

L. BRUMLEN.

APPARATUS FOR MANUFACTURING WHITE LEAD.  
No. 182,160. Patented Sept. 12, 1876.

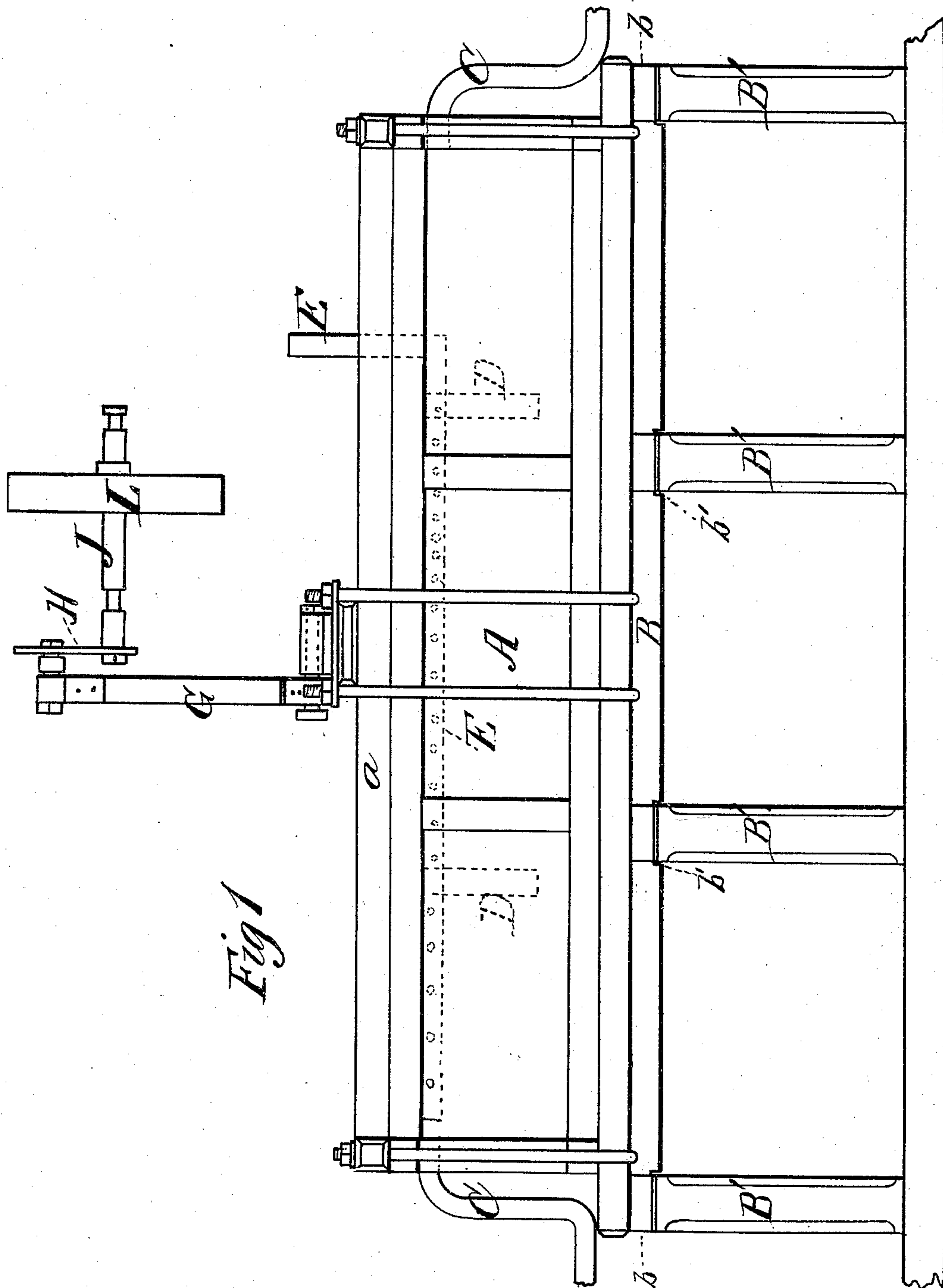


Fig 1

WITNESSES

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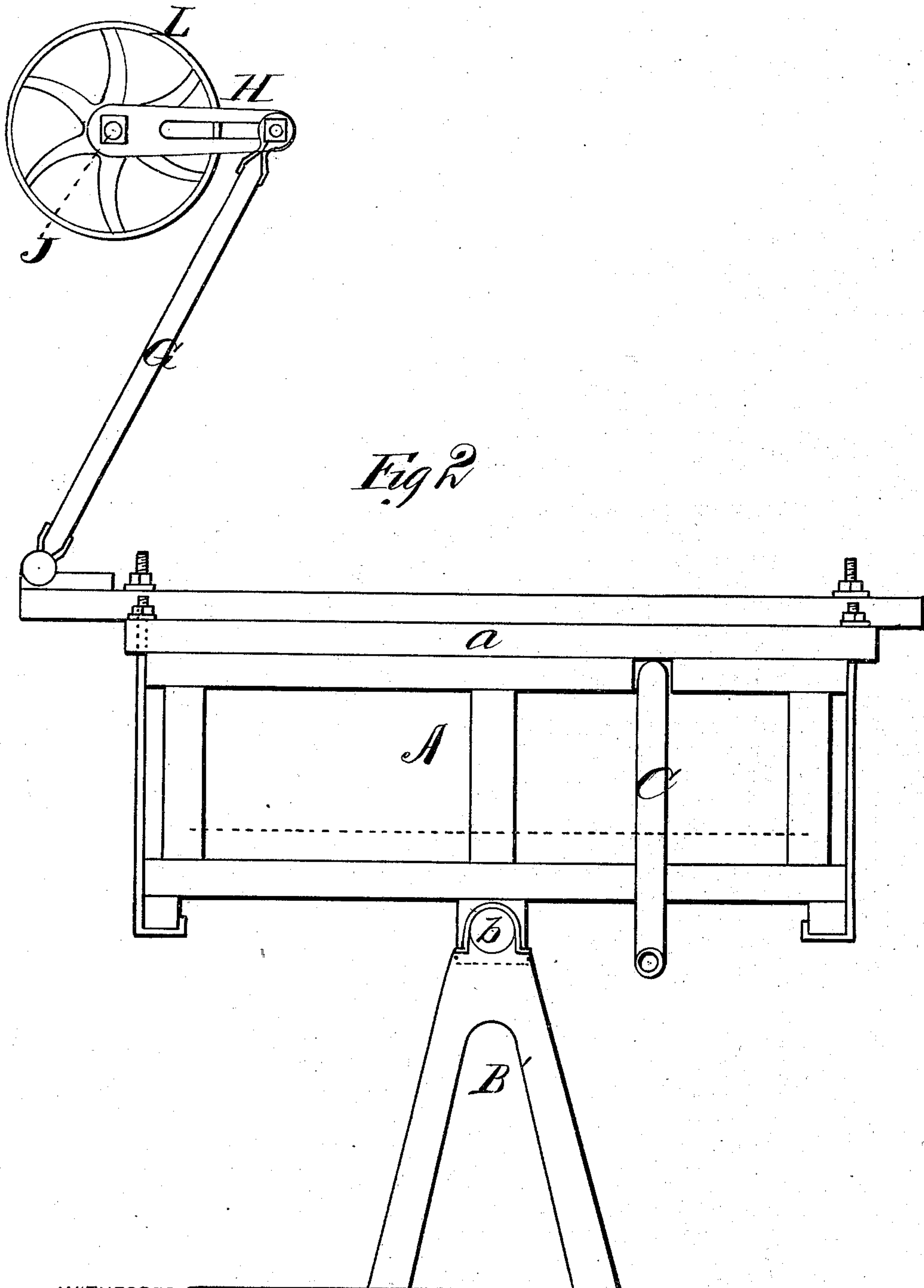
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WITNESSES

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# UNITED STATES PATENT OFFICE.

LUDWIG BRUMLEN, OF LONDON, ENGLAND.

## IMPROVEMENT IN APPARATUS FOR MANUFACTURING WHITE LEAD.

Specification forming part of Letters Patent No. **182,160**, dated September 12, 1876; application filed October 9, 1875.

*To all whom it may concern:*

Be it known that I, LUDWIG BRUMLEN, of London, England, have invented a new and valuable Improvement in the Manufacture of White Lead; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front view of my device; and Fig. 2 is an end view of the same.

