No. 641,610. Patented Jan. 16, 1900.

F. F. SCHMELZER.

APPARATUS FOR MAKING BLEACHING POWDER.

(Application filed June 8, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

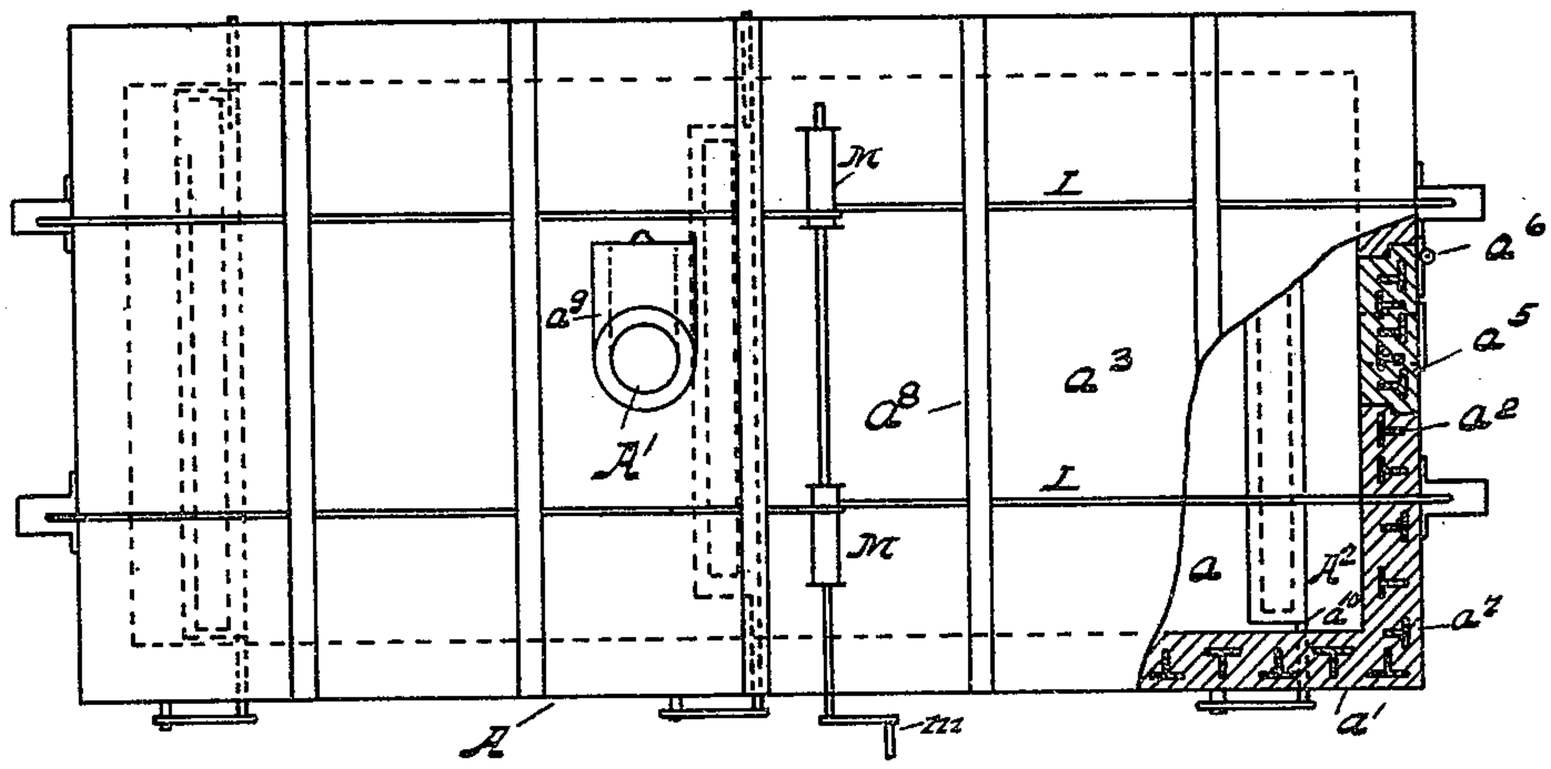

Fig. 2.

