

C. F. BARR & W. R. MILLER.
 PHOTOGRAPHIC FILM SUPPORT.
 APPLICATION FILED JULY 16, 1915.

1,214,408.

Patented Jan. 30, 1917.

3 SHEETS—SHEET 1.

FIG. 1.

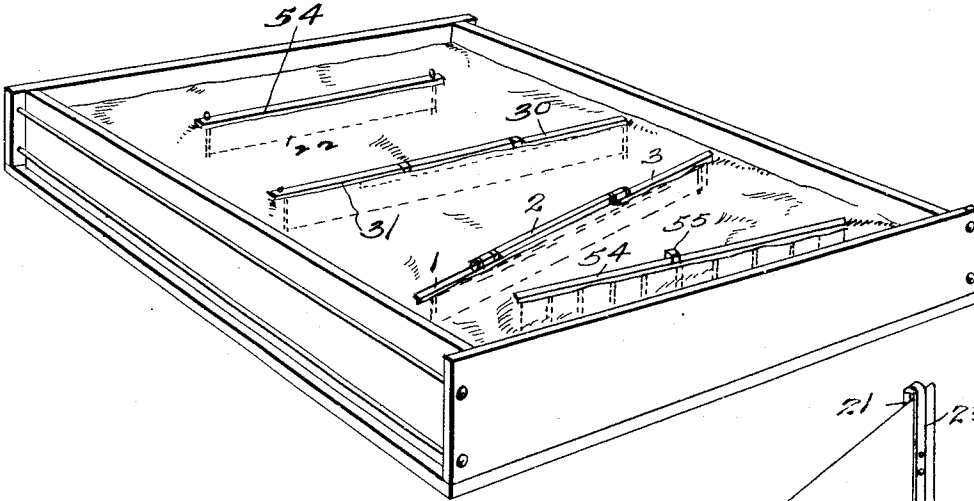


FIG. 3.

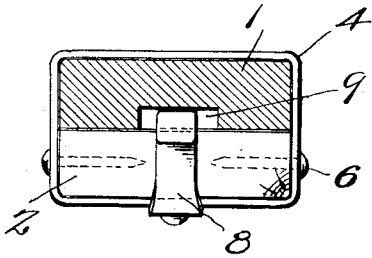


FIG. 2.

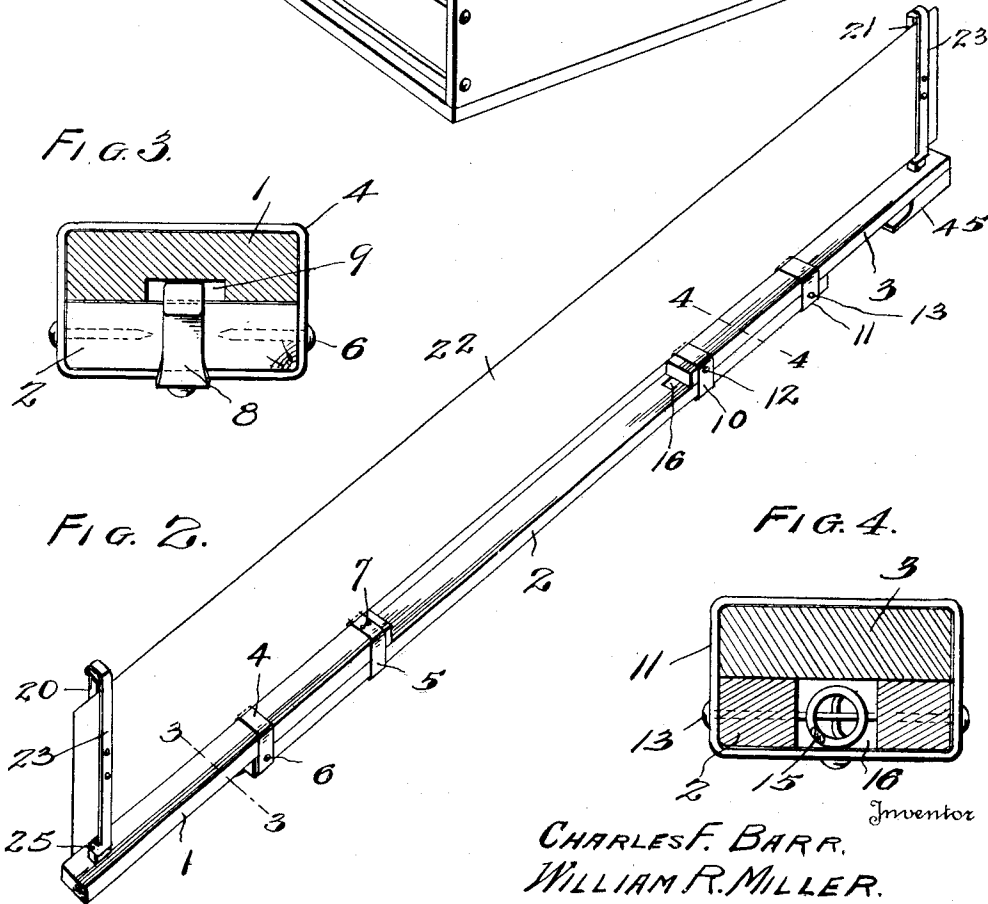
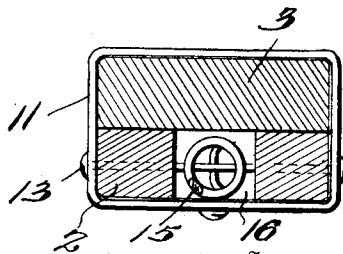


