Dec. 22, 1942. J. BOLSEY 2,305,665

FOLDING HOOD

Filed Dec. 31, 1940 2 Sheets-Sheet 1

Fig. 1

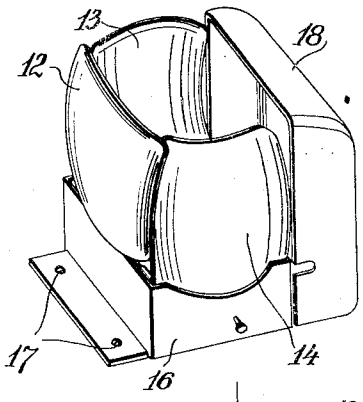
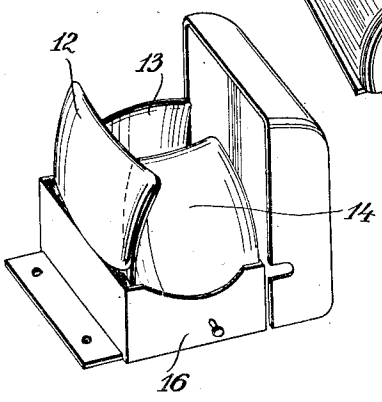


Fig. 2



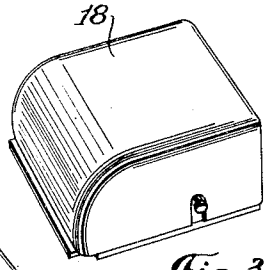


Fig. 3

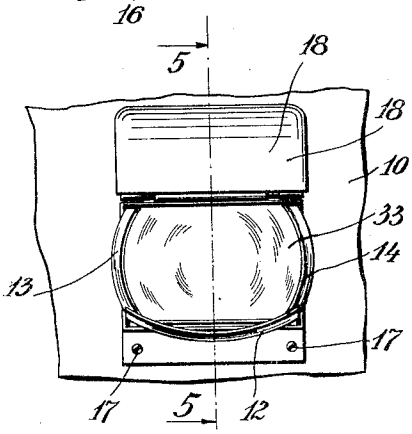


Fig. 4

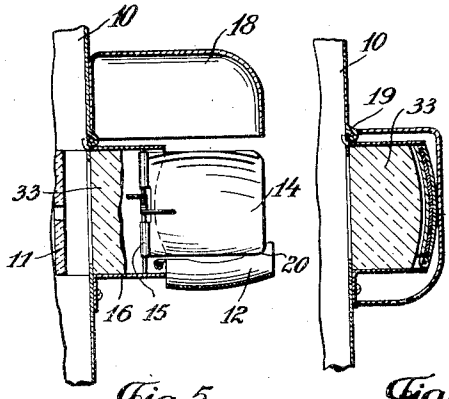


Fig. 5

Fig. 6

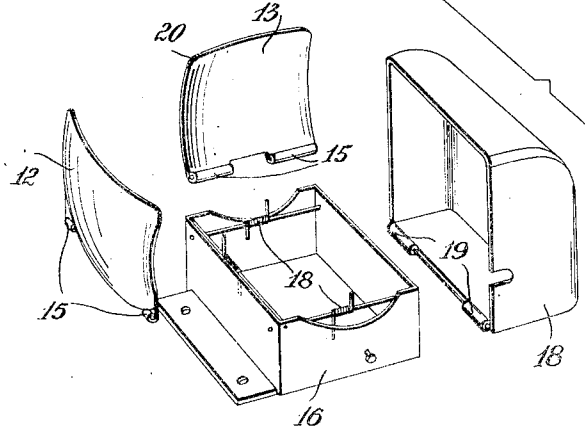


Fig. 7

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Dec. 22, 1942. J. BOLSEY 2,305,665

