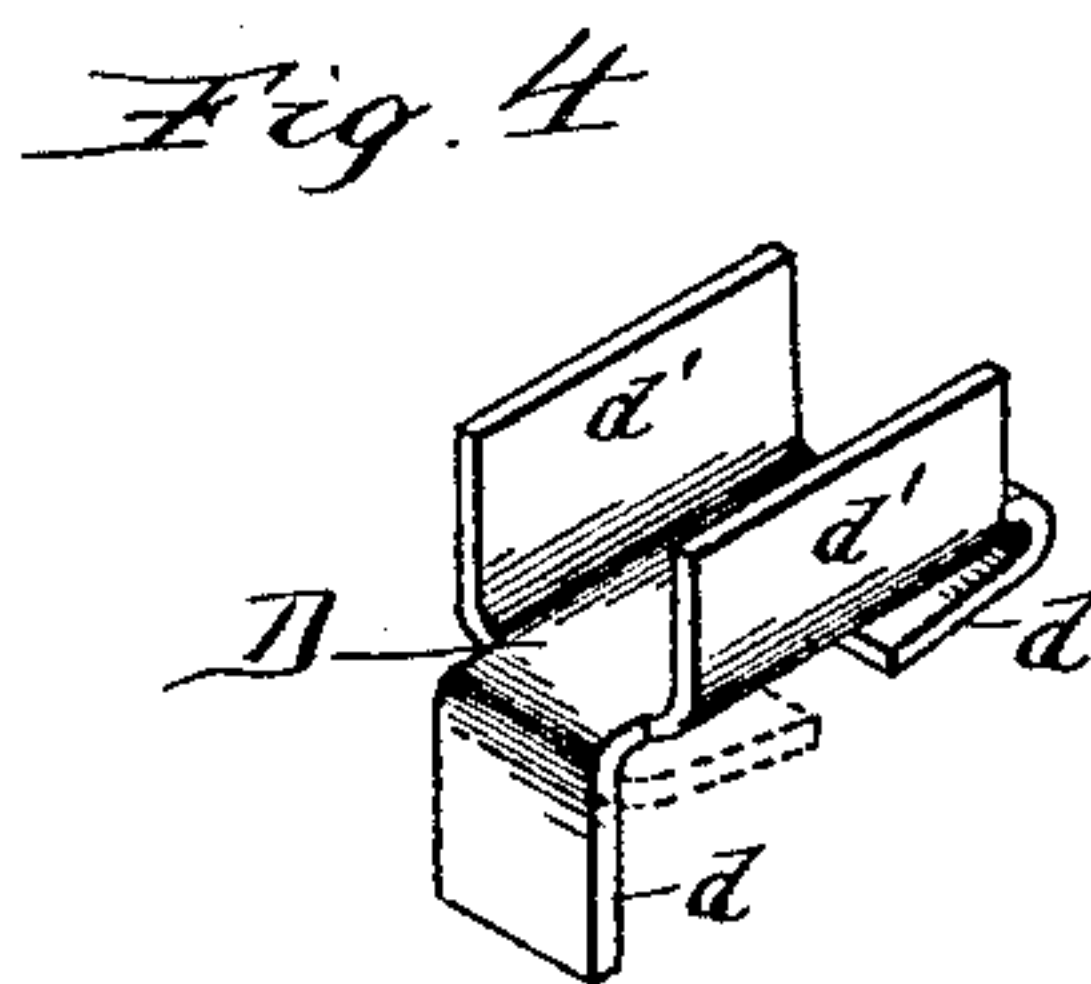
