(No Model.) 3 Sheets—Sheet 1.

N. M. HENDERSON.

TREATING OR PURIFYING PARAFFINE WAX AND APPARATUS THEREFOR.

No. 490,199. Patented Jan. 17, 1893.

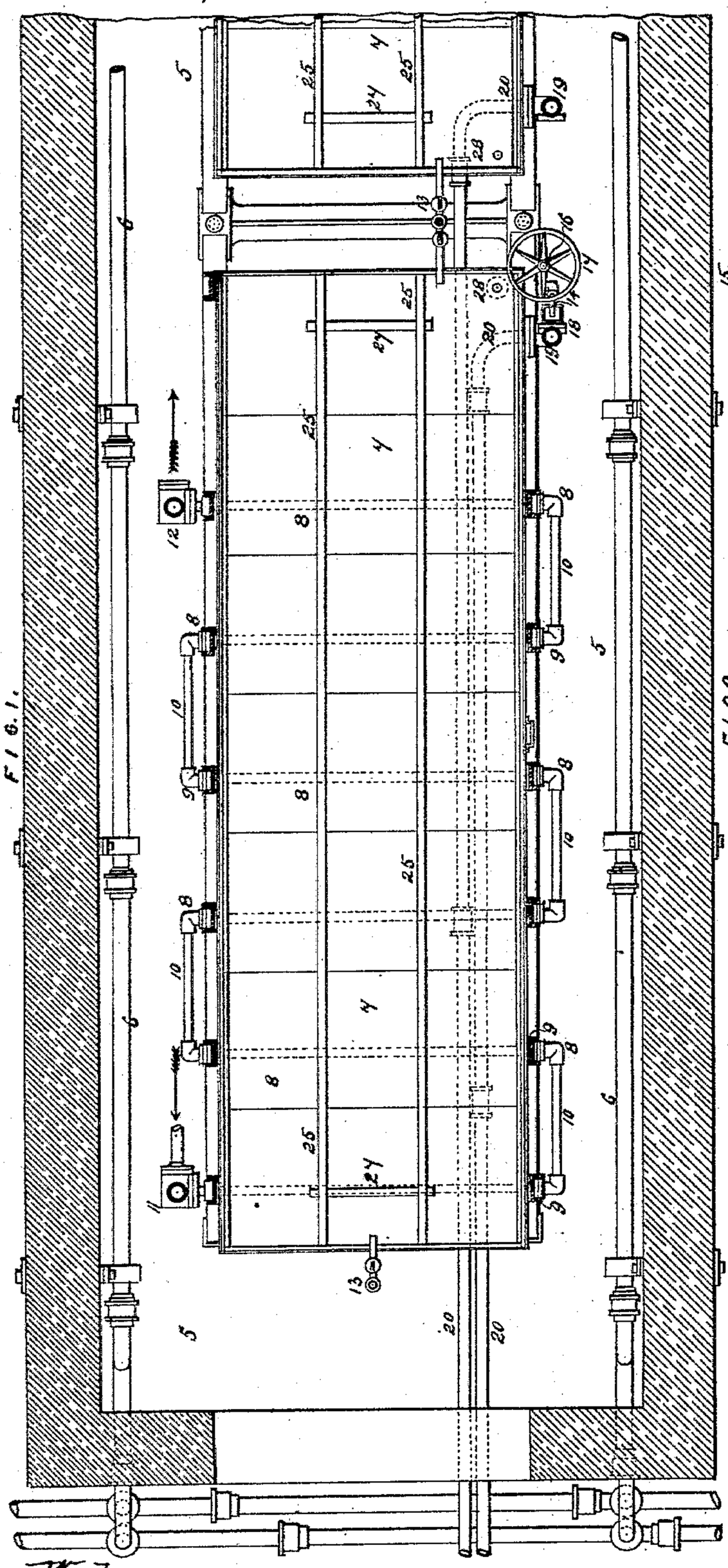

FIG. 1.

