

(No Model.)

E. WESTON.

METHOD OF TESTING CARBON CONDUCTORS FOR INCANDESCENT LAMPS.

No. 298,141.

Patented May 6, 1884.

Fig. 1.

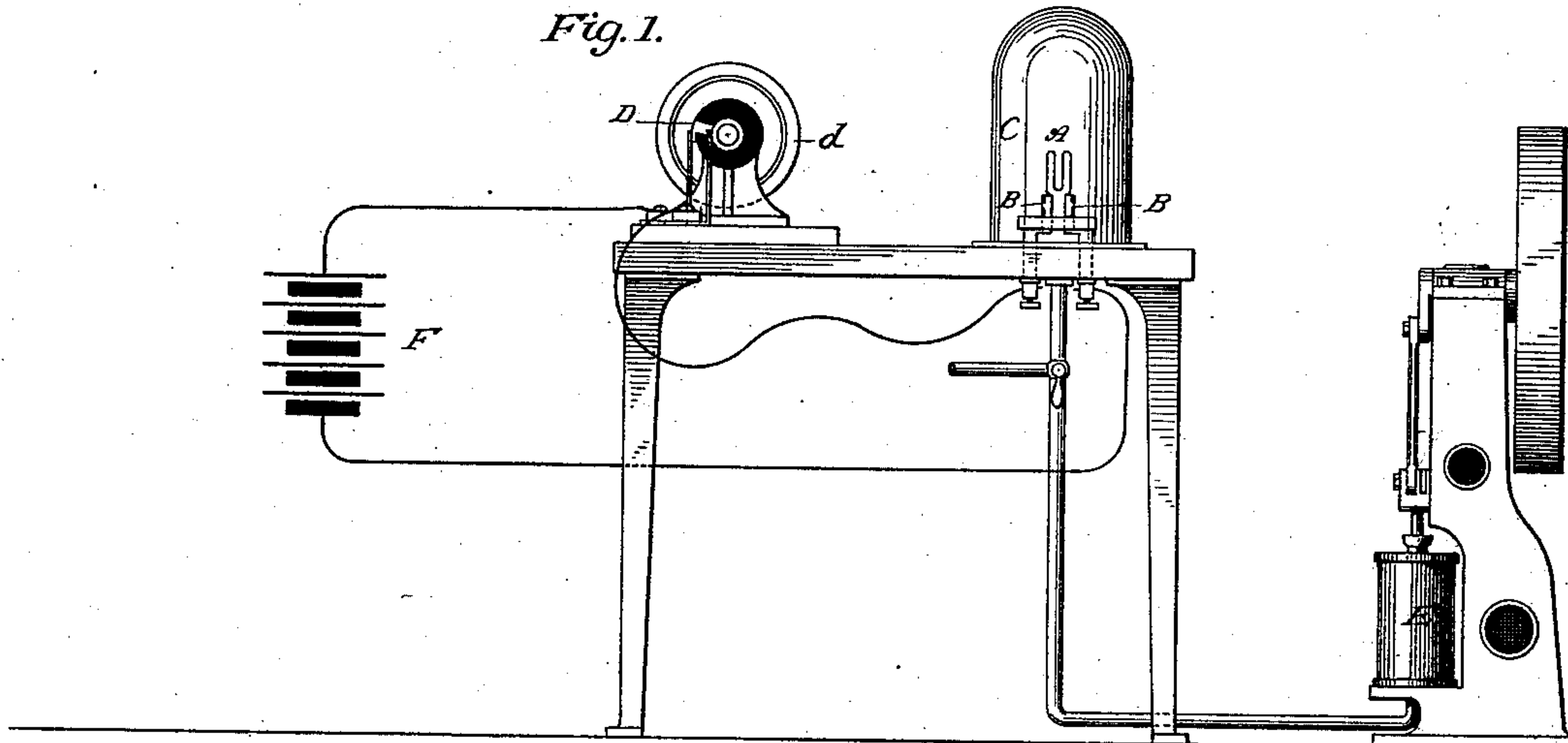


Fig. 2.