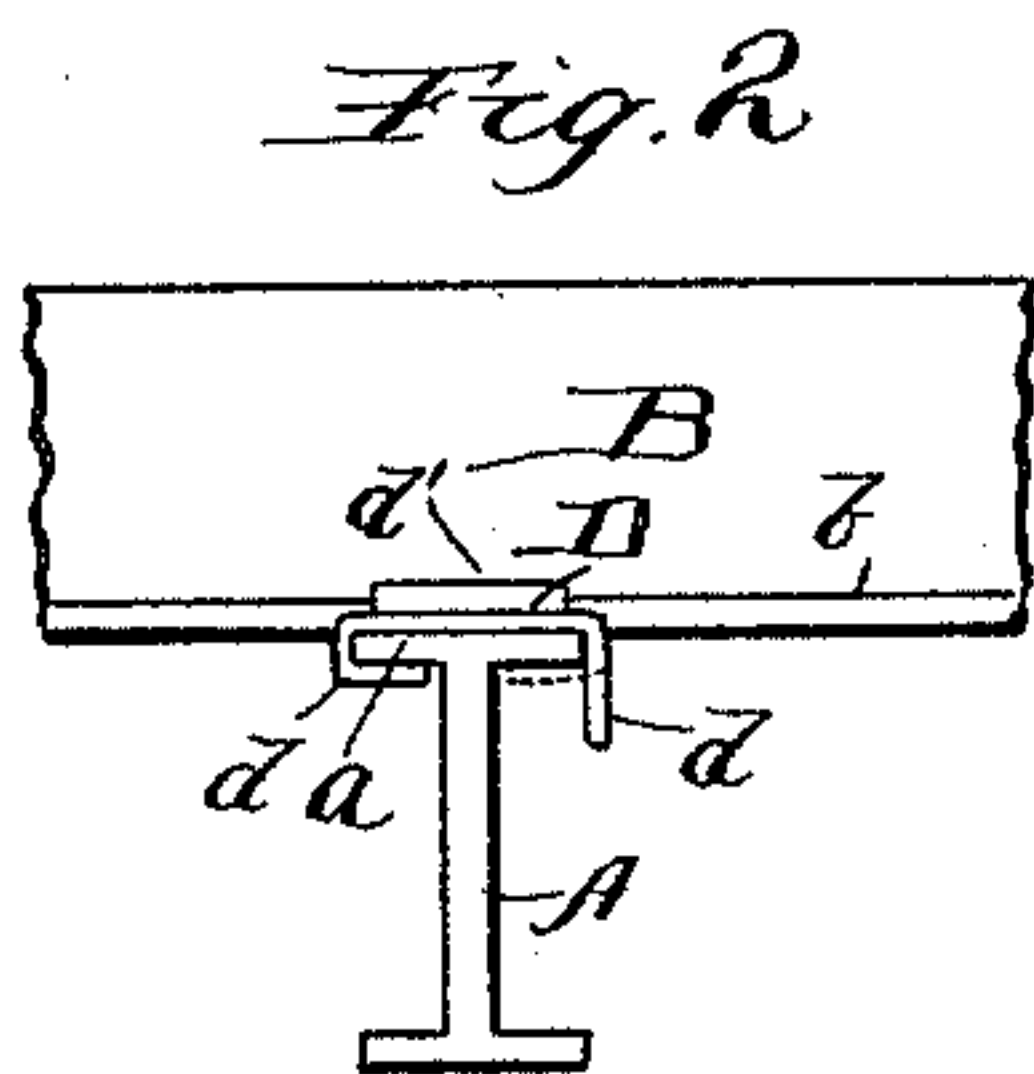
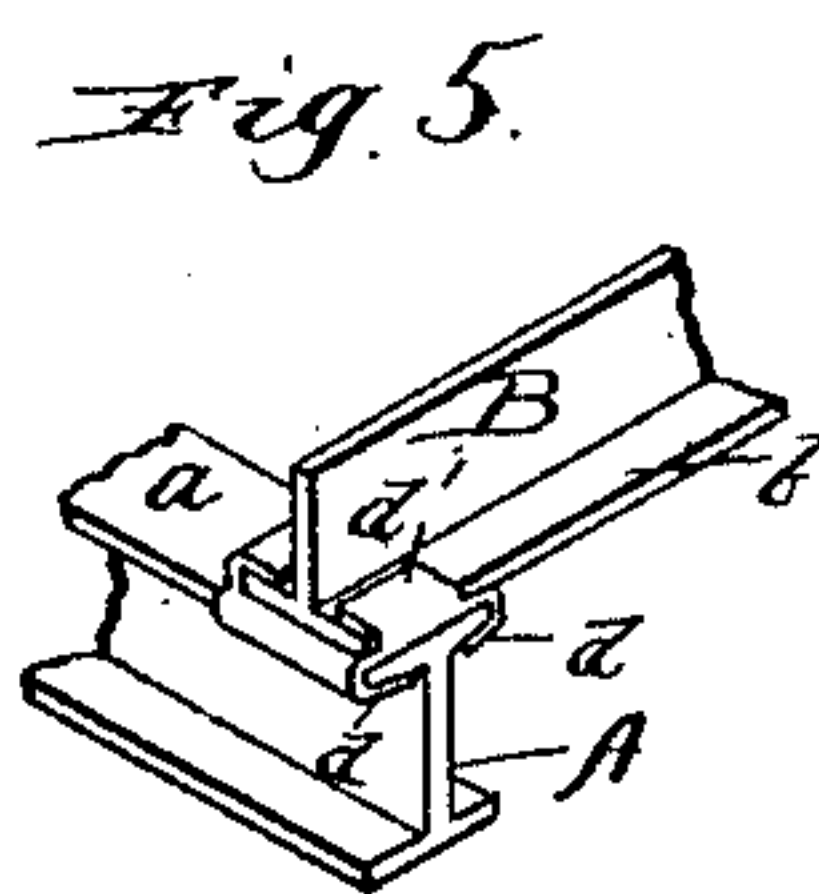
