

(No Model.)

3 Sheets—Sheet 1.

A. YOUNGER.

PROTECTING SHIELD FOR HEATING, SMELTING, OR OTHER FURNACES.

No. 551,704.

Patented Dec. 17, 1895.

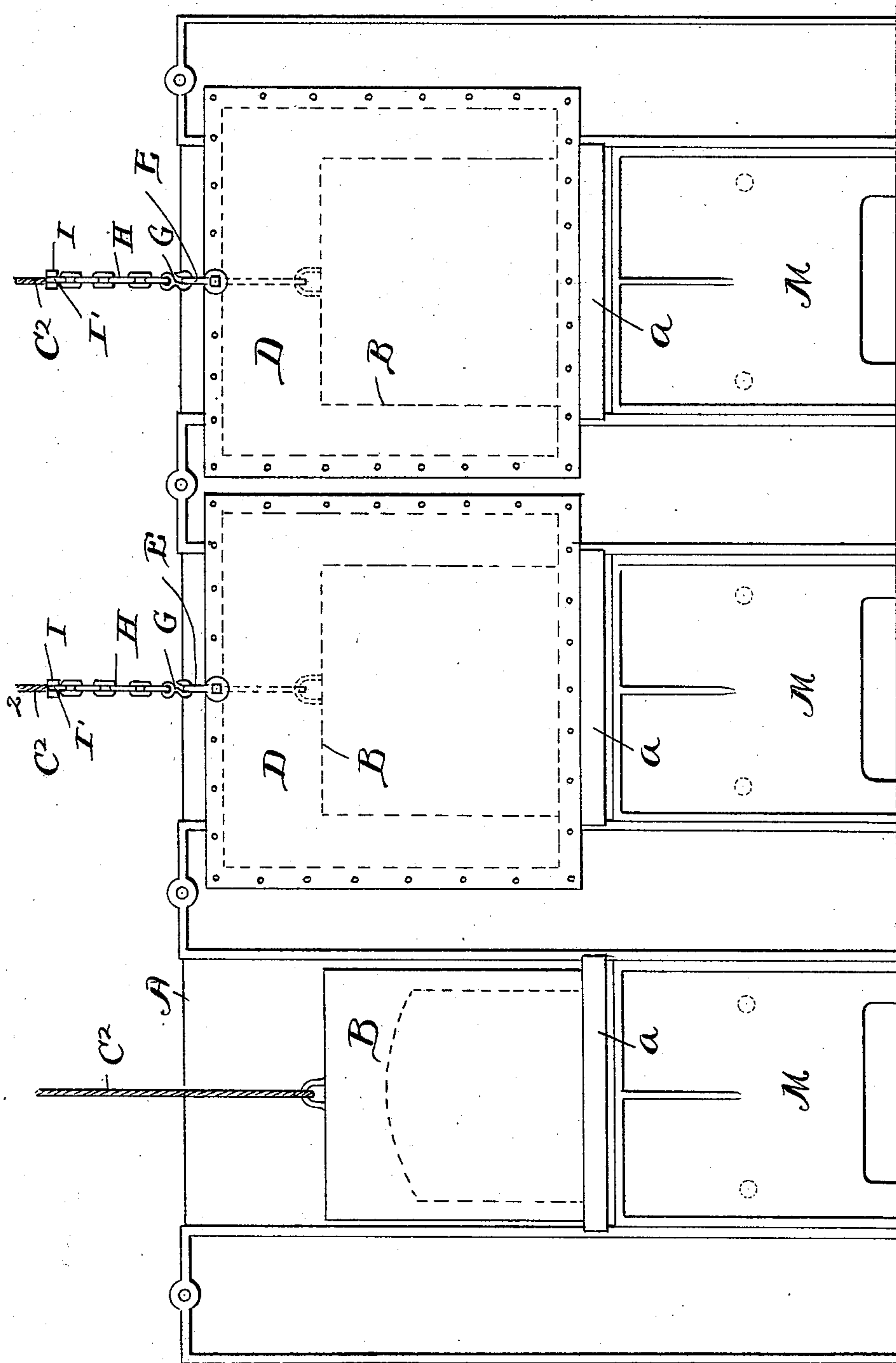


Fig. 1.

Witnesses.

E. B. Gilchrist

[Signature]

Inventor.

Alexander Younger.

