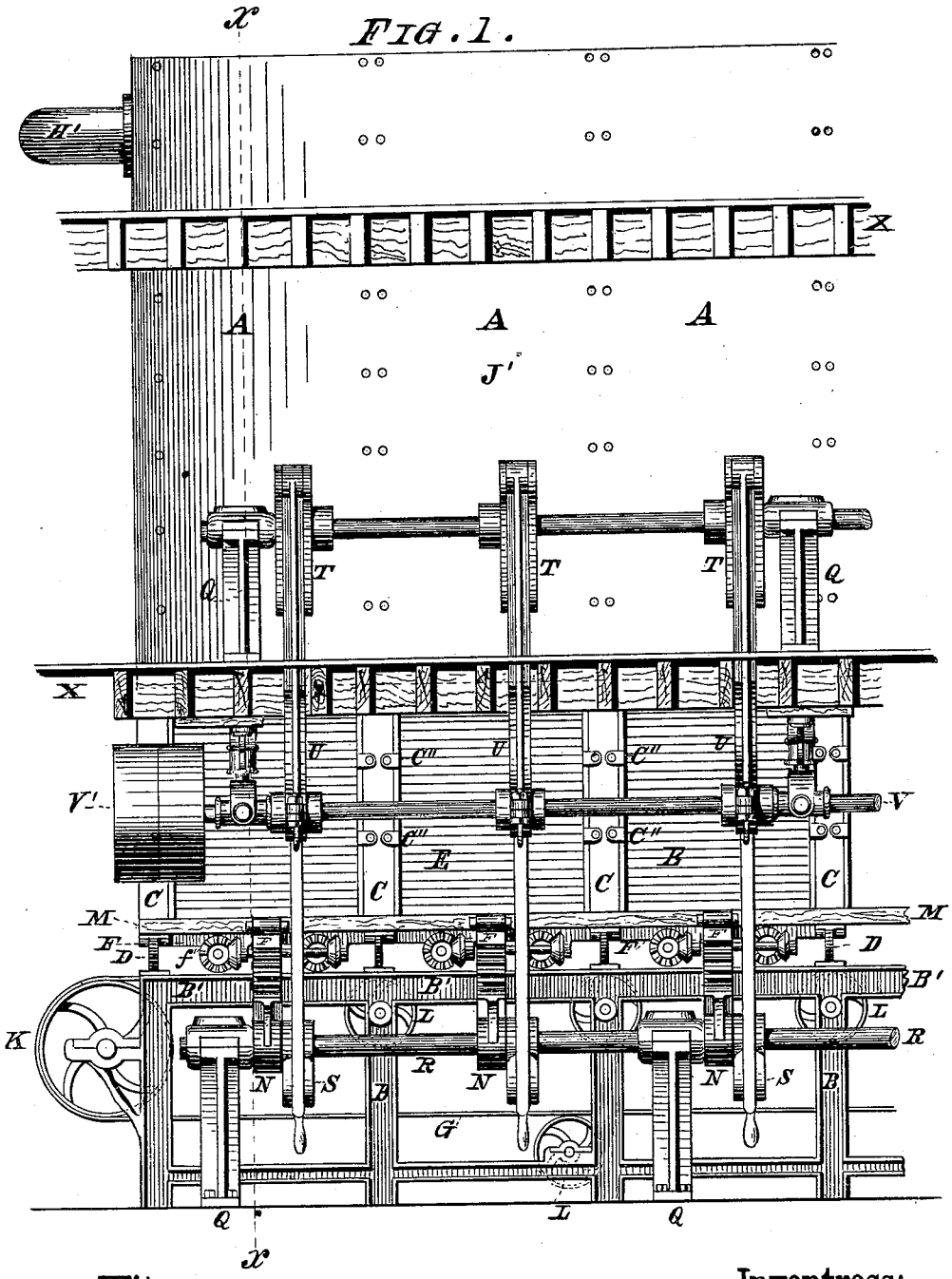
A. MEY.

Drier.

No. 205,803. Patented July 9, 1878.

FIG. 1.



