

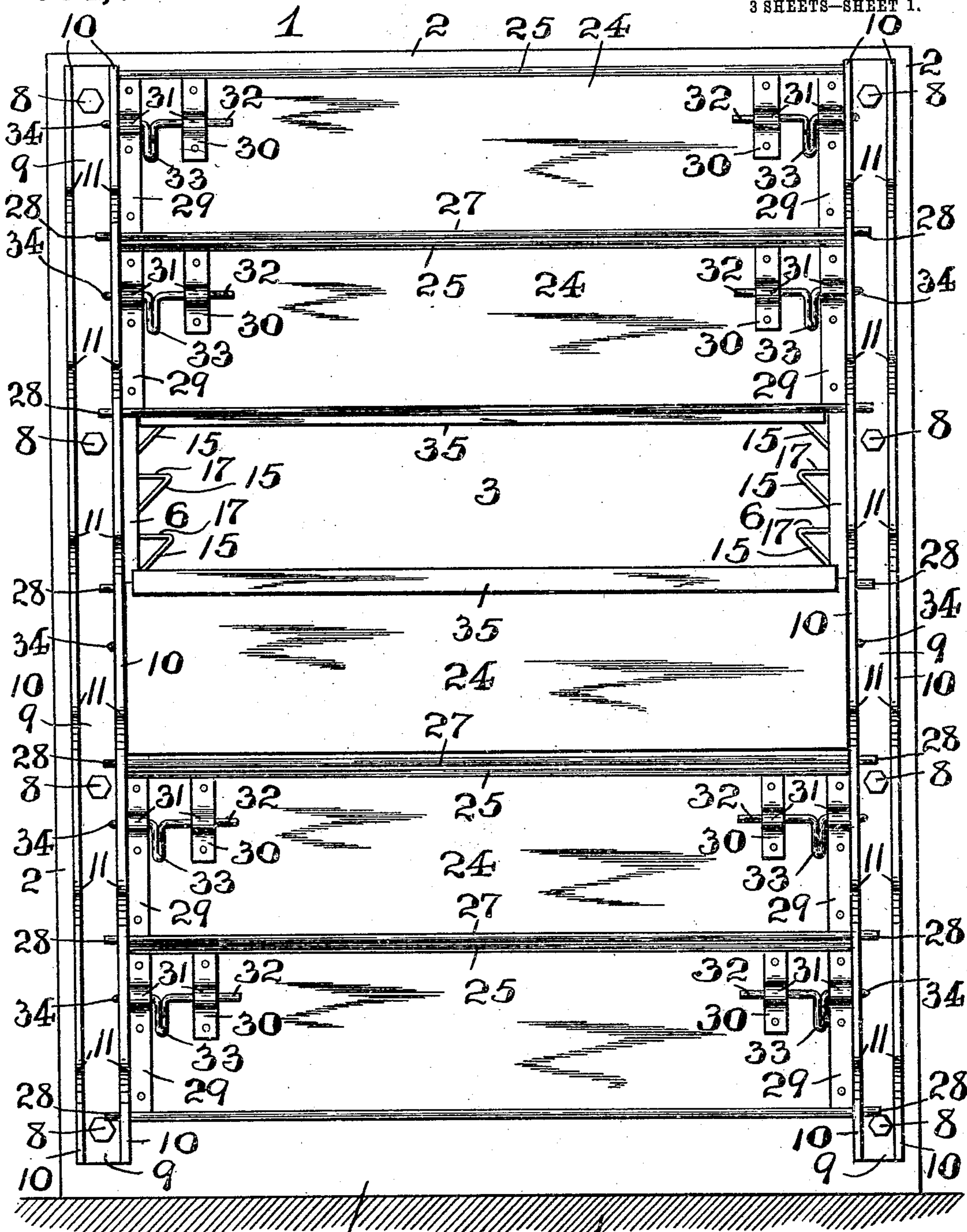
J. KOLLER.  
DRIER OR OVEN.

APPLICATION FILED JULY 29, 1908. RENEWED NOV. 11, 1909.

954,743.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.



