

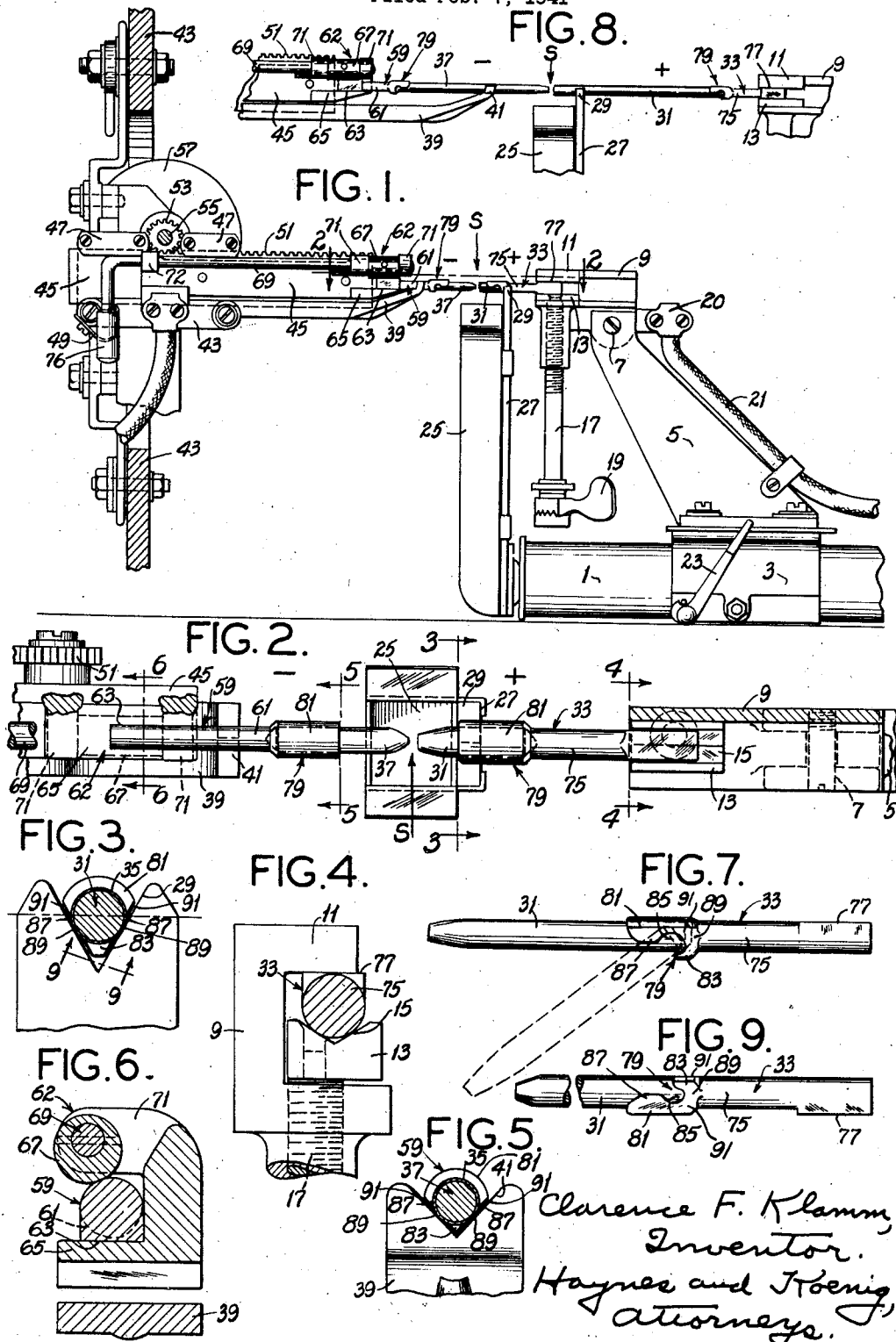
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CARBON HOLDER

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CARBON HOLDER

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This invention relates to carbon holders, and with regard to certain more specific features, to such holders for use in arc lamps and the like.

