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A. EGLI

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FORM CYLINDER FOR INTAGLIO PRINTING

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*Fig. 1.*

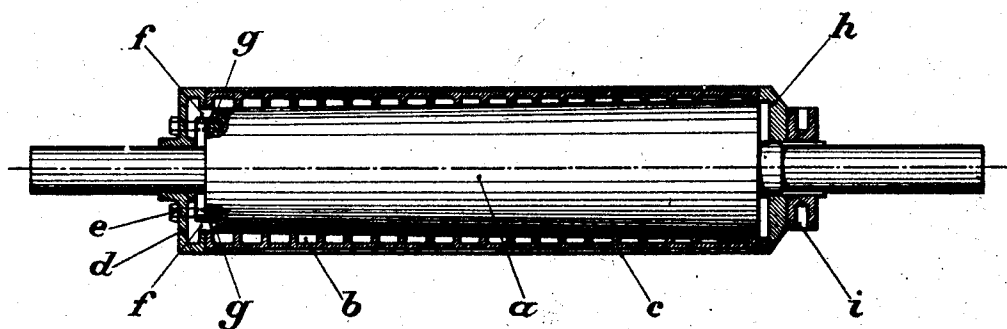
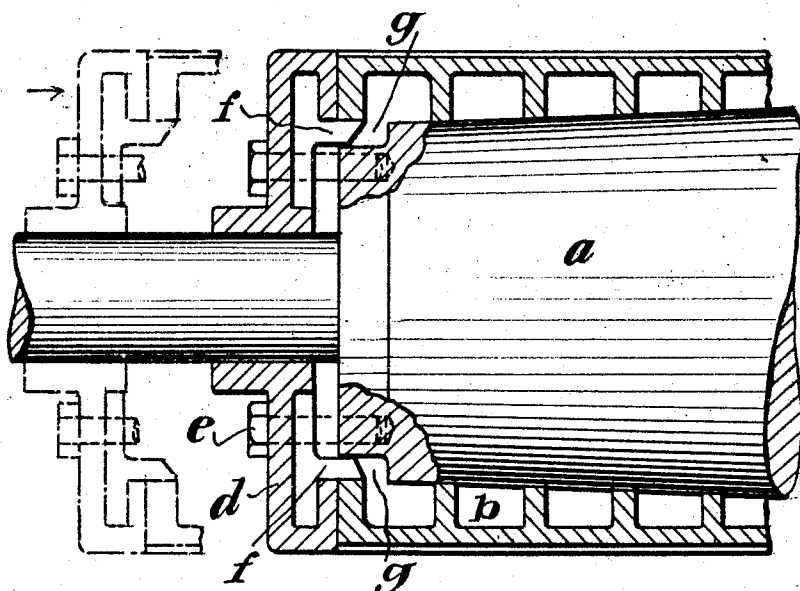


*Fig. 2.*

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## UNITED STATES PATENT OFFICE

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## FORM CYLINDER FOR INTAGLIO PRINTING

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At the beginning of copper intaglio printing copper tubes were employed as form cylinders, the said tubes being pressed on to strong cast iron cylinders provided with steel axles. Today these cast iron cylinders are provided with a galvanized copper covering, which has to be again coppered over in the copper bath when a number of etchings have been taken off. The copper covering and the cast iron cylinder form consequently an inseparable unit. Such form cylinders are used essentially for the printing by roller. For plate printing machines steel tubes having walls of about 5 millimeters are coppered and mounted upon carrying cylinders, formed as expansion cylinders, firmly positioned at one side of the printing machine.

These steel tube cylinders have an advantage over the massive cast cylinders, inasmuch as they are light to handle and may be carried and attached by one man. The cylinders have, however, the drawback that they are seldom exactly round, and that a steel tube cylinder mounted firmly on the expansion cylinder is not always firm throughout its entire surface. It often happens, as a result of this, that such a cylinder moves during the printing, thus incurring great damage.

The present invention consists in the provision of a form cylinder which has the advantages of the light steel tube cylinder, and which at the same time is more stable than the latter, and which lies more accurately upon the carrying cylinder so that it sits absolutely firmly.

The invention is illustrated by way of example in the accompanying drawing, wherein Fig. 1 is a longitudinal section through an assembled cylinder, and Fig. 2 shows an enlarged view of the left-hand end of the cylinder.