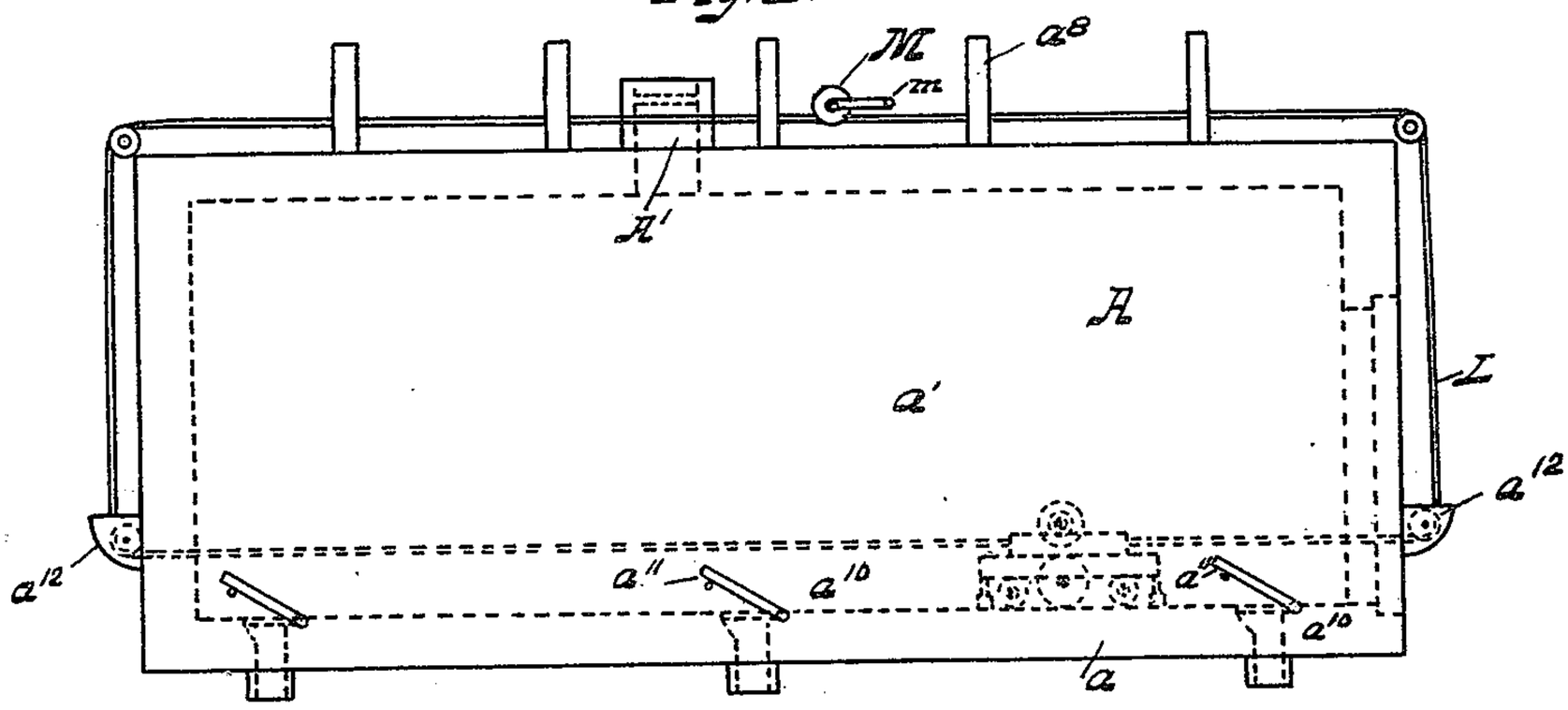

Fig. 3.

