

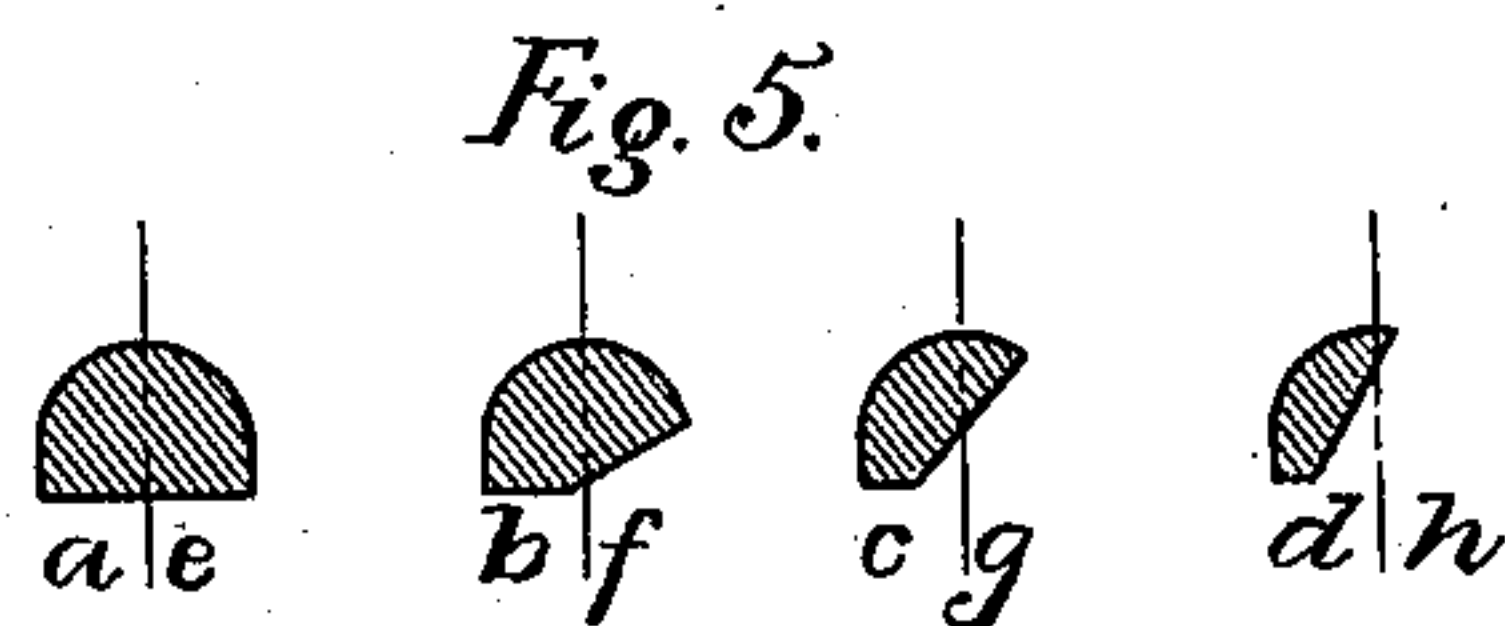
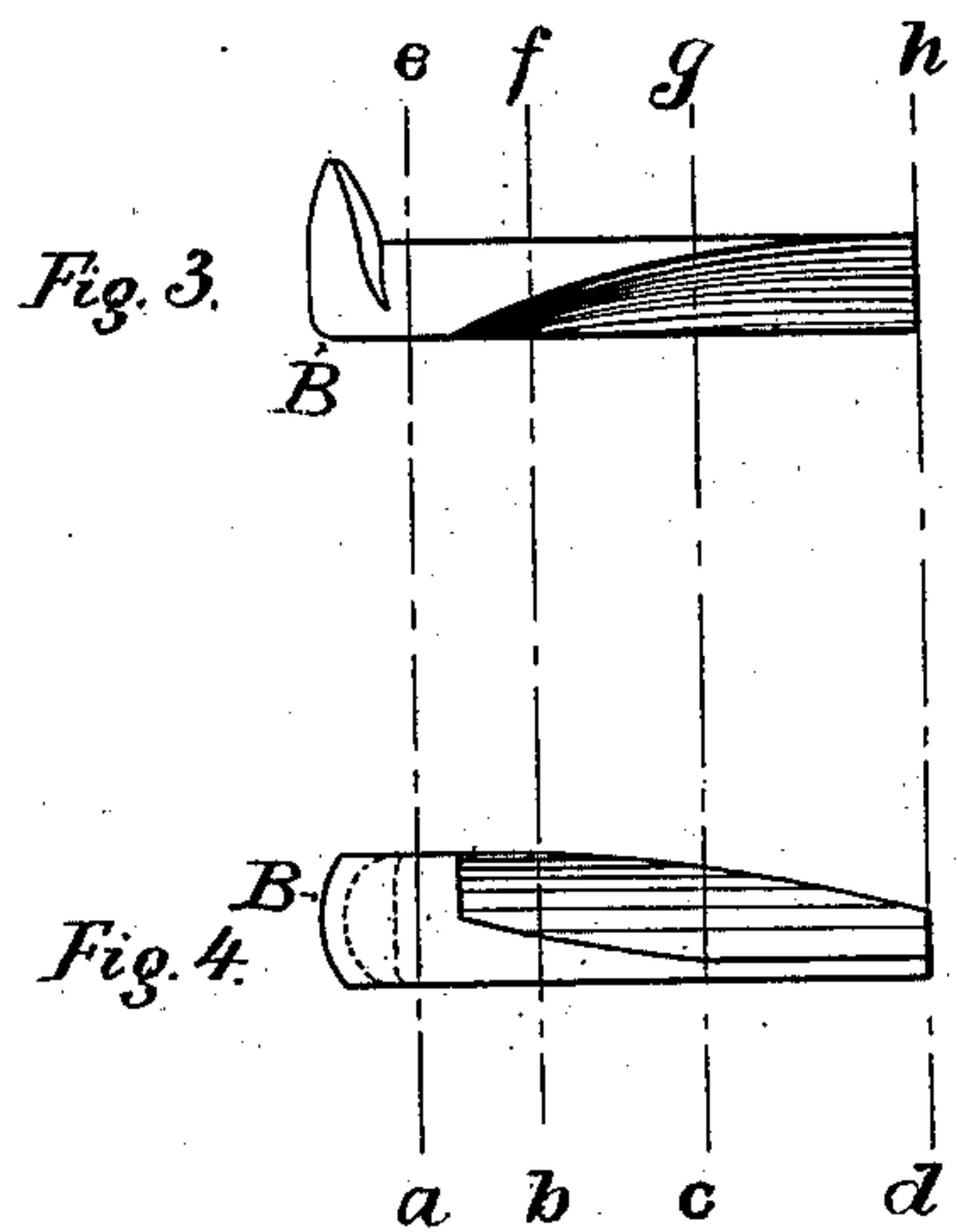
