

No. 851,919.

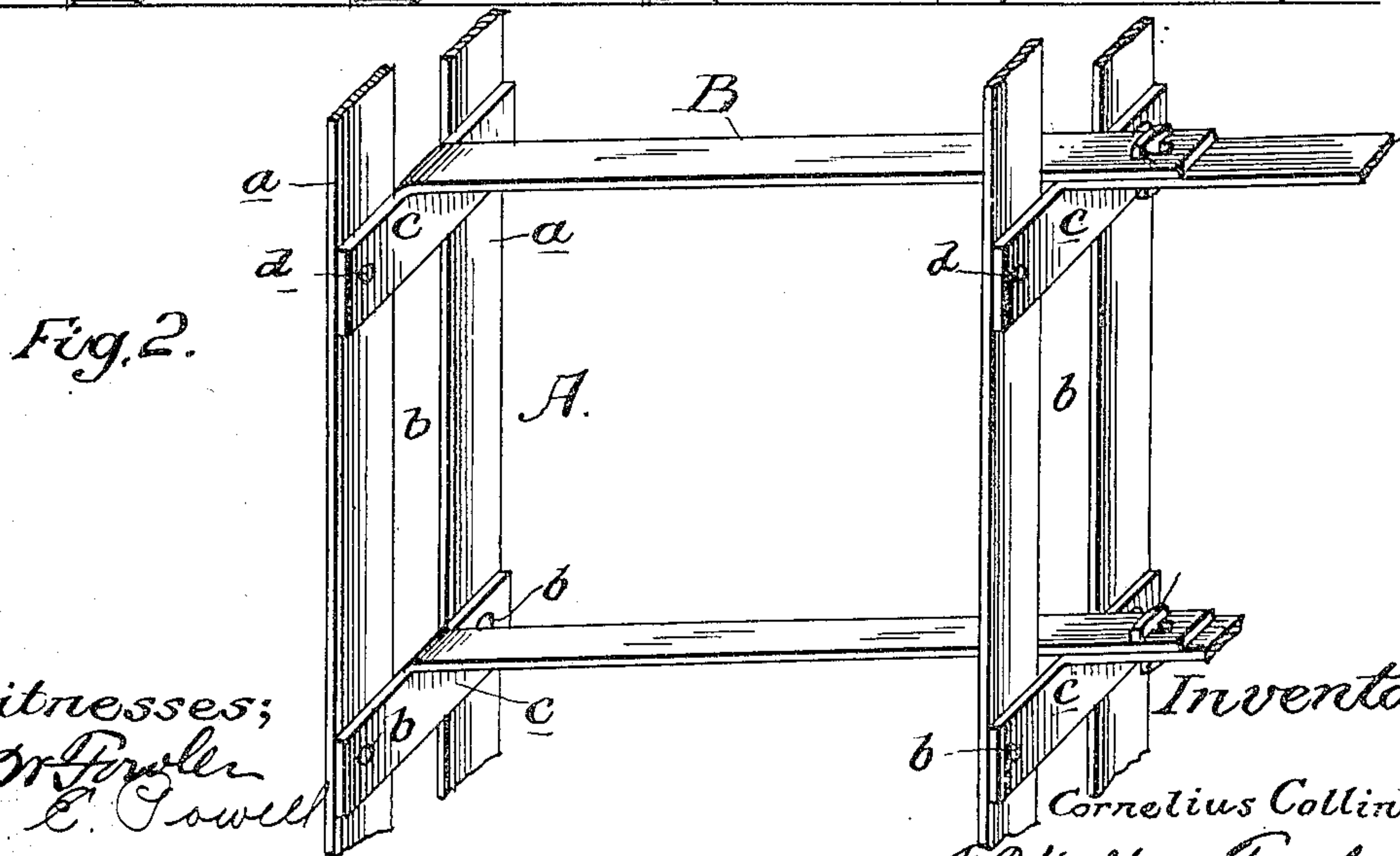
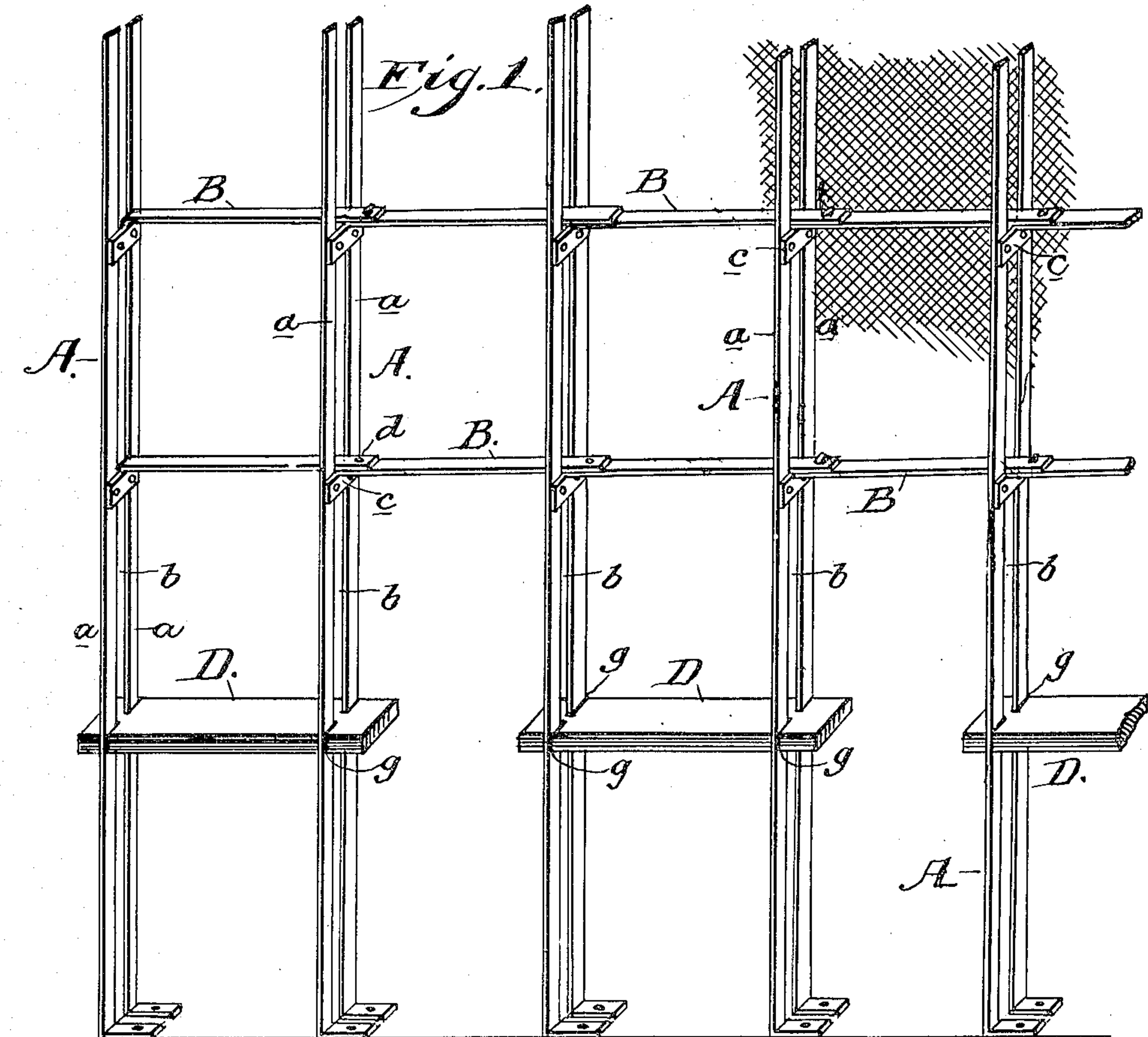
PATENTED APR. 30, 1907.

