SEARCH ROOM

Feb. 3, 1953 G. F. BELL 2,627,207

FILTER HOLDER

Filed April 29, 1950

T2657

Fig. 1.

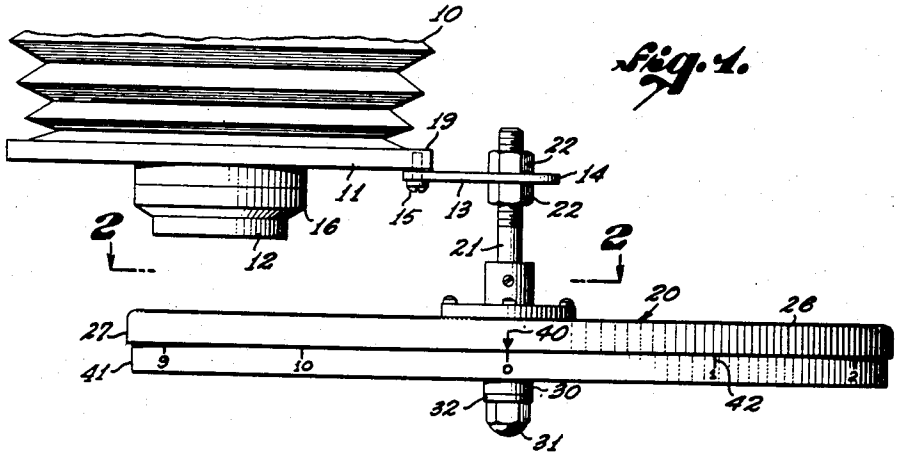


Fig. 3.

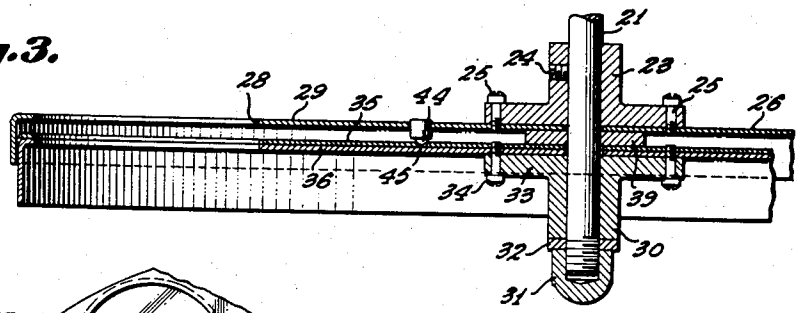
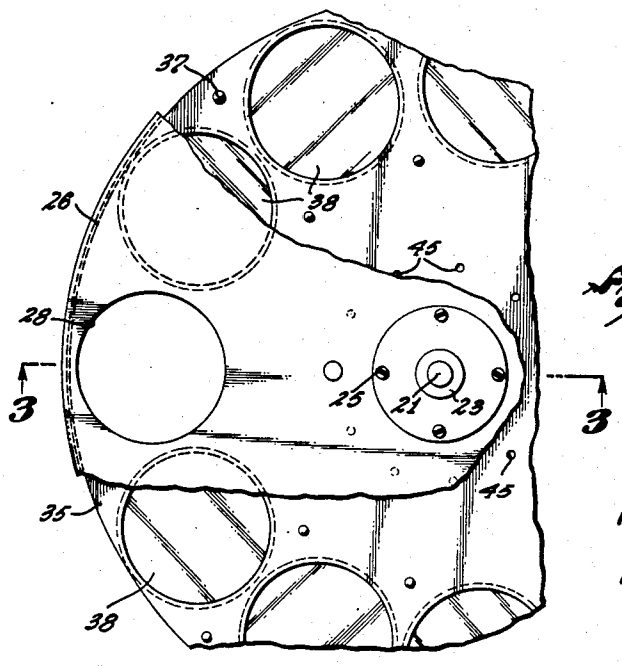


Fig. 2.



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SEARCH ROO

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FILTER HOLDER

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2 Claims. (Cl. 88—113)

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This invention relates to photographic equipment and more particularly to a holder for filters in the use of variable contrast enlarging paper, whereby a number of degrees of contrast can be obtained in a convenient manner by exposure through different colored filters selectively employed.

