No. 767,962. PATENTED AUG. 16, 1904.

W. J. RUFF.

PASTEURIZER.

APPLICATION FILED AUG. 10, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

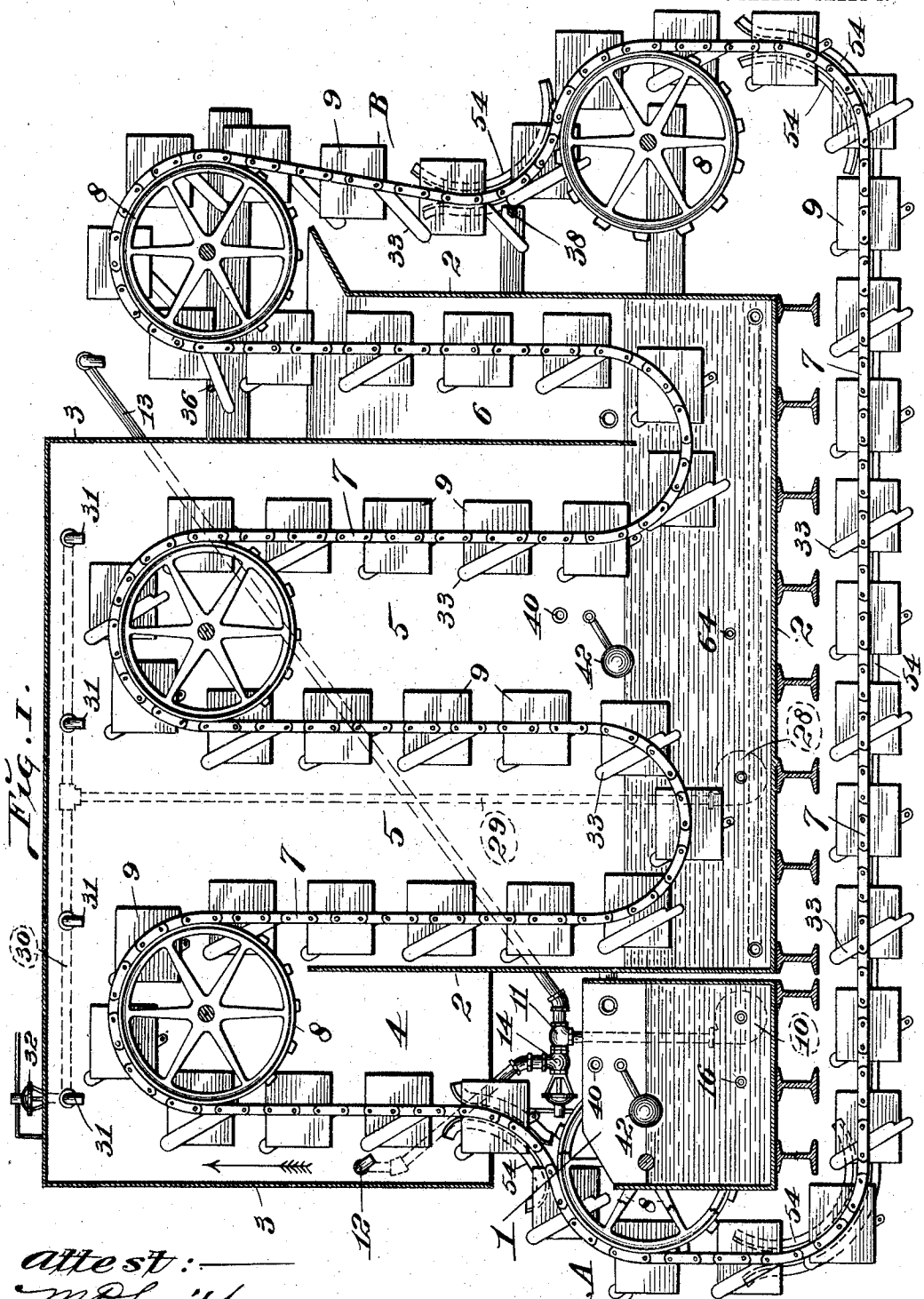


Fig. I.

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NO MODEL. 3 SHEETS—SHEET 2.