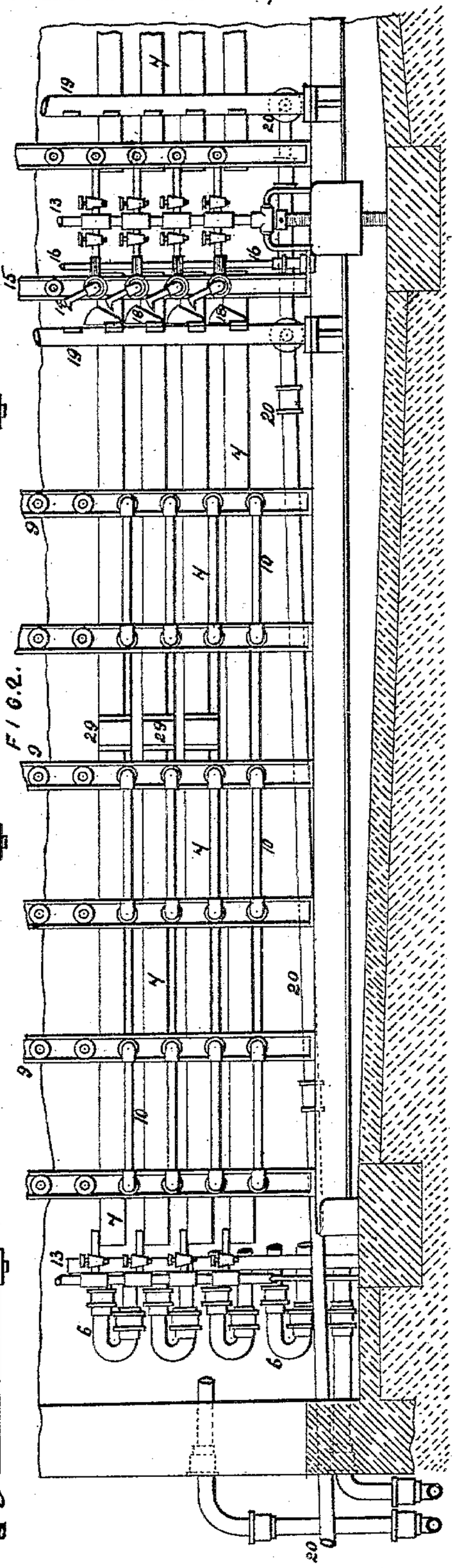

FIG. 2.

Witnesses.
George Baumann
James Gracia

Inventor
Norman Macfarlane Henderson
By his Attorneys
Howson and Howson

(No Model.) 3 Sheets—Sheet 2.

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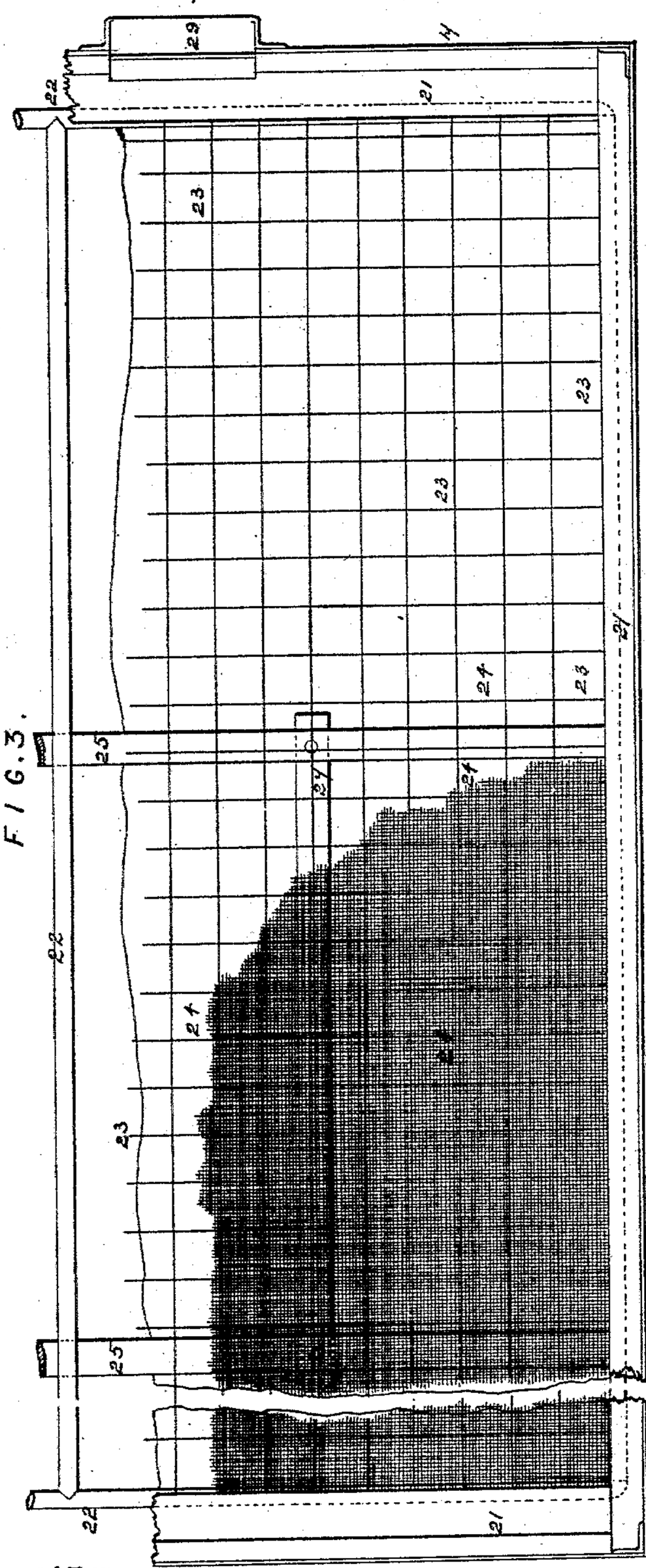

