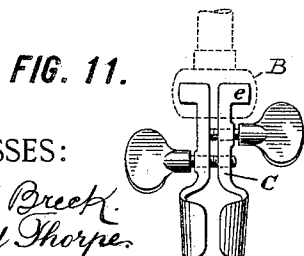
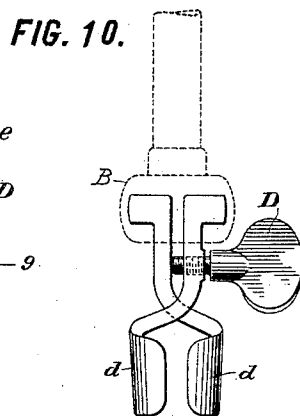
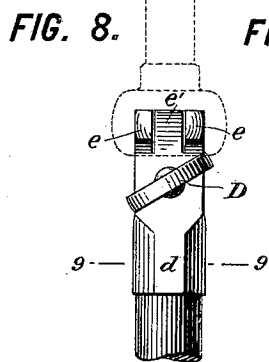
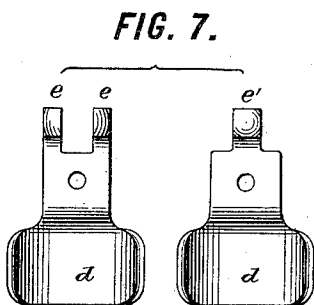
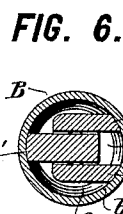
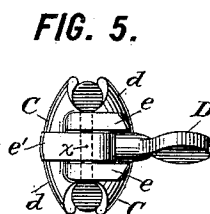
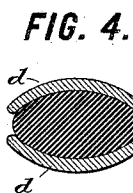
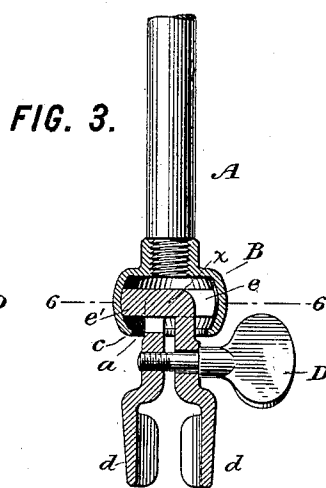
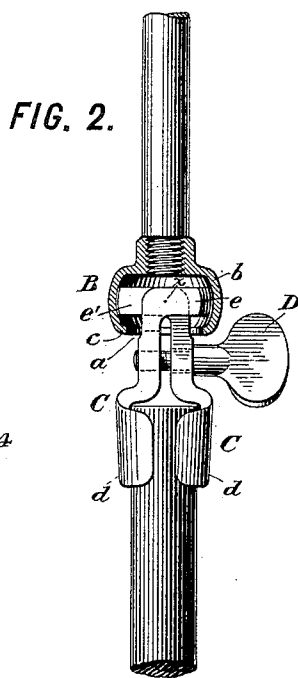
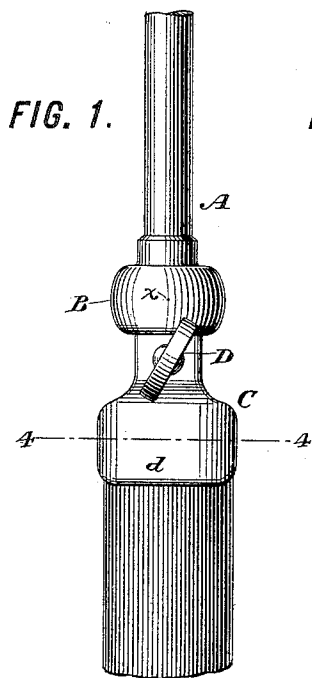


(No Model.)

J. J. WOOD.
CARBON HOLDER FOR ARC LAMPS.

No. 462,756.

Patented Nov. 10, 1891.



WITNESSES:

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CARBON-HOLDER FOR ARC LAMPS.

SPECIFICATION forming part of Letters Patent No. 462,756, dated November 10, 1891.

Application filed December 10, 1890. Serial No. 374,173. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. WOOD, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Carbon-Holders for Arc Lamps, of which the following is a specification.

