J. P. BETHKE.

AUTOGRAPHIC CAMERA.

APPLICATION FILED JAN. 9, 1918.

1,375,815.

Patented Apr. 26, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

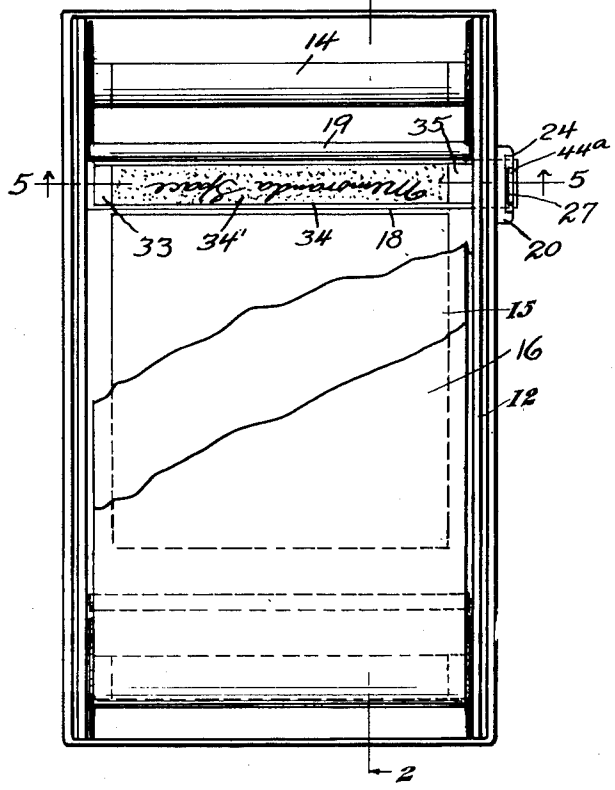


Fig. 2.

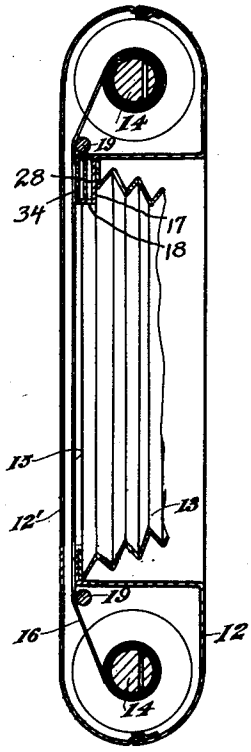


Fig. 3.

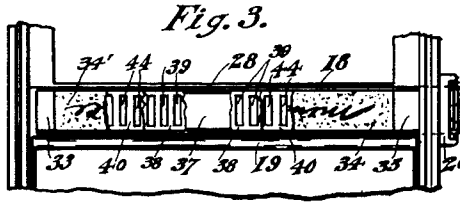
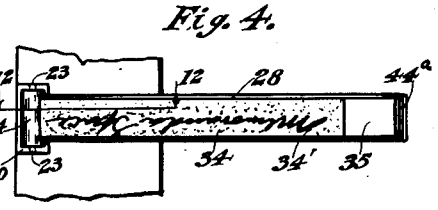


Fig. 4.



INVENTOR

John P. Bethke

BY

Upsall, Keeney & French

ATTORNEYS

J. P. BETHKE.

AUTOGRAPHIC CAMERA.

APPLICATION FILED JAN. 9, 1918.

1,375,815.

Patented Apr. 26, 1921.

2 SHEETS—SHEET 2.

Fig. 5.

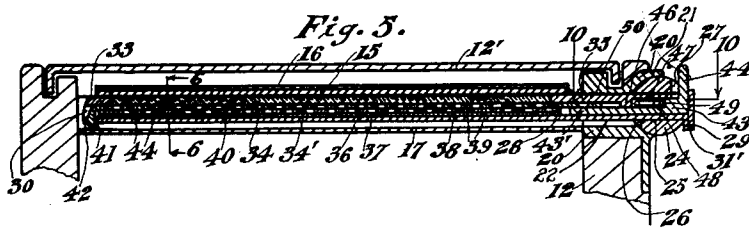


Fig. 6.

