W. B. SNOW.

Oil-Stills.

No. 137,496. Patented April 1, 1873.

Fig. 1.

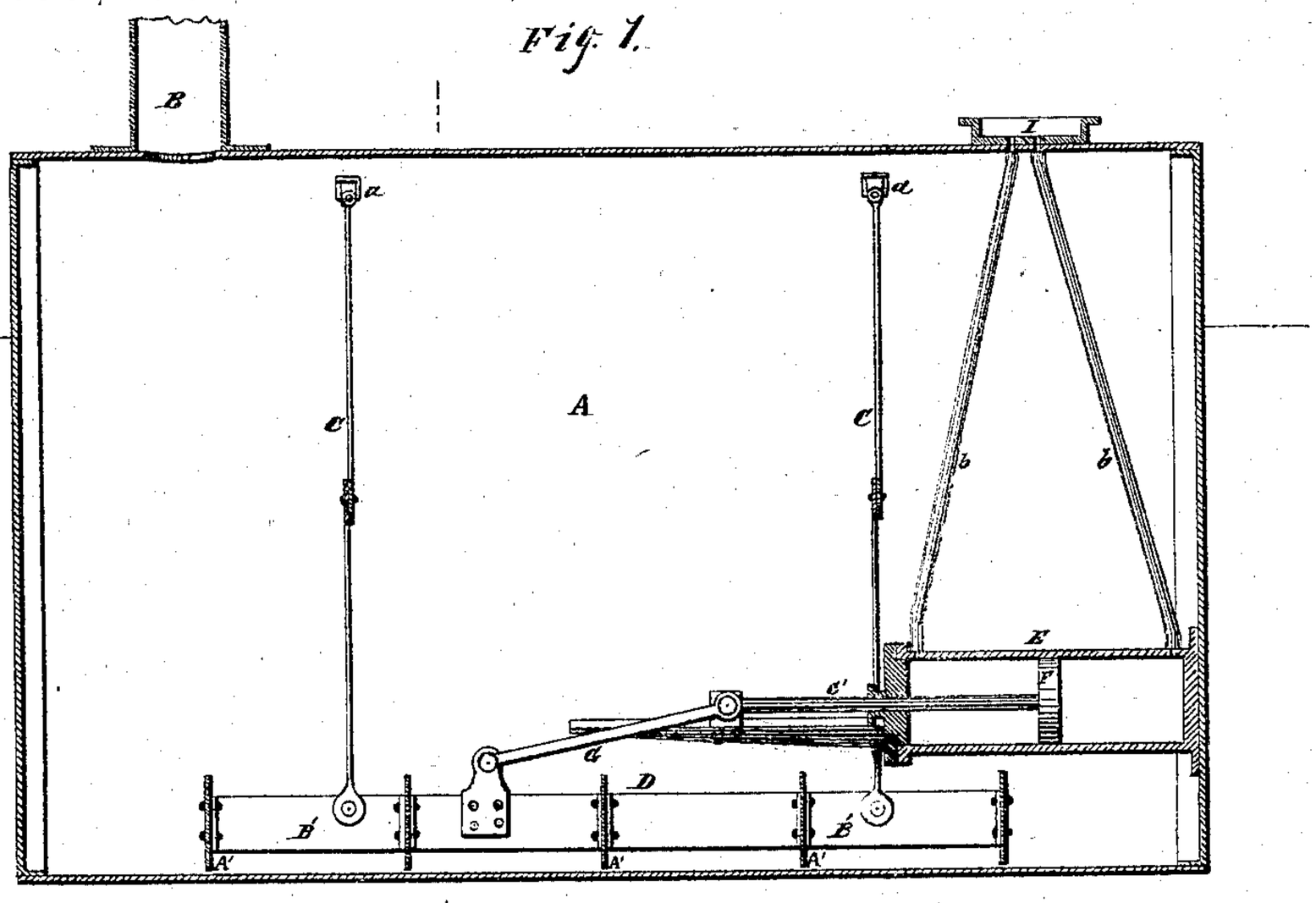
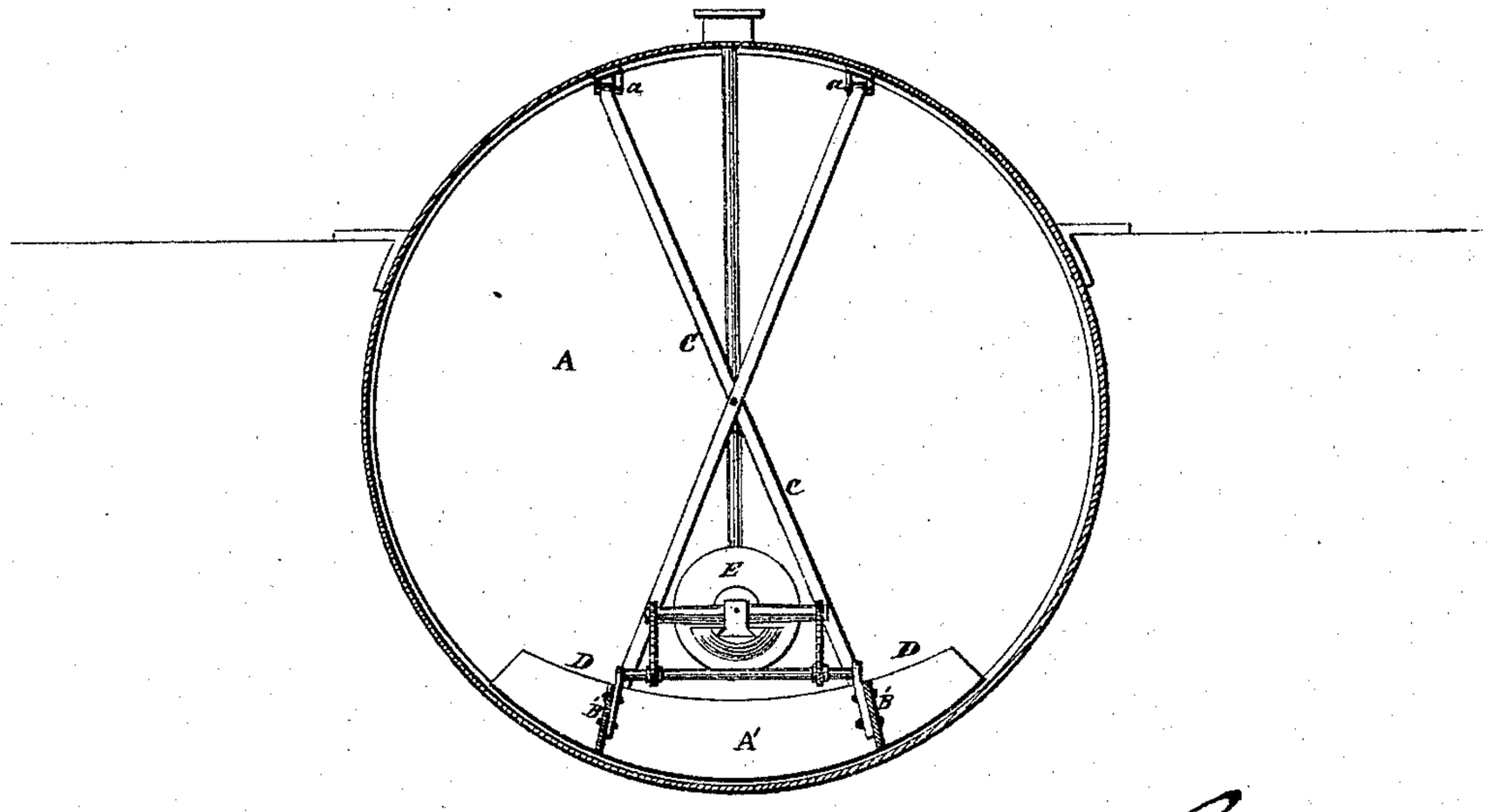


