

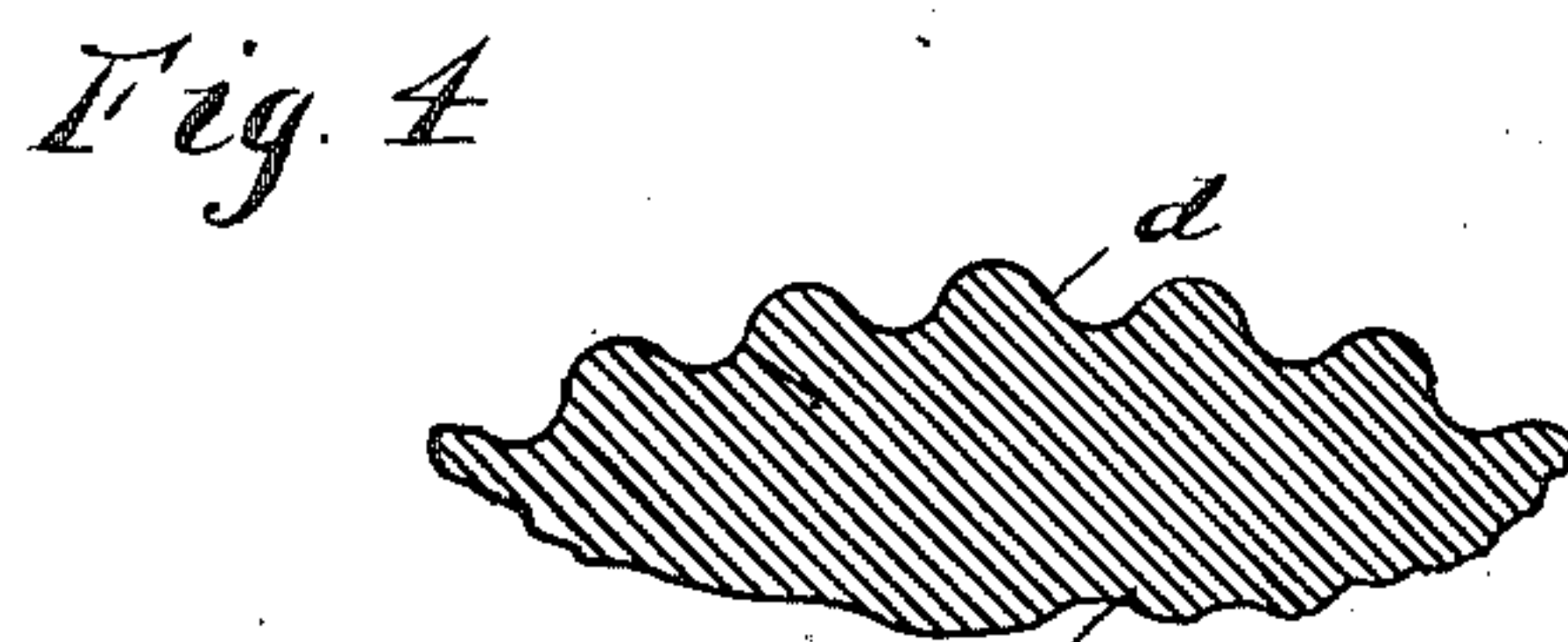
