

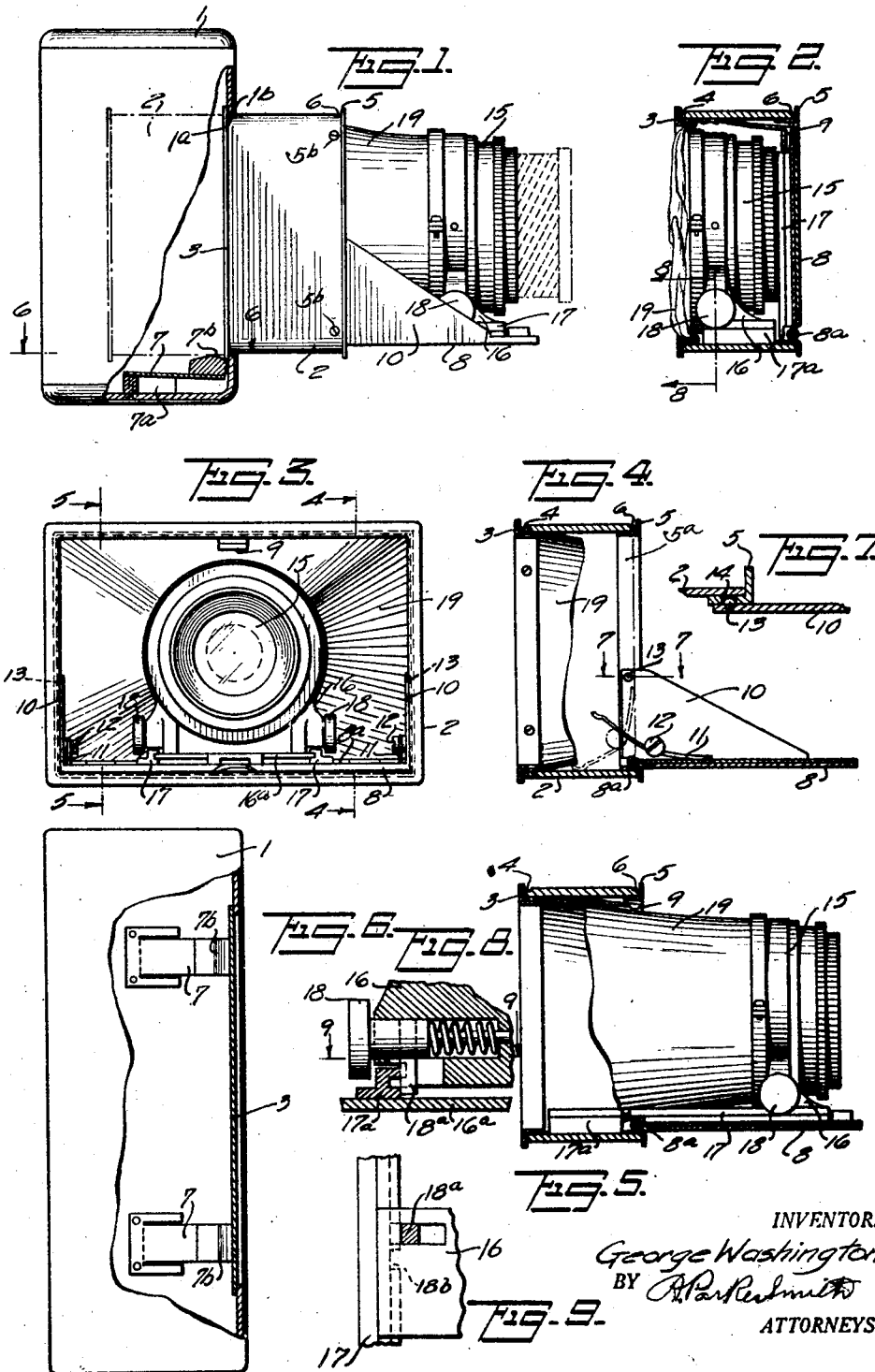
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COLLAPSIBLE CAMERA

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COLLAPSIBLE CAMERA.

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This invention relates to cameras in general but is more specifically designed to produce a collapsible form of camera which, when extended for use, will have a considerable focal length, but, when collapsed, will form a neat, compact package capable of being carried in an ordinary pocket of the user's clothing. To this end the preferred embodiment of the invention hereinafter described more in detail comprises a rectangular main casing of relatively small depth, a section telescoping sidewise into said casing and carrying lenses mounted on a sliding carriage and a collapsed bellows extension, or hood for the same, and a front panel or flap hinged to said telescoping section and adapted, when swung outward and downward, to serve as a support for the carriage and lenses when the latter are pulled out into operative position and said hood extended.

