manner, whereby on every renewal a core *g*¹, *g*², *g*³, Figs. 3, 4, 5 of a correspondingly larger diameter is chosen, while the roll itself constantly is brought back to its original diameter *D*. This method may be repeated so

often as the thickness of the mantle c^1 will allow, which can be made of copper or any other metal suited to be engraved or etched.

If desired the removing of the skin containing the engraving or etching can be carried on after the mantle is pressed on a new core instead of before loosening it on the old one.

I claim:

10 1. The method of restoring the original diameter to a printing roll composed of a core and mantle and deprived of its etching or engraving, which consists in exerting a progressing pressure on the circumference
15 of the roll, thereby enlarging the diameter of the mantle and loosening it from the core, slipping the loose mantle onto a core of larger diameter, and affixing the mantle onto the core by drawing the core and mantle
20 through a matrix ring.

2. The method of enlarging a printing roll composed of a core having a removable mantle, which consists in exerting a progressing pressure on the circumference of the roll,
25 thereby enlarging the diameter of the mantle and loosening it from the core, placing the loosened mantle around a core of larger diameter than the original core, and affixing the mantle onto the larger core.

3. The method of restoring a reduced
30 printing roll, composed of a core having a removable mantle, to its original diameter, which consists in rotating the roller, subjecting the mantle to pressure during the rotation, thereby enlarging the diameter of
35 the mantle and loosening it from the core, inserting a core of larger diameter than the original core into the enlarged mantle, and drawing the mantle and core through a matrix to affix the mantle onto the core. 40

4. The method of restoring etched printing rolls composed of a core and a removable mantle, which consists in removing the etching thereby reducing the diameter of the
45 mantle, rotating the roller between pressure rolls to enlarge the diameter of the mantle thereby loosening the latter from the core, removing said core from the mantle, inserting a core of larger diameter than the removed core into the enlarged mantle, and
50 passing the latter with the enlarged core through a matrix ring the interior diameter of which is the same as the diameter of the original etched roll.

PAUL ERNST PRESCHLIN.

Witnesses:

LOUIS VANDORY,
BESSIE F. DUNLAP.