By M. D. Seggett & Co
his attorneys.

(No Model.)

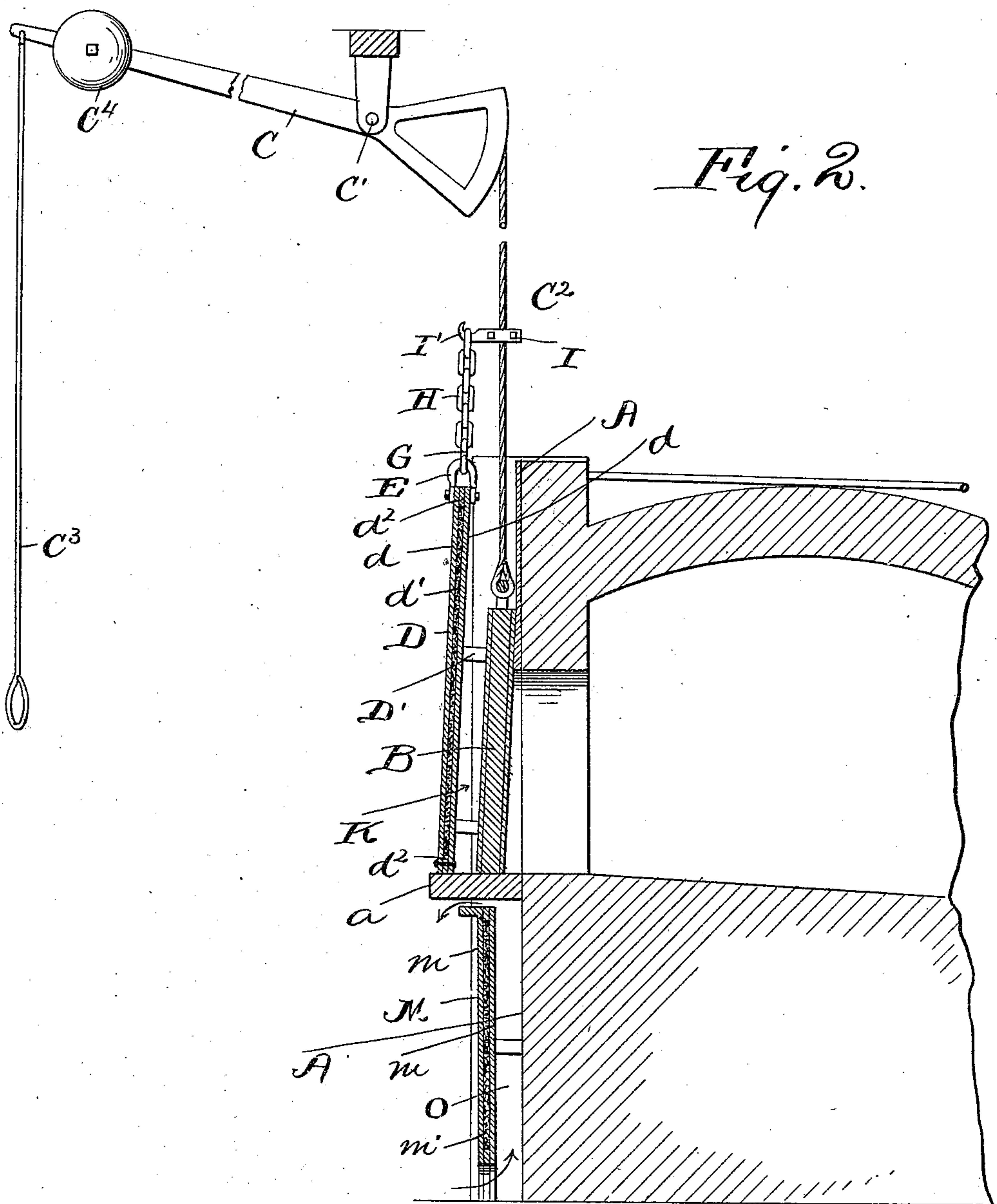
3 Sheets—Sheet 2.

A. YOUNGER.

PROTECTING SHIELD FOR HEATING, SMELTING, OR OTHER FURNACES.

No. 551,704.

Patented Dec. 17, 1895.



Witnesses.
E. B. Gilchrist.
Engraved

Inventor.
Alexander Younger
By M. W. Suggitt & Co.
his Attorneys.

