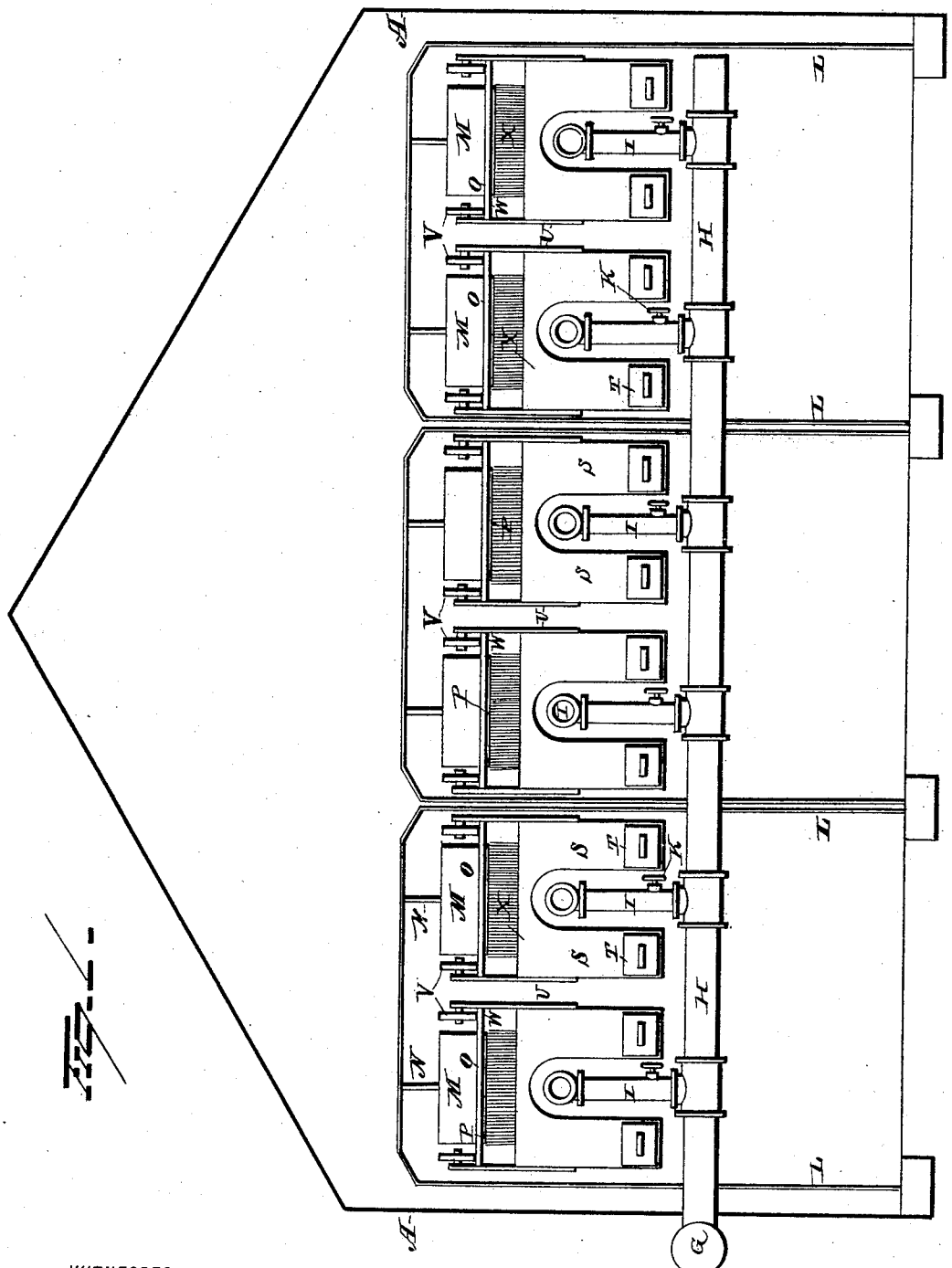
(No Model.) 3 Sheets—Sheet 1.

J. T. DYSART.

APPARATUS FOR MANUFACTURING CARBON BLACK.

No. 266,953. Patented Oct. 31, 1882.



