

(No Model.)

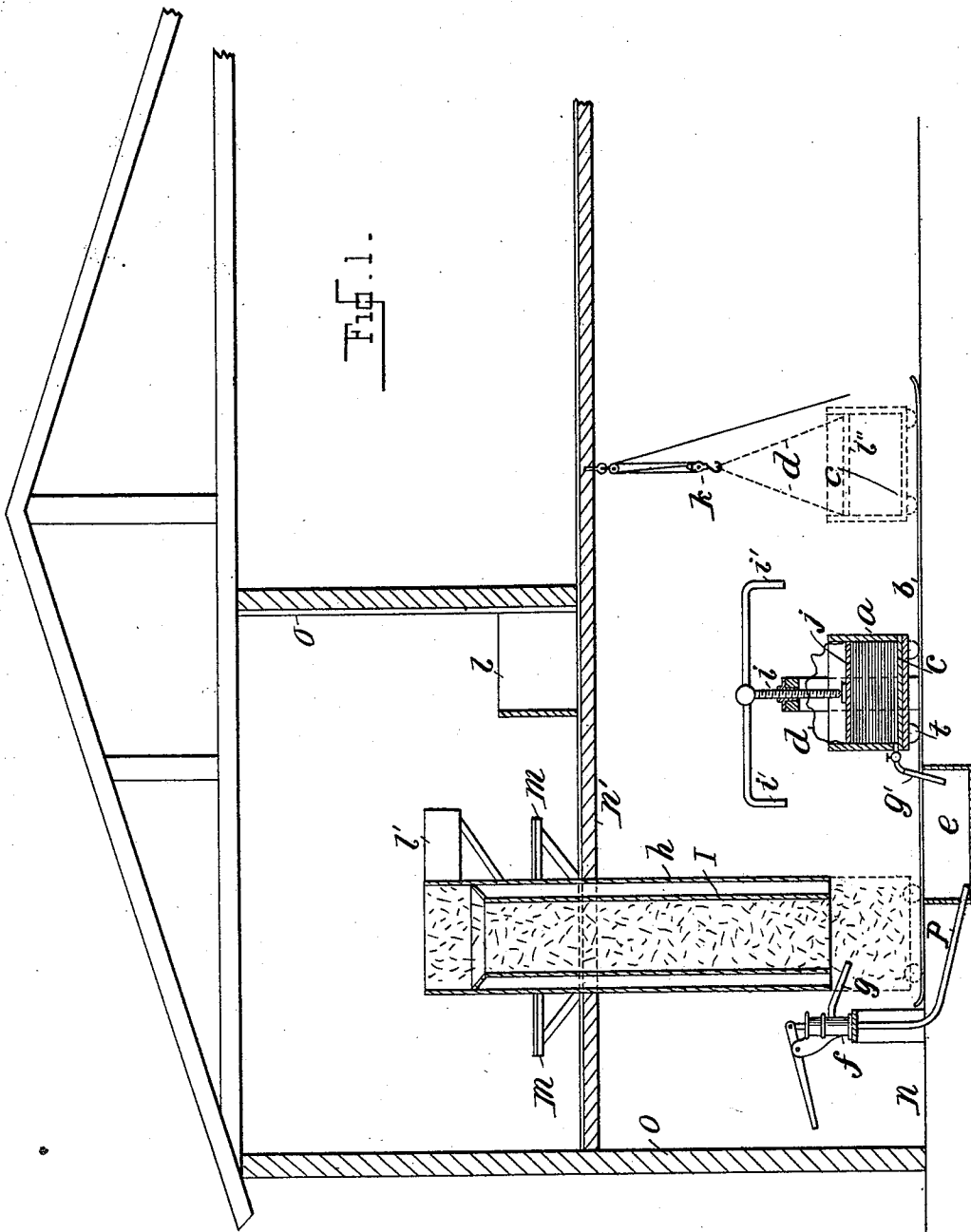
3 Sheets—Sheet 1.

