F. R. SUTTON.

Sad-Iron.

No. 226,633. Patented April 20, 1880.

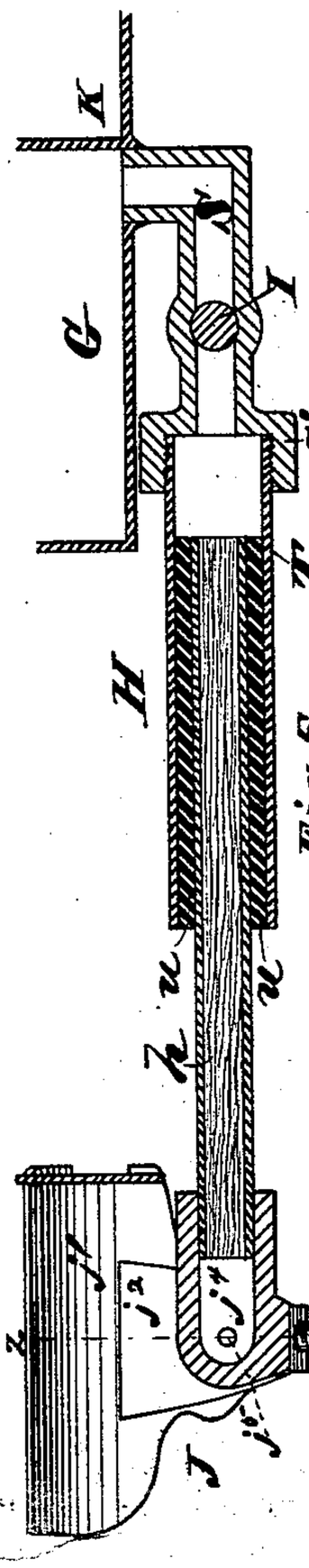

Fig. 5

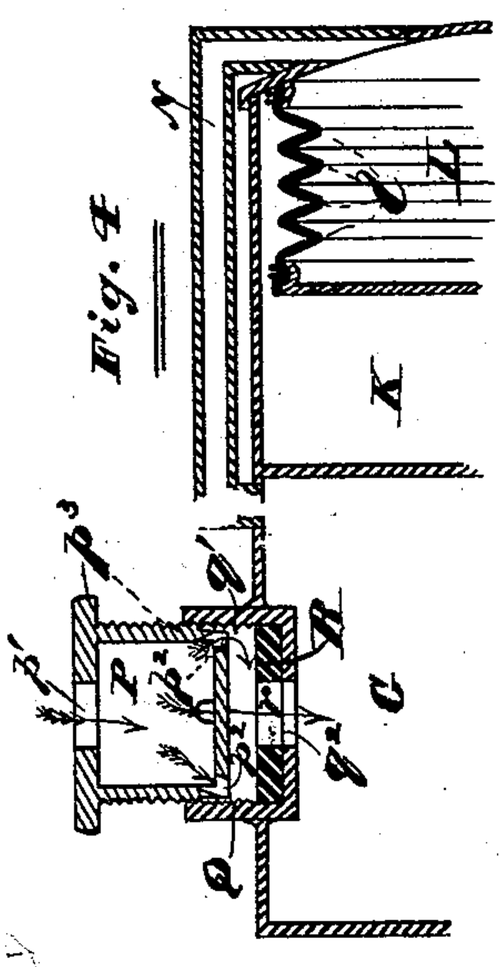

Fig. 4

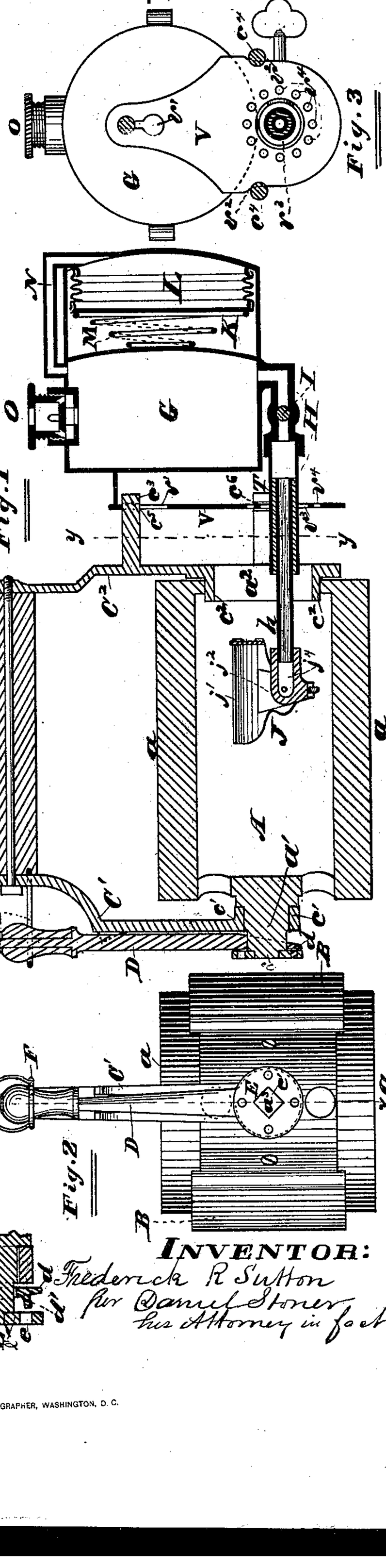

Fig. 1

Fig. 3

Fig. 6