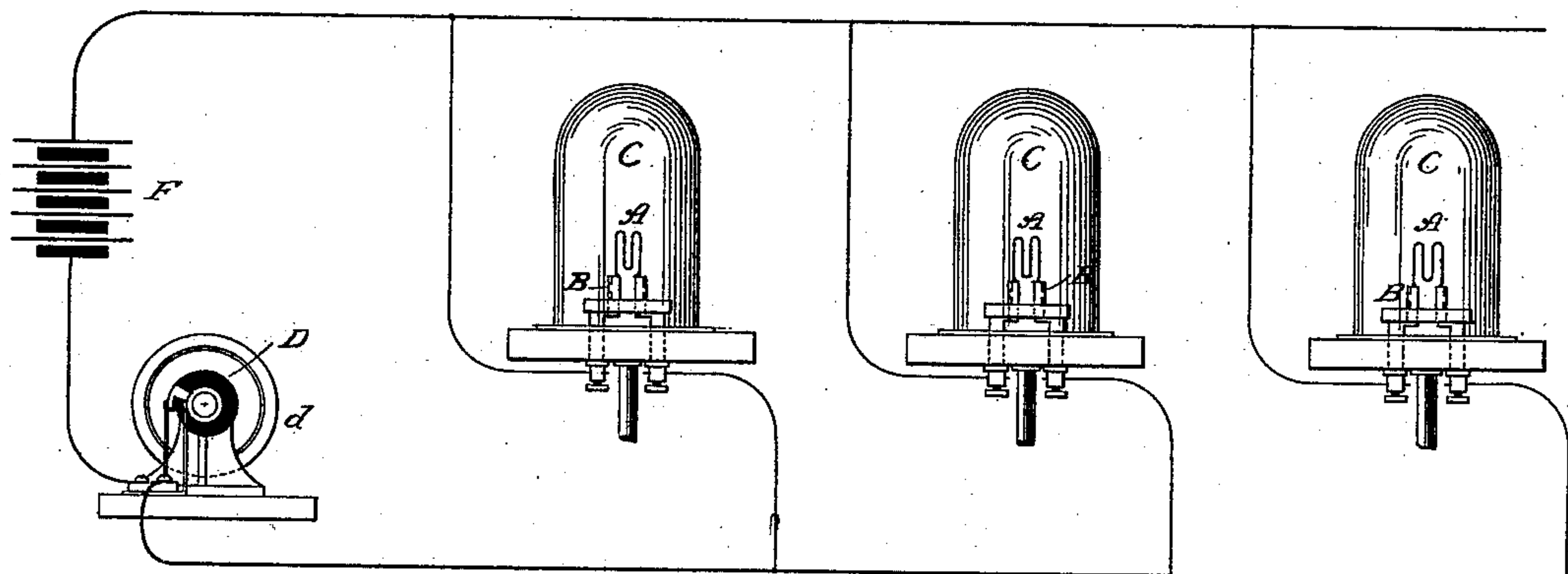