WITNESSES

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

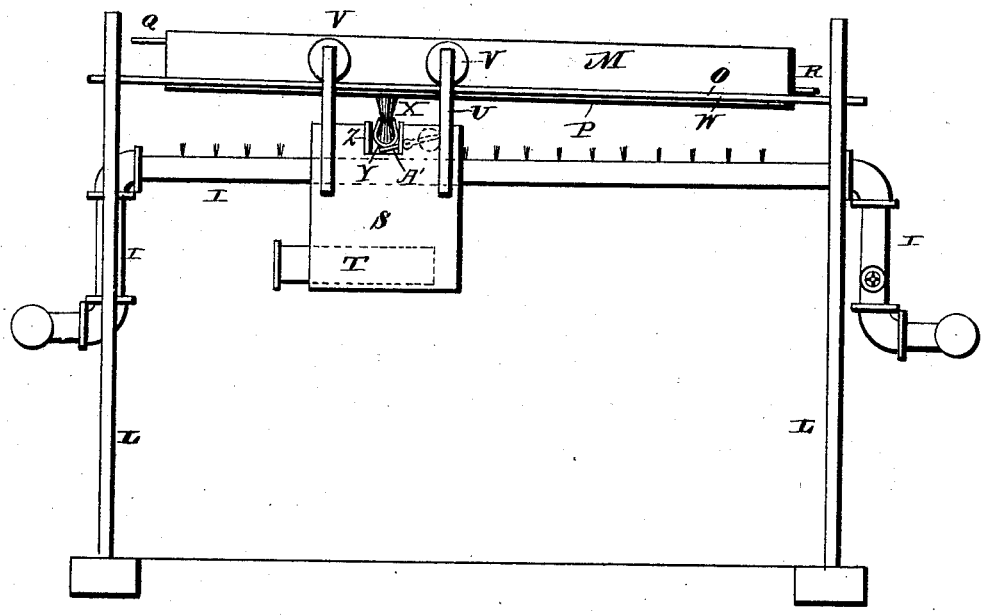
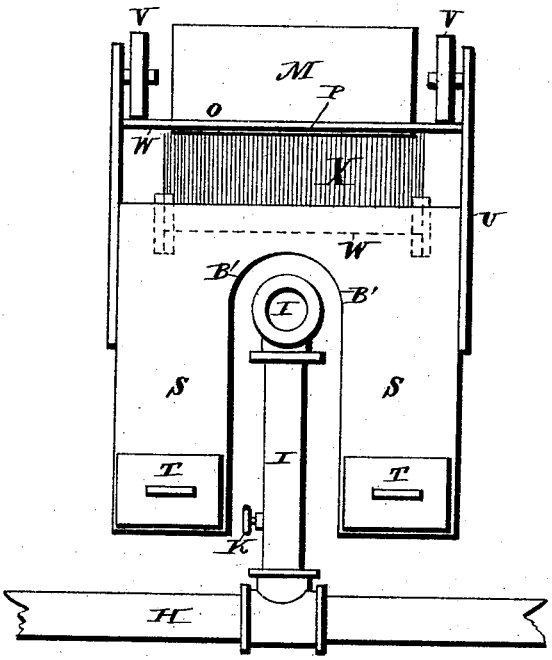


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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APPARATUS FOR MANUFACTURING CARBON BLACK.