It is intended by the instant invention to provide a means and apparatus for holding in a suitable preadjusted position selectively different light filters. The mechanism in question is intended primarily for use with vertical type enlargers but is capable of use also with enlargers of the horizontal type, and in any event permits the facile selection of one of a plurality of colored filters as a handy and practical aid particularly in the use of relatively recently developed variable contrast type enlarging paper. By the instant apparatus the hitherto comparatively tedious and impractical method of individually selecting color filters or colored glass, e. g., orange glass or the like, is dispensed with in favor of a more flexible system affording unit control, convenience of use and manipulation, and new and improved structural features and methods.

In view of the above considerations, among others, it is deemed an object of this invention to provide the unitary holder for filters of new and improved construction.

It is also among the objects of the invention to provide, in an apparatus of the desired character described, a plurality of commonly mounted filters characterized by new and improved dustproof construction, new and improved mounting qualities, and new and improved filter selecting means.

It is among the more specific objects of the invention to provide a filter-holder of simple and economical construction capable of ready mass reproduction, the parts of which are easily disassembled for replacement or repair, which provides new and improved visual and/or auditory filter-selecting means, new and improved common mounting means, and new and improved adjustable and universally adaptable characteristics.

It is moreover among the objects of this invention to provide improvements over prior art devices heretofore intended to accomplish generally similar purposes.

Other and more specific objects and advantages will appear and be brought out more fully in the following specification considered with reference to the accompanying drawing throughout which like parts are designated by like numerals.

In the drawings—

Figure 1 is a side elevational view of a filter-holder embodying this invention as applied to an enlarger fragmentarily shown;

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Figure 2 is a view as on a line 2—2 of Figure 1, parts being cut away;

Figure 3 is a vertical sectional view as on a line 3—3 of Figure 2.

Referring more particularly to the drawings, there is shown by way of illustration, but not of limitation, an enlarger 10 having thereon a customary lens board 11 including a lens 12 supported thereon.

A bracket 13 preferably having a bifurcated or slotted end 14 is secured as by a screw 15 to the underside of the lens board 11. In lieu of the securement 15 the bracket 13 may, if desired, be provided with a yoke adapted to fit over or encircle the lens cover 16, as where no lens board or the like is provided, or the bracket may be provided with a sufficiently broad portion adjacent the lens board 11 that a plurality of screws such as 15 may be utilized or a clamp provided to prevent movement of the bracket relative to the lens board.

The means shown, however, comprising a single screw 15, has, however, been found satisfactory, and when the screw 15 is tightened against the lens board, relative movement of the parts 11 and 13 is prevented.

A filter-holder generally designated at 20 is supported on the bracket 13 as by a bolt 21 fitted with jam nuts 22 for any desired rotative securement thereof relative to the bracket 13.

A hub 23 is adapted to be non-rotatably clamped to the bolt 21 as by a set screw 24. Secured to the lower side of said hub 23, as by screws 25, is a shield 26 preferably circular in shape and formed with depending edges 27.

A window 28 is formed at one side of the shield 26 designed to be centered under the lens 12. If desired, a transparency may be fixed as by gluing, clamping, pressing or the like within the opening 28 and if so the same should have its upper surface flush with the upper surface 29 of the shield 26 to facilitate cleaning and to avoid forming as a dust trap and collector.

A second hub 30 is rotatably secured on the bolt 21 as by a nut 31 and washer 32.

The hub flange 33 as by means of screws 34 carries a pair of matched filter-holding disks 35 and 36. These are preferably clamped together as by means of machine screws or the like 37 to retain individually differently colored filters 38 in evenly spaced circumferentially relationship around said disks 35 and 36. Said filters should be in orderly chromatic series and are optionally replaced, in at least one instance, with a transparency such as glass. The filters are adapted for selective rotation to register with the opening 28.

The disks 35 and 36 may be spaced from the shield 26 as by a washer 39.

The edge 27 of the shield 26 is marked as by

an arrow 40 and the edge of the disks 35, 36, the latter of which is turned down as at 41 and both of which nest within the downturned edge 27 of the shield are adapted to register as by means of index points 42 with said arrow or other mark 40.

