No. 725,841. PATENTED APR. 21, 1903.

W. HAYNER.

SURFACE CONDENSER.

APPLICATION FILED SEPT. 19, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

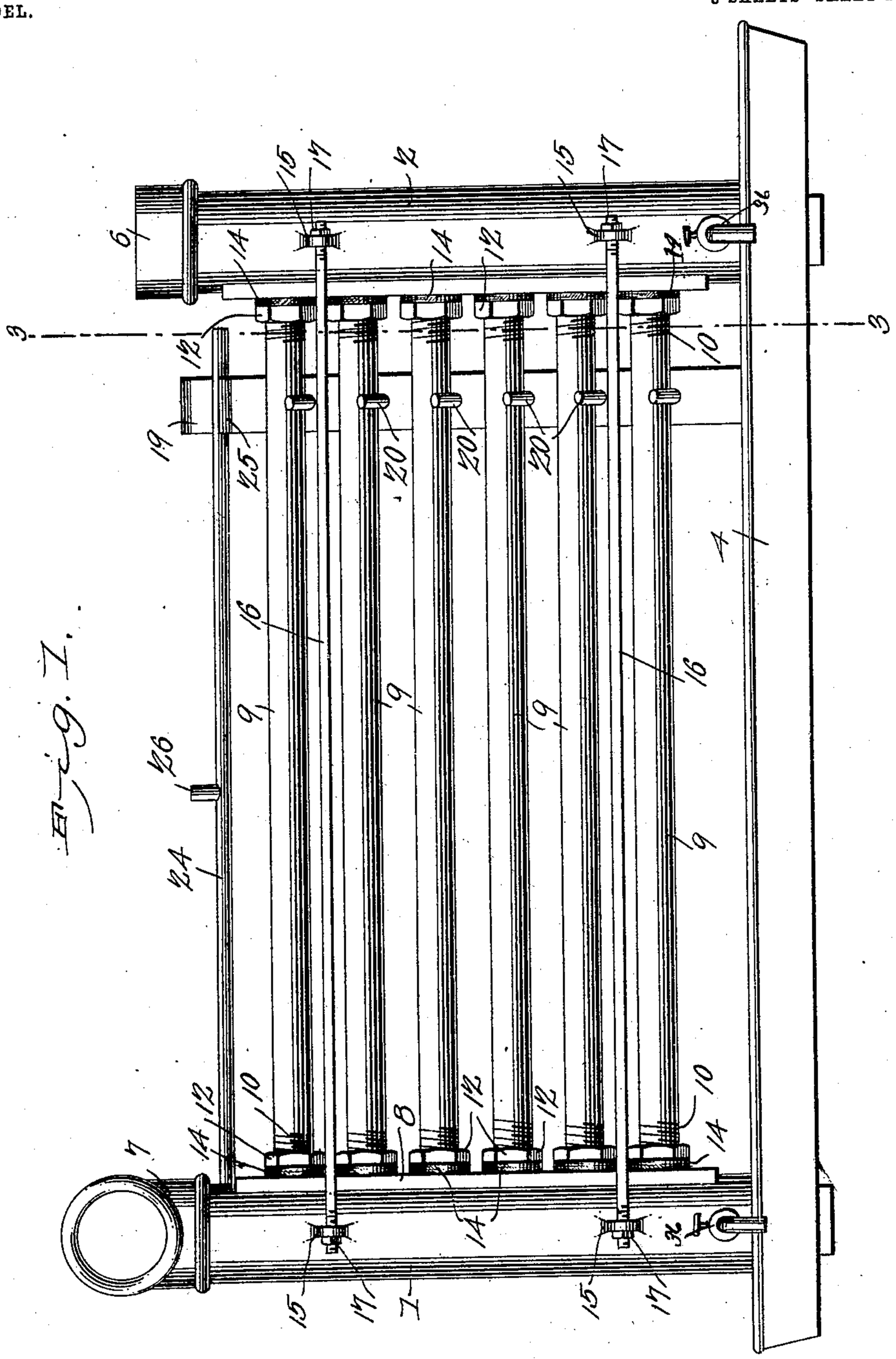

Fig. 1.

