F. G. LUNDI & J. McMILLAN.

IMPRESSING CELLULOID.

APPLICATION FILED FEB. 1, 1917.

1,237,352. Patented Aug. 21, 1917.

Fig. 1

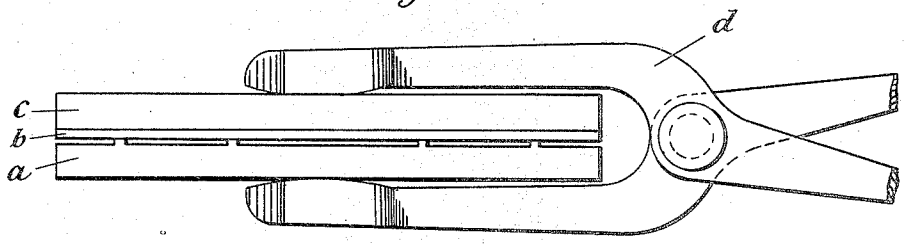


Fig. 2

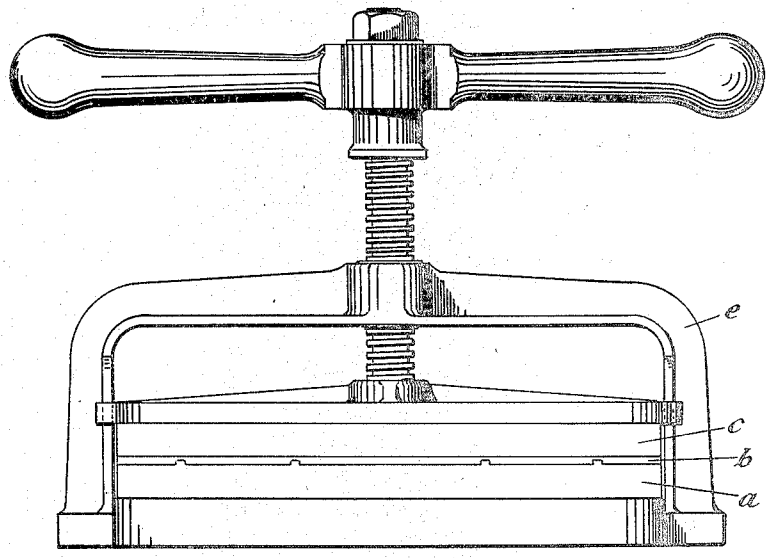
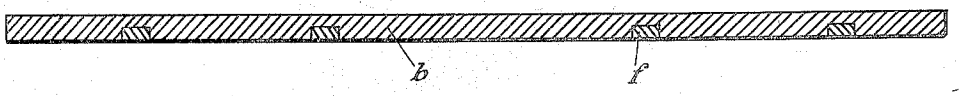


Fig. 3



Inventors

Frederick George Lundi,

John McMillan

By their Attorney

R Waddams

UNITED STATES PATENT OFFICE.

FREDERICO GEO. LUNDI AND JOHN McMILLAN, OF NEWCASTLE-UPON-TYNE, ENGLAND.

IMPRESSING CELLULOID.

1,237,352. Specification of Letters Patent. Patented Aug. 21, 1917.

Application filed February 1, 1917. Serial No. 146,023.

To all whom it may concern:

Be it known that we, FREDERICO GEORGE LUNDI and JOHN McMILLAN, subjects of the King of England, residing at Newcastle-upon-Tyne, in England, have invented certain new and useful Improvements in Impressing Celluloid, of which the following is a specification.

This invention relates to an improved method of impressing, lettering or designs in or on celluloid, in sheet form whereby the finish and appearance of the product are greatly improved in comparison with similar articles as heretofore produced.

According to our method a suitably engraved metal block is put in a suitable holder, the sheet of celluloid is placed on the block surface and a metallic plate or overlay is placed on the celluloid so that the celluloid is between the block and the metallic plate or overlay, the whole being held in the holder by any suitable means.

The holder and its contents are then subjected to heat, the whole being held firmly together by said holder to prevent the heat from curling or warping the celluloid sheet, which, if it should become warped, would allow air to enter between said celluloid sheet and the metal plate and when, subsequently, pressure was imparted to the celluloid and block by the plate in a press, a certain amount of air might be left between the celluloid sheet and metal plate which would cause air bubbles and interfere with the nicety of the impression on the celluloid made by the engraving block. After the celluloid has been rendered plastic by heat, the engraving block, celluloid sheet and metal plate are placed in a press and the impression made without further application of heat.

