

No. 755,225.

PATENTED MAR. 22, 1904.

B. GISEVIUS.  
PROCESS OF MAKING PRINTING PLATES.  
APPLICATION FILED APR. 7, 1902.

NO MODEL.

Fig. 1.

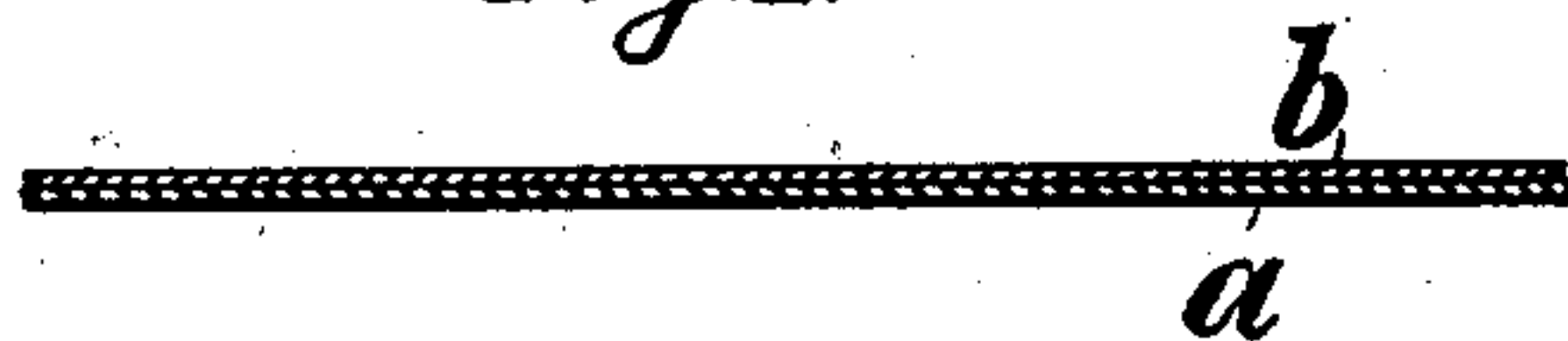


Fig. 2.

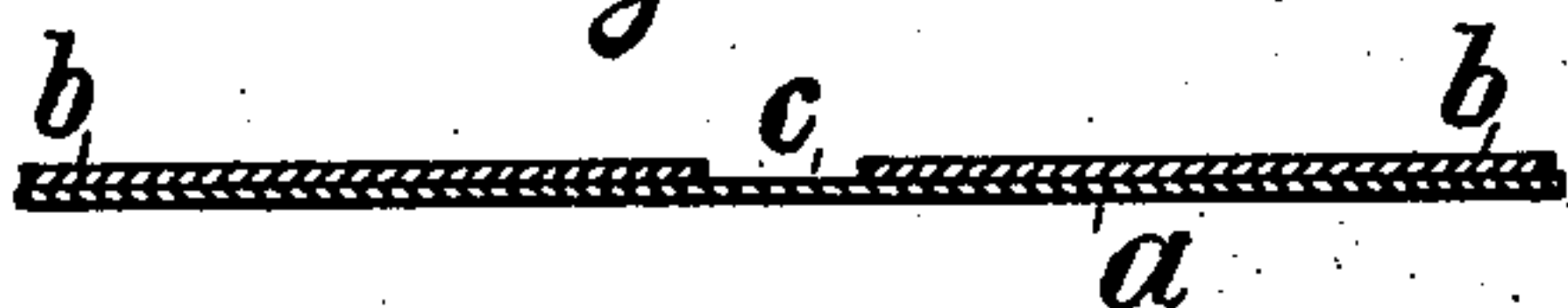


Fig. 3.