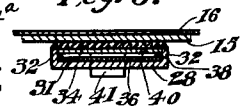


Fig. 10.

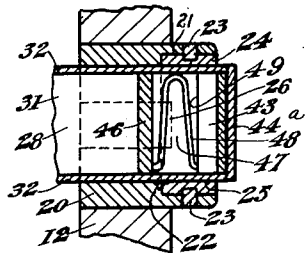


Fig. 7.

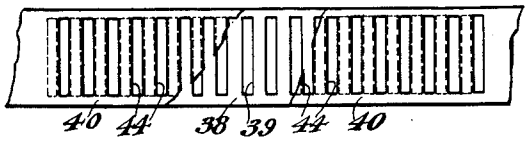


Fig. 8.

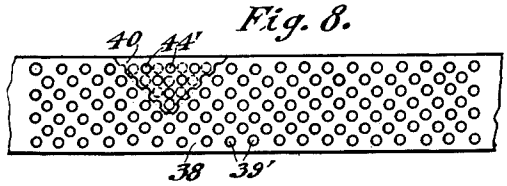


Fig. 11.

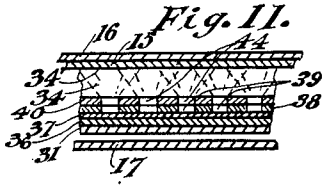
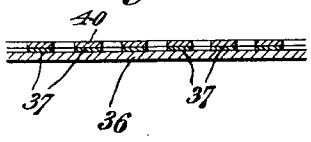


Fig. 9.



Fig. 13.



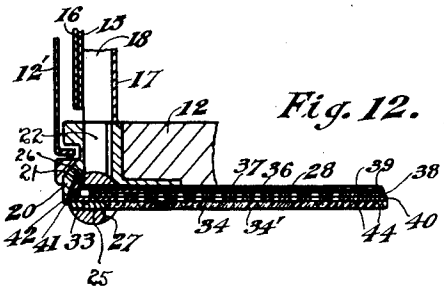


Fig. 12.

INVENTOR

John P. Bethke

BY

Uphill, Kenyon & Uphill

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN P. BETHKE, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO LOUIS SCHLESINGER, OF MILWAUKEE, WISCONSIN.

AUTOGRAPHIC CAMERA.

1,375,815. Specification of Letters Patent. Patented Apr. 26, 1921.

Application filed January 9, 1918. Serial No. 211,079.

To all whom it may concern:

Be it known that I, JOHN P. BETHKE, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Autographic Cameras, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The invention relates to autographic cameras and is more particularly designed to provide a device used in connection with a camera whereby the sensitized material in the camera may be provided with desired data, said data being light printed on the sensitized material so as to become apparent upon development of said material.

The invention is more particularly applicable to that type of autographic device in which the data is light printed upon the film by means of light emitted from an actinic ray emitting or luminous medium such as luminous paint or a radioactive substance. Luminous paint which contains phosphorescent zinc, barium or calcium sulfid, has the property of giving off actinic rays after it has been exposed to light. Purely radioactive substances do not depend upon any exterior light to excite them but give off rays of light by their own powers. The present invention may be used in connection with either of the above named sources of light.

In my application for patent Serial Number 27,031, filed May 10, 1915, I have shown and described an autographic device in which a writing surface is provided with an actinic ray emitting coating, the exposure of light from said coating being controlled by a sliding cover which is interposed between said surface and the sensitized material. In this former construction the exposure is made by pulling out this sliding cover and in so doing that portion of the surface uncovered first is exposed to the film longer than the other portions so that the exposure is not entirely uniform. In the present invention I have dispensed with this sliding cover which results in the following advantages: The writing surface is placed in direct contact with the sensitized material which insures clear printing, the whole writing surface is simultaneously exposed to light which results in uniform exposure and printing.