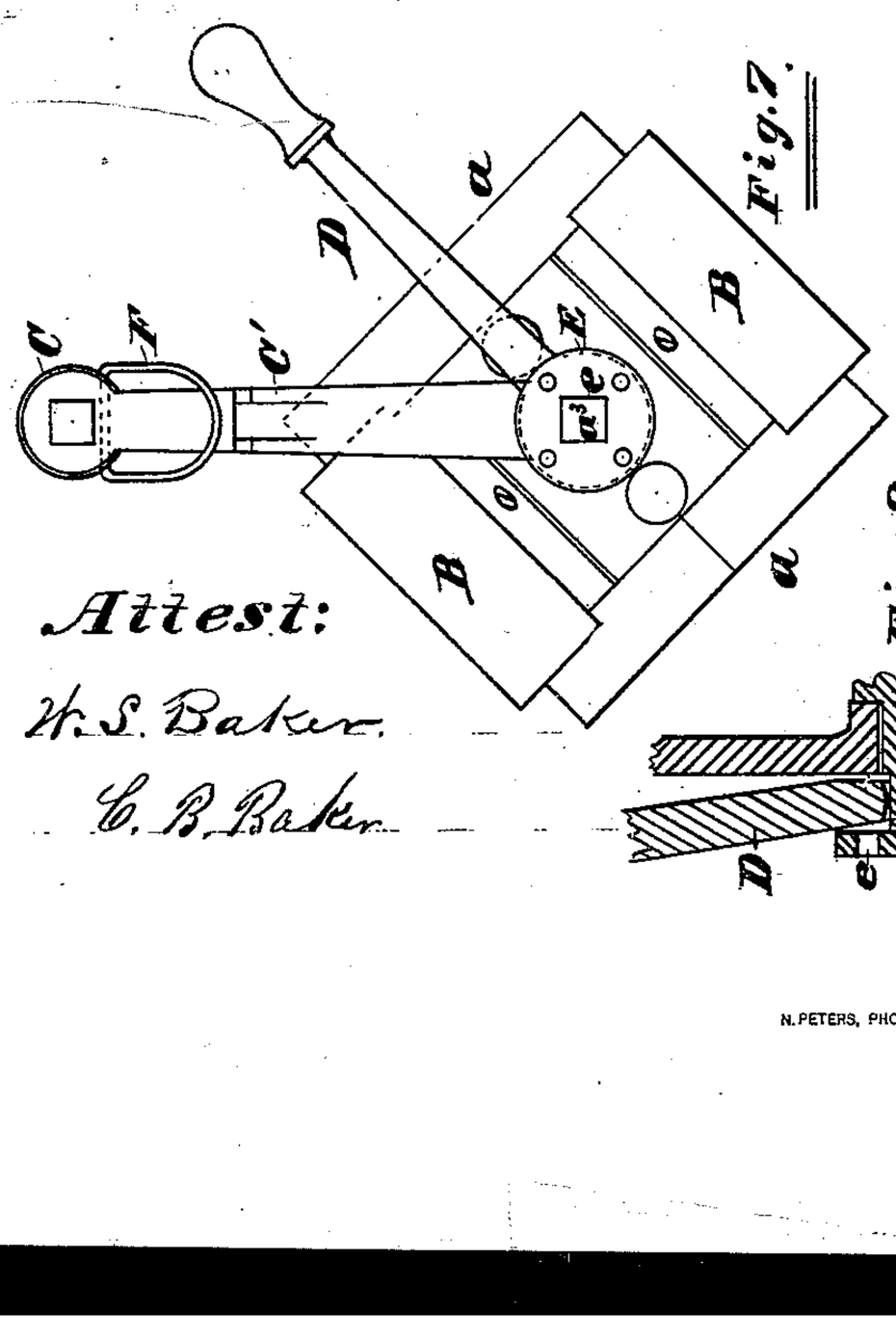

Fig. 7

Fig. 2

Fig. 8

Attest:

H. S. Baker.

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INVENTOR:

Frederick R Sutton

per Daniel Stoner

his Attorney in fact

UNITED STATES PATENT OFFICE.