Witnesses:

Frank Kirsch

Chas. Bossart

Inventress:

Amelia Mey,

by Michael J. Stark

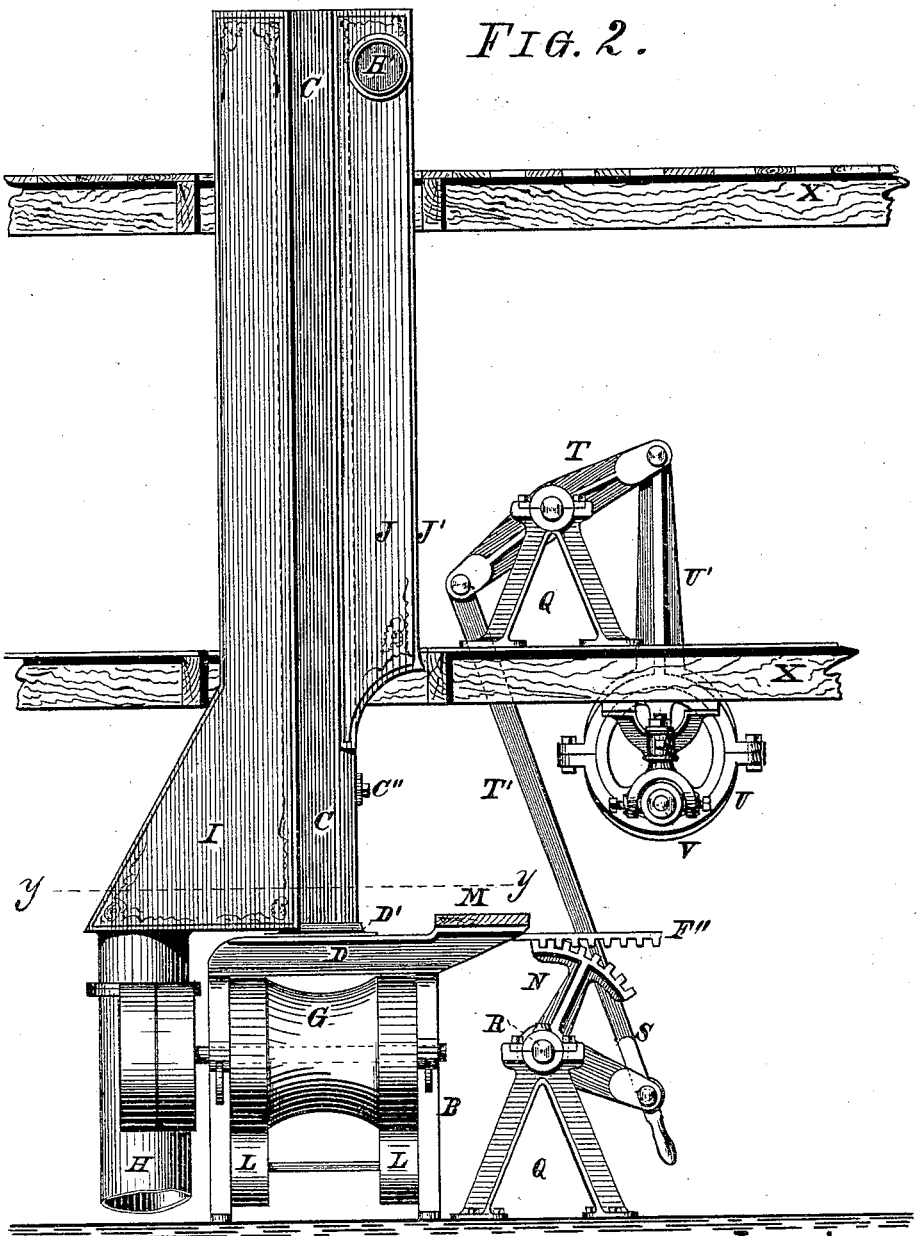
atty.

A. MEY.

Drier.

No. 205,803. Patented July 9, 1878.

FIG. 2.



Witnesses:

Frank Hirsch

Chas. Bevsar

Inventress:

Amelia Mey,

by Michael J. Stark

atty.