WITNESSES:

*F. H. M. Fraentzel*  
*Anna H. A. A. A.*

**Fig. 1**

INVENTOR:

*John Koller,*

BY

*Fraentzel and Richards,*  
ATTORNEYS

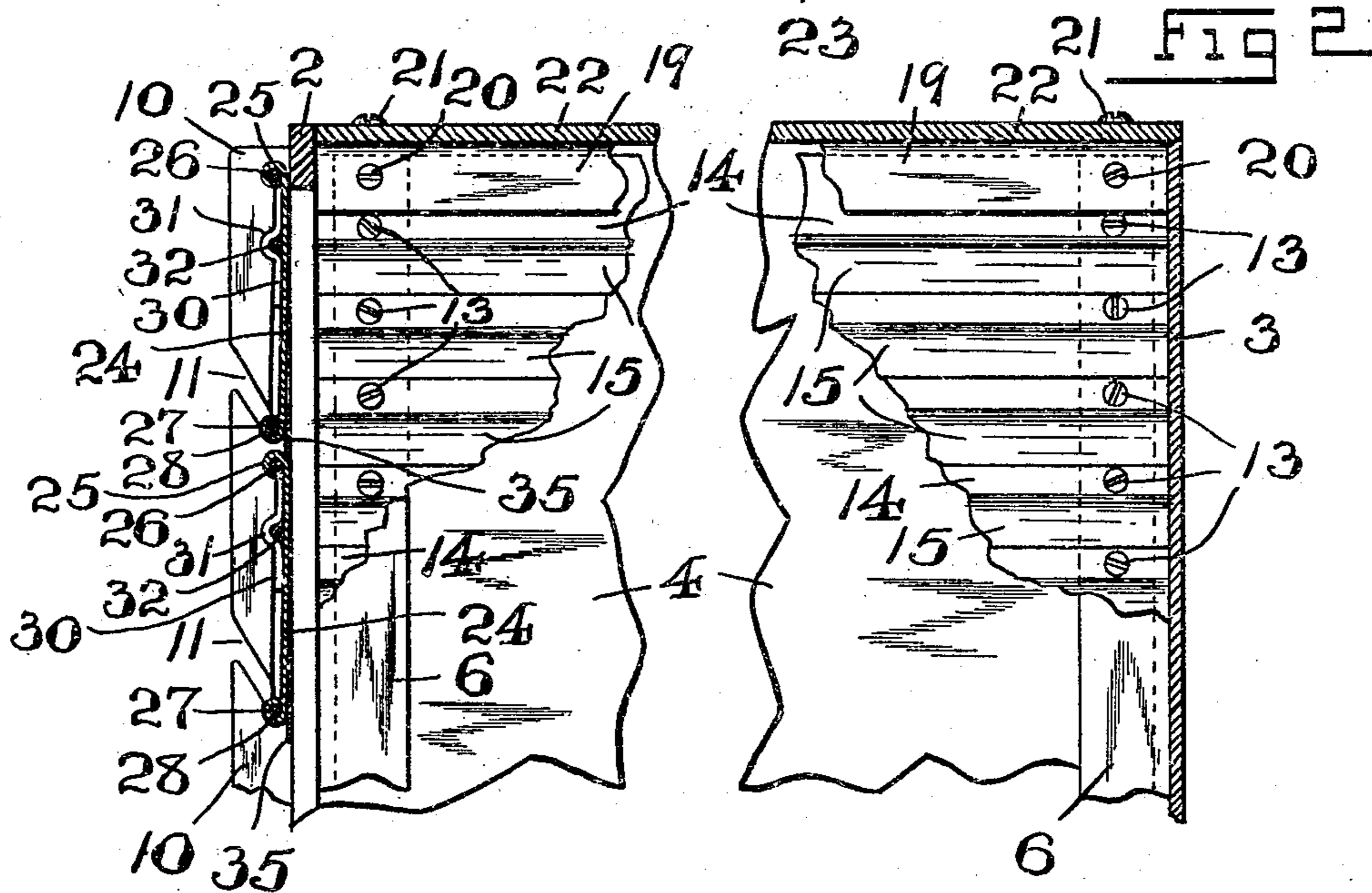
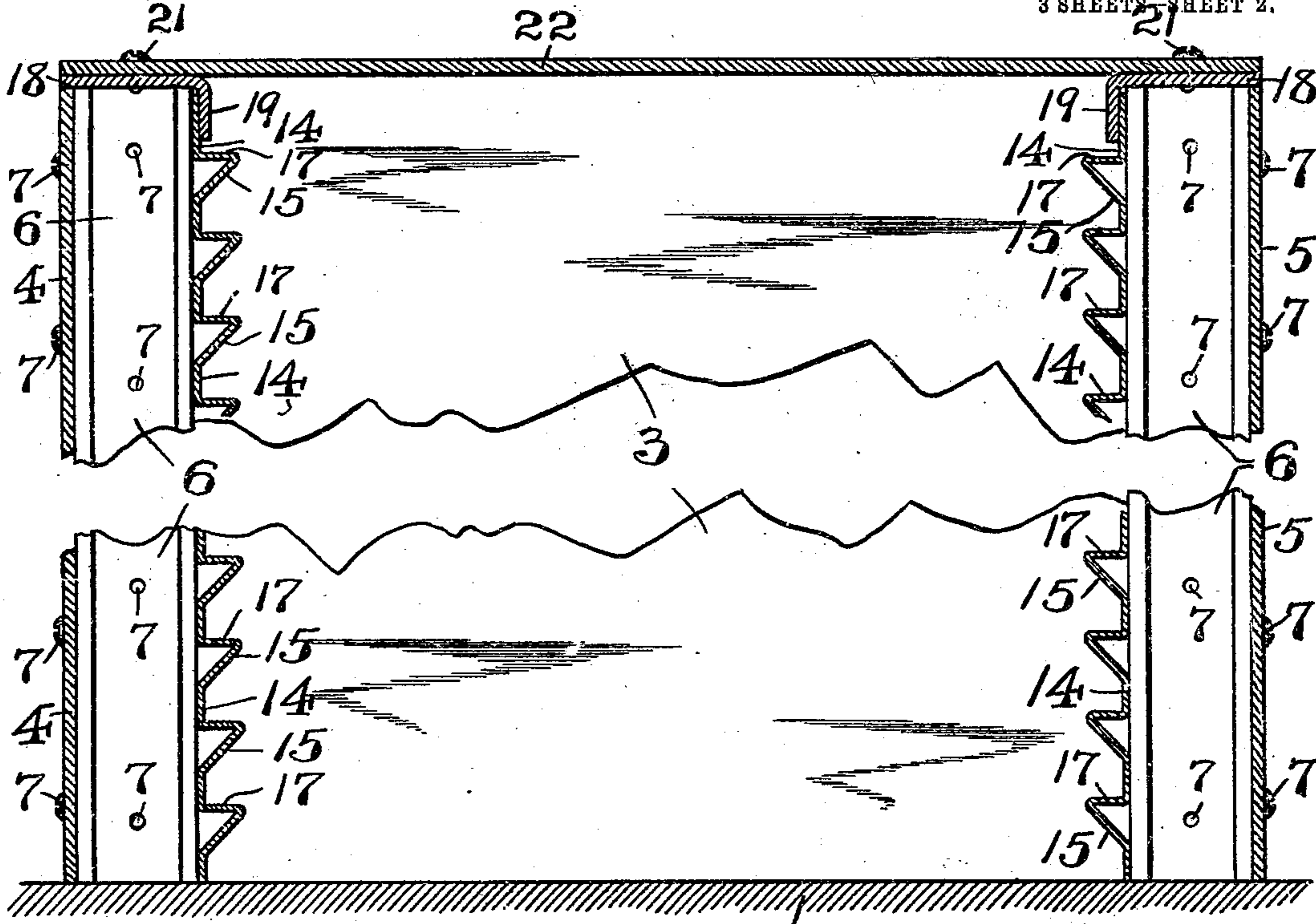
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3 SHEETS-SHEET 2.