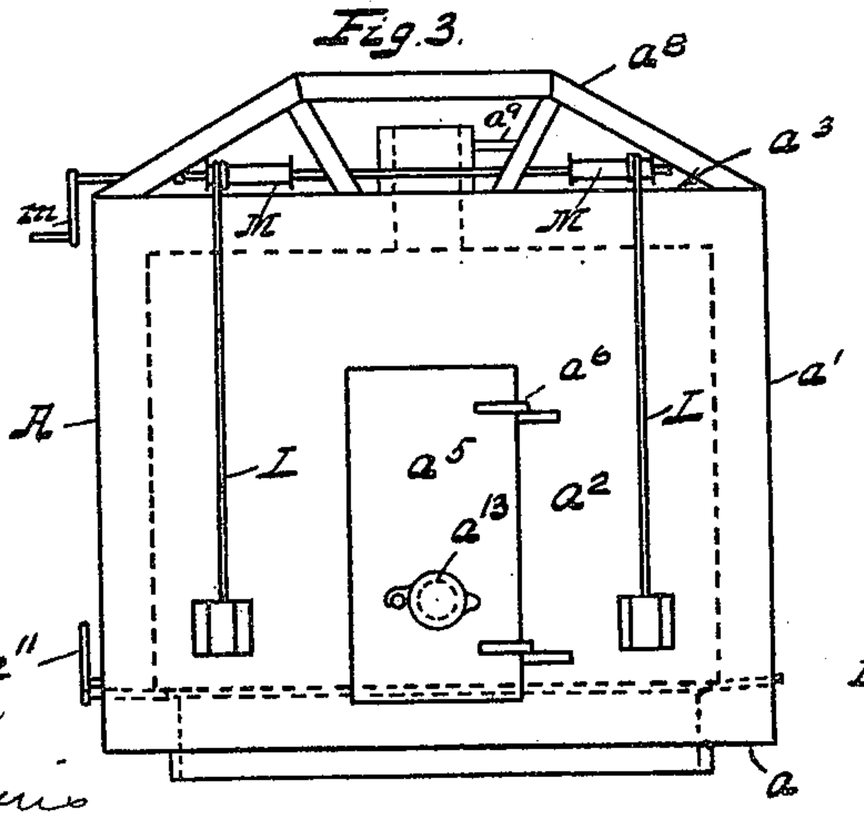

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Fig. 4.