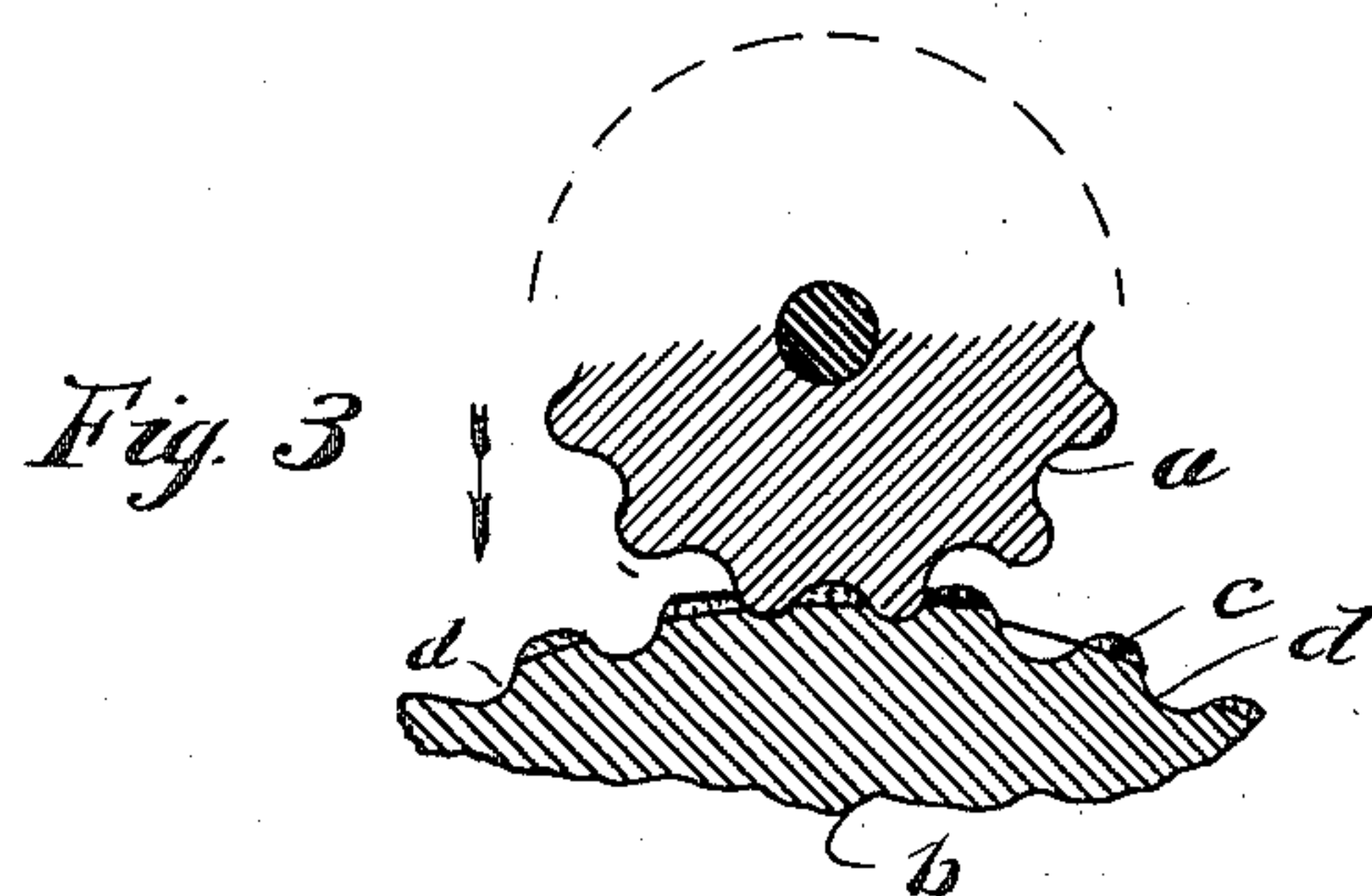
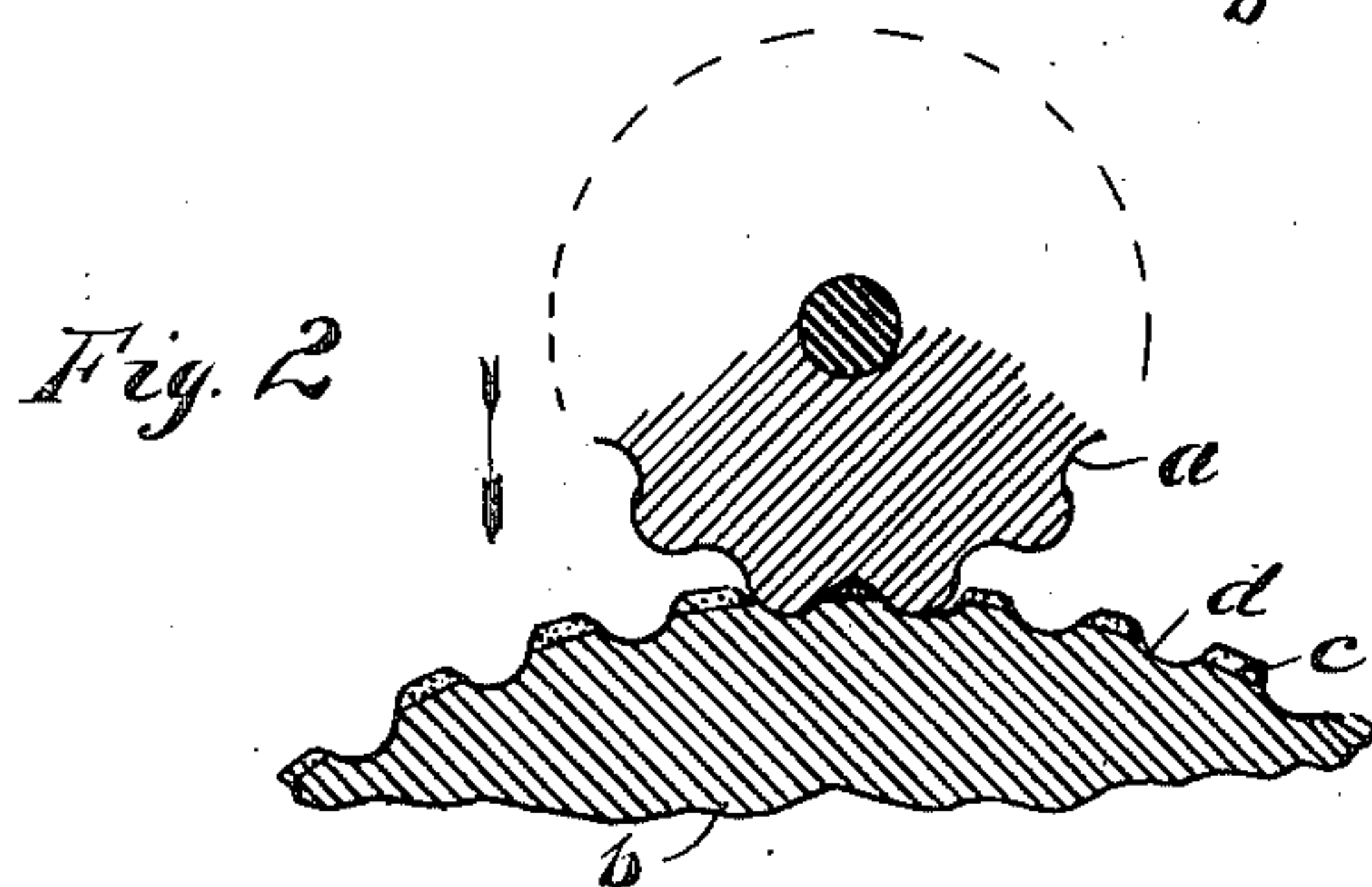