FOLDING HOOD

Filed Dec. 31, 1940 2 Sheets-Sheet 2

Fig. 8

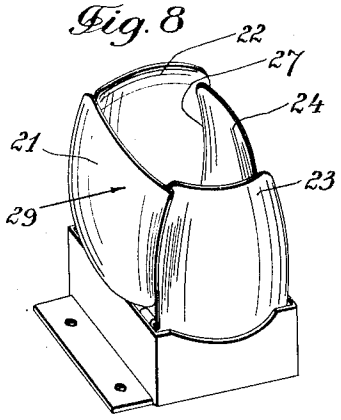


Fig. 9

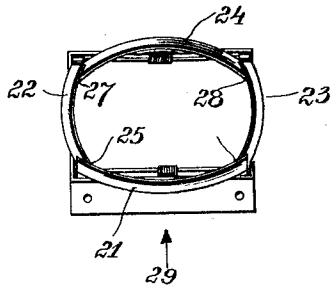


Fig. 11

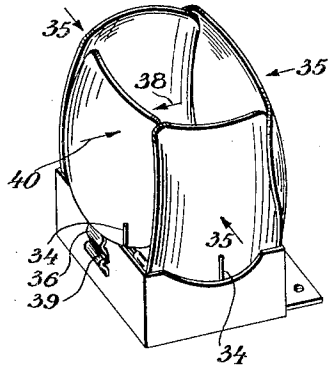
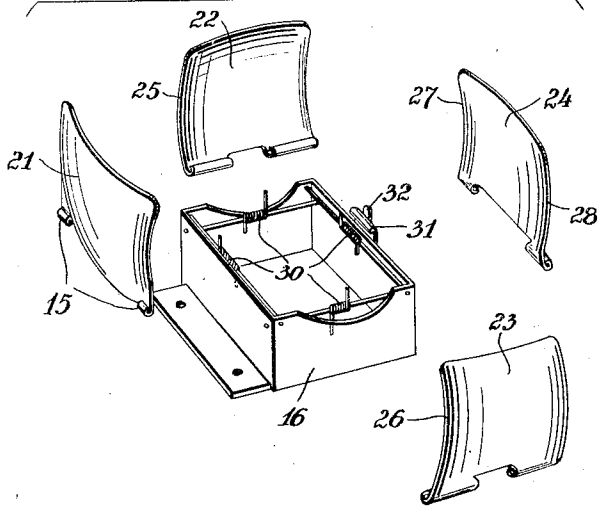


Fig. 10



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UNITED STATES PATENT OFFICE

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FOLDING HOOD

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Application December 31, 1940, Serial No. 372,508
In Switzerland November 8, 1940

14 Claims. (Cl. 88—1.5)

My present invention relates to cameras equipped with viewing devices, and particularly to reflex cameras with a viewing device on the camera top and a folding hood adapted to form a light shaft and to increase thereby the visibility of the image on the focusing screen of this viewing device.

It is an object of my present invention to provide for a folding hood which can be easily and quickly closed.

It is another object of my invention to provide for a folding hood which can be closed by one single tilting movement of the camera operator.

It is still another object of my invention to provide a folding hood in which all wall sections of the hood can be brought into closed position by folding down one of them.

It is a further object of my invention to arrange these wall sections along the four edges of a rectangular viewing device, e. g., a rectangular focusing screen and to fold down the wall section on this viewing device juxtaposed one on the other.

In accordance with my present invention I attain the above objects by providing for a folding hood with hinged spring-opened wall sections and by shaping and positioning two or more of these wall sections directly cooperating with each other in such a manner that by folding down one of these wall sections the other wall sections are automatically folded down too.

In accordance with a preferred embodiment of my invention I arrange the spring-opened wall sections along the edges of a rectangular viewing device, e. g., focusing screen in such a manner that during folding down of one of the wall sections, an edge portion of each of the other wall sections slides along the inner face of the first wall section, thereby folding down these other wall sections automatically and simultaneously with the first wall section; in such arrangements, it is of utmost importance that in opened position—i. e., when the "closing" wall section, by movement of which the other wall sections are operated, and also these other wall sections, are open—edge portions of each of these other wall sections be in contact with the inner face of said closing wall section. This means that if I have three cooperating wall sections, an edge portion of each of the second and third wall sections has to be in contact with the inner face of the first wall section, and that if I have four cooperating wall sections, an edge portion of the fourth wall section has to be in contact with the inner face of at least one of the second and third wall sections.

