G. REIMERS.

CONDENSER.

APPLICATION FILED JUNE 4, 1910.

974,598.

Patented Nov. 1, 1910.

3 SHEETS—SHEET 1.

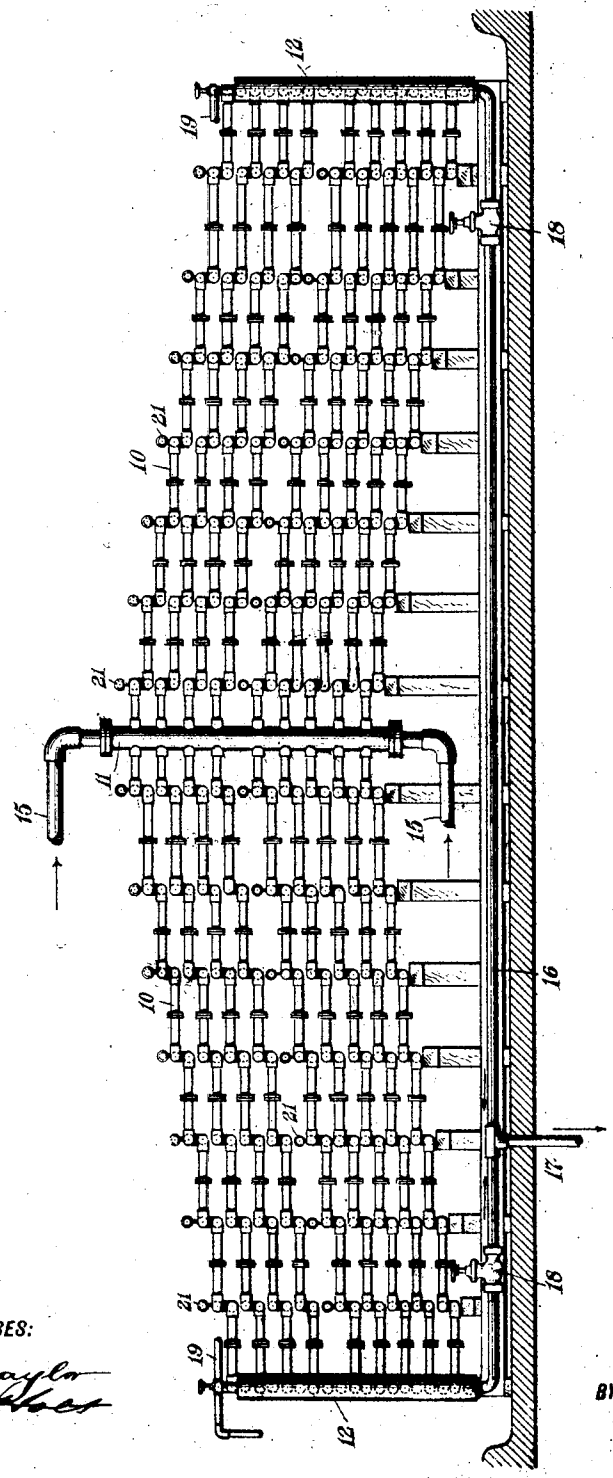

Fig. 1.

WITNESSES:

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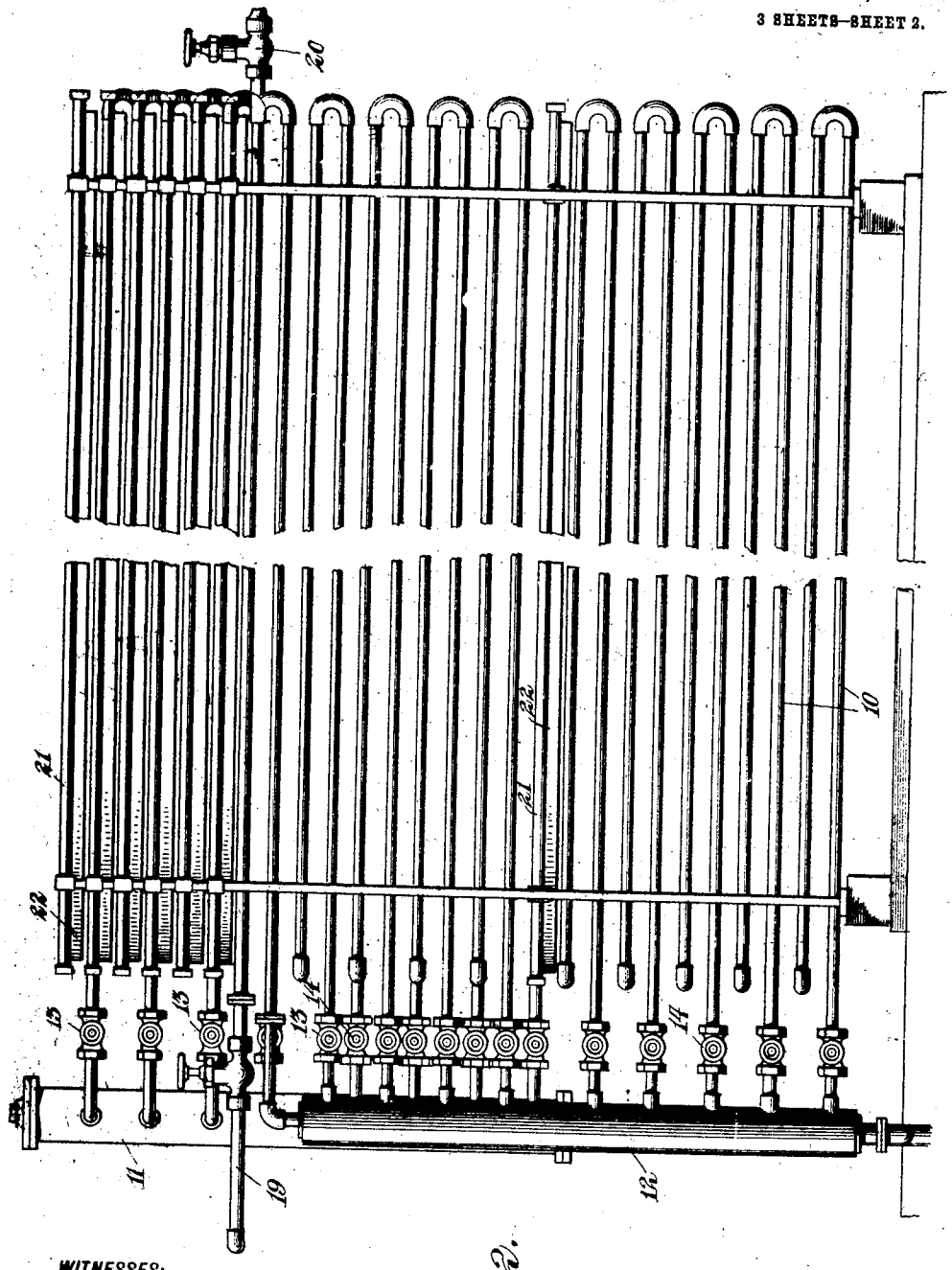

Fig. 2.

WITNESSES:

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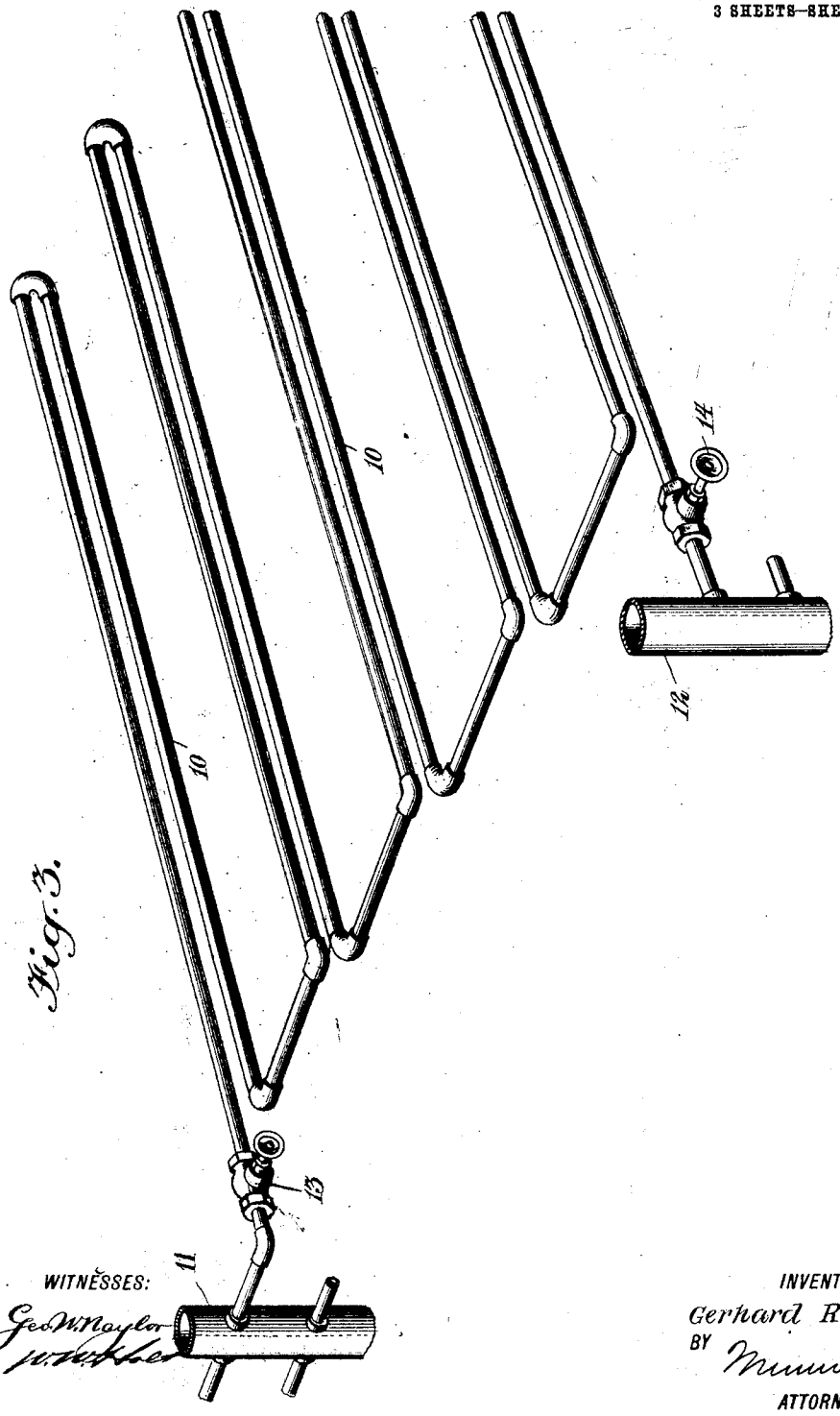

Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

GERHARD REIMERS, OF MILLTOWN, NEW JERSEY, ASSIGNOR OF ONE-HALF TO FREDERICK A. SONDHEIMER, OF NEW YORK, N. Y.

CONDENSER.

974,598. Specification of Letters Patent. **Patented Nov. 1, 1910.**

Application filed June 4, 1910. Serial No. 564,921.

To all whom it may concern:

Be it known that I, GERHARD REIMERS, a citizen of the United States, and a resident of Milltown, in the county of Middlesex and State of New Jersey, have invented a new and Improved Condenser, of which the following is a full, clear, and exact description.

The invention is an improvement in condensers such as are employed in ice and cold storage plants for condensing the hot ammonia gas, the object of the invention being to rapidly effect a thorough condensation of the gas by leading the liquid off as fast as it is formed in the condenser, under the action of gravity, thus relieving the condenser of back pressure and giving it a relatively large capacity.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a condenser constructed in accordance with my invention, the drip tank in which the condenser is placed being shown in section; Fig. 2 is an end elevation of the condenser; and Fig. 3 is a perspective view showing in detail one series of the pipe coils and its connection with the feed and discharge headers.

The condenser in general is made up of a series of tiers of pipe coils, the pipes of one tier being arranged opposite the intervals of the pipes of the adjacent tiers, and the several tiers of coils successively arranged one slightly below the other in passing from the feed toward the discharge end of the condenser, this depression in the tiers of coils in the present embodiment of the invention being shown to be equal to half the distance between adjacent coils of the same tier, and each coil 10 of each tier feeding into the next coil below of the adjacent depressed tier (see Fig. 3.) The tiers of coils are ordinarily arranged at each side of and connect with a vertical feed header 11, with the coil system at each side discharging into a vertical discharge header 12, each coil system being adapted to be cut out so that the condenser can be worked independently thereof, by valves 13 and 14, respectively arranged adjacent to the headers 11 and 12. Each coil system forming one coil of each of the coil tiers at one side of the feed header is in the form of a continuous length of pipe, as shown in Fig. 3.