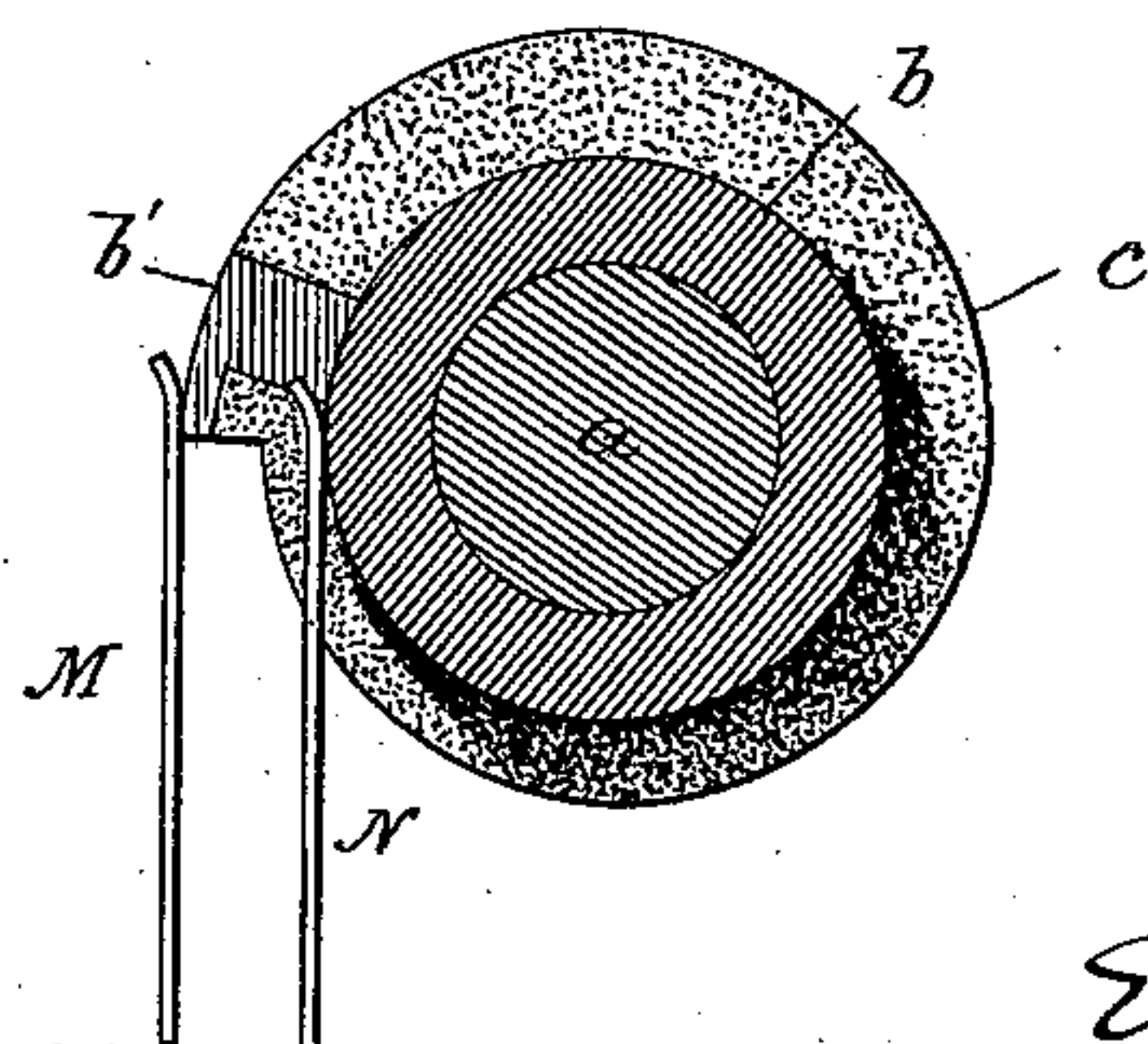


