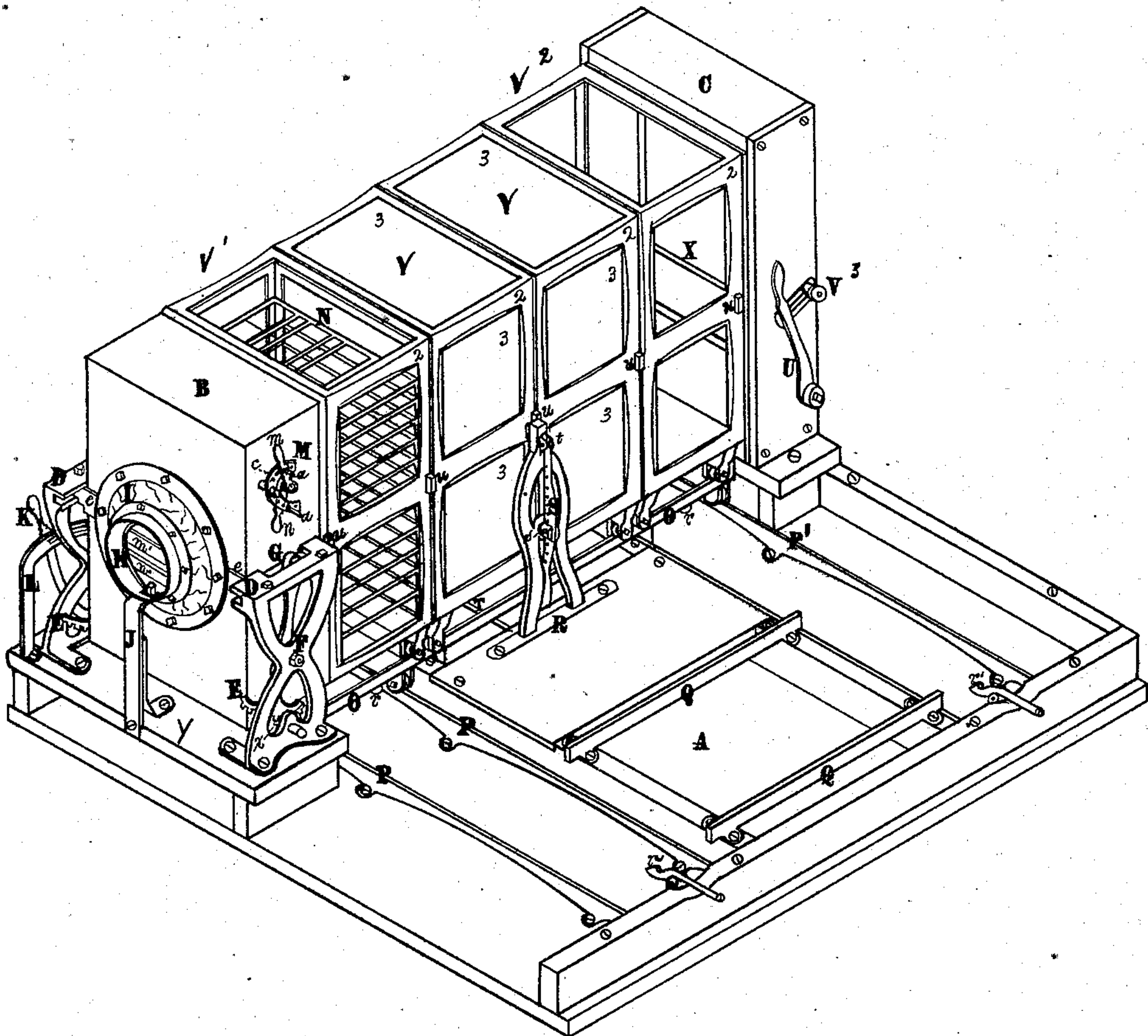


3 Sheets -- Sheet 1.

**A. H. SANDHOLZER.**  
**Glue-Driers.**

No. 158,391.

Patented Jan. 5, 1875.