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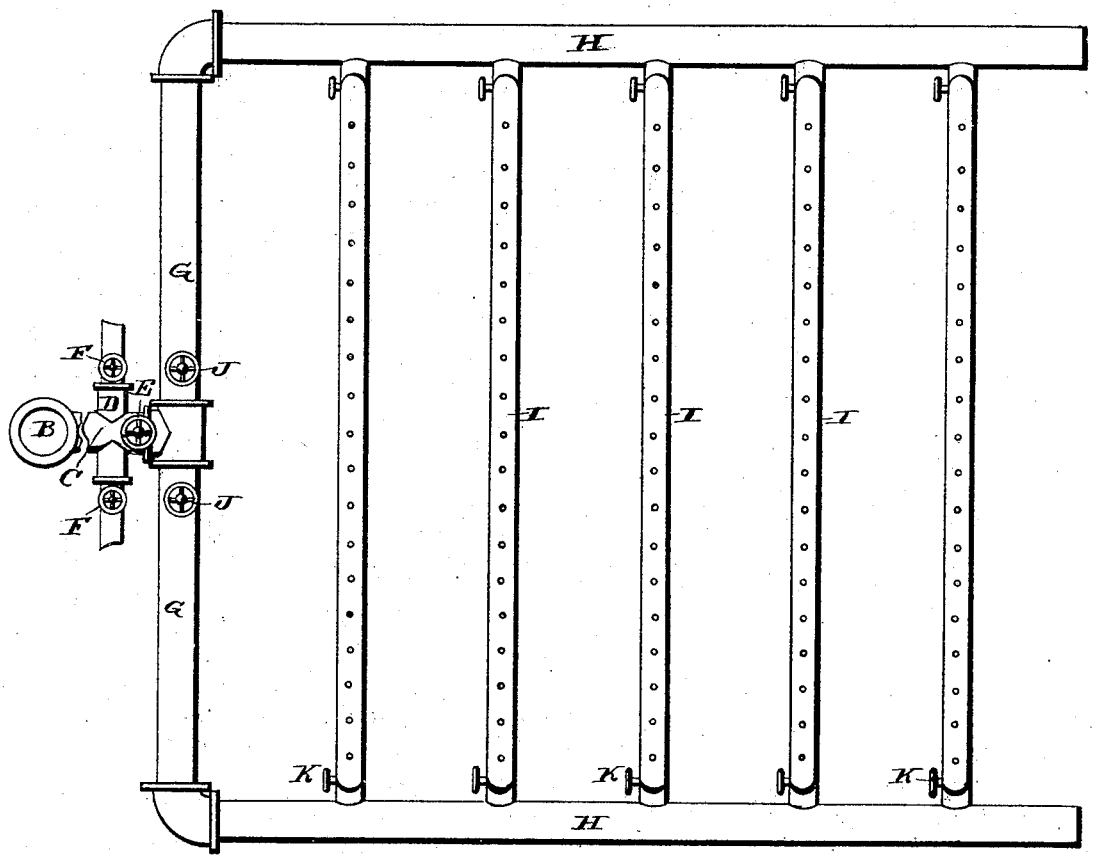
Fig. 4.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MANUFACTURING CARBON-BLACK.

SPECIFICATION forming part of Letters Patent No. 266,953, dated October 31, 1882.

Application filed May 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. DYSART, of Salineville, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Apparatus for Manufacturing Carbon-Black; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to an improvement in apparatus for the manufacture of carbon-black, the object being to provide a device of this character which shall combine simplicity and cheapness of construction with durability and efficiency in use, and which shall be adapted to produce a superior quality of carbon-black. With these objects in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in end elevation of an apparatus for the manufacture of carbon-black, the same being constructed in accordance with my invention. Fig. 2 is a view in side elevation of the devices associated with one depositing-surface and carriage. Fig. 3 is a view in front elevation of the devices shown in Fig. 2, and Fig. 4 is a plan view of the system of gas-supply pipes.

A represents a building designed and adapted to inclose my improved apparatus, to which natural gas is supplied from the well B through the primary pipe C, the same being provided with gas-escape pipes D and with a valve, E. The escape of gas from the pipes D is regulated by valves F, which are appropriately manipulated, as the force with which the gas escapes from the well varies, to maintain an equilibrium of pressure in the gas supplied to the apparatus. The constancy of the gas-supply is an important factor in the manufacture of carbon-black, in that it insures homogeniety in the product, the black disengaged from a flame sustained by an oscillating gas-supply varying in quality and in color. The said pipe C delivers the gas into the pipe G, to the opposite ends of which the pipes H are attached, the latter being connected by the parallel burner-pipes I.

Valves J, located in the pipe G, and on opposite sides of the pipe C, respectively, are designed to offer additional facilities for regulating the inflow of gas to the burner-pipes I, which are themselves provided with valves K for regulating the amount supplied to the burners. The object in making such ample provision for regulating the inflow of gas both into the main supply and into the burner-pipes is to provide means not only for regulating the gas-supply to the whole apparatus, but also for meeting the various contingencies operating to cause the different pipes to supply under an equal pressure an unequal volume of gas, and resulting from accumulations in the pipes, from incrustations on the burners, or from other causes of like nature.