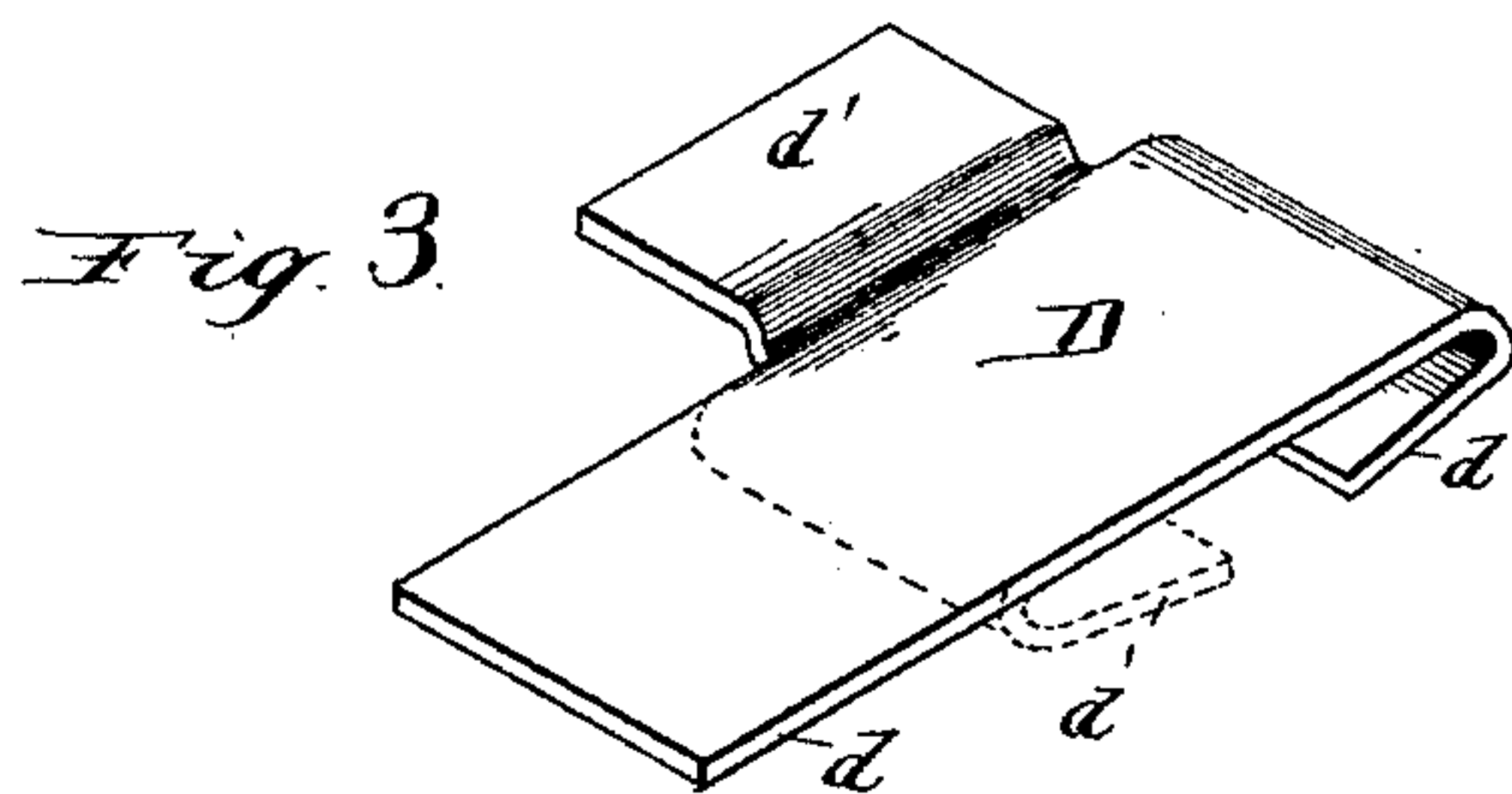
