

UNITED STATES PATENT OFFICE.

THEODOR BUSAM, OF STUTTGART, GERMANY.

APPARATUS FOR THE PRODUCTION OF BROMID-OF-SILVER POST-CARDS AND SIMILAR COPIES.

978,126.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THEODOR BUSAM, a subject of the German Emperor, residing at Stuttgart, Kingdom of Württemberg, German Empire, have invented certain new and useful Improvements in Apparatus for the Production of Bromid-of-Silver Post-Cards and Similar Copies, of which the following is a specification.

10 This invention under consideration consists of an apparatus with which within a short time a large number of bromid of silver postcards can be produced in any place desired.

15 The apparatus consists chiefly of a well-known copying arrangement, and also of a well-known transport system, by means of which the paper is carried on rollers through the various receptacles for liquid, and these 20 arrangements are united in one whole.

The invention consists in the union of the well-known development arrangement with the copying apparatus known in all its chief points through the German patent document 25 26620, since not only the pressure of the copying paper on the negative the opening and closing of the light cover and the moving of the paper roll, are effected by means of a driving spindle, but also the passage of 30 the paper roll through the developing, fixing and washing bath.

The form in which the object of the invention is carried out is depicted in the drawing, in which are shown:

35 Figure 1, a longitudinal section through the middle of the arrangement; Fig. 2, a bird's eye view of the same with the lid partially removed; and Fig. 3, a cross section from A to B of Fig. 1. Fig. 4 is an enlarged detail view partly in section showing 40 a fragment of a lever and the member to which it is connected.

In the apparatus shown *a* denotes a roll of sensitized material such as paper which is 45 run over guiding members and between the feeding rollers *b* and *c*. The roller *b* has a cog wheel *f* connected with it which meshes with a cog wheel *e*, the said cog wheel *e* being mutilated as shown at *i* so that it may 50 turn for a portion of its rotation without turning the roller *b*. The cog wheel *e* is mounted on a shaft *e'* which is turned by a crank *d*. The cog wheel *e* is further provided with a wrist pin or arm *k* with which 55 a lever *l* is adapted to engage, the said lever

being pivoted at *l'* and having its end opposite member *e* connected to a rod *r* through the medium of a pivot *r'*. The rod is connected to an arm *r''* having one end attached to a hinged cover *o* which cover rests on a photographic plate *h* and prevents light 60 from gaining access to it except when the cover is lifted.

g illustrates the paper or sensitized element which is run from the roll *a* and under 65 the sensitized element *g* is a press plate *m* which is designed to press the sensitized material into contact with the photographic plate *h*. The rod *r* has an aperture *r''* in it for the reception of the lower end of a rod 70 *q* which rod *q* is attached to the press plate and intermediate the length of the rod *q* is a shoulder *q'* which is designed as a bearing for a spring *q''* which spring also bears 75 against an angular end of the rod *r*, the said angular end containing the aperture *r''*.

The apparatus has a casing A and the said casing contains a receptacle *t* designed to contain developer, a receptacle *n* designed 80 to receive fixing solution and a receptacle *w* designed to receive water. The receptacles are provided with guiding means for the sensitized material such guiding means being in the form of rollers *s*, *v*, *s'* and *v'* at 85 the top of the receptacles and rollers *u* near the bottoms of the receptacles, so that the sensitized material being run in engagement with the said rollers is guided through the 90 baths or liquids in the said receptacles. The receptacle is also provided with guiding rollers B, C and D for the purpose of guiding the paper *z* from the roll *z'* which is for a purpose to be presently explained.

The arrangement works as follows: After 95 the end of the roll of bromid of silver, paper *a* has been drawn over the transport rolls of the liquid receptacle, this strip is fastened between the two rollers *b* and *c*. By turning the crank *d*, the wooden roller *b* and the india rubber roller *c* are turned by 100 means of the cog-wheels *e* and *f*. By this means, the strip is drawn through the arrangement, until the bromid of silver paper *g* is brought under the photographic plate *h*. Although the hand crank *d* is always turning, 105 the bromid of silver strip remains still for a short time, until the interval *i* of the cog-wheel *e* has passed the cog-wheel *f*, and the teeth of the two wheels catch into each other again. During this interval, the arm *k* 110

