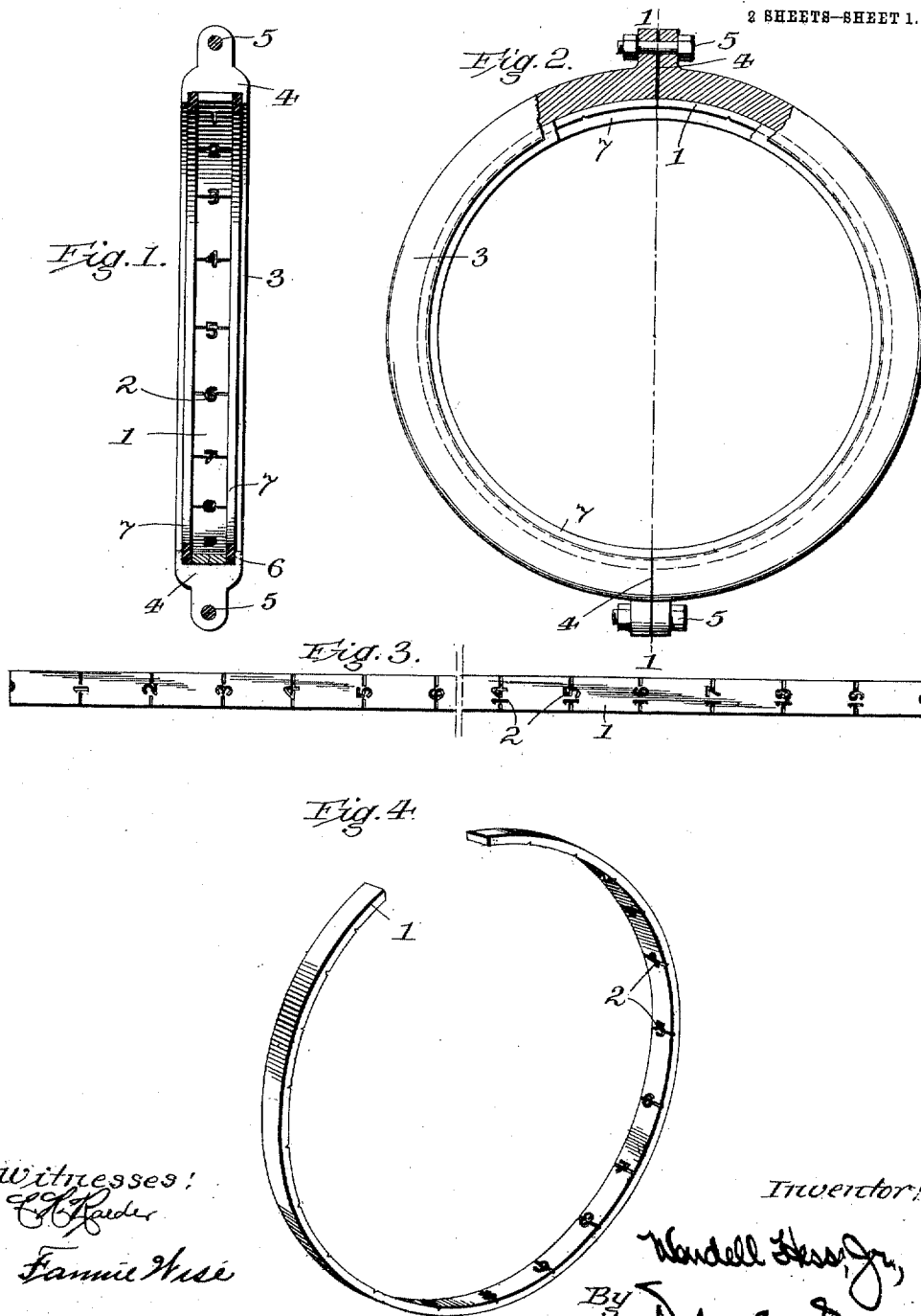


W. HESS, JR.
METHOD OF FORMING TYPE RINGS AND OTHER ARTICLES.
APPLICATION FILED MAR. 15, 1910.

985,032.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.