This invention provides an improved holder for fastening the carbon pencil of an arc lamp to the carbon-holding rod, standard, or other support thereof, to which the carbon is to be connected. Such holders ordinarily consist of two clamping-jaws adapted to grip between them the end of the carbon pencil, with a screw for forcing them together and a universally-adjustable joint connecting the jaws to the end of the rod or standard in order that the jaws may be made to assume different positions to compensate for irregularities in the carbon pencil, and thereby to bring it in correct alignment with the other carbon.

My invention provides an improved construction designed to fulfill the requisite conditions with the greatest possible simplicity of parts and the utmost cheapness of construction and ease of manipulation.

My improved construction is shown in the accompanying drawings, wherein—

Figure 1 is a front elevation of my carbon-holder applied for holding the upper carbon of an electric lamp. Fig. 2 is a side elevation thereof, partly in vertical mid-section. Fig. 3 is a side view, the carbon-holder being in vertical mid-section. Fig. 4 is a transverse section through the gripping-jaws and carbon on the line 4 4 in Fig. 1. Fig. 5 is a plan of the jaws detached, showing them in engagement with the carbon. Fig. 6 is a horizontal section on the line 6 6 in Fig. 3. Fig. 7 is an elevation of the two jaws detached, looking toward the inner side of each jaw. The foregoing figures show the carbon-holder as adapted for holding an elliptical carbon of the cross-section shown in Fig. 4. Fig. 8 is a front elevation showing the jaws as modified for holding a round carbon, and Fig. 9 is a transverse section thereof on the line 9 9. Figs. 10 and 11 are side elevations showing two different modified constructions.

In all the figures the carbon-holder is shown as applied for holding the upper carbon, being attached to the lower end of the usual carbon-holding rod A. The holder may, however, be inverted and used for holding the lower carbon. On the lower end of the rod is screwed a hollow shell B, the internal surface *b* of which is formed as a segment of a sphere. An opening *a* is formed in the bottom of the shell, surrounded, preferably, by a slightly-inturned flange *c*. Two carbon-holding jaws C C are provided, formed at their lower ends with gripping portions *d d*, adapted to engage the carbon rod or pencil, and extending thence upwardly, their upper ends entering the hollow shell B and terminating in heads *e e'*, respectively, which are turned laterally and come into contact with the interior spherical surface of the shell, their contacting surfaces being preferably formed as segments of a sphere, as shown in Fig. 7. A tightening-screw D is provided, engaging the jaws and adapted to draw them together at their lower ends to tightly grip the carbon between them, while at the same time forcing them apart at their upper ends to press these ends into tight frictional engagement with the inner surface of the shell. This screw is preferably constructed, as shown in Figs. 1 to 5, with a shoulder engaging one jaw, through which it freely passes, and with a threaded shank passing through the threaded hole in the other jaw, so that in being screwed up it tends to draw the two jaws together at the point where it engages them. This construction necessitates that the jaws shall cross each other above the screw, as shown best in Figs. 2 and 3. It is preferable to bifurcate the upper end of one jaw, forming two heads *e e*, as shown in Fig. 7, and to contract the upper end or head *e'* of the other jaw, so that it may pass through the bifurcation in the manner best shown in Fig. 6.

The proportions of the parts are such that in order to assemble them it is necessary that the upper ends of the jaws shall be passed through the opening *a* and the jaws brought to their proper relative position before the screw D is applied. By entering this screw the jaws are held together in such manner

that they cannot be tilted to the extent necessary to free their upper ends or heads from the flange *c*, and consequently the jaws cannot drop out of engagement with the shell.

5 On loosening or partially loosening the screw the gripping-jaws *d d* may be opened sufficiently to enable the trimmer to easily thrust the end of the carbon between them, whereupon by tightening up the screw *D* he brings
10 these lower ends together against the carbon and at the same time forces the upper ends or heads apart, so as to bear frictionally against the spherical inner surface of the shell. Before finally tightening the screw he will move or
15 rock the jaws and pencil together around the common center *x* of the universal connection in order to bring the carbon pencil into proper alignment with the other pencil. In case it is necessary he can also rotate the carbon pencil
20 and clamping-jaws relatively to the holding-rod, since the upper ends or heads *ee'* may turn universally within the shell. Upon perfecting the correct adjustment he finally turns the screw *D* tight, thereby leaving the parts firmly
25 clamped together with any desired adjustment. The clamping-jaws of my improved carbon-holder are thus connected to the rod *A* or other support through the intervention of what may not inaptly be termed a "re-
30 versed ball-and-socket connection," the spherical inner surface of the shell *B* performing the functions heretofore performed by the spherical outer surface of the ball, while the heads *e e'* by their frictional engagement
35 therewith take the place of the spherical sockets heretofore provided.