FREDERICK R. SUTTON, OF LAWRENCE, KANSAS.

SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 226,633, dated April 20, 1880.

Application filed May 27, 1879.

To all whom it may concern:

Be it known that I, FREDERICK R. SUTTON, of the city of Lawrence, in the county of Douglass, of the State of Kansas, have invented a new and useful Improvement in Sad-Irons, of which the following is a specification, reference being had to the annexed drawings and the letters and figures marked thereon, forming a part of the specification.

My invention pertains to a hollow revolving self-heating sad-iron, A, and its several attachments, consisting of two fluting-plates, B B, a handle, C, with arms C′ C², a clutch-lever, D, clutch-plate E, and drop-staple F, and a heating device composed of a fluid-reservoir, G, fluid-conductor H, fluid stop-valve I, and burner J, a reservoir-chamber K, compressible air-reservoir L, conical spiral spring M, air-conductor N, and an air and fluid feed and stop valve, O, all of which parts are constructed and arranged in relation to each other for the purposes set forth, as shown in the drawings, and as hereinafter described.

The object of my invention is to provide a self-heating sad-iron in which gasoline and other carbon oils may be safely and effectively used as fuel, which I accomplish by subjecting the fluid to pressure for the purpose of facilitating combustion.

In the drawings, Figure 1 is a longitudinal sectional view of the device in position for use, not showing the fluting-plates B B. Fig. 2 is a cross-elevation view of the sad-iron from the toe end in position for use for polishing, not showing the heating device. Fig. 3 is a cross-elevation front view of the fluid-reservoir G separated from the sad-iron A on line *y*, showing the fastening-plate V and lugs c^3 c^4 c^4. Fig. 4 is a sectional view, in detail, of the compressible air-reservoir L, air-conductor N, air and fluid feed and stop valve O, and the upper portions of a longitudinal-elevation section of the fluid-reservoir G and reservoir-chamber K. Fig. 5 is a longitudinal sectional view, in detail, of the fluid-conductor H, fluid stop-valve I, and burner J. Fig. 6 is a cross-sectional view, in detail, of the burner J. Fig. 7 is the same as Fig. 2, except that it shows a position of the sad-iron A and clutch-lever D in relation to the arm C′ C² in the process of revolution; and Fig. 8 is a sectional-elevation view, in detail, of the clutch-lever D, clutch-plate E, arm C′, and arbor *a′*.

Letters and figures of like name and kind refer to like parts in each of the figures of the drawings.

I will now proceed to describe more fully the said device, especially the parts thereof which I claim as my invention, for the purpose of enabling others ordinarily skilled in the art to which it pertains to make and use the same.

In the said device the hollow sad-iron A and the handle-arms C′ C² are constructed in like form and are journaled together in like manner as like parts have for like purposes been heretofore made and arranged.

The sad-iron A has in each of two opposite sides a polishing-surface, *a a*, and has attached to each of the other two opposite sides a fluting-plate, B. At the toe end it is provided with an arbor, *a′*, on which is journaled an annular flange, *c′*, of the arm C′, and at the heel end it is provided with an aperture, a^2, into which is journaled an annular flange, c^2, of the arm C².

The clutch-lever D is, at the lower end, formed into a wedge-shaped annular rim, *d*, which is journaled to the arbor *a′*, around which it operates. The lower portion of the annular rim *d* is provided with a clutch-lug, *d′*, which engages the clutch-plate E in one of the four perforations *e e e e* with which the clutch-plate E is provided. The latter is, by the mortise *e′*, rigidly secured to the tenon a^3, in which the arbor *a′* terminates.

In the heating device the compressible air-reservoir L is made of rubber or other suitable flexible air-tight material, and is preferably made cylindrical in shape, with folds *l* on the periphery; but I do not wish to limit my invention to any particular shape of the air-reservoir L, as other forms than the one described would do as well.

The said air-reservoir L is placed within the air-reservoir chamber K, within which one end bears against the rear end of the chamber K and the other end against the base of the conical spiral spring M, the other end of the spring bearing against the opposite end of the chamber K, thus forming a pressure upon the said air-reservoir L.

The chamber K is made of any suitable metal, and is secured to the rear end of the fluid-reservoir G, or is a continuation of the same. The air-reservoir L communicates with

the fluid-reservoir G through the conductor N, subjecting the fluid fuel contained in the reservoir G to air-pressure. The fluid fuel is supplied to the latter and the air through the latter and the conductor N to the air-reservoir L by means of the feed and stop valve O, with which the fluid-reservoir G is provided.

