

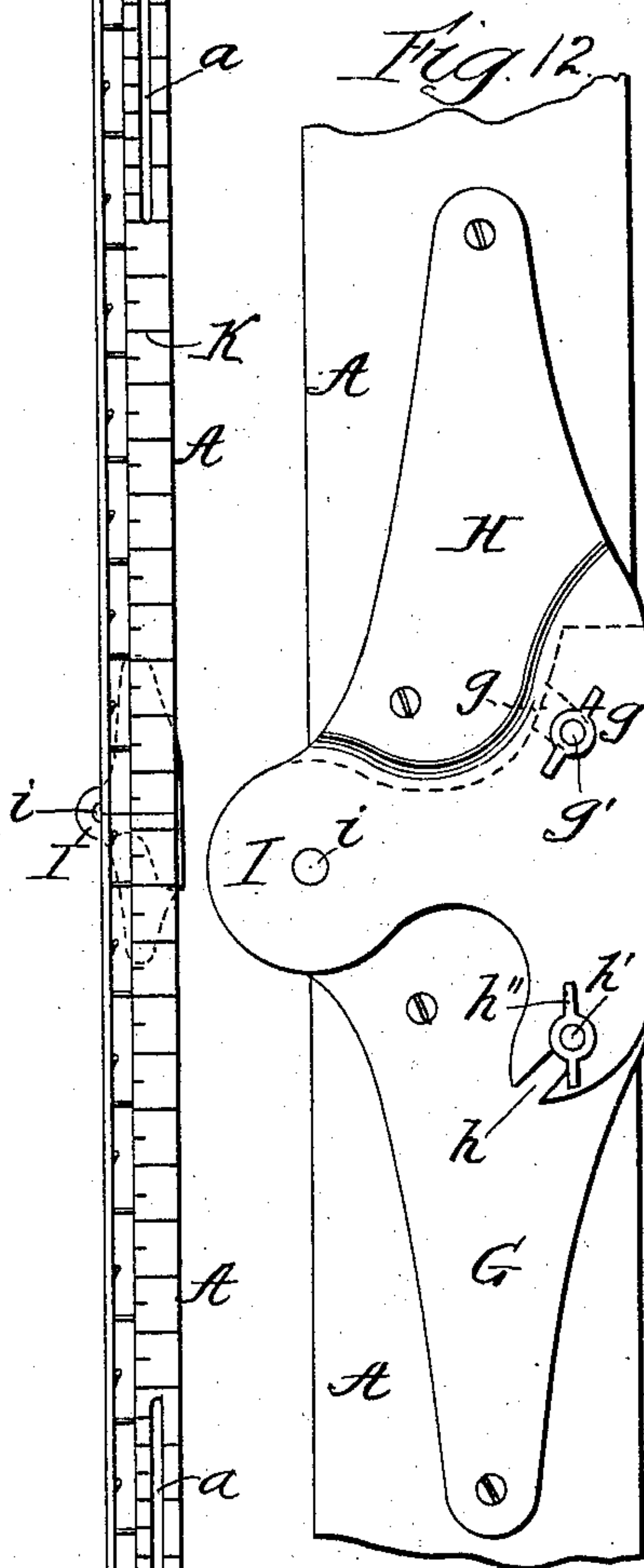
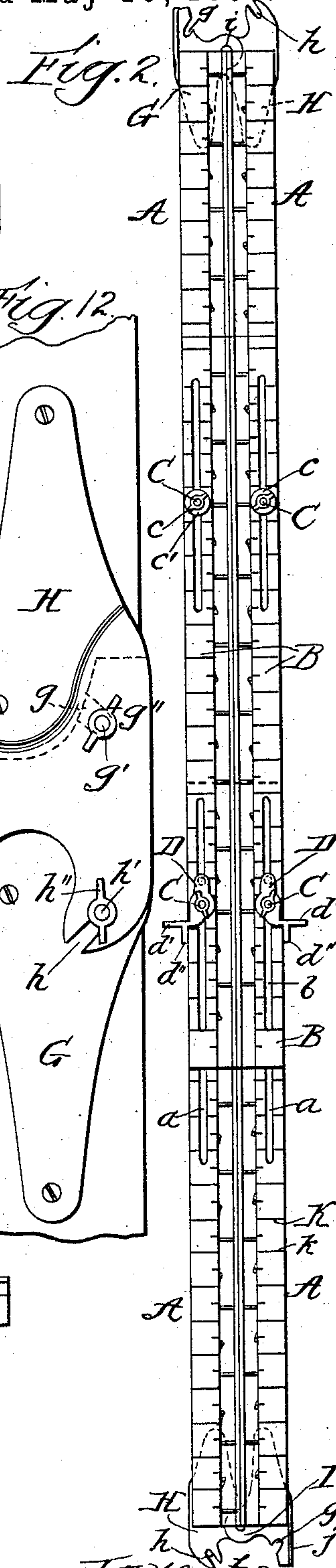
