

(No Model.)

2 Sheets—Sheet 1.

J. W. TAYLOR.

APPARATUS FOR THE MANUFACTURE OF CARBON BRUSHES.

No. 526,951.

Patented Oct. 2, 1894.

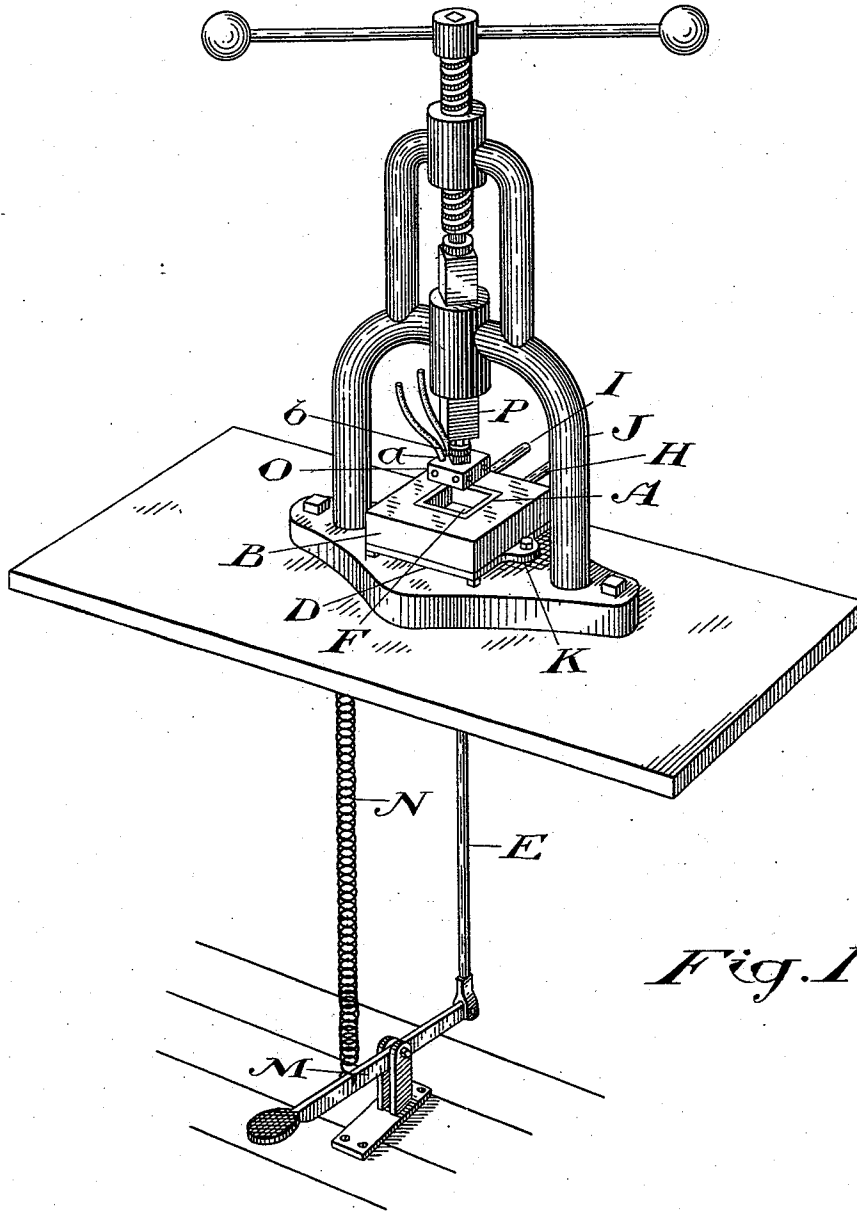


Fig. 1

Witnesses

Fred Clarke
J. Neff.