On the conical or tapered carrying cylinder *a* is mounted a ribbed shell *b* with copper covering *c*. This ribbed shell *b* has a conical or tapered bore corresponding to the conical carrying cylinder. The use of ribs on the shell *b* permits the bore to be made with a strong taper, as shown in the drawing, so as to facilitate separation from the carrying cylinder, while keeping the weight of such

shell at a minimum. A disc *d* having screws *e* extending therethrough and engaging the cylinder *a* serves to press the shell on to the cylinder. The noses *f* on the disc *d* serve to guide the ribbed shell concentrically on to the carrying cylinder when the shell is applied to the latter. These noses *f* fit into recesses *g* in the carrying cylinder *a*, so that the outermost rib of the ribbed shell does not lose its support. The dot and dash lines at the left of Fig. 2 indicate the position of the outer shell before it is forced onto the carrying cylinder *a*. A disc *h*, which, like the disc *d*, is provided with a ring-shaped projection at its rim extending toward the carrying cylinder, is engaged by a nut *i* to force the ribbed shell from off the carrying cylinder after removal of the disc *d*.

I claim:

1. A form cylinder for intaglio printing comprising, in combination, a conical carrying cylinder and a closed tubular shell surrounding said cylinder and provided on its interior face with ribs spaced longitudinally thereof, said shell having a tapered bore through said ribs, whereby said shell may be force-fitted directly onto said cylinder with the ribs in engagement with the latter.

2. The form cylinder as set forth in claim 1 wherein the ribs are of circular form and extend transversely of the axis of the carrying cylinder.

3. A form cylinder for intaglio printing comprising, in combination, a conical carrying cylinder, a closed tubular shell surrounding said cylinder and provided on its interior face with ribs spaced longitudinally thereof, said shell having a tapered bore through said ribs, whereby said shell may be force-fitted directly onto said cylinder with the ribs in engagement with the latter, and means for forcing said ribbed shell upon and off said carrying cylinder.

4. A form cylinder for intaglio printing comprising, in combination, a conical carrying cylinder, a closed tubular shell surrounding said cylinder and provided on its interior face with ribs spaced longitudinally thereof, said shell having a tapered bore through said ribs, whereby said shell may be force-fitted

directly onto said cylinder with the ribs in engagement with the latter, and means for forcing said ribbed shell upon and off said carrying cylinder, said means comprising discs movably mounted on the shaft of the supporting cylinder and adapted to engage opposite ends of said shell, and threaded elements associated with said discs and with said carrying cylinder and operable to press the discs toward said cylinder.

5. A form cylinder for intaglio printing comprising, in combination, a conical carrying cylinder, a closed tubular shell surrounding said cylinder and provided on its interior face with ribs spaced longitudinally thereof, said shell having a tapered bore through said ribs, whereby said shell may be force-fitted directly onto said cylinder with the ribs in engagement with the latter, and means for forcing said ribbed shell upon and off said carrying cylinder, said means comprising discs movably mounted on the shaft of the supporting cylinder and provided with ring-shaped projections adapted to engage opposite ends of said shell, threaded elements associated with said discs and with said carrying cylinder and operable to press the discs toward said cylinder, and means for guiding said shell parallel to the axis of the cylinder as said shell is forced onto or off the latter.

6. A form cylinder for intaglio printing comprising, in combination, a conical carrying cylinder, a closed tubular shell surrounding said cylinder and provided on its interior face with ribs spaced longitudinally thereof, said shell having a tapered bore through said ribs, whereby said shell may be force-fitted directly onto said cylinder with the ribs in engagement with the latter, and means for forcing said ribbed shell upon and off said carrying cylinder, said means comprising discs movably mounted on the shaft of the supporting cylinder and adapted to engage opposite ends of said shell, threaded elements associated with said discs and with said carrying cylinder and operable to press the discs toward said cylinder, noses projecting from one of said discs toward said cylinder, the outer surfaces of said noses being concentric with the axis of the cylinder and arranged to engage at least one of said ribs to maintain said shell concentric with respect to said cylinder axis.

In testimony whereof I have hereunto set my hand.

ARNOLD EGLI.