

No. 709,954.

Patented Sept. 30, 1902.

J. W. BAILEY.

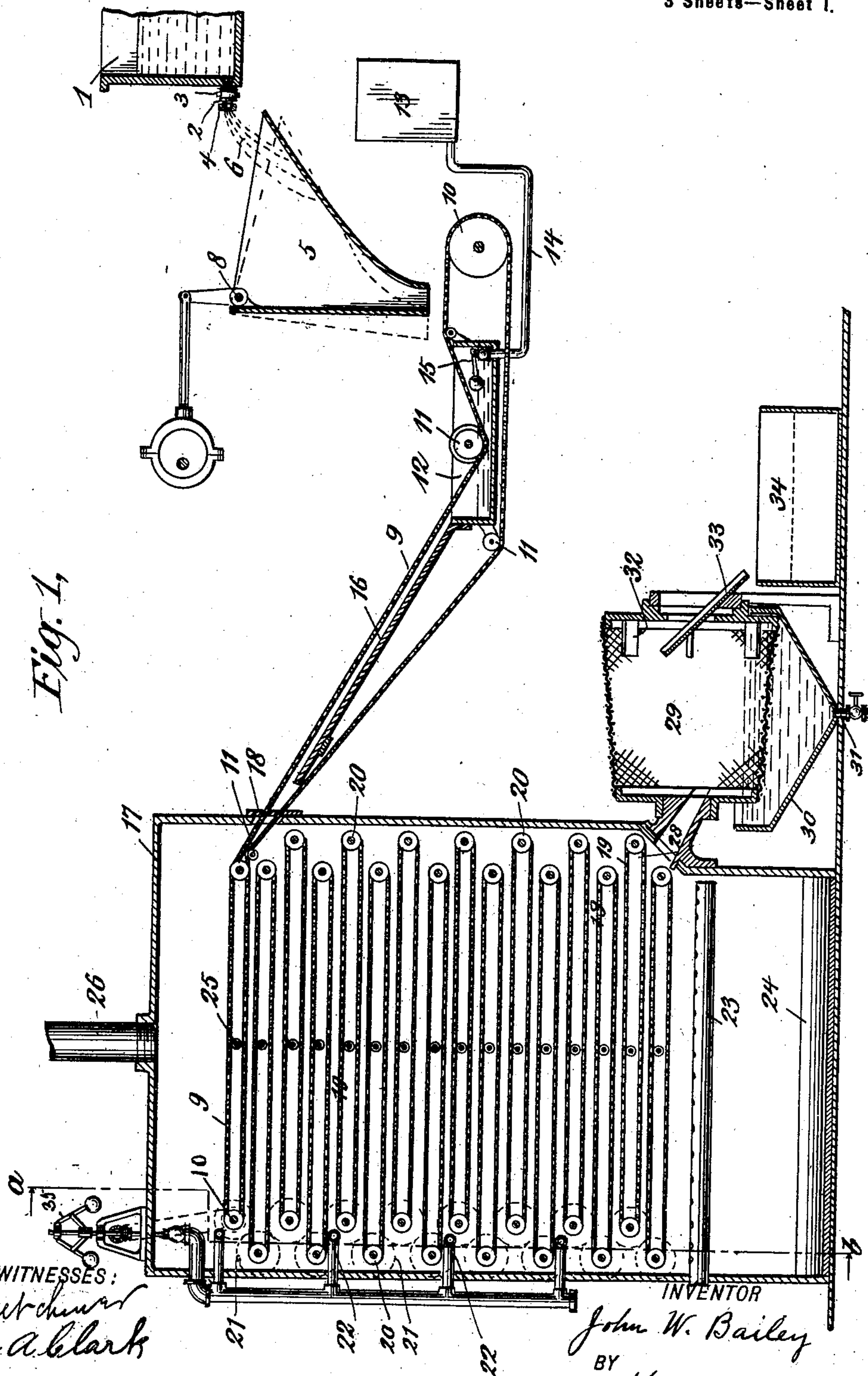
APPARATUS FOR PRODUCING WHITE LEAD.