Another object of the invention is to provide a simple means for controlling the exposure of the data to the film.

Another object of the invention resides in the manner of supporting the writing surface for receiving writing when withdrawn from the camera.

Another feature of the invention is the provision of means for automatically exposing the actinic material to light while the writing is being done.

With these and other objects in view the invention further consists in the several features hereinafter described.

In the drawings:

Figure 1 is a rear view of the camera with the back removed showing the device in printing position, part of the film being broken away;

Fig. 2 is a section taken on the line 2—2 of Fig. 1; parts being broken away;

Fig. 3 is a detail sectional view, similar to Fig. 1, parts being broken away;

Fig. 4 is a detail view showing the device withdrawn from the camera in position for receiving writing;

Fig. 5 is a section taken on the line 5—5 of Fig. 1, together with the camera back;

Fig. 6 is a section taken on the line 6—6 of Fig. 5;

Fig. 7 is a detail plan view of the shutter, parts being broken away;

Fig. 8 is a detail view of a modified form of shutter;

Fig. 9 is a detail view of another form of shutter;

Fig. 10 is a section taken on the line 10—10 of Fig. 5;

Fig. 11 is a detail enlarged sectional view similar to Fig. 5 showing a portion of the device with the parts in printing position;

Fig. 12 is a section taken on the line 12—12 of Fig. 4, and

Fig. 13 is a detail view of a further modified form of shutter.

Referring to the drawing, the numeral 12 designates the camera case of a folding camera of usual construction provided with a removable back 12′, 13 the bellows to which the lens and its mechanism (not shown) are secured, 14 the spools, and 15 the sensitized material, which in the present instance is a sensitized photographic film, which is unrolled from one spool and wound on the other as well understood by persons skilled

in this art. The film is also provided with a protective paper backing 16 which moves with the film on the outer side thereof. One side of the camera casing adjacent the bellows 13 is bent to form sides 17 and 18 which are disposed adjacent the film 15 near one of the film guide rollers 19 as shown in Fig. 2.

A member 20 is fitted into one side of the camera casing adjacent the sides 17 and 18 and is provided with a curved bearing portion 21 and a slot 22 communicating with this bearing portion and the interior of the camera. Pivotally mounted with the bearing portion 21 by means of pivot pins 23 is a cylindrical hinge member 24 having an axially extending slot 25 therein adapted to register with the slot 22 but being of less width one way than said slot 22, and recesses 26 and 27 adjacent opposite ends and sides of the slot 25.

Slidably movable within the slots 25 and 22 is a container 28 having open ends 29 and 30. This container consists of a member forming a bottom portion 31, sides 32 and part top portion 33. The rest of the top is formed by a piece of glass 34 having its outer surface 34′ ground to form a writing surface and a top piece 35 secured to the sides 32. The bottom portion 31 has a depending flange 31′ to assist in moving the container with respect to the camera and the hinge member 24.

Within the container is a strip of paper 36 secured to the bottom thereof and provided with a luminous coating 37 of luminous paint or with a radio active substance and disposed above this paper and held in fixed position against the same is a plate 38 preferably of metal provided with a plurality of spaced apart transversely extending openings 39 forming a grid so that the light emitted from the luminous coating will shine through said openings 39.

Slidably mounted within the container and upon the plate 38 and between said plate and the top of the container is a shutter 40. At one end this shutter is provided with a projection or stop 41 which moves in a notch 42 in the bottom 31 at the open end 30 of the container and projects slightly below said bottom to register with the recess 26 in the member 24.

At the other end the shutter is secured to a slide 43, forming part of the shutter, by any suitable means as rivets 43′, only one being shown, said slide being provided with a projection 44ª disposed adjacent the recess 27 in the member 24. The projection 41 of the shutter 40 and the end 30 of the container are curved to conform to the curvature of the bearing portion 22 for reasons hereinafter set forth. Of course it will be understood that the shutter 40 and the slide 43 may be made in one piece.