Witnesses
C. F. Stewart
Wm. Bagger

William Hayner, Inventor.
by Church & Co
Attorneys

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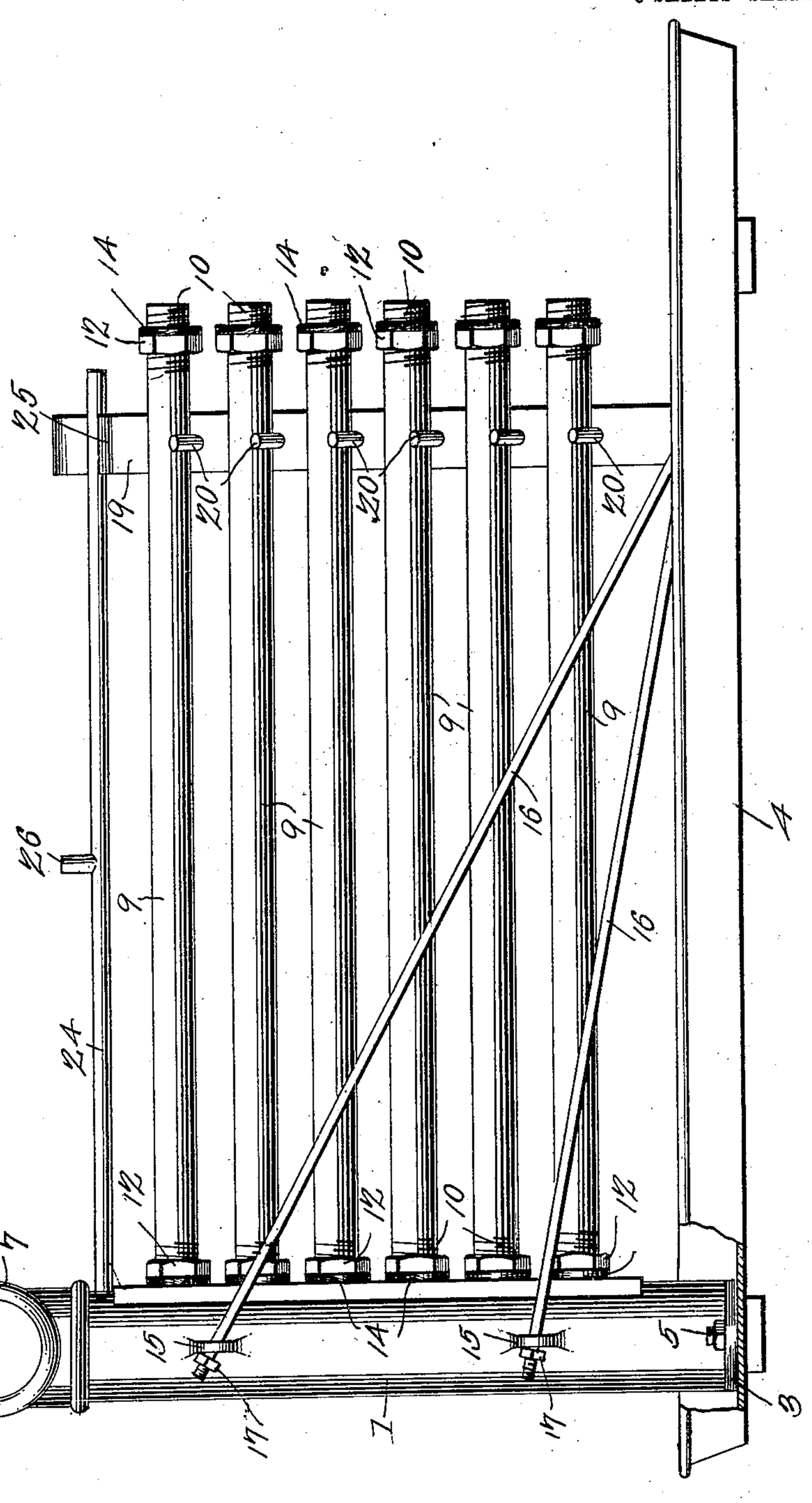
NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.