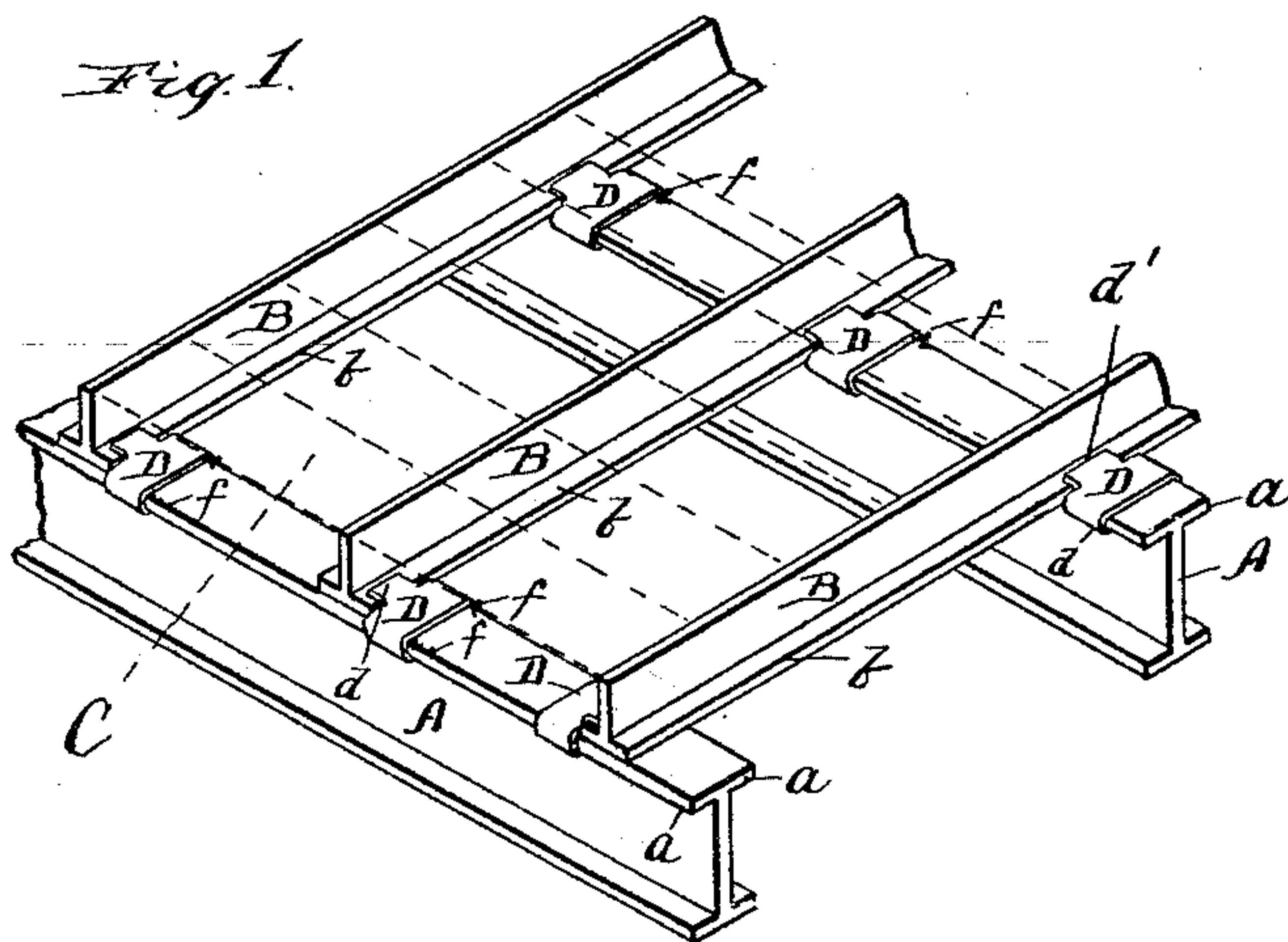