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM B. SNOW, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN OIL-STILLS.

Specification forming part of Letters Patent No. **137,496**, dated April 1, 1873; application filed September 21, 1872.

To all whom it may concern:

Be it known that I, WILLIAM B. SNOW, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Petroleum-Stills, of which the following is a specification:

This invention, relating to apparatus used in the distillation of petroleum-oils, is designed to maintain a uniform admixture of the heavier and lighter components of the oil during the process of distillation, and thereby to obtain the distillation of a greater proportion of the whole of a charge of oil put into the still than has heretofore been practicable, and at the same time to prevent the excessive formation of a carbonaceous layer upon the heating-surfaces of the still, and yet to provide for the maintenance of a thin film of such carbonaceous matter upon the said surfaces; the object of preventing the excessive formation of carbon being to prevent the loss of heat that would occur were the non-conducting layer allowed to reach any considerable thickness; and the object of retaining a thin film of carbon on the still-bottom being to prevent the excessive waste from the burning of the petroleum were the heating-surfaces kept perfectly naked to the contact of the same. The invention consists in a reciprocating dasher, made to conform in contour with the transverse section of the heating-surface of the still, and moving in a line at right angles to such section, so arranged within the still that a slight but appreciable space, equal to the thickness of the carbonaceous film desired, be left between the same and the heating-surface aforesaid. The invention further consists in the combination, with the said reciprocating dasher, of a direct-acting steam-cylinder, provided within the still, and supplied with steam from any suitable external source.

Figure 1 is a vertical longitudinal section of a petroleum-still constructed according to my invention. Fig. 2 is a vertical transverse section of the same.

A is the sheet-metal tank or body of the still, preferably of cylindrical form, provided with a suitable furnace for maintaining a fire beneath it, and having the outlet-pipe B arranged for the facile egress of the vapors from the still to the condenser. Depending from pivot-bearings *a* in the top of the tank A are swinging hangers or supports C, to the lower ends of which, and suspended thereby, is attached the dasher D. This dasher may be varied somewhat in the details of its construction; but, as shown in the drawing, consists of a number of transverse sector-shaped pieces, A′, connected by longitudinal pieces B′ attached thereto by bolts and irons, as indicated at *a′*. The pieces A′ have their lower edges shaped in close conformity to the transverse section of the adjacent lower or heating surface of the tank, as shown more fully in Fig. 2; and the device is so suspended upon the hangers C that the said edges are at a slight but appreciable or determinate distance from the heating-surface aforesaid. Such distance is proportioned to the thickness desired to be left upon the said surface of the film of carbonaceous matter resulting from the burning of the petroleum in immediate contact with the latter. E is a steam-cylinder of any suitable kind, arranged within the tank, and firmly secured to one end thereof, as more fully shown in Fig. 1. The rod C′ of the piston F of this cylinder connects direct, by the rod G, with the dasher D. The cylinder is supplied with steam through pipes *b* from a valve-chest arranged outside of the tank, as shown at I in Fig. 1, and furnished with a valve of any suitable construction, operated in any appropriate way.

In the ordinary working of the still the petroleum brought in direct contact with the hot metal of the heating-surface is more or less carbonized, leaving a deposit upon the said surface, and evolving carbonic-acid gas, which, mingling with the gaseous products of distillation, deteriorates the quality thereof; but it is manifest that, by leaving a thin film or layer of the carbonaceous deposit upon the metal, the application of intense heat to the contiguous portion of the petroleum will be measurably avoided without materially interfering with the efficient and economical working of the apparatus, and the tendency to the further accumulation of the deposit be measurably diminished.

The dasher, moving at any appreciable and previously-determined distance from the heating-surface, allows the accumulation of a film

of the carbonaceous material of a thickness sufficient to secure the result just specified, and, at the same time, prevents the accumulation of a layer of such thickness as would practically interfere with the transmission of heat through the heating-surface to the contents of the tank, and, of course, effectually secures and avoids any interference from such source with the rapid and regular operation of the still. The thorough mixture of the heavier and lighter components of the oil which is kept up by the dasher enables a more nearly perfect distillation of the whole of the oil to be effected, and a larger yield to be obtained. The arrangement described of the steam-cylinder and its adjuncts not only affords a simple and direct means of giving motion to the dasher, but also causes the cylinder to be kept at a comparatively high temperature, which prevents the loss of heat, and, consequently, of power, by radiation of the former from the cylinder.

What I claim as my invention is—

1. The reciprocating dasher D, corresponding in contour, as described, with the transverse section of the tank A, and arranged to move in a direction longitudinal with the latter, and at a slight but appreciable distance from the heating-surface of the tank, substantially as and for the purpose herein set forth.

2. The combination, with the reciprocating dasher D, arranged and operating as described, of the steam-cylinder E and its piston F, rod C′, and connecting-rod G, acting direct upon the dasher, substantially as and for the purpose specified.

W. B. SNOW.

Witnesses:

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