

(Model.)

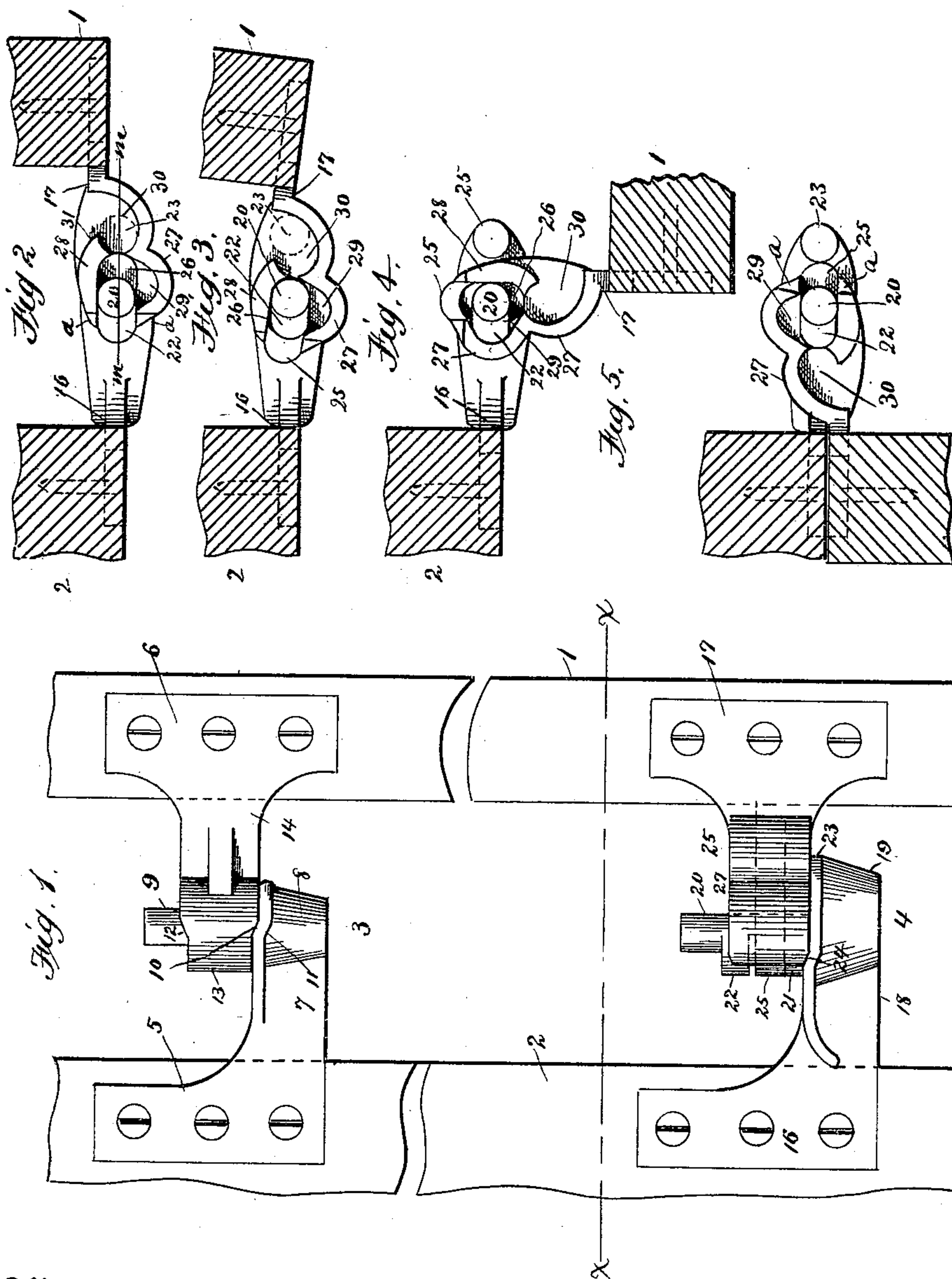
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F. H. KNIGHT.

HINGE.

No. 377,310.

Patented Jan. 31, 1888.



Witnesses

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(Model.)