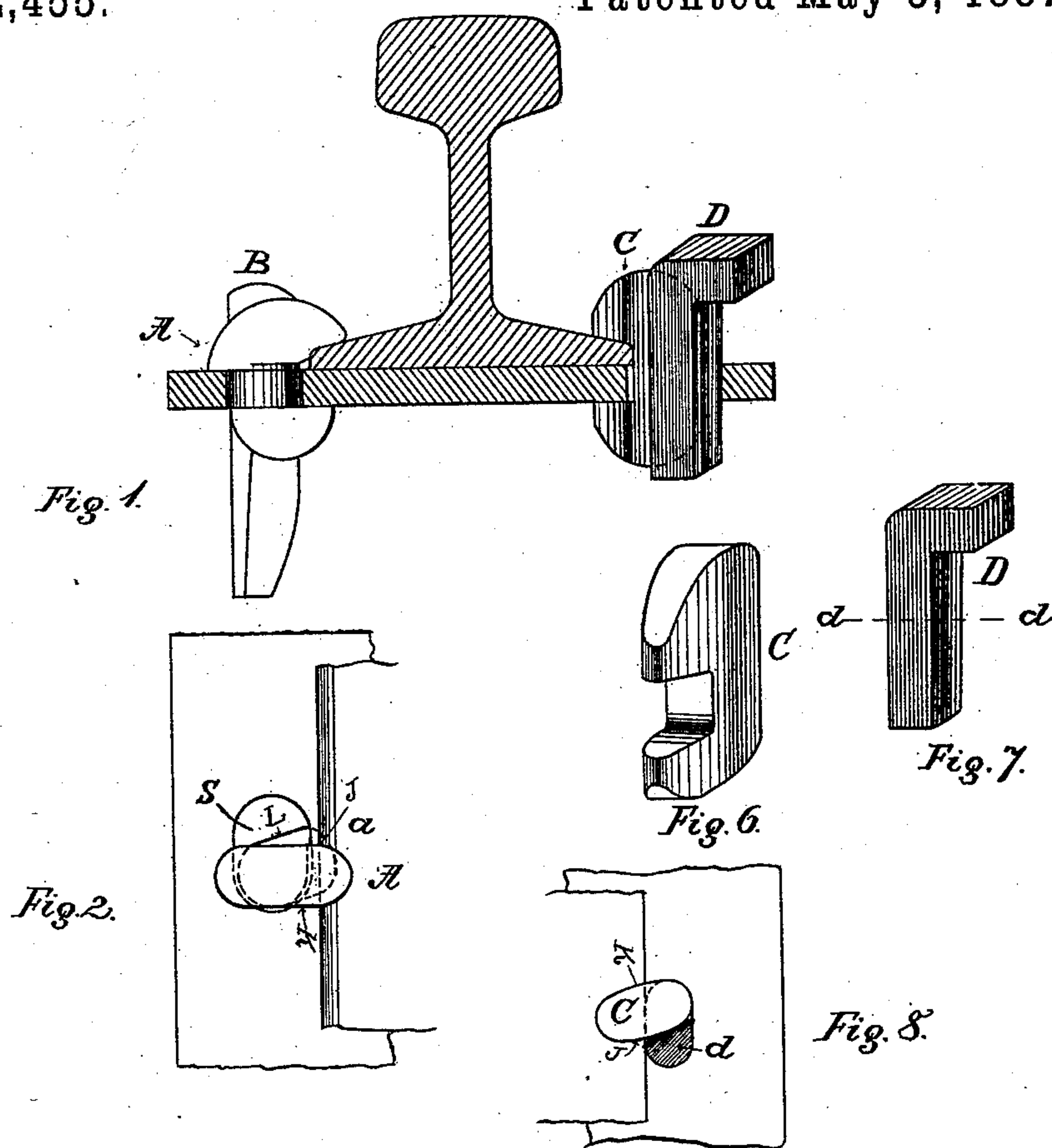
(No Model.)