My improved construction has the important advantage over prior universally-adjustable holders as applied to the carbon-holder
40 for an upper carbon in that its operation cannot be deranged by the accumulation of ice upon it. It has also the advantage that the loosening of the clamping-jaws to any extent short of the disengagement therefrom of the
45 tightening-screw will not permit of the falling apart of the jaws from the supporting-shell, since in order to detach these jaws it is necessary to entirely withdraw the screw and disengage the jaws by tilting them independently
50 of one another.

As applied to holding an elliptical carbon the gripping-jaws *d d* are extended to the shape shown in Fig. 4, while for holding an ordinary cylindrical pencil they are preferably made angular, as shown in cross-section in Fig. 9.

In lieu of crossing the jaws above the screw and employing a screw tending to draw them together at the point of its engagement, the
60 modification shown in Fig. 10 may be employed, where the jaws are crossed below the screw and the screw tends to press them apart at the point where it engages them.

My invention is also susceptible of modification in the manner shown in Fig. 11, where
65 the jaws are not crossed, two tightening-

screws being arranged one above the other. On inserting the carbon between the jaws the lower screw is to be tightened to draw the lower ends of the jaws together to grip the
70 carbon, after which the upper screw is to be tightened to press apart the upper ends into firm frictional engagement with the inner surface of the shell.

My invention may be otherwise modified
75 in matters of detail without departing from its essential features. For example, the inner surface of the shell *B* need not be spherical if a universal adjustment is not required, but may be in a segment of a cylinder the
80 axis of which may be either vertical or horizontal, according to the direction of desired adjustability.

I claim as my invention the following-defined novel features, substantially as herein-
85 before specified, namely:

1. A carbon-holder consisting of a hollow shell, two clamping-jaws adapted to grip the carbon between them at their lower ends and terminating at their upper ends in contact
90 with the internal surface of said shell, reacting against one another and adapted to tilt in clamping the carbon, and a tightening device for acting on said jaws to press their lower ends together and their upper ends
95 apart.

2. A carbon-holder consisting of a hollow shell, two clamping-jaws adapted to grip the carbon between them at their lower ends, crossing each other and terminating at their
100 upper ends in contact with the internal surface of said shell, and a screw for acting on said jaws to press their lower ends together and their upper ends apart.

3. A carbon-holder consisting of an internally-spherical shell, two clamping-jaws adapted to grip the carbon between them at their lower ends and terminating at their upper
105 ends in contact with the internal surface of said shell, and a screw acting against one of said jaws and reacting against the other to press their lower ends together and their upper
110 ends apart.

4. A carbon-holder consisting of an internally-spherical shell, two clamping-jaws
115 adapted to grip the carbon between them at their lower ends, having their upper ends crossing each other and terminating in contact with the internal surface of said shell, and a screw for drawing said jaws together
120 intermediate of their lower ends and their point of intersection.

5. The combination of the hollow shell *B*, clamping-jaws *C C*, having heads *ee'* within said shell, and gripping portions *d d*, and a
125 tightening-screw *D*, engaging said jaws between their heads and gripping portions and adapted to press their lower ends together and their upper ends apart.

6. The combination of hollow shell *B*, having a flange *c* surrounding its opening, clamping-jaws *C C*, having gripping portions *d d* at
130

their lower ends and laterally projecting and
crossing heads *e e'* at their upper ends, the
head of one jaw being bifurcated and that of
the other entering the bifurcation, and a screw
5 D, engaging the jaws to press their lower ends
together and their upper ends or heads apart
into frictional engagement with the inner sur-
face of the shell.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses.

JAMES J. WOOD.

Witnesses:

ARTHUR C. FRASER,
FRED WHITE.