**WITNESSES:**

WITNESSES:  
J. H. W. Fraentzel  
Anna H. Aeter.

INVENTOR:

John Koller,

BY  
*Fraentzel and Richards,*  
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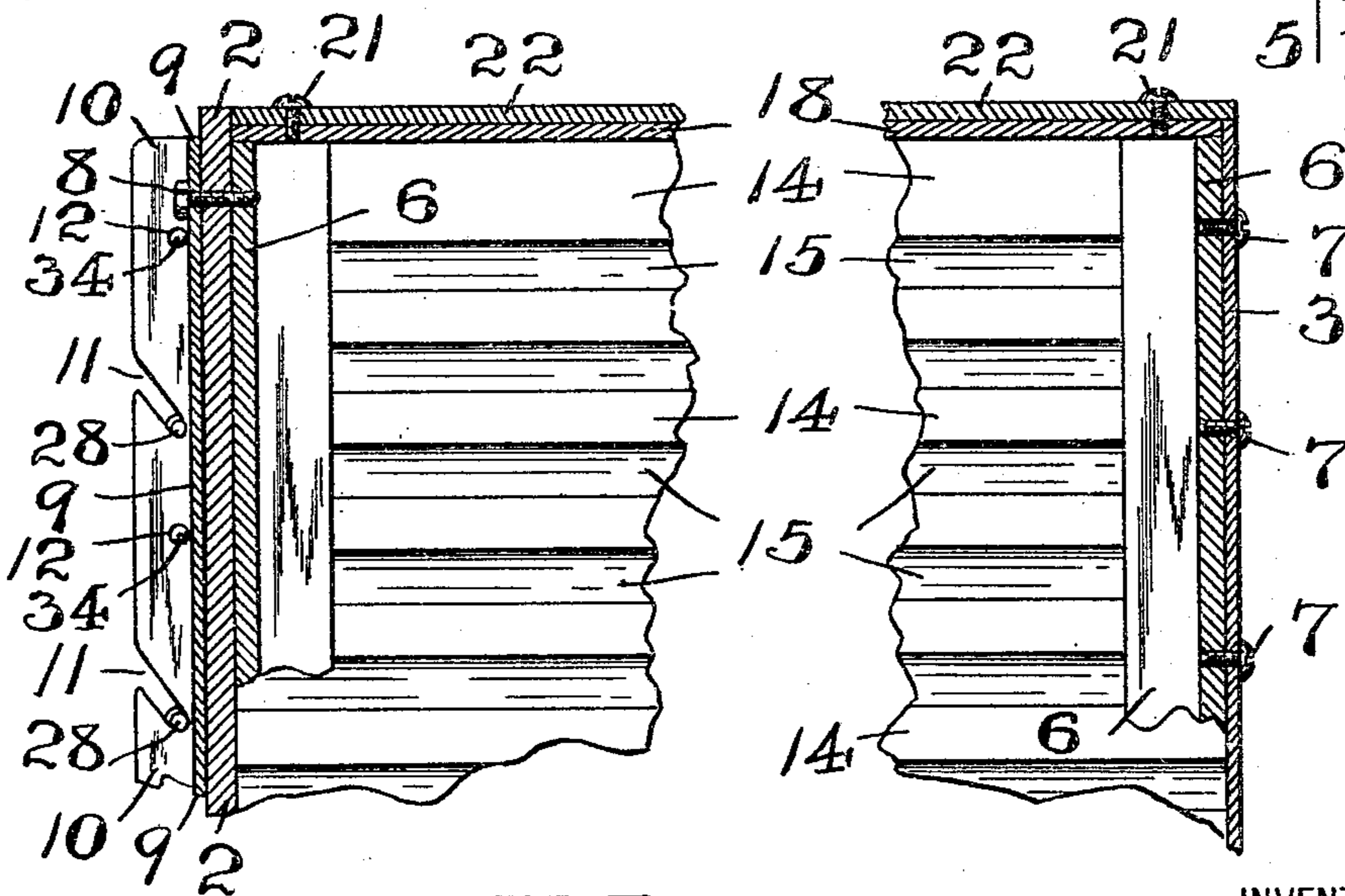
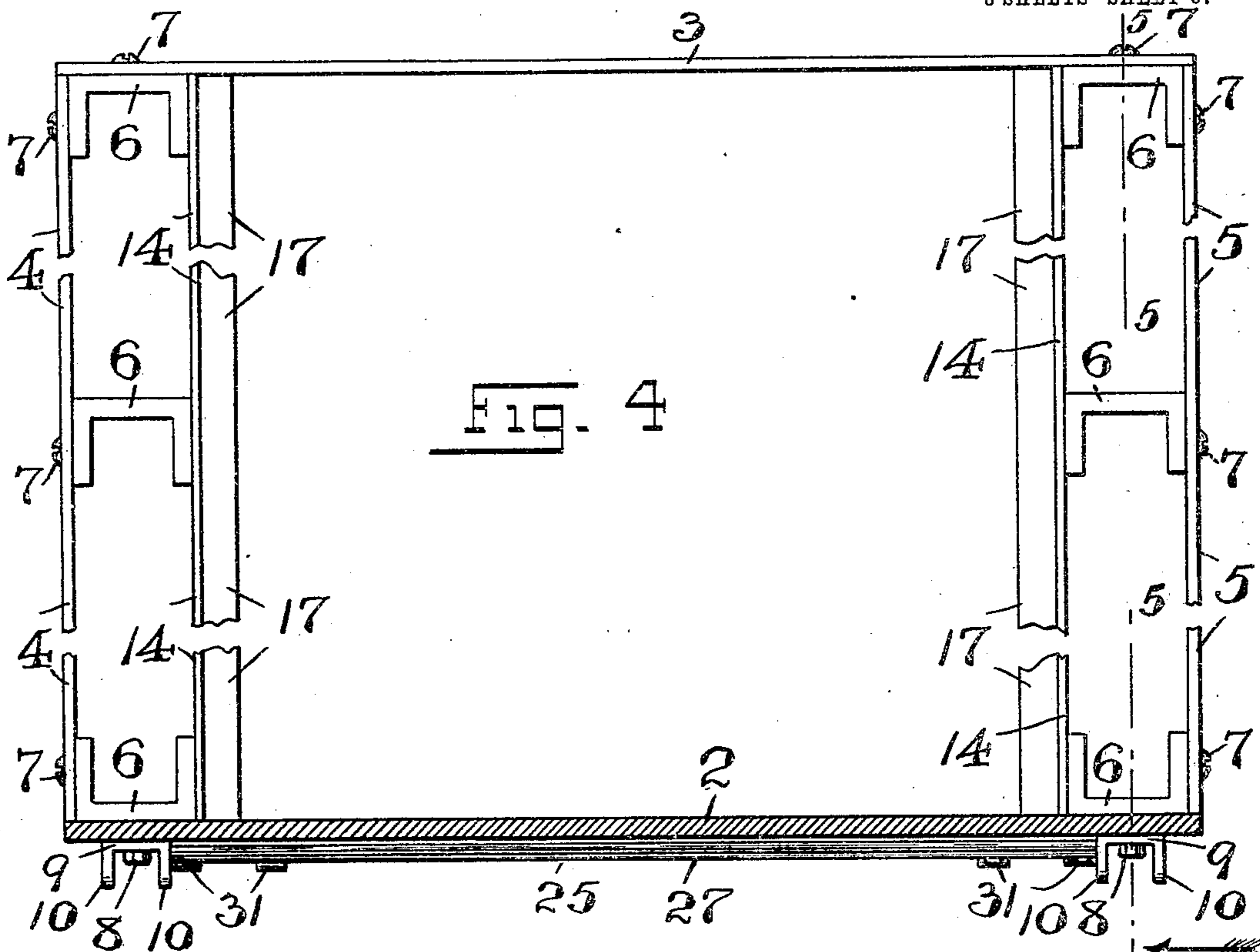
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3 SHEETS—SHEET 3.