FIG. 4.



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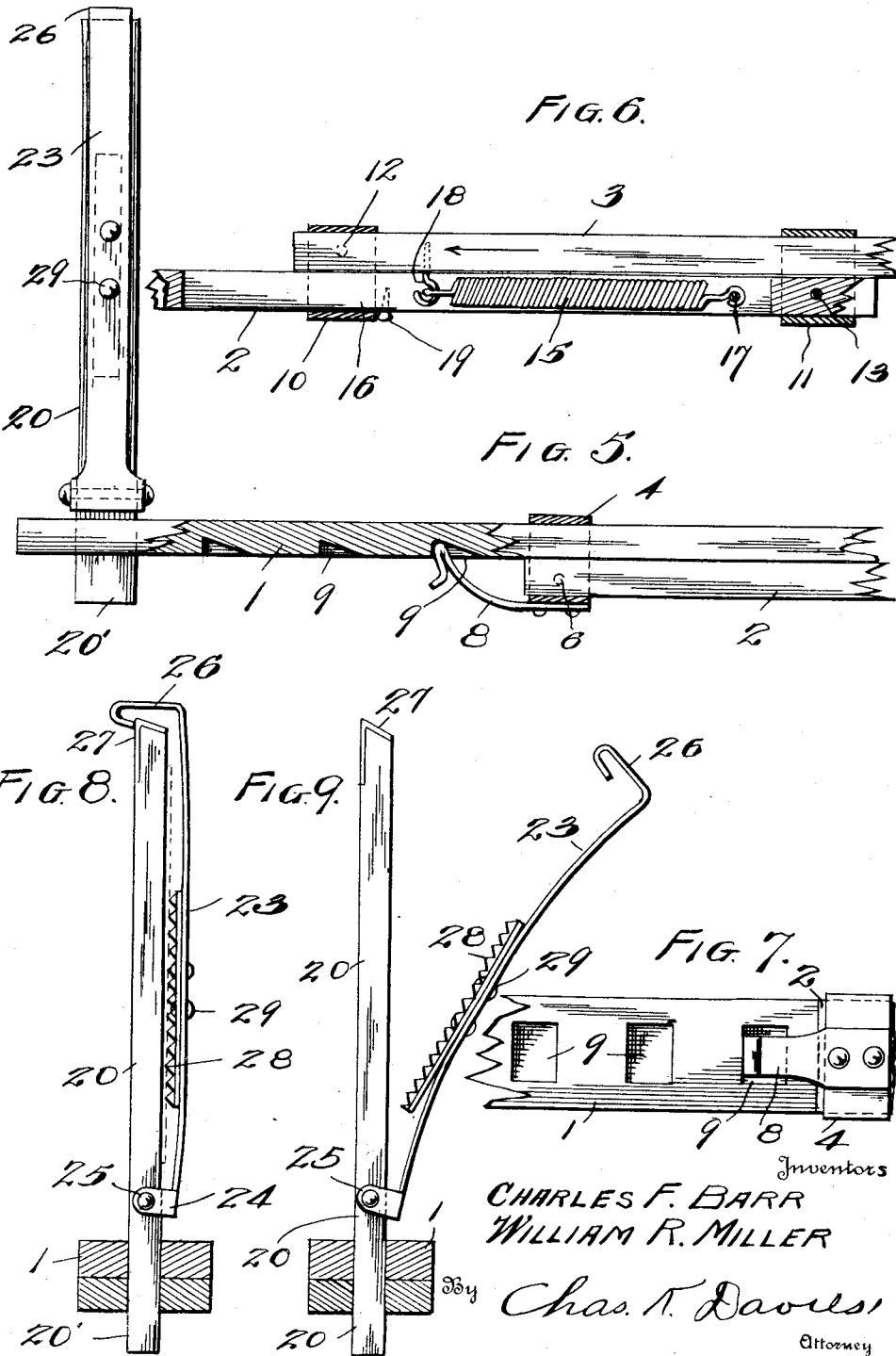