(No Model.)

H. A. STREETER.
IRON ROOF OR OTHER STRUCTURE.

No. 459,051.

Patented Sept. 8, 1891.



Witnesses:
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UNITED STATES PATENT OFFICE.

HERBERT A. STREETER, OF CHICAGO, ILLINOIS.

IRON ROOF OR OTHER STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 459,051, dated September 8, 1891.

Application filed March 15, 1890. Serial No. 343,985. (No model.)

To all whom it may concern:

Be it known that I, HERBERT A. STREETER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Iron Roofs and other Structures, of which the following is a specification.

My invention relates to improvements in the construction of iron or steel fire-proof roof, floor, or other structures wherein iron or steel **I** or **T** beams crossing each other are employed, the space between the upper course of beams being filled in with hollow tile or other analogous material.

Heretofore it has been customary to secure the crossing beams together by drilling holes through the flanges of the crossing beams after they are put in place on the building and inserting bolts through such holes. This means of securing the beams together is not only very expensive, as the holes have to be drilled by hand, it being impracticable to drill the holes by machinery before the beams are put in place, but it is also a very slow and tedious method and frequently occasions great delay and incidental expense in the erection of the building. This method of drilling holes through the flanges of the crossing beams also tends in a measure to weaken the beams and is liable to the more serious objection that the slightest contraction or expansion or longitudinal movement of the beams, due to the strains to which they are subjected, will often cut the bolts, and thus render them of no service.

The object of my invention is to provide a strong, simple, and efficient device or means for rigidly and firmly securing the crossing beams in place, one to the other, which will not operate to in any way weaken the beams, and whereby the beams may be rapidly and quickly secured together, and which will admit of the necessary contraction or expansion or longitudinal movement of the beams without injury to the device by which they are secured together.

To this end my invention consists in the combination of the crossing beams with a plate-steel attaching device having lips adapted to be bent over the flanges of the crossing beams. The lips on the attaching-plate which embrace the flange or flanges of one

beam are arranged at right angles to the lip or lips which embrace the flange or flanges of the crossing beam. The attaching-plate may fit between the crossing beams, in which case the upper beam will rest upon the attaching-plate; or the attaching-plate may be secured to the under beam at the side of the upper or crossing beam.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a perspective view of a device embodying my invention. Fig. 2 is an end view of the lower beam, showing the attaching-plate as applied before the final lip is hammered to place around the flange of the lower beam. Fig. 3 is a perspective view of the attaching-plate, showing the form which fits at the side of the upper beam. Fig. 4 is a similar perspective view showing the form of attaching-plate which fits between the crossing beams. Fig. 5 is a similar perspective view showing the beams secured together by the attaching-plate fitting between them.

In said drawings, A represents the under or **I** beams, such as are commonly used for the main rafters of a roof or main supporting-beams of a floor. These **I**-beams A are usually placed about three feet apart.

B represents the ordinary **T**-beams, crossing the beams A at right angles, and between which the hollow tile C are laid and by the flanges *b b* of which such tile are supported. The beams B are usually placed about twelve inches apart, according to the dimensions of the particular tile used.

D is my attaching-plate, having lips or flanges *d d*, adapted to embrace the flanges *a a* of the under beam A. The attaching-plate D has one or more lips or flanges *d'*, adapted to fit over or embrace the flange or flanges *b b* of the upper or crossing beam B. One of the lips *d* may be bent to shape, as indicated in Fig. 3, and also the lip or flange *d'* when the attaching-plate is manufactured.

To secure the beams A B together, all that is required to be done is to put the attaching-plate in position, as indicated in Fig. 2, and then bend the lip or flange *d* snugly around the flange *a* of the beam A.

