

No. 648,307.

Patented Apr. 24, 1900.

A. SCHWARZ.

PHOTOGRAPHIC PRINTING APPARATUS.

(Application filed Dec. 8, 1899.)

(No Model.)

Fig. 1

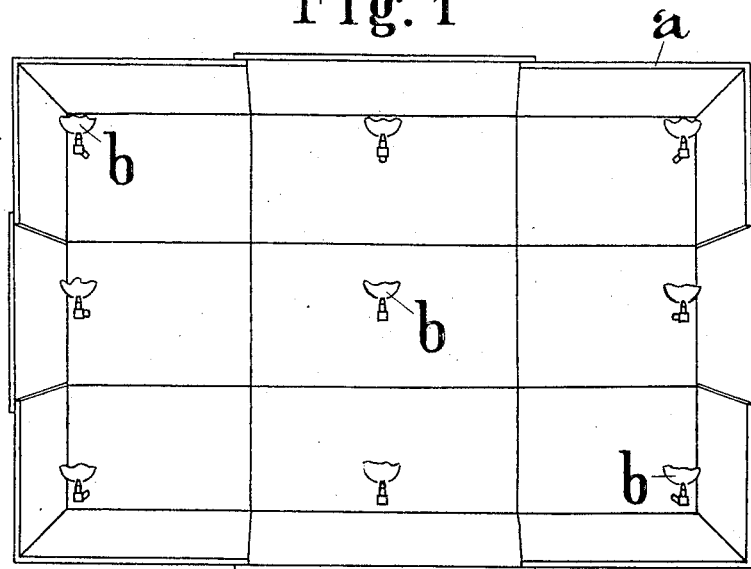
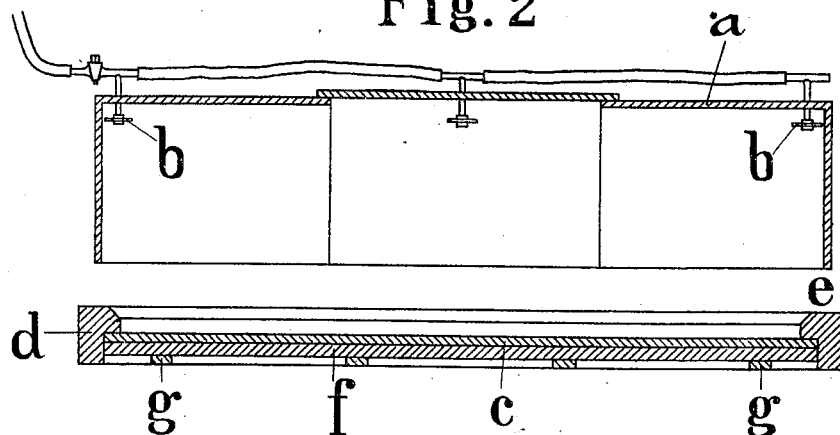


Fig. 2



Witnesses  
Harry A. Knight  
Amelia F. Ball

Inventor  
August Schwarz  
by Knight Bros  
Attorneys

# UNITED STATES PATENT OFFICE.

AUGUST SCHWARZ, OF FRANKFORT-ON-THE-MAIN, GERMANY.

## PHOTOGRAPHIC-PRINTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 648,307, dated April 24, 1900.

Application filed December 8, 1899. Serial No. 739,701. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST SCHWARZ, a subject of the King of Prussia, German Emperor, and a resident of Frankfort-on-the Main, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Photoprinting Apparatus, of which the following is a specification.

10 This invention relates to the photoprinting of drawings upon sensitized paper by means of artificial light.

The difficulty attendant upon the use of artificial light for the purpose of the production of photoprints of large drawings is that the rays do not run parallel, as is the case with sunlight, but proceed radially from a point, and in consequence the surface of the sensitized paper or film is not regularly illuminated. The employment of reflectors to obviate this difficulty is only possible for small surfaces, as the source of light must be as near as possible to the sensitized paper or film. Consequently nothing further remains  
15 for the production of larger copies than the arrangement closely together of a great number of lights, which of course has the disadvantage of too great expense.

The present invention consists in the employment of an open shell of any shape having its interior enameled a dull white and having its interior approximately of the size of the drawing to be copied and the arrangement within such shell of a number of sources of light close to the interior face of the shell and the arrangement of the copying-frame in front of the open part of the shell. The interior of the shell is regularly illuminated by means of the lights and reflects light equally  
20 upon all parts of the copying-frame.

The accompanying drawings illustrate diagrammatically the manner in which the invention may be carried into effect.

Figure 1 is a front view in perspective of a shell such as that hereinbefore described. Fig. 2 is a sectional plan corresponding thereto, in which the copying-frame is also shown in section.

The shell *a* is enameled or painted dull white within to adapt it to diffuse the light and may be constructed with its respective faces of one sheet of metal, or, as illustrated, it may be constructed of several metal plates which may be riveted or otherwise secured  
25 together to form a stanch construction.

Lights *b* (indicated by crosses) are arranged in proximity to the rear interior face of the shell, and these may be arc-lamps, incandescent electric lamps or mantles, or acetylene-gas flames, or other source of light.

*s* represents a means for supplying illuminant—in this case a gas-tube.

*d*, Fig. 2, is the copying-frame, in which is mounted a glass plate *c*, behind which the drawing and sensitized paper or film are held by means of a felt-padded wooden plate *f*, pressed home by means of transverse bars *g*. The distance *e* between the shell and the copying-frame prevents the undue heating of the glass plate *c* and serves for the purpose of observation. The shell and copying-frame may be mounted in such relation one to the other as may be convenient.

The housing is preferably made collapsible by telescoping sections *w*, *x*, *y*, and *z* sliding over one another, as suggested by the drawings, in the directions of the vertical and lateral dimensions, so that the field of illumination may be varied at will and the superficial area of the open side of the shell made to correspond to the surface to be printed. Moreover, the sources of light are symmetrically disposed in the several sections and in such positions as to maintain uniform distribution of light over the varying area of illumination.

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

1. An apparatus of the character described, comprising a shell and a plurality of sources of light arranged therein; said shell being constructed of sections telescopic or collapsible transversely to the direction of transmission of light, whereby the area of illumination may be varied at will.

2. An apparatus of the character described, comprising a shell made up of telescoping sections, and a plurality of sources of light symmetrically arranged upon the respective sections in positions to maintain uniformity in the field of illumination, notwithstanding changes in the area thereof.

The foregoing specification signed at Frankfort-on-the-Main, Germany, this 7th day of September, 1899.

AUGUST SCHWARZ.

In presence of—

D. W. REUTHIN, Jr.,  
SIMON W. HANAUER.