C. W. JEFFERSON.

PROCESS OF MAKING MICA INSULATING PLATES.

No. 497,324.

Patented May 16, 1893.



Witnesses

Wm. A. Courtland

Liscadia M. Linnan.

Inventor

Charles Wilkin Jefferson,
By his Attorney.

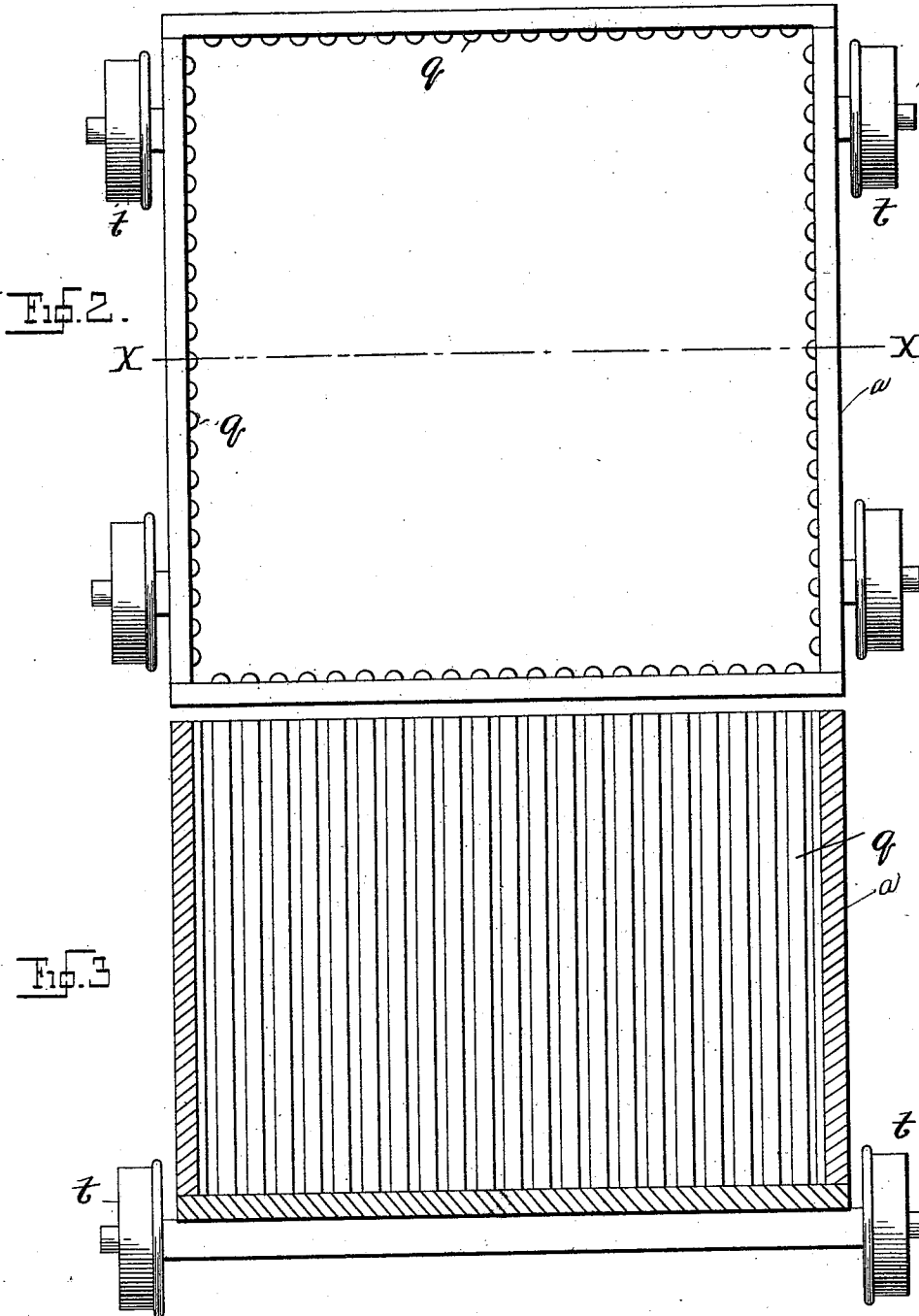
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Wm. A. Courtland
Loreadia M. Lennan

Inventor
Charles Wilkin Jefferson,
By his Attorney,
Edward H. Thompson.

