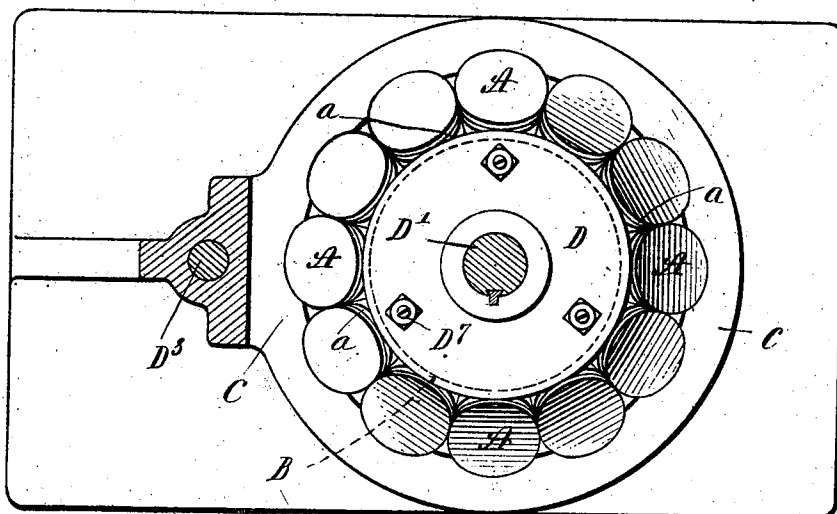


MACHINE FOR FORMING GROOVES AND THE LIKE UPON THE SIDES OF ROLLERS, &c.

1,023,381.

Fig. 2.



Witnesses:
 Francis Ober
 L. J. Morrison

By his Attorneys
 Rogers, Kennedy & Campbell By R. F. Rogers

UNITED STATES PATENT OFFICE.

HENRY HESS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE HESS-BRIGHT MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

MACHINE FOR FORMING GROOVES AND THE LIKE UPON THE SIDES OF ROLLERS. &c.

1,023,381.

Specification of Letters Patent.

Patented Apr. 16, 1912.

Application filed October 14, 1910. Serial No. 586,991.

To all whom it may concern:

Be it known that I, HENRY HESS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Forming Grooves and the Like Upon the Sides of Rollers, &c., of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to machines for forming grooves and the like upon the sides of rollers and other objects, and is more particularly disclosed herein in connection with the formation of conically shaped or angularly located grooves upon the rollers used in journal bearings, such grooves being intended to form abutting surfaces, whereby the end thrust on the rollers is resisted or transmitted and also the rollers are held in normal position in relation to the other parts of the bearing. It will be obvious, however, that the machine is capable of broader application and in fact may be employed to produce grooves of various forms and location upon any desired object.

Referring to the form of rollers previously mentioned, it will be seen that in order to obtain the greatest accuracy and uniformity, and the least resistance and wear, it is essential that the conically shaped grooves shall be absolutely true and similar and that the position of the grooves, that is to say, their distance from the ends of the rollers, shall be exactly the same in all. These results I secure by forming the grooves by the machine now to be described.

In the accompanying drawing I have shown my invention in preferred form, and as particularly applied to the production of conically shaped or angularly located grooves upon the surfaces of rollers, conically shaped as to their general outline, but obviously such arrangement is simply by way of example and for the purpose of illustrating one form of my invention, and many changes and variations may be made therein without departing from its spirit. Generally speaking, I desire it to be expressly understood that I do not limit myself to any specific form or embodiment ex-

cept in so far as such limitations are specified in the claims.

Referring to the drawing: Figure 1 is an elevation, partly in section, of the essential portions of a machine embodying my invention, and Fig. 2 is a transverse sectional view thereof, taken substantially on the line 2—2 in Fig. 1.

As illustrated in the drawing, the rollers A A are conically shaped as to their general outline and it is desired to form grooves or cuts *a—a* upon the sides thereof, such grooves or cuts constituting in effect conical abutting surfaces for the purposes previously specified. The general conical formation of the rollers A A is however not essential to the employment of my machine, which is designed generally for the production of grooves upon any objects where they may be desired. The rollers A A are mounted in series between a ring C and an internal rotatable disk B, the ring and disk being suitably shaped to correspond to the form of the rollers A A, and by disposing the rollers in the manner indicated, they are brought into proper angular position to be subjected to the action of the grinding tool D.