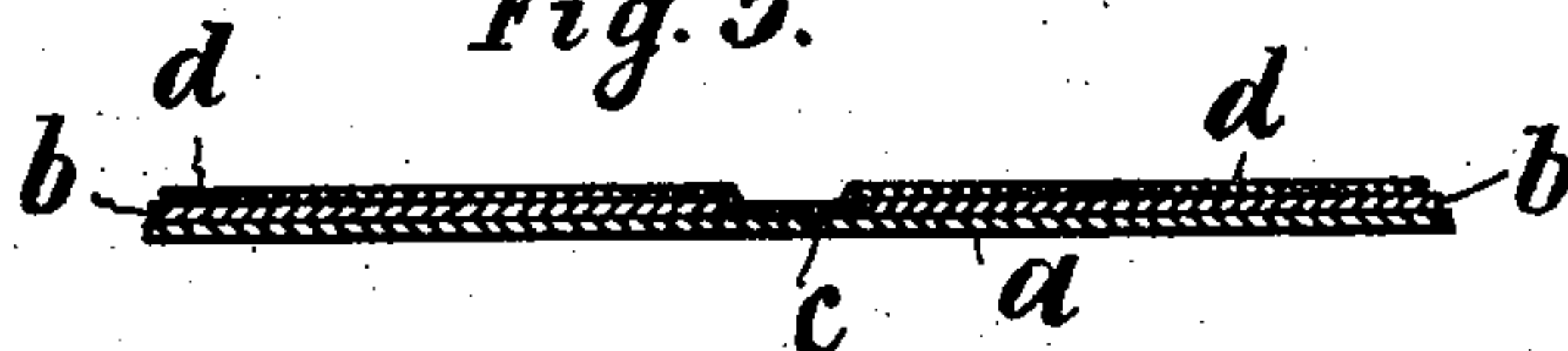


Fig. 4.

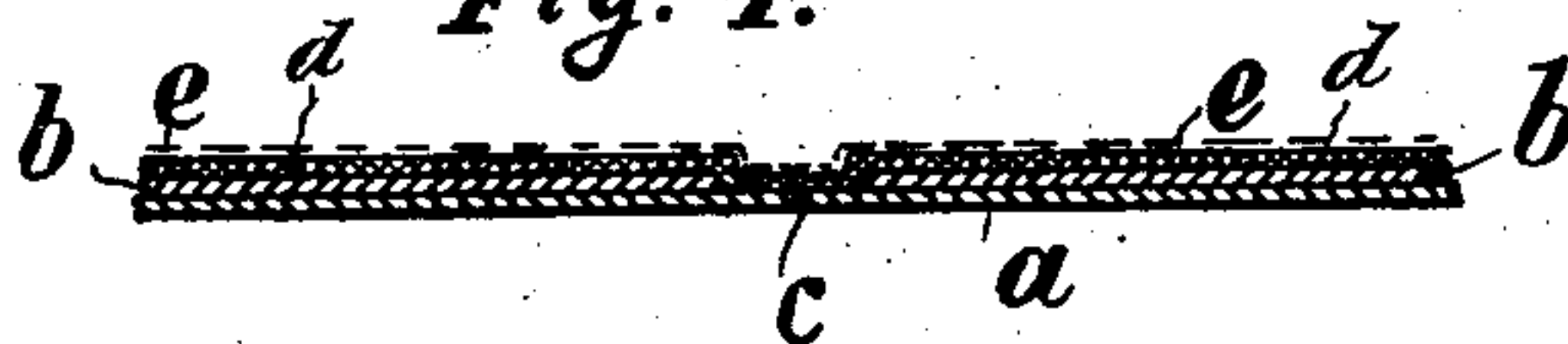


Fig. 5.

