

No. 725,894.

PATENTED APR. 21, 1903.

G. ULLRICH.

ARRANGEMENT FOR HEATING, COOLING, AND MIXING THE
MASH IN MASH TUBS.

APPLICATION FILED JAN. 23, 1900.

NO MODEL.

2 SHEETS—SHEET 1.

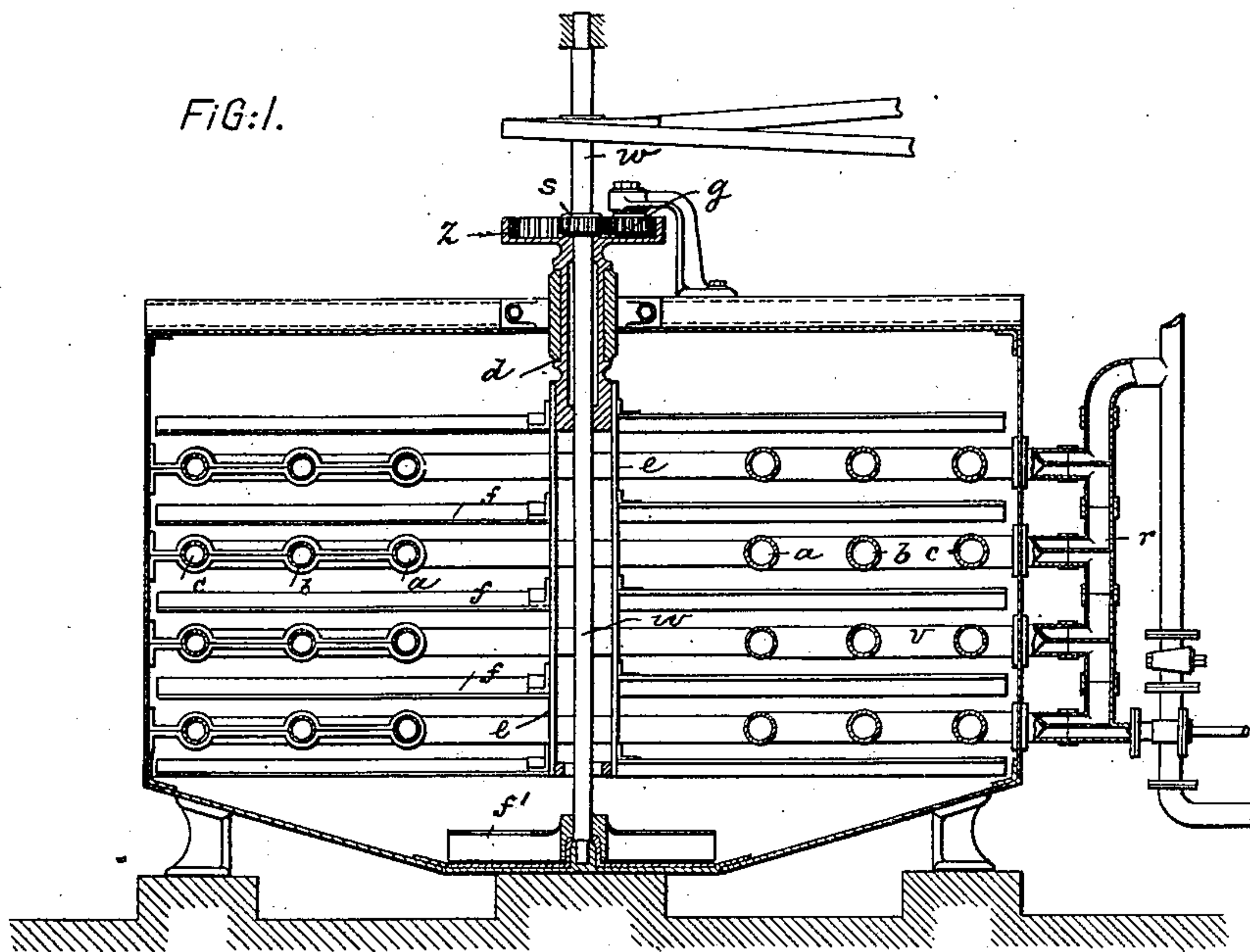
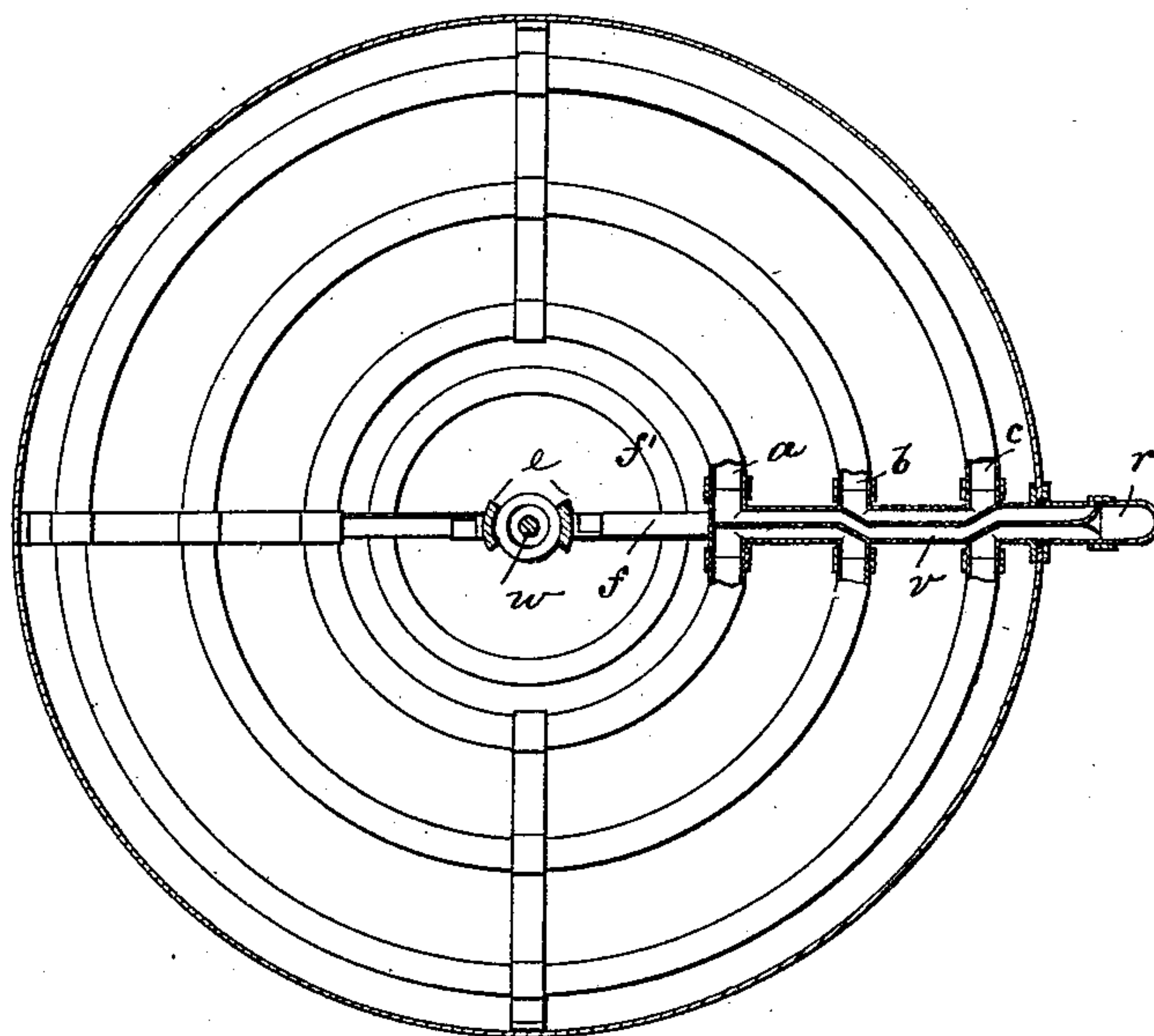