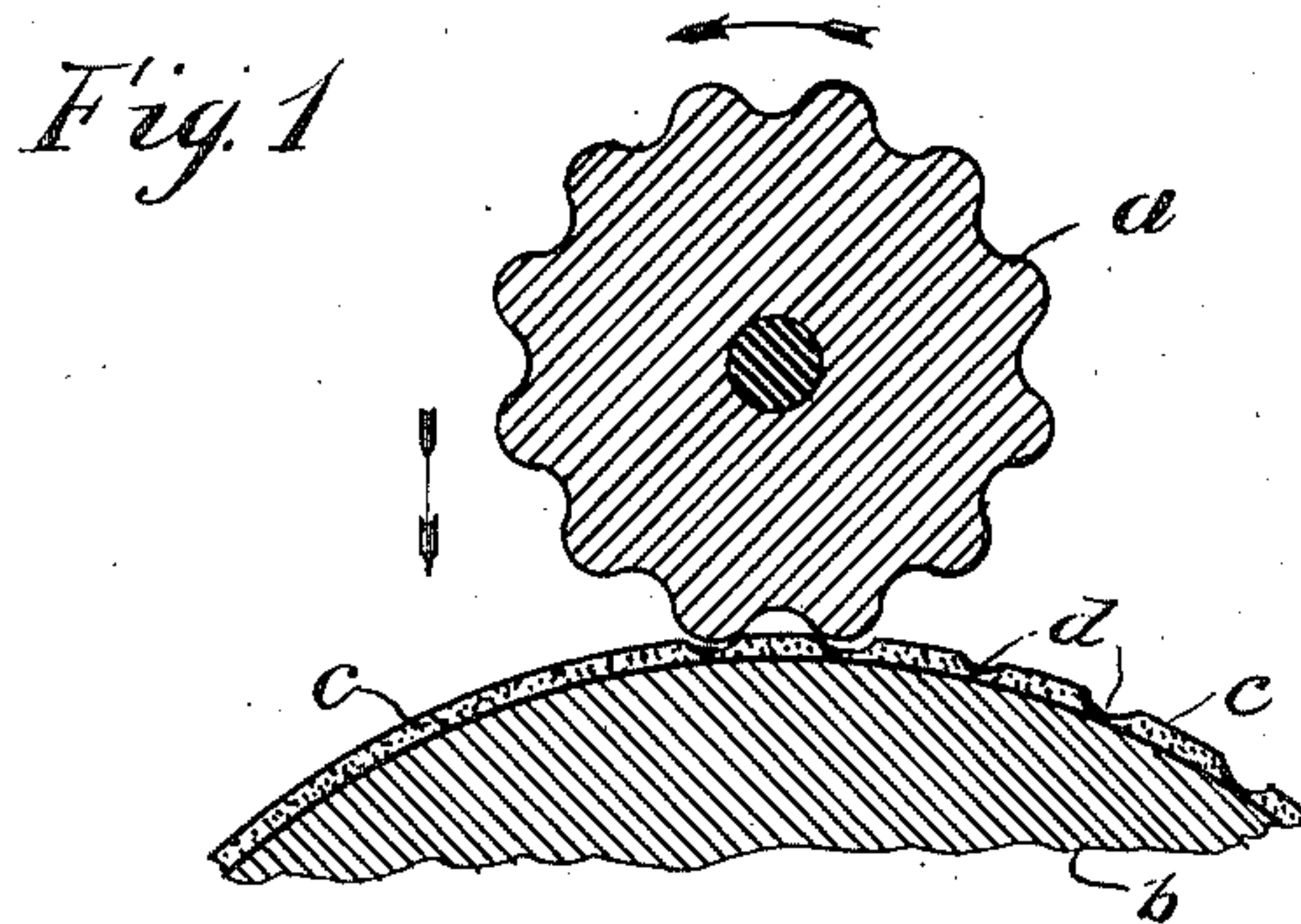
No. 681,727.

