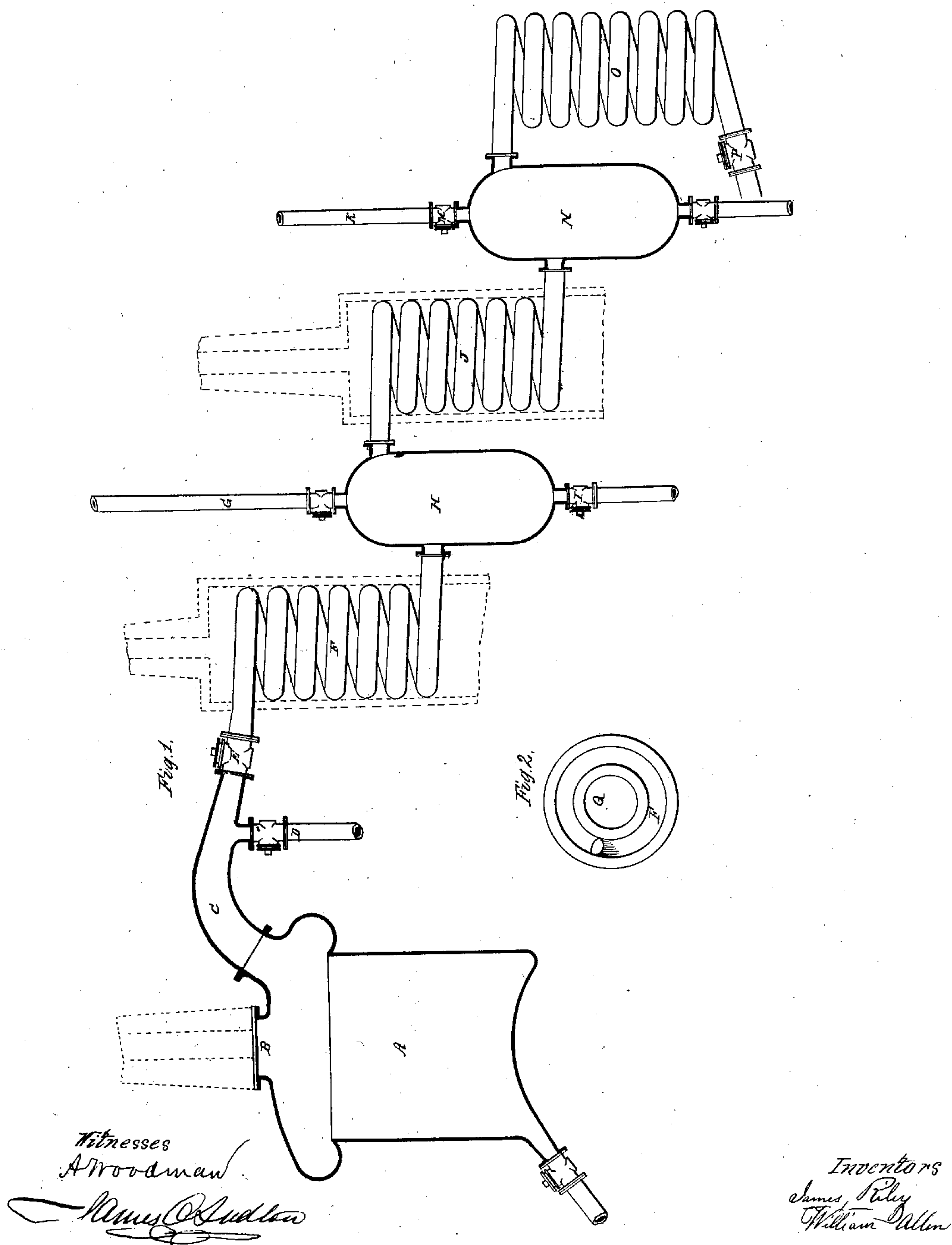


No. 9,627.

PATENTED MAR. 22, 1853.

J. RILEY & W. ALLEN.
PROCESS OF DISTILLING ROSIN OIL.



UNITED STATES PATENT OFFICE.

JAMES RILEY AND WILLIAM ALLEN, OF SOUTHFIELD, NEW YORK.

IMPROVEMENT IN PROCESSES FOR DISTILLING ROSIN-OIL.

Specification forming part of Letters Patent No. 9,627, dated March 22, 1853.

To all whom it may concern:

Be it known that we, JAMES RILEY and WILLIAM ALLEN, both of the town of Southfield, in the county of Richmond and State of New York, have invented or discovered a new and useful Process in the Manufacture of Rosin-Oil; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which represent one of the modes of reducing the same to practice, and in which—

Figure 1 represents a side view of an apparatus complete, the portions of which that are to be built in brick-work, and which are to be directly or indirectly in contact with the fire, being margined by red lines; and Fig. 2 represents a horizontal section through one of the worms, showing the fire-proof brick, clay, or cement around said worms, to protect them from direct contact with the fire, and so that they may be heated by radiation only.