(Application filed Aug. 1, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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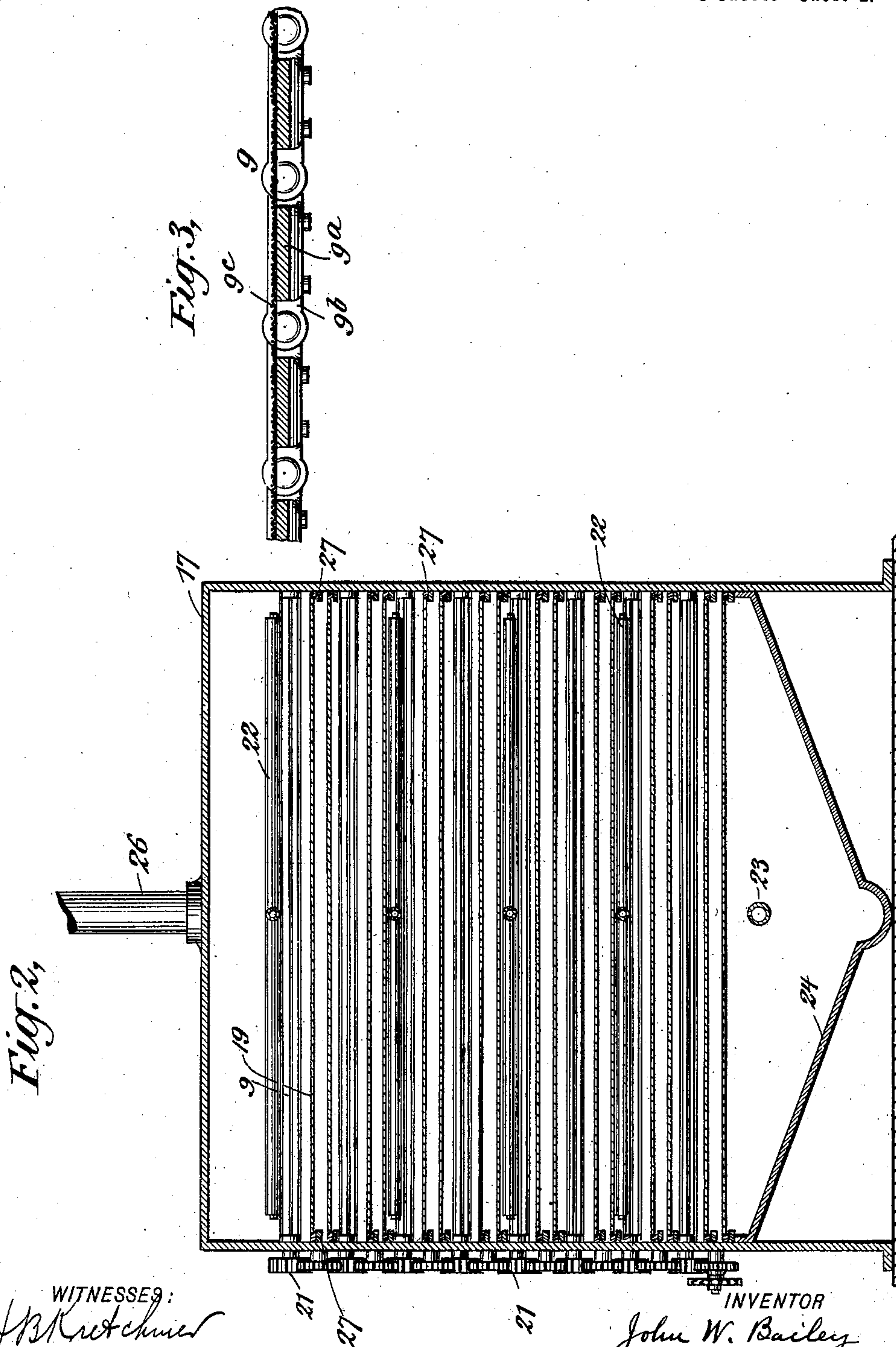
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APPARATUS FOR PRODUCING WHITE LEAD.

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3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

