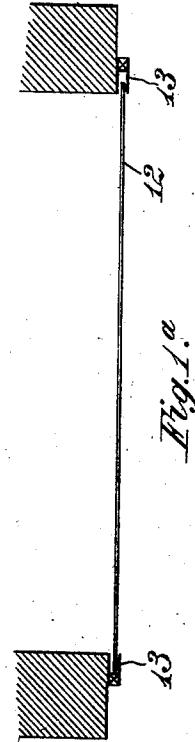
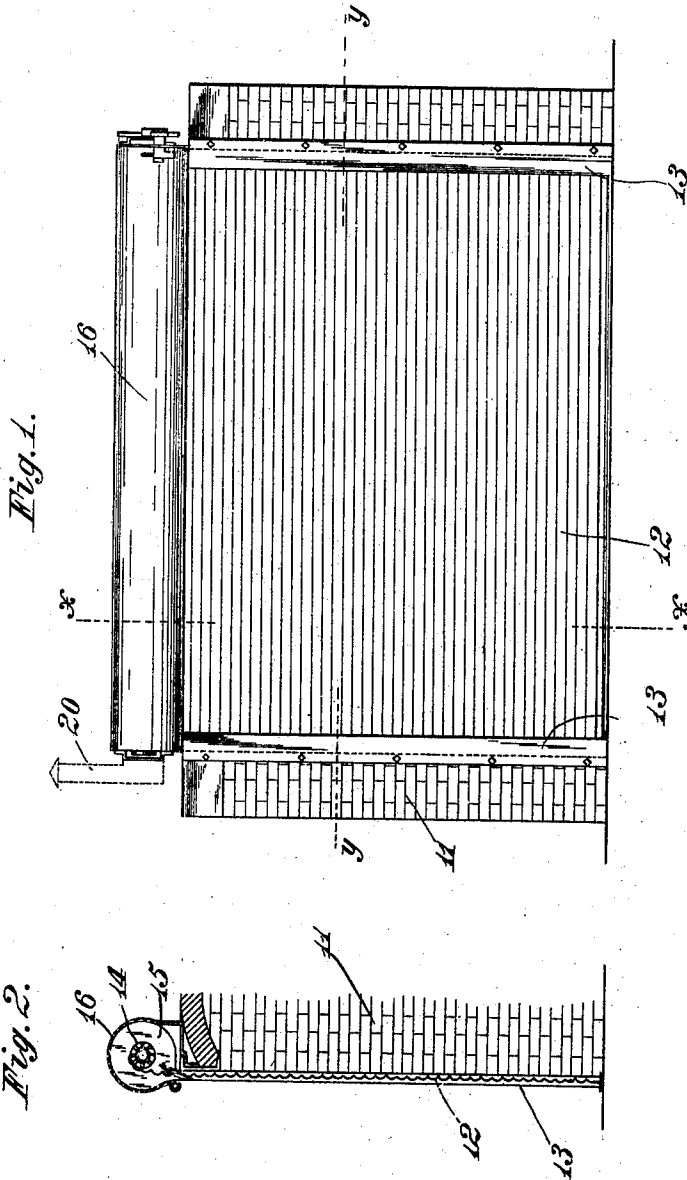


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DOOR FOR OVENS, KILNS, OR OTHER STRUCTURES.
APPLICATION FILED AUG. 3, 1908.

987,155.

Patented Mar. 21, 1911.

3 SHEETS—SHEET 1.



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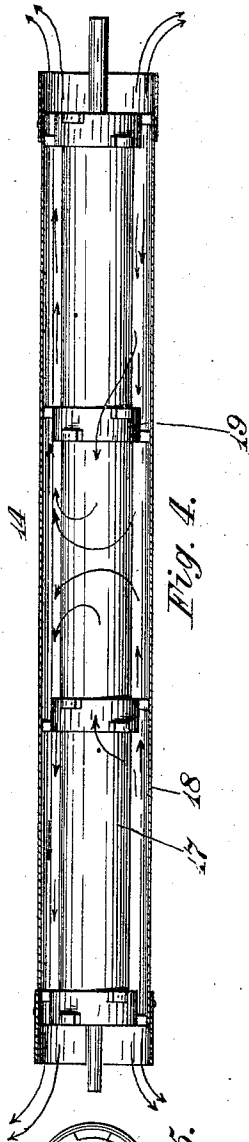


Fig. 4.

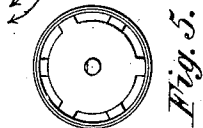


Fig. 5.