(No Model.)

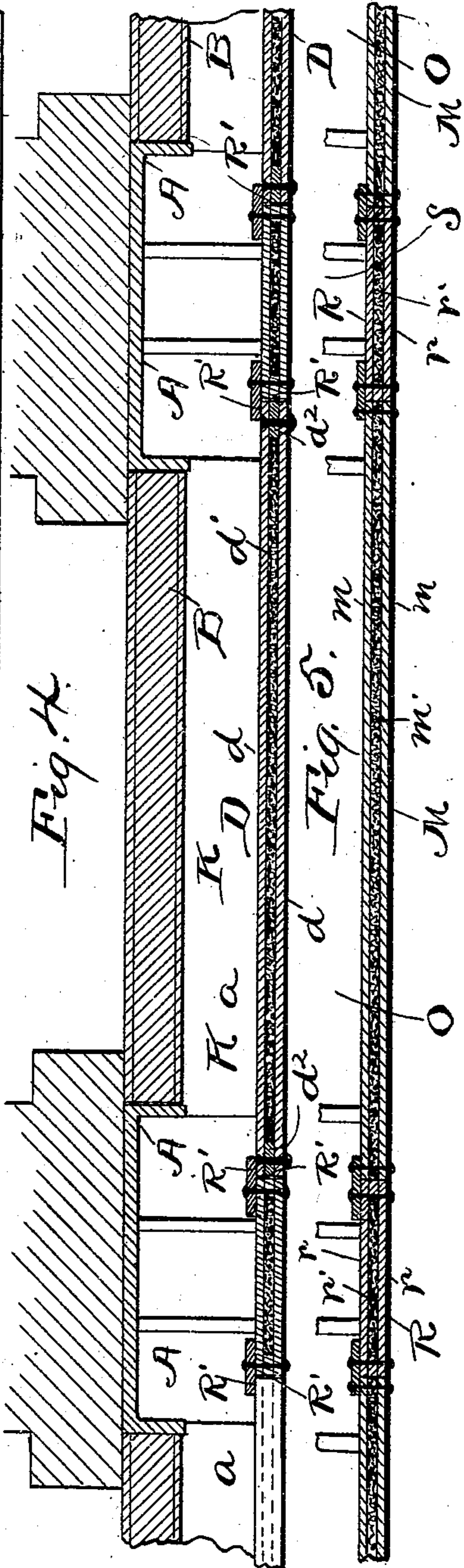
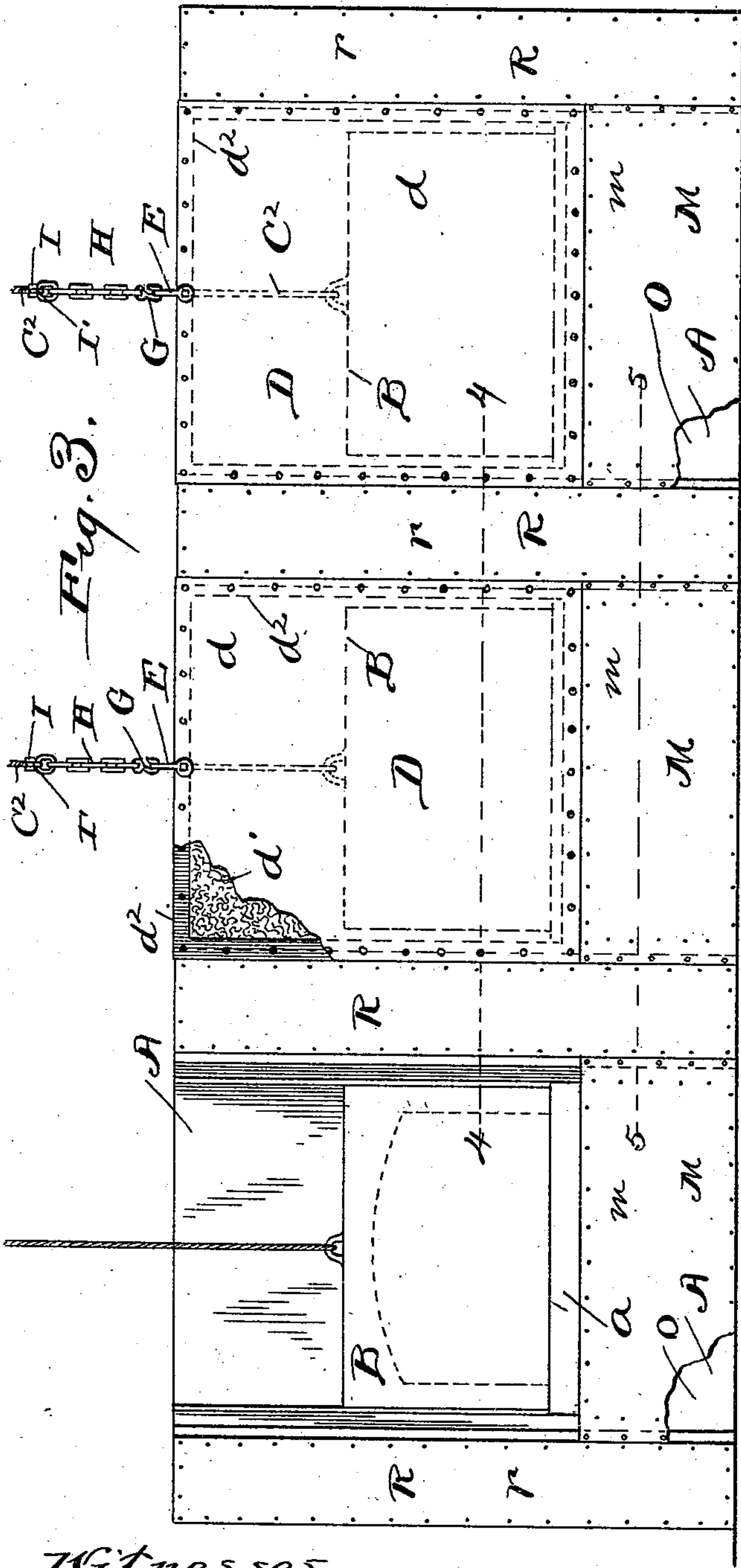
3 Sheets—Sheet 3.