The attaching-plates D should be made of

strong tough steel plate, so that one or more of the flanges or lips $d d'$ may be hammered to place when the metal is cold. If preferred, however, the plate may be heated by a portable heating device at the time the flanges or lips are hammered home. When the holding flanges or lips $d d'$ are bent or hammered snugly around the flanges of the beams, they will firmly and securely unite the two together and prevent any possibility of the beams getting out of place in respect to each other. If desired, the flanges $a a$ of the bottom beam A, at the edges thereof adjacent to the attaching-plate D, may be nicked with a cold-chisel, as indicated at f , as an additional security; but this in practice I find to be generally unnecessary. Both the flanges $d d'$ which fit around the lower plate may preferably be partially formed or bent at the time of manufacture, as indicated in Figs. 2 and 4, one of the flanges d being bent into hook shape to fit the flange a of the beam A and the other being preferably bent at about right angles to the plane of the plate A. It should be understood that when the attaching-plate D is applied both the flanges or lips $d d'$ should be to some extent hammered around the flanges of the beam A, so as to cause a firm bite around the beam.

I find in practice that the attaching-plates D, when made of plate steel of the required thickness to give necessary strength, do not interfere with the smooth laying of the tile C upon the flanges $b b$ of the beams B, as such tiles are always laid in a bed of mortar, which operates to make a smooth seat for the tile-blocks, notwithstanding the lips d' of the plate D, resting upon the flange b of the beams B. Where the attaching-plates are made of the form indicated in Figs. 1, 2, and 3, an attaching-plate D may be secured on each side of each beam B. Ordinarily, however, one attaching-plate will suffice at each crossing of the beams A B. Preferably, however, the attaching-plates D should be arranged alternately on each side of the beam B. This alternate arrangement is indicated in Fig. 1 in respect to the right-hand beam B.

Although the form shown in Figs. 4 and 5 possesses some advantages in point of strength, I prefer to use the form shown in Figs. 1, 2, and 3, where the attaching-plate fits at the side of the beams B B, as this form permits the beams A B to fit flat together with nothing between them.

By means of my attaching-plates the beams A B may be very rapidly and cheaply secured together as the building is being constructed. The beams are in no way weakened, and the

construction admits of contraction and expansion without injury to the fastening or means of attachment.

Another great practical convenience in the use of my invention arises from the fact that if the beams should by accident or mistake be secured in a wrong position the binding-lips of the attaching-plates may be easily and quickly loosened by simply driving a cold-chisel or wedge under the lips $d d'$ and then the beams readjusted in place.

I claim—

1. The fire-proof roof or floor structure herein shown and described, consisting in the combination of the lower beams A, having flanges a , upper cross-beams B, having flanges b , resting upon and supported by said beams A, tile C, supported by and between said beams B, and wrought-iron or steel attaching-plates D, fitting on the upper faces of said lower beams A and having each lips or flanges $d d'$, bent firmly around and embracing the flanges of said lower beams A, whereby said attaching-plates are rigidly fixed in position longitudinally on said beams A and adapted to resist the lateral thrust of said tile C, said attaching-plates D being also each formed with a lip or flange d' , fitting over the flange of said upper beams B, whereby the beams A and B are rigidly secured together and beams B held firmly at the proper distance apart to support said tile, substantially as specified.

2. The fire-proof roof or floor structure herein shown and described, consisting in the combination of the lower beams A, having flanges a , upper cross-beams B, having flanges b , resting upon and supported by said beams A, tile C, supported by and between said beams B, and wrought-iron or steel attaching-plates D, fitting on the upper faces of said lower beams A and having each lips or flanges $d d'$, bent firmly around and embracing the flanges of said lower beams A, whereby said attaching-plates are rigidly fixed in position longitudinally on said beams A and adapted to resist the lateral thrust of said tile C, said attaching-plates D being also each formed with a lip or flange d' , fitting over the flange of said upper beams B, whereby the beams A and B are rigidly secured together and beams B held firmly at the proper distance apart to support said tile, said attaching-plates D fitting on said beams A at the side of said beams B, substantially as shown and described.

HERBERT A. STREETER.

Witnesses:

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EMMA HACK.