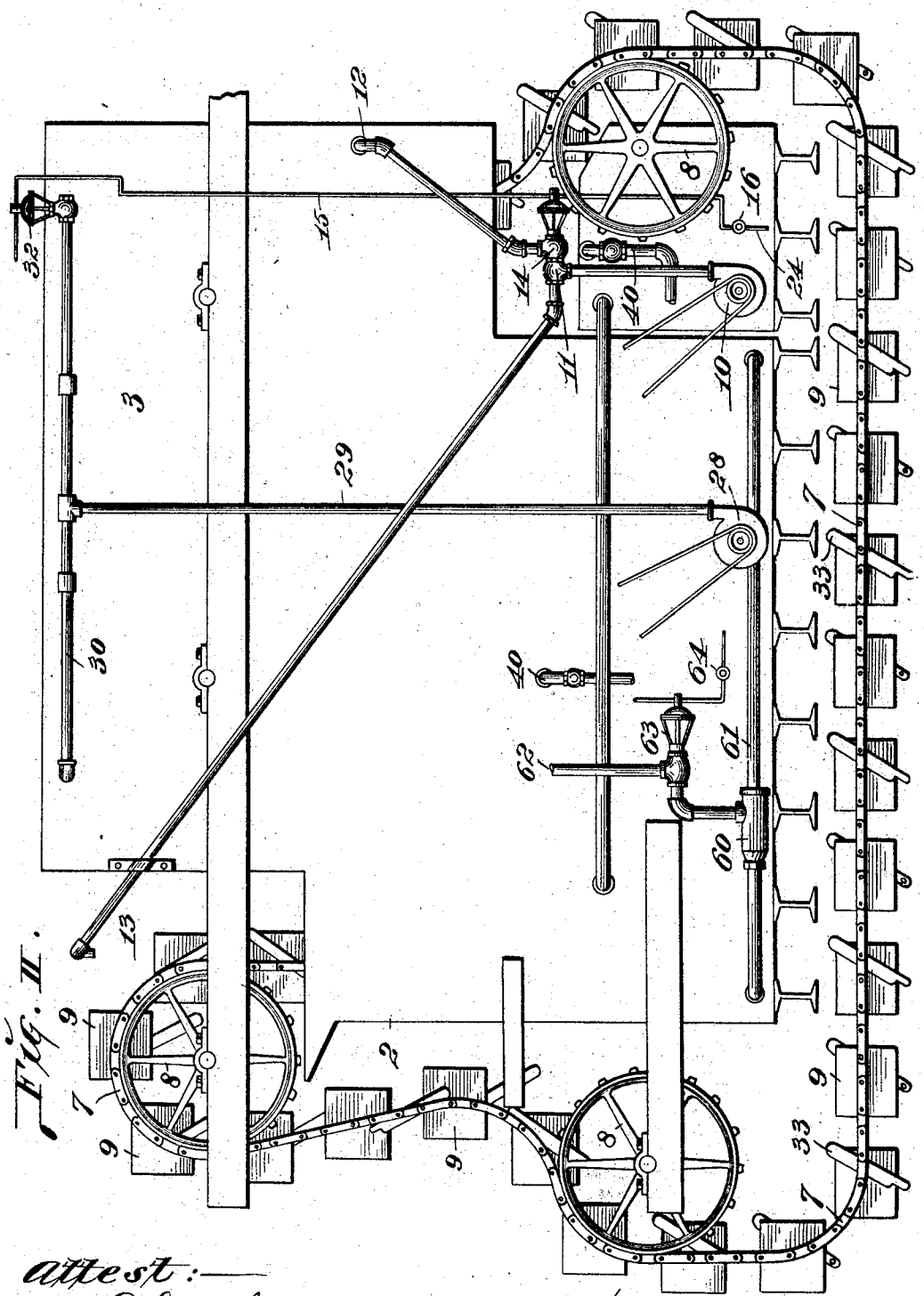


Fig. II.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. III.

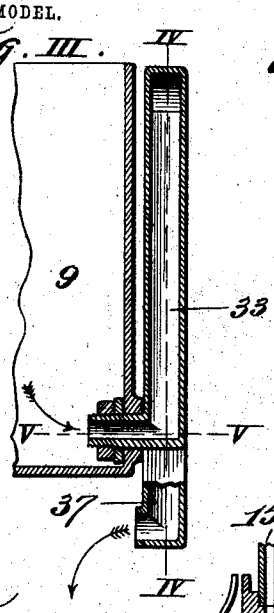


Fig. IV.

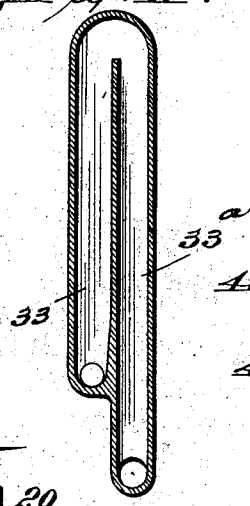


Fig. VI.