Frames L, situated side by side, are adapted to support inclined metallic pans M, which are suspended from the said frames by means of the depending bars N. The outer surfaces of the bottom portions, O, of the said pans constitute the surface upon which the carbon is deposited as it is disengaged from the flames of the burning gas, these surfaces being coated with a thin layer, P, of asbestus, applied in any desired manner, but preferably as a thick paint.

Suitable inlet and outlet water-pipes (designated by Q and R, respectively) are connected with the pans and arranged to pass currents of water over their bottom portions for the purpose of keeping the same cool, the transit of the water over the said surfaces being accelerated by their pitch or inclination.

By maintaining the bottom portions of the pans, and hence the depositing-surfaces, at a constant and low temperature, the deposition of the carbon is facilitated, and it is prevented from becoming browned after deposition, retaining that peculiar blue-black color which it is desirable to preserve, but which is destroyed if the carbon is subjected to any great degree of heat. The depositing-surfaces of my apparatus, however, become but slightly heated, because the asbestus, against which the gas-flames impinge, being a non-conductor,

imparts comparatively little heat to the metal surface to which it is attached, which latter is cooled, as described, by running water. In case the radiation of heat from the asbestus is alone sufficient to maintain the depositing-surfaces at the desired temperature, the deflection of water over their upper faces may be dispensed with. It is in virtue of this construction that the manufacture of the carbon-black may be continuously maintained, it being unnecessary to discontinue the operation to permit the depositing-surfaces to cool.

Each of the pipes I is provided with a traveling receptacle or carriage to gather the black after its deposition. The depending portions S of the said carriages, which are centrally cut away to adapt them to fit over the pipes, are provided with drawers T, adapted to be readily removed, emptied, and replaced as often as need be. The carriages are provided on each side with two vertical posts, U, having small wheels V attached to them, which travel on the projecting ledges W of the bottom portions, O, of the pans M.

The carbon is removed from the depositing-surfaces by means of brushes X, secured in clamps Y, the opposite ends of which are inserted in vertical slots Z, formed in the opposite sides of the carriages. The said clamps, in which the brushes are mounted, are adapted to have free vertical reciprocation in the slots Z, and also to be deflected from side to side therein, the brushes being held against the depositing-surfaces by means of weighted levers A′, pivotally secured to the inner side walls of the carriages, and arranged substantially as shown. As the motion of the carriage is reversed the clamps and brushes will be deflected in the opposite direction, thus preventing the latter from binding on the depositing-surfaces. After the carbon is disengaged from the depositing-surfaces it will fall into the carriages, being deflected by the curved lower walls, B′, thereof into the drawers before described. The carriages are actuated to and fro beneath the depositing-surfaces at regular intervals by any desired motor, a system of weights having been found to admirably fulfill all of the requirements demanded of the motive power.

Depositing-surfaces constructed as described and cooled by a water current are maintained at a temperature at which the deposition of the particles of carbon in the gas is the most freely effected, and at the temperature at which it is deposited in its most desirable color.

It is evident that in complying with the requirements resulting from the oscillation of the ordinary practical conditions some changes in the apparatus may be necessary. I would therefore have it understood that I do not limit myself to the exact construction and arrangements of parts herein shown and described, but that I hold myself at liberty to make such alterations as fairly fall within the spirit and scope of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for manufacturing carbon-black, a depositing-surface consisting of a metallic surface faced with asbestus, substantially as set forth.

2. In an apparatus for manufacturing carbon-black, a depositing-surface faced with asbestus, and provided with means for deflecting a current of water over the upper face of said depositing-surface for the purpose of cooling it, substantially as set forth.

3. In an apparatus for manufacturing carbon-black, the combination, with a depositing-surface, of a traveling carriage to receive the carbon-black, a clamp mounted in and adapted to be vertically reciprocated and laterally deflected in slots formed in opposite sides of the carriage, and a brush mounted in the clamp, substantially as set forth.

4. In an apparatus for manufacturing carbon-black, the combination, with a depositing-surface, of a traveling carriage to receive the carbon-black, a clamp mounted in and adapted to be vertically reciprocated and laterally deflected in slots formed in opposite sides of the carriage, a brush mounted in the clamp, and weighted levers to press on the bottom of the clamp and hold the brush against the depositing-surface, substantially as set forth.

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

JOHN T. DYSART.

Witnesses:
GEO. D. SEYMOUR,
FRANK OSGOOD MCCLEARY.