Inventor

John W. Taylor—
by
Ridout and Maybee
Attys

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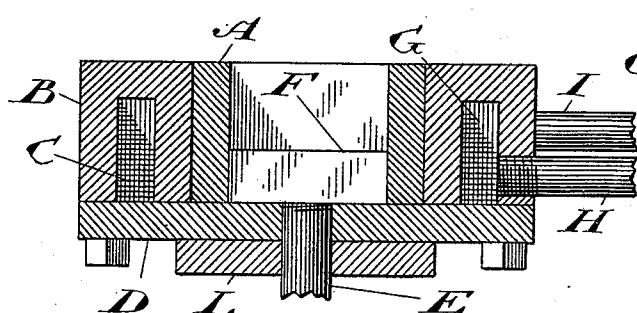


Fig. 2

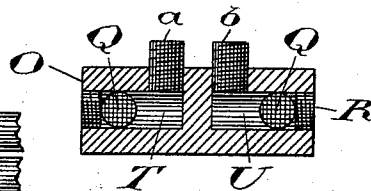


Fig. 4

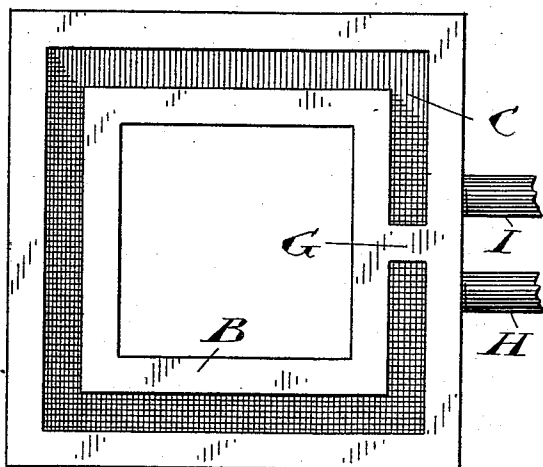


Fig. 3

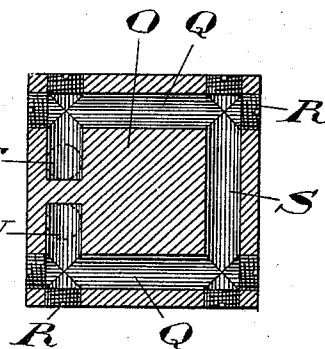


Fig. 5

Witnesses

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G. M. Neff.

Inventor

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UNITED STATES PATENT OFFICE.

JOHN W. TAYLOR, OF PETERBOROUGH, CANADA.

APPARATUS FOR THE MANUFACTURE OF CARBON BRUSHES.

SPECIFICATION forming part of Letters Patent No. 526,951, dated October 2, 1894.

Application filed May 7, 1894. Serial No. 510,386. (No model.)

To all whom it may concern:

Be it known that I, JOHN WRIGHT TAYLOR, of the town of Peterborough, in the county of Peterborough and Province of Ontario, Canada, have invented a certain new and Improved Apparatus for the Manufacture of Carbon Brushes, of which the following is a specification.

The object of my invention is to devise a suitable apparatus for the manufacture of carbon brushes by means of which such brushes may be turned out ready for the market without requiring the expenditure of extra labor after having been removed from the machine, and it consists, essentially, of a die barrel surrounded by a casing containing a steam chamber, a lower die at the bottom of the die barrel and an upper die to which pressure may be applied by a suitable press, the whole being constructed in detail substantially as hereinafter more particularly described and then definitely claimed.

Figure 1, is a perspective view of the apparatus. Fig. 2, is a cross-section of the die barrel and surrounding casing with the lower die in position. Fig. 3, is a bottom plan view of the casing with the lower part removed. Fig. 4, is a cross-section of the upper die showing in elevation the steam inlet and outlet pipes. Fig. 5, is a sectional plan of the same.

In the drawings, like letters of reference indicate corresponding parts in the different figures.

A, is the die barrel surrounded by a casing B, inclosing a steam chamber C. This casing is closed by the plate D, held in place by suitable bolts. This plate also forms the bottom of the die barrel and has a hole formed therein for the passage of the rod E, connected to the lower die F.

On reference to Fig. 3, it will be seen that the steam chamber C, is divided by a partition G, the inlet pipe H, entering on one side the partition and the outlet pipe I, on the other so that the steam is compelled to make a complete circuit of the chamber C, before it can escape.