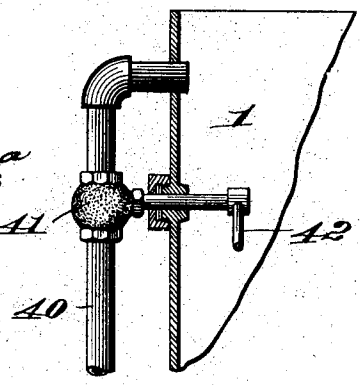


Fig. X.

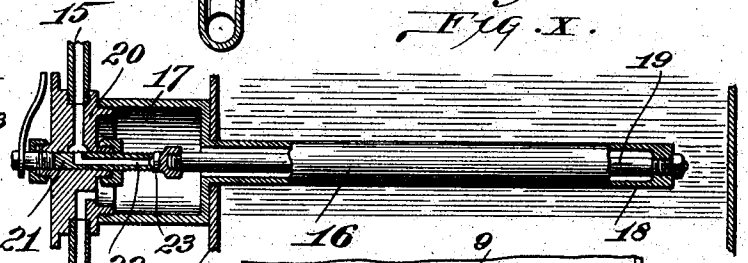


Fig. V.

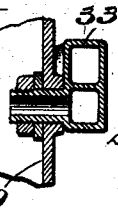


Fig. XII.

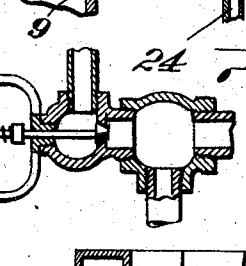


Fig. VII.

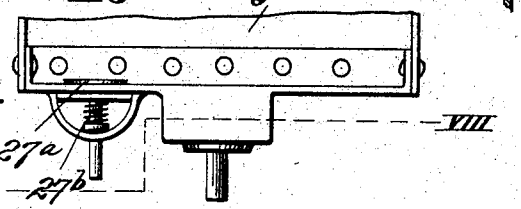
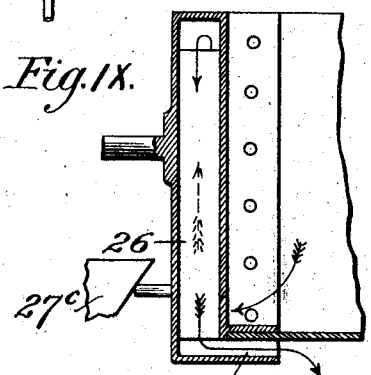


Fig. VIII.

Fig. IX.



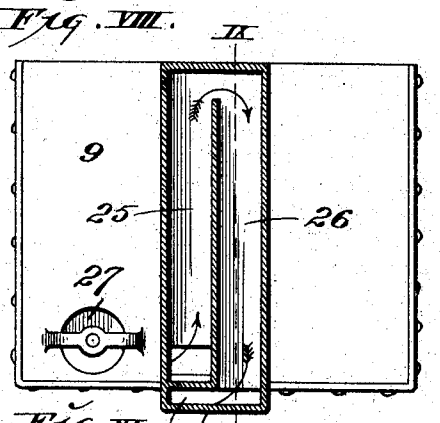
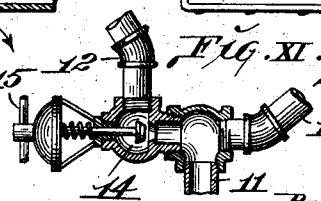


Fig. XI.



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Wm. J. Ruff:—

By Wright Brown & Quinby

Atty's.

No. 767,962. Patented August 16, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM J. RUFF, OF QUINCY, ILLINOIS.

PASTEURIZER.

SPECIFICATION forming part of Letters Patent No. 767,962, dated August 16, 1904.

Original applications filed February 13, 1903, Serial No. 143,177, and April 24, 1903, Serial No. 154,111. Divided and this application filed August 10, 1903. Serial No. 168,898. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. RUFF, a citizen of the United States, residing in Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Pasteurizers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention relates to a machine for pasteurizing beer, &c., and belongs to the same class of machines as those shown and described in my United States applications for patents filed February 13, 1903, Serial No. 143,177, and April 24, 1903, Serial No. 154,111.