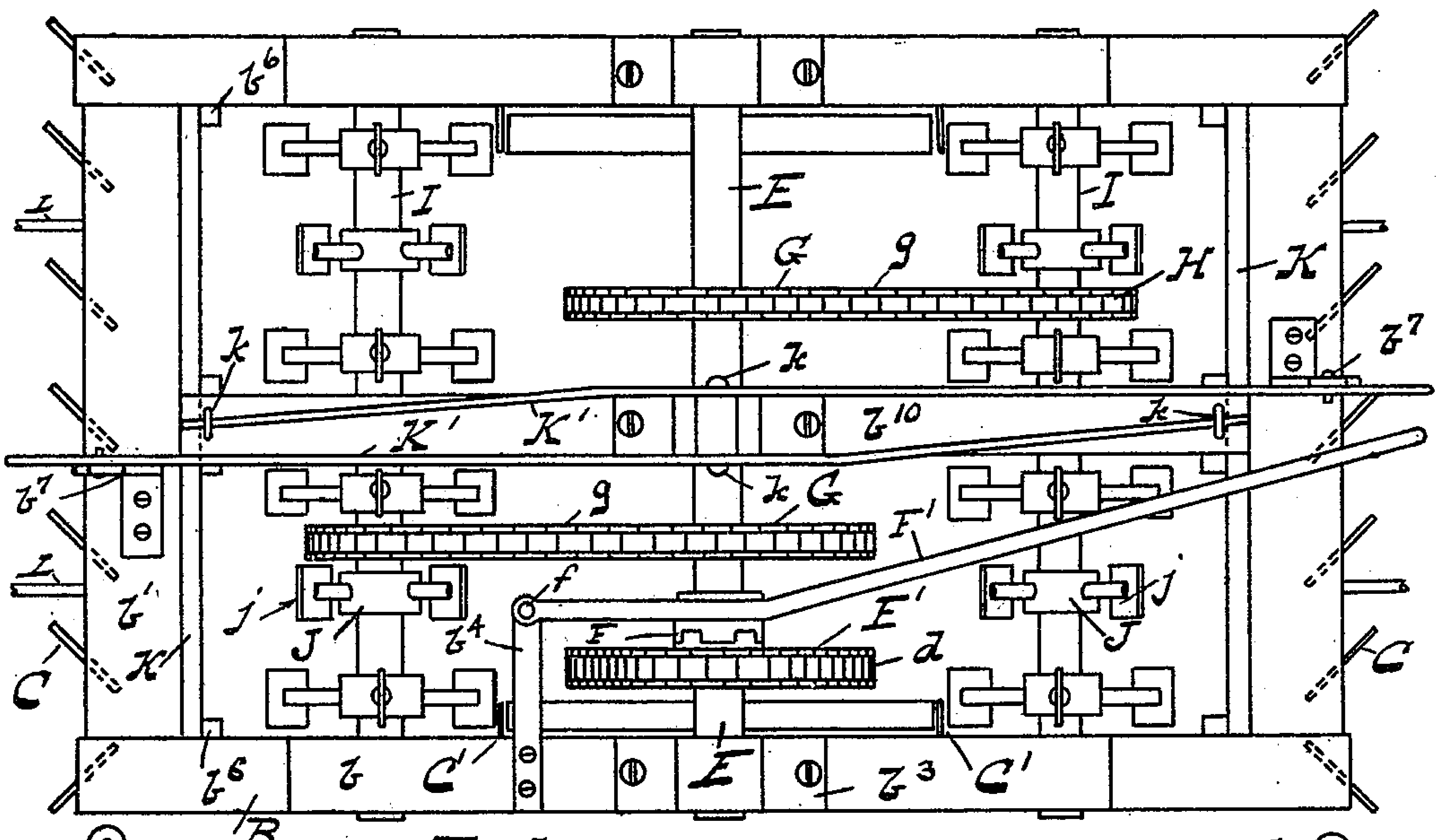
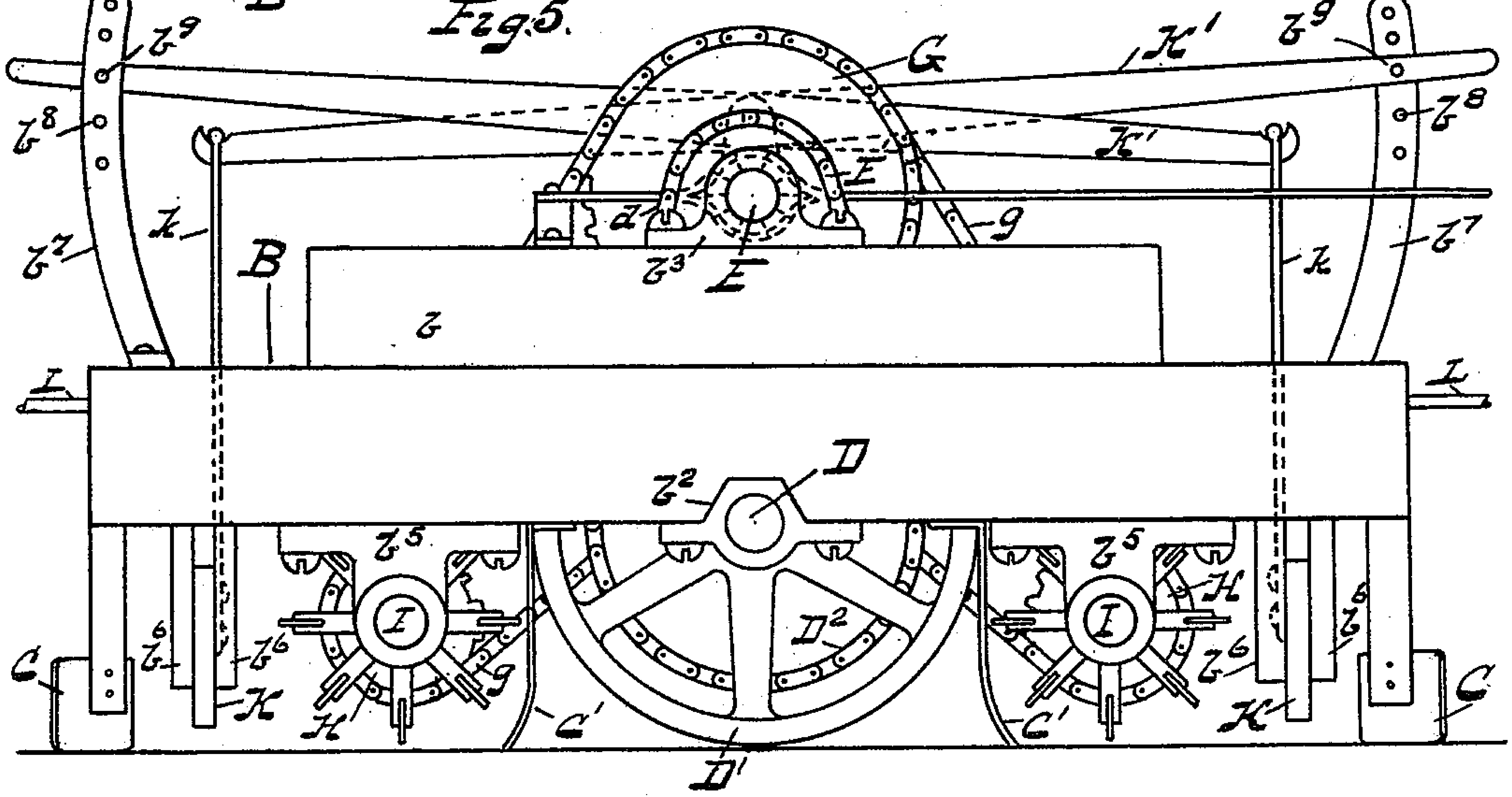