Witnesses:

E. J. Barber

Fannie Wise

Inventor:

Wendell Hess, Jr.,

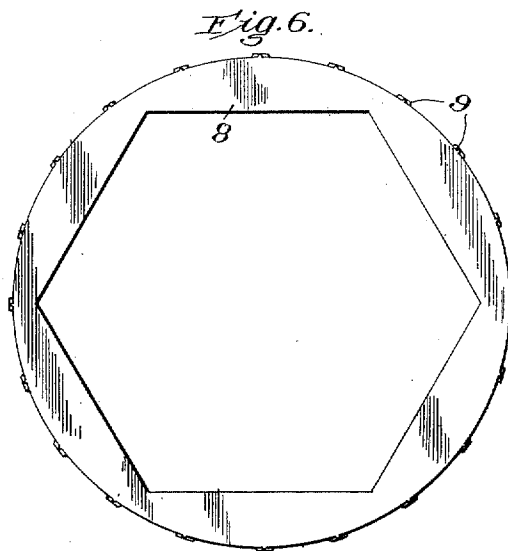
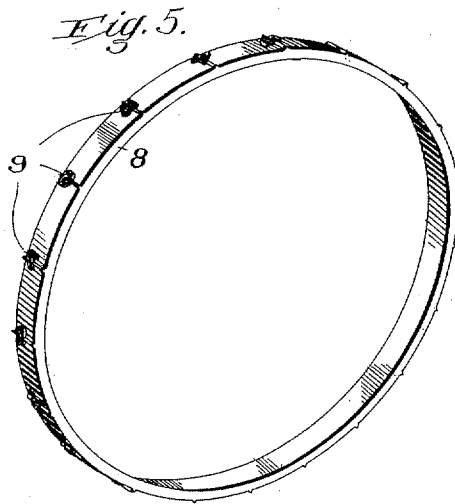
By *Dodge and Sons,*
Attorneys.

W. HESS, JR.
METHOD OF FORMING TYPE RINGS AND OTHER ARTICLES.
APPLICATION FILED MAR. 15, 1910.

985,032.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 2.



Witnesses:

Chas. Radtke

Fannie Hill

Inventor:

Wendell Hess, Jr.
By *Dodge and Sons,*
Attorneys.

UNITED STATES PATENT OFFICE.

WENDELL HESS, JR., OF TROY, NEW YORK, ASSIGNOR TO W. & L. E. GURLEY, OF TROY, NEW YORK, A CORPORATION OF NEW YORK.

METHOD OF FORMING TYPE-RINGS AND OTHER ARTICLES.

985,032.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed March 15, 1910. Serial No. 549,438.

To all whom it may concern:

Be it known that I, WENDELL HESS, JR., a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Methods of Forming Type-Rings and other Articles, of which the following is a specification.

This invention relates to an improved method of forming type rings or similar articles, such type rings being commonly used in various printing and recording mechanisms.

The essential principle of the invention is the formation of a mold in the flat, then bending the mold to the required contour, which commonly is circular, and while holding it in such position by a special form of clamp, depositing metal electrolytically upon the mold. The final steps are the machining of the deposited metal and the subsequent removal of the clamp ring and stripping of the mold. The mold proper is capable of use in other connections and though described here for the sake of clearness, forms the subject matter of and is claimed in my co-pending application Serial Number 602,251, filed January 12, 1911.

An accurate description of the process, with reference to a simple arrangement of mold and clamp, will be given in connection with the accompanying figures, wherein:—

Figure 1 is a section of the clamp and mold assembled, the plane of section being on the line 1—1 of Fig. 2; Fig. 2 is a side view, partly sectional, of the devices shown in Fig. 1, after electro-deposition of metal; Fig. 3 is a view of the mold as formed in the flat; Fig. 4, is a perspective of the mold bent practically to form; Fig. 5 is a perspective view of the completed product showing the inner surface machined to fit a circular carrier; and Fig. 6 is an elevation of a completed product showing the inner surface machined to fit a hexagonal carrier.