A. YOUNGER.

PROTECTING SHIELD FOR HEATING, SMELTING, OR OTHER FURNACES.

No. 551,704.

Patented Dec. 17, 1895.



Witnesses.
E. B. Gilchrist.
C. W. Ward

Inventor.
Alexander Younger.
By M. D. Leggett & Co.
his attorneys.

UNITED STATES PATENT OFFICE.

ALEXANDER YOUNGER, OF CLEVELAND, OHIO.

PROTECTING-SHIELD FOR HEATING, SMELTING, OR OTHER FURNACES.

SPECIFICATION forming part of Letters Patent No. 551,704, dated December 17, 1895.

Application filed September 13, 1894. Serial No. 522,949. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER YOUNGER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Shielding or Protecting Men Engaged at Heating, Smelting, or other Furnaces; 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 pertains to make and use the same.

My invention relates to improvements in protecting and shielding men engaged at furnaces.

In the accompanying drawings, Figure 1 is a front side elevation of a furnace provided with shielding or protecting devices involving my invention. Fig. 2 is a vertical section on line 2 2, Fig. 1. Fig. 3 is a front side elevation of another furnace with shielding or protecting devices involving my invention, portions being broken away. Fig. 4 is a top plan in section on line 4 4, Fig. 3; and Fig. 5 is a top plan in section on line 5 5, Fig. 3, the parts shown in Figs. 4 and 5 being enlarged in size as compared with the corresponding parts exhibited in Fig. 3.

Referring to the drawings, A represents the furnace-front, and B designates the doors leading to the fire, heating, or smelting (as the case may be) chambers of the furnace. The doors are opened by elevating them, and the means employed for elevating or opening a door consists usually of a lever C fulcrumed at C' to any suitable support overhead. One end of the lever is operatively connected with the door by means of a cable C², and to the other or forward end of the lever is attached a rod C³ by means whereof the operator can actuate the lever as required to elevate or open the door, the lever being provided with a weight C⁴ to counterbalance the weight of the door and attachments, and thereby enable the door and attachments to be held at the desired elevation. Doors B when in their closed position rest, respectively, upon a ledge or flange *a* rigid with the furnace-front.