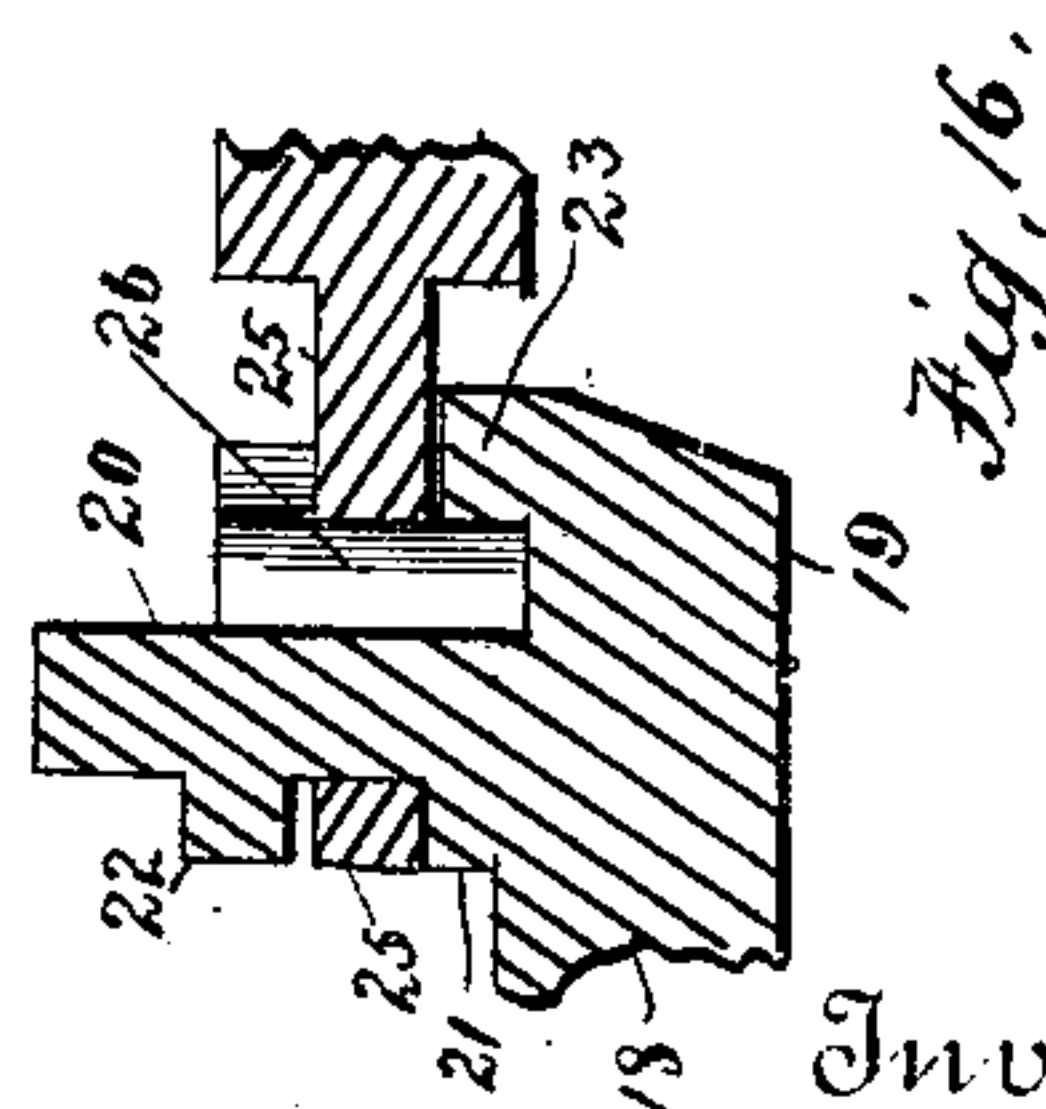
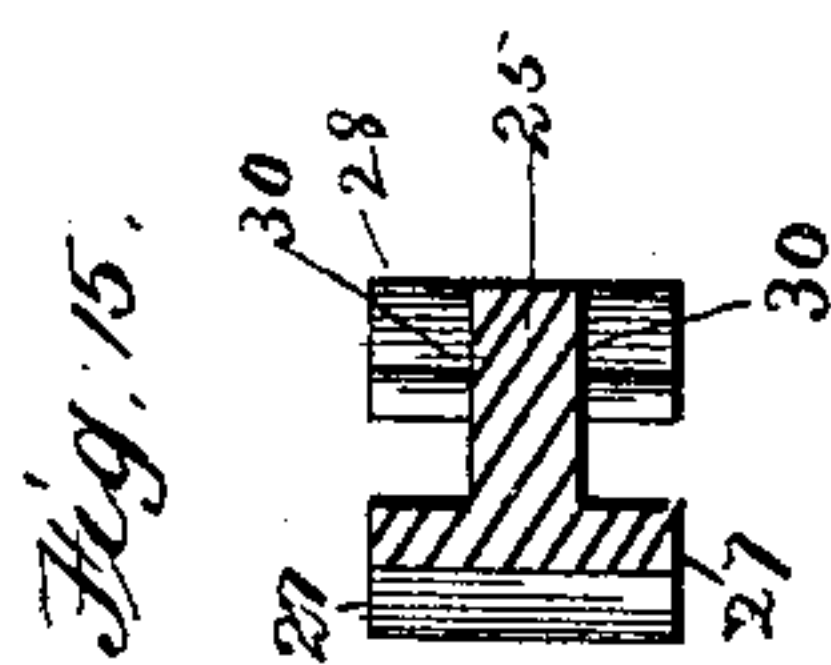