Patented Sept. 3, 1901.

E. OFFENBACHER.
MANUFACTURE OF PATTERN ROLLERS.

(Application filed Oct. 1, 1900.)

(No Model.)



Witnesses:

G. S. Noble

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Att'y.

UNITED STATES PATENT OFFICE.

EMIL OFFENBACHER, OF MARKT REDWITZ, GERMANY.

MANUFACTURE OF PATTERN-ROLLERS.

SPECIFICATION forming part of Letters Patent No. 681,727, dated September 3, 1901.

Application filed October 1, 1900. Serial No. 31,660. (No model.)

To all whom it may concern:

Be it known that I, EMIL OFFENBACHER, a subject of the German Emperor, and a resident of Markt Redwitz, in the Empire of Germany, have invented certain new and useful Improvements in the Manufacture of Pattern Rollers or Plates, (already described in my prior pending application, Serial No. 732,009, filed September 29, 1899,) of which the following is a specification.

My present invention relates to certain improvements in the manufacture of pattern rollers or plates for producing ornamented glass articles, the object being to provide an improved process whereby any desired design may be engraved on the metal pattern-rollers, as hereinafter fully described, reference being had to the accompanying drawings, which are intended to render the description more easily comprehensible.

Figure 1 is a sectional view of two rollers, showing the first step in my improved process. Fig. 2 is a similar view showing the second step. Fig. 3 shows the pattern-roller in an advanced stage, and Fig. 4 shows the roller as completed.

The new method is as follows: The desired pattern is engraved on the small supplementary steel roller *a*, Fig. 1, said roller being then tempered or hardened and secured on the support of an ordinary lathe or planing-machine, so that the same is in close contact with the surface of the steel plate or roller *b* to be engraved. The latter is coated with an acid-proof paste-like mass *c*, and as the steel roller *b* is revolved (or as the steel plate *b* is reciprocated) the supplementary roller *a* is also revolved and presses the pattern into the coating *c*, so that the steel of the roller or plate is uncovered at certain points *d*, while the remaining surface is still coated with the said paste-like mass. The roller or plate to be engraved is then treated with nitric acid or other suitable etching liquid, which thus acts on the uncovered points of the steel to remove the excess of material and produce

chemical alterations whereby the steel is converted at these points into a soft spongy mass. Then after removing the acid the pressing of the pattern into the etched parts is repeated by means of the supplemental roller *a*, Fig. 2, whereby the projecting parts on the latter penetrate still deeper into the parts softened by the etching liquid. Then by repeating this as many times as required the desired depth or recesses and projections may be obtained on the steel roller or plate, as illustrated in Figs. 3 and 4. The pattern roller or plate thus obtained is termed "positive." When it is desired to have a "negative" pattern, I make a second negative roller *a'* by means of the positive roller *a* by causing the same to revolve against each other and pressing and etching as already described. Then the negative roller thus obtained is tempered or hardened and employed for producing the large roller for rolling glass.

The above-described method enables me to engrave most complicated designs in rollers or plates.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The process of manufacturing metal pattern rollers and plates, consisting of coating the roller or plate to be operated on with an acid-proof composition, pressing the pattern of the forming-roller through said composition and exposing a portion of the surface of the roller or plate, etching the exposed surface with suitable acid, thereby softening the exposed surface, washing the acid therefrom and then repeatedly pressing the roll into the softened metal and etching and washing the same until a pattern of the desired depth is obtained.

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

EMIL OFFENBACHER.

Witnesses:

HUGO HEINEMANN,
OSCAR BOCK.