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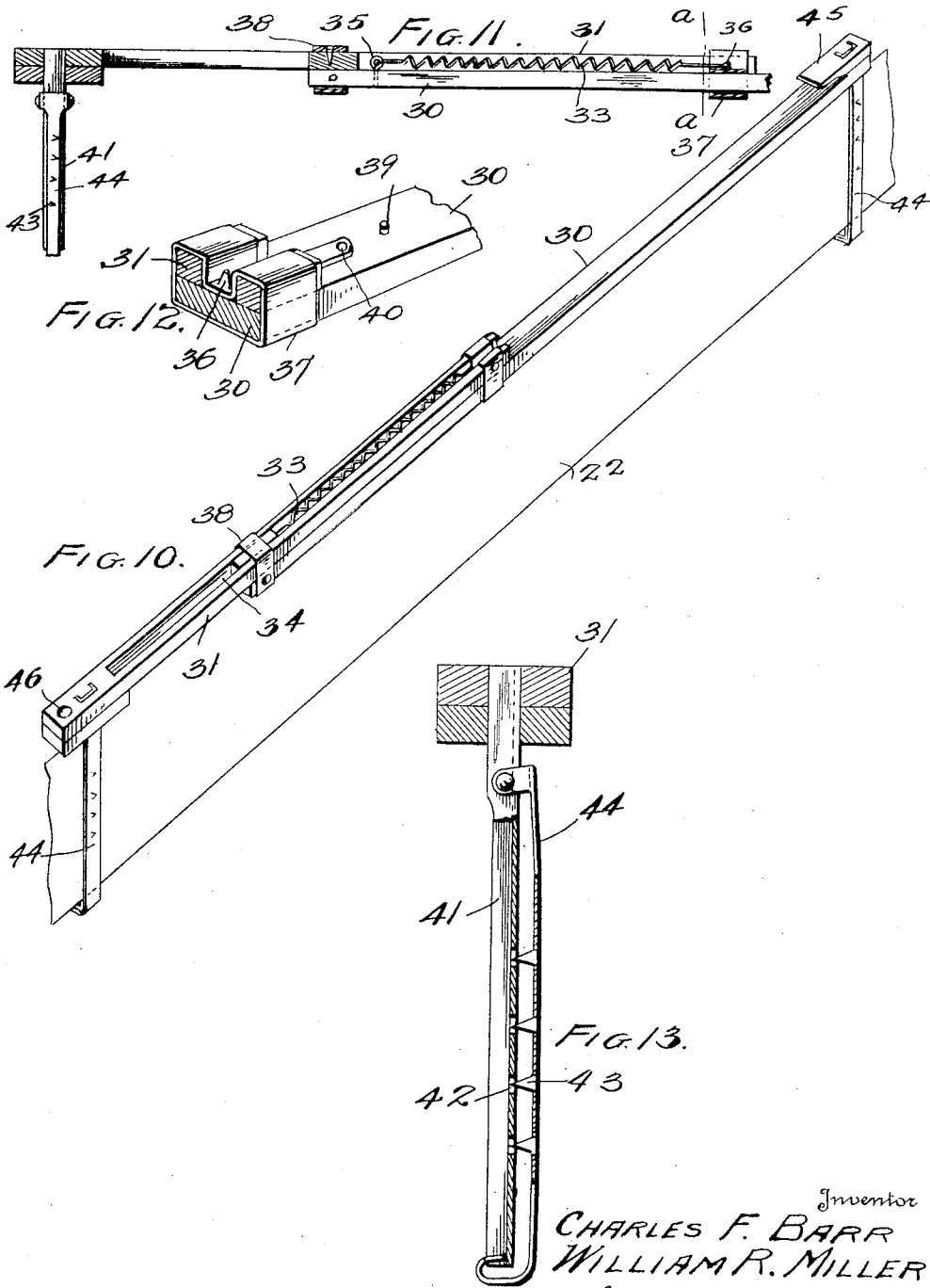