Fig. 4,

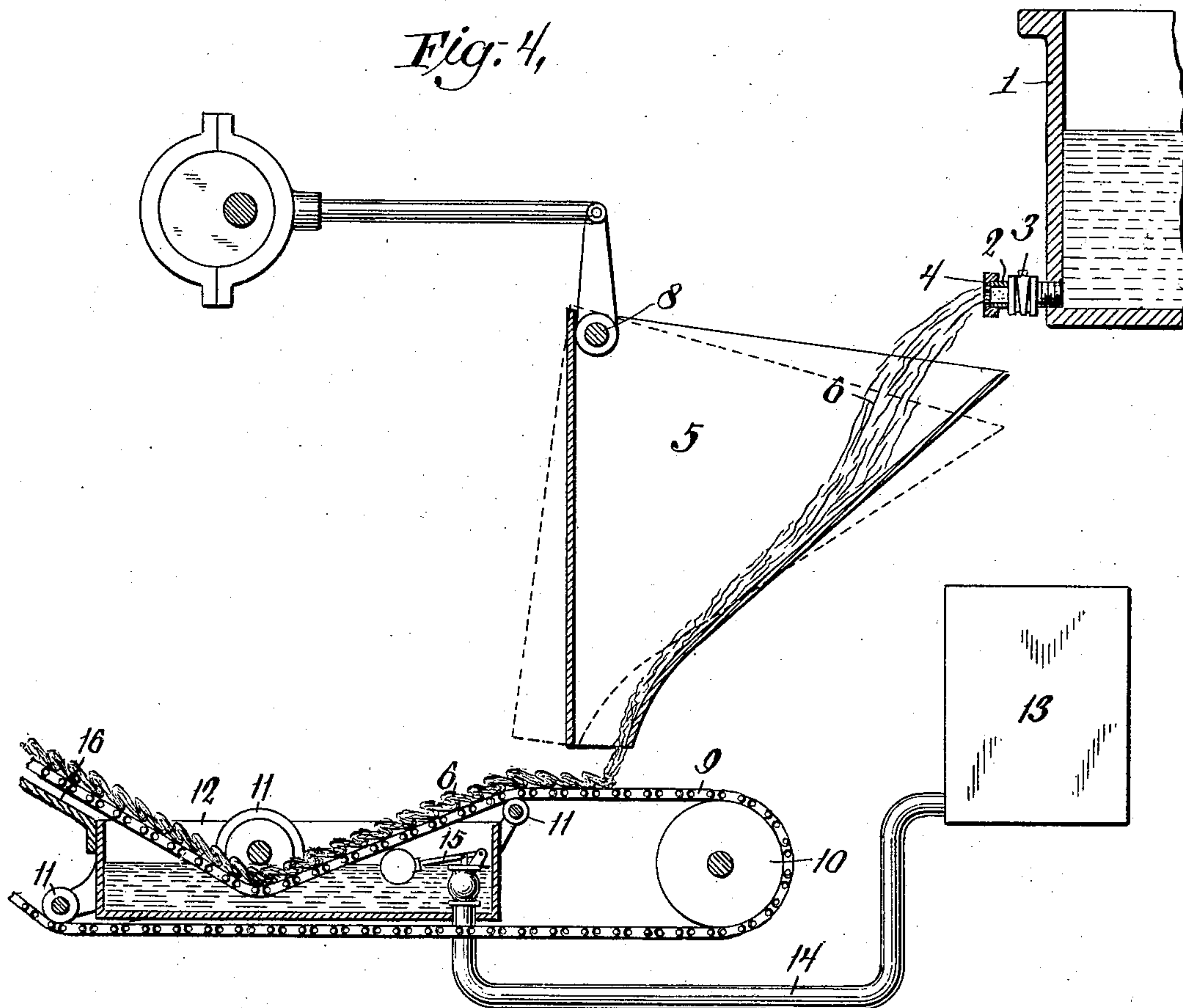
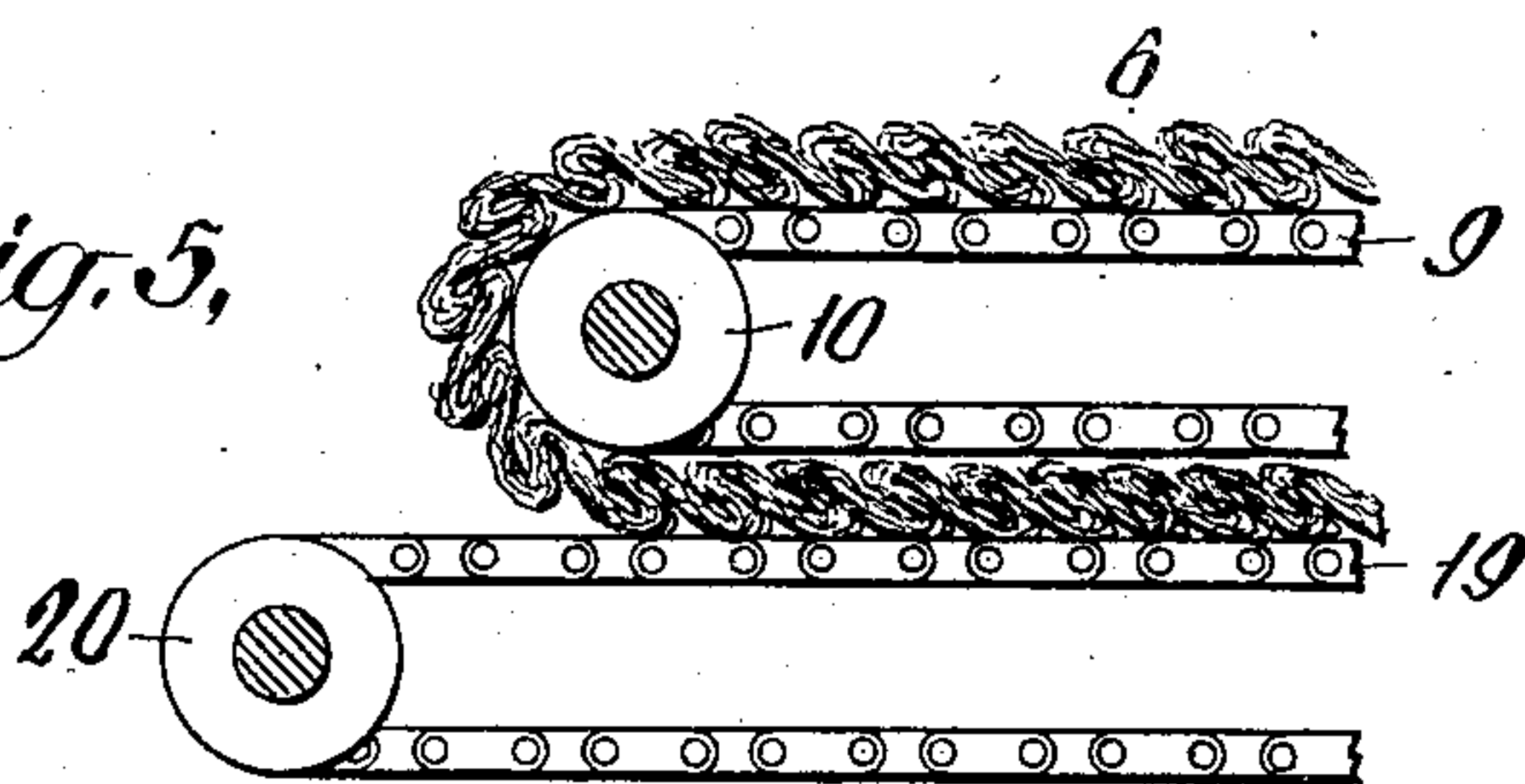