C. A. MARSHALL.

GIB AND KEY.

No. 362,455.

Patented May 3, 1887.



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# UNITED STATES PATENT OFFICE.

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## GIB AND KEY.

SPECIFICATION forming part of Letters Patent No. 362,455, dated May 3, 1887.

Application filed January 6, 1887. Serial No. 223,571. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. MARSHALL, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Gibs and Keys, which invention or improvement is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to construct a gib and key which by their joint action, wherever applicable, shall present great powers of leverage, and which by their great solidity of bearing will resist any tendency to work loose from shocks or jars of machinery in motion or the vibration of moving loads.

The invention consists of the parts hereinafter described, and set forth in the claim.

In the accompanying drawings, Figure 1 shows the application of two sets of gibs and keys for the purpose of clamping the lower flanges or foot of a car-rail to a bottom plate, one of said sets being a modification of the other, but both embodying the same general principle of operation. The rail and plate are shown in cross-section and the gibs and keys in elevation, the key on the right being in perspective. Fig. 2 shows in plan the arrangement of devices on the left of Fig. 1, the key being omitted. Figs. 3 and 4 show, respectively, detached, the side and back of the key used with the gib shown in Fig. 2; and Fig. 5 shows the shape of cross-sections of said key, taken at the respective lines *a e*, *b f*, *c g*, and *d h*, drawn through Figs. 3 and 4. Figs. 6 and 7 show, detached, the gib and key used on the right of Fig. 1, each in perspective. Fig. 8 shows in plan the arrangement of devices shown on the right of Fig. 1, the key being omitted.