C. COLLINS.

## FIREPROOF BUILDING CONSTRUCTION.

APPLICATION FILED MAR. 12, 1906.

2 SHEETS—SHEET 1.



Witnesses;  
Cyr Fowler  
A. E. Powell



Inventor;  
 Cornelius Collins  
 By T. Walter Fowler  
 his atty.

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2 SHEETS—SHEET 2.

Fig. 3.

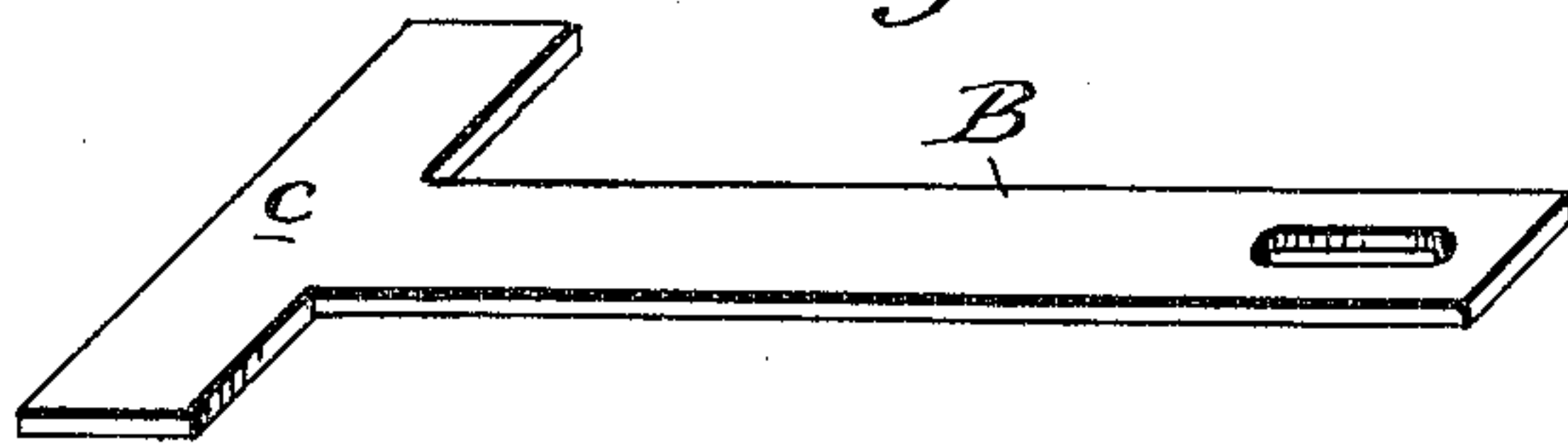


Fig. 4.