The novel features which I consider as characteristic for my invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof will be best understood from the following description of specific embodiments, when read in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of a folding hood with three cooperating wall sections and a separate cover, in opened position;

Fig. 2 is a perspective view of the folding hood shown in Fig. 1, during closing;

Fig. 3 is a perspective view of the same folding hood, in closed position;

Fig. 4 is a top view of the folding hood shown in Figs. 1—3;

Fig. 5 is a cross-section line 5—5 of Fig. 4;

Fig. 6 is a cross-section of the folding hood shown in Fig. 5, in closed position;

Fig. 7 is an exploded view of the folding hood shown in Figs. 1—6;

Fig. 8 is a perspective view of a folding hood with four cooperating wall sections;

Fig. 9 is a top view of the following hood shown in Fig. 8;

Fig. 10 is an exploded view of the folding hood shown in Fig. 8, and

Fig. 11 is a perspective view of another embodiment of my new folding hood.

The folding hood shown in Figs. 1–7 is attached to top wall 10 of camera casing 1 over the focusing screen 11 and the magnifying lens 33 of the viewing device. Three wall sections, i. e., the middle wall section 12 and the side wall sections 13 and 14 are secured by hinges 15 to the hood base 16, rigidly secured by screws 17 to top wall 10. They are forced into open position by springs 18, as shown in Figs. 5 and 7.

Besides these three wall sections, a cover 18 is arranged secured by hinges 19 to top wall 10 and adapted to cover all wall sections 12, 13 and 14 in folded-down position, as shown in Fig. 6.

The main characteristic features of my present invention consist in the shape and arrangement of the wall sections: as shown in the drawings, each of these wall sections has a concave-convex shape and they are arranged in such a way that in opened position the edge portions 20 are in contact with the inner concave face of the wall section 12 and that during the folding down these edge portions slide along the

concave face, as shown in Fig. 2. By arranging these wall sections in the way shown in Fig. 4, this means, by using a wall section 12 with a concave inner face, by arranging each of the wall sections 13 and 14 at an angle of at least 90° to wall section 12, and by maintaining the edges 20 of wall sections 13 and 14 permanently, i. e., when in open position and during folding in contact with the inner face of wall section 12, I attain the main object of my present invention: It is possible to fold down all three wall sections simultaneously and automatically by folding down wall section 12 only.

I want to note that I may shape the wall sections 13 and 14 as parts of a spherical surface; it should, however, be stressed that I may also use plane wall sections instead of spherical wall sections 13, 14. They also would give a satisfactory result; I prefer, however, to give a spherical shape also to these wall sections, facilitating thereby closing of the hood and superposing these sections over the magnifying lens 33.

The above description of the folding hood, shown in Figs. 1 to 7, seems clear enough; therefore, these figures will be understood without further explanation and need not each separately a detailed description.

The folding hood shown in Figs. 8–10 comprises four wall sections 21, 22, 23 and 24. As shown in these figures, I use four spherical, i. e., concave-convex, wall sections and arrange these wall sections in such a manner that in their open position portions of the edges 25 and 26 of the wall sections 22 and 23 are in contact with the inner concave face of wall section 21, and one or both of the edges 27 and 28 of wall section 24 is, or are, in contact with the inner concave faces of wall sections 22 and 23. In connection with this embodiment of my invention I want to note, too, that although I have shown four spherical wall sections, I may use three spherical wall sections 21, 22 and 23 only, and use a plane or otherwise shaped wall section instead of spherical wall section 24.

This folding hood is closed by folding down of wall section 21 in the direction indicated by arrow 29: By folding down of this wall section, portions of the edges 25 and 26 are forced to slide along the inner surface of section 24 and to fold down the wall sections 22 and 23 also; by folding down these wall sections 22 and 23 portions of the edges 27 and 28 of wall section 24 are compelled to slide along the inner surface of these wall sections 22 and 23 and the wall section 24 is folded down too. It is thus evident that by closing, i. e., by folding down of wall section 21, the other three wall sections 22, 23 and 24 are folded down too.

As the springs 30 tend to open the folding hood, when this is in closed position, I provide locking means 31 for holding section wall 21, and thereby all four wall sections, in closed, folded-down position. These locking means may be of a usual type, e. g., locking means operating automatically when section wall 21 is folded down, blocking it in its closed position. I, furthermore, provide means 32 for releasing the closed wall section by putting locking means 31 out of action.