WITNESSES:

*E. H. W. Fraentzel*  
*Armas H. Alter*

FIG. 5

INVENTOR:

*John Koller*

BY

*Fraentzel and Richards,*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

JOHN KOLLER, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE AMERICAN COAL CHUTE CO., AND ARCHITECTURAL IRON WORKS, A CORPORATION OF NEW JERSEY.

DRIER OR OVEN.

954,743.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed July 29, 1908, Serial No. 445,873. Renewed November 11, 1909. Serial No. 527,577.

*To all whom it may concern:*

Be it known that I, JOHN KOLLER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Driers or Ovens; 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, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates, generally, to improvements in drying apparatus or ovens; and, the invention has reference, more particularly, to a novel construction of drier or oven for use more especially in tanneries, which is constructed with supporting guides upon which are to be slidably arranged the usual frames in which the hides or skins which are to be dried are stretched.

My present invention, therefore, has for its principal object to provide a novel and simply constructed drier or oven which is adapted for drying purposes of the various kinds, the parts comprising the drier or oven-structure being all made of metal, and the intermediately placed studs or posts being made of suitable angle or channel irons, all of the various parts being constructed and arranged in such a manner, so that there will be no shrinkage of the parts, due to any excessive degree of heat; and, the invention having for its especial purpose to provide an apparatus which has all of its parts arranged in such a manner, so that any possibility of dirt and dust getting into the interior of the drier or oven is clearly obviated.

The invention has for its further purpose to provide a novel drier or oven, having arranged upon its front a series of independently operating doors or leaves, any one or more of which may be independently lowered so as to open only a definite portion or portions of the drier or oven, thereby preventing any undue loss of the heating or drying medium within the drying chamber of the apparatus; and, furthermore, to provide a novel construction of hinged doors or leaves of the character hereinafter more fully set forth, and novel locking devices or

catches for fixing each door or leaf in its closed relation upon the front of the drier or oven.

The invention has for its further purpose to provide a drier or apparatus having inner walls of sheet-metal bent or made with angular off-sets forming supports or guides for the reception of suitable drying frames, all of the parts being proof against shrinkage due to excessive heat, so that the drying frames can be easily moved in and out of the drying chamber without any danger of sticking owing to the shrunken or warped condition of the supports or guides now in ordinary use and which are made of wood; and, furthermore, to provide a fireproof drier.

Other objects of this invention not at this time more particularly enumerated will be clearly understood from the following detailed description of my present invention.

With the various objects of my present invention in view, the invention consists, primarily, in the novel drier or oven hereinafter set forth; and, the invention consists furthermore in the various novel arrangements and combinations of the devices and parts, as well as in the details of the construction of the same, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claims which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a front view of a drier or oven embodying the principles of the present invention, said view showing more particularly one arrangement of independent doors or leaves for obtaining an entrance at different points to the drying chamber of the apparatus, and one of the doors or leaves being shown in its lowered or opened relation to the other doors or leaves which are represented in their closed positions. Fig. 2 is a transverse vertical section of the drier or oven, with the central portion of the same shown broken away, said view showing more particularly one arrangement of the inner metal side-walls formed with angular supporting off-sets or guides. Fig. 3 is a central vertical section in detail, of a portion of the front