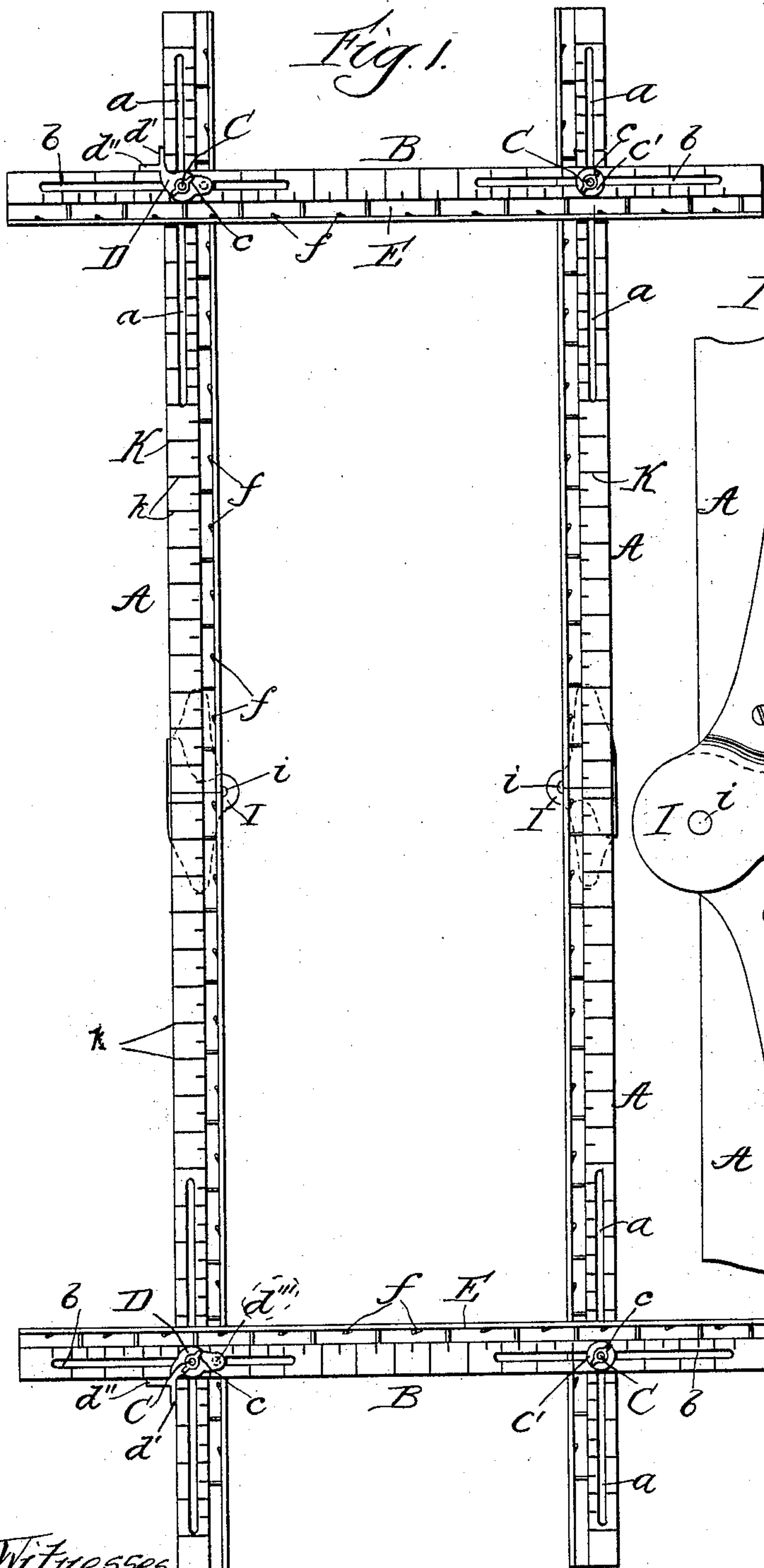
(No Model.)