The hot gases are fed from the gas compressor to both ends of the vertical feed header 11, by feed pipes 15; and the liquid is discharged at the lower ends of the vertical discharge headers 12 into a discharge pipe 16, which in turn discharges to the point of use through a discharge pipe 17, the discharge pipe 16 having a controlling valve 18 between the pipe 17 and each of the discharge headers, one of these valves being cut off when it is desired to work only one side of the condenser. To the upper ends of the vertical liquid headers is connected the customary equalizer pipe 19, this pipe extending to one side of the condenser and being provided with a foul gas cock 20 on the highest point of the condenser, as is the customary practice.

Above the tiers of the condenser coils are placed the usual water drip pipes 21 for cooling the gas, these pipes also being placed intermediate the height of the tiers, for which purpose gaps are left, as clearly shown in Fig. 1. The drip pipes are provided with flanges 22, down which the water runs and is spread before dropping on the pipe below, this, however, forming no feature of my invention.

As the hot gases are led into the feed header from the gas compressor they pass under uniform pressure into the several condenser coils which are open. Directly as any portion of the gas is condensed, the liquid is led off under gravity to the discharge header, from which it passes through the discharge pipes 16 and 17. In this way there is no opportunity for the condensate choking up the coils and causing a back pressure of the gas, or a raising of the so-called head pressure, and as a consequence the condensation is rapid and thorough and the capacity of the condenser relatively large.

The large number of outlets for the gas which the condenser provides insures the rapid distribution of the gases over a wide range, and accordingly a rapid condensation of the ammonia or other gas.

Although the condenser is particularly designed for condensing freezing mediums it is adapted as a condenser for other gases

and is further adapted as a cooler for liquids, as for example a cooler for milk.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a condenser for freezing mediums and other gases, a gas feed pipe, a liquid discharge pipe, and a series of condenser coils extending from the feed pipe to the discharge pipe and successively arranged one below and at the side of the other to successively discharge from one coil to the next by gravity.

2. In a condenser for freezing mediums and other gases, a series of tiers of condenser coils, with the coils of one tier successively arranged below the coils of an adjacent tier in passing from the feed to the discharge end of the condenser, each coil of each tier discharging into the next coil below of the next adjacent tier.

3. In a condenser for freezing mediums and other gases, a series of tiers of condenser coils, the tiers of coils successively depressed below each other in passing toward their point of discharge, and each coil of each tier discharging into a coil below arranged in another tier.

4. In a condenser for freezing mediums, and other gases, a vertical feed header, a vertical discharge header, and a series of condenser coils forming a continuous pipe system leading from the feed header to the discharge header, with the coils successively arranged one below the other in passing toward the discharge header.

5. In a condenser for freezing mediums and other gases, a vertical feed header, a vertical discharge header, and a series of condenser coils forming a continuous length of pipe connecting the feed header to the discharge header, the coils arranged to discharge successively one into the other under the action of gravity.

6. In a condenser for freezing mediums and other gases, a vertical feed header, vertical discharge headers, and condenser coils extending from the feed header to each of the discharge headers, with the coils successively discharging one into the other under the action of gravity.

7. In a condenser for freezing mediums and other gases, a vertical feed header, vertical discharge headers, condenser coils extending from the feed header to each of the discharge headers, with the coils successively discharging one into the other under the action of gravity, and means for cutting off the flow from the feed header to the coils leading to either of the discharge headers.

8. In a condenser for freezing mediums and other gases, a vertical feed header, vertical discharge headers, a discharge pipe leading from the lower ends of the discharge headers, and a series of condenser coil systems leading from the feed header to each discharge header and arranged one above the other, forming tiers of coils, with the coils of each system successively feeding one to the other under the action of gravity.

9. In a condenser for freezing mediums, and other gases, a series of tiers of condenser coils, with the coils of one tier successively arranged below the coils of the adjacent tier and arranged opposite the intervals thereof, with each coil of each tier discharging into a coil below, of another tier.

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

GERHARD REIMERS.

Witnesses:

FREDERICK A. SONDHEIMER,

W. W. HOLT.