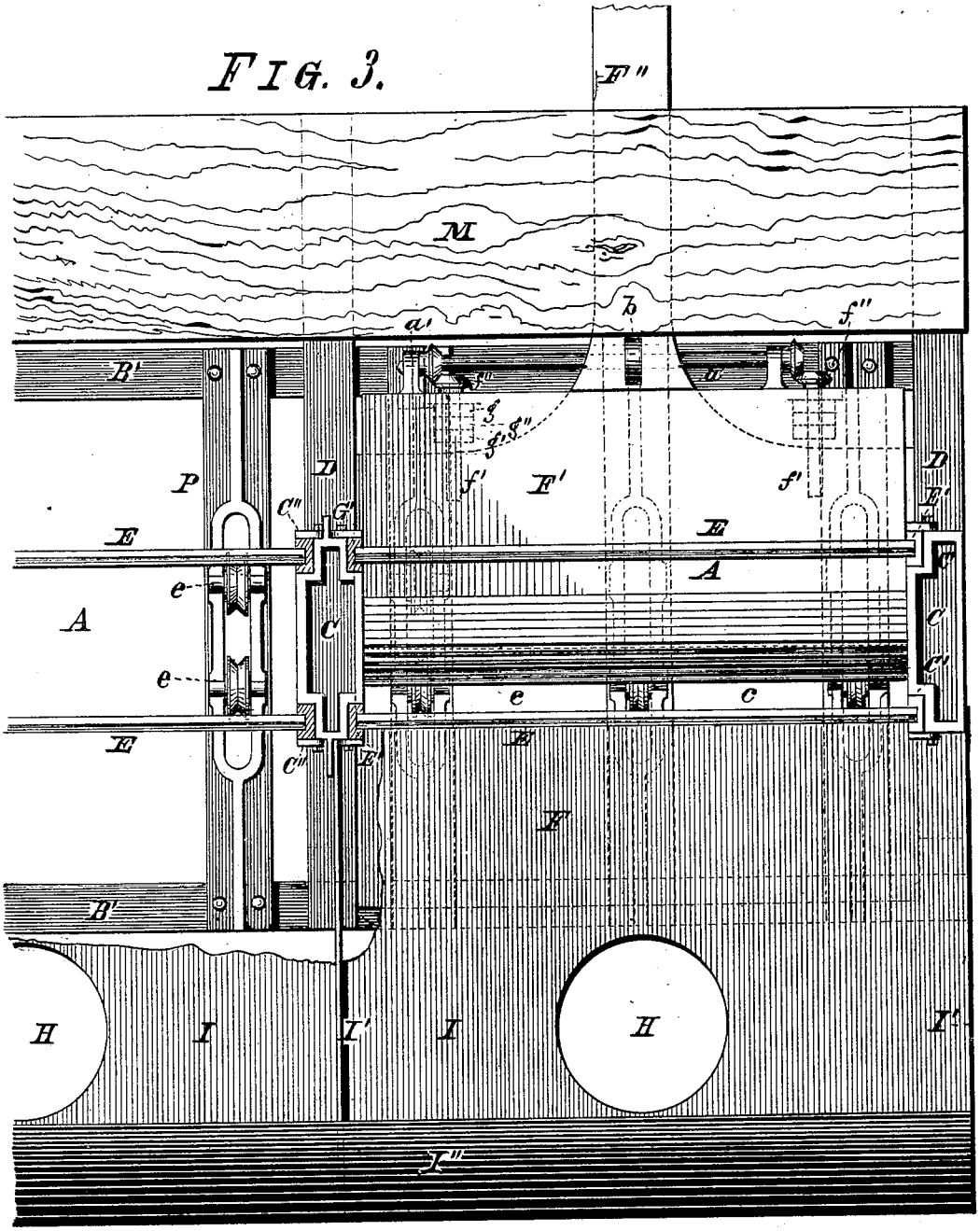
4 Sheets—Sheet 3.

A. MEY.

Drier.

No. 205,803. Patented July 9, 1878.

FIG. 3.



Witnesses:

Frank Hissch

Chas. Bessart

Inventress:

Amelia Mey,

by Michael J. Stark

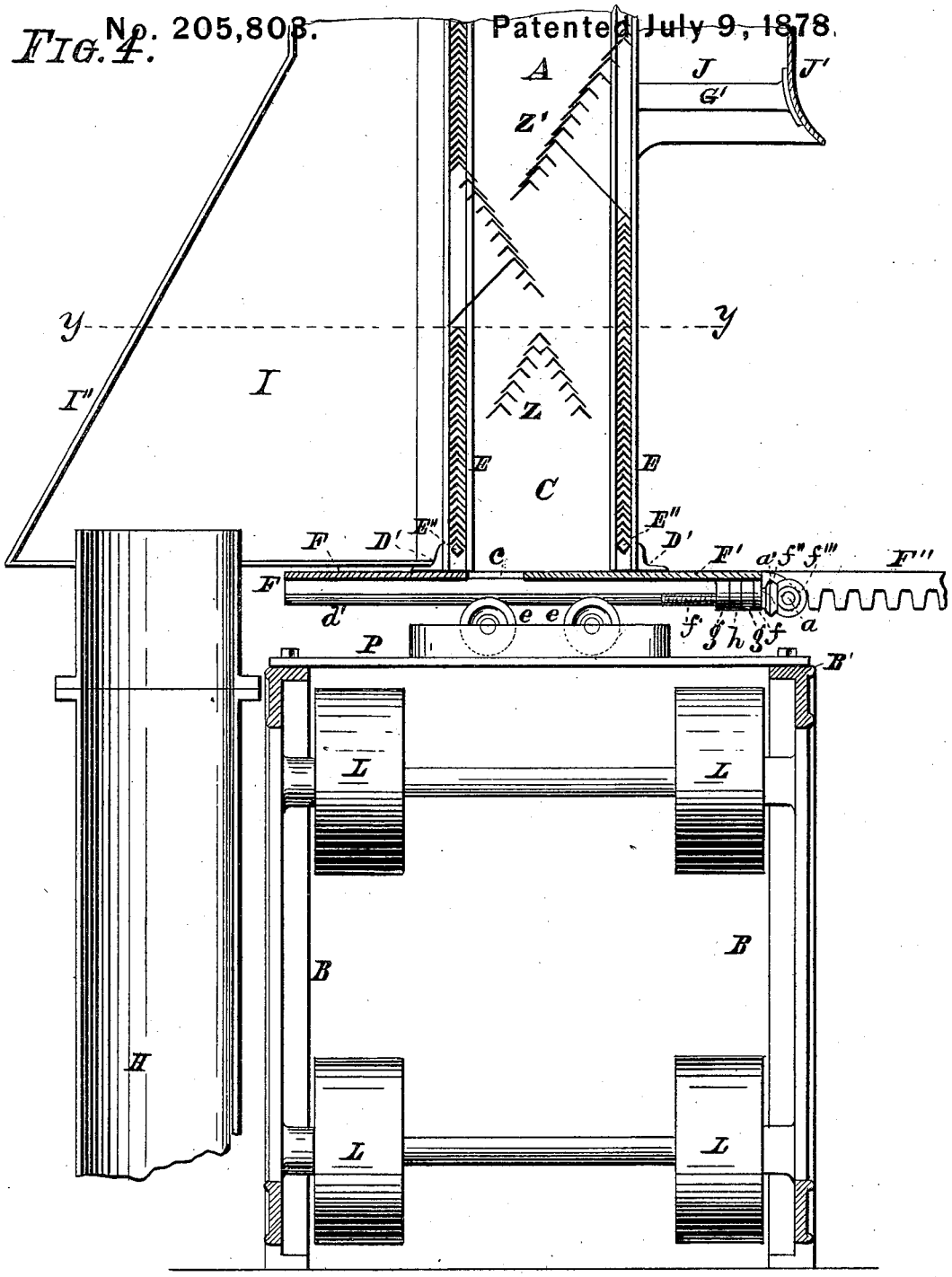
atty.

A. MEY.

Drier.

No. 205,808. Patented July 9, 1878.

FIG. 4.



Witnesses:

Frank Hirsch

Chas. Bussart

Inventress:

Amelia Mey

by Michael J. Stark

atty.

UNITED STATES PATENT OFFICE.

AMELIA MEY, OF BUFFALO, NEW YORK.

IMPROVEMENT IN DRIERS.

Specification forming part of Letters Patent No. **205,803**, dated July 9, 1878; application filed March 15, 1878.

To all whom it may concern:

Be it known that I, AMELIA MEY, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on a Drier; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has special reference to driers and coolers for grain, malt, barley, wheat, sand, salt, and similar articles and substances; and it consists in the peculiar arrangement of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings hereinbefore mentioned, Figure 1 is a front, and Fig. 2 a side, elevation of my improved drier and cooler. Fig. 3 is a horizontal sectional plan in line *y y* of Fig. 2. Fig. 4 is a fragmental sectional elevation in line *x x* of Fig. 1.

Like letters of reference indicate corresponding parts in all the figures.