Fig. 5,



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APPARATUS FOR PRODUCING WHITE LEAD.

SPECIFICATION forming part of Letters Patent No. 709,954, dated September 30, 1902.

Application filed August 1, 1900. Serial No. 25,503. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. BAILEY, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented an Improved Apparatus for Producing Lead Carbonate, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, which form a part hereof.

The invention relates to an improved apparatus for manufacturing lead carbonate or what is commonly known as "white lead" or any similar product; and the object of the invention is to enable the said white lead to be produced automatically and continuously, and therefore quickly and economically, and at the same time to furnish a product which is superior in quality to that which is made by the methods now in use.

To that end my invention consists, first, in the combination, in such apparatus, of a carrier or belt adapted to support and convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a corroding-chamber, and means for supplying a suitable corroding-gas, such as carbonic-acid gas, to the chamber.

In the best form of the invention the carrier referred to not only introduces the lead into the corroding-chamber, but also conveys it for some distance in the said chamber.

My invention also consists of means for feeding the comminuted lead to the carrier.

My invention also consists of means for so comminuting the lead that it may be maintained in an uncompacted condition. In the best form of the invention the means for comminuting the lead constitutes the means for feeding the comminuted lead to the carrier.

In the best form of the invention the comminuted lead is fed to said carrier in waves or masses which are wholly or partly separated from one another. This part of the invention also consists in the combination, with the carrier and other essential parts, of a feed-chute to feed comminuted lead to the carrier, which chute is mounted on a pivot and is adapted to rock on said pivot, and means for rocking

this chute. This part of the invention also consists in combining with the said feed-chute means for comminuting the lead and feeding it into the feed-chute.

My invention also consists in combining with some or all of the parts above mentioned means for applying the moistening agent, preferably acetic acid and water, to the lead.

In the best form of the invention I employ a bath provided with an acid reagent, through which the carrier moves before passing into the corroding-chamber, whereby the comminuted lead is wet or moistened with the acidulated liquid before being exposed to the air and the corroding-gas. This part of the invention also includes means to automatically maintain a predetermined level of the acidulated liquid in said bath.