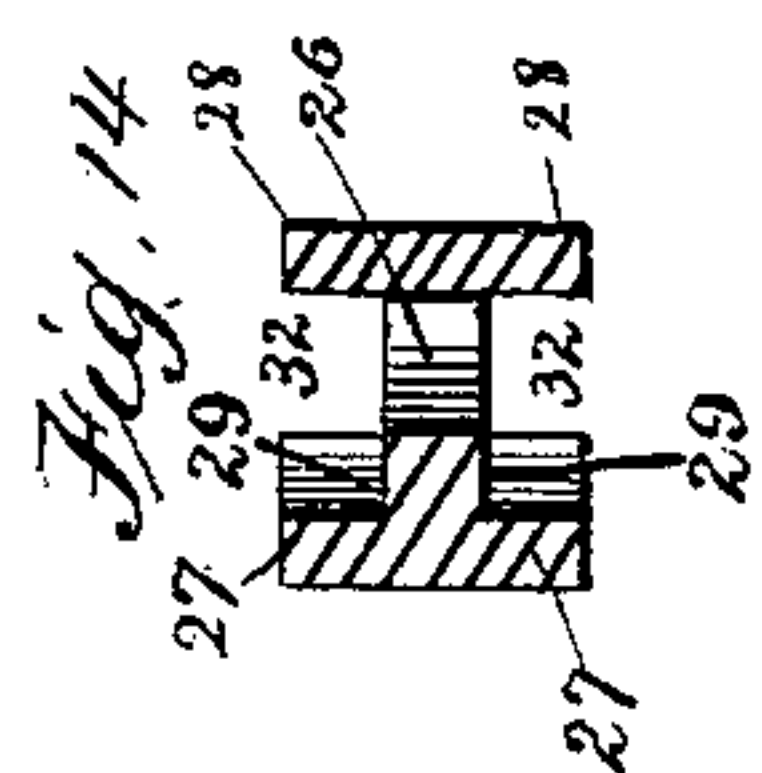
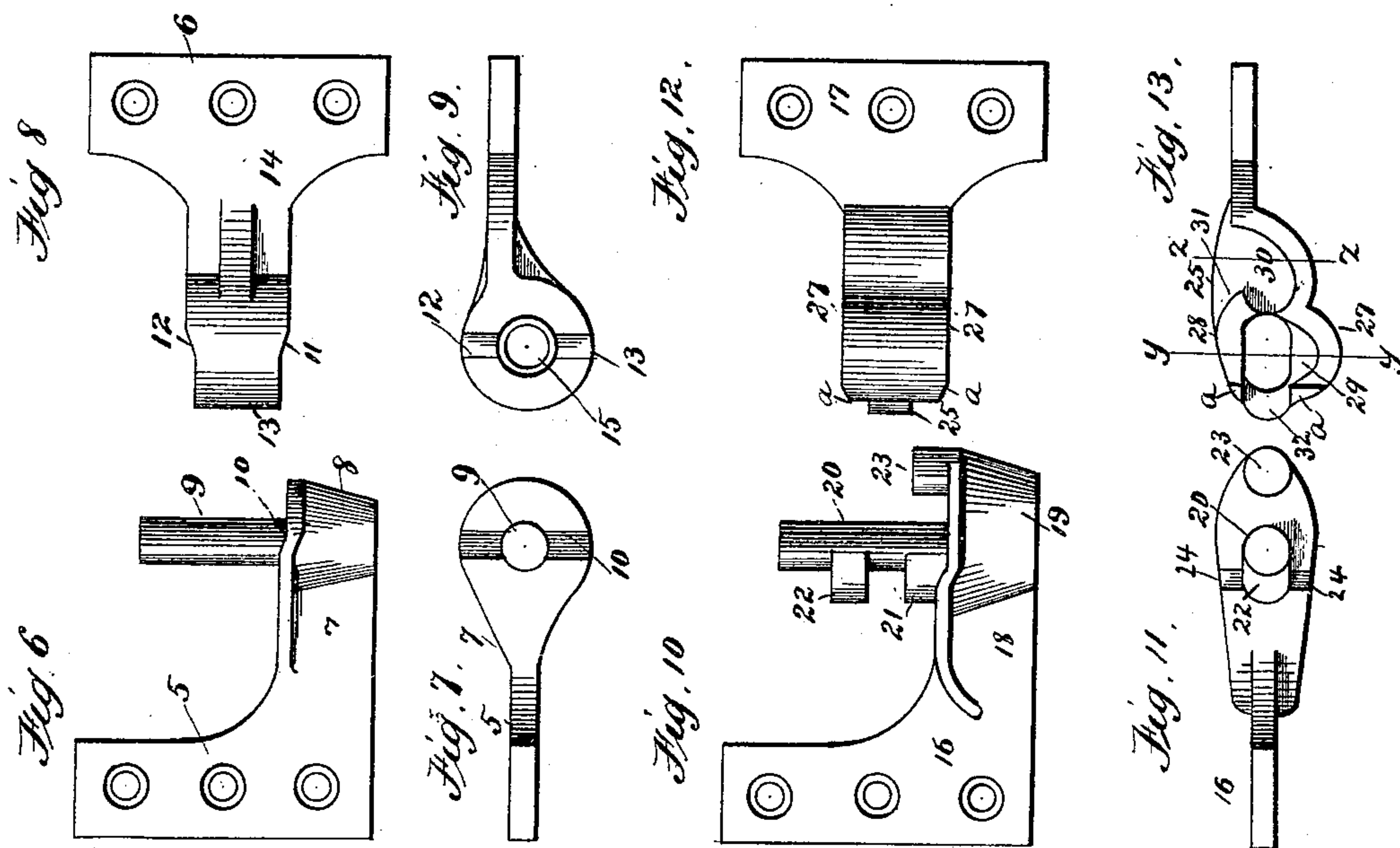
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HINGE.