Selected positions of filter registration corresponding to the index figures 42 with the arrow position 40 are centered and held as by a spring-urged ball detent 44 or the like selectively engageable in corresponding dimples or openings 45 formed in the disk 35. Such detent preferably acts with an audible click which—in a dark room—may be felt or heard by an operator whose manipulation of the downturned edge 41 causes rotation of the filter disks 35, 36. Said arrow 40 and the designated stations 42 index the filters 38 selectively with the opening 28 in the shield.

In use the apparatus 20 is secured in an appropriate manner as aforesaid to the lens board or like structure of the enlarger. The bracket 13 and apparatus 20 is adjusted until the opening 28 registers with the lens 12. To facilitate such registry a set screw 24 can be loosened and the shield 26 rotated about the bolt 21. Thereupon, tightening of said screw 24 retains the shield in its adjusted position.

The filters 38 are selectively brought into use by rotation of the disks 35, 36 as by means of the downturned edge 41.

Individual filters 38 may be removed by loosening adjacent screws 37 whereby to slide such filters radially outwardly. Others may be inserted in like manner and the adjacent screws thereupon retightened.

It is contemplated that the instant apparatus will be made of metal such as aluminum, thus the shield 26 and the disks 35, 36 would be of sheet aluminum. Their hubs 23 and 30 might also be of such material while the remaining parts may be of steel. Thus, in order to increase the durability of the detent construction, particularly upon the disk 35, the latter may be provided with a hardened metal washer adjacent the detent. Optionally, of course, other material including steel plastic, wood and the like may be employed over-all or for individual parts.

This invention features the provision of a new and improved economically reproducible, cheap and universally adaptable filter-holder of new and improved construction and facility of operation.

Although I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent structures and methods.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a filter-holder of the character described, a shaft and means for mounting said shaft on a photographic enlarger upon a vertical axis, upper and lower substantially flat annular disks mounted upon said shaft in slight axial spaced relationship, the upper of said disks being keyed against rotation relative to said shaft, and the lower of said disks being rotatable on said shaft, the upper of said disks having a transparent opening adapted to be aligned with the lens of said enlarger, said disk being otherwise opaque over its entire surface, said lower disk having a plurality of

filters mounted therein and including appropriate openings for said filters and including a cover plate having matching openings for retaining said filters on said lower disk, means for retaining said cover plate on said lower disk and clamping said filters therebetween, detent means between said disks for releasably retaining said lower disk in selected positions relative to the upper disc corresponding to positions of alignment of said transparent opening on the upper disk with respective filters in said lower disk, said upper disk having a down-turned flange entirely around its circumferential periphery, said lower disk being telescoped and nested entirely within the area defined by said down-turned flange, said lower disk extending substantially to the inner surface of said down-turned flange, and having a corresponding down-turned flange likewise extending entirely around its circumferential periphery and depending below the lowermost edge of the downturned flange on said upper disk to provide a handhold for manipulating said lower disk, said handhold being provided entirely around said filter-holder, and index means upon said handhold portion and upon an adjacent corresponding outer edge portion of said downturned flange of said upper disk corresponding to said detent-held positions in a manner to indicate at all times the position of any of said filters relative to said transparent opening in said upper disk.

2. In a filter holder for a vertical enlarger having a bottom lens, a shaft, means for vertically securing said shaft adjacent said lens, a first horizontal disc coaxially keyed to the shaft and including a window adapted to be centered under the lens, an annular flange depending from the circumferential periphery of the disc and having filter indexing means on its outer surface adjacent its lower marginal edge, a second horizontal disc journaled on the shaft below and coaxially with the first disc, a plurality of filters on the second disc selectively alignable with said window upon rotation of said second disc, said second disc being nested within said depending annular flange on said first disc, said second disc likewise having an annular depending flange having a lower portion extending below the lower marginal edge of the first flange, and an upper portion nested within the confines of said first flange, said lower portion being in close proximity to said lower marginal edge of said flange on said first disc and having complementary indexing means in close proximity to said first indexing means, and said second flange providing a manipulative handle entirely around the filter holder, and detent means between said discs corresponding to said indexing means for releasably retaining any selected filter centered with said window.

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