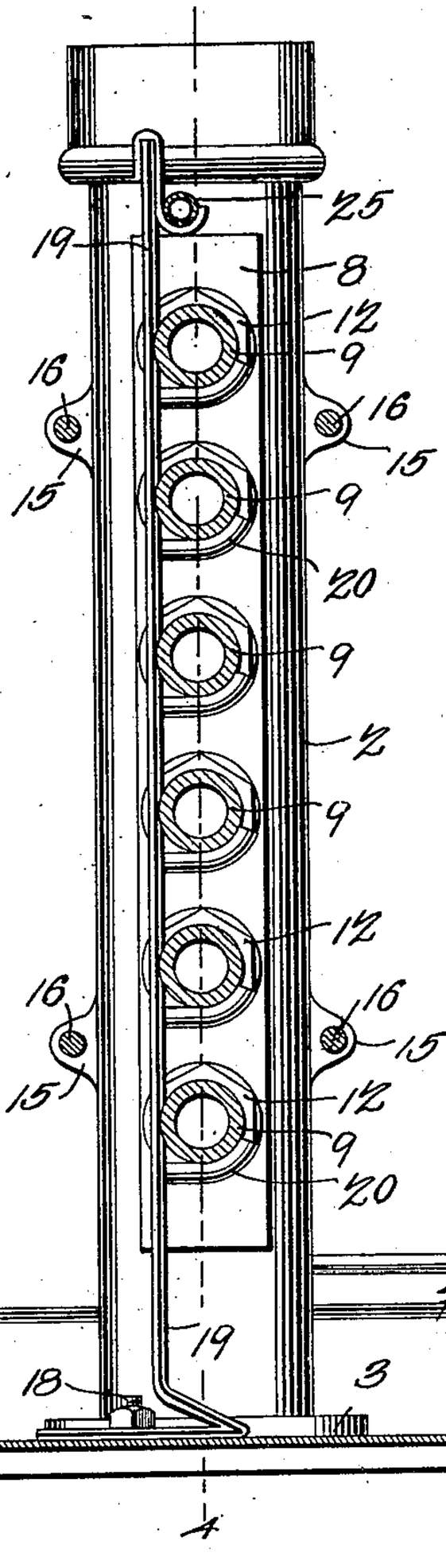
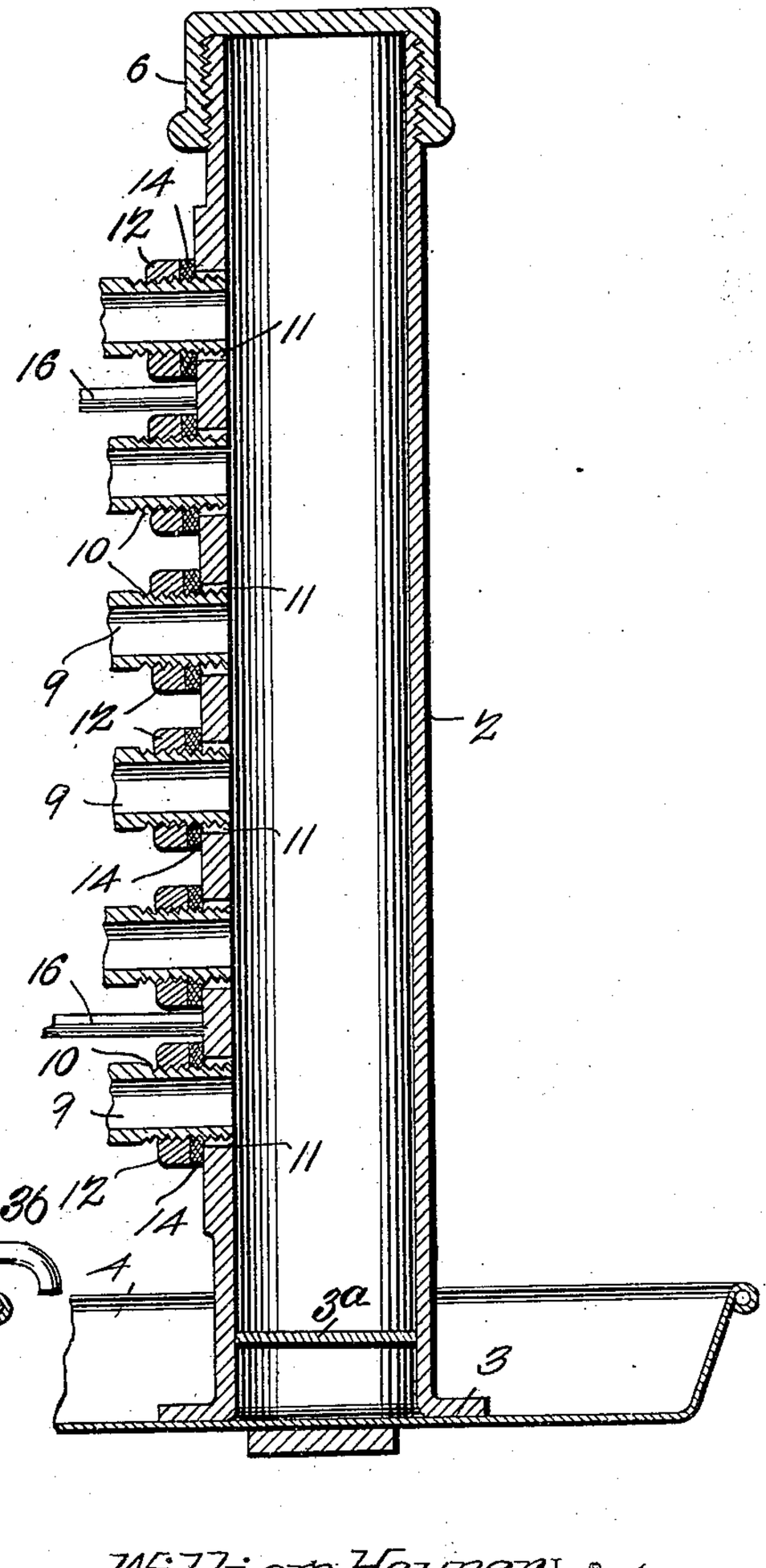