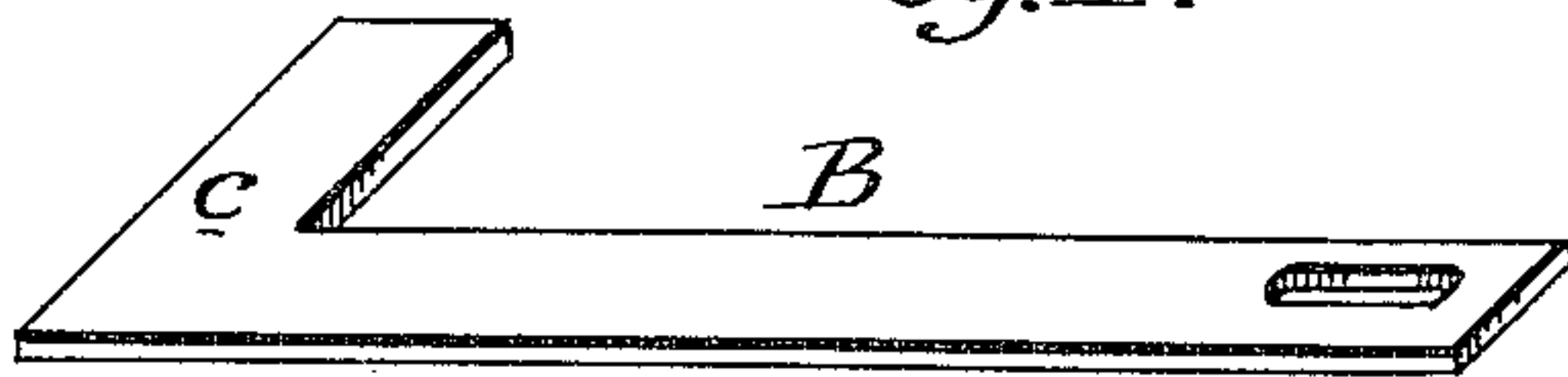


Fig. 5.

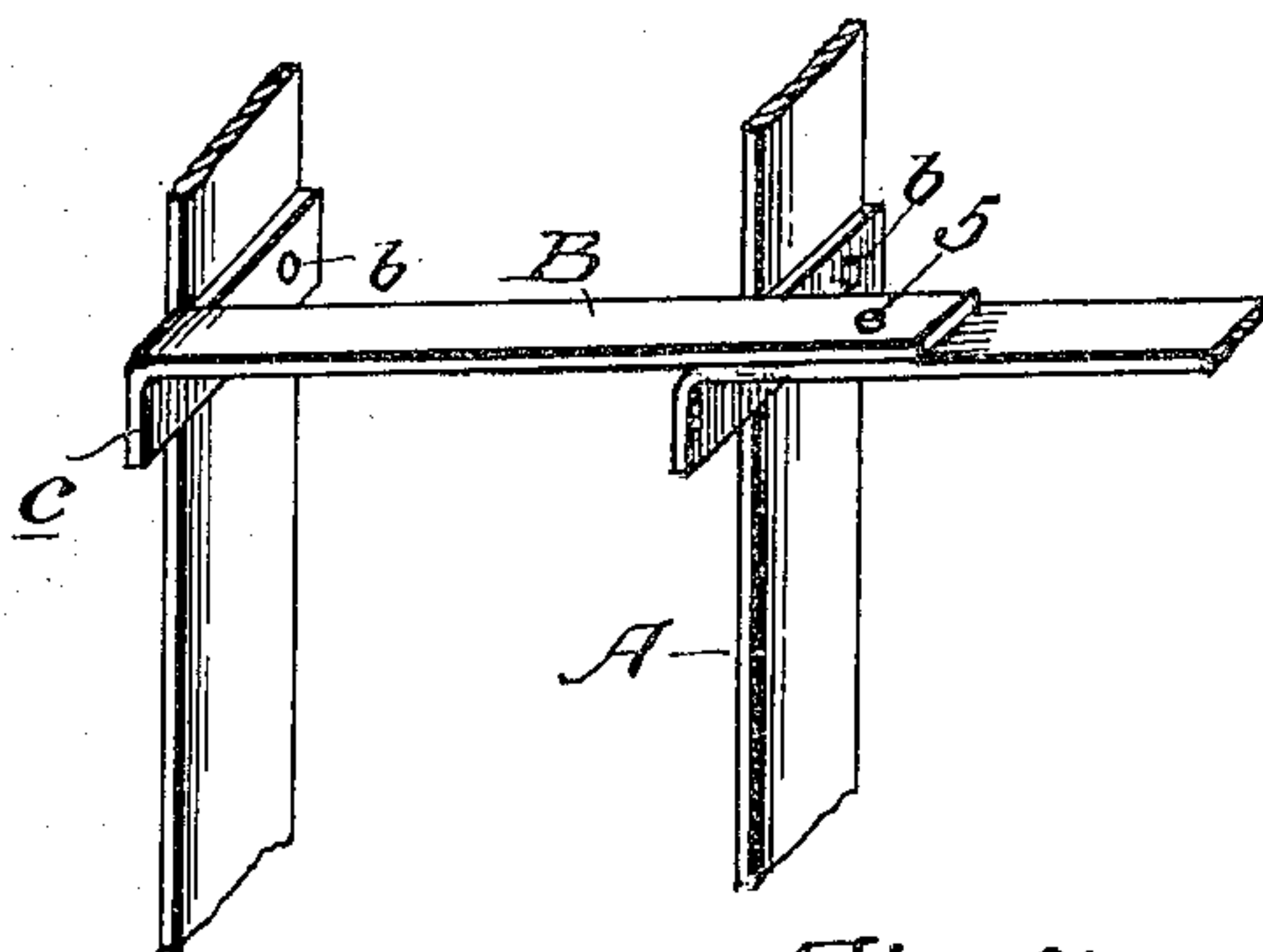


Fig. 6.

