

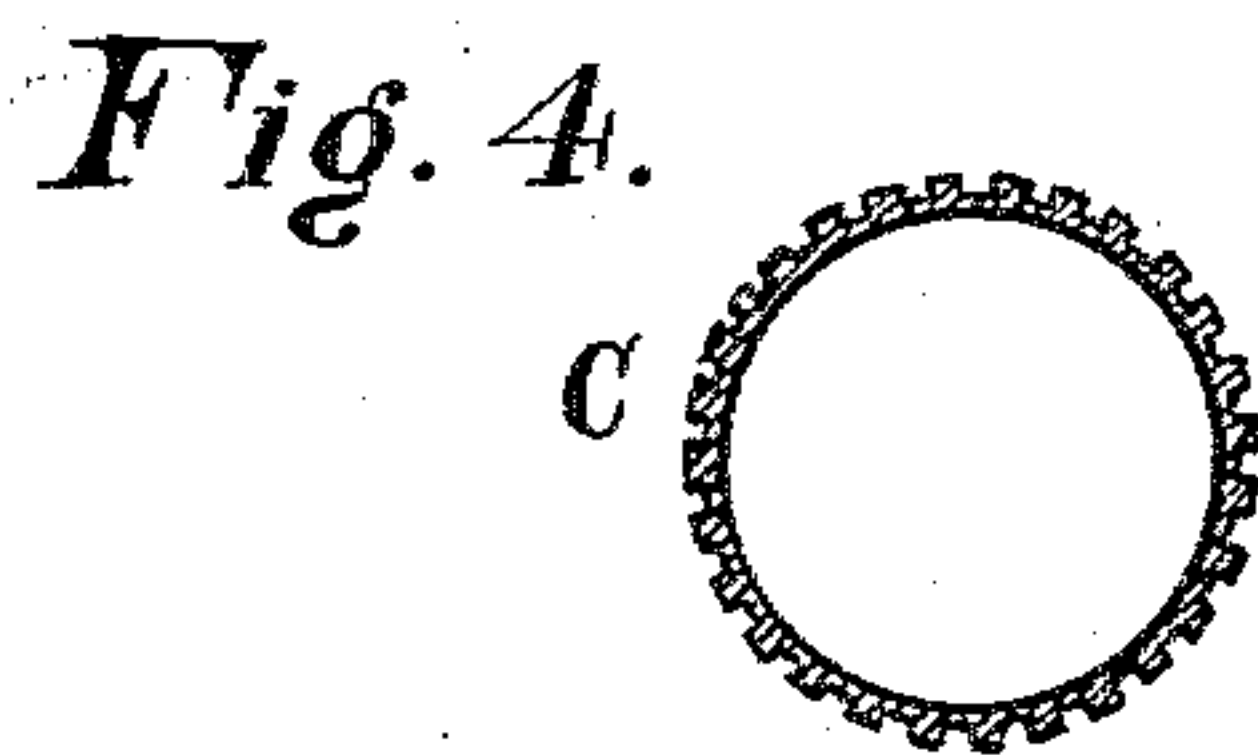
