H. A. W. WOOD.

METHOD OF REPRODUCING INTAGLIO PRINTING SURFACES.

APPLICATION FILED JUNE 28, 1911. RENEWED JAN. 30, 1915.

Patented Aug. 24, 1915.

1,151,318.

Fig. 1.

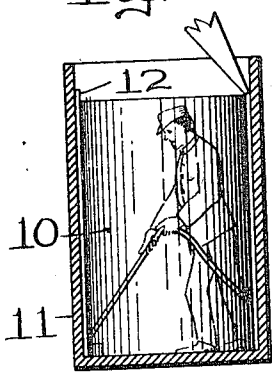


Fig. 2.

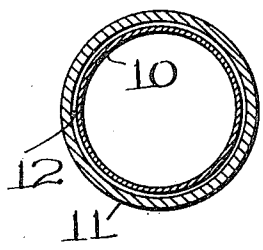


Fig. 3.

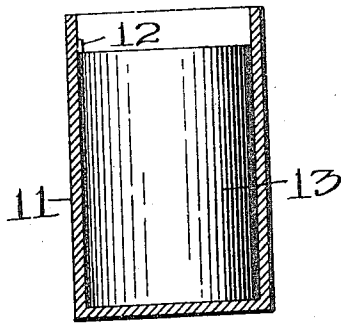


Fig. 4.

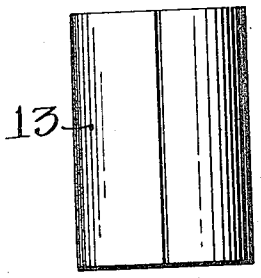


Fig. 5.

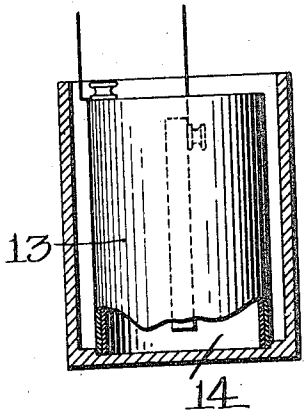


Fig. 6.

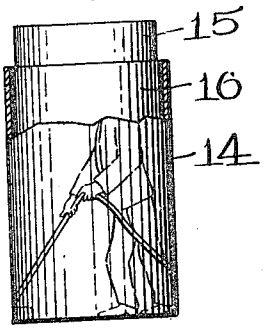


Fig. 7.

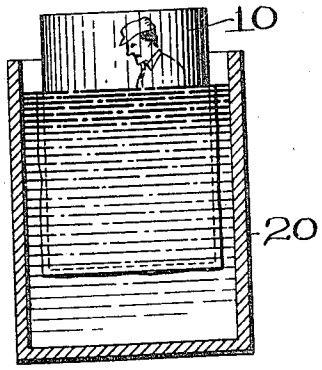


Fig. 8.

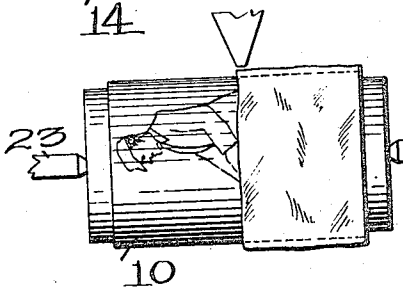
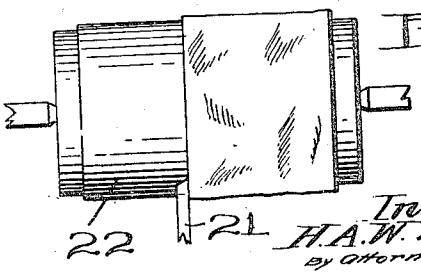


Fig. 9.



Witnesses:

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UNITED STATES PATENT OFFICE.

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METHOD OF REPRODUCING INTAGLIO-PRINTING SURFACES.

1,151,318. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed June 28, 1911, Serial No. 635,734. Renewed January 30, 1915. Serial No. 5,306.

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Method of Reproducing Intaglio-Printing Surfaces, of which the following is a specification.

In my application for patent on method of reproducing intaglio printing surfaces filed on the 21st day of June, 1911, Serial No. 634,529, I have described a method of accurately reproducing intaglio printing surfaces, particularly curved ones, in which a flexible negative is first produced and then detached from the original intaglio surface which is used as a model. In that process the negative is then used for the production of a second positive which is the product of the process. This invention relates to similar subject matter and has substantially the same objects in view, but it involves the production of a specific kind of flexible negative produced by a molding process as will appear hereinafter. The invention also involves other features and advantages as will appear.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a central vertical sectional view showing the first step of the process; Fig. 2 is a horizontal sectional view of the same; Fig. 3 is a view similar to Fig. 1 showing the outer surface of the cast negative 13; Fig. 4 is a side elevation of the negative thus produced; Fig. 5 is a central longitudinal sectional view showing the next step of the process; Fig. 6 is an elevation showing the next step thereof; Fig. 7 is a central vertical sectional view indicating a modified way of securing the first negative; Fig. 8 is an elevation showing another way of securing such a negative; and Fig. 9 is an elevation showing the step of truing the negative produced either by the method shown in Fig. 7 or that shown in Fig. 8.