and rear of the drier or oven, said view showing in elevation the parts comprising one of the side-walls, and illustrating also one manner of hinging the doors or leaves upon the front of the apparatus. Fig. 4 is a top view and horizontal sectional representation of the drier or oven, with the top of the apparatus removed; and Fig. 5 is a detail vertical section through a part of the front and back of the apparatus, said section being taken in a vertical plane through line 5—5 in said Fig. 4, looking in the direction of the arrow *y* in said Fig. 4.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to the several figures of the drawings, the reference-character 1 indicates the complete drier or oven showing one embodiment of the principles of my present invention, and the same comprises an open front frame 2 of metal, usually cast-iron, a rear wall or back 3 of sheet-metal, and the outer or side-walls 4 and 5. The reference-character 6 indicates a suitable number of uprights, studs or posts, made of any desirable material, said studs or posts being preferably in the form of angle or channel-irons, substantially as illustrated. The said back 3 and side-walls 4 and 5 are suitably fastened and secured to said uprights, studs or posts 6 by means of suitable bolts or screws, as 7, or any other suitable fastening devices, and the front-frame 2 is secured to the front set of said uprights, studs or posts by means of tap-bolts 8, or any other suitable fastening means, as will be clearly evident from an inspection of the several figures of the drawings. Arranged upon the front of said frame 2, at each side thereof, and being also secured upon the frame 2 by means of said tap-bolts 8, are suitable vertically arranged angle or channel-irons, as 9, said angle or channel-irons being provided in one or both of their forwardly extending flanges 10 with downwardly extending and angularly disposed slots, as 11, which form pivot or pintle-bearings for the purposes to be presently more fully described. The said angle or channel-irons 9 are also provided in one or both of their flanges 10 with suitably disposed bolt-receiving perforations or openings 12.

Suitably secured upon the oppositely disposed faces of the inner flange-members of the uprights, posts or studs 6, preferably by means of suitable screws 13, are the inner side-plates or walls 14. These side-walls are preferably made from sheet-metal, and have pressed out therefrom, a series of angular portions or members 15 and horizontally disposed portions or members 17, said parts being arranged in the manner shown more particularly in Figs. 2 and 3 of the drawings,

so as to provide upon each side of the inner chamber of the apparatus a series of oppositely disposed guides and supports for the arrangement of suitably constructed drying frames thereon. Suitably arranged upon the upper ends of each set of said uprights, studs or posts 6, is a sheet-metal plate 18, formed with a downwardly extending angular member 19, each plate 18 having its downwardly extending angular member 19 fastened to the upper portion of the inner side-walls or plates 14 by means of screws 20, or other suitable fastening devices, substantially as shown in Fig. 3 of the drawings. Resting upon said plates 18 and suitably fastened thereto, preferably by means of screws 21, or other suitable fastening devices, is the top-plate or cover 22 of the apparatus; and, as shown in Figs. 1 and 2 of the drawings, the bottom of the apparatus may be formed by the usual cement or other flooring 23 of the building or place in which the drier or oven is to be used.

The previously mentioned doors or leaves, which may be of any suitable lengths and widths, are each indicated by the reference-character 24. Each door or leaf is made from sheet-metal, and has its upper marginal edge curled over or beaded, as at 25, a reinforcing or strengthening wire 26 being suitably arranged and secured in said bead 25. Each door or leaf is also made along its lower marginal edge-portion with a curled-over or beaded member or element 27 in which is arranged and suitably secured a reinforcing or strengthening rod or bar 28 having its respective ends projecting from the open end-portions of the beaded member or element 27, so as to provide each door or leaf with a pair of pintles or pivots adapted to be removably arranged in the oppositely disposed angular slots or openings 11 of the flanges 10 of the angle or channel-irons 9, to secure each door or leaf in its pivotal opening and closing relation upon the front-frame 2, and at the same time, providing a fastening means which permits of the removal of any one or more of the said doors or leaves for repairs, or otherwise, as will be clearly evident.

To each door or plate, and at the end-portions thereof, are suitably secured suitable bars or plates 29 and 30, the said bars or plates being provided with suitably formed bearing-portions 31. Pivotally arranged in each pair of bearing-portions 31, at the end-portions of each door or leaf, is a suitably formed bolt 32, which, while it is adapted to oscillate in said bearings, also has a sliding movement limited by a suitably bent member or element 33, which provides a fingerpiece, for withdrawing the free end-portions 34 of the bolts from holding or locked engagement with bolt-receiving holes or perforations 12,

previously mentioned, and for again returning the end-portions 34 into holding or retaining engagement with the said receiving holes or perforations, as will be clearly evident.

Thus, from the foregoing description and from an inspection of the several figures of the drawings, it will be clearly seen, that the operation of each door or leaf is independent of the operation of the other doors or leaves, so that only any desired limited portion of the front of the drier or oven can be opened, to prevent and reduce the possible escape of the heat from the drying chamber to a minimum.