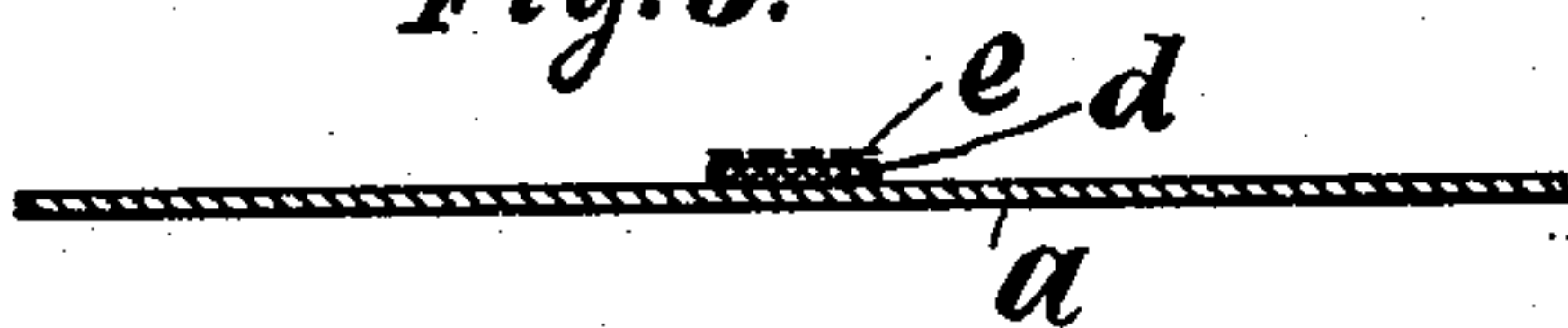
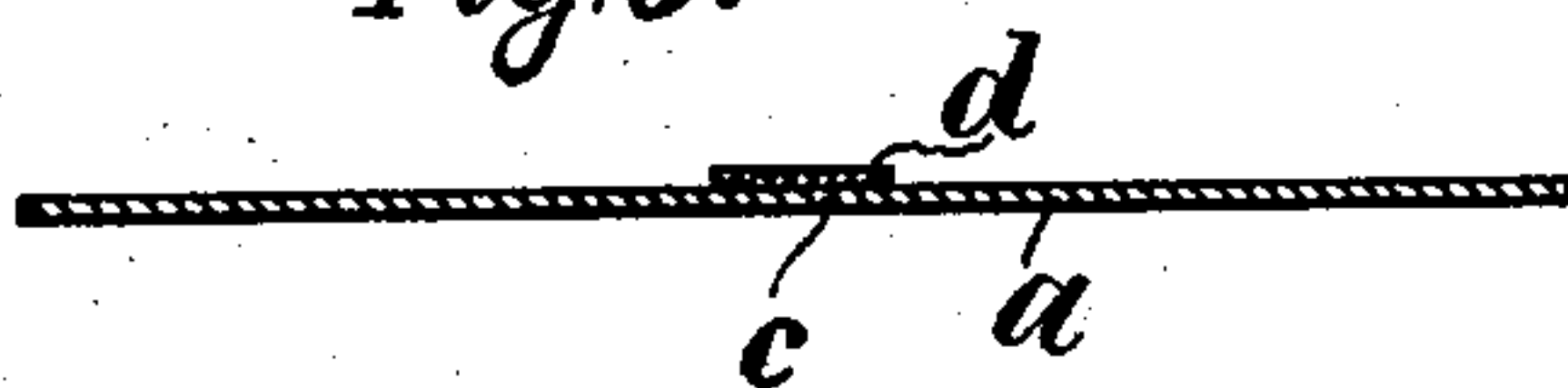


Fig. 6.



Witnesses:  
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## UNITED STATES PATENT OFFICE.

BOGDAN GISEVIUS, OF BERLIN, GERMANY.

## PROCESS OF MAKING PRINTING-PLATES.

SPECIFICATION forming part of Letters Patent No. 755,225, dated March 22, 1904.

Application filed April 7, 1902. Serial No. 101,737. (No specimens.)

*To all whom it may concern:*

Be it known that I, BOGDAN GISEVIUS, a subject of the King of Prussia, German Emperor, residing at Berlin, Germany, have invented  
 5 certain new and useful Improvements in Processes of Making Printing - Plates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which  
 10 it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The herein-described process for making  
 15 printing-plates is of that class in which a sensitized film is exposed under a suitable transparent original, thereby rendering portions of said film insoluble in water, and the soluble portions then washed out and rolled in with  
 20 ink, and, finally, the film removed, so that only the ink-lines of the design remain.

It has been found that such printing-surfaces, that consist, essentially, of ink, to which is sometimes added pitch, rosin, or a similar  
 25 substance to increase their adhesion to the base-plate, have only a slight adhesion to the latter, especially along the edges of the lines, so that clear sharp prints cannot be obtained, especially if the edition or "pull" be large,  
 30 and that they are also injured by the washing of the plate. It has also been observed that such processes cannot be performed on aluminium plates, because that metal when in contact with the film of gum and chromate,  
 35 notwithstanding the removal of said film in the points and lines of the design by the so-called "developing" process, will not receive and retain a fatty ink.

The herein-described process is characterized by the fact that the design which remains  
 40 on the plate consists of a substance that has an extraordinarily great adhesion to the plate and is not removed therefrom either by washing or by pressure, while it freely receives  
 45 printing-ink and enables the sharp printing of large editions.

The present invention gives better results than heretofore attained with the plates in general use, zinc plates, and in addition permits the use of aluminium plates which, by

reason of their lightness, resistance to acids, and the ease with which when desired the design may be erased and a new one substituted, have great advantages over all other materials. 55

In this process a material that is rendered insoluble in water by the action of light is especially suitable, such as a mixture of albumen and a chromium salt.

In the accompanying drawings, in which  
 60 like parts are similarly designated, Figure 1 represents a sensitized plate; Fig. 2, the washed plate after exposure; Fig. 3, the same covered with an insoluble film. Fig. 4 shows a further coating of an acid-resist; Fig. 5, the  
 65 next stage in which the lines of the design are retained on the plate, and Fig. 6 the finished plate.