My invention also consists in the combination, in such apparatus, of a corroding-chamber, a traveling carrier, such as an endless belt, for the lead in said chamber, and means for supporting and moving said carrier.

In the best form of the invention the traveling carrier is perforated, so as to permit the ready passage of the corroding-gas, and is combined with means for feeding comminuted lead to said carrier.

My invention also consists in the combination, in such apparatus, of a carrier adapted to convey the comminuted lead into the corroding-chamber and one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier and means for supporting and moving the said carriers. This part of the invention also consists in combining with the said parts suitable means for feeding the comminuted lead to the first or introducing carrier.

My invention also consists in the combination, in such apparatus, of a corroding-chamber and a series of traveling carriers for the lead arranged vertically in said chamber, each carrier overlapping the carrier above it at one end, and means for supporting and moving said carriers, whereby the lead in passing from a higher to a lower carrier is inverted or changed in position, so as to expose new parts or surfaces to the action of the corroding-gas.

My invention also consists of certain other features of construction and combinations of parts hereinafter described and claimed.

My improved apparatus is shown in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the apparatus; and Fig. 2 is a vertical section of the corroding-chamber, taken on the line *a b* of Fig. 1. Fig. 3 is a longitudinal section of the carriers. Fig. 4 is an enlarged view illustrating the manner in which the lead fiber is fed onto the carrier. Fig. 5 is an enlarged view illustrating the manner in which the lead fiber passes from one carrier to another carrier in the corroding-chamber.

In the figures similar numerals refer to similar parts.

Referring to the drawings, 1 is one of a series of melting-pots for melting the pig-lead and converting it into fiber or finely-communited or "shotty" lead. 2 is a discharge-pipe leading from the bottom of said melting-pot and provided with a suitable valve 3.

4 is a plate provided with fine openings or orifices and placed at the outlet end of the pipe 2, through which the molten lead is forced by means of the weight of the column of lead in the melting-pot 1.

5 is a feed-hopper into which the lead fiber 6 drops after it has been forced out through the openings in plate 4. This chute is made of sheet-iron or other suitable material and suspended at its upper end on the rock-shaft 8 and so arranged that it can swing for a short distance back and forth, as represented in dotted lines in Fig. 1. Any suitable device may be used for giving the rocking motion to the said chute.

9 is a carrier in the form of a continuous belt, preferably made about eight feet wide. It is stretched upon and carried by the pulleys 10 and the idlers 11. This belt 9 is preferably made of wood slats 9^a, held together by links 9^b and which may be covered with wire-cloth 9^c or other suitable material, the purpose of this construction being to permit the belt to pass easily over the pulleys and the idlers and at the same time to permit the corroding-gas to pass easily through the belt, so as to reach every part of the comminuted lead which is being carried by the belt. The belt is moved by sprocket-wheels on the pulleys 10.

12 is a box containing a regulated solution of acid and water supplied automatically and maintained at a given level from the tank 13. The tank 13 is kept supplied with the acid in proper solution—preferably acetic acid and water—and is connected by means of the pipe 14 with the box 12.

15 represents a float-valve device arranged in the box 12 and adapted to open and close the discharge-valve in the pipe 14, thereby maintaining the solution in the box 12 at any desired level.

The belt 9 after receiving its charge of lead

fiber passes underneath the large idlers 11, and the lead is thereby made to pass through the bath in the box 12, as a result of which the stock under treatment is wet to properly acidify it before subjecting it to the action of the air and the corroding-gas. The belt 9 is preferably made several hundred feet long—say from three hundred to six hundred feet—so as to give it a capacity of several tons per day.

16 is an apron for conducting the drippings from the belt 9 back into the tank 12.

17 is a corroding-chamber which may be, say, eight or nine feet wide and from one hundred to three hundred feet long and into which the belt 9 feeds the lead fiber 6 in the manner illustrated in Fig. 1. The opening through which the belt 9 passes into the corroding-chamber is preferably provided with a flexible curtain 18, adapted to readily yield to permit the passage of the belt and comminuted lead without disturbing the lead, but to prevent the escape of any considerable quantity of the corroding-gas.