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK F. SCHMELZER, OF ERIE, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO J. M. SHERWIN, OF SAME PLACE.

APPARATUS FOR MAKING BLEACHING-POWDER.

SPECIFICATION forming part of Letters Patent No. 641,610, dated January 16, 1900.

Application filed June 8, 1899. Serial No. 719,822. (No model.)

To all whom it may concern:

Be it known that I, FRANK F. SCHMELZER, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Mechanism for Making Bleaching-Powder; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to mechanism for making bleaching-powders; and it consists in certain improvements therein, as will be hereinafter fully described, and pointed out in the claims.

Heretofore in the process of forming bleaching-powder slaked lime has been placed in the chambers to the depth of three or four inches and chlorine gas admitted to the chamber and confined with the lime for a considerable period, sometimes several days. It has been necessary to subject the lime to the chlorine gas for this length of time in order that the gas may reach all parts of the lime.

The object of my process is to hasten the union of the chlorine with the lime, and thus shorten the process as well as to improve the product. I have provided preferable mechanism for carrying out this process, which is shown in the drawings, as follows:

Figure 1 shows a plan view of the chamber; Fig. 2, a side elevation of the same; Fig. 3, an end elevation; Fig. 4, a plan view of the agitator and scraper; Fig. 5, a side elevation of the same.

