

W. ADAMSON.
Mixing Apparatus.

No. 47,264.

Patented Apr. 18, 1865.

Fig. 1.

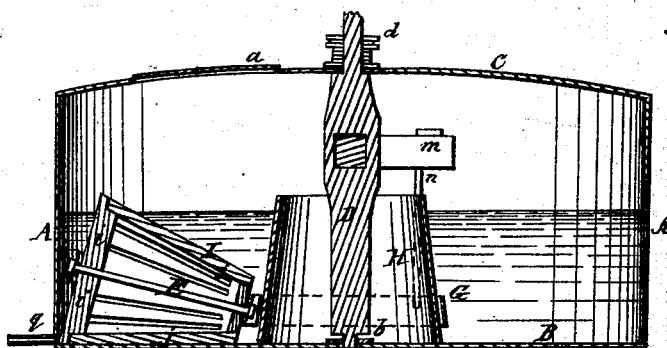
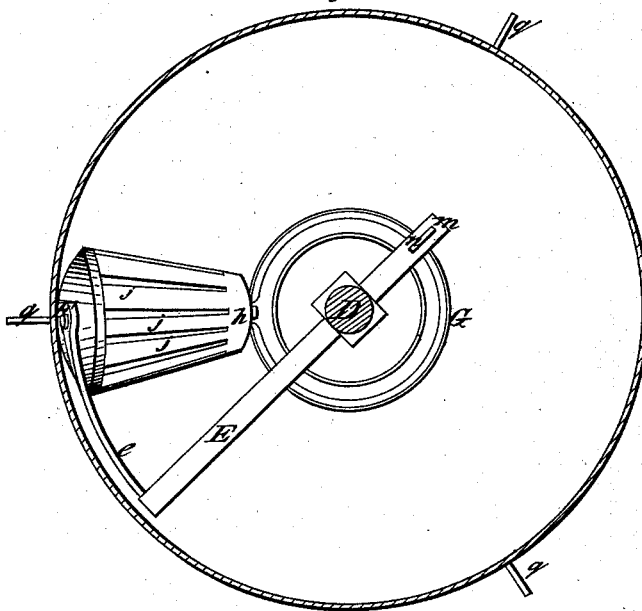


Fig. 2.



Witnesses:

W. Albert Steel.

M. R. Keane.

Inventor:

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by his Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM ADAMSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED APPARATUS FOR AGITATING AND KNEADING SUBSTANCES.

Specification forming part of Letters Patent No. 47,264, dated April 18, 1865.

To all whom it may concern:

Be it known that I, WILLIAM ADAMSON, of Philadelphia, Pennsylvania, have invented certain Apparatus for Agitating and Kneading Substances; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to improvements in apparatus for which Letters Patent were granted to me on the 6th day of September, 1859, and consists of a cone shaped roller caused to revolve on its own axis, and to traverse in a circular path in a closed vat, within which pressure is maintained by the introduction of jets of steam or by the application of external heat.

My invention further consists of a central shield, so arranged within the vat as to maintain the contents in the most advantageous limits for the said roller to act upon them.

The apparatus, which is fully described hereinafter, has been designed for the purpose of treating rags and other fibrous material prior to conversion into paper-stock, to the rendering of fatty matters—such as tallow, lard, &c.—of facilitating the process of tanning, the extracting of glue, the manufacture of soap, obtaining extracts from dye-woods, making decoctions, and the treatment of other materials and compounds, in the preparation of which thorough pressure and agitation are desirable.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of my apparatus for kneading and agitating; Fig. 2, a sectional plan of the same.