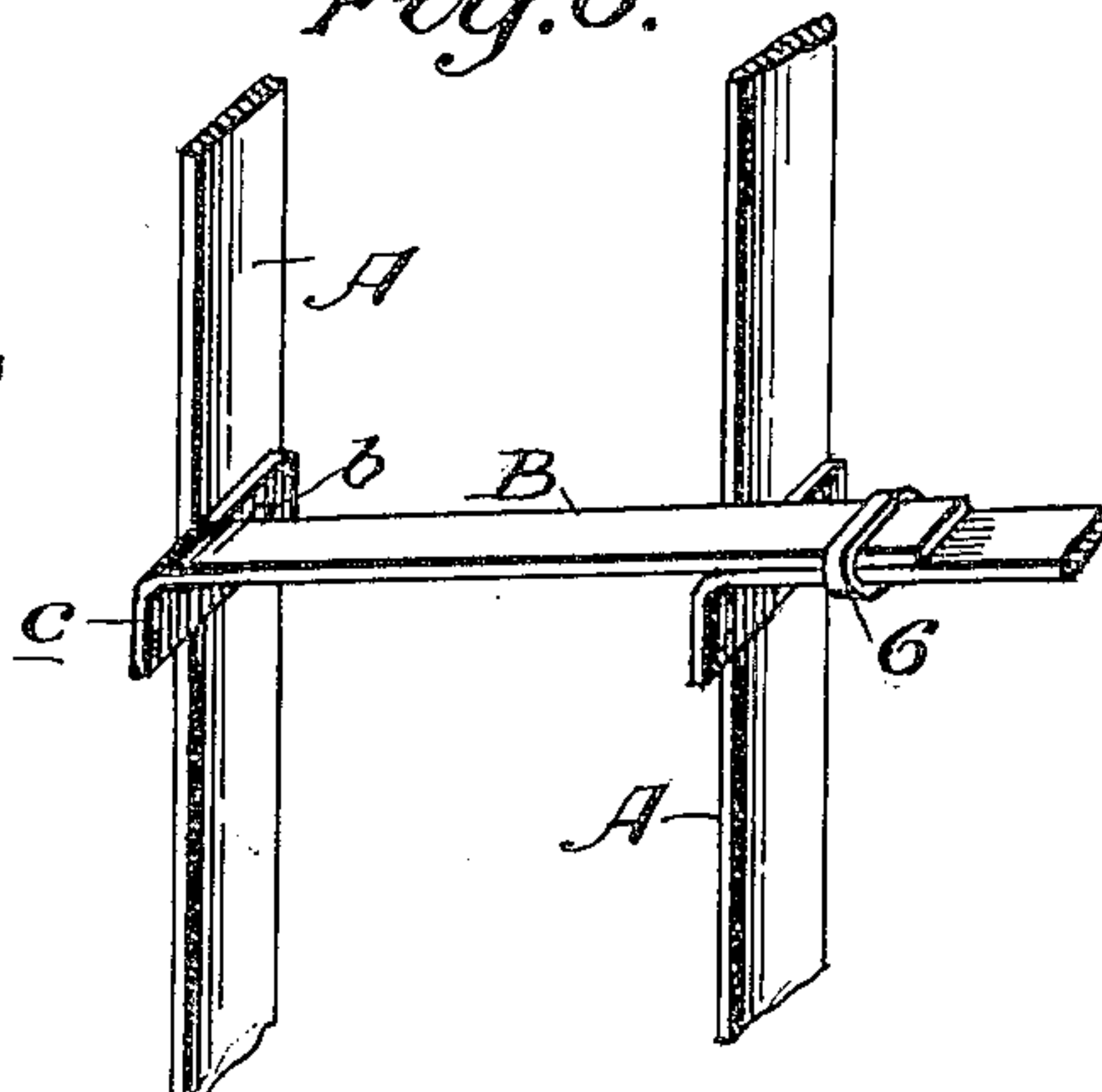


Fig. 7.