Although, I have shown only wall sections cooperating directly, e. g., by sliding of an edge of one wall section on the face of another wall section, I want to note that I may also provide for motion-transmitting means, e. g., a lever system to achieve the required simultaneous movement of the wall sections.

I also propose to connect, if required, cover 18 with wall section 12 by a lever system adapted to move also wall section 12 by moving of cover 18. As wall section 12 operates the wall sections 13 and 14, I may, in this case, operate by movement of cover 18 all three wall sections 12, 13 and 14 simultaneously with cover 18, and thus close or open the folding hood by operating of the cover 18 only.

As shown in Fig. 11, I may use also a folding hood with spring-closed wall sections instead of with spring-opened sections; in this case the springs 34 are arranged in such a way that they tend to close the hood by moving the wall sections in the direction indicated by arrows 35; it is evident that this hood will close automatically and, therefore, I must provide means by which to open the hood against the action of spring 34 and to keep the hood, i. e., its wall sections, in opened position. For this purpose I provide projection part 36 on the innermost wall section 37 by means of which I am able to tilt this wall section in direction of arrow 38, pushing thereby the other wall sections also into opened position.

During viewing and focusing, the hood sections have to be retained in this opened position. Therefore, I provide a blocking member, e. g., a spring 39, engaging projection 36 when the latter is open. This spring 39 must be so strong as to keep the wall sections in opened position against the action of springs 34.

In order to close the hood I exert pressure against the wall section 37 in the direction indicated by arrow 40 and close this section against action of spring 39. By closing this wall section, all other sections are closed automatically, too.

I want to emphasize that also this embodiment of my invention should be covered by the following claims.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of reflex cameras with viewing devices differing from the types described above.

While I have illustrated and described the invention as embodied in reflex cameras with viewing devices, I do not intend to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of my invention.

Without further analysis, the foregoing will so fully reveal the gist of my invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a reflex camera a viewing device on the top of the camera, a folding hood adapted to form a light shaft for said viewing device and comprising at least two hinged spring-opened wall sections adapted to lie, when closed, in juxtaposition to each other, the first of said wall sections having a concave inner face and positioned in relation to the other wall section in such a manner that when open, an edge portion of the other wall section is in contact with the inner concave face of said first wall section and that during folding

down of said first wall section, said edge portion slides along said inner concave face of said first wall section so that said other wall section is folded down automatically and simultaneously with the folding down of said first wall section.

2. In a reflex camera a viewing device on the top wall of the camera, a folding hood adapted to form a rectangular light shaft for said viewing device and comprising four hinged spring-opened wall sections adapted to form, when opened, the four walls of said rectangular light shaft and when closed to lie in juxtaposition to each other, at least the first, second and third of said wall sections having a concave inner face and the first of said section positioned in relation to the second and third wall sections and at least one of said latter wall sections positioned in relation to the fourth wall section in such a manner that when open, an edge portion of each of said second and third wall sections is in contact with the inner concave face of said first wall section and at least one edge portion of said fourth wall section is in contact with the inner concave face of at least one of said second and third wall sections, and that during folding down of said first wall section edge portions of said second and third wall sections slide along the inner concave face of said first wall section and at least one edge portion of said fourth wall section slides along the inner concave face of at least one of said second and third wall sections, so that said second, third and fourth wall sections are folded down automatically and simultaneously with folding down of said first wall section.

3. In combination with a folding hood for cameras, according to claim 2, locking means adapted to hold said first wall section in folded-down position.

4. In combination with a folding hood for cameras, according to claim 2, locking means adapted to hold said first wall section in folded-down position, and means for releasing said locking means at will of the operator of said camera, opening thereby the folding hood by action of said spring.

5. In combination with a folding hood, according to claim 12, a separate tightly closing cover adapted to be folded down over said wall sections when they are in folded-down position, to hold thereby said wall sections in this position and to avoid soiling of said viewing device.

6. In combination with a folding hood, according to claim 12, a separate tightly closing cover adapted to be folded down over said wall sections when they are in folded-down position, and means connecting said cover with said first wall section adapted to fold down said first wall section when said cover is closed.