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3 SHEETS—SHEET 3.



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PHOTOGRAPHIC-FILM SUPPORT.

1,214,408.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, CHARLES F. BARR and WILLIAM R. MILLER, citizens of the United States of America, residing at Winchester, in the county of Frederick and State of Virginia, have invented certain new and useful Improvements in Photographic-Film Supports, of which the following is a specification.

10 The present invention relates to improvements in photographic film supports designed for use in connection with such films while being developed, rinsed, fixed, washed and then dried, without the necessity of re-
15 handling during the entire process.

The primary object of the invention is the provision of a buoyant device upon which the film may be supported and the device and film be permitted to float in the
20 different fluids while the film is being treated.

In the process of developing photographic films much time and labor are lost in preparing the film for its bath in the
25 different fluids, and constant attention is necessary on the part of the operator to prevent the films from coming in contact with each other while in the bath. These objections are overcome in the present invention
30 by the utilization of a device or support for the film upon which the film is carried, without change or alteration in its position or relation to the support, during the entire process from the first step of development
35 to the drying of the film, and the films are held apart from one another while in the bath by the formation of the supports upon which the films are independently suspended. The supports, which are buoyant,
40 are each equipped with suspending means, so that the supported film, whether of roll type or pack type, is held submerged in the bath while the support floats upon the surface of the liquid or fluid.

45 The invention consists in certain novel combinations and arrangements of parts whereby a buoyant support is provided to float upon the surface or at the surface of the fluid and hold the film in suspended position beneath the surface of the fluid; in
50 means for adapting the support for different lengths of films of the roll type; in means for compensating for contraction or expansion on the part of the film during the

developing process; and in other features 55 as will be hereinafter more fully pointed out.

In the accompanying drawings we have illustrated several complete embodiments of our invention constructed according to the
60 best modes we have so far devised for the practical applications of the principles of our invention, all of which have proven highly satisfactory and successful in actual use.

Figure 1 is a perspective view of a photographic bath tank showing different forms of the device floating therein with suspended films. Fig. 2 is a perspective view of a holder in the position in which the roll
70 film is suspended before being floated in inverted position in the tank. Fig. 3 is an enlarged sectional view on line 3—3 Fig. 2. Fig. 4 is an enlarged transverse sectional view on line 4—4 of Fig. 2. Fig. 5 is an
75 enlarged view, partly in section, of the left end of the support of Fig. 2. Fig. 6 is a sectional view of a portion of the support near the right end of the device shown in Fig. 2. Fig. 7 is a plan view of the under
80 part of a portion of the support in Fig. 5 showing the extensible rack. Fig. 8 illustrates one of the suspending posts with its clip closed thereon. Fig. 9 illustrates the same clip open. Fig. 10 shows a perspective
85 view of a modified form of the support, the two pieces of the device being resiliently connected together. Fig. 11 is a longitudinal, vertical sectional view of the left end of the support of Fig. 10. Fig. 12 is a sectional view in perspective at line a—a Fig.
90 11. Fig. 13 is an enlarged, partly sectional view of the metal post and clip of the support of Fig. 10.