Referring by numeral to the devices illustrated in the drawings 1, represents the mold. This is formed of a strip of metal into which the characters 2 desired to appear in relief upon the type ring are impressed. Obviously if the characters were desired to appear in intaglio upon the type ring they would be formed in relief upon the mold. The most accurate results are secured by engraving characters in the strip by a machine,

as this secures characters of uniform depth and sharpness. It is, however, possible where the characters upon the finished type ring are to appear in relief, to form corresponding impressions in the mold strip by the use of ordinary steel dies, but this method, while convenient for the manufacture of special or unusual molds, is less desirable because of the probable uneven depth of the impressions and the distortion of the mold strip by the action of the dies. After the characters have been formed in the mold strip, it is bent to the form shown in Fig. 4, the ends being slightly separated, so that the mold will tend to spring away from the type ring when released. The form, however, is such that when the ends are sprung together, the mold assumes the desired shape. After bending, the mold is placed in the clamp 3 which is preferably of metal to secure the desired strength, although vulcanite or similar insulating material may be successfully used. The clamp ring is divided into two parts as at 4, and is drawn tightly together around the mold strip by bolts or similar fastenings 5, so as to hold the mold in a true circle or whatever form is desired. The inner face of the clamp ring has an annular groove 6, the groove 6 being somewhat wider than the mold strip 1, to receive the flexible rubber washers 7, at each side of the mold, which, projecting inward past the edges of the mold, serve to define the edges of the metal coating to be deposited on the inner face of the mold. Obviously these washers may be of any suitable insulating material but should be flexible enough to be removable without releasing the clamp. After mounting the mold and washers as above, the clamp if of metal should be coated with paraffin or similar non-conducting material to prevent the plating of the clamp, and the inner face of the mold may be thinly coated with any one of the well known compounds to facilitate the stripping of the metal to be deposited thereon. A method of coating the surface for this purpose, which has proved highly successful is first to oxidize the face of the mold after which the mold strip is warmed, and coated with wax, and while still warm is wiped as dry as possible with a cloth. The assembled mold is now placed in an electroplating bath, the mold being connected as the cathode and rotated about an anode placed at the center,

so as to secure an even deposition of metal upon the mold. The metal thus deposited will conform to the mold, and will be limited at its sides by the washers 7. After the deposited metal has reached a desirable thickness, usually about one eighth of an inch, the mold is removed from the bath, and the washers 7 are withdrawn, without releasing the clamp. The clamp, with the contained mold and type ring is then placed in a lathe and the type ring turned out to size as shown in Fig. 5, or the ring is machined to some other internal contour as indicated in Fig. 6. The clamp ring and mold can be so designed that the face of the type ring is concentric with, or bears some known relation to the outer contour of the clamp so that accurate machining of the type ring is possible. The type ring is thus entirely completed, prior to removal from the mold. All that remains to be done is to release the clamp ring and strip the mold from the type ring. The resulting product is as illustrated in Figs. 5 and 6, the characters 9 of the type ring 8, being of course the reverse of the characters 2 of the mold strip 1.

Although I describe my invention as applied to the manufacture of type rings, it is obvious that it may be adapted to the manufacture of many similar articles and that the outward contour of the finished product is not necessarily circular, but may be of any form which will permit the formation and stripping of a mold in the manner set forth. The following claims are therefore not to be interpreted as limited to the particular function and embodiment set forth.

Having thus described the invention, what I claim is:—

1. The method of forming articles bearing characters upon their surfaces, which consists in, forming a mold for the desired characters upon a strip of metal; bending said strip to the proper contour; clamping it in such position; depositing metal electrolyti-

cally upon the face of the mold; and then removing the clamp and mold.

2. The method of forming articles bearing characters upon their surfaces, which consists in, forming a mold for the desired characters upon a strip of metal; bending said strip to the proper contour; clamping it in such position; depositing metal electrolytically upon the face of the mold; shaping the metal thus deposited to desired contour and size; and then removing the clamp and mold.

3. The method of forming articles bearing characters upon their faces which consists in, forming a mold for the desired characters upon a strip of metal; bending said strip to the desired contour with the mold side inward; clamping it in such position; depositing metal electrolytically upon the face of the mold; and then removing the clamp and mold.

4. The method of forming articles bearing characters upon their faces which consists in, forming a mold for the desired characters upon a strip of metal; bending said strip to the desired contour with the mold side inward; clamping it in such position; depositing metal electrolytically upon the face of the mold; shaping the metal thus deposited to the desired contour and size; and then removing the clamp and mold.

5. The method of forming articles bearing characters upon their surfaces which consists in forming a mold for the desired characters upon a strip of metal; bending said strip to the proper contour; depositing metal electrolytically upon the mold face; and then removing the mold.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WENDELL HESS, JR.

Witnesses:

CALESTRA I. HALLENBECK,
G. S. HOPKINS.