My invention resides, primarily, in the employment of a shield D at the front of each door B, two of which shields are shown in operative position in Figs. 1 and 3. A desirable shield for the purpose is shown more

clearly in Fig. 2, and is operatively connected with the mechanism employed for opening the door in such a manner that the shield is moved with the door in opening and closing the latter. The shield is preferably constructed wider and higher than the door so that it will extend above and beyond either side of the door. The means employed for establishing operative connection between the shield and the door-actuating mechanism comprises preferably a clevis E secured to top and central portion of the shield, said clevis being shown engaged by a hook G attached to the lower end of a chain H that, at its upper end, is attached to a hook I' rigid with a clamp I mounted upon cable C² in any approved manner.

By the construction just described it will be observed that as the door is lifted or lowered to open or close the same the shield at the front of the door is correspondingly actuated. Shield D consists preferably of two metallic plates or sheets *d* (see Fig. 2) located a suitable distance apart, with mineral wool or other material indestructible by fire and that is a non-conductor of heat interposed between said sheets or plates. Sheets or plates *d* and the mineral wool or non-conductor of heat are secured together in any approved manner, and the shield shown in Fig. 2, at its rear side, is provided with any suitable number of rearwardly-projecting lugs or members D' adapted, at their rear or free ends, to engage the respective furnace-door and thereby hold the shield somewhat forward of or separated from the door so as to form an air-chamber or passage-way K between the shield and door, through which chamber or passage-way air can freely circulate and thereby be instrumental in keeping the door and shield in a comparatively cool condition. The mineral wool or indestructible material interposed between the two sheets or plates *d* of the shield is preferably engaged and covered at its edges by a metallic frame *d*² suitably secured to and between plates *d*.

A stationary shield M is preferably provided below each furnace-door to protect or shield the legs of the attendant or operator against heat radiating from the portion of the furnace-front below the door. This shield is supported in any suitable manner and is similar in construction to the movable shield al-

ready described, said stationary shield consisting preferably of two metallic plates or sheets *m* located a suitable distance apart with mineral wool *m'* or other material that is
 5 indestructible by fire and a non-conductor of heat interposed between the two sheets or plates, and the shield being located a suitable distance forward of the adjacent portion
 10 of the furnace-front to form an air-space *O* between said stationary shield and the adjacent portion of the furnace-front; also, a similar stationary shield *R* is provided between the furnace-doors, as shown in Figs. 3
 15 and 4, said shield being supported in any desirable manner and consisting preferably of two metallic plates *r* located a suitable distance apart, with mineral wool *r* or other
 20 heat-indestructible material interposed between the two sheets or plates, shield *R* being located a suitable distance forward of the adjacent portion of the furnace-front to form an air-space *S* between said shield and the adjacent portion of the furnace-front.

If shields *R* are provided between the furnace-doors as just indicated, the movable
 25 shields in front of said doors are preferably made to engage and operate in ways *R'* formed upon said stationary shields.

What I claim is—

30 1. The combination with a furnace-door and mechanism for elevating and thereby opening said door, of a movable shield located a suitable distance forward of the furnace-door and means operatively connecting said
 35 shield with the door-actuating-mechanism in such a manner that the shield shall be moved with the door in opening and closing the lat-

ter, said means comprising a hook borne by the door-actuating-mechanism, a clevis secured to the top and central portion of the
 40 shield and suitably suspended from said hook, substantially as set forth.

2. The combination with the door leading to the fire, heating or smelting-chamber of the furnace, of a movable shield a suitable
 45 distance forward of the door to form an air-space between the shield and door, a shield *M* suitably supported in front of the furnace-front below the door, and an air-passage-way
 50 extending in under, behind and above said shield *M* and communicating both above and below, with the external atmosphere, substantially as shown, for the purpose specified.

3. The combination with a furnace having two or more fire, heating or smelting-cham-
 55 bers, of movable shields located a suitable distance forward of the doors leading to said chamber, stationary shields suitably supported below the doors a suitable distance forward of the furnace-front, and an air-passage-
 60 way extending below, behind and above said shields and communicating at the bottom and top with the external atmosphere, and stationary shields *R* located between the doors and a suitable distance forward of the adjacent
 65 portion of the furnace-front, substantially as shown, for the purpose specified.

In testimony whereof I sign this specification, in the presence of two witnesses, this 2d day of August, 1894.

ALEXANDER YOUNGER.

Witnesses:

C. H. DORER,
 L. WARD HOOVER.