**Fig. 1.**

**Witnesses;**

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**Inventor;**

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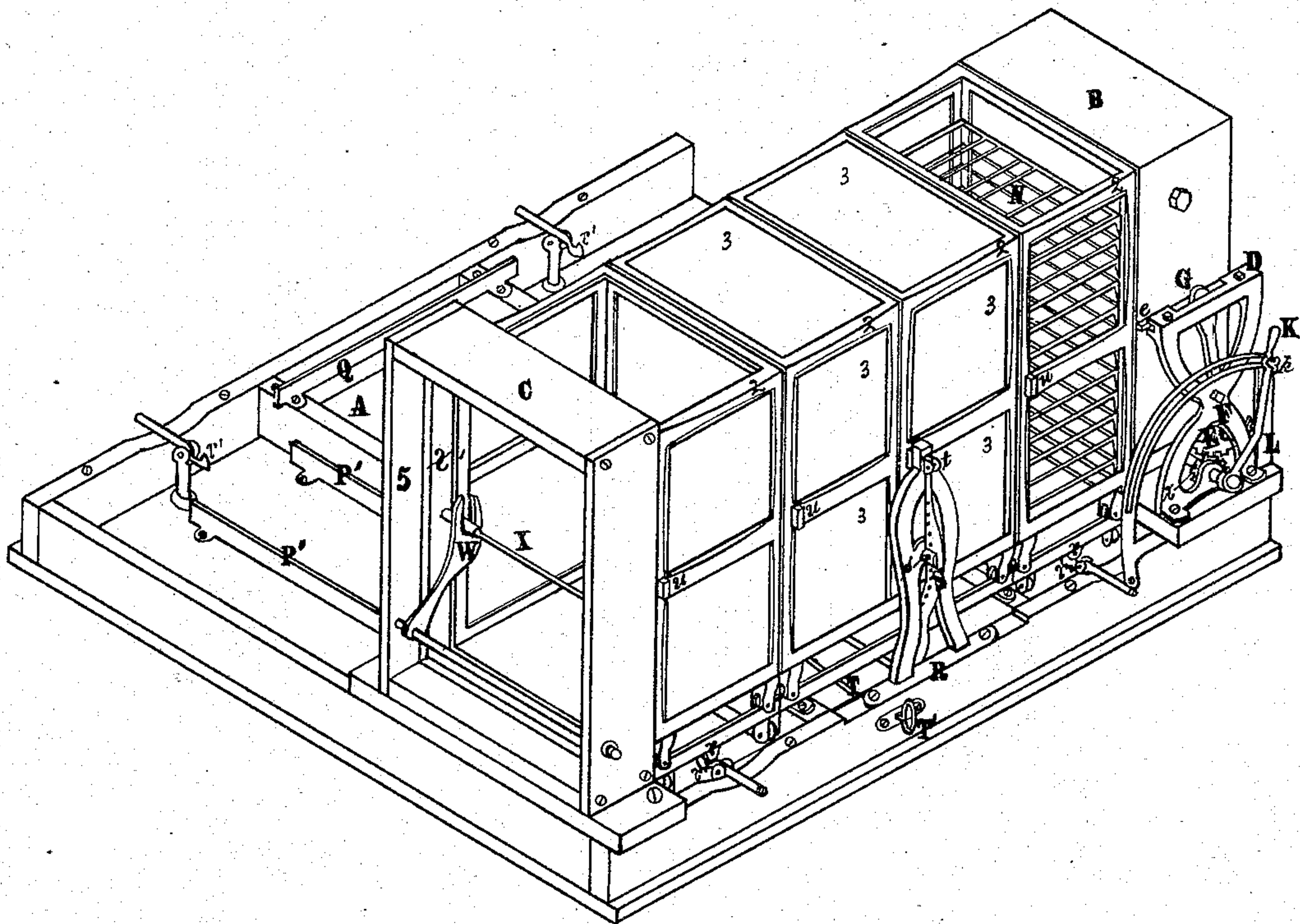


Fig. 2.

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Sam<sup>l</sup> C. Oliver.