Fig. 3.



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METHOD OF TESTING CARBON CONDUCTORS FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 298,141, dated May 6, 1884.

Application filed September 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Methods of Testing Carbon Conductors for Incandescent Lamps, of which the following is a specification.

10 In the usual methods of manufacturing incandescent lamps, blanks or filaments of some proper material are carbonized and then attached to the metallic conductors passing through the base of the lamp-globe. After 15 this the globes are exhausted and sealed. The carbon conductors are composed of a slender strip or filament of uniform width and thickness throughout, except at and near the ends, where they are widened out to form clamping-surfaces. I have found that the carbons, when 20 prepared in the manner described, or even when electrically heated in a vapor of hydrocarbon after the preliminary process of carbonization, contain spots of higher resistance than the remaining portions of the strip, which are often not detected until the carbons have 25 been mounted and the lamps completed.

My invention consists in a novel method of testing carbons, preparatory to their insertion 30 in a lamp, or at any stage in the manufacture of the lamp, which shows at once the weak points or spots, when such exist. I accomplish this by passing through the carbons an intermittent or undulating current, and I will now 35 describe in detail the manner in which I carry the invention into effect.

After the strips or blanks are carbonized, I place one or more of them in a receiver, connecting their ends with the terminals of a circuit. I then exhaust the air from the receiver, 40 or fill it with a more or less attenuated atmosphere of hydrocarbon vapor, and then pass through the circuit impulses of current. If the carbon be defective, owing to the presence 45 of weak spots, it will be rendered incandescent at the weak points only, the rest remaining dark. If it be free from weak points, it will all be dark, or only slightly reddened. The current may be of sufficient strength to raise the 50 carbon to a high degree of incandescence; but it is to be interrupted so quickly after each

closing of the circuit as to have time to heat up only those points that are of higher resistance than the rest of the strip, and these only sufficiently to make them plainly visible. It 55 is obvious that an undulatory current in which the variations are from a strength less than that required to heat the carbon to redness to that sufficient to raise it to incandescence, or thereabout, will produce the same results. I 60 prefer to simply make and break the circuit, however, and in the drawings I have represented a device for doing this, in combination with a temporary exhaustion-chamber.

Figure 1 shows in side elevation the apparatus complete. Fig. 2 illustrates a method 65 of testing several carbons or lamps simultaneously, and Fig. 3 is a sectional view of the device for interrupting the circuit.

A is a carbon; B B, clamps for holding the same and connected with an electric circuit. 70

C is a receiver, which is placed over the carbon and exhausted to the necessary degree to prevent oxidation of the carbon.

D is a circuit-breaker in circuit with the carbon. 75

E is an exhaust-pump for removing the air from the receiver C.

F is any suitable generator for supplying the current for testing the carbon. 80

The circuit-breaker, which is illustrated in section in Fig. 3, consists of a shaft, *a*, carrying a collar or hub, *b*, of metal. One-half of the hub is surrounded by a collar, *c*, of insulating material, through which extends a lug, 85 *b*, from the hub. Springs M N, connected with the circuit, bear, respectively, on the two parts of the hub. A crank or pulley wheel, *d*, is fixed to the shaft and is turned by hand or power. Other and similar devices may be employed in lieu of that described, the construction 90 of the same being such as to render them capable of closing the circuit momentarily at rapid intervals.

When this device is used in conjunction with 95 the apparatus shown in Fig. 1, it is set in operation as soon as a sufficiently high vacuum is formed in the receiver C to preserve the carbon from burning. A very few impulses of current are sufficient to show whether the carbon 100 is defective or not.

Instead of one receiver C, several may be

used in the same circuit, as shown in Fig. 2, or any number of carbons may be placed under the same receiver.

It is obvious that while the plan of testing prior to the mounting of the carbons has many advantages, the tests may be made at any stage in the manufacture of the lamps. For example, the circuit-interrupting mechanism may be used with the exhaust-pumps, and the lamps tested just prior to being sealed. Without, therefore, confining myself to the specific construction of the apparatus described, nor to the precise manner of effecting the tests herein set forth,

What I claim is—

1. The method of testing the carbon conductors for incandescent lamps by passing through them an intermittent or undulatory current, and heating or raising to incandescence their defective portions, as herein set forth.

2. The method of testing carbon conductors for incandescent lamps, which consists in mounting the conductors in an exhaust-receiver, and passing through them an intermittent current of a nature to redden or raise to incandescence their defective portions only, as herein described.

3. In a carbon-testing apparatus, the combination of a receiver, means for exhausting the same of air, one or more holders for the carbons forming terminals of an electric circuit, and a device included in the circuit and adapted to close momentarily and at intervals the circuit, as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 13th day of September, 1883.

EDWARD WESTON.

Witnesses:

H. A. BECKMEYER,

L. V. E. INNES.