A marks the chamber in which the lime is placed and into which chlorine gas is introduced. This chamber is formed of the bottom a, side walls a', end walls a^2, and top a^3. These walls are formed with T-irons a^7, on which is formed a wall of concrete or other cement. Heretofore the walls of the chambers of this class have been formed by using timbers and coating them with lead plates. This is expensive, and the walls so formed are not durable. By my construction the walls are not only made durable, but of great strength. The chamber is provided with doors a^5 at each end, which are arranged to swing on hinges a^6; but in the ordinary operation of the device it is not necessary to open these doors. A hopper A′ is arranged on the top of chamber, and an opening from said hopper is provided with a slide a^9, by which it may be opened and closed. Doors are arranged in the bottom of the chamber and they are carried by hinged rods a^{10}, which extend out through the wall of the chamber and are provided at their outer ends with levers a^{11}, by means of which the doors may be closed and opened from outside of the chamber A. The agitator B is placed in the chamber A and is operated from without the chamber by a cable L, which passes through the walls of the chamber and through a tar-box or other gas-trap a^{12} at each end of the chamber. The cable L passes over a drum M at the top of the chamber, and the drum M is provided with a crank m or other motor by which the cable L may be moved to and fro in the chamber.

Any desired agitator may be provided by means of which the lime may be agitated during the time it is subjected to the chlorine gas, but I prefer the mechanism shown in detail in Figs. 4 and 5. The agitator is provided with the frame formed of the sides b and ends b'. At the ends of the frame are attached shovel-blades C, and these are inclined (those at the outer edge being inclined to move material inwardly) so as to throw the lime up into ridges as the said blades are passed through the lime. At the center of the frame is journaled an axle D in a box b^2. A wheel D′ is mounted on this shaft D and also a sprocket-wheel D^2. A chain d runs from the sprocket-wheel D^2 to a sprocket-wheel E′, which sprocket is journaled on the shaft E. The shaft E is journaled in a box b^3 on the side of the frame. A clutch F is arranged to lock the sprocket-wheel E′ with the shaft E. This clutch is provided with the lever F′, by which it may be thrown into and out of engagement. The lever F′ is fulcrumed at f on the arm b^4, and said handle extends out to the end of the frame. The two sprocket-wheels G G are fixed on the shaft E, and sprocket-chains g g run from these wheels to the sprocket-wheels H on the shafts

I. The shafts I are journaled in boxes b^5, secured to the frame. Arranged on the shafts I are series of spiders J, on which are agitating-plates *j*, the length of the plates being such as to just clear the floor upon which the agitator is resting. Each spider is arranged so as to operate upon a ridge formed by one of the shovel-blades C. The operation of this part of the machine will be readily apparent. The agitator is drawn back and forth in the chamber by means of the cable L. The wheel D′, sustaining a large part of the weight of the frame, rapidly rotates, through the intermediate mechanism, the agitating-plates *j*. The effect of this of course is to throw the lime in the form of a dust with great violence, and consequently keep the lime in a thorough state of agitation. The lime so agitated is thoroughly exposed to the chlorine gas, so that the chemical union takes place very quickly and very thoroughly, and by this thorough stirring of the lime there is less chance of any injury to the product.

At each end of the frame there are guides b^6, in which are placed scraper-boards K. Rods *k* run from these boards to the levers K′, which are fulcrumed at *k* on a central part of the frame b^{10}. Arms b^7 extend up from the ends of the frame in the path of the ends of the levers K′, and these arms b^7 are provided with a series of perforations b^8. The lever K′ may be secured to these arms by a pin b^9, so that the scraper-boards K may be set at any level desired. Hand-holes a^{13} are provided in the doors a^5, by opening which a hand may be inserted to operate the levers K′ and also the clutch-lever F′. After the chemical union of chlorine and lime is effected the clutch F may be thrown out of engagement and the levers K′ operated, so as to lower the scraping-plates K. The doors A^2 may be opened, and the product can then be scraped through the openings normally closed by the doors A^2 and the chamber thus discharged. The central door is made somewhat narrower than the end doors in order to allow the passage of the wheels D′. At each side of the wheels D′ is placed a plate C′, the purpose of which is to clear the surface of the floor in front of the wheels, so that the frame may be carried the same distance from the floor at all times.