FIG. 2.



Witnesses:
William Miller
William Schuly.

Inventor:
Gustav Ullrich
by his attorneys
Roeder & Briesed

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FIG. 3.

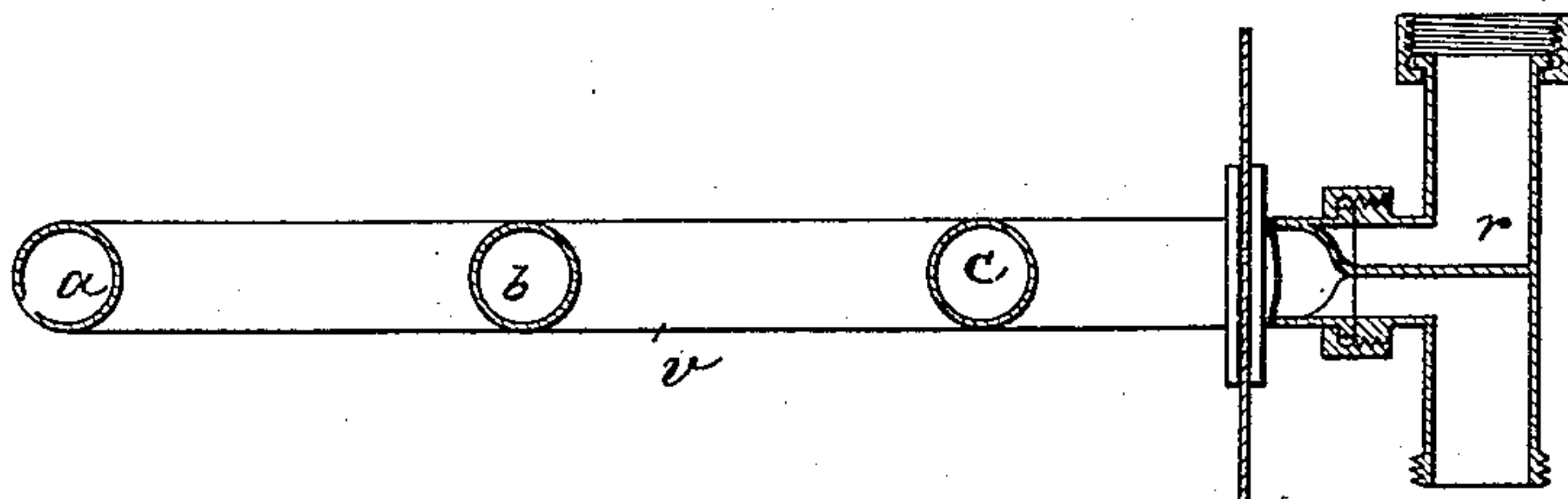
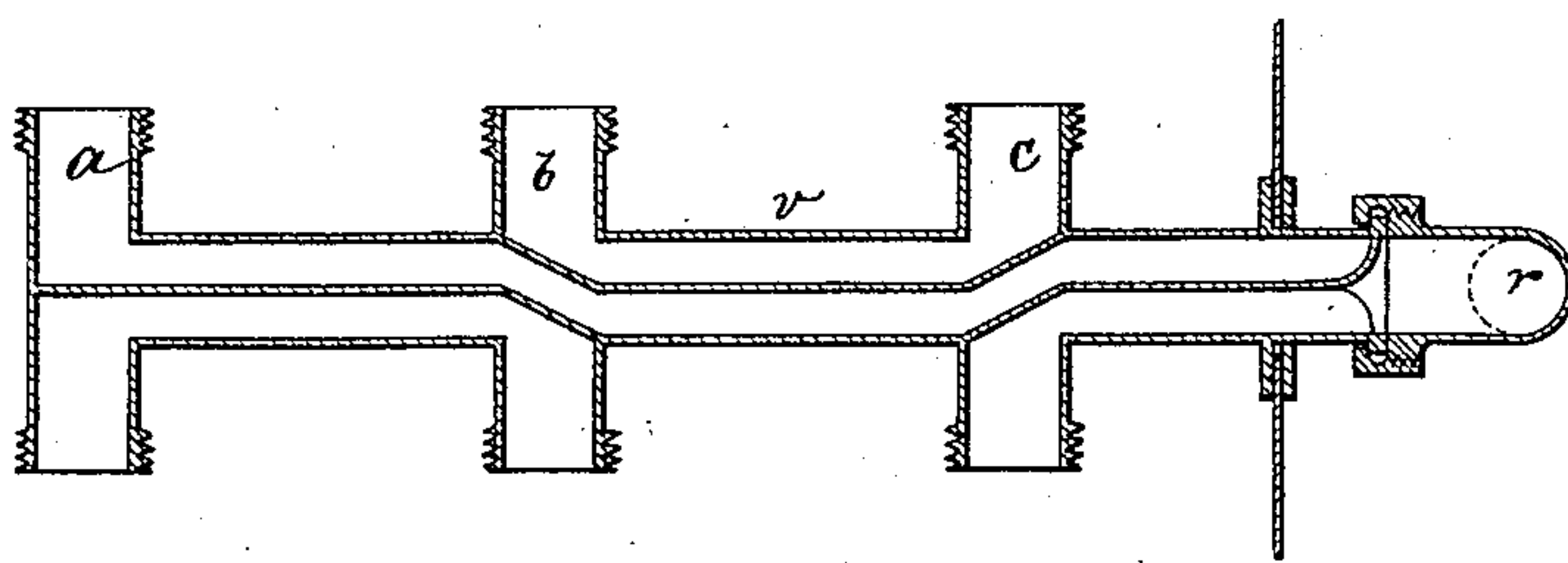


FIG. 4.