which is fitted to the cog-wheel *e*, presses on the lever *l*, so that by the turning of the latter the bromid of silver paper is pressed against the photographic plate *h* through wooden plate *m*, and at the same time the cover *o* of the frame *p* is raised, whereby the lighting of the paper takes place. The rods *q* and *r*, which are connected respectively with the plate *m* and the cover *o* and are necessary for the pressing and lighting of the paper, are so arranged, that the rods only lift up the cover *o*, when by means of the rod *q* the wooden plate *m* has pressed the paper against the plate *h*, so that the lighting of the paper may not take place too soon. When the pressure of the arm *k* is released from the lever *l*, the latter goes back into its place, and with it also the rods *q* and *r*. As soon as the copying is finished, the cog-wheels *e* and *f* catch into each other again, and the bromid of silver strip is pushed on farther the length of a picture, i. e., until the interval on the cog-wheel *e* comes again to the cog-wheel *f*. Now the paper which has been pushed forward is again exposed to the light, as already described, and so on. The copied strips are now first all brought from the roller *s* into the receptacle *i*, containing developer, and passed over the roller *u* and the bottom of tank, up to the roller *v*, which is positioned over the partition between the receptacles or compartments for the developing and fixing solutions. The strip is run over the other rollers shown in the drawing, and is then applied to the feeding mechanism consisting in part of the rollers *b* and *c*, heretofore described. Through this arrangement of the rollers, the strip to be developed is drawn through the receptacle, and thereby has sufficient time to develop. The developed strip is then in the same way drawn through the fixing bath into receptacle *w*, and then through the water bath *x*, so that it emerges finished from the arrangement through the rollers *b* and *c*. If sufficient pictures have been made, and the roller *a* has not yet been completely unwound, cover *y* is opened, the printed strips are to be cut off from those still unexposed, and the former are to be joined to the ordinary strip *z*, made of cheap paper, so that this remains in the liquid receptacles while the apparatus is not in use, and there is a saving of the bromid of silver paper.

Reference has heretofore been made to the means for moving the cover and plate successively, that is to say, moving the plate so as to engage the sensitized material prior to the time the cover is lifted to such an extent as to admit light, and in carrying out that feature of the invention, the said plate has a rod *q* attached to it, and the cover has connection with the rod *r* to which the lever *l* is pivotally connected. The lower end of

the rod *r* has an angular portion *r'* through which the rod *q* extends, and the said rod *q* also has a shoulder *q'* to engage a spring *q''*, which spring is interposed between the shoulder *q'* and the end *r'* of the rod *r*. As the lever is oscillated, therefore, movement is communicated to the rod *r*, which in turn, through the agency of the spring, communicates motion to the rod *q*, thus causing the plate to bear against the sensitized material in order that it may be pressed against the photographic plate *h*, prior to the admission of light, as stated. In practice, the pressing plate need not travel a great distance from the photographic plate, as it is only necessary to relieve the pressure on the photographic plate in order to permit the sensitized material to move, hence the cover would not be opened sufficiently to admit light prior to the time the traveling plate engaged the material on the photographic plate.

I claim—

1. In a photographic printing and developing apparatus, a casing having an exposure opening therein, a photographic plate applied to said opening, a door guarding said opening against the admission of light, means for feeding sensitized material across said opening, a press plate for pressing the sensitized material against the photographic plate, a rod connected to the door having an angular end, a rod connected to the press plate extending through the angular end of the first mentioned rod, a shoulder on the second mentioned rod, a spring interposed between the shoulder and the end of the rod connected to the door, and a lever for communicating motion to the first mentioned rod.

2. In a photographic printing and developing apparatus, a casing having an exposure opening therein, a photographic plate applied to said opening, a door guarding said opening against the admission of light, means for feeding sensitized material across said opening, a press plate for pressing the sensitized material against the photographic plate, a rod connected to the door having an angular end, a rod connected to the press plate extending through the angular end of the first mentioned rod, a shoulder on the second mentioned rod, a spring interposed between the shoulder and the end of the rod connected to the door, a lever connected to the first mentioned rod, and means for oscillating the lever.

3. In a photographic printing and developing apparatus, a casing having an exposure opening therein, a photographic plate applied to said opening, a door guarding said opening against the admission of light, means for feeding sensitized material across said opening, a press plate for pressing the sensitized material against the photo-

tographic plate, a rod connected to the door having an angular end, a rod connected to the press plate extending through the angular end of the first mentioned rod, a shoulder on the second mentioned rod, a spring interposed between the shoulder and the end of the rod connected to the door, a lever connected to the first mentioned rod, and means associated with the means for feeding sensitized material for actuating said lever.

4. In a photographic printing and developing apparatus, a casing having an exposure opening therein, a photographic plate applied to said opening, a door guarding said opening against the admission of light, means for feeding sensitized material across said opening, a press plate for press-

ing the sensitized material against the photographic plate, a rod connected to the door having an angular end, a rod connected to the press plate extending through the angular end of the first mentioned rod, a shoulder on the second mentioned rod, a spring interposed between the shoulder and the end of the rod connected to the door, and receptacles containing fluids adapted to act on the sensitized material through which the said sensitized material is drawn.

In testimony whereof, I affix my signature in the presence of two witnesses.

THEODOR BUSAM.

Witnesses:

JOSEF ULBERT,
WILHELM TREFZ.