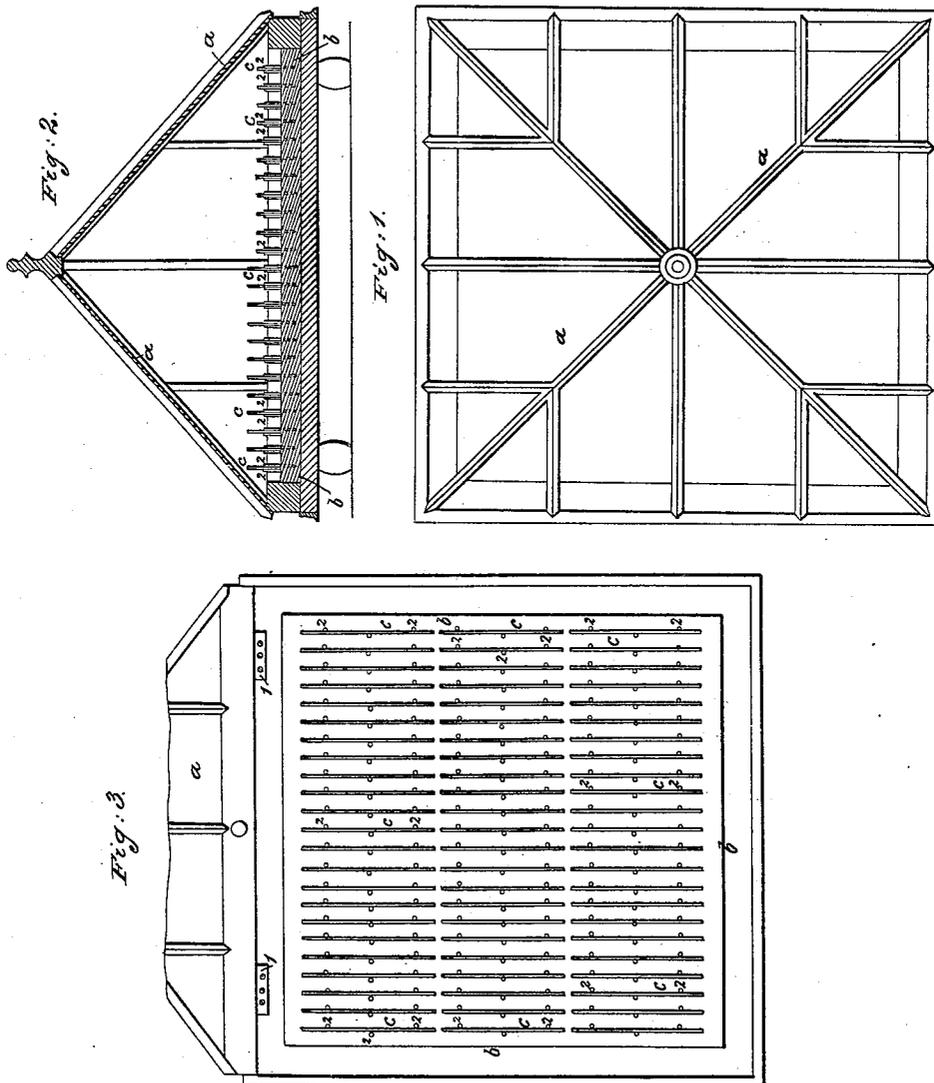


W. M. WELLING.  
Bleaching Ivory Plates.

No. 13,928.

Patented Dec. 11, 1855.



Witnesses:

*Samuel W. Conell.*  
*Thomas G. Harrell.*

Inventor:

*Wm M. Welling.*

# UNITED STATES PATENT OFFICE.

WM. M. WELLING, OF BROOKLYN, NEW YORK.

## DEVICE FOR BLEACHING IVORY.

Specification of Letters Patent No. 13,928, dated December 11, 1855.

*To all whom it may concern:*

Be it known that I, WILLIAM MANDEVILLE WELLING, of the city of Brooklyn, in the county of Kings and State of New York, have invented, made, and applied to use certain new and useful Improvements in Methods of Bleaching Ivory Plates; 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 drawing, making part of this specification, wherein—

Figure 1, is a plan of the case used to contain the ivory plates, Fig. 2, is a vertical section of the same, and Fig. 3, is a plan of the bottom of the case as with the ivory plates in place thereon.

The like marks of reference designate the same parts.

The nature of my said invention consists in so placing and sustaining ivory plates on their edge within a case, that the light and heat shall act on both sides of the plate and thoroughly and perfectly bleach the same.

The usual method of bleaching ivory plates, such as those used for piano, melodeon, and organ keys, and for other purposes is to expose the same beneath glass cases on their side to the action of the sun's rays; and when one side is bleached, or partially so, the ivory is turned over to bleach the opposite side; this occupies considerable time both in the bleaching as well as in turning them over, and besides this the ivory is very apt to become warped in consequence of only one side being exposed at a time to the sun's rays, and great difficulty also arises in bleaching both sides to a uniform extent in consequence of the inequality in the light during the given intervals of time that the alternate sides are exposed to its action. To overcome some of the foregoing difficulties it has been proposed to arrange the plates of ivory in such a manner that they could be turned over by mechanical appliances as often as necessary, but the same becomes costly and does not bleach both ends uniformly.

My invention overcomes all the before mentioned obstacles, and enables me to accomplish a more perfect bleaching operation in about one third less time than that usu-

ally occupied, and consequently requiring a proportionate less number of cases, and less quantity of stock for carrying on a given amount of business, but my invention derives its chief importance from the perfection with which the bleaching operation is performed, and that without requiring or cracking the ivory and without warping or handling from the time it is placed in the cases until the bleaching operation is completed.

The glass case *a*, which I make use of is constructed of a pyramidal form and attached by hinges 1, at one of its sides so that it can be easily opened or closed on the bottom *b*, around which bottom the glass case shuts tightly as seen in Fig. 2.

2, 2, are rows of small pins so placed as to sustain the ivory plates *c*; on their edge; and these pins should be as small and short as will accomplish their purpose. For the plates of piano forte, melodeon and organ keys, I find it most convenient to make use of three pins, one near the center on one side of the plate, and two on the other side near the ends thereof as shown.

The cases filled with ivory plates set on edge in this manner are to be exposed to the action of the sun's rays, on the roof of a suitable building or other convenient place, and the cases are to be so set that the plates stand in nearly the north and south line, so that in the morning the sun will shine on one side of the ivory plates, while the other receives the reflected light and heat from the pyramidal glass case, and the next plate of ivory; and in the afternoon the opposite action takes place. I am thus enabled to bleach both sides of the ivory plates simultaneously, thereby consuming far less time, preventing warping, and avoiding the usual handling or turning operations and accomplishing the beneficial results herein before set forth.

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

The method herein described and shown of bleaching ivory plates, by so placing and sustaining them on their edges in a suitable manner, that the sun's rays shall act with uniform power and bleach said plates equally on both sides in the manner and as specified; thereby dispensing with the usual method of

turning the plates over to expose alternately  
 the flat sides to the action of the light, and  
 preventing warping or damage to the ivory  
 and accomplishing said bleaching operation  
 5 in far less time and more perfectly as speci-  
 fied.

In witness whereof I have hereunto set

my signature this second day of November  
 1855.

WM. M. WELLING.

Witnesses:

LEMUEL W. SERRELL,  
 THOMAS G. HAROLD.