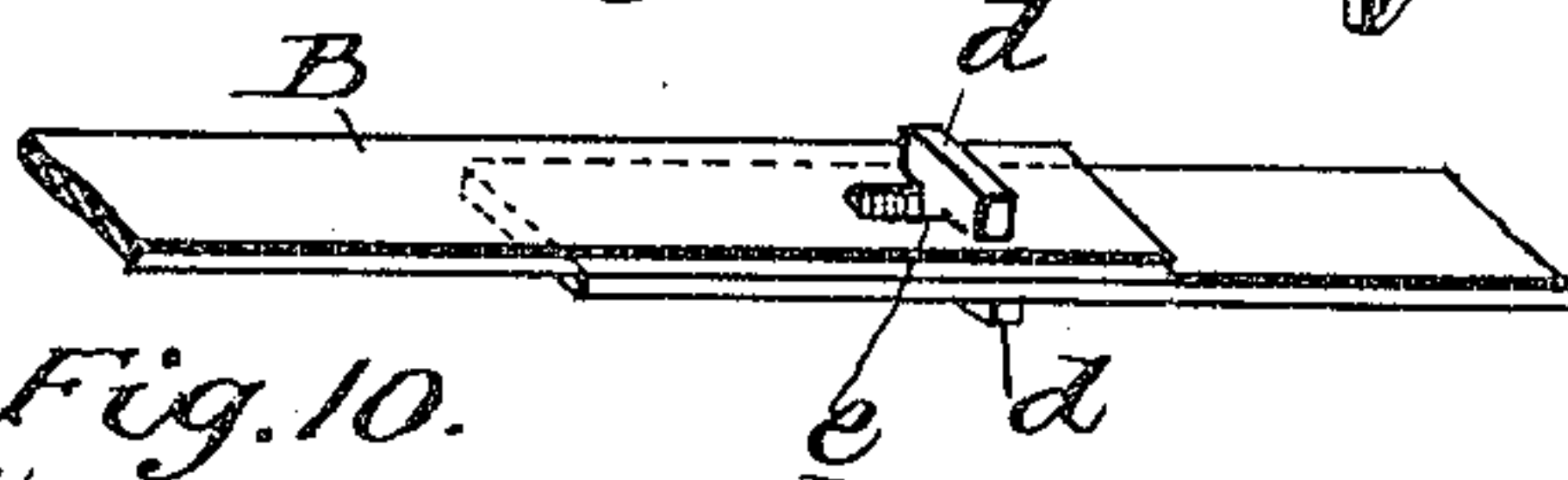


Fig. 8.

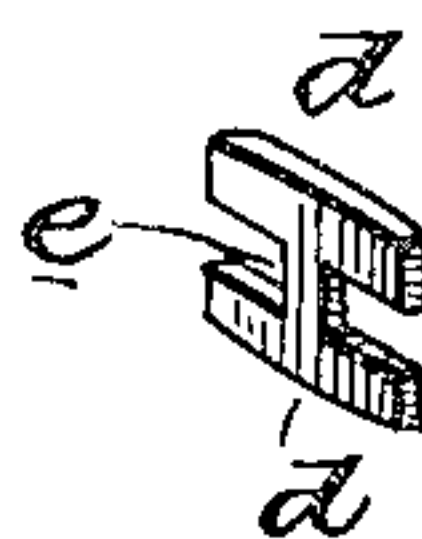


Fig. 10.