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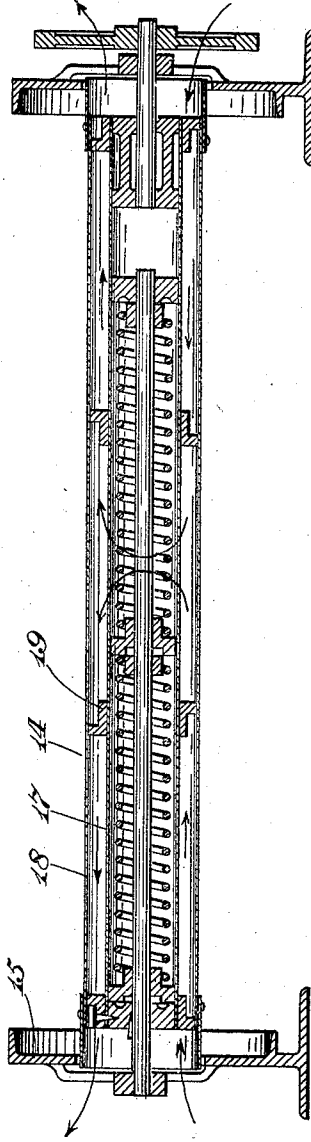


Fig. 3.

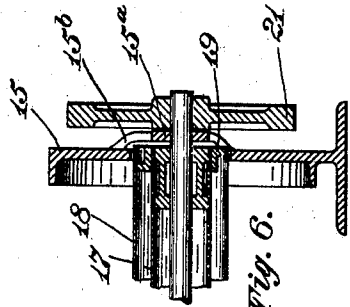
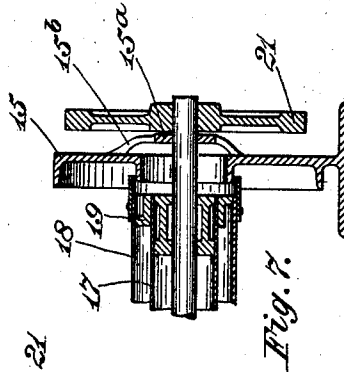
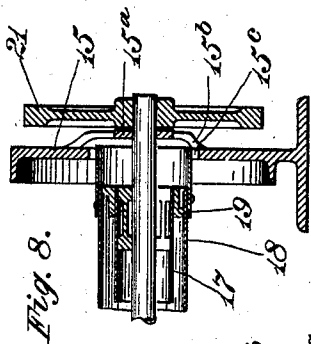
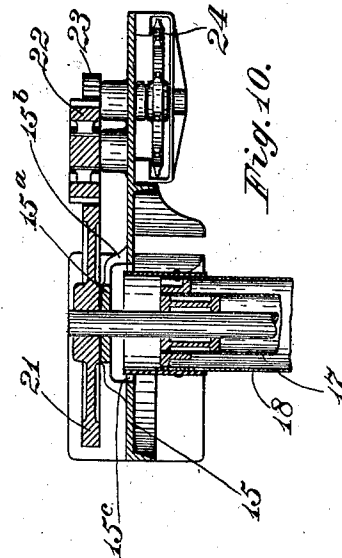
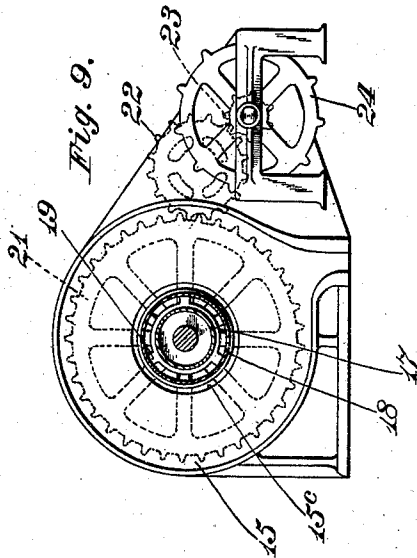
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UNITED STATES PATENT OFFICE.

EDWARD H. McCLOUD, OF COLUMBUS, OHIO.

DOOR FOR OVENS, KILNS, OR OTHER STRUCTURES.

987,155.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed August 3, 1908. Serial No. 446,565.

To all whom it may concern:

Be it known that I, EDWARD H. McCLOUD, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Doors for Ovens, Kilns, or other Structures, of which the following is a specification.

The object of this invention is to provide an improved rolling door or shutter especially adapted for closing the doorways of ovens or kilns or other structures where high temperatures are maintained.

The invention consists in the details of construction hereinafter particularly described and pointed out in the claims.

In the accompanying drawings—Figure 1 is a front elevation of a kiln equipped with the invention. Fig. 1^a is a longitudinal section on the line *y—y*, Fig. 1. Fig. 2 is a vertical section on the line *x—x*, Fig. 1. Fig. 3 is a longitudinal section through a roller for the shutter. Fig. 4 is a longitudinal section of the outer barrel of the roller showing the inner barrel and spiders therein in full. Fig. 5 is an end view of the roller shown in Fig. 4. Figs. 6, 7 and 8 show three different ways of isolating the interior of the roller from the interior of hood that incloses the coil of shutter on the drum. Fig. 9 is a section showing the mechanism for operating the roller and shutter. Fig. 10 is a horizontal view also in section to show the mechanism for operating the shutter.