19 represents a series of belts or conveyers suitably mounted upon and carried by rollers or pulleys 20. These belts are staggered with reference to one another—that is to say, the uppermost belt 19 projects beyond the belt 9, as shown at the left-hand side in Fig. 1—so that the comminuted lead may fall from the belt 9 upon the uppermost belt or conveyer 19 and be carried backward across the corroding-chamber. The second belt 19, counting from the top, projects beyond the belt 19 immediately above it at the right-hand side. The third belt 19, counting from the top, projects beyond the belt 19 just above it on the left-hand side, and so on down through the series of belts or conveyers. The pulleys or rollers 20 are provided with sprocket-wheels to drive the belts 19 and also at one end of the corroding-chamber with driving-gears 21. (See Figs. 1 and 2.) The pulley 10 at the upper end of the corroding-chamber on the left side, as shown in Fig. 1, is also provided with a driving-gear 21. These gears 21 preferably mesh with one another and are connected in any suitable way with a driving-shaft. It will be evident that by means of this series of gears adjoining belts will be driven in opposite directions, which will cause these belts to continuously carry the comminuted lead back and forth from one side of the corroding-chamber to the other, the comminuted lead falling from each belt to the belt below, and so on until it reaches the lowest belt of the series. The belts 19 are open-meshed belts, such as could be made out of wood slats held together by links and covered with any open-mesh cloth adapted to permit the corroding-gas to pass freely through the belts.

22 22 are sprinkling-pipes for sprinkling the stock under treatment as it passes through the corroding-chamber. These pipes are connected with any suitable source of supply and

extend across the chamber, being of substantially the same width as the belts 19, and are provided with perforations through which the acidulated water is sprinkled or sprayed on the stock which is under treatment. As many of these pipes may be employed as are thought desirable or necessary. The supply of fluid to these pipes may be controlled by a governor 35, as shown.

23 is a pipe or conduit for supplying the steam and corroding-gas—namely, carbonic-acid gas—and for distributing them through the bottom of the corroding-chamber. This pipe is provided with perforations on its upper side and is connected with any suitable source of supply of the said corroding-gas and steam.

24 is a sump or receptacle for catching the drippings from the moving belts 19 and is preferably shaped as shown in Fig. 2.

25 25 are supporting-rollers for supporting the belt 9 and also the belts 19. Any number of these may be used for this purpose.

26 is a pipe for conveying the waste gases from the corroding-chamber.

27 27 (see Fig. 2) are tracks or ways which are traveled by the links at the ends of the slats of which the belt 9 and the belts 19 are made. These tracks are simply to guide the belts and cause them to move properly over the rollers 20.

28 is a chute for receiving and delivering the corroded product to the wash-machine.

29 is a revolving wash-machine for separating the corroded metal from the portion of the stock that has not been corroded, by means of which the latter—that is to say, the waste product—is thrown out and collected for further treatment.

30 is a hopper-bottomed tank in which the wash-machine works and the bottom of which receives the corroded product. The wash-machine consists of a reel which is covered with a fine brass-wire screen or other suitable material and adapted to permit the white lead to pass through the meshes or perforations of the same, while preventing the uncorroded product from escaping. The tank is provided with sufficient water to partly submerge the lower side of the reel. The tank 30 is provided with a pipe 31, through which the white lead which is suspended in the water can be pumped to the drying-room. The rear end of the reel is provided with diaphragms or partitions 32, extending part of the distance from the circumference of the reel toward the axis and adapted to carry the uncorroded portions of the material to the upper side of the reel and to dump them on the inclined chute 33, from which they drop into the receiver 34 for the waste products.

The operation of my improved apparatus is as follows: Metallic lead is melted in the melting-pots 1 by any suitable means. In the best application of my invention the lead is heated to a temperature only slightly above the melting-point and is caused to flow

through one or more fine orifices in the plates 4. It solidifies as soon as it reaches the air, forming a thread-like product in structure like wool and known as "lead fiber." I prefer to force the lead through the fine orifices in the plates 4 by means of the pressure of a column of lead in the melting-pots 1 of sufficient height to force the molten lead through said orifices. If the metallic lead is heated to a higher degree of temperature, it will break into a fine shotty condition. My apparatus is not limited to the treatment of lead fiber, although in the best method of using my invention the lead is comminuted in this form. The chute 5 is given a rocking motion, swinging between the positions indicated in Fig. 1, one being in a full line and the other in a broken line. The lead fiber slides down through the chute 5 and by means of the rocking motion of the chute is fed onto the carrier-belt 9 in masses or waves, wholly or partly separated, as illustrated in Fig. 4, each mass or wave containing a regulated quantity of the comminuted lead. As a result of thus separating the lead into more or less independent masses the corroding-gas is given more complete access to the comminuted lead, and the corrosion is therefore more thorough. The belt or carrier 9 then carries the comminuted lead without substantial disturbance through the bath containing the agent which is employed to make the preliminary attack on the metal. I prefer to use a solution of acetic acid and water for this purpose, although any other suitable agent may be employed, provided it is adapted to accomplish a similar result. The bath is contained in the box 12, which holds a regulated solution of acetic acid and water. This solution is preferably of a strength of about one part of twenty-six-per-cent. acid to eight parts of water. The supply of the solution in said bath is automatically maintained. An ample supply of the solution of the proper strength is kept in the tank 13 and is fed to the box 12 through the pipe 14 and maintained at a given level in the box 12 by means of the float-valve device 15. After the metallic lead has been thus passed through the bath of the moistening agent it is carried by the belt 9 without substantial disturbance through the air and into the corroding-chamber 17 in the manner indicated in the drawings. While passing through the air to the corroding-chamber the lead or a part of it is oxidized and combining with the acetic acid forms acetate of lead, being thus prepared for the action of the corroding-gas. The lead drops from the belt 9 onto the top one of the series of belts or conveyers 19 in the manner illustrated in Fig. 5. In passing from one belt to another in this way the lead is inverted or changed in position, so as to expose new parts or surfaces to the action of the corroding-gas and without such severe or irregular disturbances as would tend to injuriously compact it. The belt 9 and the various belts 19 are pref-