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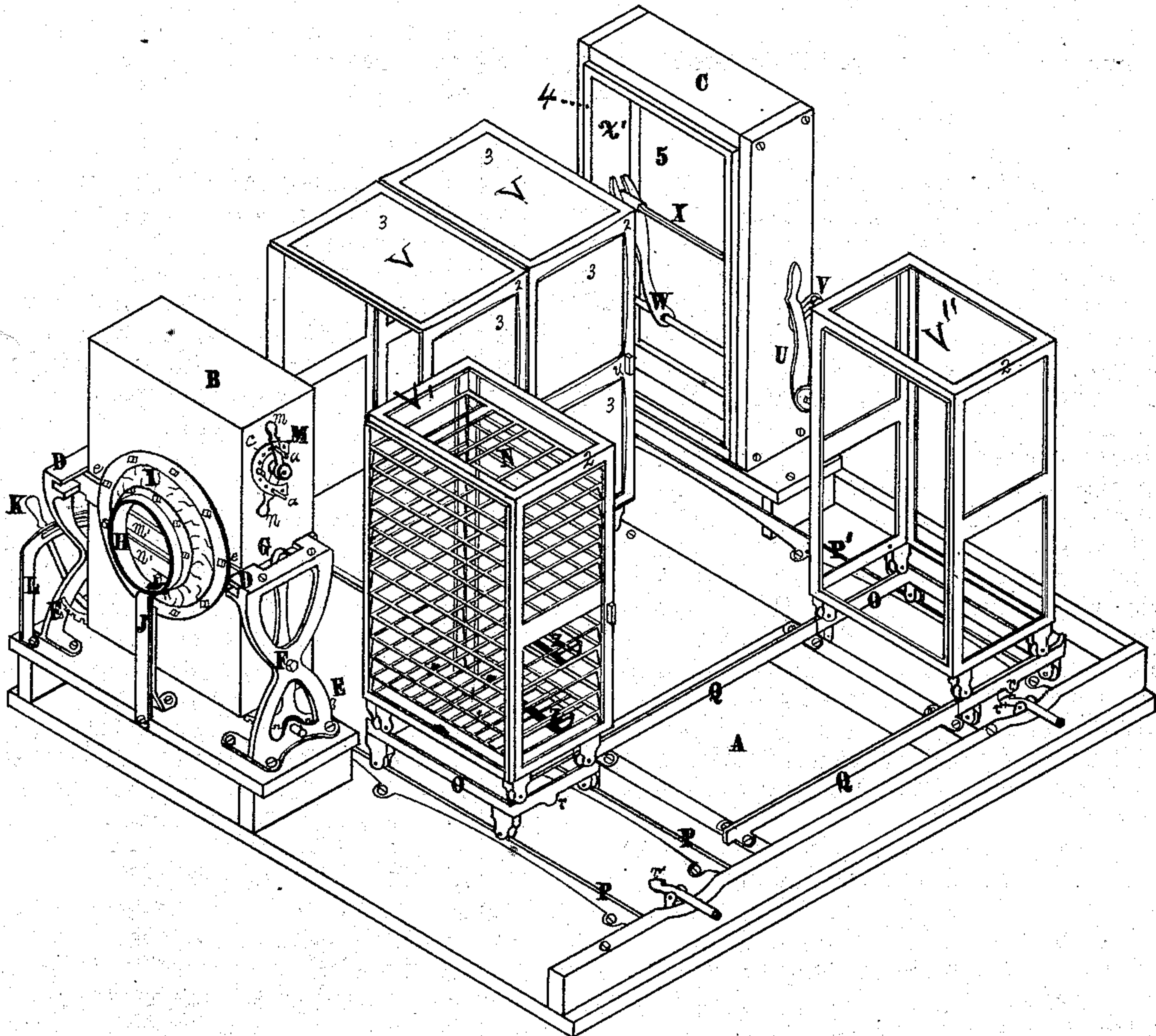


Fig. 3.

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Sam<sup>l</sup> C. Oliver

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# UNITED STATES PATENT OFFICE.

ADRIAN H. SANDHOLZER, OF NEEDHAM, MASSACHUSETTS.

## IMPROVEMENT IN GLUE-DRIERS.

Specification forming part of Letters Patent No. **158,391**, dated January 5, 1875; application filed November 17, 1874.

*To all whom it may concern:*

Be it known that I, ADRIAN H. SANDHOLZER, of Needham, in the county of Norfolk, State of Massachusetts, have invented a certain new and useful Improvement in Apparatus for the Manufacture of Glue, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view of my improved apparatus, showing the front side and induction end of the evaporating-trunk. Fig. 2 is a like view, showing the rear side and eduction end of the trunk; and Fig. 3, a perspective view, showing the railway and method of changing the crates or cars.

Like letters of reference indicate corresponding parts in the different figures of the drawing.

My invention relates more especially to the drying or evaporating mechanism; and consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a simpler, cheaper, and more effective device of this character is produced than is now in ordinary use.