The casing B, inclosing the die barrel is connected to the bed of the press J, by means of bolts passing through lugs K, formed on opposite sides of the plate D. A plate L, is placed between the plate D, and the bed of

the press J, to convey the pressure on the lower die to the bed of the press. The press J, is placed on a suitable table or bench, and on the floor beneath it is placed a treadle M, to which is connected the rod E, of the lower die plate.

N, is a spring adapted to retain the treadle M, in its normal position.

O, is the upper die, suitably connected to the spindle P, of the press J. A steam chamber is formed in this die by boring two holes Q, from side to side of the die and closing their ends by screw plugs R. Intersecting these holes at right angles are the holes S, T, U, also closed by plugs R. From the top of the die holes are bored connecting with the inner ends of the holes T, and U, and suitable nipples *a, b*, are screwed therein, to which nipples flexible steam inlet and outlet pipes are connected enabling the die to be effectually heated.

A screw press J, is shown in the drawings, but it will of course be understood that a hydraulic or other press may be substituted for that shown.

Having described the construction of the apparatus, I will briefly describe its operation. The steam chambers in the casing B, and the upper die are supplied with steam at a pressure of about sixty pounds per square inch. When the die and die barrel are sufficiently heated, a suitable quantity of the raw material hereinafter described is placed in the die barrel. The upper die is then closed down upon it, and the whole left for a suitable length of time, generally about two minutes. The power of the press is then applied and the material properly compressed and amalgamated. The upper die being withdrawn by reversing the press, the compressed material forming the brush is removed from the die barrel by depressing the treadle M, which lifts the lower die and raises the brush into a position to be removed. At least four presses are preferably used, as, owing to the length of time necessary for the formation of a brush, one man can readily attend to this number. When a sufficient number of brushes have been turned out in this way, they are subjected to the usual operations of burning and copper-plating, and are then ready for the market.

Carbon brushes are now generally made from an intimately mixed and pulverized combination of coke and pitch. Of this mixture, which forms the raw material of the brushes, a suitable quantity is placed in a large mold and after having a plate or upper die placed thereon, is taken to an oven and there heated to an extent sufficient to soften the pitch. After removal from the oven, the mold is taken to a hydraulic press and subjected to a pressure of about six thousand pounds to the square inch. The plate thus formed is then taken to a cutting machine and roughly cut into a number of blocks somewhat larger than the size required for the finished product. These blocks, after undergoing the operation of baking in the kiln, have then to be ground to the desired shape by hand labor, which involves a very large addition to the cost of manufacture. It is to avoid the necessity for this additional labor in grinding and polishing that I have designed my apparatus.

It will be readily seen that by combining the press, die barrel, and heating apparatus in one machine, I avoid a considerable amount of handling and that as the die barrel is of the exact size required for the brush, the finished product will require no hand labor to fit it for the market, and that an accuracy of form will be attained, which is otherwise impossible.

I do not of course confine myself to the manufacture of carbon brushes, as by enlarging the die barrel and using suitably-shaped dies, the apparatus may be readily adapted to the production of the carbon rods or pencils used in arc electric lamps, or of any other forms of manufactured carbon.

What I claim as my invention is—

1. In an apparatus for the manufacture of carbon brushes, the upper die O, having holes Q, S, T, U, drilled therein, in combination with plugs R, steam inlet *a*, and steam outlet *b*, substantially as and for the purpose specified.

2. In an apparatus for the manufacture of carbon brushes, the combination of the die barrel A, casing B, inclosing a steam chamber C, surrounding the die barrel and provided with steam inlet and outlet pipes H, and I; the lower die F, connected to the treadle M, by the rod E; the upper die O, provided with a steam chamber and steam inlets and outlets *a*, and *b*, for the same; and a press J, to the spindle of which the said upper die O, is connected, substantially as and for the purpose specified.

Peterborough, April 27, 1894.

JOHN W. TAYLOR.

In presence of—

A. P. POUSSETTE,
R. A. D. HAY.