In the views 11 designates the furnace or kiln, and 12 the rolling shutter for closing the opening thereto. The shutter travels in channels 13 at the opposite sides of the doorway. The shutter is mounted to coil or roll up on a spring roller designated 14, generally, in Fig. 2, and said roller is mounted in and between suitable end brackets 15. The roller and coil of shutter thereon are inclosed by a hood 16. The hood is arranged to inclose the coil and prevent the escape of heat from the top of the oven, or the access of cold air thereto. The interior of the hood therefore becomes quite hot, and it is more especially the object, among others, of the present invention to prevent the high heat within the hood or heat from a heated shutter on the roller from penetrating to the spring or springs of the roller and destroying their temper, or from so far softening the roller itself as to permit it to sag with

the weight of the shutter. The roller therefore, as particularly shown, includes two barrels 17 and 18, separated by spiders 19, so that air can pass freely between the barrels. The inner barrel 17 contains the usual well-known shaft members and coil spring or springs for counterbalancing the shutter and need not be particularly described. Instead of supporting the projecting ends of the shaft members in the body 15 of the end brackets they are supported in bearings 15^a, offset from the outer faces of the brackets by legs 15^b cast on the brackets; and the brackets are provided with ample openings 15^c through which air can pass freely to and from the interior of the roller.

In Figs. 6, 7 and 8 are shown several modes of isolating or cutting off the interior of the roller from communication with the interior of the hood so that there can be an independent circulation of cool air through the roller. In Fig. 6 the roller itself is shown to project toward or into the opening of the end bracket. In Fig. 7 the edge of the opening of the bracket is shown, as provided, with an inwardly projecting circumambient lip that coöperates with a small annular addition to the outer barrel of the roller. In Fig. 8 a considerable sleeve extension is added to the outer drum to project through the opening of bracket. This last form is also shown in Figs. 3, 4 and 10. In each of these forms it will be observed that a like result is obtained, that is to say, the cool exterior air is admitted at the ends of the roller, and is free to pass therinto and circulate around the interior of the roller and keep it relatively cool.

In Figs. 3 and 4 I have indicated by arrows and lines what I conceive to be the probable normal direction of flows of air through the roller.

If it should be desired to have the air flow in one direction only or with a strong draft through the roller, this can be accomplished by attaching to one side a draft pipe 20, as shown at the left hand side of Fig. 1.

In Figs. 9 and 10 I have illustrated the operating mechanism for such rollers. In these views 21 designates the gear wheel that is secured to the end of the shaft projecting at that end; 22 an intermediate gear, and 23 a pinion driven by a sprocket 24, the latter to be operated by a hanging endless chain not shown, but well understood.

As there will be more or less variation in

the temperature of the oven or kiln, there will be more or less expansion and contraction of the roller. To provide for this the barrels are secured to the shaft at the end more remote from the operating gear, and the intermediate gear 22 is shown as made of greater thickness than the gear 21, so that the latter can move laterally and still remain in operative mesh therewith. To provide for expansion of the shutter with the roller the channel toward which expansion takes place can obviously be made of greater depth, as seen more particularly in Fig. 1^a.

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

1. In combination with the doorway of a furnace or kiln, end brackets having openings, a hood, a rolling shutter, and a roller mounted in said end brackets and inclosed by said hood, said roller containing an inner and an outer barrel, with means for separating them and permitting the flow of external air between them, and means for directing the air through said brackets into the roller, and adapted to preclude the passage of any considerable quantity of air from or to the space between the roller or roller and shutter and the hood.

2. In combination with the doorway of a furnace or kiln, end brackets having openings, a hood, a rolling shutter and a spring roller mounted in said brackets and inclosed by said hood, said roller containing an inner and an outer barrel with means for separating them and permitting the flow of external air between them, and means for directing the air through said brackets into the roller, and substantially excluding it from between the hood and the roller or shutter thereon.

3. In combination with the doorway of a

furnace or kiln, end brackets having openings, a hood, a rolling shutter and a spring roller open at its ends and mounted in said brackets and inclosed by said hood, said roller having its ends in close connection with the openings of the brackets, whereby external air is admitted to the interior of the roller and the passage of air from or to the hood substantially precluded.

4. In combination with the doorway of a furnace or kiln, end brackets having openings, a hood, a roller shutter and a spring roller open at its ends and mounted in said brackets and inclosed by said hood, and collars on the ends of said roller extending toward the openings in the brackets to admit external air to the interior of the roller and substantially prevent the passage of air from or to the hood.

5. In combination with a rolling shutter and a roller therefor, that are subject to expansion and contraction due to heat, of means for coiling the shutter, including two meshing gears, one of which is on the roller and one of which is of greater thickness than the other, whereby the roller can longitudinally expand and contract without disengagement of the gears.

6. The combination of end brackets, a spring curtain roller supported in the end brackets, said roller comprising an inner and an outer peripherically closed barrel, means for holding the barrels separated, and a conductor for promoting a circulation of cool air through the brackets and into the space between the barrels of the roller.

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Witnesses:

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