The lettering or design which has thus been impressed in the celluloid is next, if required, coated or filled with the desired color, and any superfluous color rubbed or ground off; or the coloring matter may have been previously applied to the block by means of an inking roller or the like, before the block is put in the holder, in which case the lettering or design in the celluloid may require no further treatment.

The method is illustrated in the annexed drawing in which Figure 1 represents in section the engraved block, the celluloid sheet, and the metal plate carried in a suitable holder.

Fig. 2 shows the block sheet and plate transferred to a press.

Fig. 3 shows in section the impressed celluloid sheet with color filling.

a represents the engraved block, *b* the celluloid sheet and *c* the superposed metal plate. *d* is the holder and *e* the press. *f* represents the color filling.

We are aware that it is well known that in order to impress lettering or designs on celluloid, the celluloid must be brought by the application of heat to the desired plastic state to take the impression from a matrix or engraved block.

This has been heretofore effected by using a specially constructed press in which the pressure members are heated by steam or the like and the necessary heat is provided at the time the impression is made.

Our method which is principally intended for obtaining celluloid articles with finely impressed letters or designs thereon analogous to finely engraved letters or designs differs from these known methods by the fact that the celluloid the engraving block and the metal plate are heated to the desired state before being placed in the press so that a press of ordinary construction will serve for obtaining the impression. The degree of heat given to the celluloid can be better controlled, and the celluloid is brought to the proper heat and plasticity before the pressure is applied.

What we claim as our invention and desire to secure by Letters Patent of the United States is:—

1. A method of forming impressions on celluloid consisting in placing a sheet of celluloid between an engraving block and a metal plate; placing said sheet of celluloid, engraving block and metal plate in a holder, heating the same to render the celluloid plastic and subsequently subjecting said sheet of celluloid to pressure between said block and plate in a press.

2. The herein described method of forming impressions on a sheet of celluloid which consists first in placing a sheet of celluloid between an engraving block and a metal plate; second, in placing said block, celluloid sheet and plate in a holder and holding the three firmly together; third, in heating said block, celluloid sheet and metal plate while still held in contact with each other by said holder, whereby said celluloid sheet is rendered plastic; and fourth in placing

said block, celluloid sheet and plate still in contact with each other and while said celluloid sheet is in a plastic state in a press and subjecting them to pressure therein.

3. The herein described method of forming impressions on a sheet of celluloid which consists first in placing a sheet of celluloid between an engraving block and a metal plate; second, in placing said block, celluloid sheet and plate in a holder and holding the three firmly together; third, in heating said block, celluloid sheet and metal plate while still held in contact with each other by said holder, whereby said celluloid sheet is rendered plastic; and fourth in placing said block, celluloid sheet and plate still in contact with each other and while said celluloid sheet is in a plastic state in a press and subjecting them to pressure therein without further application of heat.

4. The herein described method of forming impressions on a sheet of celluloid which consists, first, in placing a sheet of celluloid between an engraving block and a metal plate, said metal plate having a plane surface adjacent to said celluloid sheet; second, in placing said block, celluloid sheet and plate in a holder and holding the three firmly together, with the entire surface of said celluloid sheet contacting with the plane surface of said metal plate: third, in heating said block, celluloid sheet and metal plate while still held in contact with each other by said holder, whereby said celluloid sheet is rendered plastic; fourth, in placing said block, celluloid sheet and plate still in contact with each other and while said celluloid plate is in a plastic state in a press and subjecting them to pressure therein.

5. A method of forming impressions on celluloid consisting in placing a sheet of celluloid between an engraving block and a metal plate: placing said sheet of celluloid, engraving block and metal plate in a holder, heating the same to render the celluloid plastic and subsequently subjecting said sheet of celluloid to pressure between said block and plate in a press, the impressions in the celluloid being subsequently filled with color, substantially as described.

In witness whereof we have signed this specification in the presence of two witnesses.

F. GEO. LUNDI.
JOHN McMILLAN.

Witnesses:
FRED. H. BELL,
H. W. PEACOCK.