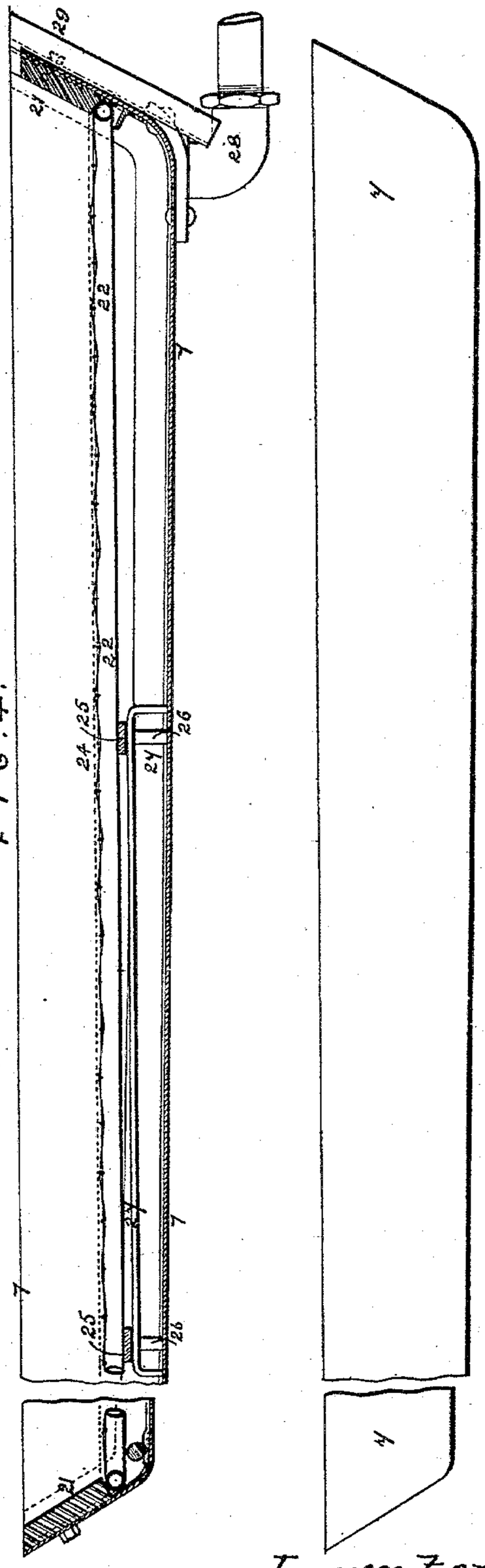

Witnesses.
George Baumann
James Gracie

Inventor.
Norman Macfarlane Henderson
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(No Model.) 3 Sheets—Sheet 3.