My present invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side view of my improved machine with the housing and tanks in vertical section. Fig. II is a side elevation. Fig. III is a detail vertical section showing part of one of the bottle-containing baskets and its drain-pipe. Fig. IV is a section taken on line IV IV, Fig. III. Fig. V is a horizontal section taken on line V V, Fig. III. Fig. VI is a detail section showing part of the attemperating and cooling tank and its supply-pipe. Fig. VII is a detail top view showing a modification. Fig. VIII is a vertical section taken on line VIII VIII, Fig. VII. Fig. IX is a section taken on line IX IX, Fig. VIII. Fig. X is a section showing the regulator. Fig. XI is a section showing one of the diaphragm-valves. Fig. XII is a view similar to Fig. XI, showing another of the diaphragm-valves.

Referring to the drawings, 1 represents a tank for holding the attemperating and cooling water, and 2 is a tank for holding water of maximum temperature. Fitting over these tanks and extending into the latter is a housing or hood 3, thereby forming a leg or space 4, in which the beer is attemperated, a leg or space 5, in which the beer is heated to and for a sufficient length of time retained at a maximum temperature, and a leg or space 6, in which the beer is cooled. The bottles of beer are conducted through these legs by means of a carrier composed of endless chains 7, supported by sprocket-wheels 8 and between which are the bottle-containing baskets 9, that are pivotally connected to the chains, so as to always maintain a horizontal position. The beer to be pasteurized is placed in the baskets at A, the carrier moving in the direction of the arrow, Fig. I. The carrier is driven by any suitable form of motor (not shown) connected up to the shaft of one of the sprocket-wheels 8. Communicating with the tank 1 is a rotary pump 10, from which extends a pipe 11, having a branch 12 for discharging attemperating-water into the baskets 9 in advance of the introduction of the water of maximum temperature and a branch 13 for discharging cooling-water into the baskets after the bottles have been submitted to the action of the water of maximum temperature. In the pipe 12 is a diaphragm-valve 14, (see Fig. XI,) such as is shown in my Patent No. 701,622, dated June 3, 1902. The air-supply pipe 15 of the diaphragm-valve communicates with a regulator 16, located in the tank 1. The regulator is shown in Fig. X and consists of a cylinder 17, secured to one wall of the tank 1 and having a tube 18, that extends into the tank. Within the tube 18 is a thermostatic bar or rod 19, the inner end of which is made fast to the end of the tube 18. In the outer end of the cylinder 17 is fitted a plug 20, into which is tapped a stem 21, having a port 22, that communicates with the pipe 15. The inner end of the stem 21 forms the seat for a valve 23 on the outer end of the thermostatic rod 19.

24 is a compressed-air pipe tapped into the plug 20 and which communicates with the interior of the cylinder 17.

When the temperature in the tank 1 falls below a given point—say 90° Fahrenheit—the bar 19 will contract and open the valve 23. Compressed air will then pass through the pipe 24, which is connected to a suitable compressed-air tank, (not shown,) through the stem 21, and through the pipe 15 to the diaphragm-valve 14, thus causing the valve to be closed and shutting off the flow of water from the pump 10 through a pipe 12 into the baskets 9. When the temperature of the

water in the tank 1 rises above the desired temperature, the valve 23 closes again, thus permitting the flow of water through the valve 14 and pipe 12 into the baskets 9. As the baskets become nearly filled with water they overflow back into the tank 1—that is, so long as they are passing through the leg 4. This overflow is from basket to basket and is permitted by means of a double-legged pipe, (shown in Figs. III and IV,) and which consists of a leg 33, communicating at bottom with the basket with which it is pivotally connected and at top with a leg 33^a, having a discharge-opening 37, that terminates beneath the basket, so as to direct the water into the basket beneath.

28 represents a rotary pump communicating with the tank 2 and from which a pipe 29 extends to the top of the machine, where it is provided with branches 30, having nozzles 31 for discharging hot water into the baskets. The left-hand nozzle 31 is located in the upper part of the leg 4, and this nozzle is provided with a diaphragm-valve 32, corresponding to the valve 14, except that it is held open by the compressed-air pressure instead of being closed by the compressed-air pressure, so that when the valve 14 is closed the valve 32 is open, and vice versa, the result being that when the water in the tank 1 falls below the desired temperature the valve 32 will be opened and hot water will pass through the baskets in the leg 4 into the tank 1, and thus restore the temperature in the tank. As soon as the water rises above the desired temperature again the valve 32 will be closed and the valve 14 opened, and thus the cooling of the water caused by attemperating the cold beer is constantly counteracted by hot water passing from the tank 2 through the diaphragm-valve 32, the result being that the water in the tank 1 is maintained at approximately a uniform temperature at all times.