In the drawings, A represents the floor or ground of the room in which the apparatus or mechanism is located, and P P' two parallel railways or tracks, between which, at each end, there are two short elevated railways, Q T, running at right angles to the rails P P'. A series of six crates or cars, B C V V V<sup>1</sup> V<sup>2</sup>, are arranged in line at one side of the floor A, the end crate C being stationary, the crate B movable, but not detachable, and the others portable, and provided underneath with small sheaves or trucks, designed to roll only in the direction of the cross-railways Q T. Arranged to run upon the tracks P P' are two carriages, O O, consisting of a frame-work mounted on wheels. These carriages are supplied at each end with cross-rails corresponding with the rails Q T, and carry the crates V<sup>1</sup> V<sup>2</sup>, the crates V V being mounted on the elevated railway T. The crates V V V<sup>1</sup> V<sup>2</sup> are constructed with frame-works 2 2 of cast metal, and have open sides, or are formed in such a manner that when

placed in juxtaposition, as shown in Fig. 1, they make a continuous hollow trunk-opening through the series from B to C. The panels 3 3 are of thin sheet metal cast into the frames this mode of construction being designed to obviate the shrinkage which occurs when the crates are made of wood, and also to lessen the cost, as compared with crates having sheet-metal panels and wrought-metal frames. Projecting from the sides of the crate B are two flanges or ribs, e e, which work freely in grooves in the upper ends of the standards D D, attached to the bed Y. These standards support the crate, and, with their grooves and the flanges e e, form ways or rundlets, in which the same is moved back and forth by the lever K. Pivoted to the standards D at F, and to the sides of the crate B at G, are two levers, E, having segmental racks at their lower ends, which engage with the pinions x on the shaft to which the lever K is attached. There is also a slotted curved stop-plate, L, and thumb-screw k, for setting the lever K in any desired position. The frames 2 2 of the crates are provided at the edges or corners with alternate flanges and rabbets, or are tongued and grooved in such a manner that the tongue or flange on the crate V<sup>1</sup> enters the rabbet or socket in the crate B, and the flange on the crate V enters the groove in crate V<sup>1</sup>, and so on throughout the series. Attached to the standard J there is a flanged pipe coupling or thimble, H, which is connected with the crate B by the elastic collar I, and within the crate, opposite the opening in the coupling, are two dampers or deflecting-plates, m' n', which are operated, respectively, by the levers m n, connected thereto by a system of rods. (Not shown.) A semi-circular stop-plate, M, provided with holes c and pins a, is for the purpose of adjusting the plates in any desired position. Fitted to slide in the crate C there is a frame, X', having the cross-bar X and a rubber-packed face, 4. This frame is attached by its inner edge to the inner side of the crate by means of the corrugated cloth or sheet-rubber 5, in such a manner as to make an air-tight connection and still permit the frame to be freely advanced to the crate V<sup>2</sup>, and again retracted by means of the lever U and rocker-shaft W, or adjusted in any desired position by the stop V<sup>3</sup>. Within the



crates  $V V V^1 V^2$  are a series of removable racks,  $N$ , separated by legs at the corners, and supporting the evaporating or drying pans  $z z$ . The crate  $V^1$  is represented with the panels removed, to show the racks, and  $V^2$  with the panels and racks both removed, to show the construction of the frame; but it will be understood that all of the crates, excepting  $B C$ , are to be provided with panels, racks, and drying-pans. Projecting from the sides of the crates  $V^1 V V V^2$  farthest from the crate  $B$  are studs  $u u$ , and upon either side of the crate  $V$  there is a standard,  $R$ , in which are centrally pivoted the vertically-adjusted levers  $S$ . Jointed to the upper ends of these levers, and working horizontally in apertures in the tops of the standards  $R$ , there are sliding stops or dogs  $t$ , which engage the studs  $u u$ . The lower ends of the levers are connected by horizontal rods to a double crank-shaft, (not shown,) located under the crate  $V$ , and this shaft is operated by the sliding rod  $T'$ , the crank-shaft and levers  $S$  being so connected that when the rod  $T'$  is pulled, both of the dogs  $t t$  will be disengaged from the studs  $u u$ , and vice versa.

From the foregoing the nature and operation of my invention will be readily obvious to all conversant with such matters.