The invention as illustrated in Figs. 2 to 7
95 inclusive embodies an extensible and resiliently adjustable support for a roll film so that the support may be positively and fixedly lengthened or shortened to adjust it to the length of film, and in addition the sup-
100 port has parts resiliently connected together so that the support between the suspending posts for the film may move to compensate for expansion or contraction of the film during the process of treatment.

As depicted in Fig. 2 the support comprises three separate pieces, the extension
105 end piece 1, the intermediate piece 2 and the

adjustable end piece 3. These parts are preferably made of wood and the two end pieces are movable with relation to the intermediate or body member 2. The extension or extensible piece or bar 1 is slidable on the intermediate bar 2 through the medium of the two metallic bands 4 and 5, the former attached to the bar 2 by pins or nails as 6 and the latter fixed on the extension or rack bar 1 by nails 7, so that these parts are loosely connected together in order that the rack bar 1 may be extended with relation to the bar 2 to lengthen the support. In this manner the support may be extended to adapt it for use with different lengths of roll films. To hold the extension in its adjusted position, a spring tongue or pawl 8 is attached to the band 4 which it will be remembered is fixed to the bar 2, and this pawl is adapted to engage any one of a series of notches 9 centrally located and alined along the surface of the extension 1. By the utilization of this pawl and series of notches, the extension bar may be held in extended position to increase the length of the support and the pawl or ratchet 8 prevents the extension from moving inwardly to contract the support.

The adjustable bar or end piece 3 is also loosely connected to the intermediate bar 2 through the medium of a pair of guide bands 10 11 similar to the bands 4 5 and the pins or nails 12 13 connect the bands fixedly to their respective bars 3 and 2. A spring 15 forms a resilient and adjustable element of connection between the bars 2 and 3. It is located in a longitudinally extending slot 16 in the bar 2 near the end of the bar, and by means of the pin or nail 17 the spring is fixed at one end to the bar 2, while its other end is fixed to the screw eye 18 in the bar 3. The nail 19 prevents the guide bands from slipping off the end of the bar 2, but it will be evident that the spring 15 will permit the bar 3 to move in the direction of the arrow in Fig. 6 for the purposes to be described.

The end pieces 1 and 3 are provided with posts as 20 21 respectively, preferably strips of wood rectangular in cross section and fixed in sockets in the pieces 1 and 3. As a matter of convenience the ends of the posts project through the bars as at 20' so that the supports may be manipulated by grasping these projections as handles when using the supports to place the film 22 in its bath, or in taking the support therefrom. Each wood post is equipped with a clip 23 of resilient metal formed with integral ears 24 that are pivoted at 25 to the post, and the free end of the clip is formed or fashioned as a hook 26 which is adapted to engage the top end of the post which may be provided with a metallic wear plate or cap 27. The inner face of the clip is provided with a toothed plate 28 riveted thereto at 29, and

it will be apparent that the function of the toothed plate is to securely hold the end of the film as 22 between the clip and post. In suspending the film 22 between the posts, the extension 1 is first arranged in proper position to adapt the length of the support to the length of the film, and then the end of the film is attached to the post 20 between the post and clip 23 by snapping the hook over the capped end of the post. The resiliency of the clip 23 causes the toothed plate to engage and impinge the film against the wood of the post and the film at this end is thus held rigid. The film is now stretched across the support to the post 21, but before attaching the film to this post however, the adjustable end 3 is moved slightly in toward the end 1 sufficiently to bring the spring 15 under tension. The free end of the film is now attached to the post 21 and the post freed. The tension of the spring urges the adjustable end 3 away from the intermediate bar 2, and this feature of the spring not only holds the extension bar 1 against its pawl 8, but it allows for either a slight contraction or expansion of the suspended film due to action of the fluid while developing, yet at the same time the spring holds the film distended and prevents wrinkling or buckling.