That the joint formed between the lower and upper edges of two adjacent doors or leaves may be closed, each door or leaf may be provided upon its back, and along its lower marginal edge, with a narrow bar or plate-like member 35 which is disposed directly back of the joint and effectively closes the same, when the doors or leaves are in their closed positions, as will be clearly evident.

From the foregoing description of my present invention it will be seen that I have devised a simply constructed and effectively operating drier or oven, all of the parts of which are easily and quickly assembled, and being made of metal, the parts can not warp or shrink, due to the excessive degrees of heat; and, furthermore, the angular arrangement and construction of the inner side-plates or walls 14 is such, that while they may be made of thin sheet-metal, still the arrangement of the members 15 and 17 is such that the walls 14 are rigidly braced and form strong racks upon which the drying frames can be suitably arranged and supported, without any perceptible wear and tear upon the horizontally disposed members 17.

Of course I am aware that changes may be made in the various arrangements and combinations of the devices and parts, as well as in the details of the construction of the said parts, without departing from the scope of my present invention as set forth in the foregoing specification, and as defined in the appended claims. Hence, I do not limit my present invention to the exact arrangements and combinations of the devices and parts as set forth in the said specification, nor do I confine myself to any of the exact details of the construction of the various parts as illustrated in the accompanying drawings.

I claim:—

1. A drier or oven of the character herein specified comprising an open front frame provided with sectional doors for closing the same, a sheet-metal back, vertical up- rights or posts of angle-iron, and side-mem-

bers secured to said uprights or posts, said side-members being made from sheet-metal and being provided with supporting means forming guides for the support of drying frames thereon, an angle-plate arranged upon the upper ends of said posts or up- rights, and a sheet-metal top-plate secured to said angle-plates, substantially as and for the purposes set forth.

2. A drier or oven of the character herein specified comprising an open front frame provided with sectional doors for closing the same, a sheet-metal back, vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with supporting means forming guides for the support of drying frames thereon, an angle-plate arranged upon the upper ends of said posts or uprights, and a sheet-metal top-plate secured to said angle- plates, substantially as and for the purposes set forth.

3. A drier or oven of the character herein specified comprising an open front frame provided with sectional doors for closing the same, a sheet-metal back, outer side-walls of sheet-metal, vertical uprights or posts of angle-iron, means for securing said outer side-walls to said uprights or posts, and inner side-members also secured to said uprights or posts, said inner side-members being made from sheet-metal and being provided with alternately arranged angular members forming braces and horizontal members forming supporting guides for the support of drying frames thereon, substantially as and for the purposes set forth.

4. A drier or oven of the character herein specified comprising an open front frame provided with sectional doors for closing the same, a sheet-metal back, outer side-walls of sheet-metal, vertical uprights or posts of angle-iron, means for securing said outer side-walls to said uprights or posts, and inner side-members also secured to said uprights or posts, said inner side-members being made from sheet-metal and being provided with a supporting means forming guides for the support of drying frames thereon, an angle-plate arranged upon the upper ends of said posts or uprights, and a sheet-metal top-plate secured to said angle- plates, substantially as and for the purposes set forth.

5. A drier or oven of the character herein specified comprising an open front frame provided with sectional doors for closing the same, a sheet-metal back, outer side-walls of sheet-metal, vertical uprights or posts of angle-iron, means for securing said outer side-walls to said uprights or posts, and inner side-members also secured to said up- rights or posts, said inner side-members

being made from sheet-metal and being provided with alternately arranged angular members forming braces and horizontal members forming supporting guides for the support of drying frames thereon, an angle-plate arranged upon the upper ends of said posts or uprights, and a sheet-metal top-plate secured to said angle-plates, substantially as and for the purposes set forth.

6. A drier or oven of the character herein specified, comprising a metal open front frame, and a series of sheet-metal doors hinged upon said frame, each door being provided with an upper beaded marginal edge, a reinforcing wire contained in said beaded edge, a lower beaded marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-portions projecting from the open ends of said lower beaded edge so as to provide pintles for pivotally connecting said doors with said open frame, substantially as and for the purposes set forth.

7. A drier or oven of the character herein specified, comprising a metal open front frame, and a series of sheet-metal doors hinged upon said frame, each door being provided with an upper beaded marginal edge, a reinforcing wire contained in said beaded edge, a lower beaded marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-portions projecting from the open ends of said lower beaded edge so as to provide pintles for pivotally connecting said doors with said open frame, and sliding bolts upon each door, substantially as and for the purposes set forth.

8. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-portions, a series of sheet-metal doors arranged between said angle-irons, and pintles connected with and extending from each door, said pintles being arranged in said bearing-portions, substantially as and for the purposes set forth.

9. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-portions, a series of sheet-metal doors arranged between said angle-irons, each door being provided with an upper beaded marginal edge, a reinforcing wire in said beaded edge, a lower beaded marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-portions projecting from the open ends of said lower beaded edge, and said ends forming pintles extending into and pivotally arranged in the bearing-portions of said angle-irons, substantially as and for the purposes set forth.

10. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-portions, a series of sheet-metal doors arranged between said angle-irons, each door being provided with an upper beaded marginal edge, a reinforcing wire in said beaded edge, a lower beaded marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-portions projecting from the open ends of said lower beaded edge, said ends forming pintles extending into and pivotally arranged in the bearing-portions of said angle-irons, said angle-irons being also provided with bolt-receiving holes, and sliding bolts upon each door, said bolts having their ends slidably arranged in said bolt-receiving holes, substantially as and for the purposes set forth.

11. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, and a series of sheet-metal doors arranged between said angle-iron and pivotally connected therewith, a sheet-metal back forming part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with supporting means forming guides for the support of drying frames thereon, substantially as and for the purposes set forth.

12. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-portions, a series of sheet-metal doors arranged between said angle-irons, and pintles connected with and extending from each door, said pintles being arranged in said bearing-portions, a sheet-metal back forming part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with supporting means forming guides for the support of drying frames thereon, substantially as and for the purposes set forth.

13. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-portions, a series of sheet-metal doors arranged between said angle-irons, each door being provided with an upper beaded marginal edge, a reinforcing wire in said beaded edge, a lower beaded

marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-ports projecting from the open ends of said lower beaded edge, said ends forming pintles extending into and pivotally arranged in the bearing-ports of said angle-irons, a sheet-metal back forming part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with supporting means forming guides for the support of drying frames thereon, substantially as and for the purposes set forth.

14. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-ports, a series of sheet-metal doors arranged between said angle-irons, each door being provided with an upper beaded marginal edge, a reinforcing wire in said beaded edge, a lower beaded marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-ports projecting from the open ends of said lower beaded edge, said ends forming pintles extending into and pivotally arranged in the bearing-ports of said angle-irons, said angle-irons being also provided with bolt-receiving holes, and sliding bolts upon each door, said bolts having their ends slidably arranged in said bolt-receiving holes, a sheet-metal back forming a part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with supporting means forming guides for the support of drying frames thereon, substantially as and for the purposes set forth.

15. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, and a series of sheet-metal doors arranged between said angle-irons and pivotally connected therewith, a sheet-metal back forming part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with alternately arranged angular members forming braces and horizontal members forming supporting guides for the support of drying frames thereon, substantially as and for the purposes set forth.

16. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-ports, a series of sheet-metal

doors arranged between said angle-irons, and pintles connected with and extending from each door, said pintles being arranged in said bearing-ports, a sheet-metal back forming part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with alternately arranged angular members forming braces and horizontal members forming supporting guides for the support of drying frames thereon, substantially as and for the purposes set forth.

17. A drier or oven of the character specified comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-ports, a series of sheet-metal doors arranged between said angle-irons, each door being provided with an upper beaded marginal edge, a reinforcing wire in said beaded edge, a lower beaded marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-ports projecting from the open ends of said lower beaded edge, said ends forming pintles extending into and pivotally arranged in the bearing-ports of said angle-irons, a sheet-metal back forming part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being made from sheet-metal and being provided with alternately arranged angular members forming braces and horizontal members forming supporting guides for the support of drying frames thereon, substantially as and for the purposes set forth.

18. A drier or oven of the character specified, comprising a metal open frame, vertical angle-irons secured upon said frame, said angle-irons having outwardly extending flanges provided with angular slots forming bearing-ports, a series of sheet-metal doors arranged between said angle-irons, each door being provided with an upper beaded marginal edge, a reinforcing wire in said beaded edge, a lower beaded marginal edge, and a reinforcing bar in said beaded edge, said bar having its end-ports projecting from the open ends of said lower beaded edge, said ends forming pintles extending into and pivotally arranged in the bearing-ports of said angle-irons, said angle-irons being also provided with bolt-receiving holes, and sliding bolts upon each door, said bolts having their ends slidably arranged in said bolt-receiving holes, a sheet-metal back forming part of said drier, a series of vertical uprights or posts of angle-iron, and side-members secured to said uprights or posts, said side-members being

made from sheet-metal and being provided  
with alternately arranged angular members  
forming braces and horizontal members  
forming supporting guides for the support  
5 of drying frames thereon, substantially as  
and for the purposes set forth.

In testimony that I claim the invention

set forth above I have hereunto set my hand  
this 27th day of July, 1908.

JOHN KOLLER.

Witnesses:

FREDK. C. FRAENTZEL,  
F. H. W. FRAENTZEL.