Among the several objects of the invention may be noted the provision of a carbon holder which permits of more complete consumption of carbon rods, thus reducing wasted stub portions and effecting a reduction in carbon cost; the provision of a holder of the class described which permits of a continuously accurate coaxial carbon feed very close to the holder; the provision of a device of the class described which presents minimum obstruction in the lamp in which it is incorporated; and the provision of a device of the class described into which carbons may be easily removed and inserted and which is economical to make. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, in which is illustrated one of various possible embodiments of the invention,

Fig. 1 is a side elevation illustrating a pair of feeding units to which the invention is applied, and showing a pair of carbons in advanced positions;

Fig. 2 is a horizontal section on an enlarged scale, taken on line 2—2 of Fig. 1;

Fig. 3 is a vertical section taken on line 3—3 of Fig. 2;

Fig. 4 is a vertical section taken on line 4—4 of Fig. 2;

Fig. 5 is a vertical section taken on line 5—5 of Fig. 2;

Fig. 6 is a vertical section taken on line 6—6 of Fig. 2;

Fig. 7 is an enlarged side elevation showing in solid lines an applied length of carbon, and in dotted lines the manner in which said carbon is removed or inserted;

Fig. 8 is a fragmentary view of certain parts of Fig. 1 showing a pair of carbons in retracted position; and,

Fig. 9 is a fragmentary section taken on line 9—9 of Fig. 3, but eliminating the support, the view being also of Fig. 7 at an angle from bottom.

Similar reference characters indicate corresponding parts throughout the several views of the drawing.

Referring now more particularly to Fig. 1, 55

there is shown at numeral 1 a stationary guide on which is a slide 3 carrying a bracket 5 for pivotally supporting at 7 a conducting clamp 9. The clamp 9 has an upper stationary jaw 11 (Fig. 4), and a lower movable jaw 13 which is notched as shown at 15. Jaw 13 is under vertical control of a clamp screw 17. A handle 19 is used for rotating the clamp screw 17 and a line terminal 20 is provided for connecting the clamp 9 with a flexible wire 21.

A known automatic feed moves the carriage 3 to the left on guide 1. It may also be moved manually after declutching it from said feed by means of a clutch lever 23. Since the construction for the automatic feed and the clutch are known and form no part of the present invention per se, they have not been further shown.

Carried on the front end of the support 1 is a hollow chute 25 for receiving waste material which spatters from the carbon at the light sources. Behind this chute 25 and also fixed on the support 1 is a prop 27 which has a V-shaped notch in its end as indicated at 29.

It is the purpose of the prop 27 to support in its notch 29 the larger of a pair of carbons, numbered 31. This is a positive carbon and is held in one of the holders 33, which form the subject of this invention per se. The holder 33 is held in the clamp 9 and is therefore movable along with the carbon 31 in accordance with the movement of the members 3, 5 and 9. During its movement the carbon 31 rests in the V-notch 29 at the end of the prop 27 due to the weight of its counterclockwise overhang with respect to the center 7 (Fig. 3). As shown at 35 in Fig. 3, the carbon 31 is copper clad.

A second and negative carbon 37 is arranged coaxially with the carbon 31 and slides in a V-shaped bracket 39. Bracket 39, like the prop 27, is stationary. It carries a notch 41 (Fig. 5) and is rigidly fastened to stationary frame parts 43. The carbon 39, like the carbon 31, is copper clad, as indicated at 35 in Fig. 5.

Slidable with respect to the fixed bracket 39 is a carriage 45 which is held in alignment by guides 47 and pressed upward by means of a spring 49. This carriage 45 has rack teeth 51 on its upper edge which mesh with the teeth of a pinion 53 on a control shaft 55 carried on frame 43. The spring 49 presses the rack 51 toward pinion 53, and since the spring 49 is to the left of the pinion, it tends also to rock the carriage clockwise. Some lost motion between the carriage 45 and the bracket 39 permits of the desired angular motion. The fact that the carbon

37 rests in the groove 41 of the bracket 39 limits clockwise angular motion under pressure from spring 49 to a point such as shown in Figs. 1 and 8. The control shaft 55, through suitable automatic means operating through a clutch 57, feeds the carriage 45 to the right, as required. The shaft 55 may also be manually rotated to feed the carriage back and forth for starting purposes. Since these feed parts are also known, further details will not be given.

In order to clamp a carbon to the carriage 45, a second holder 59 is employed which is held in a clamp 62. The holder 59 consists of a circular shank 61 (Figs. 2 and 6), the rear end of which has a flat bottom 63 (Fig. 6). This shank is clamped against a stationary lower jaw 65 of the carriage 45 by means of an eccentric 67 carried on a shaft 69. The shaft 69 has one bearing in a bracket 71 and another in a bracket 72. The shaft is provided with a handle 76 by means of which it may be rotated to move the eccentric 67 into wedging engagement with the rear portion of the holder 59.

The other holder 33 also has a cylindric shank at 75 (Fig. 4) with a flat seat 77. Thus it may be held by the V-notch in the jaw 13.

Both holders 33 and 59 have socket portions indicated generally at 79. These portions are each different in size to accommodate different carbon diameters, but their general forms are similar. Only one will be described, similar reference characters being applied to the other.