The best form of apparatus at present known to me embodying my invention is illustrated in the accompanying drawings in which,

Fig. 1 is a side elevation, with parts broken away or in section, showing the camera in position for taking a photograph.

Fig. 2 is a detail axial section showing the bellows extension collapsed.

Fig. 3 is a front elevation of the bellows extension and lens in operative position.

Fig. 4 is a longitudinal section on line 4-4 of Fig. 3, with parts broken away.

Fig. 5 is a similar section on line 5-5 of Fig. 3.

Fig. 6 is a plan view with parts broken away and others shown in section on line 6-6 of Fig. 1.

Fig. 7 is a detail horizontal section on line 7-7 of Fig. 4.

Fig. 8 is a detail section on line 8-8 of Fig. 2, and Fig. 9 is a section on line 9-9 of Fig. 8, showing the parts in positions assumed while carriage 16 is being drawn outward.

Throughout the drawings like reference characters indicate like parts. 1 is the main casing enclosing the plate or film holder, shutter and related parts of any proper construction (not shown) and having a front opening 1^a in which is mounted the telescoping section 2. This telescoping section has a narrow rear flange 3 with a narrow groove 4 located immediately in front of

said flange, and also a front flange 5 with a similar groove 6 just back of it. 7, 7, are vertically movable plate springs each rigidly mounted at one end in the main casing 1 on a cutaway block 7^a and carrying at its other, free end a block 7^b having a beveled upper face adapted to bear against the lower edge of flange 3 when the telescoping section 2 is pulled out, as shown in Fig. 1, and against the under surface of said section 2 when the latter is pushed in, as indicated in dotted lines in Fig. 1. As a result of this construction, when the telescoping section is pulled out the upper portion of the front plate 1^b of the main frame engages groove 4, the telescoping section 2 being forced up against it by springs 7, 7; and when said section 2 is forced inward, the front groove 6 similarly is engaged by plate 1^b. Consequently the telescoping section 2 is thereby elastically locked in either its inner or outer position.

8 is a flap or panel hinged at 8^a along one edge to section 2 and adapted to fill the front opening of said section when said plate is swung up into vertical position, being held in this vertical position by the spring latch 9, then engaging its upper edge. When this plate or apron 8 is swung down into horizontal position, as shown in Figs. 1, 4 and 5, it is locked in said position by laterally extending latching pins 13, 13, carried by flexible side extensions 10, 10, on said plate and engaging sockets 14, 14 (see Fig. 7), formed in the inner surface of the front portion of section 2. The springs 11, 11, pivoted or otherwise fastened to the side pieces 10, 10, at 12, 12, are flexed between the inner surface of plate 8 and the bottom of section 2, when plate 8 is thrown up into vertical position as indicated in dotted lines in Fig. 4. As a result of this last described construction, when the operator presses upward the slightly projecting end of spring latch 9, the plate 8 will be released and the springs 11, 11, will throw it down into horizontal position, pins 13, 13, thereupon snapping into sockets 14, 14, and elastically locking it in said horizontal position. To return the plate 8 to vertical position, the operator presses the elastic side pieces 10, 10, slightly inward to free pins 13, 13, from sockets 14, 14, and swings plate 8 upward until it is again caught and held by latch 9. As clearly shown in Figs. 1 to

5, the flange 5 is part of a rectangular frame 5^a which is held in telescoping section 2 by screws 5^b. The hinged flap or panel 8 and its associated parts are mounted on this ring 5^a. By taking out screws 5^b all these parts may be removed as a unit from telescoping section 2.

15 15 represents generally any standard form of adjustable objective lens carried by carriage 16 which is supported by base plate 16^a (see Figure 3), which is adapted to engage grooves along the inner faces of parallel rail sections 17, 17, carried by plate 8 or the shorter extension rail sections 17^a, 17^a, mounted on the bottom of section 2. Buttons 18, 18, are connected to spring-pressed friction locks, one of which is shown at 18^a, (see Fig. 8), which are adapted to hold carriage 16 in any position of adjustment on rails 17 or 17^a and particularly to engage notches 18^b in rails 17, 17, (see Fig. 9) to lock the lens carriage 16 in its outer position of adjustment. A bellows extension or hood 19 connects lenses 15 with the rear of telescoping section 2. Preferably said member 19 is formed of a tapering tubular section of flexible fabric, such as felt, which has its larger end fastened to casing section 2 and can be crumpled up behind and around the lens carriage 15 as shown in Fig. 2 when the camera is closed for transportation or storage.