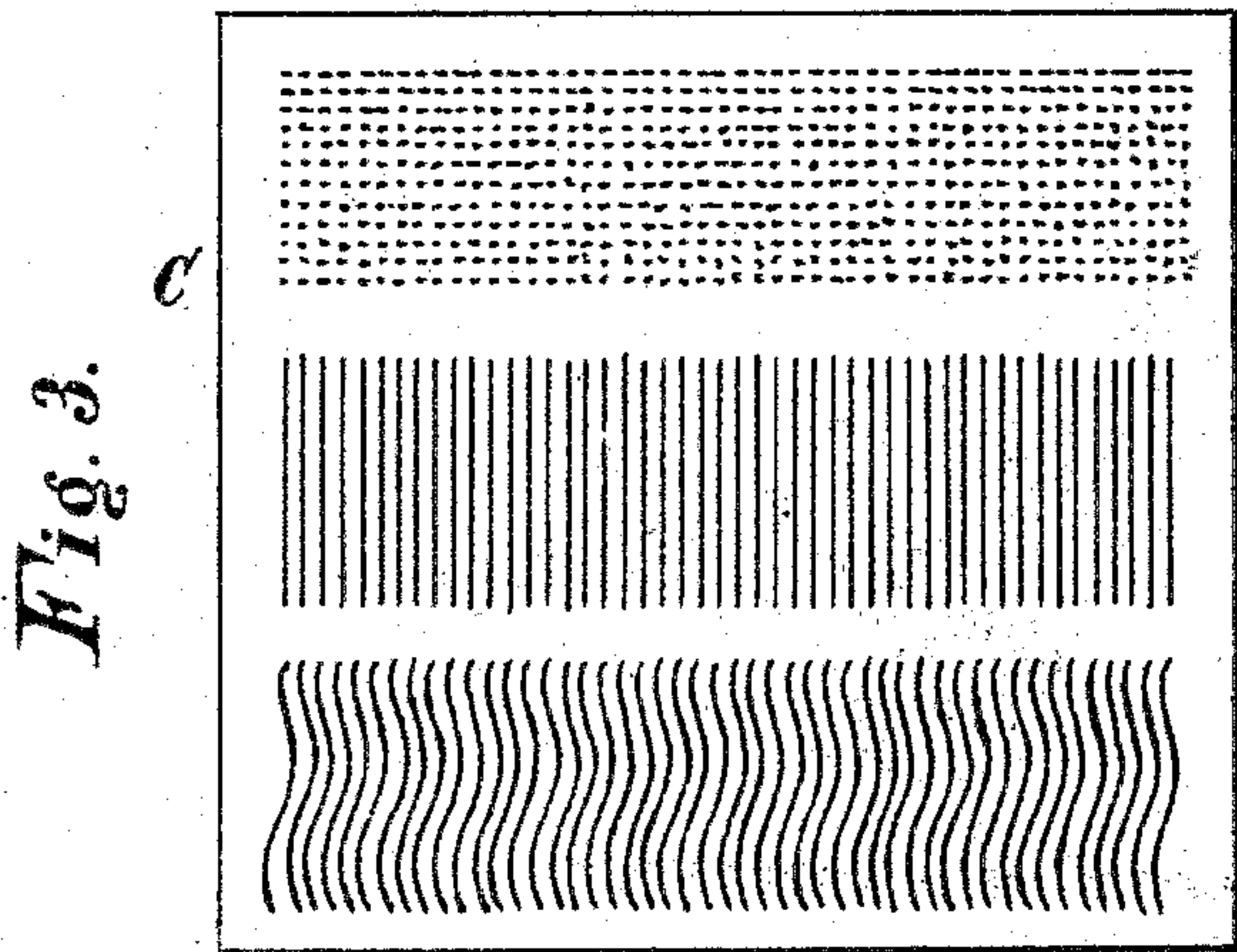
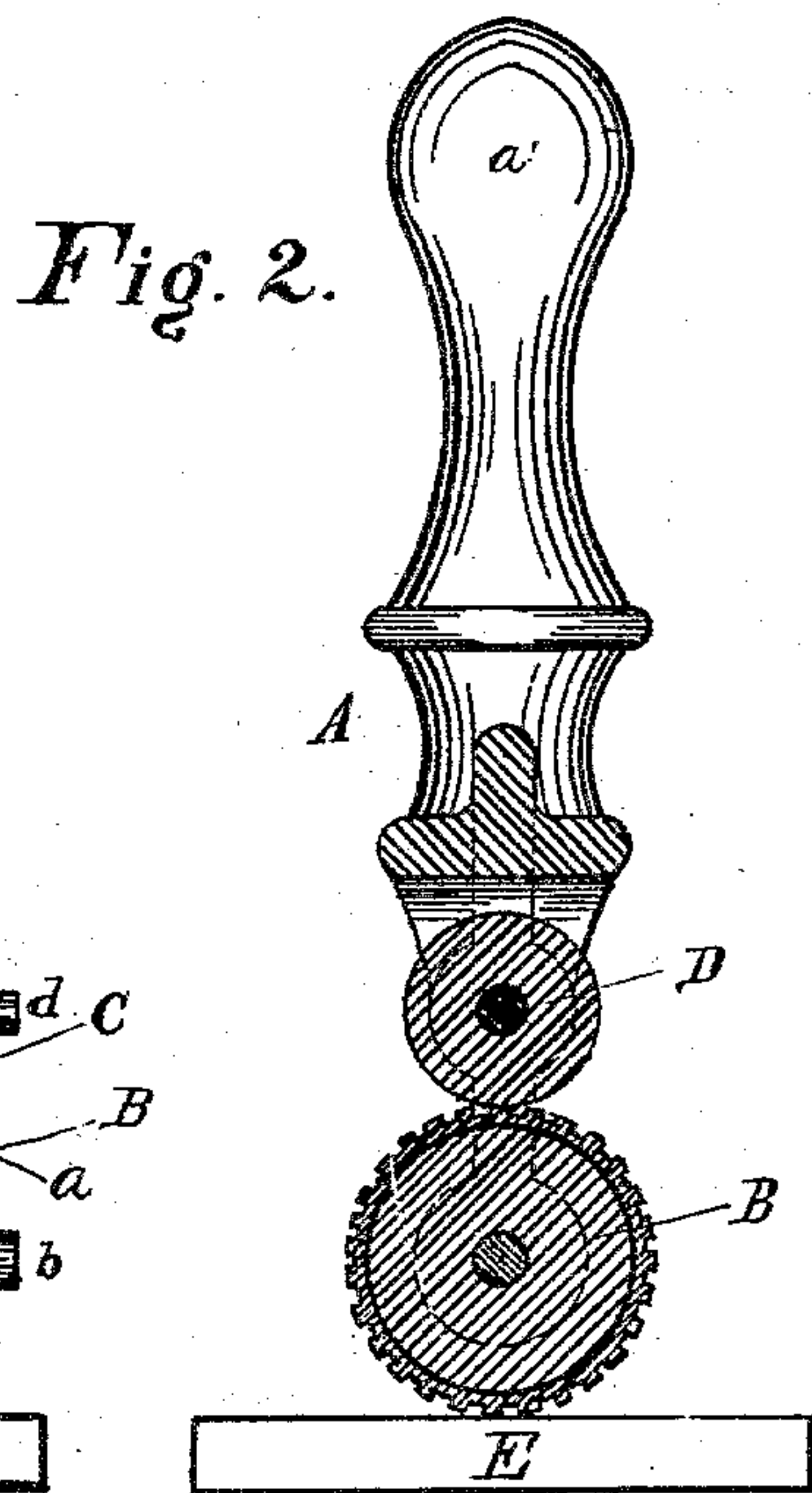