Referring to Figs. 7 and 9, a socket portion 79 consists of an incomplete arcuate hood portion 81 which provides a recess for receiving the upper curved surface of the rear end of a carbon. At 83 is a small finger or holder which provides a fulcrum. The finger portion 83 is shorter than the hood portion 81, and between it and the end of the hood are formed clearance openings 85. This construction permits of the angular insertion of the end of the carbon, as indicated by the dotted lines in Fig. 7. The carbon may then be rotated into position under the hood 81, using the finger 83 as a fulcrum. It is also intended that the sides 87 of the hood 81 be carried down circularly slightly below the center line of the carbon, so that there is a resilient grasping action upon the carbon when it is rotated into the solid straight-line position shown in Fig. 7 (see also Figs. 3 and 5). As above stated, the construction thus described also applies, according to similar reference numerals, to the socket 79 of the holder 61. In both instances, the diameters of the carbons 37 and 31 are the same as the shanks 61 and 75 respectively.

Also there are cut-away flat bearing portions shown at numerals 89 which are continuous between the respective carbons and the shanks of their holders, which are not subject to interference when sliding along in the V-notches of the brackets 29 or 41, as the case may be. Thus there is presented no interference to sliding the carbon from the position shown in Fig. 8 to the position shown in Fig. 1, that is, the socket 79 may slide right on through the notches 29 and 41 without raising the carbon and without interfering with smooth coaxial movement. Fig. 9 on its upper side shows how one supporting line of slide is continuous.

Heretofore, the feed on carbons needed to be stopped before the ends of the holders reached the V-notches 29 or 41, and the result was a large waste of carbon material. By means of the present invention, instead of throwing away

about $2\frac{1}{2}$ " of carbon on the negative carbon 37, only about $\frac{3}{4}$ " is thrown away. A corresponding saving is made in the case of the positive carbon 31. They can be burned close down to their ends.

After the carbons have burned down, reloading is easily accomplished by moving the holders 33 from their respective clamping means 67 and 13, rotating out the carbon stubs and rotating in the new pieces (Fig. 7), after which the holders are reclamped. Then when the carbons are released they gravitate into their positions in the notches 41 and 29 (Fig. 8), so as to be slidable back and forth along with their holder shanks 61 and 75.

It will be seen from Figs. 3 and 5 that the essentials of the invention are the simplicity with which carbons are held in their holders while providing a continuous sliding action between the carbons and their respective holder shanks of equal diameters. This permits of sliding each carbon back and forth without any raising due to socket 79. In other words, each holder 79 is cut back by planes 91 so that coaxial side elements on its carbon and on its shank (61 or 75) slide on a V-support (Fig. 9), without interference by the holder portion 79.

A function of the finger 83 is to hold the carbon stiff and prevent angling down when it is held out on its outer end as indicated in Fig. 8. This finger is long enough to reach to a point beyond the ordinary chamfer portion on the rear ends of carbons, as indicated by the dotted lines in Fig. 7.

The holder is preferably made of brass which, I have found, does not tend to fuse with the copper sheath of the carbon when the carbon burns down to a point near the holder.

Advantages of the invention are continuous coaxial feed of the carbons down to close to their ends without lateral carbon movement which would distort the arc at point S. Another advantage is the provision of holders which are small, economical, and which do not interfere with the proper gathering and projection of the light rays from the light source S by means of the mirror ordinarily used, but not shown.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A carbon holder for cylindric carbons comprising a cylindric shank of a diameter equal to the carbon diameter, a socket for one end of the carbon, said socket comprising a curved portion having an arc at least greater than 180° to resiliently receive the carbon, and a shorter finger portion opposite said curved portion providing a fulcrum whereby the carbon may be angled into resilient engagement under the curved portion.

2. A carbon holder for cylindric carbons comprising a cylindric shank of substantially equal diameter, a cylindrically hollow socket portion, said socket portion being composed of an upper elongate hood for resiliently receiving the carbon and a lower shorter finger, said socket portion being provided with a plurality of tangent planes between the hood and the finger to provide for the substantially unimpeded sliding action of a V-support between the carbon and said shank,

and oppositely located openings between said finger and hood to provide for free angular entry of one end of the carbon and subsequent rotation upon the finger as a fulcrum and into position within said hood.

3. A carbon holder comprising a cylindric shank having substantially the same diameter as the carbon to be held, a holder portion on the end of said shank having a cylindric socket of a

diameter substantially equal to that of the shank to receive said equal diametered carbon, said holder portion being formed as an upper hood and a lower shorter finger to provide a fulcrum for angling the carbon into position in the hood, and a pair of angled cut-away portions formed as tangents to the shank and the carbon for resting upon a V-support.

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