35 In operating this portion of the invention to shut up the camera the user presses buttons 18, 18, inward, between thumb and forefinger, to release the locks 18^a then engaging rail sections 17, 17, and pushes the carriage 16 back into section 2 before swinging plate up to close the camera and allowing latch 9 to engage and hold it. 40 Conversely, on opening the camera, after releasing latch 9 and permitting springs 11, 11, to swing plate 8 down, the operator releases the carriage from rail sections 17^a, 17^a, by pressing inward buttons 18, 18, and pulls the carriage out into operative position shown in Fig. 5, and then, by releasing buttons 18, 18, locks the carriage and the lenses in this operative position.

50 The general method of operating the camera, therefore, is as follows: Assuming the camera to be in collapsible condition for transportation, when it is to be used the operator first trips latch 9 with his thumb nail and allows springs 11, 11, to swing plate 8 down into the position shown in Figs. 1, 3, 4 and 5. He then pushes telescoping section 2 downward to free groove 6 from front plate 1^b, (thereby flexing springs 7, 7,) and pulls it out into the position shown in Fig. 1 and, grasping carriage 16 by buttons 18, 18, pulls out the lenses, extending the bellows hood 19 usually to the full extent as shown in Fig. 5 although he may leave it in an intermediate position

if he so desires. He then adjusts the focus of the lenses, usually by rotating one member of the lens holder so as to bring it out into dotted line position shown in Fig. 1, and proceeds to take the photograph. To 70 prepare the camera for transportation, again, he reverses the above described series of steps and reduces the camera to the compact condition generally indicated in Fig. 6, in which it can be easily placed in any 75 ordinary pocket of the clothing.

Having described my invention, I claim:

1. In a camera the combination, with a main casing having an opening in its front face, of a casing section fitting in said opening and adapted to telescope into said main casing, said telescoping section having a flange on its rear portion projecting laterally inside of said main casing and a groove in its outer wall face adjacent said flange, and elastic pressure means inside said main casing for holding said telescoping section against the opposite edge of said main casing opening with said groove in engagement with said edge when the telescoping section 80 is pulled out. 85

2. A structure such as defined in claim 1 in which said elastic pressure means comprises a spring with a cam face over which said flange rides when said telescoping section is moved out of or into said main casing. 90

3. In a camera the combination, with a main casing having an opening in its front face, of a section fitting in said opening and adapted to telescope into said main casing, said telescoping section having flanges on its front and rear projecting laterally one inside and the other outside of said main casing together with grooves in its outer wall face adjacent said flanges, and elastic pressure means inside said main casing for holding said telescoping section against the opposite edge of said main casing opening with one of said grooves in engagement with said edge when said telescoping section is in either its innermost or outermost position. 100 105 110

4. A structure such as defined in claim 3 in which said elastic pressure means comprises a spring with a cam face over which said innermost flange rides when said telescoping section is moved out of or into said main casing. 115

5. In a camera the combination, with a main casing having an opening in its front face, of a casing section fitting in said opening adapted to telescope into said main casing, said telescoping section having a flange on its rear portion projecting laterally inside of said main casing, and elastic pressure means inside said main casing for holding said telescoping section against one edge of said main casing opening, a swinging panel hinged at its lower edge to the front of said telescoping section, a spring latch on said 120 125 130

telescoping section adapted to engage and hold said panel section when it is swung up to close the front of said telescoping section, an objective lens movable into and out of said telescoping section, means for guiding said lens when said panel section is swung down and said lens is pulled out upon it, and an extensible hood connected to said lens at one of its ends and to the interior of said telescoping section at its other end.

6. A structure such as defined in claim 5 combined with guide rails on said telescoping section and on said panel in alignment one with another when said panel is swung down, and locking means for holding said lens in adjusted positions on said rails.

7. In a camera, the combination of a main casing with an opening in the front thereof, a telescoping casing section mounted in said opening, a panel having a hinged support from the lower outer edge of said telescoping section adapted to close the outer end of said telescoping section when swung up and to serve as the support for a lens carriage when swung down, a lens carriage, means for guiding said carriage along the floor of said telescoping section and along the upper

surface of said panel when the latter is swung down, and a collapsible hood extending from said lens carriage to the inner portion of said telescoping section.

8. A combination such as defined in claim 7 in which said hood consists of a flexible fabric of smooth tapering tubular form when extended with its larger end connected to said telescoping section and its smaller end connected to said lens carriage.

9. A combination such as defined in claim 7 in which said hinged support for said panel comprises a rectangular frame removably fastened in said telescoping section, to which frame said panel is hinged.

10. In a camera the combination of a main casing with an opening in the front thereof, a telescoping casing section mounted in said opening, an outwardly flanged frame removably fastened in the outer end of said casing, and a panel hinged to the lower portion of said flanged frame and provided with elastic side flanges carrying means adapted to interlock with said frame when said panel is swung down.

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