Fig. 4.



Witnesses
E. G. Siggers
Wm. Bagger

William Hayner, Inventor.
by Church & Co
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM HAYNER, OF JACKSONVILLE, FLORIDA.

SURFACE CONDENSER.

SPECIFICATION forming part of Letters Patent No. 725,841, dated April 21, 1903.

Application filed September 19, 1902. Serial No. 124,074. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAYNER, a citizen of the United States, residing at Jacksonville, in the county of Duval and State of Florida, have invented a new and useful Surface Condenser, of which the following is a specification.

This invention relates to surface condensers of that class which are used to a large extent, for example, in ice-making machines for the purpose of providing distilled water to be used in the manufacture of ice; and it has for its object to provide a device of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency.

A further object of the invention is to provide a surface condenser which may be very easily and quickly taken apart for the removal and cleansing of the pipes and then put together again without unnecessary delay or loss of time, thereby enabling a comparatively small condenser to perform a large amount of work in a given time, and thus materially lessening the cost of installation and the amount of room required, two objects which are of no little importance wherever the use of condensers is involved.

With these and other objects in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a surface condenser constructed in accordance with my invention. Fig. 2 is a side elevation showing the same with the detachable header removed for the removal of the pipes. Fig. 3 is a vertical sectional view taken on the line 3 3 in Fig. 1. Fig. 4 is a sectional view taken on the line 4 4 in Fig. 3.

Corresponding parts in the several figures are indicated by similar numerals of reference.

In carrying out my invention I provide two headers 1 and 2, both of which are flanged at their lower ends, as shown at 3, provided with closures, as 3^a, the header 1 being permanently secured to a pan or basin 4 by means of bolts 5 or other suitable well-known fastening means. The other header 2 is supported loosely and removably upon the bottom of the pan 4 by means of the flange 3 at its lower end. Said removable header 2 is also closed at its upper end by means of a cap 6, while the header 1 is provided at its upper end with a coupling 7, whereby it may be connected with the source of steam-supply.

Each of the headers is provided on its inner side with a facing-plate 8, which is preferably formed integrally therewith, and the object of which is to form a perfectly-tight plane bearing-surface for the abutting ends of the steam-pipes 9. The latter are provided with screw-threaded ends 10, adapted to engage unthreaded openings or perforations 11, which extend through the walls of the headers having the facing-plates or bearing-plates 8. The openings 11, it will be observed, are not screw-threaded, but are just large enough to admit the threaded ends of the pipes, which are provided with nuts 12 and packing-collars or gaskets 14, which in practice are preferably made of asbestos, although any other material that may be deemed suitable for the purpose may be employed.

Each of the headers 1 and 2 is provided on its front and rear sides with perforated lugs or ears 15 to receive the ends of the connecting and tightening rods 16, the ends of which are screw-threaded and provided with nuts 17, by tightening which the loose header may be drawn in the direction of the stationary one, thus tightening the grip of the headers upon the pipes.

Suitably secured, as by means of a bolt 18, to the bottom or base of the pan or tray 4 is an upright 19, having a plurality of curved arms 20, which serve to support the ends of the steam-pipes 9, said supporting-upright being arranged closely adjacent to the removable header 2. This device serves to support the free ends of the steam-pipes when the header 2 is detached, thus enabling the steam-pipes to be readily detached one by one and to be placed in exactly the proper position to engage the openings in the removable header when the latter is replaced in operative position.

