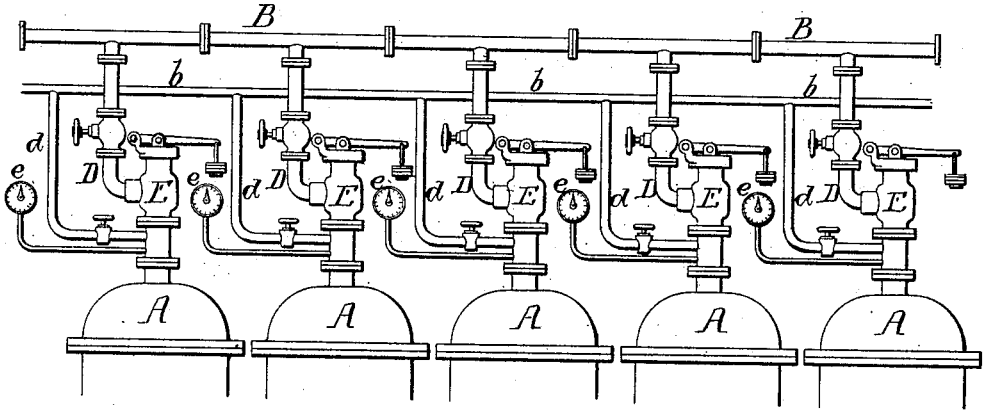
A. J. & A. B. GALLAGHER.
Rectifying Apparatus.

No. 199,281. Patented Jan. 15, 1878.

Fig. 1.



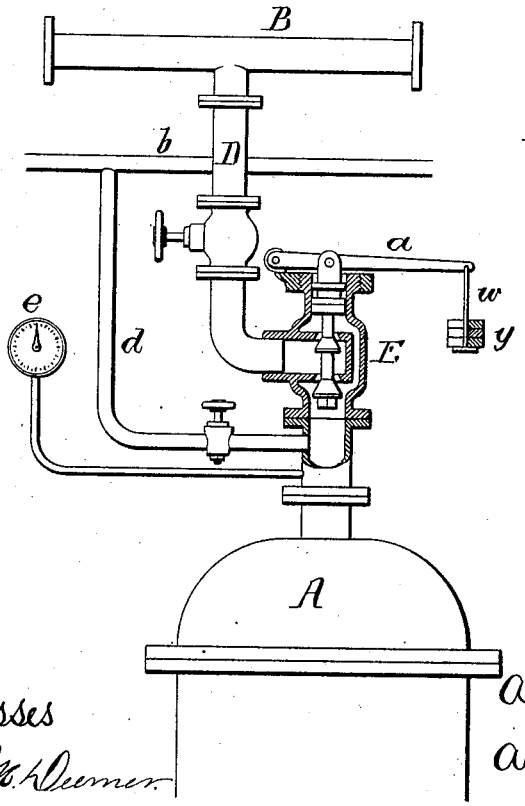


Fig. 2.

Witnesses
John W. Deemer
Harry Smith

Inventors
Anthony J. Gallagher
and
Augustus B. Gallagher
by their Attorneys
Howson and Sons

UNITED STATES PATENT OFFICE.

ANTHONY J. GALLAGHER AND AUGUSTUS B. GALLAGHER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN RECTIFYING APPARATUS.

Specification forming part of Letters Patent No. **199,281**, dated January 15, 1878; application filed November 19, 1877.

To all whom it may concern:

Be it known that we, ANTHONY J. GALLAGHER and AUGUSTUS B. GALLAGHER, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Rectifying Apparatus, of which the following is a specification:

Our invention relates to an improvement in that class of rectifying apparatus in which a series of rectifying-cylinders fed from a supply-pipe common to all are used; the main object of our invention being to render each cylinder independent of the others as regards the pressure of the liquid upon the filtering material within said cylinder, an object which we attain in the following manner, reference being had to the accompanying drawing, in which—

Figure 1 is a side view of a series of rectifying-cylinders with our invention applied thereto; and Fig. 2, a side view, partly in section, and drawn to an enlarged scale, of one of the cylinders and its connections.

In rectifying apparatus of the character to which our invention relates it is advisable, after filling a cylinder with fresh filtering material, to admit the liquor to the same at a comparatively low pressure at first, and to gradually increase the pressure until it reaches the maximum.

Unless this is done the forcing of the liquor at a high pressure through the fresh filtering material soon exhausts the latter, and renders it incapable of properly performing the duty for which it is intended.

In order to permit one or more freshly-filled cylinders of a series to be worked at a low pressure, without at the same time lowering the pressure upon the other cylinders, we use the appliances shown in the drawing, in which A A are the rectifying-cylinders; B, the main supply-pipe; and D, branch pipes, extending from the main pipe B to the rectifying-cylinders.

The branches D do not communicate directly with the cylinders A, the liquor in its passage from the pipe B to each cylinder being compelled to pass through a valve-chest, E, containing a regulating-valve, the stem of which is connected to a lever, *a*, near the inner end, the outer end of the lever being furnished with a pendent rod, *w*, for receiving weights *y*.

These weights tend to keep the valve open, while the pressure within the cylinder tends to close the valve, so that as soon as the pressure within the cylinder becomes greater than the downward pressure which the weights exert on the valve the latter will be closed, or partially closed, until the pressure in the cylinder is reduced to an extent determined by the weights on the lever.

It will thus be seen that by properly weighting the levers *a*, any desired pressure may be maintained in any of the cylinders, so that each cylinder of a set is, so far as regards the pressure within the same, independent of all the others.

The valve is duplex—that is, there are two valves on the one stem, and two seats in the chest, the lower valve being the largest.

It is not absolutely necessary, however, in carrying out our invention, that the precise construction of valve and valve-chest and mode of weighting the valve which we have shown should be used in all cases.

A water-pipe, *b*, extends along the row of cylinders A, above the same, and is connected therewith by means of valved branches *d*, so that when it is desired to wash the filtering material in any of the cylinders the flow of liquor through the same may be stopped, and water caused to pass through the cylinder until the desired washing operation has been effected.

A pressure-gage, *e*, is combined with each of the cylinders A, in order to indicate to the attendant the amount of pressure within the same.

We claim as our invention—

The combination, in rectifying apparatus, of a series of filtering-vessels, A, a feed-pipe, B, common to all the cylinders, the system of pipes and cocks, whereby the said vessels are rendered independent of each other, and the loaded valves, by the automatic action of which a uniform pressure may be maintained in each vessel independently of the uniform pressure maintained in the other vessels, all substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ANTHONY J. GALLAGHER.
AUGUSTUS B. GALLAGHER.

Witnesses:
JAMES REILLY,
HARRY SMITH.