The nature of our invention or discovery consists in the distillation of oil from rosin by passing it in an expanded state from the alembic where it is first heated through one, two, or more worms or other suitable vessels incased in fire-brick, cement, or clay, so as to be heated by conduction, in contradistinction from actual contact with the fire, and with pitch-receivers, flow-backs, and other necessary connecting-pipes, stop-cocks, or valves, thus producing distillation by expansion at one operation, and preventing destructive distillation, loss by carbonization, and saving two-thirds of the time usually consumed in processes for a similar purpose heretofore known.

To enable others skilled in the art to fully understand and use our invention or discovery, we will proceed to describe an apparatus which is in successful operation, premising, first, that we do not confine ourselves to this or any other special apparatus, as they may be varied to suit various circumstances without in the least changing the nature of our invention or discovery.

The alembic A is built into the brick-work, having a suitable furnace underneath or around it, which should also have the necessary draft-flues, chimney, &c., and on top of said alembic is the man-hole B, of any of the usual well-

known forms and construction. A "goose-neck pipe," C, is attached to the alembic near its top, and said pipe C is further provided with a pipe, D, having a stop-cock therein, through which the acid and spirit is carried off to any suitable receiver. The pipe C is also provided with a shut-off cock, E, and then connects with a worm, F, which is entirely incased or surrounded with fire-proof brick, cement, or clay, as represented by the red lines in Fig. 2, for the purpose of protecting it from direct contact with the fire, the whole being so built into a furnace as to allow the heat and flame to pass up through the coil of the worm, as at Q, as well as outside of it, and thence to the stack or chimney. The lower end of the worm F, after it passes out of the brick-work inclosing it, connects with the pitch-receiver H, which has a pipe and stop-cock or valve, I, at its lower end, and a gas or escape pipe, G, on top, also provided with a stop-valve, L. The worm F enters the pitch-receiver H near its center in height, and at or near the top of this receiver is joined another worm, J, made, incased, and arranged in all respects like that at F, just described, and this worm enters another pitch-receiver, N, in all respects similar to the one at H, having its escape and draw-off pipes, stop-cock, &c. A cold worm, O, which may be surrounded with cold water, is attached to the top of the pitch-receiver N, and from the bottom of this cold worm a pipe leads to any suitable vessel for receiving the distilled oil. The series of worms, receivers, &c., are arranged on a plane descending from the alembic, as seen in the drawings, so as to facilitate the passage of the oil from one to the other. The alembic is charged up to about two-thirds of its capacity with rosin, and a saturated solution of nitrate of soda or potassa, equal to about one per cent. of the rosin used, is added. The fire is slowly raised till the acid and spirit or artificial naphtha has passed over, the quantity being about ten per cent. of the rosin used. At this period the temperature is raised slowly to about 500° of Fahrenheit's scale, and the oil begins to expand and pass over from the alembic A through one or more heated worms, F J, kept at a temperature from ten to twenty degrees higher than that of the alembic, and thence

through a cold worm, O, to a receiver, where it will be of a uniform quality and color. As before stated, the worms F J are not in immediate contact with the fire, but receive their heat by conduction through the fire-clay that surrounds them, and by this means we prevent destructive distillation, while we expand the oil, making it more light and buoyant, and thus facilitating its progress through the worms without loss by carbonization. By this process we also produce an oil entirely clear of that creosotic smell which marks the oils distilled by other known processes. The product by our method is about seventy-five per cent. of the rosin used.

The great advantages of this process over the present known methods are as follows: The oil and spirit are completed in one day, whereas the usual method requires three days, with a corresponding increased loss by carbonization, amounting to about two hundred and twenty gallons on forty barrels of rosin, or about twenty per cent., whereas by our process the average loss will be about six per cent. on the rosin used, and the oil will be uniform in color and free from all that noxious smell attached to the oil manufactured by other methods, and this results from the less destructive distillation, and the fact that the oil passes over at a much lower temperature.

Having ascertained the non-volatility of rosin at 500°, the temperature hereinafter named, we find that the rosin is rendered perfectly liquid, but do not mean to assert that rosin cannot be volatilized, but to be understood that the oil is not condensable at the temperature as stated by others, and by the method now in general use. We consider the condensing-worm of no utility,

except for the spirit, for when the thermometer indicates 500° of Fahrenheit the rosin is rendered permanently liquid, and as the heat increases violent expansion and decomposition is the result, and the oil or liquid rosin is drawn over by capillary force, due to the increased velocity which it receives by the expansion; and at this stage of the proceeding the heat may be reduced so as to regulate the flow through the worms and flow-backs, and whatever gas may have generated will pass off through the escape-pipes connected to the flow-backs G K, and the oil will continue its course through the worms and flow-backs to a receiver, and is completed at one operation, and at a saving of two-thirds of the time and cost usually employed in this manufacture by the processes heretofore known.

Having thus fully described the nature of our invention or discovery, and shown one of the methods of reducing it to practice, what we claim therein as new, and desire to secure by Letters Patent, is—

The process by which we manufacture oil from rosin, by passing it from an alembic through expanding worms, or their equivalents, surrounded by a jacket of fire brick or clay, whereby we prevent destructive distillation, carbonization, and greatly economize time, substantially as set forth.

JAMES RILEY.

WILLIAM ALLEN.

Witnesses to the signature of James Riley:

M. COLLIER,

P. S. HIGGINS.

Witnesses to the signature of William Allen:

THEO. FREAU,

JOHN B. GILES.