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3 Sheets—Sheet 3.

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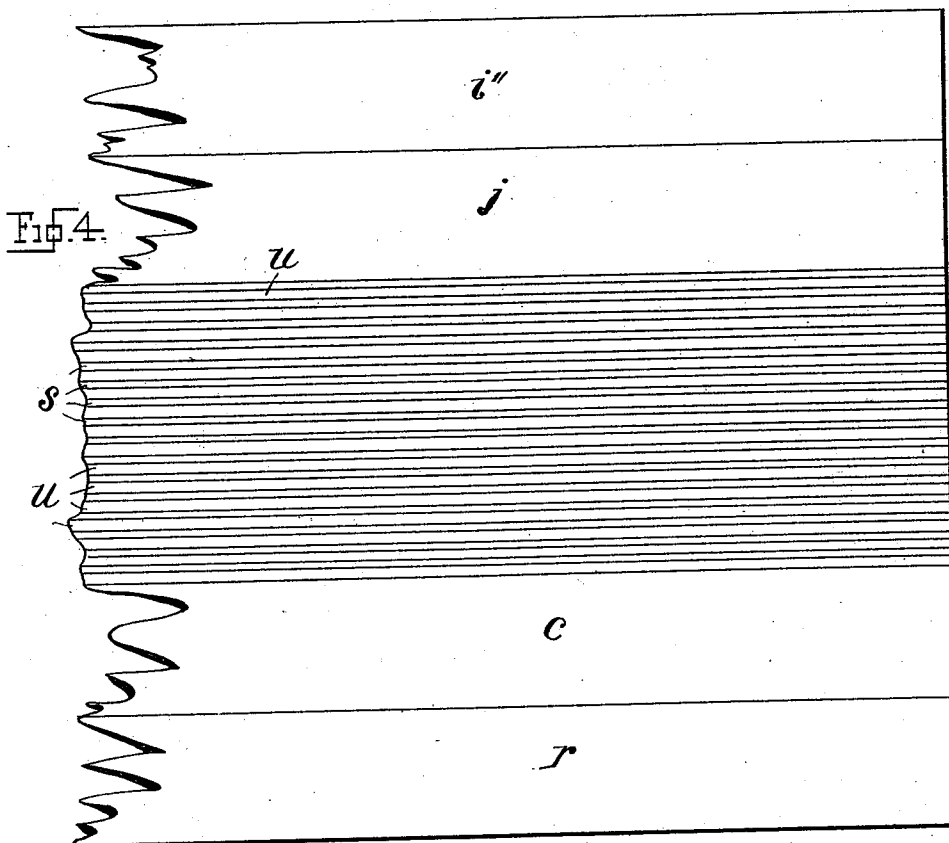
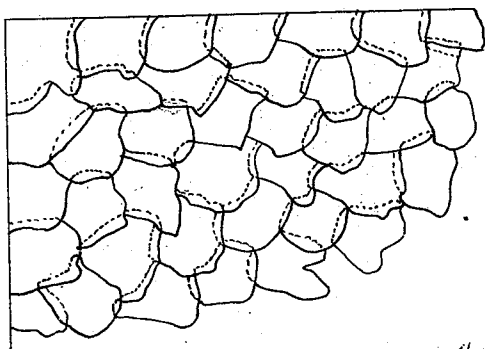


Fig. 5.



Witnesses

Wm. A. Coutland

Louisia M. Linnan

Inventor

Charles Wilkins Jefferson,
By his Attorney,

Edward P. Thompson

UNITED STATES PATENT OFFICE.