A is a circular vat, of metal, closed at the top, with the exception of an opening furnished with a detachable or movable cover or door, *a*, the bottom being also closed with the exception of a similar opening furnished with a suitable cover. In the center of the vat is a vertical shaft, D, the lower end of which turns in a step, *b*, secured to the bottom B, the upper end of the spindle projecting through and turning in a stuffing-box, *d*, secured to the top C of the vat. To the spindle D is secured a horizontal cover, E, to the outer end of which is connected a link, *e*, and in the end of the lat-

ter turns one end of a spindle, F, the inner end of which turns in a metal ring, G, surrounding and turning freely on a circular shield, H, the latter being concentric with the vat and being secured to the bottom of the same. To this spindle F is secured a cone-shaped roller, I, which in the present instance consists of two disks, *h* and *i*, connected together at their peripheries by means of a series of slots, *j*. To the portion *m* of the arm E, which projects beyond the vertical shaft D, is secured a rod, *n*, the lower end of which is attached to the metal ring G, so as to maintain the same in a proper position. Pipes *q* form communications between the steam space of an adjacent steam-boiler and the vat, the steam entering at or near the bottom of the same at as many points as may be deemed advisable.

The materials or substances, with whatever fluids may be necessary, are introduced into the annular trough formed between the interior of the vat and the shield H, to such a depth that they cannot pass or be thrown over the edge of the said shield, after which the door is closed, steam introduced through the several pipes, and a rotary motion imparted to the shaft D by means of belts or any suitable system of gearing. The roller is thereby caused to revolve on its own axis and at the same time to traverse the annular trough.

In treating rags or other fibrous material prior to conversion into paper-stock they are deposited on the bottom of the annular trough of the vat to a depth equal to about one-third of the diameter of the large end *i* of the roller, a proper quantity of any of the solutions heretofore used for cleansing rags, straw, &c., being also introduced into the trough. As the roller revolves in a circular path it presses on the rags, thoroughly agitates and kneads them, while the jets of steam cause constant ebullition, penetrates the interstices of the fibrous material, and assists the roller in agitating the same.

The pressure within the vat, which may be about ten pounds and upward per square inch, as the nature of the material to be acted on may suggest, plays a most important part in accomplishing the desired result—namely, a thorough, rapid, and economical cleansing of the materials. After the contents of the vat have been thus treated the steam is shut off and the liquid withdrawn and replaced with

fresh water, which by the aid of the revolving roller washes the material still further.

The apparatus is applicable to the rendering of fatty matters—such as tallow, lard, &c.—the melting of which by the usual process is a tedious and costly operation. With my apparatus, however, the lumps of fat are broken up and agitated, and every portion so thoroughly exposed to combined heat and pressure within the vat that the rendering is effected rapidly and without the usual loss by burning.

The desired pressure may be maintained within the vat by the direct application of heat to the exterior of the same.

In using the apparatus for tanning purposes a moderate heat only may be used and this at intervals only, the cover *a* being also removed and replaced at intervals, as desired.

The skins are first subjected to the preparatory washing and softening in the apparatus by the revolving roller, after which lime is introduced and the whole agitated until the hair is removed from the skins, after which they are again washed and the bating material introduced into the vat, this being subsequently drawn off, the skins again washed with clean water, after which the tanning material is introduced, or the skins are removed to the usual tanning-vats.

It will be evident that the apparatus is well adapted to the extracting of glue, the treatment of soap, the obtaining of extracts from dye-woods, making decoctions, and to other purposes.

It will be observed that the apparatus described is in some respects similar to that set forth in my Letters Patent for making decoc-

tions, dated the 6th of September, 1859, in which apparatus, however, the vat was open at the top, and consequently no internal pressure was maintained, and the vapors, in many cases, serviceable in assisting the operation, permitted to escape.

In my patented apparatus, too, there was no central shield to form an annular trough and to confine the material acted on within appropriate limits.

The vat may be made of metal or of wooden staves properly strengthened, and the roller may be made solid and either of wood or metal, or it may be corrugated or serrated, although I have found the slatted roller described to operate with marked success.

I may remark here that the apparatus may be used to advantage in large laundries for washing clothes.

I claim as my invention, and desire to secure by Letters Patent—

1. The cone shaped roller, caused to traverse in a circular path and to revolve on its own axis in a closed vessel, within which pressure is maintained by the introduction of steam or otherwise, all substantially as and for the purpose herein set forth.

2. The combination of the vat, having either an open or closed top with the central shield, *H*, and the traversing and revolving roller.

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

WM. ADAMSON.

Witnesses:

JOHN WHITE,

W. J. R. DELANY.