Witnesses:
William Miller.
William Schulz.

Inventor:
Gustav Ullrich
by his attorneys
Roeder & Briesen

UNITED STATES PATENT OFFICE.

GUSTAV ULLRICH, OF RATINGEN, GERMANY.

ARRANGEMENT FOR HEATING, COOLING, AND MIXING THE MASH IN MASH-TUBS.

SPECIFICATION forming part of Letters Patent No. 725,894, dated April 21, 1903.

Application filed January 23, 1900. Serial No. 2,428. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV ULLRICH, a citizen of Germany, and a resident of Ratingen, near Dusseldorf, Germany, have invented certain new and useful Improvements in Arrangements for Heating, Cooling, and Mixing the Mash in Mash-Tubs, of which the following is a specification.

The subject of this invention is an arrangement for heating, cooling, and mixing the mash in mash-tubs, wherein the pipe connection which serves to send the heating or cooling agent in the upward direction and to effect uniform heating or cooling of the mash is fitted in such a manner that the arms of the stirring mechanism may extend outward as far as the wall of the tub, while at the same time they enable a special centrifugal wheel to be provided at the bottom of the tub, if required.

The improved apparatus is represented in the accompanying drawings, wherein—

Figure 1 is a vertical section, and Fig. 2 a cross-section, of the same. Figs. 3 and 4 illustrate the arrangement of the pipe connection, the former figure being a side elevation of the arrangement, partly in vertical section, while Fig. 4 is a horizontal section thereof.

In the example shown three pipes are supposed to be arranged concentrically with each other and to be connected by an upright pipe or tube *r*, located outside the tub and constructed in four superposed compartments. Owing to this arrangement, as has been mentioned before, there is nothing to prevent the arms or blades *f* of the stirring device, which are mounted upon the shaft *w* and which extend through the spaces between the pipes, from reaching to the mash-tub wall. The heating or cooling medium is admitted into the radial piece or pipe-coupling *v* of the lowest pipe division or layer, passes first through the inner pipe *a*, is conducted into the pipe *b* through the said coupling *v*, wherein a suitable duct is provided for the purpose, then passes through such pipe *b*, and presently upon passing through a second duct of the coupling is delivered into the pipe *c*. After

this the said heating or cooling medium flows back again through a third duct of the pipe-coupling and then enters the next pipe division or layer above by upright pipe *r*. This it traverses in a like manner, and the same operation is repeated with regard to the third and fourth pipe divisions to be employed. Their number is optional, and, indeed, a pair of coil-rows may be used instead of three or more. In order to accomplish the circulation described, the coupling *v* is provided with a number of short ducts that connect consecutively the adjoining pipes of each horizontal row of coils, the inflow and outflow duct for each pipe being separated by a partition.

Above the bottom of the tub, for the purpose of insuring a proper mixing or stirring effect, a centrifugal flier is arranged, as shown at *f'*, and in order that a more rapid rotary motion may be imparted to such turbine than the motion received by the stirring arms or blades these arms or blades are not attached to the shaft *w* direct, but to upright supports *e*, fitted to a revoluble socket or sleeve *d*, an arrangement which facilitates cleaning and prevents any of the mash from adhering to the surfaces or walls. Between the shaft *w*, which should be driven by means of a driving-belt or the like, and the sleeve *d*, speed-reducing gear is inserted, which may be of any desired construction. In the arrangement shown a wheel *z* is mounted upon the sleeve *d*, such wheel being provided with an internally-toothed rim and driven in conjunction with the intermediate wheel *g* by a spur-wheel *s*, mounted upon the shaft *w*, or motion may be derived from the sleeve *d* itself, and releasing mechanism may be provided which will enable the shaft *w* or, in other words, the flier *f'* to be arranged without interfering with the operation of the stirring-blades *f*. The bottom of the tub is preferably made deeper where a flier is used, so that the whole contents of the vessel may come in contact with and be moved along by the same.

What I claim is—

1. In a mash-tub, a series of superposed

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rows of pipe-coils combined with a series of radial pipes having ducts that connect said coils, and with an upright pipe connecting the radial pipes, substantially as specified.

- 5 2. In a mash-tub, the combination of a shaft, with a lower stirrer secured thereto, a sleeve surrounding the shaft, stirrers connected to said sleeve, and heating-coils be-

tween which the stirrers project, substantially as specified.

Signed by me at Dusseldorf, Germany, this 12th day of January, 1900.

GUSTAV ULLRICH.

Witnesses:

WILLIAM ESSENWEIN,
P. LIEBER.