It will readily be seen from the foregoing that the chamber may be recharged and discharged and the entire operation effected without any one entering the chamber or handling directly the product.

It is well known that in making bleaching-powder under the present processes there is great injury to the health of the workmen. By my process such injurious effects are largely obviated.

What I claim as new is—

1. In a device for forming bleaching-powder and the like, the combination of a chamber for confining the gas and lime; means for agitating the lime while subjected to the gas; a cable for actuating said means extending from said means within the chamber to without the chamber; and means for sealing the opening through which said cable passes.

2. In an agitator for agitating lime for the formation of bleaching-powder, the combination of the frame; a series of shovel-blades carried by said frame and arranged to form ridges in the body of lime through which they are passed; a series of agitating-plates arranged to move more rapidly than the frame and to operate upon the ridges so formed; and means for actuating said agitating-plates.

3. In an agitator for agitating lime for the formation of bleaching-powder, the combination of a frame; a wheel carrying said frame; agitating-plates carried by said frame and arranged to move more rapidly than the frame; a power-transmitting mechanism for transmitting the movement of said wheel to said agitators; shovel-blades carried by said frame and arranged to form ridges in the material through which the device is passed in the path of the agitator-plates.

4. In a device for forming bleaching-powder, the combination of a chamber arranged to confine lime and gas; an agitator comprising agitator-plates adapted to enter and throw the material from the floor of said chamber when moved at sufficient speed; mechanism for actuating said agitator-plates with sufficient speed to effect the throwing of the material through the movement of said plate; and means for sealing the opening in the walls.

5. In a device for forming bleaching-powder, the combination of a chamber arranged to confine lime and gas; an agitator comprising a frame adapted to be moved to and fro across the floor of said chamber, and agitator-plates carried by said frame and arranged to agitate material spread upon the floor of said chamber as said frame is moved to and fro across the floor; mechanism passing through the walls of the chamber for actuating said frame and plates from without the chamber; and means for sealing the opening in said walls through which said mechanism passes.

6. In a device for forming bleaching-powder, the combination of a chamber for confining lime and gas, an agitator comprising a frame; agitating-plates carried by said frame; mechanism passing through the walls of said chamber for moving the said frame from without the chamber; means for sealing the opening in said walls, through which said mechanism passes; mechanism actuated by the movement of said frame for actuating said plates; and means for actuating said frame from without the chamber.

7. In a device for forming bleaching-powder, the combination of a chamber for confining the gas and lime; of an agitator comprising a frame; a series of shovel-blades carried by said frame and arranged to form ridges through the material, through which the frame

is passed; a series of agitating-plates carried by said frame and arranged to operate upon the ridges so formed; and means for actuating said frame and plates from without the chamber.

8. In a device for producing bleaching-powder, the combination with the chamber for confining gas and lime; of an agitator arranged in said chamber; a frame for carrying said agitator; means actuated by the movement of said frame for actuating said agitator; a scraper carried by said frame; a clutch device for throwing out the agitating mechanism when the device is desired to be used as a scraper.

9. In a device for producing bleaching-powder, the combination with the chamber for confining gas and lime; of an agitator arranged in said chamber; a frame for carrying said agitator; means actuated by the movement of said frame for actuating said agitator; a scraper carried by said frame; a clutch device for throwing out the agitating mechanism when the device is desired to be used as a scraper; and means for actuating said agitator and scraper from without the chamber.

10. In a device for producing bleaching-powder, the combination of a chamber for confining gas and lime, said chamber having openings in the bottom thereof; doors for closing said openings; means for actuating said doors from without the chamber, an agitator arranged in said chamber; said agitator comprising a frame and wheel carrying said frame; agitating-plates carried by said frame and actuated by the movement of said wheel; scraping-plates carried by said frame; means for adjusting the height of said plates; clutch mechanism for throwing out said agitating mechanism; a cable extending from said agitator to without the walls of said chamber for actuating said agitator.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK F. SCHMELZER.

Witnesses:
J. M. SHERWIN,
H. C. LORD.