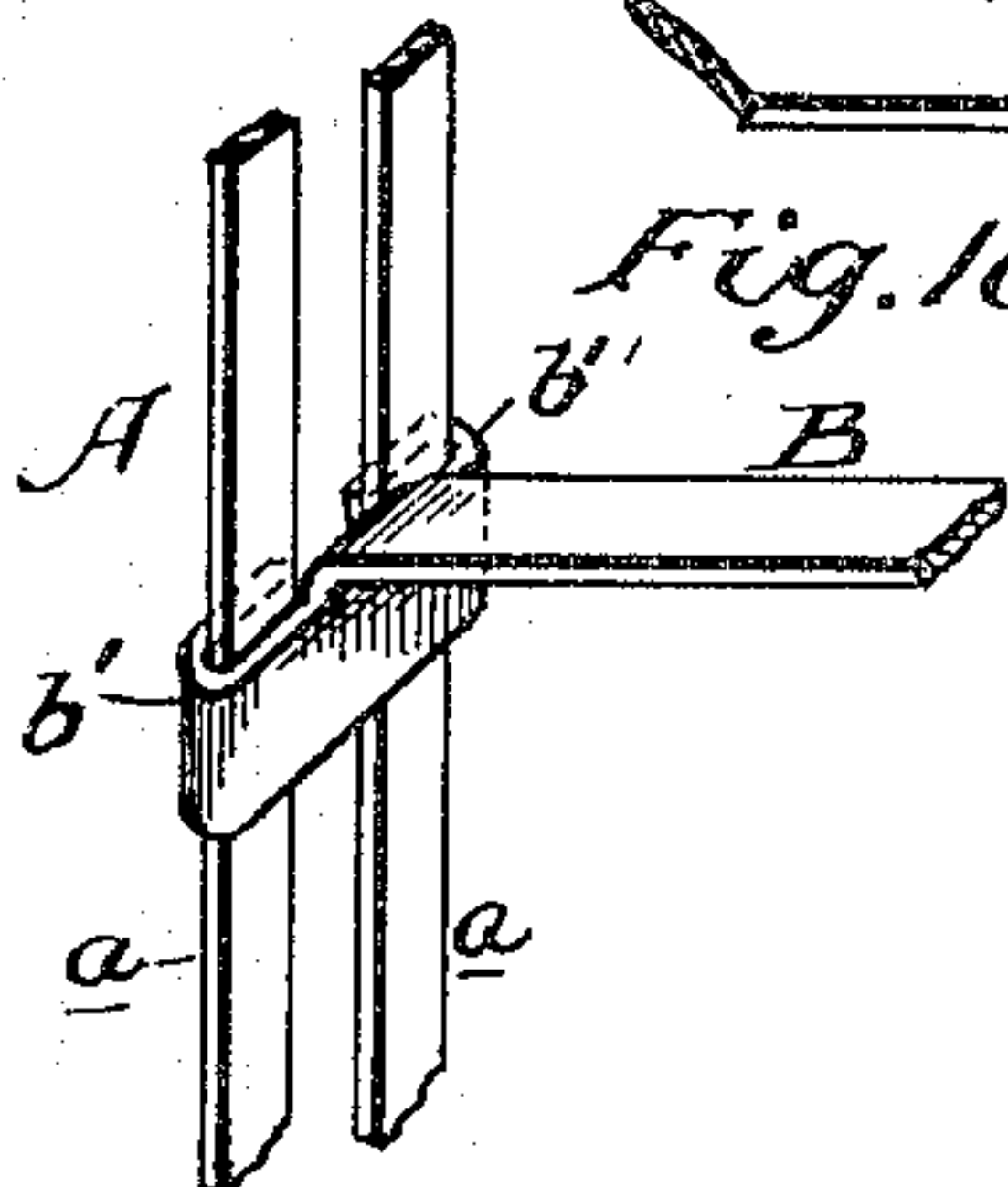
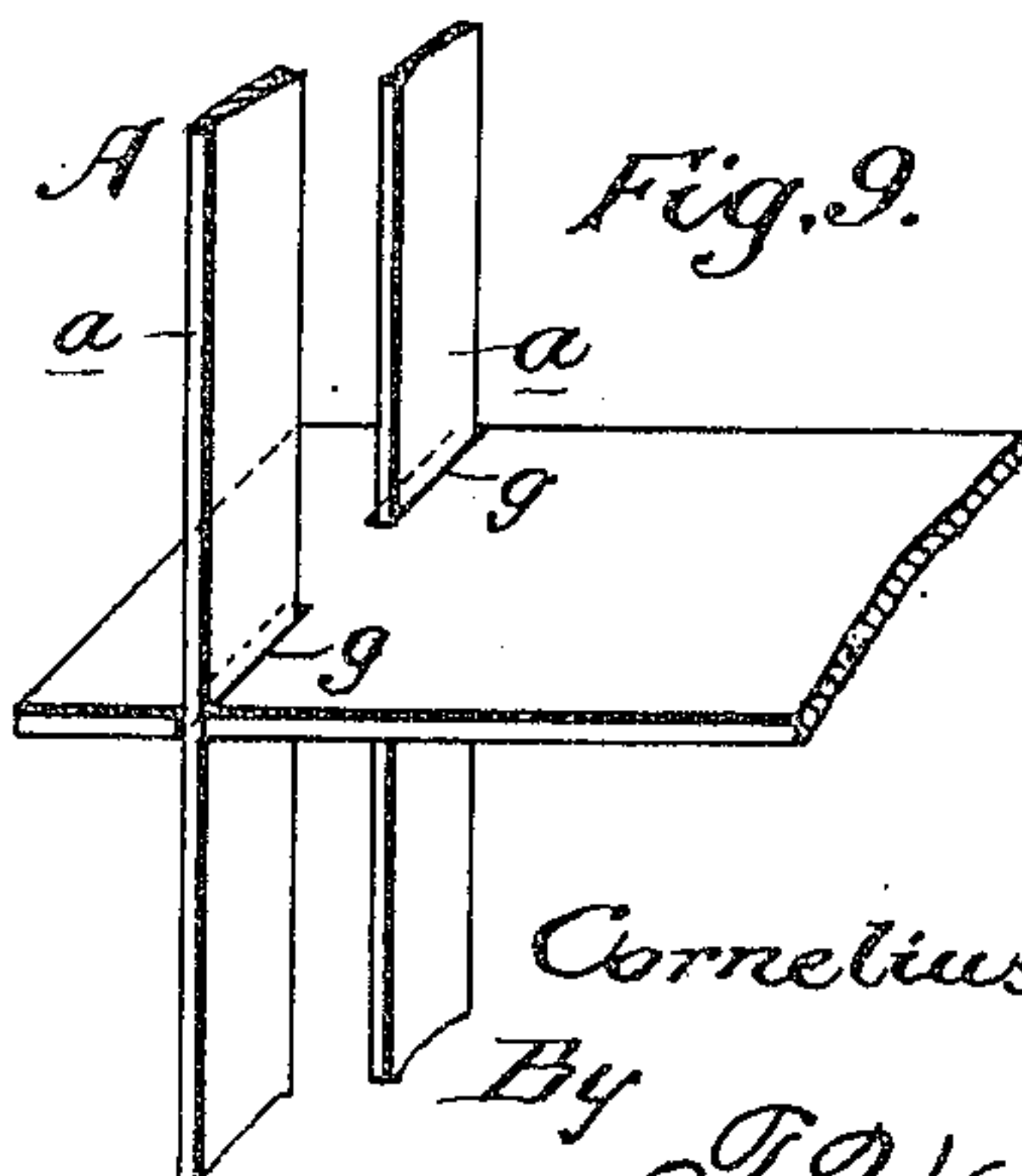


Fig. 9.



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# UNITED STATES PATENT OFFICE.

CORNELIUS COLLINS, OF SAN FRANCISCO, CALIFORNIA.

## FIREPROOF BUILDING CONSTRUCTION.

No. 851,919.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed March 12, 1906. Serial No. 305,728.

*To all whom it may concern:*

Be it known that I, CORNELIUS COLLINS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Fireproof Building Construction, of which the following is a specification.

My invention relates to certain new and useful improvements in fire-proof building constructions wherein a light and rigid metallic frame work is employed for partitions, furring, ceilings and other subdividing structures; and my invention consists of the parts and the constructions and combinations of parts which I will hereinafter describe and claim.

In a former patent granted to me January 2, 1900, No. 640,445, I have disclosed a fireproof building construction where structural metal is used and where parallel strips of sheet metal having little inherent rigidity in themselves are so connected with each other and with supporting beams by lateral or transverse braces as to form rigid structures capable of supporting mortar, concrete or other plastic material which will harden after application whereby the metal and concrete become mutually supporting and are especially useful in the construction of partitions, ceilings, floors and other subdividing structures which it is desired to render fire-proof and where it is desirable to protect the metal from the direct action of heat or from destruction by oxidation or other causes.