In Figs. 5, 7 and 11 I have shown the shutter 40 formed of a metal plate provided with spaced apart transversely extending openings 44 forming a grid, which openings can be brought into register with the openings 39 so that the light emitted from the luminous coating will pass through these alined openings.

In Fig. 8 I show a shutter 40′ in which the openings 44′ are holes arranged in staggered relation which holes are adapted to be brought into and out of register with similar holes in a plate similar to the plate 38.

In Fig. 9 I have shown a shutter 40″ of celluloid having portions 45 rendered opaque while the other portions 45′ are transparent whereby a grid is formed.

The top piece 35 has a projection 46 which together with said piece and the slide 43 form a recess 47 in which is disposed a bent spring 48 said spring bearing against said projection 46 and a shouldered portion 49 of the slide 43 to normally hold the shutter 40 in non-exposing position, as shown in Fig. 5.

The side 50 of the slot 22 and the side of slot 25 in line therewith normally lie in a plane parallel to the surface of the film 15 and so close to the plane of the film that when the container is in place within the camera its top will be in direct contact with the film which insures clear printing. It will be noted in this connection that on the movement of the container to its position within the camera it is immediately placed in printing position and thus any special means for moving the writing surface or sensitized material into printing contact after said surface is within the camera is eliminated.

As shown in Fig. 2 one side of the container is in sliding contact with the side 18 of the casing and the container moves transversely of the film in the space between the film 15 and the side 17 of the casing. Of course the sides 17 and 18 of the casing protect that portion of the film which receives the autograph from the light coming through the camera lens.

In Fig. 5 the parts are shown in normal or non-exposing position with the container disposed adjacent the film 15. When it is desired to autograph the sensitized material the operator takes hold of the flange 31′ and pulls outwardly thereby sliding the container in the slot 22 and in the slot 25 in the member 24 until the stop 41 seats itself in the recess 26 in said member thus preventing further movement. Then the container is swung over against the side of the camera, out of line with the slot 22, through the turning of the member 24 in its bearing and assumes the position shown in Fig. 4. While the container and the hinge member

24 is being turned the curved portion of the end 30 engages the curved bearing portion 21 and the container is moved outwardly with respect to the shutter whereby the openings 39 are brought into register with the shutter openings, as shown in Fig. 12, and remain in register until the container is again swung into line with the slot 22 in the member 20. Thus when the container is moved outwardly and swung over to writing position the shutter is moved to exposing position so that the luminous material within the container can absorb its charge of light as the data is being placed upon the ground glass writing surface 35. Of course it is understood that this feature of exposing to light is not essential where a purely radioactive substance is used as the luminous material.

With the container in the position shown in Fig. 4 the writing upon the slide may be done in pen or pencil and readily removed from the ground glass by erasing it. When the writing is finished the operator turns the container and the member 24 back to bring the slot 25 into line with the slot 22 and then pushes the container inwardly to its position within the camera as shown in Figs. 1 and 5. In this connection it will be noted that by making the spring of such a strength as to require a greater force to compress it than that necessary to slide the container in the hinge member any liability of relative movement between the container and the movable shutter 40 is prevented. With the parts in printing position the operator simply presses inwardly on the projection 44ª and this brings the slots or openings 44 or 44′ in the shutters 40 and 40′ or the transparent portions of the shutter 44″ into register with the openings in the plate 38 thereby permitting the light from the luminous material 37 to pass through the glass 35 and affect the sensitized material except at those portions where the writing appears as the light at these points is intercepted by the writing and thus does not affect the film. The time of exposure depends upon the light emitting strength of the luminous material and with a material of proper strength the exposure may be made by simply pressing the projection 44 into the recess 27 and keeping it in this position for about five seconds and then releasing it, the spring 48 moving the shutter back so that the openings in the shutter and those in the plate 38 are out of register.