As the carrier is passing through the leg 5 the beer is submitted to the action of the water of maximum temperature which overflows from the baskets through the conduits 33 33^a back into the tank 2, where it is maintained at the maximum temperature in any suitable way—as, for instance, by means of a steam-jet 60, (see Fig. II,) located in a pipe 61, that connects the two ends of the tank together. In the pipe 62 of the jet-pump is a diaphragm-valve 63, corresponding to the valve 14, and connecting with the diaphragm-valve is a regulator 54, corresponding to the regulator 16. When the water falls beneath the point desired—say 148^C Fahrenheit—the regulator 64 will open the valve 63, admitting steam to the tank through the pipe 61. As the carrier is passing up through the leg 6 the beer is submitted to the action of cooling-water deposited in the baskets through the pipe 13, which, as stated, communicates with the pump 10, that is located in the tank 1, and the bottles are thus gradually cooled down before being exposed to the atmosphere. As the baskets leave the top of the leg 6 the water commences draining therefrom into the baskets beneath, this being effected through means of the swiveled double-legged pipes 33. (See Figs. III and IV.) These pipes are connected to the lower portions of the baskets, as shown in Figs. III and V, and they are slowly turned into a horizontal position by coming against a pin 36. (See Fig. I.) As they are turned the water flows from their lower extended ends 37 and is discharged into the baskets beneath and finally back into the tank 2. The bottles are thus gradually cooled down as they move upwardly through the leg 6. When the carrier is moving downwardly from the sprocket-wheel that is located over the leg 6, the baskets are empty of water, so that the beer can be removed about the point B. Beneath this point there is located another stationary pin 38, against which the pipes 33 impinge and are turned back to their upwardly-inclined positions, so that the baskets are ready to take and hold water again when they reach the point A.

Any loss of water in the tanks is restored through pipes 40, provided with valves 41, to which are connected floats 42, located within the tanks. (See Figs. I and VI.) When the water falls beneath the desired level, the floats will by descending open the valves 41, thus permitting a flow of water into the tanks from the pipes 40, which are connected with any suitable source of water-supply.

54 represents stationary rails for guiding the endless chains of the carrier where they are deflected in the course of their travel.

In Figs. VII, VIII, and IX, I have shown a modification of the double-legged pipe 33 33^a, which consists in locating a fixed water-conduit at one end of the baskets, which conduit consists of a leg 25, communicating with the lower part of the basket and at top with a leg 26, having a lower extension 27, that terminates beneath the basket. This conduit permits the overflow of the water from the basket, and to discharge the water from the baskets (which in the other form is effected by the turning of the pipe 33 33^a, as described) I employ a valve 27^a, which is normally held to its seat by a spring 27^c. The stem of the valve projects some distance beyond the basket and is adapted to come against a suitable stationary pin to effect the opening of the valve when the baskets reach the top of the leg 6. With a machine thus constructed a very small tank may be utilized, inasmuch as the attemperating and the cooling of the beer is effected without the use of a tank to hold the water through which the carrier is passing at the time that the attemperating and cooling processes are being carried on.

I claim as my invention—

1. In a pasteurizer, the combination of a

single tank for holding attemperating-water and cooling-water, a pump for conducting water from said tank, a pipe connected to said pump for conducting the water for attemperating the beer, another pipe connected to said pump for conducting the water for cooling the beer, a tank positioned between the points of attemperating and cooling for holding water of maximum temperature, a pump for conducting water from the last-mentioned tank through a pipe to a point of discharge above and over the same, and a carrier for moving the bottles past the discharge ends of said pipes to receive water therefrom, and through the water of maximum temperature; the baskets of said carrier being provided with means for allowing the water to pass from one to another.

2. In a pasteurizer, the combination of a single tank for holding attemperating and cooling water, a pump for conducting water from said tank through a pipe for attemperating the beer and through another pipe for cooling the beer, a tank for holding water at maximum temperature, a pump for conducting water from the last-mentioned tank through a pipe located over the first-mentioned pipes, diaphragm-valves located in said pipes, a regulator in said attemperating-tank and which is connected to said diaphragm-valves, and a carrier for moving the bottles past the discharge ends of said pipes to receive water therefrom and through the body of water at maximum temperature.

WILLIAM J. RUFF.

In presence of—
GERHARD G. ARENDS,
FRANK A. LUBHE.