No. 377,310.

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Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANK H. KNIGHT, OF WASHINGTON, DISTRICT OF COLUMBIA.

## HINGE.

SPECIFICATION forming part of Letters Patent No. 377,310, dated January 31, 1888.

Application filed October 3, 1887. Serial No. 251,327. (Model.)

*To all whom it may concern:*

Be it known that I, FRANK H. KNIGHT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Hinges; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in hinges; and it consists, essentially, in the construction and arrangement of the several parts comprised therein for service substantially as hereinafter described, and illustrated in the accompanying drawings, wherein similar figures of reference denote similar parts.

In said drawings, Figure 1 is an elevation of my improved hinge, showing the same applied to a shutter or door and in open or locked position. Fig. 2 is a sectional view taken on the line *xx* of Fig. 1, looking downward toward the hinge. Figs. 3, 4, and 5 are views showing the hinge in the different positions it assumes while the shutter or door is being opened or closed. Figs. 6 and 7 represent a side elevation and a top plan view, respectively, of one of the leaves (that fixed to the hanging-stile) of the upper hinge. Figs. 8 and 9 are similar views of the remaining leaf of the upper hinge. Figs. 10 and 11 represent, respectively, a side elevation and a top plan view of the fixed leaf of the lower hinge. Figs. 12 and 13 are similar views of the swinging leaf of said lower hinge. Fig. 14 is a sectional view taken on the line *yy* of Fig. 13. Fig. 15 is a similar sectional view taken on the line *zz* of said Fig. 13, and Fig. 16 is a sectional view taken on the line *mm* of Fig. 3.

In the present embodiment of my invention I have shown an ordinary window blind or shutter, 1, movably connected to a hanging-stile, 2, by reversible hinges 3 and 4, which, although differing from each other, to a considerable extent are yet arranged to coact with each other to form a perfect

swinging support for a blind or shutter, 50 and which are constructed, respectively, in the manner which I will now proceed to describe. Of said hinges the upper, 3, consists of two leaves, 5 and 6, which, as are also the leaves of the lower hinge, are provided with suitable apertures to receive screws or nails, by which they are secured to a hanging-stile and blind, door, &c., respectively. The former, 5, of said leaves is provided with a forwardly-projecting portion, 7, which terminates in an enlargement, 8, that carries an upwardly-projecting pintle, 9, and is also provided at the opposite sides of said pintle and upon its upper surface with slight inclines 10, which engage one or the other of similar inclines, 11 and 12, that are formed upon the opposite sides of an enlarged head, 13, which in turn is formed upon a projecting portion, 14, of the leaf 6 and at each side of an aperture, 15, that extends through said head 13 for the reception of the pintle 9.

By reference to Figs. 1, 6, 7, 8, and 9 it will be seen that the upper surface of the projection 7 of the leaf 5 extends in different planes, and that said surface is adapted to closely engage one or the other of the surfaces of the projection 14 of the leaf 6 when the hinges are in open position. It will also be observed, and more especially by reference to Figs. 7 and 8, that while the pintle 9 is placed in the plane of the body portion of the leaf 5, the aperture 15 in the leaf 6 for the reception of said pintle is not in the plane of the body of said leaf, but is rather at one side thereof, the object of such construction being to permit the complete hinge to act either as a "right" or a "left" hand hinge, as will be readily understood. The upper hinge thus constructed is adapted to co-operate with a lower hinge, 4, which consists in two leaves, 16 and 17, the former of which is also provided with a forwardly-projecting portion, 18, terminating in an enlarged head, 19, carrying an upwardly-projecting pintle, 20, which is placed in the plane of the body of the leaf 16, and is provided upon the side adjacent to the body of the leaf with locking-studs 21 and 22, which are arranged at a short distance from each



other and operate to prevent accidental displacement, both lateral and vertical, of the blind.

By reference to Figs. 1, 10, and 11 it will be observed that the upper surface of the projecting portion 18 of the leaf 16 extends in different planes, and that said projection is provided at its outer end with an upwardly-projecting guide-stud, 23, and also at opposite sides of the pintle 20 with inclines 24, the forward edges of which are in alignment with the rear surface of the pintle 20. The remaining part of the hinge 4—viz., the leaf 17—is also provided with a forwardly-projecting portion, 25, which is provided near its outer end with an elongated aperture or slot, 26, which extends in a plane parallel with the plane of the body of the leaf, to receive the pintle 20, and upon opposite sides of said slot 26, upon each side of the projection 25, with flanges 27 and 28, the inner surfaces of the latter of which are coincident with one side of said slot 26, while the inner surfaces of the remaining flanges 27 are curved outward from said slot to provide recesses 29, in which the locking-studs 21 and 22 move when the complete hinge is being opened and closed. (See Figs. 3 and 4.)