N. M. HENDERSON.

TREATING OR PURIFYING PARAFFINE WAX AND APPARATUS THEREFOR.

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FIG. 6

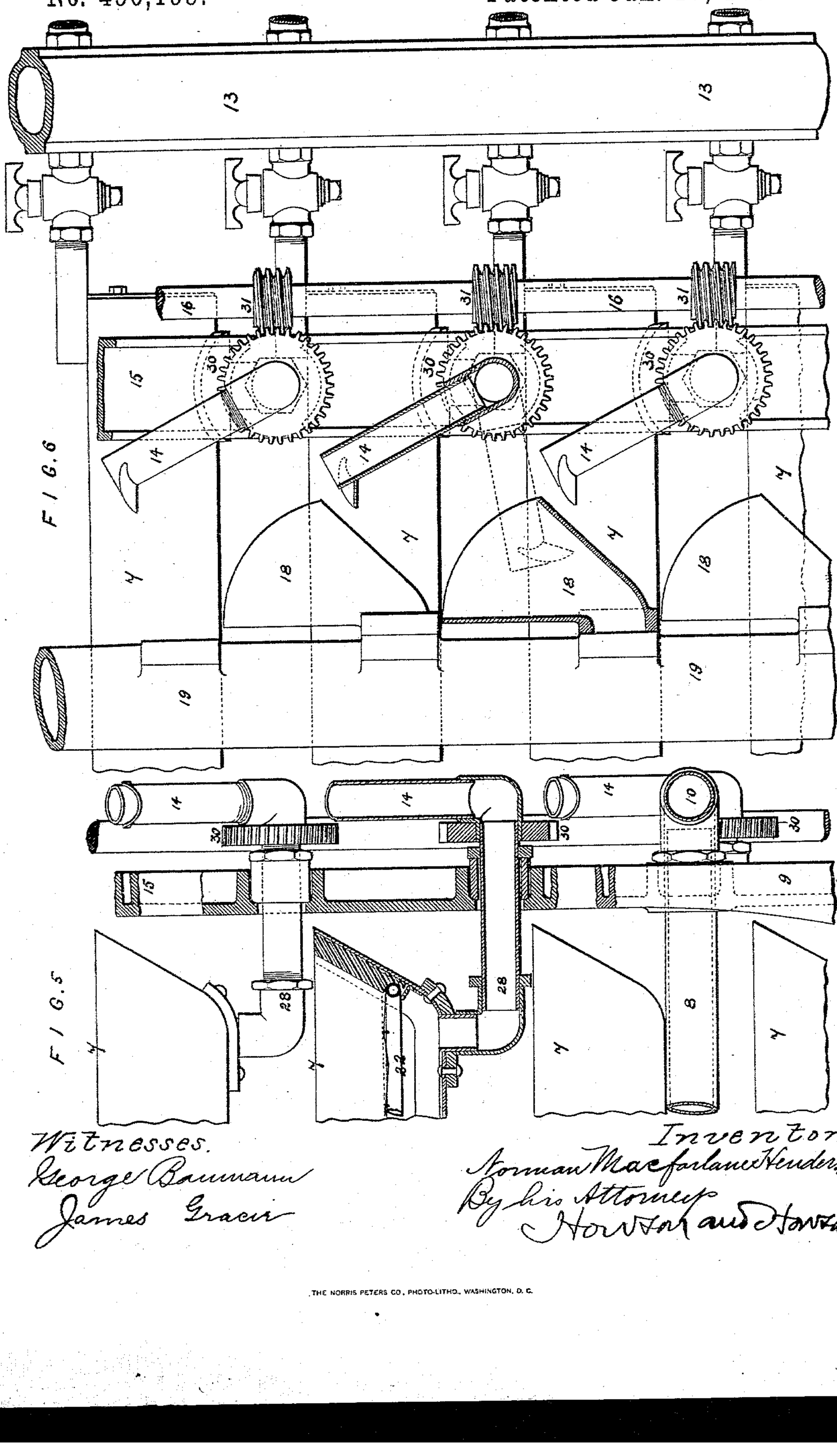

FIG. 5

Witnesses.
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Inventor:
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UNITED STATES PATENT OFFICE.