CHARLES WILKIN JEFFERSON, OF SCHENECTADY, ASSIGNOR TO EUGENE MUNSELL & CO., OF NEW YORK, N. Y.

PROCESS OF MAKING MICA INSULATING-PLATES.

SPECIFICATION forming part of Letters Patent No. 497,324, dated May 16, 1893.

Application filed February 15, 1893. Serial No. 462,784. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILKIN JEFFERSON, a subject of the Queen of Great Britain, and a resident of Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Processes of Making Mica Insulating-Plates, of which the following is a specification.

In former patents granted to my colleagues and myself, are described products of mica and cement manufactured, as far as one of the steps is concerned, by laying on by hand upon a foundation plate, layers of sheets of mica with overlapping edges and films of cement between the sheets.

Further details of the process and product may be seen in the patents referred to, namely:—Patents Nos. 483,646 and 483,653, both issued October 4, 1892; and Nos. 491,707 and 491,708, both issued on February 14, 1893. The process forming the basis of the subject matter of said patents requires a great deal of time and expert labor, but has been carried on in practical manufacture for about two years for all qualities of mica plates, for want of some better way which now forms the subject matter of this application and which has had a fair trial of several months. I would have it understood that the old process is still useful for the finer class of work, while the new one herein set forth is applicable to purposes where a second quality of mica plate is called for.

In order that the present invention may be understood in all its details, the accompanying drawings are described.

Figure 1 is a vertical section of the plant, showing not only the apparatus but also some of the building which assists in giving some idea as to the practical manner of installation in any ordinary factory. Fig. 2 is a plan of the car or vat without the false bottom. Fig. 3 is a vertical section of the vat at the line X in Fig. 2. Fig. 4 is a vertical section of the contents of the vat including its bottom board and the upper plate of the press. Fig. 5 is a plan of a sheet made by the process. The irregular marks outline the pieces of mica.

The apparatus for carrying out the inven-

tion consists of the combination of a horizontally movable vat *a*, a track *b* upon which the vat rests, a false bottom *c* in the vat and having a flexible rope *d* by which it may be lifted, a well *e* for cement located under the track, a pump *f* whose outlet *g* is above the level of the vat, which has an outlet *g'* above the well, a stationary shaft *h* having a cloth lining *I*, whose lower opening terminates above the vat, and whose upper opening is at a distant point—in practice preferably not less than ten feet and generally about eighteen feet, a press *i* whose upper plate *j* fits within the vat, an elevator or tackle *k* above the level of the vat, for connecting with the false bottom, and other details consisting of boxes *l*, *l'*, for holding the elementary sheets, and a platform *m* on which the operator may stand to throw the sheets down the shaft, which may extend, as shown, from the vat on one floor *n* of the building through the next floor *n'* above of the same building *o*.

The vat is movable along the track so as to occupy any of the three positions shown; namely, the middle, represented in full lines under the press *i*, the right hand end in dotted lines under the elevating tackle and at the left dotted under the shaft *h*. The well *e* is shown below the track between the vat in its middle and left hand positions. The pump connects with the vat by the supply pipe *p*. The vat has ribs *q* so that cement may circulate freely during the process to any part of the vat the bottom of which is lettered *r*. Iron plates *s* are employed for purposes hereinafter set forth.

t represents the wheels of the car or vat.