The flanges 27 are extended in curved planes rearwardly toward the body of the leaf, to form, in connection with the rear ends of the flanges 28, recesses 30, into one or the other of which the guide-stud 23 is swung (according as the hinge is a right or a left hinge) when the hinge is opened, (see Figs. 1, 2, and 3,) to facilitate which result I curve the outer surfaces of the flanges 28 at the points 31, as shown. The outer ends of the flanges 27 and 28 are beveled or inclined at  $\alpha$ , to operate in unison with the inclines 24, as will be hereinafter described.

The operation of my improved hinge is as follows, assuming the blind or shutter to be closed and the several parts of the hinge 4 to be in the position shown in Fig. 5, the pintle 20 resting against one end of the slot 26, while the guide-stud 23 bears against the outer end of the projection 25: When the blind is swung outward, the locking-studs 21 and 22 upon the pintle 20 will swing into the recesses 29, (see Fig. 4,) and will, by impinging against the sides of said recesses, (the flange 27,) move the pintle 20 toward the opposite end of the slot. The continued outward movement of the blind will next bring the guide-stud 23 into one or the other of the recesses 30, whereby said stud, by impinging against the curved side of said recesses, (see Fig. 3,) will move the leaf 17 outward until the inclines  $\alpha$  of said leaf coincide with the inclines 24 of the leaf 16 and the said inclines are, by the weight of the blind or shutter, moved into engagement, by which the locking-studs 21 and 22 will be moved into the recesses 32 and 33 between the ends of the flanges 27 and 28, and the guide-stud 23 will be moved against the forward side

of the recess 30, thus locking the blind in open position. (See Figs. 1 and 2.)

It will be observed that the stud 22 serves a twofold function—viz., to aid the stud 21 in maintaining the blind in open and locked position, and also to prevent the vertical displacement of said blind when open.

It will be observed that the inclines 10 and 11, or 10 and 12, as the case may be, of the hinge 3 come into engagement simultaneously with the engagement of the inclines 24 and  $\alpha$  of the hinge 4, and will consequently aid said latter inclines when the blind or shutter is to be closed.

To close the blind or shutter, a slight inward pressure only is necessary to move the parts of the hinge 4 into the position shown in Fig. 3, in which position the parts 16 and 17 of the hinge 4 are unlocked from each other, after which the blind may be readily drawn inward, the parts 16 and 17 moving upon each other in similar manner but opposite direction to that hereinbefore described.

While I have herein shown the pintle 20 as having two locking-studs, 21 and 22, I yet do not confine myself to such construction, inasmuch as one of said studs may be dispensed with without detracting from the operation of my invention. Again, it is not essential to the proper working or locking of the blind, shutter, &c., that the hinges 3 and 4 thereon be of different construction, as herein shown, since each of said hinges may be similar in construction to the hinge 4 and successfully accomplish the desired result. Again, the swinging portion 17 of the hinge 4 may be provided upon one side only with flanges 27 and 28, in which case the hinges 4 will be formed into regular right and left hand hinges.

Various other modifications in detail of construction may be made in my invention without departing from the spirit or sacrificing the advantages thereof. I therefore claim the right to make such modifications therein as shall properly fall within the scope and limit of said invention.

Having thus described my invention, I claim—

1. A hinge comprising a leaf having a pintle, a locking-stud upon said pintle, and a guiding-stud separate from said pintle, and a leaf having a slot to receive said pintle and separate recesses to receive said locking-stud and said guiding-stud, respectively, substantially as described.

2. A hinge comprising a leaf having a pintle, separate locking-studs projecting from said pintle, and a guiding-stud separate from said pintle, and a leaf having a projecting portion, a slot formed therethrough to receive said pintle, and separate recesses upon its opposite sides to simultaneously receive said locking-studs and guiding-stud, substantially as described.

3. In a hinge, a leaf having a pintle, separate locking-studs projecting from said pintle,



5 a guiding-stud separate from said pintle and inclines at opposite sides of said pintle, and a leaf having a projecting portion, a slot there-through to receive the pintle, separate recesses upon its opposite sides to simultaneously receive said locking-studs and said guiding-stud, and inclines to engage the inclines of the opposite leaf, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK H. KNIGHT.

Witnesses:

WILLIAM H. H. KNIGHT,  
W. J. BERNHARD.