In modern methods of building it is the tendency to eliminate wood and combustible material to as great an extent as possible, and to substitute in lieu thereof wherever practicable steel, brick, stone, concrete or other non-combustible materials. It is also desirable on account of the costly character of the aforesaid structures to economize the interior space as much as possible by making the interior walls, ceilings and floors, as thin as is consistent with strength and sufficient solidity to maintain them in place without vibration, and to make them fireproof, and resistant.

In my present invention an important object is to still further economize in the cost of structures of the character before alluded to by using narrow separate and parallel strips spaced from each other a distance substan-

tially approximating the thickness of the partition or structures to be constructed, and separate and narrow bracing pieces with bent heel portions made wider than the braces and sufficiently wide to bridge the space between the separated strips, or beams, and extend over the latter so as to be secured thereto.

A further object is to provide an improved means for securing the ends of overlapping bracing pieces together.

A still further object is to provide wooden nailing pieces with means whereby they may be secured to the strips in such manner that wainscoting and like finishing constructions may be rigidly secured to the rigid partition.

In the accompanying drawings which are illustrative of several forms of my invention,—Figure 1, represents in perspective a section of fire-proof construction embodying my invention. Fig. 2, is an enlarged perspective of portions of two parallel uprights and connecting braces. Fig. 3, is a perspective of one of the bracing pieces before it is bent. Fig. 4, shows a bracing strip of modified form. Fig. 5, shows a bracing piece secured at the side edge of the upright. Figs. 6 and 7 illustrate methods of securing overlapping portions of the bracing strips. Fig. 8, is a perspective view of a locking button or member. Figs. 9 and 10, are modifications to be referred to.

In said drawing A represents what may be the vertical or upright members or strips adapted for a partition, but it is equally manifest that these strips may be used either vertically or horizontally in the construction of the several parts of a building.

For present purposes I will hereafter term these strips as "uprights" and for the purposes of this description I will assume that they are designed for a fireproof partition employing metal and concrete in its construction. Each upright I form of two separate narrow strips *a* placed edge to edge, and separated from each other edgewise a distance substantially approximating the thickness of the desired partition; that is, the distance between the outer edges of the two parallel strips may represent the thickness of the partition minus the metal lathing, burlap or other fabric which I may secure over the uprights, and the concrete, plaster, or other plastic outer coating. In connection with said uprights I employ the bracing strips B



which extend laterally or transversely from one upright to another and are fixed or attached to both, in some suitable manner, as by means I will hereinafter describe, so as to connect adjacent uprights to form a rigid brace there-between, and to form a rigid and secure, though light and economical, skeleton frame work of substantially indestructible character and one that is desirable in fire-proof building constructions. While the parallel spaced strips which comprise each upright may be connected in a fixed relation to each other in any suitable manner so as to preserve the space  $v$  between their inner edges, and which space is desirable for the reception of pipes, or for wires etc., for conveying electric currents to the building, I prefer, for my present purposes, to form the braces or pieces B with widened or enlarged heels  $c$  which are bent at right angles to the length of said bracing pieces so as to adapt the heel pieces to be riveted, tied or otherwise secured to the members of the upright. The heel pieces are preferably made sufficiently wider than the space between the parallel members of the upright to overlap one, or both, of the upright members to afford room for a rivet  $d$  or a tying wire, clamp or other means, all well known in this art, whereby the bracing pieces are securely fixed to the upright at the heel ends.

In Figs. 1, 2 and 3, I show a bracing piece made substantially T-shape and having the heel bent at right angles. With such a construction the heel extends equally right and left of the main part of the bracing piece and bridges the space between the two spaced members  $a$  of the upright, and extends over both members and is riveted thereto at  $d$  to maintain the fixed spaced relation between the upright-members. The projection each side of the main part of the brace may be unequal, of course, in fact in some instances, as for instance in Fig. 4, I may construct the brace of a substantially L-shaped blank in which case the heel will project only beyond one side of the bracing piece, and is thus adapted for an upright composed of a single piece of metal, as in Fig. 5, in which instance, when the bracing piece is in operative position, it will lie flush with or a little to one side of the plane of the edge of the upright strip and thereby serve substantially the same purpose as though the bracing strip was an integral tongue bent from the edge of the strip, as in Figs. 1, 5 and 6, of my said former patent. In some instances the width of the heel may be even greater than the distance between the outside edges of the spaced members of the upright in which case the portions  $v'$   $v'$  which extend beyond the outside edges of said members may be folded or bent back over said edges and made to securely clamp thereto as in Fig. 10, by press-

ing them tight thereagainst. Beyond the heel portion, the bracing pieces are, preferably, of uniform width, and, preferably, are sufficiently long to extend to the next or adjacent upright, and are sufficiently narrow as to be passed into the space between the members of the next or adjacent upright and overlap the corresponding bracing strip thereof, as shown in Fig. 1. The width of the bracing strip may be such that its edges will bind against the edges of said space when the free end of the strip is forced into the space whereby said end will be held, or a rivet, clamp, or other fastening may be employed, if desired. For purposes of illustration I show a rivet 5 in Fig. 5, a clamp 6 in Fig. 6 and a novel fastening means in Figs. 1 and 7.

