

(No Model.)

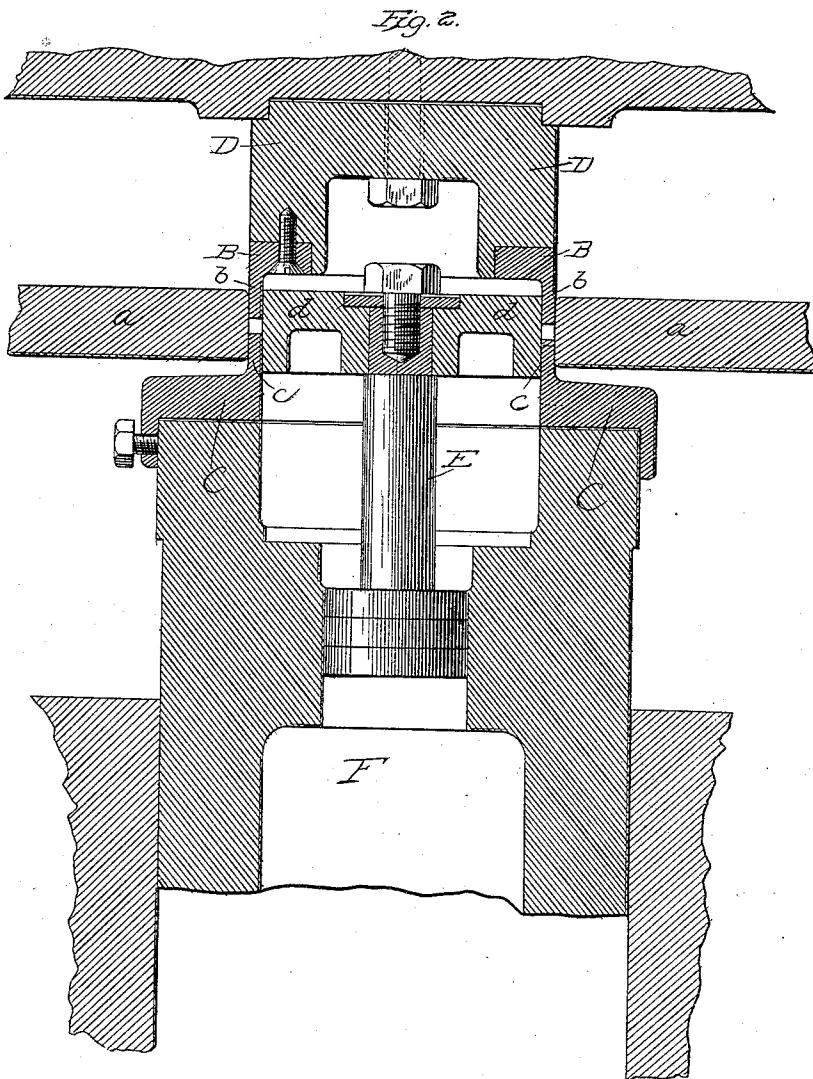
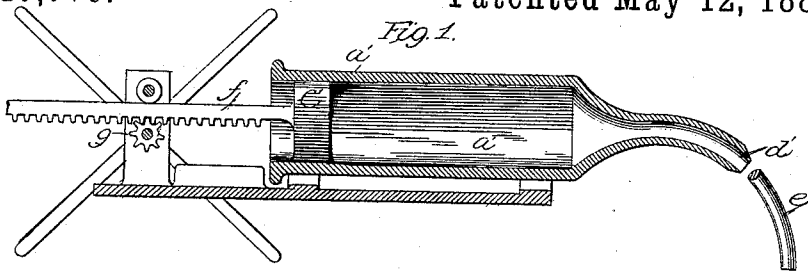
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C. F. HEINRICHS.

APPARATUS FOR MAKING CURVED CARBONS.

No. 317,776.

Patented May 12, 1885.



Attest:

Walter Malden
F. L. Middleton

Inventor
Chas. F. Heinrichs
by Joyce & Spear

Attys.

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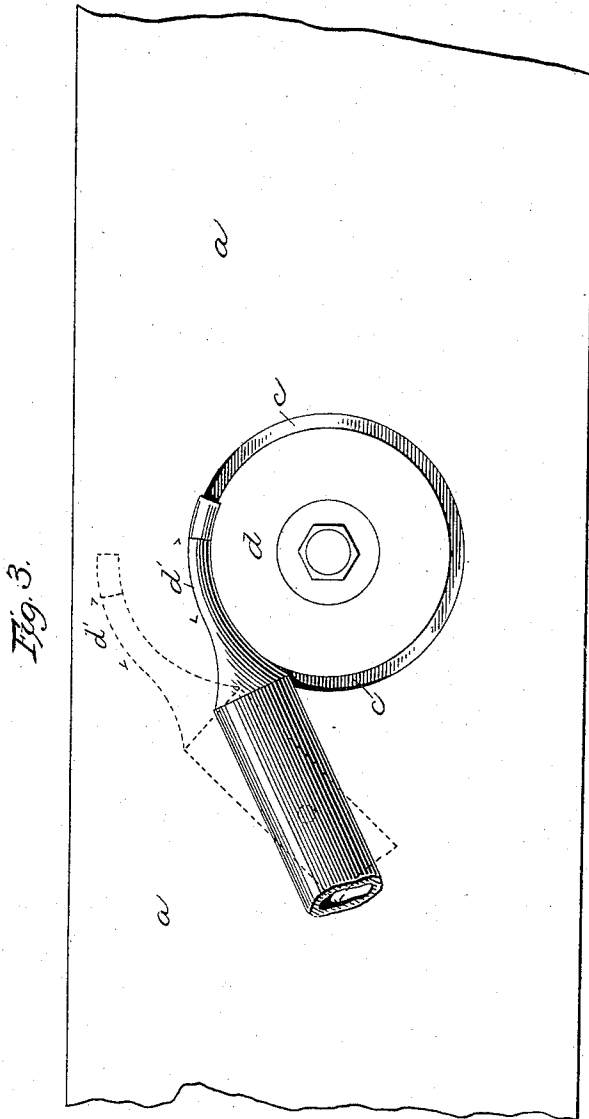
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UNITED STATES PATENT OFFICE.