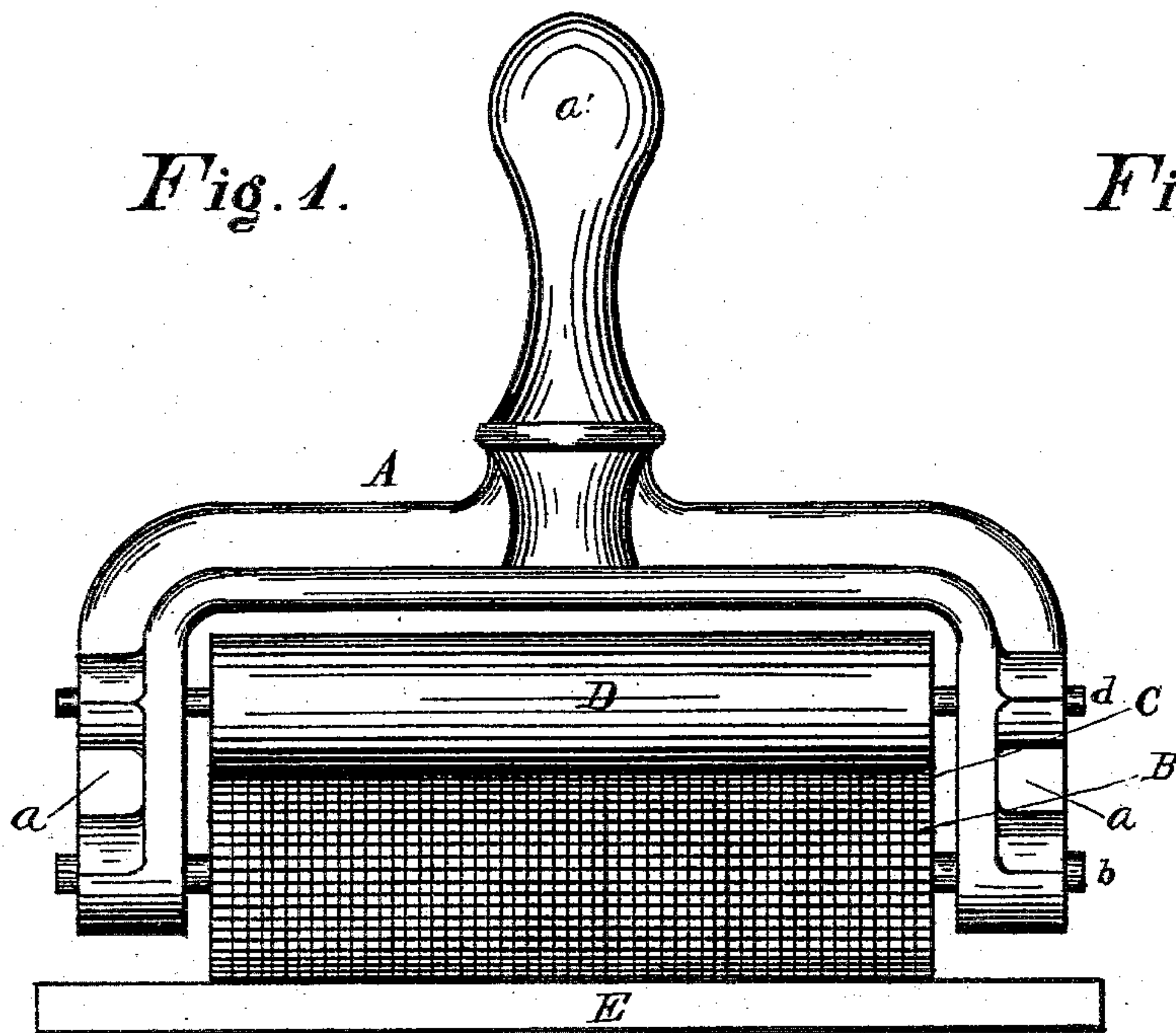
(No Model.)