erably made to travel at the same rate of speed, so that the comminuted lead is not torn apart or compacted. Any part of the moistening solution that drips from the belt 9 on its way from the bath to the corroding-chamber falls upon the apron 16 and runs back into the bath. The comminuted lead is carried back and forth through the corroding-chamber, dropping from one belt 19 to the next lower belt 19, and during all this time is exposed to the action of the carbonic-acid gas and steam, which are introduced into the chamber through the pipe 23. The lead is thus very thoroughly and uniformly corroded. At the same time the lead is kept wet or moistened by being sprinkled with acidulated water through the sprinkling-pipes 22. The corroded lead is finally delivered by the lowest belt 19 into the chute 28, from which it passes into the washing-machine or reel 29. This reel rotates in the tank 30, which is provided with enough water to cover the lower portion of the reel. The water separates the fine amorphous powder, which is the lead carbonate, from the residue and carries it through the meshes of the reel into the bottom of the tank 30, from which it is pumped to the drying-room. After it has been dried it is the finished dry white lead of commerce. The uncorroded portion, which is usually not more than eight per cent., cannot pass through the meshes of the wash-machine and is dropped out at the farther end into the receptacle 34 and is subjected to further treatment.

The corroding-chamber having sixteen of the belts or conveyers 19 and being three hundred feet in length would give a total length of travel of about five thousand feet in the corroding-chamber before the stock under treatment would pass into the washing-machine.

In operating my apparatus in the best way known to me I feed predetermined quantities of the comminuted lead into the corroding-chamber successively at intervals. For example, I run the belt 9 for, say, two and a half hours, causing it to travel at the rate of about seven feet per minute. This belt receives about fifteen pounds of lead fiber per lineal foot, if made eight feet wide. Thus I feed about one thousand feet of the comminuted lead into the corroding-chamber and then stop the belts and allow the comminuted lead to remain at rest during the rest of that day in the said corroding-chamber, where it is subjected all the time to the action of the corroding-gas. The next day a similar quantity of comminuted lead is fed into the corroding-chamber, and then the belts are again stopped, and this is continued from day to day. After four days of continuous operation the belts would be nearly full, and on the fifth day the machine would begin to discharge the corroded stock into the wash-machine. After this I feed a similar quantity of comminuted lead into the corroding-chamber each day, and a like quantity of corroded

product is discharged from the corroded chamber each day. This would give a daily output of corroded product of about nine or ten tons, counting on an increase in weight in the corroded product of only about twenty per cent.

White lead made by this apparatus is superior to white lead manufactured by the methods heretofore in use. It has all the good qualities of lead corroded by the slow processes—such as body, sticking, and lasting qualities—and is free from stains and is of an amorphous character instead of being in a crystalline condition. It is also superior to the white lead made by chemical precipitation, because the latter lacks body, is “fluffy,” and will not hold its color when applied.

It will be apparent that by means of my improved apparatus white lead can be produced very quickly and at a minimum of labor, thus producing great economy.

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

1. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a belt adapted to carry the comminuted lead into the corroding-chamber, means for supporting and moving the belt and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

2. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to support the comminuted lead and convey it into the corroding-chamber, means for supporting and moving the carrier, and means for supplying a suitable corroding-gas to the chamber, substantially as described.