CHARLES F. HEINRICH, OF NEW YORK, N. Y.

APPARATUS FOR MAKING CURVED CARBONS.

SPECIFICATION forming part of Letters Patent No. 317,776, dated May 12, 1885.

Application filed December 9, 1884. (No model.) Patented in France May 13, 1879, No. 130,646; in England November 11, 1879, No. 4,589, and in Germany May 21, 1880, No. 13,802.

To all whom it may concern:

Be it known that I, CHARLES FREDERICK HEINRICH, of New York, in the county of New York and State of New York, have invented a new and useful Improvement in the Manufacture of Curved Carbon Pencils; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to the apparatus employed for forming or shaping of the ground and plastic carbon employed in the manufacture of carbon pencils for electric lamps.

My invention consists in the hereinafter-described apparatus for first forming the carbon in approximately the curved shape desired, and subsequently pressing the carbon pencil so formed until the required density has been obtained.

In the accompanying drawings, Figure 1 represents a side sectional elevation of the apparatus employed for forming or shaping the carbons. Fig. 2 represents a sectional elevation of the pressure-dies in readiness to press the curved carbon pencils. Fig. 3 represents the forming apparatus shown in Fig. 1 as mounted on the die-plate of the press and adapted to act in connection therewith to feed the curved carbon issuing from the curved discharge-passage directly to the press.

An ordinary cylinder, *a'*, having been secured to suitable frame-work, the piston *c'* is withdrawn from the cylinder by means of the operation of pinion *g* and rack-bar *f*, or by other equivalent means. The cylinder is then filled with the ground and plastic carbon and the piston *c'* is forced in, pressing the carbon out through the discharge-passage *d'*, which is formed on a curve corresponding to the curvature of the carbons to be manufactured, as at *e'*, and thus I make circular carbon pencils with ordinary mechanism as now known and used, with the exception of making the discharge-passage curved instead of straight.

The curved carbons, after issuing from the curved discharge-passage, require further and more powerful compression in order to condense the material and bring them into proper condition for use in an electric lamp. Difficulty in carrying out this supplemental pro-

cess consists, after giving the required amount of pressure, in extracting the carbon pencil from the dies without fracture. To carry out this part of the process in the manufacture of these pencils, I have provided an annular die-plate, *a*, having its cylindrical opening equal to the exterior diameter of the carbon ring to be formed. In it is fitted a lower annular plunger or die, *c*, the annular ring which forms the die-face proper being in thickness equal to the thickness of the ring carbon to be formed. This is supported upon a base, *C*, fixed to the plunger of a hydraulic press. An upper ring or die, *b*, the same in size and shape, is attached by a flange, *B*, to another plunger, *D*. These two dies fit accurately within the die-plate *a*, and within them is a plunger, *d*, attached to the rod of a piston, *E*, working in a cylindrical central opening in the plunger *F* of the hydraulic press. The upper ring or die, *b*, being removed, the curved carbon is fed from the curved discharge-passage of the forming-press, as shown in Fig. 3, into the cavity formed by the walls of *a* and *d*, and upon the annular die *c*. The curved carbon as fed into the die-press is smaller than the cavity formed therein, so that it may enter it freely. After the forming-press is removed, as shown in dotted lines, Fig. 3, the upper annular die is brought down and pressure applied with the hydraulic press to properly condense and shape the carbon. The hydraulic pressure is then taken off the plunger *F*, and the plunger *D* forces the carbon ring out of the die-plate *a*, but still resting upon the die *c* and plunger *d*. The plunger *d* being then forced into the plunger *F*, the carbon ring can then be taken from the lower die, *c*, without liability to injury.

Having thus described my invention, what I claim is—

1. The hereinbefore-described apparatus for manufacturing carbons, consisting of a forming-press for the carbon, having a piston contained therein and a curved discharge-passage, and a die-press adapted to receive the curved carbon from the forming-press, composed of the die-plate *a*, the dies *b* and *c*, and the plunger *d*, all substantially as described.

2. In the manufacture of carbon pencils for electric lamps, the combination, with the forming-press for the carbon and the piston contained therein, of the curved discharge-passage, substantially as described.

5 3. In the manufacture of carbon pencils for electric lamps, the described die-press consisting of the die-plate *a*, the dies *b c*, and the plunger *d*, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES F. HEINRICHS.

Witnesses:

F. L. MIDDLETON,
WALTER DONALDSON.