C. C. MACBRAIR.

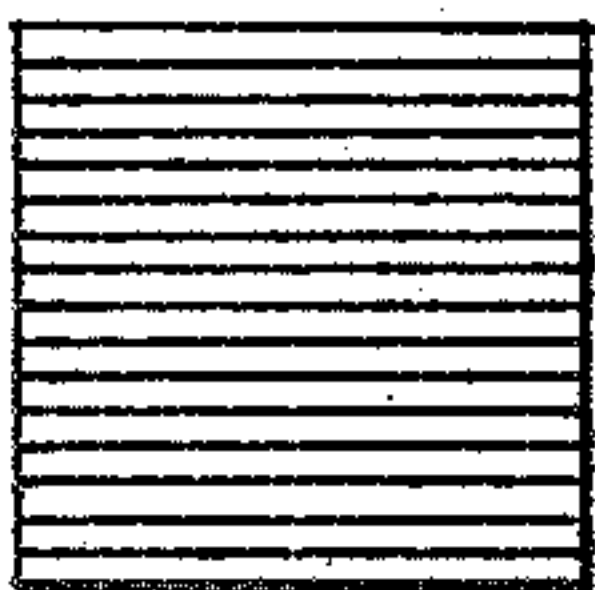
DEVICE FOR STIPPLING, SHADING, OR TINTING PRINTING STONES  
OR PLATES.

No. 288,081.

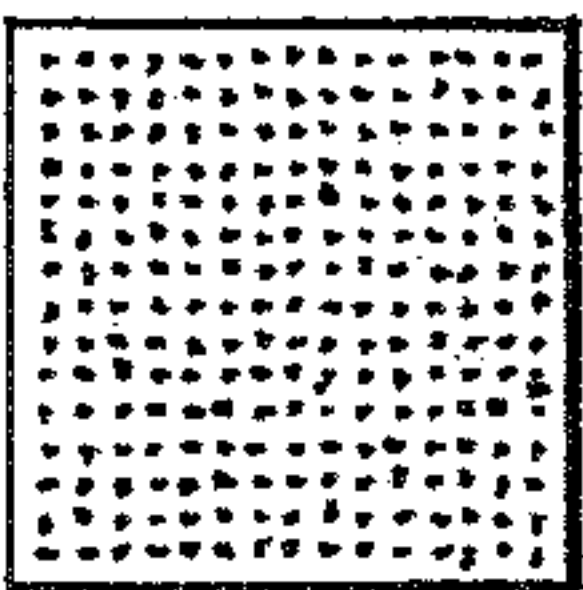
Patented Nov. 6, 1883.