The said feed and stop valve O is composed of a hollow plug, P, socket Q, and gasket R. The plug P has a feed-aperture, p', at the top, and two (more or less) perforations, p^2, at the bottom thereof, near the outer edge, and is provided with a screw-thread, p^3, on the periphery, by means of which it is secured to and is operated within the socket Q, within a corresponding screw-thread, q', on the inner side of the perimeter of the latter, which latter is provided with a feed-aperture, q^2, in the center of the bottom thereof. Between the bottom of the plug P and the socket Q is placed an annular gasket, R, of cork or other suitable material, the aperture r in the center of which corresponds with the aperture q^2 in the bottom of the socket Q, thus forming, when the plug P is driven home, an air-tight valve.

The reservoir G communicates with the burner J by means of the conductor H, which is composed of the valve-tube S, provided with a socket, S′, sleeve T, conductor-tube h, and packing U, the valve-tube S connecting with the reservoir G, the sleeve T connecting with the socket S′ of the valve-tube S, and the conductor-tube h being inserted into the sleeve T, the interstices between the two latter being filled with the packing U, of cork or other suitable material. The conductor-tube h is connected at the free end with the burner J. The latter is composed of a piece of wedge-shaped cast-iron or other suitable material, the two oblique sides expanding upward, each of which is prolonged into a curvilinearly upward, outwardly and inwardly projecting side flange, j', and near the inner side of each side flange, j', it is prolonged into an oblique outwardly, upward-projecting flange, j^2, forming a narrow channel, j^3, between each of the respective flanges j' and j^2. The said channels j^3 are open at each end and at the top, forming air-flues to facilitate combustion.

The interior of the burner J is provided with a longitudinal passage, j^4, which connects at one end with the conductor-tube h and terminates at the center of the burner J into two lateral passages, j^5 j^5, each of which lateral passages is intersected by an upwardly and outwardly inclined oblique passage, j^6, j^6, terminating conically between the flanges j' and j^2, into each of which passages j^6 is inserted a set-screw, W W, with a conical point to regulate the flow of gas, forming a burner in each of said channels j^3, within which combustion takes place, the flame of each burner bearing against the inner side of the curved flange j' for the purpose of perfecting combustion.

The heating device is removably attached to the sad-iron by means of three horizontal lugs, c^3 c^4 c^4, with which the arm C^2 is provided, the lug c^3 having at each of the two opposite sides, near the free end, a lateral vertical slot, c^5, and the lugs c^4 c^4 having each on the inner side, near the free end, a like lateral vertical slot, c^6, and by means of a metallic plate, V, vertically attached to the front end of the reservoir G, the plate V having near the upper end an inverted key-hole-shaped aperture V′, which engages the slot c^5 of the lug c^3, and having at each side edge a divergent flange, V^2, one of which engages one of the lugs c^4 and the other the other of said lugs c^4 by the slot c^6. The lugs c^3 c^4 c^4 are of sufficient length to allow a space between the arm C^2 and the plate V of about two inches, forming an air-space. The lower portion of the plate V is provided with an aperture, V^3, for the reception of the conductor H, and the said aperture V^3 is surrounded by a series of perforations, V^4, forming air-passages.

Having described the said device in the foregoing specification, what I claim as new as my invention, and desire to secure by Letters Patent, is—

1. In a heating device attached to a hollow revolving sad-iron, a compressible air-reservoir, L, and air-conductor N, in combination with a fluid-reservoir, G, substantially as described, for the purpose set forth.

2. In a heating device attached to a hollow revolving sad-iron, a spring, M, in combination with a compressible air-reservoir, L, and reservoir-chamber K, substantially as described, for the purpose set forth.

3. In a heating device attached to a hollow revolving sad-iron, in combination with a fluid-reservoir, G, air-conductor N, and compressible air-reservoir L, the fluid and air feed and stop valve O, composed of a hollow plug, P, socket Q, and gasket R, constructed and arranged substantially as described, for the purpose set forth.

4. In a heating device attached to a hollow revolving sad-iron, in combination with a fluid-reservoir, G, and a burner, J, the conductor H, composed of the valve-tube S, with socket S′, sleeve T, conductor-tube h, and packing U, substantially as described, for the purpose set forth.

5. In a heating device attached to a hollow revolving sad-iron, the combination of the fluid-conductor H, fluid-reservoir G, air-conductor N, compressible air-reservoir L, and spring M, the burner J, provided with side flanges, j' j', inner flanges, j^2 j^2, passages j^4 j^5 j^5 j^6 j^6, and screws W W, substantially as described, for the purpose set forth.

In witness whereof I hereunto set my hand this 22d day of May, 1879.

FREDRICK R. SUTTON.

In presence of—

CHARLES SEARS,

DANIEL STORER.