This invention is illustrated in Fig. 1 as applied to a rail for the purpose of clamping it to a suitable seat or bed, because the lower flange of the rail has a beveled or inclined surface—an advantageous feature in one of any two bodies to be clamped together by means of this invention. It is obvious, however, that the invention may be used in any practical application of clamping metal to metal, whether rails to their chairs or stringers or other metal things having a suitable shape for the jaws of the gib to clamp.

In the figures of the accompanying drawings the several parts to be now described are indicated by letters of reference, as follows: The gib A has a top jaw or head of button form—that is, the head laps over both sides of the slot in which the gib is fitted. The rear lap, however, is not essential. The important feature is that the side of the gib, instead of being straight vertically, is given a winding incline or helical wind, as shown in Fig. 2 by the line L, which indicates the angle of inclination of the side of the gib at the bottom jaw. By reason of this construction sufficient rotation of the gib A is effected to firmly clamp the rail to the plate by driving into the slot the key B, shaped with a winding incline on one side, as shown in the several Figs. 3, 4, 5. The gib C has jaws shaped substantially like the jaws of the gib A. The sides, however, of the gib C are not winding, but straight. The key D is tapered and of such a shape that when driven into the slot the gib C and said key entirely fill the curved ends of the slot in the plate, as indicated by the section-lines marked *d* in Fig. 8.

The mechanical principle involved in this invention is as follows: The gib is preferably made of such shape in the jaws that it is slightly smaller between them than the bevel or wedge surface constituted of the two pieces said jaws are to clamp. The gib fits against one of the half-round ends of the slot S, and rotates against this when forced by the driven key, its center of rotation being true to the center of the curved end of the slot against which it is rotated. As the key is driven into the slot, the gib rotates correspondingly to each stage of the key's entry, and at each of said rotations each end of the slot is well and solidly filled by the bearing against it of the gib and key, respectively. There is thus provided a compound leverage of exceedingly great closing or clamping power, and a fastening device is thus obtained of such a nature and solidity that no amount of vibration will affect it or loosen it.

While the draft put upon the gib by making a greater or less difference in the space between its jaws and the thickness of the wedge or bevel surface to be clamped is advantageous, such draft is not positively necessary; and



while so proportioning the gib and key as to entirely fill the slot in which they are confined is a good plan, such complete filling in breadth is not positively necessary, the important point 5 being to have firm bearing of gib and key against their respective curved ends of the slot. When this is the case, the gib is so firmly held by the key that the gib may even fit slightly loose in the jaws and yet fulfill its 10 office. In fact, an important feature of this device is that when the gib and key are together the device partakes of the nature of a positive lock, the parts being capable of retaining their respective positions without depending upon the friction of the jaws of the 15 gib upon the clamped surfaces for such retention.

The side of the gib C against which the side of the key D bears is flat, as is also said side 20 of said key; hence the angle of said sides must change when the gib rotates against the curved end of the slot S. Both gib and key being thus free to rotate, true alignment of key to gib and perfect bearing against each 25 other at all changes of angle of the bearing-side of each are effectively maintained. The

gib A also rotates by the driving in of its key B; but said key is of such form as enables it to be driven home either with or without rotating. So far as its entry is compensated for 30 by the rotation of the gib, the key does not rotate; but so far as the gib does not rotate, the further entry of the key merely serves, like a wedge, to solidly fill in the slot or to effect a slight rotation of itself, its rounded edge 35 permitting of either or both results.

Having thus fully described my said improvement in gibs and keys, as of my invention I claim—

A clamping device consisting of a gib and 40 key combined, the gib having a side adapted to abut a key provided with an inclined or winding wedge form, and each having a rounded edge adapted to rotate within and against the curved ends of an elongated hole 45 or slot, substantially as and for the purposes set forth.

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