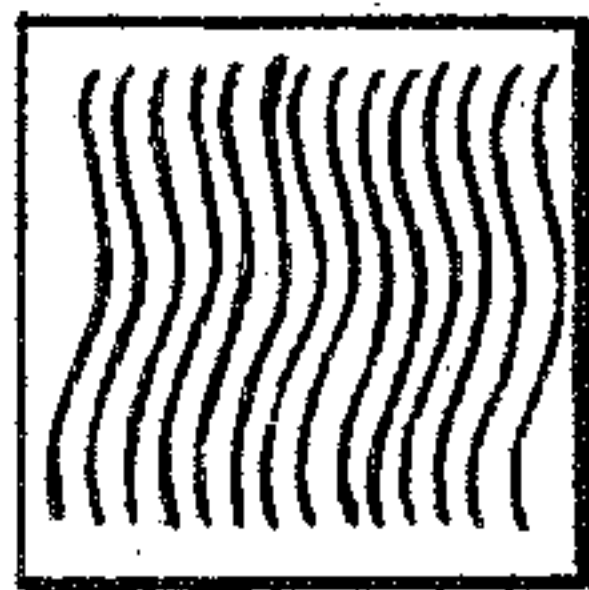
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

CHARLES C. MACBRAIR, OF CINCINNATI, OHIO.

DEVICE FOR STIPPLING, SHADING, OR TINTING PRINTING STONES OR PLATES.

SPECIFICATION forming part of Letters Patent No. 288,081, dated November 6, 1883.

Application filed March 10, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES C. MACBRAIR, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Devices for Stippling, Shading, or Tinting Printing Stones or Plates, of which the following is a specification.

My invention is in the nature of an improvement upon devices for the production of stipple, line, or waved shading or grain work upon printing stones and plates.

The purposes and previously-existing methods for the production of stipple, line, waved, or grain shading upon printing-surfaces are fully described in several Letters Patent of the United States and of Great Britain, but with more perspicuity and detail in United States Patent No. 214,493, of April 22, 1879, to Benjamin Day, to which patent I shall have occasion to refer in pointing out the practical merits of my invention.

My invention has for its object the production of a device for stippling, line-shading, or graining printing-surfaces, which shall develop upon such surfaces the desired effects in shading and varying the lights with greater accuracy and facility than any of the devices previously in use, and which shall be adapted to the largest work, as circus-posters, equally as well as to the smallest card-work. The present devices or methods can be used successfully only in small work, for reasons given hereinafter.

To accomplish my object I construct a pressure-roll, of any desired or convenient size—as, for instance, (for large work,) of two and one-half inches diameter and twenty-four inches long—mounted upon a shaft or spindle in a suitable frame, for use by hand, which roll is made of an unyielding or firm material—as wood, hard rubber, or metal—and upon this pressure-roll I place a transfer-sleeve of any suitable yielding material—as fine glue or gelatine, and glycerine—upon the external surface of which sleeve is produced in relief, by means of a corresponding matrix or mold, any kind of stipple, line, waved, or grain design for shading. The internal diameter or bore of this sleeve is sufficiently less than the external diameter of the roll upon which it is mounted, that when drawn over or upon the latter it will adhere to and revolve with it.

The thickness of the transfer-sleeve is such that when pressed upon the surface to which the shading effect is to be applied such shading may be heavy or light, according to the pressure applied. In the same frame in which the roll is mounted I provide a feed or inking roll, charged with transfer-ink, in the usual manner, which feed-roll, by means of its weight, if heavy, or by means of springs, if light, bears upon the surface of the transfer-sleeve and imparts to it the requisite ink or color to maintain the sleeve in condition to produce the requisite shading effects upon the printing stone or plate.

The principal use of my device is in the preparation of stones and plates for lithograph-printing.

In the accompanying drawings, Figure 1 is an elevation of my improved transfer or printing roll. Fig. 2 is a transverse section on the line *xx* of Fig. 1. Fig. 3 is a transfer-sleeve developed upon a plane, showing three different kinds of shade effects impressed or molded in relief thereon, although only one of a kind will be used on the same sleeve. Fig. 4 is a cross-section, at right angles to axis, of the transfer-sleeve; and Figs. 5, 6, 7, and 8 are illustrations of some of the shade effects produced upon a printing-surface.

Similar letters of reference indicate similar parts.

A is a frame, (preferably of cast or wrought iron,) provided with arms *a a* and handle *a'*. The arms *a a* are furnished with bosses, to form bearings and receive the journals of the shafts or spindles *b* and *d* of the pressure-roll B and inking-roll D, respectively.

B is the pressure-roll, of an unyielding material—as wood, hard rubber, or metal—the surface of which is truly concentric with the journals of shaft *b*, and of uniform diameter from end to end.