3. In apparatus for making white lead or similar products, the combination with a corroding-chamber, a belt adapted to carry the comminuted lead into the corroding-chamber, means for supporting and moving the belt, means for feeding comminuted lead to the belt, means for applying a moistening agent to the lead and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

4. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to support the comminuted lead and convey it into the corroding-chamber, means for supporting and moving the carrier, means for feeding comminuted lead to the carrier in masses wholly or partly separated, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

5. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted

to rock on a pivot, means for rocking the chute, means for applying a moistening agent to the lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

6. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting the lead and feeding it into the feed-chute, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

7. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

8. In apparatus for making white lead or similar products, the combination with a corroding-chamber, a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means to automatically maintain a predetermined level of the liquid in said bath, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

9. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, means for feeding comminuted lead to the carrier in masses wholly or partly separated, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

10. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supply-

ing a suitable corroding-gas to the chamber, substantially as set forth.

11. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting lead and feeding it into the feed-chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

12. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means adapted to support the comminuted lead in an uncompacted condition and carry it in that condition through said chamber and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

13. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support adapted to carry the comminuted lead through said chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

14. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means adapted to support the comminuted lead in an uncompacted condition and carry it in that condition into and through said chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

15. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support adapted to carry the comminuted lead into and through said chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

16. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting the comminuted lead and carrying it into said chamber without substantial disturbance, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

17. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting the comminuted lead and carrying it into and through said chamber without substantial disturbance, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

18. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support for carrying comminuted lead into

said chamber without substantial disturbance, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

5 19. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support for carrying comminuted lead through said chamber without substantial disturbance, and means for supplying a suitable
10 corroding-gas to the chamber, substantially as set forth.

20. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting comminuted lead and carrying it into said chamber without substantial disturbance, means for feeding comminuted lead onto said carrier and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

21. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting comminuted lead and carrying it into and through said chamber without substantial disturbance, means for feeding the comminuted lead onto said carrying means, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

22. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for comminuting metallic lead so that it may be maintained in an uncompacted condition, means for supporting the comminuted lead and carrying it into said chamber without compacting it, said comminuting means being arranged to feed the comminuted metal onto said carrying means, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

23. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for comminuting the lead in the form of fiber, and means for supporting the fiber and carrying it into said chamber without compacting it, said comminuting means being arranged to feed the comminuted lead onto said carrier and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

24. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for so comminuting the lead as to form fiber, and means for supporting the fiber and carrying it into and through said chamber without compacting it, said comminuting means being arranged to continuously feed the fiber as it is formed onto said carrying means, means for supporting and continuously moving the carrying means, means for supplying moisture to the corroding-chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

25. In apparatus for making white lead or

similar products, the combination with a corroding-chamber, of a reticulated or permeable support for carrying comminuted lead through said chamber without substantial disturbance, means for feeding comminuted lead to said support, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

26. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, substantially as set forth.

27. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier and means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, substantially as set forth.

28. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, substantially as set forth.

29. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting the lead and feeding it into the feed-chute, means for supplying a suitable corroding-gas to the cham-

ber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

30. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, means for feeding comminuted lead to the carrier in masses wholly or partly separated, a bath provided with a moistening agent, through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

31. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

32. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting the lead and feeding it into the feed-chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

33. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a series of traveling carriers for the lead arranged vertically in said chamber, each carrier overlapping the carrier above it at one end, means for supporting and moving said carriers, and means for supply-

ing a suitable corroding-gas to the chamber whereby the lead in passing from one carrier to another is inverted without substantial disturbance, substantially as set forth.

34. In apparatus for making white lead or similar products, the combination with a corroding-chamber of means adapted to support the comminuted lead and convey it into and through the corroding-chamber, means for supporting and moving the carrying means, means for applying a moistening agent to the lead, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

35. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means adapted to support the comminuted lead and convey it into and through the corroding-chamber, means for supporting and moving said carrying means, means for moistening the comminuted lead while in the corroding-chamber, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

36. In apparatus for making white lead or similar products, the combination with a corroding-chamber, means for supporting and moving the carrier, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber and means for moistening the comminuted lead in the corroding-chamber, substantially as set forth.

37. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a traveling carrier for the lead in said chamber, and means for supporting and moving said carrier, means for moistening the comminuted lead in the corroding-chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

38. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the lead into the corroding-chamber, means for supporting and moving the carrier, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, and means for moistening the comminuted lead in the corroding-chamber, substantially as set forth.

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

JOHN W. BAILEY.

Witnesses:

GEO. W. MILLS, Jr.,

EDWIN SEGER.