In using my improved apparatus, the pans  $z z$  in the crates  $V V V^1 V^2$  are filled with liquid glue, and the crates arranged in line, as shown in Figs. 1 and 2, the rod  $T'$  being pulled to detach the stops  $t$ . The movable crate  $B$  is then forced against the crate  $V^1$  by the lever  $K$ , crowding all of the crates together, and pushing them against the fixed crate  $C$ , the connection being then made complete by forcing the sliding frame  $X'$  against the crate  $V^2$  by the lever  $U$ , and securing it by the stop  $V^3$ , the lever  $K$  being also secured in such a manner as to hold the crates together by means of the stop  $k$ .

It will be seen that the crates, when in this position, form a continuous hollow trunk or chamber, filled with racks and pans.

Hot or cold air, as preferred, is now forced into the crate  $B$ , through a pipe attached to the thimble  $H$ , by means of a hot-blast fan-blower, or in any other convenient manner, the air passing through the entire series of crates, and out of the apparatus through any proper eduction-pipe connected with the crate  $C$ , the blast being regulated and a more or less direct current admitted to the trunk by means of the deflecting-plates or dampers  $m' n'$ .

As evaporation will take place more readily in the crate  $V^1$ , being nearest the point where the hot air enters, the crates require to be changed from time to time during the process, which is accomplished as follows: The rod  $T'$  is pulled to cause the stops  $t t$  to engage the studs  $u u$ , thereby locking the crates  $V V V^2$  in position; the lever  $K$  is then moved to retract or withdraw the crate  $B$ , leaving the crate  $V^1$  free, which is then run out by means of its carriage  $O$  upon the rails  $P P$  until it is

brought opposite to the transverse elevated railway  $Q Q$ , onto which it is run, and the carriage  $O$  returned to position. The rod  $T'$  is now pulled to unlock the crates  $V V V^2$ , which are pushed forward, one of the crates  $V$  running upon the carriage  $O$ , next the crate  $B$ , and the crate  $V^2$  running off the carriage  $O$ , which is next the crate  $C$ , onto the rails  $T$ . The carriage  $O$ , so freed, is then run forward to the rails  $Q$ , and receives the crate  $V^1$ , with which it returns to the position first occupied by the crate  $V^2$ , the frame  $X'$  being removed for that purpose. The crates, being now all in position, may be again forced together by the levers  $K U$ .

As the carriages  $O$  are run out upon the tracks  $P P'$  they are caught and held in a proper position for the crates to be transferred to the tracks  $Q$  by means of the gravitating pawls  $r r$ . The object of the elastic collar  $I$  is to permit the crate  $B$  to be advanced without disturbing the position of the pipe thimble or flange  $H$ . The grooves or joints between the crates are designed to be packed with rubber, or some other suitable substance.

I have found that the liquid in the crate  $V^1$  is liable to be evaporated or dried unevenly when the hot air is admitted in a direct current. I therefore provide the plates  $m n$  for deflecting or breaking up the current on its entrance to the trunk, or graduating the force with which it impinges upon the pans.

It will be obvious that the construction of the crates, and the means of locking the same together and rendering the joints tight, also the number of the same, may be varied without departing from the spirit of my invention; also, that other means may be employed for changing the position of the same, as described, and for supporting the pans therein.

It will be seen that by my improved process a very large amount of glue may be manipulated with comparative ease, while the facility with which the crates can be changed, whereby the pans in which the greatest evaporation has taken place are regularly brought to the rear and fresh ones substituted, renders the process far more perfect than would otherwise be possible.

Having thus explained my invention, what I claim is—

1. In an apparatus for drying or evaporating glue, the following instrumentalities, to wit: In the improved glue-drier described, an open-sided crate having a cast-metal frame and sheet-metal panels, the panels being cast in, substantially as and for the purpose specified.

2. A series of open-sided detachable crates provided with pans, in combination with a device or devices for holding the crates together to form a continuous hollow trunk, through which air is passed for drying or evaporating purposes, substantially as specified.

3. In combination with the crates  $V^2 V V^1$ , the stationary crate  $C$  and movable crate  $B$ , substantially as and for the purpose specified.



4. The crate B, standards D D, levers E E, lever K, and pinions *x x*, combined to operate substantially as and for the purpose described.

5. The fixed crate C, provided with the sliding frame X', combined and arranged to operate substantially in the manner and for the purpose set forth.

6. In combination with the crates V V V<sup>1</sup> V<sup>2</sup>, the mechanism for locking or holding a por-

tion of the crates while one is being removed, substantially as and for the purpose specified.

7. The standards R R, levers S S, stops *t t*, studs *u u*, and rod T', combined to operate substantially as and for the purpose set forth.

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