In the modification shown in Figs. 10 to 13, the extension end is omitted, and only two members are employed to the support, the bar 30 and its adjustable slide bar 31 which are resiliently connected by means of the spring 33 seated in the slot 34 in bar 31. The spring is attached to the bar 30 by the screw eye 35, and the other end of the spring is attached to a prong or spur 36 struck up from the body of the metal band 37 which is secured to the bar 31, another band 38 being attached to the bar 30 near its end so that these two bands guide the movement of the two bars relatively to each other. A pin 39 (Fig. 12) is provided in the bar 30 over which the perforated end of a tongue 40 may be passed when it is desired to hold the two bars in adjusted position with the spring 33 under tension. But after the film is attached, this connection is of course broken. In this form of the invention, metal posts 41 are employed made up of channel metal perforated at 42 for the reception of the prongs 43 struck from the material of the resilient metal clip 44. The film is securely held between the prongs and the perforated post, and the support is made adjustable by shortening the support to place the spring under tension before the film is placed in position between the posts. A hook 45 may be provided at one end of the support from a wood block nailed to the end of the bar 30, and the support may be suspended by this hook when the film is drying; or, if desired,

the hole 46 in the end of the bar 31 may be employed for this purpose.

In all the illustrated forms of the invention it will be seen that the film is suspended from its support so that it may be submerged under the surface of the liquid bath while the support floats upon the surface of the liquid, as indicated in Fig. 1. After the films have been properly "stretched" on the supports they are placed in the tank, with the film beneath and the supporting bar above. It is not necessary to carefully and slowly submerge the film as is customary in most devices now in use, but the film with its support may be placed in the bath with but slight attention on the part of the operator, and after once being left in the bath needs no further attention unless for a slight stirring of the liquid or fluid. There is no danger of the films coming in contact with each other while in the bath, as it will be seen that each film stands upon its edge, and the width of the supporting or buoyant bars prevents contact of the films if the bars contact with each other. After being once suspended between the suspending members of the support, the films are preserved in this position through the developing, rinsing, fixing and drying steps of the process. The film is held in best position to insure proper and uniform treatment in the baths and in its suspended position it dries out uniformly and evenly without buckling or twisting. There are numerous other meritorious features and advantages in this manner of supporting the film during treatment, and there are numerous changes and alterations contemplated in the construction of the devices but these are all covered within the scope of the appended claims.

What we claim is:—

1. An extensible film support comprising a pair of buoyant bars, means connecting the bars for automatically extending the

support, and members carried by the bars for supporting a film between them.

2. An extensible film support comprising a pair of overlapping buoyant bars co-acting with each other and each provided with a guiding member for the other bar, means connecting two ends of the bars for automatically extending the bars, and means carried by the other ends of the bars for supporting a film.

3. An extensible film support comprising a pair of bars with overlapping ends, means connecting said ends for automatically extending the bars, and a post carried by each of the other ends of the bars with attaching means for supporting a film between the posts.

4. An extensible film support comprising a pair of bars with overlapping ends and each end having a fixed guide band encircling the other end, one of said bars having a longitudinal slot therein and a spring located in said slot having its ends attached to the ends of the bars for automatically extending the bars, and means on the bars for supporting a film.

5. An extensible film support comprising an intermediate bar and an end bar and means connecting said bars for automatically extending them, a third bar, and means on the intermediate bar co-acting with the third bar for holding said bar in adjusted position.

6. An extensible film support comprising an intermediate bar and an automatically extensible end bar, a third bar having notches therein and operatively connected to the intermediate bar, and a pawl on the intermediate bar to engage said notches and hold the third bar in adjusted position.

In testimony whereof we affix our signatures.

CHARLES F. BARR.
WILLIAM R. MILLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."