As was stated in the specification of the above identified application, this invention relates to a process of providing a cheap and practical way of reproducing intaglio printing surfaces in the form of cylinders of copper, nickel or the like so that they can be used for newspaper, and commercial printing.

This invention has for its ultimate object the great increase in the value and in the use of this system of printing by making it suitable for ordinary kinds of printing which are done now by means of stereotype plates and the like. This invention also involves a novel intaglio printing cylinder and negative from which it is made.

The species of the invention illustrated in the first six figures is carried out in the following way: An etched cylinder 10 is shown made in the usual way and suitable for use directly in the process of intaglio printing and provided of course with an intaglio design. This is lightly oiled or dusted with black lead and then is stood on end in a tubular mold 11 which is closed at the bottom. This mold is made of such size that there is a uniform small space between it and the surface of the cylinder. I prefer to place a thin strip 12 of metal or wood vertically along one side of the cylinder 10 and in contact with the wall of the mold so as to close the mold entirely at that point. Preferably this strip is placed along the margin of the design. Now into the space between the cylinder and mold molten wax, type metal, or other fluid molding material is poured. This is allowed to become hard in the usual way. Then the cylinder 10 is removed from the mold. As the inside of the mold is perfectly cylindrical and as the cylinder is provided with indentations in the design, the cast coating 13 on the cylinder will be removed from the mold with the cylinder.

On account of the use of the strip 12 it will be found that the coating 13 is slit or open at 13^a from end to end along the margin of the design. If the strip 12 has not been used the cylinder can be slit with a knife or otherwise prepared for removal, as indicated in the above identified application. In either event it is flexed sufficiently to free it from the engraved surface of the cylinder 10 and then it can be removed. The inner surface of course of this cast body 13 is a complete negative representation of the surface of the printing cylinder 10.

Now to perform the next step the negative 13 is restored to a true cylindrical form. At its inner surface, if need be, it is coated with black lead or other similar substance. Then it is placed in an electro plating bath as indicated in Fig. 5 and a metallic shell 14 is deposited within it. This may be of cop-

per, nickel, or other metal suitable for intaglio printing. Upon removal of the two shells 13 and 14 from the electro-plating bath the shell 13 is removed from the cylindrical inner shell 14 by flexing the former in the same way as it was removed from the cylinder 10. It will be found of course that the cylinder 14 constitutes a duplication of the cylinder 10, except that it is provided with a seam in the place occupied by the slit in the negative 13. This seam is burnished off and the shell is then placed on end and a mandrel or core 15 introduced into it of such size as to leave a space between the core and the back of the shell 14. Backing metal 16 is poured in to reinforce the shell 14. It will be understood of course that this backing operation can be performed either before or after the shell 13 is removed. In either event a cylinder is provided to all intents and purposes like the cylinder 10 and capable of being used as a substitute therefor. The negative 13 also can be used over and over again. It will be observed that by the use of the strip 12 no undue distortion of the negative is necessary in removing it from the cylinders, and there is no danger of marring or scratching them by a cutting instrument.

Another way of carrying out this method is to force a plastic molding material like clay for example, between the walls of the mold 11 and the cylinder 10. This is treated in the same way as the negative 13 herein described.

Another species of the invention is indicated in Fig. 7, in which a receptacle 20 is provided for molten wax. The cylinder 10 is immersed in this wax and on account of its surface being cooler than the temperature of the molten wax the latter will collect upon it and form a coating which adheres to its surface. This coating is irregular on the outer side, but may be turned down in a lathe, as for example, by means of a cutting tool 21, as indicated in Fig. 9. When the outer surface is a true cylinder the coating 22 may be slit along the margin and removed as before. This coating of course has a true negative impression on the inside which can be used like the negative 13.

Another way of forming such a wax coating is indicated in Fig. 8 in which the cylinder 10 is mounted on centers 23 and rotated slowly while molten wax is poured over it. In both of these cases the cylinder 10 should be lightly oiled or dusted with black lead before the wax is applied so that the wax negative may be stripped easily therefrom.

Although I have illustrated and described several ways in which the invention can be carried out, and in each case indicated a definite order of steps, I am aware that I have not exhausted the possibilities in this respect, and that the invention is capable of being carried out in many other ways without departing from the scope thereof as expressed in the claims. Therefore I do not wish to be limited to any of the precise orders of steps herein described, but

What I do claim is:—

A method of reproducing intaglio printing cylinders which consists in placing such a cylinder in a cylindrical mold having an inside diameter a little larger than the outside diameter of the cylinder, casting a molding material in liquid form between the cylinder and mold, whereby when said material hardens it will form a thin coating on the outside of said cylinder constituting a negative of the design, removing the cylinder and negative from the mold, separating the edges of the negative along a margin, flexing the negative from the cylinder, forming an interior coating on the negative by electro-deposition to constitute the surface of a new printing cylinder, and casting a backing inside said interior coating.

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

HENRY A. WISE WOOD.

Witnesses:
BLODWEN W. JONES,
MABEL M. GLASSEY.