NORMAN MACFARLANE HENDERSON, OF BROXBURN, SCOTLAND.

TREATING OR PURIFYING PARAFFINE-WAX AND APPARATUS THEREFOR.

SPECIFICATION forming part of Letters Patent No. 490,199, dated January 17, 1893.

Application filed June 1, 1892. Serial No. 435,153. (No model.) Patented in England January 27, 1887, No. 1,291.

To all whom it may concern:

Be it known that I, NORMAN MACFARLANE HENDERSON, a subject of the Queen of Great Britain and Ireland, and a resident of Broxburn, in the county of Linlithgow, Scotland, have invented certain Improvements in Treating or Purifying Paraffine-Wax and in Apparatus Therefor, (for part of which I have obtained a British patent, No. 1,291, dated January 27, 1887,) of which the following is a specification.

My said invention has for its object to diminish the cost of plant and labor, in treating or purifying paraffine-wax, and to simplify the apparatus and improve its action. The crude paraffine-wax having been treated in the ordinary way in a filter press, so as to separate from it a large portion of the oil mixed with it, is by my present invention at once melted and run into the sweating apparatus, without being first operated on, as ordinarily practiced, in hydraulic presses for the purpose of separating more of the oil or liquid. After the paraffine-wax has solidified in the sweating apparatus, and after the water upon which it was run has been drawn off, the sweating heat is applied, the temperature being raised in a gradual manner as heretofore, but the heat is kept for a longer time than heretofore at about 80° Fahrenheit, in order that the larger quantity of oil in the paraffine-wax, may be drained off, before the temperature is raised to the maximum usual for the first sweating stage. In sweating apparatus previously in use the paraffine-wax was supported in trays upon wire gauze or perforated sheet metal covered with woven fabric or felt. The wire gauze or sheet metal used was comparatively coarse or open, its office being simply to support the cloth or felt. By my present invention I dispense with the cloth or felt, which is liable to become choked with impurities, and I have the paraffine-wax supported on wire gauze of a suitable fineness, say having about sixteen meshes to the inch, or on perforated sheet metal of corresponding or suitable fineness.

Figures, 1, and 2, on Sheet, 1, of the drawings are a sectional plan and a sectional side elevation showing the general arrangement of the apparatus. Figs. 3, and 4, on Sheet, 2, are enlarged, views showing in plan and in sectional side elevation the construction of the sweating pans and accessory parts, and Figs. 5, and 6 on Sheet 3, are sectional views also enlarged of details to be hereinafter referred to.

In these drawings the same reference numerals are used to mark the same or like parts wherever they are repeated.

The sweating apparatus is arranged in a horizontally elongated chamber, 5, constructed with brick or stone walls and a suitable roof and fitted for being heated by steam or hot-water pipes, 6. According to the size of the establishment, the apparatus comprises one or more vertical series of trays, 7, each series comprising nine or other convenient number of trays one over the other. Fig. 2, shows the lower trays of one vertical series and portions of those of the next series, Fig. 1, being a corresponding sectional plan. Besides the heating pipes, 6, ranged along the sides of the chamber, 5, there are transverse heating pipes, 8, under each tray, these pipes serving also to carry the trays and being fixed in vertical standards, 9. The outer ends of the transverse heating pipes, 8, are connected in series by short longitudinal pipes, 10, the several sets receiving their supplies from standard pipes, 11, and discharging into other standard pipes, 12. The paraffine-wax is in a melted state when charged into the trays, 7, being floated upon water which is supplied to the trays by standard pipes, 13, fitted with stopcocks. The melted wax is fed into the topmost trays of each vertical series from melting tanks (not shown) and it overflows from each tray to the next lower one until all of a series are charged. The level of the water in the trays, 7, is at the height of diaphragms or strainers with which the trays are provided and it prevents the melted wax from running through the strainers. When the trays have been charged the wax is allowed to congeal and then the water is run off from under it; and after the withdrawal of the water the sweating heat is applied. As best shown in Figs. 5, and 6, which are respectively a transverse vertical section and a sectional side elevation the bottoms of the trays communicate by short pipes, 28, with swiveling nozzles, 14, fitted to a standard, 15, and constructed with wormwheel teeth, 30, on