The operation is as follows:—The false bottom *c* is lowered into the vat, which is run under the shaft, where cement, generally shellac dissolved in alcohol, is pumped from the well *e*, until a certain depth of liquid cement is obtained depending upon how many plates are to be made. Into the top of the shaft are thrown the elementary sheets of which the plates are to be formed. They are introduced pell mell without regard to whether parallel to one another, vertical or horizontal. They fall so that some of the sheets are parallel to vertical planes and some parallel to horizontal planes, until near the middle,

when they are more generally horizontal. Near the bottom, they finally vibrate in a small angle above and below a horizontal plane and fall flat upon the sticky cement into which they gradually sink and lie on one another irregularly but all substantially parallel to one another. An important feature is that the sheets are evenly distributed, although the same are as large as four to six square inches in area. The layer is comparable to that of snow which has fallen in the absence of a wind. If the sheets were not thrown in from such a height that they become substantially horizontal before reaching the cement, some would be vertical and in oblique positions ready to be broken by the next step or pressure of the press *i* under which the vat is run, and the handles *i'* turned until all superfluous cement is expelled into the well *e* for further use. In order that the process may be made use of economically on a large scale, iron plates *s* are placed in the vat before removing to the press, and more sheets thrown down the shaft, and so on until there are alternate layers of iron or other stiff plates *s* and mica and cement layers *u*. Then a board *i''* is laid on top, and the whole pressed by the upper plate *j* of the press. The vat is moved under the tackle *k* and the bottom *c* with its load of mica plates and iron plates is drawn up and the same allowed to drain. The whole mass is divided up into separate parts, which may be done because of the iron plates. Each iron plate with its contents, mica and cement, is subjected to great pressure and moderate heat. The excess of alcohol is thus removed, and the excess of cement is expelled and the mica sheets are brought very closely together forming a complete plate consisting almost wholly of mica, which may be stamped out to any size, or the plates may be split to any thinness. In order that the opposite surfaces may be as smooth and as parallel to one another as possible, they are ground off to the desired amount and degree of accuracy.

The cement used for making these mica plates, &c., varies of course according for what purpose the plates, &c., are going to be used. For electrical purposes shellac or other high resistance gum is suggested. For fire-proof purposes silicate of soda, Portland cement, &c., or a thin solution of clay which in that case would require the plates to be burned in a kiln like brick and tile. These various plates, slabs, &c., have also value for decorative purposes, and can be used for building roofing or wherever a waterproof, fire proof and refractory material is required.

I claim as my invention—

1. The hereinbefore described process of

manufacturing a mica plate, from mica sheets and cement, consisting in distributing the sheets evenly upon and within the cement while in a liquid condition, by the action of the gravitation and resistance of a fluid during the fall of said sheets through the fluid from such a height above the said cement that the sheets become substantially parallel to a horizontal plane before reaching the cement, expelling the excess of cement by pressure, and finally drying the plate thus formed.

2. The hereinbefore described process of manufacturing a mica plate, from mica sheets and cement, consisting in distributing the sheets evenly upon and within the cement while in a liquid condition, by the action of the gravitation and resistance of air during the fall of said sheets through the air from such a height above the cement that the sheets become substantially parallel to a horizontal plane before reaching the cement, expelling the excess of cement by pressure, and finally drying the plate thus formed.

3. The hereinbefore described process of manufacturing a mica plate, from mica sheets and cement, consisting in distributing the sheets evenly upon and within the cement while in a liquid condition, by the action of the gravitation and resistance of a fluid during the fall of said sheets through the fluid from such a height above the cement that the sheets become substantially parallel to a horizontal plane before reaching the cement, expelling the excess of cement by pressure, drying the plate thus formed, and finally grinding the surfaces of the plate until opposite sides are substantially parallel.

4. The hereinbefore described process of manufacturing a mica plate, from mica sheets and cement, consisting in distributing the sheets evenly upon and within the cement while in a liquid condition, by the action of the gravitation and resistance of a fluid during the fall of said sheets through the fluid from such a height above the cement that the sheets become substantially parallel to a horizontal plane before reaching the cement, adding to the mass of mica under the cement, a separating sheet as a foundation for more mica, repeating the above steps until several layers of cement and mica are obtained, expelling the excess of cement by pressure, and finally drying the plates.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 8th day of February, 1893.

CHARLES WILKIN JEFFERSON.

Witnesses:

ALLAN H. JACKSON,
SAMUEL W. JACKSON.