This drier and cooler is composed of one or more compartments, through which the grain or other substance to be dried or cooled is caused to move by gravitation, while a current of hot or cold air is forced transversely through the said compartments, slides having an adjustable discharge-aperture being arranged to reciprocate below, and serving as a bottom to said compartments, to control the discharge of the contents of said compartments. The grain or other substance passing through these slides drops upon an apron-conveyer, to be transported to bins, &c., from whence it is either removed for storage, or, by means of an elevator, carried to the top of the apparatus, to be again passed through the compartments.

A A are a series of chambers or compartments, erected upon a suitably-constructed frame-work or foundation, B. These compartments are produced by a series of columns, C, placed a suitable distance apart upon beams D, placed transversely upon the top rails B′ of the frames B. The longitudinal vertical walls of these compartments are formed of a series of slats, E, bent into a V or U shape, and placed one upon the other within frames E′. The bottom of said compartments is formed of slides F, which are reciprocated by means of suitable mechanism, as hereinafter more fully explained.

The frame B consists of two properly-constructed metallic skeleton sides, having, at suitable places, bearings for the shafts of the conveyer-pulleys K, and bearing or carrier pulleys L of an apron-conveyer, G, operating between the sides of the frame B, below the slides F. Upon the top rails B′ of these frames are secured a series of transverse beams, D, which project over the front side of the frame B a certain distance, and carry on their ends a foot-board, M. Upon the beams D are placed longitudinally two angle-irons, D′, to which the columns C are bolted. These columns C consist of hollow castings of a height and depth corresponding to that of the chambers A; and they have in front and rear recesses or offsets C′, within which the frames E′, embracing the slats E, are placed, said frames being held in the recesses by plates C″, bolted to said columns and overlapping said frames E′. The columns C have in front projecting bars G′, serving as a medium for attachment of the jacket J′, and on their rear walls I′, for attachment of the jacket I″, said walls I′ forming partitions in the air-chamber I, to separate this chamber into as many compartments as there are compartments A.

The frames E′ are bolted together by means of rods E″, Fig. 4, so that any of the frames with the slats E can be removed entire from the compartments by removing the clamps C″. This arrangement is a very desirable feature in driers, since it enables me to enter the compartments at any time without much trouble and loss of time.

The slides F consist of two separate parts, F F′, the latter being a movable plate sliding upon the former. The plate F has in front a projecting rack, F″, by means of which it is vibrated horizontally from the segmental wheel N. The sliding plate F′ has projections or lugs *f*, which retain screw-spindles *f′*. The plate F has two downwardly-projecting lugs, *g g′*, between which is placed a nut, *h*. The front end of the screw-spindles carry bevel-wheels *f″*,

meshing with similar bevel-wheels f''' on the axle a, revolving in lugs a' of said sliding plate F′. Upon the axle a is secured a hand or similar wheel, b, by means of which said shaft a is revolved. By turning this shaft in the proper direction, the sliding plate F′ is caused to move upon the plate F, and thus to close or open the discharge-aperture, c, Fig. 4. The lower side of the plate F has V-shaped projections d', forming rails, by means of which the slides are sustained upon guide-wheels e, revolving within bearers or carriers P, fastened upon the top rails B′ of the frames B.

In the accompanying drawings I have illustrated a device for actuating the slides F, consisting of standards Q, carrying a shaft, R. Upon this shaft are movably secured the segmental wheels N, heretofore mentioned, and levers S, secured to said segmental wheels N in any desired manner. These levers S are connected with walking-beams T by means of connecting-rods T′, said walking-beams being operated from eccentrics U by eccentric-rods U′. The shaft V, upon which the eccentrics U are secured, is revolved at a slow speed by pulleys V′, or other gearing. This mechanism is partly secured upon, and partly suspended from, the floorings and ceilings X of the building within which the structure is erected, and driven from any prime motor, in the usual manner, by belting, &c. This mechanism may, however, be varied, and the slides F vibrated by any other well-known and suitable device or devices, without changing the nature of my invention.

In operation, the matter to be dried is placed into the compartments A from their top, and a current of air caused to enter the different air-chambers I through the ducts H, the current being produced by any of the well-known air-compressors, such as a fan, &c. This air passes through the interstices of the slats E into the compartments A, and transversely through the substance to be acted upon, emerging on the opposite side, and carrying with it the moisture or heat of said substance to be either dried or cooled, from whence it is carried off by the duct J in front of the apparatus. This duct J is, by means of the pipe or pipes H′, in connection with a suction-fan or with a flue having a strong draft, (not shown,) which establishes a current in said duct J, and thus removes the impregnated air from the apparatus.