their necks so that they can be turned by worms, 31, on a vertical shaft, 16, having a handwheel, 17, (Fig. 1) at its upper end, an arrangement allowing all the swiveling nozzles, 14, of a vertical series of trays to be turned at once. The liquids separated from the wax are drained off through the swiveling nozzles, 14, into cups or hoppers, 18, fitted to standard pipes, 19, which lead them into inclined pipes, 20, through which they pass to suitable receptacles. When the sweating operation is complete the remaining wax is melted and run off through the same nozzles, 14, and pipes, 19, 20, into other receptacles.

The construction of the trays, 7, with their diaphragms or strainers will be best understood from Figs. 3, and 4, Sheet 2. Instead of comparatively short narrow trays arranged transversely as heretofore I now arrange them longitudinally making their width about the same as the former length, and their length considerably greater, thus very much simplifying the construction, diminishing the number of fittings, lessening the cost and reducing the labor required. Each tray is made of sheet iron or steel, the upper parts, with which the wax is chiefly in contact being lined with wood, 21. The diaphragms consist each of a frame made of tubes, 22, preferably brass, united at the corners by right-angle pieces fixed into the tube ends. On each frame, 22, are fixed longitudinally and transversely strong wires, 23, about two inches apart, as shown at the right-hand side of Fig. 3, the wires being fixed by bending around the tubes, 22, and brazing or soldering. Upon the wires, 23, wire gauze, 24, is laid as shown at the left-hand side of Fig. 3, being fixed by lacing with wire around the tubes, 22. The diaphragms are supported by longitudinal bars, 25, which have studs, 26, fixed in them to rest on the bottom of the tray and which are kept in position and additionally supported by transverse tie bars, 27, the ends of which are turned down to rest on the bottom of the tray. The trays, 7, are made with their bottoms slightly inclined down to one side, the discharge pipes, 28, being fitted at one end of the lower side. At about the middles of these sides of the trays, 7, at which the bottoms are lower, overflow ducts, 29, are constructed for the melted wax to pass on from each tray, as it becomes filled, to the next lower tray.

What I claim as my invention is—

1. In an apparatus for treating or purifying paraffine-wax, the combination of a chamber having longitudinal and transverse heating pipes, metal trays carried by the transverse pipes, strainers consisting of frames carrying longitudinal and transverse wires and fine wire gauze on the wires supported at a small height above the bottom of the trays, the said trays provided with outlets below the said strainers, and overflow ducts from one tray to the next lower one, with swiveling nozzles communicating with the said outlets, gearing for simultaneously turning each set of nozzles and hoppers into which the nozzles discharge, all substantially as and for the purposes set forth.

2. In an apparatus for treating or purifying paraffine-wax, the combination of a tray, with a strainer consisting of a frame formed of tubes carrying longitudinal and transverse wires and wire gauze over the wires, and supports for the strainer at a small height above the tray bottom, all substantially as and for the purposes set forth.

3. In an apparatus for treating or purifying paraffine-wax, the combination of a series of sweating trays, with swiveling nozzles communicating by pipes with the bottoms of the trays, and worm gearing for simultaneously turning the set of nozzles, substantially as set forth.

4. The process of treating or purifying crude paraffine-wax from which liquid has not been expressed by hydraulic pressure, consisting in solidifying the wax, gradually raising its temperature until about 80° Fahrenheit has been reached, maintaining this temperature for some time for the purpose described, and finally raising the temperature to the maximum heat usual for the first sweating stage.

5. The process of treating paraffine-wax, consisting in melting the wax, running it in layers over water, allowing it to solidify thus, then drawing off the water, and finally sweating this wax.

6. In an apparatus for treating and purifying paraffine-wax, the combination of a tray having a strainer supported at a small distance from the bottom thereof, and a water inlet to the space below the said strainer and an outlet at the bottom of the tray, with a swiveling nozzle communicating with the said outlet, all substantially as and for the purposes set forth.

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

NORMAN MACFARLANE HENDERSON.

Witnesses:
EDMUND HUNT,
DAVID FERGUSON.