7. In combination with a folding hood, according to claim 12, a separate tightly closing cover adapted to be folded down over said wall sections when they are in folded-down position, and a lever system connecting said cover and said first wall section adapted to fold down said first wall section, by closing of said cover, thereby closing all wall sections simultaneously with the closing of said cover.

8. In a reflex camera a viewing device on the top wall of the camera, a folding hood adapted to form a rectangular light shaft for said viewing device and comprising four hinged spring-closed wall sections adapted to form, when opened, the four walls of said rectangular light shaft and when closed to lie superposed on each other, at least a second, third and fourth of said wall sections having a concave inner face and the first of said wall sections positioned in relation to the second and third wall sections and at least one of said latter wall sections positioned in relation to the fourth wall section in such a manner that during opening of said first wall section edge portions of said first wall section slide along the inner concave faces of said second and third wall sections and at least one edge portion of said second and third wall sections slides along the inner concave faces of said fourth wall section, so that said second, third and fourth wall sections are opened simultaneously and automatically with opening of said first wall section.

9. A folding hood as claimed in claim 8, comprising a projecting member for opening said first wall section and means for locking said first wall section in opened position.

10. In a reflex camera including a viewing device on the top of said camera, a folding hood comprising at least two hinged wall sections, at least one of which has an inwardly curved inner face, said wall sections being adapted to lie when in closed position superimposed upon each other on said viewing device and to stand in opened position at a certain angle to the top of said camera, forming thereby a light shaft for said viewing device, springs forcing said wall sections from one of said positions into the other, said wall sections being shaped and positioned relative to each other in such a manner that during moving of a wall section against the action of said springs, an edge portion of one of said wall sections is in permanent contact with the inwardly curved inner face of the other of said wall sections and slides along said inwardly curved inner face.

11. In a reflex camera including a viewing device on the top of said camera, a folding hood comprising at least two hinged wall sections, at least one of which has a concave inner face, said wall sections being adapted to lie when in closed position superimposed upon each other on said viewing device and to stand in opened position at a certain angle to the top of said camera, forming thereby a light shaft for said viewing device, springs forcing said wall sections from one of said positions into the other, said wall sections being shaped and positioned relative to each other in such a manner that in that position into which said wall sections are forced by said springs, an edge portion of one wall section is in contact with said inner concave face of the other wall sections and that during manual moving of a wall section against the action of said springs, said edge portion is sliding along said concave face, whereby also the not manually moved wall section is compelled to move automatically and simultaneously with the manually moved wall section in the same direction.

12. In a reflex camera a viewing device on the top of the camera, a folding hood adapted to form a light shaft for said viewing device and comprising at least two hinged spring-opened wall sections adapted to lie, when closed, in juxtaposition to each other, the first of said wall sections having a concave inner face and positioned in relation to the other wall section in such a manner that during folding down of said first wall section an edge portion of said other wall section is in permanent contact with the inner concave face of said first wall section and

forced to slide along the same, so that said other wall section is folded down automatically and simultaneously with the folding down of said first wall section.

13. In a reflex camera, equipped with a viewing device on the top of said camera, a folding hood comprising at least a first and a second wall section, said wall sections adapted to lie when in closed position superimposed upon each other on said viewing device and to stand in opened position at a certain angle to the top of said camera, forming thereby a light shaft for said viewing device, springs forcing said wall sections from opened into closed position, said second wall section having a concave inner face and positioned in relation to said first wall section in such a manner that during folding up of said first wall section, an edge portion of said first wall section is in permanent contact with the inner concave face of said second wall section and forced to slide along the same so that said second wall section is folded up automatically and simultaneously with the folding up of said first wall section.

14. In a reflex camera equipped with a viewing device on the top of said camera, a folding hood comprising at least a first and a second hinged wall section adapted to lie when in closed position superimposed upon each other on said viewing device and to stand in opened position at a certain angle to the top of said camera, springs forcing said wall sections from opened into closed position, said second wall section having a concave inner face and positioned in relation to said first wall section in such a manner that when closed an edge portion of said first wall section is in contact with the inner concave face of said second wall section and that during folding up of said first wall section, said edge portion of said first wall section is forced to slide along said inner concave face of said second wall section so that said second wall section is folded up automatically and simultaneously with the folding up of said first wall section.

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