The device of Fig. 7 consists of a piece of thin flat metal with upper and lower wide heads  $d$  and an intermediate flat connecting shank  $e$ . When using such a device, I slot the free end of one bracing piece and make a corresponding matching slot in the heel end of the bracing piece to which it is to be fastened and then, the said slots being in register, I pass one of the heads of the fastener through both slots turn them cross wise the slots, and then, by suitable tools, I hold one of said heads and turn the other head so as to twist the intermediate shank  $e$  which shortens the shank and causes the heads to firmly and securely clamp the pieces between them. Such a fastening means may be employed wherever two pieces overlap each other and it is desired to hold them tightly together.

When the partition is to be furnished with a wainscoting or like finish or covering which cannot be nailed or satisfactorily fastened to the interior skeleton frame work, I employ the wooden blocks D shown in Fig. 1. These may be of any suitable or desired width and thickness. They may be as wide as the upright, but preferably should be thin enough to be readily passed endwise through the space between the spaced members of the upright, or through the slot when a single piece of metal is used for the purpose, as in Fig. 9, and then turned into horizontal position, to facilitate which operation I cut grooves  $g$  in the opposite edges of the blocks to match with and to receive the edges of the upright. This construction is also applicable to the ends of metal bracing strips made of separate straight and unbent pieces as shown in Fig. 9. The wooden blocks may be tied or fastened in place by any well known means, and when in place they serve as a means to which the wainscoting or an outside covering may be nailed quickly and securely.

In conjunction with all of the forms herein described, I employ mortar, concrete, or other plastic material which will afterward



harden, and this is spread over and through the structure in the manner commonly resorted to in this art.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is,—

1. In a fireproof building construction, a beam or upright composed of separate, parallel members spaced edgewise from each other, a bracing piece adapted to extend transversely from said beam or upright to an adjacent one, said bracing piece having an integral heel portion bent at an angle and made of greater width transversely than the body of said piece and of sufficient width to extend across the space between the members of the beam or upright and to be secured to each of the members to fixedly maintain the space therebetween.

2. In a fireproof building construction, a series of beams or uprights formed of sheet metal set edgewise substantially parallel one with the other, and bracing pieces arranged substantially at right angles to the beams or uprights and extending from one beam or upright to an adjacent one, said bracing pieces being of less width than the width of the beam or upright and having a heel portion bent at right angles to its body and of greater width than said body so that it may extend transversely over the beam to a plane at one side of the edge of said body.

3. In a fireproof building construction, the combination with parallel uprights of thin sheet metal, of bracing pieces extending transversely between two adjacent uprights said bracing pieces having a heel end made wider than the remainder of the piece and bent at right angles thereto whereby it projects transversely beyond the plane of the edge of the piece and may be fixed to said upright.

4. In a fireproof building construction, the combination with parallel uprights formed of separate and spaced strips of thin sheet metal, of bracing pieces extending transversely between two adjacent uprights, said bracing pieces having a heel portion wider than the body of the piece whereby it bridges the space between the separated strips of each upright and projects right and left beyond the plane of the edges of the piece and over said strips, and is secured to the latter.

5. In a fireproof building construction, the combination of an upright, or beam, of thin sheet metal set edgewise, of a bracing piece extending transversely between adjacent uprights, or beams, said bracing piece having a downturned heel portion of greater width transversely than the width of the piece whereby it overlaps the upright or beam, and means for securing the extended portion of the heel to the upright, said bracing

piece extending to and beyond an adjacent upright and fixed to a like bracing piece thereof.

6. In a fireproof building construction, the combination with an upright, or beam, of a bracing piece of uniform width for the major portion of its length and having one end widened transversely and bent at right angles, and means for securing said widened portion to an upright member or beam.

7. In a fireproof building construction, the combination with uprights each formed of two parallel and spaced strips of sheet metal, of bracing pieces extending transversely between adjacent uprights said spacing pieces having transversely widened heel portions which bridge the space between the strips and overlap the strips said strips being independent of each other whereby they may be moved toward and from each other to adjust the width of the upright, and means fixing the heel portions of the bracing pieces to the strips and thereby maintaining the strips in a fixed relation to each other, the free ends of the bracing pieces from one upright extending to and between the corresponding pieces of an adjacent upright and being fixed to a corresponding bracing piece thereof.

8. The combination with the overlapping ends of two pieces of sheet metal, of means for fastening said pieces together said fastening means comprising upper and lower heads and a connecting shank, said shank passing through the overlapping portions of the pieces and said heads being turnable to twist said shank and thereby shorten the same to cause the heads to firmly clamp the pieces.

9. The combination with the overlapping ends of two pieces of metal said ends having elongated slots adapted to register, of a fastener for said ends said fastener including upper and lower heads and a connecting shank, one of said heads and said shank being passed through said slots and said heads being then turned crosswise of the slots whereby the shank is twisted to reduce its length and cause the heads to clamp the pieces tightly together.

10. In a fireproof building construction, the combination with spaced, parallel uprights having slots or openings in their central portions, of connecting pieces of greater width than said slots and passed endwise therein said pieces having grooves in their edges adapted to register with the edges of the uprights whereby the pieces may be turned into a horizontal position to receive said edges and form a lock and rigid connection between adjacent uprights.

11. In a fireproof building construction, the combination with spaced, parallel uprights having slots or openings in their central portions, of wooden blocks of greater width than said slots and passed endwise



therein, said blocks having grooves cut transversely into opposite edges so as to register with the opposite edges of each of two adjacent uprights whereby the blocks may be  
5 turned into a horizontal position and made to lock with the uprights, said blocks serving as nailing pieces for wainscoting.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CORNELIUS COLLINS.

Witnesses:

C. W. FOWLER,  
TIMOTHY COLLINS.