The substance to be dried or cooled is retained in the compartments A a sufficient length of time, and then gradually discharged therefrom through the slides F, the discharge-apertures c in said slides being adjusted to such a size as to retard the downward movement of the substance in the compartments sufficiently to effectually dry or cool the same, as the case may be, while passing through said compartments.

To divide the bulk of the matter passing through the compartments, and thus to allow the current of air to act effectually upon every particle of the same, I place inclined partitions Z horizontally through said compartments. These partitions may be constructed to slope first toward both side walls, and then toward the center, as illustrated at Z, Fig. 4, or alternately from one toward the opposite side, as shown at Z′ of said figure. In this manner the bulk is effectually separated into thin sheets while passing downward, so that the air-current can impinge upon every particle thereof, such being the object of the arrangement heretofore described.

It is obvious that the apparatus may be used as either a drier or cooler, and hence as a drier and cooler combined, hot or cold air being forced into the apparatus, as necessity requires.

To stop the action of any one of the slides F without interrupting that of the remaining ones, the rods T′ are so arranged as to be readily disconnected from the levers S, actuating the segmental wheels N. In this manner, and by making the partitions I′ in the air-chambers I, I am enabled to put any one or more of the drying-compartments A out of operation, which, in case of accident to the slides, or for other reasons, is a very desirable feature.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. A drier or cooler composed of a series of independent compartments, A, having walls formed of V or U shaped metallic slats E, placed one upon the other, each compartment being provided with an air-chamber, I, and having a sliding bottom provided with an adjustable discharge-aperture, substantially as and for the use and purpose specified.

2. A drier or cooler composed of a series of independent compartments, A, having front and rear walls formed of angular slats E, placed into removable frames E′, said compartments being divided by a series of columns, C, forming the end walls for said compartments, and provided with separate air-chambers I, as and for the purpose stated.

3. A drier and cooler embodying the following elements, to wit: A series of compartments, A, each provided with an independent air-chamber, I, and an adjustable sliding bottom, a common discharge-duct, J, and a horizontal conveyer, G, operating below the compartments A, as specified.

4. A drier and cooler in which the end walls are formed of columns C, having offsets C′, and the side walls formed of metallic slats E, set into removable frames E′, as and for the object stated.

5. In a drying and cooling apparatus, the front and rear walls E, composed of V or U shaped metallic slats, placed one above the other into frames E′, said frames being secured together, as described, and held to the apparatus, substantially in the manner as and for the purpose specified.

6. In a drying and cooling apparatus, the walls E, composed of metallic slats, placed one above the other, said slats being placed into

frames E′, secured together by the rod E″, as and for the purpose specified.

7. In driers or coolers, an air-chamber, I, having one wall in common with said drier or cooler, and extending from top to bottom of the same, said chamber being provided with partition-walls I′, separating said chamber into compartments, each of which having an induction-pipe, H, and a discharge through the common wall of said apparatus, substantially as and for the purpose specified.

8. The slides F, composed of two plates, one movably arranged upon the other, with their upper surfaces flush and even, the movable slide being provided with means such as hereinbefore specified for changing the distance between the abutting ends of said plates, as and for the object stated.

9. The slides F, composed of two plates, F F′, the latter being arranged within guides of the former, and provided with means, substantially as specified, for changing its position relative to the plate F, and thereby the size of the aperture *e* between them, as and for the object stated.

10. A bottom for the compartments A, composed of two plates, arranged side by side, with their upper surfaces flush and even, and capable of being adjusted relatively to the distance between them, whereby an adjustable discharge for said compartment is produced, substantially as and for the purpose stated.

11. The discharge-slide for the compartments A, composed of two plates, F F′, operated by the adjusting-screws *f′*, counter-shaft *a′*, with suitable connecting-gearing, said slide being reciprocated underneath said compartment, as and for the purpose stated.

In testimony that I claim the foregoing as my invention I have hereto set my hand and affixed my seal in the presence of two subscribing witnesses.

AMELIA MEY. [L. S.]

Attest:

MICHAEL J. STARK,
FRANK HIRSCH.