This invention has relation to improvements in the manufacture of white lead; and the nature of the invention consists in the peculiar construction of the apparatus for manufacturing white lead, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A represents an oblong rectangular box, having a lid, *a*, which is detachable and forms an air-tight joint with the body of the box. This box is in all other respects air-tight, and is provided at each end with a journal, *b*, the shaft B of which may extend from end to end under the box, and may be provided with a number of supplementary journals, *b'*, which have their bearings in standards B', arranged in proper relation to each other, as shown in Fig. 1. Box A is provided at each end with a pipe, C, preferably of copper, leading into its interior; also, with partitions D, reaching from the lid *a* nearly to the bottom, and with a third pipe, E, extending from end to end of the said box, and projecting through the lid, as shown in Fig. 1, for a purpose hereinafter explained. Pipe E is provided throughout its whole length with spaced perforations, through which a liquid, hereinafter described, will be discharged or sprinkled over the surface of metallic lead placed in the box.

In practice I prefer to use lead-wire made in any suitable manner, and it is treated to produce the white lead of commerce (carbonate of lead) in the following manner, to wit: The box having been filled with lead, so arranged as to expose the greatest surface, a weak solution of acetate of lead, or acetic acid, will be forced through pipe E and sprinkled over the

lead, so as to sufficiently moisten every part thereof, and prepare it for being oxidized by a current of air forced through pipe C. This liquid is then drawn off and hot air is introduced to facilitate the oxidation of the lead. This is continued for some time, when a solution of acetate of lead will be sprinkled over the lead by means of pipe E, which solution will forthwith combine with the oxide of lead, and form a subacetate of lead. Carbonic acid will then be introduced, which will cause the carbonate of lead to be precipitated until the subacetate again becomes neutral, and all the oxide of lead made during the introduction of air has been converted into the carbonate. The solution of acetate of lead will, during the rocking of the box, which must now be continued without intermission, wash off the carbonate of lead as quickly as it is formed, and is in due time let off from the box together with the carbonate, through a tap suitably located for the purpose. The former will then settle to the bottom of the vessel provided for the purpose, leaving the solution clear and ready for use again and again. After the acetate solution has been drawn off the hot air will be again introduced into the box to form the oxide, acetate of lead will be sprinkled over the lead to form with the oxide a subacetate of lead, which, by the introduction of carbonic-acid gas, will be transformed into the carbonate. This process may be continued for any length of time till the metallic lead is consumed, any excess of carbonic acid or nitrogen gas not consumed during the process finding its escape through a suitable pipe in the other end of the box.

In practice the box will be rocked or oscillated by means of a rod, G, and a crank-arm, H, fixed on a shaft, I, which is operated by a suitable motor through the medium of a pulley-wheel, L. The effect of divisions D, arranged in the box, is to obstruct the passage of carbonic-acid gas, so that being delayed, as it were, it may the more readily combine with the subacetate of lead to form the carbonate, and a less quantity be unconsumed.

I am aware that it is not new, broadly, in the manufacture of white lead, to oxidize metallic lead by a current of hot air, and I therefore lay no claim to such invention. And I am



also aware that the several steps, or stages, together, constituting my process for manufacturing white lead, have heretofore been employed, both separately and together, but in a different order, in a process for manufacturing white lead; and I therefore lay no claim to my process irrespective of the particular order of the successive steps in the process described by me, whereby by first moistening the metallic lead with acetic acid, and then introducing a current of hot air, a greater quantity of oxide of lead is formed, and thereby in the successive after steps of the process described, a greater quantity of carbonate of lead is produced.

What I claim as new, and desire to secure by Letters Patent, is—

1. The process of manufacturing white lead, consisting in first subjecting metallic lead to the action of a weak solution of acetate of

lead, or acetic acid, so as to moisten it, then drawing off said liquid and passing a current of hot air around said lead to oxidize it, then dissolving the so-formed oxide by means of a solution of acetate of lead, and then introducing carbonic-acid gas, causing the precipitation of the carbonate of lead, substantially as described.

2. An apparatus for manufacturing white lead, consisting of the rocking box, having induction and eduction pipes, obstructing divisions, and a perforated pipe, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LUDWIG BRUMLEN.

Witnesses:

M. W. BRUMLEN,  
JOHN MULLETT.