The tool D may be rotated in any desired manner, such for instance as the spindle D¹, gearing D², counter-shaft D³, and gearing D⁴ actuated from the power driven shaft D⁵. The tool D is splined upon the spindle D¹ so as to be capable also of longitudinal movement thereon, which movement is controlled by a handle D⁶, and is limited by a stop D⁷. In this manner the grinding action of the tool upon the rollers A A may be governed and regulated to any desired extent.

The disk B is shown as provided with suitable connections whereby it may be rotated, comprising a shaft B¹ and gearing B² connected to the power driven shaft D⁵.

Because of the contact of the disk B with the rollers A A, the latter are caused to rotate individually, so as to present successively and continuously their sides to the action of the cutting edge of the tool D whereby the grooves *a—a* are formed. As shown in the drawing, these rollers A A are mounted in the machine in substantially the angular relation to each other that they oc-

dupy in the journal bearing, and it will be seen that by the employment of the machine, absolute uniformity is secured as to the position of the grooves in the sides of the rollers, and also the exact similarity of the grooves formed therein.

It will be obvious that my improved machine may be employed in many different ways without departing from the spirit of my invention. Thus, for instance, the rollers need not be arranged in the exact angular relation previously described, all that is essential in this respect being that the angular relation adopted should be the one calculated to give the desired pitch and position to the grooves. As previously pointed out, also, the main portion of the object operated upon need not be conical, as in the particular illustration given. Again, the internal disk B might remain stationary, and the external ring C be rotated to produce the same result, namely, the individual rotation of the rollers or other work. Or again, both the external ring and the internal disk may be rotated, or other and entirely different means may be employed to secure the rotation of the work. Similarly, the particular means employed for forming the grooves may be entirely different from that herein disclosed, and such means might consist of milling tools, wood working tools, etc., dependent upon the material employed and the nature of the result required. Not only may the position and angular relations of the grooves upon the sides of the rollers be varied to suit the particular needs, but in addition thereto, their conformation and shape may be altered at will, as for instance by changing the shape, character and location of the cutting or grinding instruments. Again, the form of the tool may be varied as desired in accordance with the character of the work to be performed thereby; and similarly its location may be changed, as well as its point of application to the work. These and many other variations will suggest themselves to those skilled in the art, and I regard them all as comprised within the scope of my invention, which in its broad terms consists of a machine comprising means for mounting a plurality of the

objects in circular series and in the desired angular position, means for rotating them individually, and means for simultaneously applying a forming tool to all the sides thereof, in order to form grooves and the like therein.

Having thus described my invention, its construction and mode of operation, what I desire to claim and secure by Letters Patent of the United States is as follows:

1. The machine for forming grooves and the like upon the sides of rollers, or other objects, comprising means for mounting a plurality of the rollers in circular series and in the desired angular position, means for rotating the rollers individually, and means for applying a forming tool to the sides thereof.

2. The machine for forming grooves and the like upon the sides of rollers for journal bearings, comprising means for mounting a plurality of rollers in the angular relation they occupy in the bearing, means for rotating the rollers individually, and means for applying a forming tool to the sides thereof while thus rotated.

3. The machine for forming grooves and the like upon the sides of rollers, or other objects, comprising means for sustaining the rollers in circular series, means for rotating them individually, and a grinding tool having a cutting edge or portion adapted to engage the sides of all the rollers simultaneously to form grooves therein.

4. The machine for forming grooves and the like upon the sides of rollers, or other objects, comprising means for sustaining the rollers in circular series, means for rotating them individually, and a grinding tool having a cutting edge or portion adapted to engage the sides of all the rollers simultaneously to form grooves therein, the said tool being mounted within the space inclosed by the inner sides of the rollers.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY HESS.

Witnesses:

GEORGE M. HENRIE,
MARY M'CALLA.