In Fig. 11 I have shown in a general way the passage of the light rays by diffraction through the grid and the glass and by test I have found that good printing results can be obtained when the slots 38 are $\frac{1}{32}$ of an inch in width and the distance between the slots slightly wider than $\frac{1}{32}$ inch and the thickness of the glass is $\frac{1}{16}$ of an inch. The plate 44 is similar to the plate 38. It will also be noted that by placing the luminous material in certain spots upon the paper similar to the manner in which the shutter shown in Fig. 9 is arranged, the plate 38 may be dispensed with.

While I have described the container as being open at its ends it will be noted that the ends of the shutter cover these openings at all times against the admission of light.

Though the device is shown in conjunction with and primarily designed for use in a camera it could be used independently of its connections with the camera as a separate device for numbering or imprinting other data on sensitized photographic material while in a dark room.

I am aware that the details of construction herein shown and described are capable of some modification and change and I therefore desire it to be understood that such changes as come within the scope of the appended claims are within the spirit of my invention.

What I claim as my invention is:

1. In an autographic camera, the combination, with a camera having an opening in one of its walls, of a data receiving member movable in said opening into and out of data imparting position adjacent the sensitized element within the camera, means for furnishing light from a luminous material, for printing the data on said member upon said sensitized element, and shutter mechanism provided with a multiplicity of exposure openings for simultaneously exposing all portions of the sensitized material adjacent said data receiving member to the light from said light furnishing means.

2. In an autographic camera, the combination, with a camera, of a sensitized material marking device provided with a member having a writing surface positionable adjacent the sensitized material in the camera, a luminous element located in front of said member, and a shutter mechanism provided with a multiplicity of exposure openings for simultaneously exposing all portions of the sensitized material adjacent said writing surface to the action of rays emitted from the luminous element.

3. In an autographic camera, the combination, with a camera having a sensitized element therein and an opening in one of the walls of the camera in line with the space in the camera in front of the sensitized element, of a data receiving member mounted to slide in said opening and movable directly in front of said sensitized element into printing position in said space, a luminous element in front of the data receiving member, and means provided with a multiplicity of exposure openings for simultaneously exposing all portions of said sensitized element to the rays emitted from said

luminous element to simultaneously print all the data upon said member upon said sensitized element.

4. In an autographic camera, the combination, with a camera, of a sensitized material marking device provided with a translucid writing surface on one side, a luminous element, and shutter mechanism provided with a multiplicity of exposure openings interposed between said surface and said luminous element for controlling the passage of rays, emitted from the luminous portion, through said translucid writing surface.

5. In an autographic camera, the combination, with a camera having an opening in one of its walls, of a container slidably movable in said opening and pivotally secured to the camera so as to be swung against the same on its withdrawal, a member having a writing surface carried by the container, means within the container furnishing a source of light, and means carried by the container for controlling the exposure of the sensitized material to the light from said light furnishing means.

6. In an autographic device, the combination, with a member provided with a luminous element, of a grid arranged in sections, means movable relatively thereto and forming a shutter to control the passage of light emitted by the luminous element.

7. In an autographic device, the combination, with a camera, of a sensitized material marking device provided with a writing surface on one side positioned adjacent the sensitized material, a luminous element arranged in sections and positioned on the opposite side of said marking device, a grid located between said luminous element and marking device and movable relative to the luminous element and forming a shutter, and means exterior of the camera for controlling said shutter.

8. In an autographic device, the combination, with a member provided with luminous material, of means for diffracting the light emitted from said material, a member having a translucid writing surface through which said diffracted light passes, and means for controlling the passage of light through said surface.

9. In an autographic camera having sensitized material therein, a marking device for said sensitized material embodying a translucid element having a writing receiving surface on one side adapted to lie against said sensitized material, an actinic ray emitting luminous element, and a shutter means located between said luminous and translucid elements, said shutter means having a multiplicity of light openings which are openable simultaneously to simultaneously expose the entire surface of the sensitized material adjacent the marking device to the rays of light from the luminous element.