1. The metal plate *a* is first coated with a gum-chromate film *B*, consisting of about two  
 70 hundred parts, by weight, of water, seven parts of potassium bicromate, and forty to fifty parts of a syrupy solution of gum arabic and then dried in a dark room, Fig. 1. The plate is placed in a printing-frame, film upward, and a  
 75 transparent original picture, positive or negative, depending on the kind of print to be produced, is placed on it face down. After exposure, usually about one to four minutes, the plate is removed from the frame in a dark  
 80 room, laid in cold water, and gently tamped with cotton-wool. The action of the light is to render those portions of the film *b* that were not protected from light by the opaque lines and points of the original insoluble in  
 85 water, while those portions *c* that lie under the opaque portions of the original are not affected by light and remain soluble, so that by the solvent action of the water, aided by the tamping with cotton-wool, they are re-  
 90 moved, leaving the plate clean and bare in the outlines of the original design, Fig. 2. The plate is then dried.

2. At the conclusion of this preliminary operation the metal shows white in those places  
 95 where the opaque lines of the transparency protected the film *b* from light, the remaining portions still coated with gum showing gray. The entire face of the plate is then covered  
 100 with a film *d* of an albumen solution consist-



ing of white of egg, potassium bichromate, and ammonia, again dried, and exposed to the free light, Fig. 3. The result is that the entire albumen film becomes insoluble in water.

5 3. In this condition, covered with one film in the line and points of the design and elsewhere with two, the plate is treated or coated with an acid-resist—such as asphalt, lithographic transfer-ink, and the like—the object  
10 of which is to protect the albumen film, especially that part within the lines and points of the design, not so much against solution by the subsequent treatment under 4, but to prevent the acid from making this film re-  
15 sistant to printing-inks, which otherwise has a strong affinity for such inks. The plate is therefore thoroughly rolled in with the aforementioned acid-resist *e* and again dried, Fig. 4. The use of the asphalt or lithographic trans-  
20 fer-ink renders it necessary to again expose the plate to the free light to slightly warm the plate or to slightly heat the plate artificially.

4. The plate is now placed for a few minutes in a solution of one volume of muriatic  
25 acid to two of water. The acid unites somewhat with the gum film *b* despite the superposed layers of ink and albumen and is removed, together with the superposed layers, by light tamping and rubbing with cotton-  
30 wool and pure water, while the lines and points of the design remain sharp and distinct on the white background of metal, Fig. 5. The plate thus freed from the film in the parts between the lines and points of the design is  
35 next sponged over with gum-arabic solution and then dried.

5. The plate when dry is then washed with pure water to remove the gum, after which it is etched in the usual manner, then the asphalt  
40 or other acid-resist film *e* removed by washing in turpentine to leave the albumen surface corresponding to the picture, Fig. 6. The plate may then be rolled in with ink and printed from. The entire process occupies  
45 about an hour.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A process of making printing-plates,  
50 which consists in coating a plate with an actinic film capable of being rendered insoluble by the action of light, producing an actinic impression on the film, developing it, coating with a second actinic film capable of taking  
55 ink, removing those portions consisting of two

layers and leaving the single layer as a printing-surface, substantially as described.

2. A process of making printing-plates, which consists in coating a plate with an actinic film capable of being rendered insoluble  
60 by the action of light, producing an actinic impression on the film, developing it, coating with a different film also capable of being rendered insoluble by the action of light and exposing it to light, removing those portions  
65 consisting of two films, to leave the plate coated in parts with a single film rendered insoluble and capable of acting as a printing-surface, substantially as described.

3. A process of making printing-plates, 70 which consists in coating a plate with an actinic film capable of being rendered insoluble in water by the action of light, producing an actinic impression on the film, developing it, coating the film with a second different film ca-  
75 pable of being rendered insoluble by the action of light, exposing said film to light, coating it with an acid-resist, removing those portions consisting of two layers and a coating of the acid-resist to leave the design consisting of  
80 the second layer, and etching the plate and removing the acid-resist, substantially as described.

4. A process of making printing-plates, 85 which consists in coating a plate with chromated gum, producing an actinic impression on the film, developing it, coating the developed film with chromated albumen, rendering it insoluble, removing those portions consist-  
90 ing of two layers of film and etching the plate, substantially as described.

5. A process of making printing-plates, which consists in coating an aluminium plate with an actinic film capable of being rendered  
95 insoluble in water by the action of light, producing an actinic impression on the film, developing it, coating the film with one of chromated albumen, rendering it insoluble, coating this with an acid-resist, removing those  
100 portions having two layers of film by an acid-bath, removing the acid-resist to leave an albumen printing-surface, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in pres-  
105 ence of two subscribing witnesses.

BOGDAN GISEVIUS.

Witnesses:

JOHANNES HEIN,  
WOLDEMAR HAUPT.