C is the yielding transfer-sleeve, cast of a composition of fine glue or gelatine and glycerine, in a suitable mold, which shall produce in relief upon the external surface thereof the desired stipple, line, or waved shading, as in Fig. 3, only one of which kinds of shading, however, is admissible upon any one roll, and the internal surface or bore of which shall be smooth and of a diameter somewhat less than the diameter of the pressure-roll B, so that



when the sleeve C is drawn upon the roll B it shall adhere to and revolve with the latter. The sleeve C, being cast as an independent member of the device, and removable from the roll B, any number of these, each having a different form or variety of shade, stipple, or lines impressed thereon, may be made and used with a single roll.

D is an inking or feeding roll of the kind usually employed for supplying ink to a form in an ordinary printing-press, mounted in the frame A, over the roll and sleeve B and C, which roll D is charged with transfer-ink for the preparation of printing stones and plates. In large devices of my design the weight of the feed-roll D will be sufficient to produce the pressure required to impart the ink to the surface of the sleeve C; but in small devices a spring of any convenient form will be required to press the feed-roll D upon the transfer-sleeve C and impart to the latter the ink or color required.

E is a lithographing stone or plate, upon which the outlines of a figure are drawn in the usual manner, and upon which it is desired to produce certain shading effects, which effects may be flat tints, as shown in line-work, Fig. 5, stipple in Fig. 6, waved or curved shading in Fig. 7, and as a graduated tint in Fig. 8, which latter effect may be produced either by varying the pressure on opposite ends of the roll B and sleeve C, when in use, or by casting a transfer-sleeve with a series of graduated stipple or line work upon the surface thereof.

The object of this class of work in the preparation of lithographing stones or plates has been so fully described in former patents of this and other countries, and is so well known to the craft, that any extended description here is not necessary to a proper understanding of my invention.

Referring to the objections to all previous devices for this purpose with which I am familiar, films such as are described in Day's Patent, No. 214,493, and in other patents, can be used successfully only of small size, owing to the deteriorating effect of changes of temperature upon the composition entering into the film, causing it to expand and buckle in warm weather and to contract unevenly and possibly tear in cold weather, and as the film must be of same thickness, however large, to produce the desired effects, these objections, together with the necessity of repeatedly removing and re-inking the film by hand to produce deeper tones or tints, are sufficient to defeat its use upon a larger surface.

When large surfaces are to be shaded with the flat films, they (the films) must be set over the figure several times, care being had that the joints of the shade-work shall register perfectly. Thus in shading or toning a surface eighteen by twenty-four inches with a flat film six by eight inches it must be set over the figure on the stone or plate no less than nine times and possibly more than this

number of times if deep tones are required upon portions of the figure. This transferring of the film from place to place over a large stone or plate requires great skill and considerable time, all of which is avoided by my improved device, which may be large enough to cover the entire figure or plate at one sweep.

In using my improved transferring device such portions of the figure as do not require tinting or shading are stopped out by an overlay of thin paper cut to the form of so much of the figure as requires high lights; or the entire figure may be tinted and the high lights scraped out. To increase the depth of tint or shade the roll is passed over the figure repeatedly, successively stopping out with a solution of gum and acid or an overlay of paper so much of the figure as has been given the proper tone or shade.

By means of the feed-roll D, to supply ink to the transfer-sleeve C, any amount of surface—representing several complete revolutions of the latter—may be made with a uniform effect upon the figure being worked.

I am aware that printing-films or transferring-films, for the shading or tinting of figures by means of pressure by a platen-press, or by the abrasive action of a stylus upon the back thereof, are not new, and these I do not claim.

I am also aware that it is not new to employ a roller having molded thereon a covering of printer's composition perforated for coloring the edges of the books; nor to employ, for marking purposes, a roll having a rubber-coated cloth band with type-letters on its surface, secured thereto by a wedge set into a longitudinal groove in the roll, so as to take up the slack of the band, a second roll being used to apply ink to the marking-roll; nor to construct a hand-stamp of two rolls, one being the marking-roll covered by a rubber band having printing-letters thereon, the other being used to apply ink to the marking-roll. The rubber-surface is too hard for my purpose, and the yielding surface must be detachable, so that different designs may be applied to the same roll.

Having described my invention, what I claim is—

In a device for shading or tinting figures on printing stones or plates, the combination, with a frame and an inking-roll and transfer-roll, of a detachable sleeve to the transfer-roll composed of a yielding material, such as glue or gelatine and glycerine having the desired design in relief on its external surface, substantially as and for the purpose set forth.

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

CHARLES C. MACBRAIR.

Witnesses:

JOHN W. HILL,  
JOSEPH SIMS.