10. In an autographic camera, the combination, with a camera having an opening in one of its side walls, of a hinge member pivotally mounted at the opening and provided with a slot, an autographic device including a printing member slidably mounted in said hinge member and movable to printing position within the camera and to receiving position exterior of the camera, and means for causing the data upon the printing member to be printed upon the sensitized element within the camera.

11. In an autographic camera, the combination, with a camera having an opening in one of its side walls, of an autographic device slidably movable in said opening to data imparting position within the camera and data receiving position on the exterior of the camera and comprising a translucid writing-receiving element, a luminous element positioned to the front thereof, a movable shutter for controlling the passage of light from the luminous element through said writing-receiving element, manually operable means for controlling said shutter when said device is moved to data imparting position on the exterior of the camera, and automatically operable means for operating said shutter when said device is moved to data receiving position on the exterior of the camera.

12. In an autographic camera, the combination, with a camera having an opening in one of its side walls, of an autographic device movable in said opening to data imparting and data receiving position on the interior and exterior of the camera respectively and comprising a member having a translucid writing element, a luminous element, and light control means interposed between said writing receiving element and said luminous element.

13. An autographic device comprising a translucid element for receiving data, a luminous element, and means interposed between the data receiving element and said luminous element to control the passage of rays of light, emitted by the luminous element, through the data receiving element.

14. An autographic device comprising a translucid member having a writing-receiving surface for receiving data, a luminous element, and a shutter means interposed between the data receiving member and said luminous element and constructed to simultaneously expose the whole of said surface to the rays of light emitted by the luminous element.

15. An autographic device comprising a piece of glass ground on its outer side to form a writing receiving surface, means for causing light to pass through said writing

receiving surface, and means interposed between said writing receiving surface and said first named means for controlling the passage of light through said writing receiving surface.

16. An autographic device comprising a frame, a translucid member having a surface for receiving data, and secured to said frame, a member provided with an actinic ray emitting coating, a two part grating interposed between said surface and said coating to diffract the light rays, one part of said grating being movable with respect to the other to control the passage of the emitted rays.

17. The combination, with a camera having an opening in one of its walls, of an autographic device, movable in said opening to data imparting position adjacent the sensitized element within the camera and to data receiving position exterior of the camera and comprising a member having a translucid writing receiving surface, a second member provided with an actinic ray emitting coating, a two part grating interposed between said writing receiving surface and said actinic ray emitting coating to diffract the light rays, one part of said grating being movable with respect to the other, and means operable from the exterior of the camera to move said movable grating.

18. The combination, with a camera having an opening in one of its walls, of a container movable in said opening and provided with a translucid member having a writing receiving surface and movable to data imparting position adjacent the sensitized element within the camera and to data receiving position exterior of the camera, an actinic ray emitting coating on a base within the container, a movable shutter interposed between said coating and said writing receiving surface, means normally maintaining the shutter in light excluding position, and means operable from the exterior of the camera for opening the shutter to expose the sensitized material adjacent said writing receiving surface.

19. The combination, with a camera having an opening in one of its walls, of a hinge member pivotally mounted on the camera adjacent said opening and having an opening therein communicating with the opening in the wall of the camera, a container slidably mounted in said openings and provided with a translucid member having a writing receiving surface, an actinic ray emitting coating on a base, and a slidably movable shutter interposed between said coating and said writing receiving surface, means for normally holding said shutter in light excluding position, the movement of said shutter to exposing position being manually controlled when the container is within the camera, and means for automatically moving said shutter to exposing position when said container is moved outward and turned with said hinge member to data receiving position.

20. In an autographic device, the combination, with an actinic ray emitting coating on a base member, of a two part diffraction grating disposed adjacent thereto to diffract the light rays, one part of said grating being movable with respect to the other to control the passage of the emitted rays through said grating.

In testimony whereof, I affix my signature.

JOHN P. BETHKE.