24 designates the sprinkler-pipe, which is supported at one end upon a curved arm 25, mounted at the upper end of the upright 19, and at the other end upon the upper edge of the facing-plate 8 of the stationary header 1. This pipe is provided with an inlet 26, which is to be connected in any suitable manner with the source of water-supply.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood. When the condenser is in operative position, it receives steam through the coupling at the upper end of the stationary header 1 from any suitable source of supply, the steam in the pipes 9 being condensed by the water or cooling liquid which is applied to the outer sides of said pipes 9 by the sprinkler-pipe above, the resultant water of condensation being carried off in any suitable well-known manner, as by means of valved pipes 36, which, however, are not a part of my invention. The impurities that settle in the lower parts of the pipes 9 and which in order to obtain perfectly pure distilled water require to be frequently removed and which in condensers of ordinary construction have been a source of annoyance may be very readily removed from the pipes of my improved condenser by simply unscrewing the nuts 17 upon the ends of the connecting-rods 16 which engage the removable header. The free ends of said rods are permitted to drop into the tray 4, where they are supported while the header 2 is removed, leaving the device in the condition shown in Fig. 2 of the drawings. The pipes 9 may then be readily removed by simply lifting them clear of the stationary header, when they may be cleaned and replaced or fresh ones, already cleaned, may be replaced in lieu of them. The loose header is then replaced, as well as the connecting-rod, the nuts upon which are tightened, thus restoring the condenser to operative condition, the whole being the work of a very few minutes. By tightening the nuts 12 up against the facing-plates of the headers and the interposed packing-rings or gaskets absolutely tight joints may be secured; but this auxiliary tightening will not usually be required after the pipes have been once fitted to the headers. Any leaky joint may, however, in this manner be almost instantaneously made tight.

I desire it to be understood that I do not limit myself to the precise construction and arrangement of parts herein shown and described, but reserve the right to any changes and modifications which may be resorted to without sacrificing the utility of my invention or departing from the spirit and scope thereof.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A surface condenser comprising a tray, a header permanently secured to the bottom thereof, a header loosely supported upon the bottom of said tray, condensing-pipes engaging openings in the said headers, and tightening-rods connecting the latter.

2. A surface condenser comprising a tray, a header secured to the bottom thereof, a header loosely supported upon the bottom of said tray, condensing-pipes engaging openings in the said headers, a permanently-disposed upright having curved supporting-arms for said condensing-pipes, said upright being arranged closely adjacent to the loose header, and tightening-rods connecting the headers.

3. A surface condenser comprising headers, one stationary and the other non-attached, supported upon a suitable base and having flat or plane faces with openings extending therethrough, said headers being also provided with laterally-extending perforated lugs, condensing-pipes having screw-threaded ends extending into the openings in the flat faces of the headers, tightening-nuts, and gaskets forming packing-rings upon the threaded ends of said pipes, and tightening-rods having screw-threaded ends engaging the laterally-extending perforated lugs of the headers and provided with tightening-nuts.

4. A surface condenser comprising a pair of headers, flanged at their lower ends and supported, the one stationary and the other non-attached upon a suitable base, said headers having flat faces with perforations extending therethrough, condensing-pipes, screw-threaded at their ends and having nuts and packing-rings, said screw-threaded ends loosely engaging the perforations extending through the flat faces of the headers, supporting means for one end of the condensing-pipes, adjacent to and independent of, the non-attached header, and means for connecting the headers by drawing the loose header tightly in the direction of the stationary header.

5. In a surface condenser, the combination of a stationary and a non-attached header, condensing-pipes loosely engaging the headers, means for connecting the headers and forcing them loose in the direction of the stationary header, and means for producing tight joints between the condensing-pipes and the headers independently of the tightening means connecting the latter.

6. In a surface condenser, the combination of headers, one stationary and the other non-attached, said headers being provided with projecting bearing-faces having openings therethrough, condensing-pipes engaging the openings in said headers, means for connecting the latter and for tightening them upon the condensing-pipes, means for producing tight joints between the condensing-pipes and the headers independently of the tightening means for the latter, an upright having arms supporting the ends of the condensing-

pipes adjacent to the removable header, and a sprinkling-pipe supported at one end upon the shoulder formed by the upper edge of the facing-plate of the stationary header, and at the other end by an auxiliary support at the upper end of the upright having arms supporting the ends of the condensing-pipes.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM HAYNER.

Witnesses:

PALMER H. SMITH,

LYMAN SPINCER.