2 Sheets—Sheet 1.

R. HOFFHEINS.
CURTAIN STRETCHER.

No. 603,690.

Patented May 10, 1898.



Witnesses
Wm. J. Manning
Chas. B. Bond

Inventor
Ruben Hoffheins

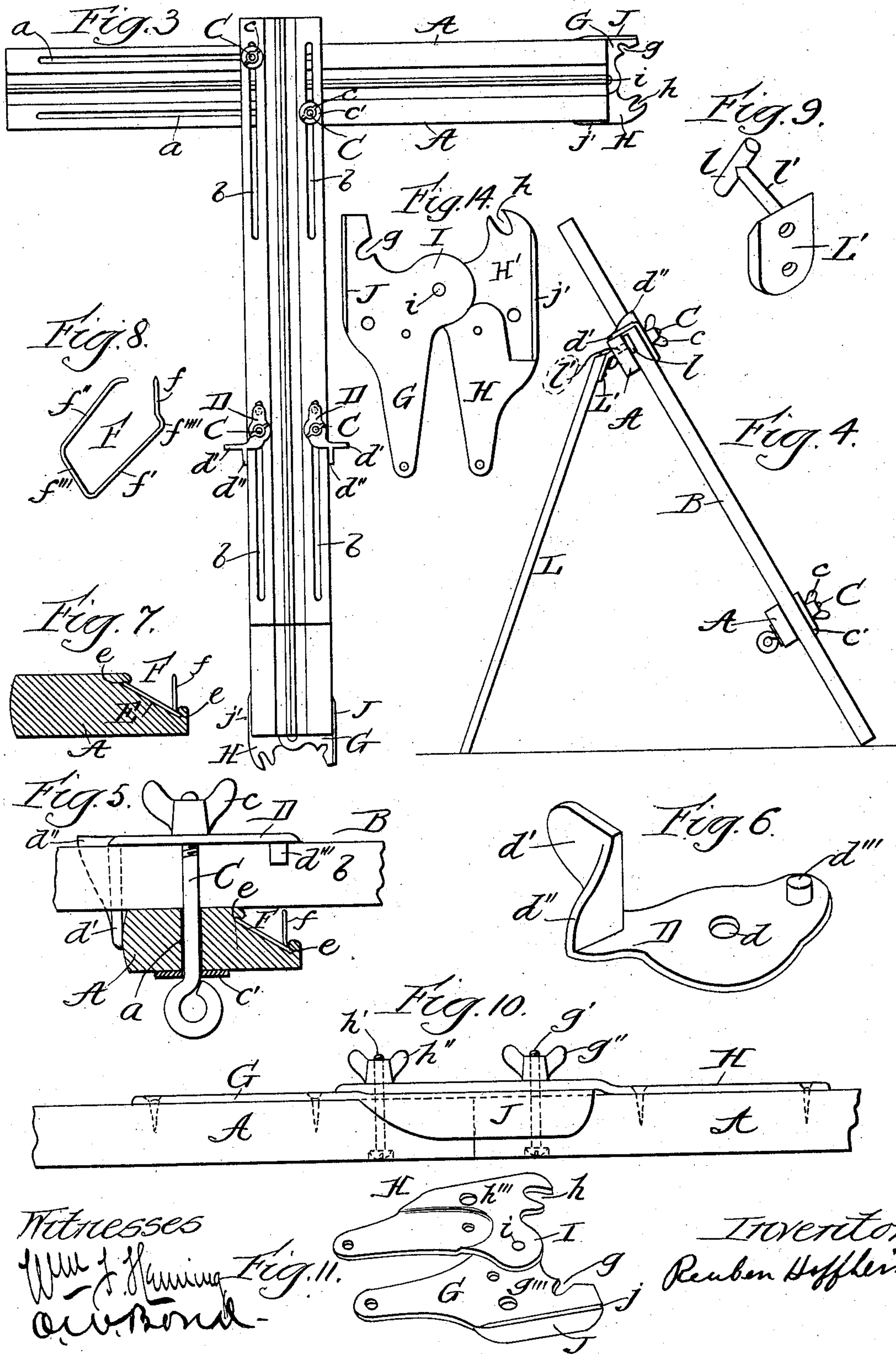
(No Model.)

2 Sheets—Sheet 2.

R. HOFFHEINS.
CURTAIN STRETCHER.

No. 603,690.

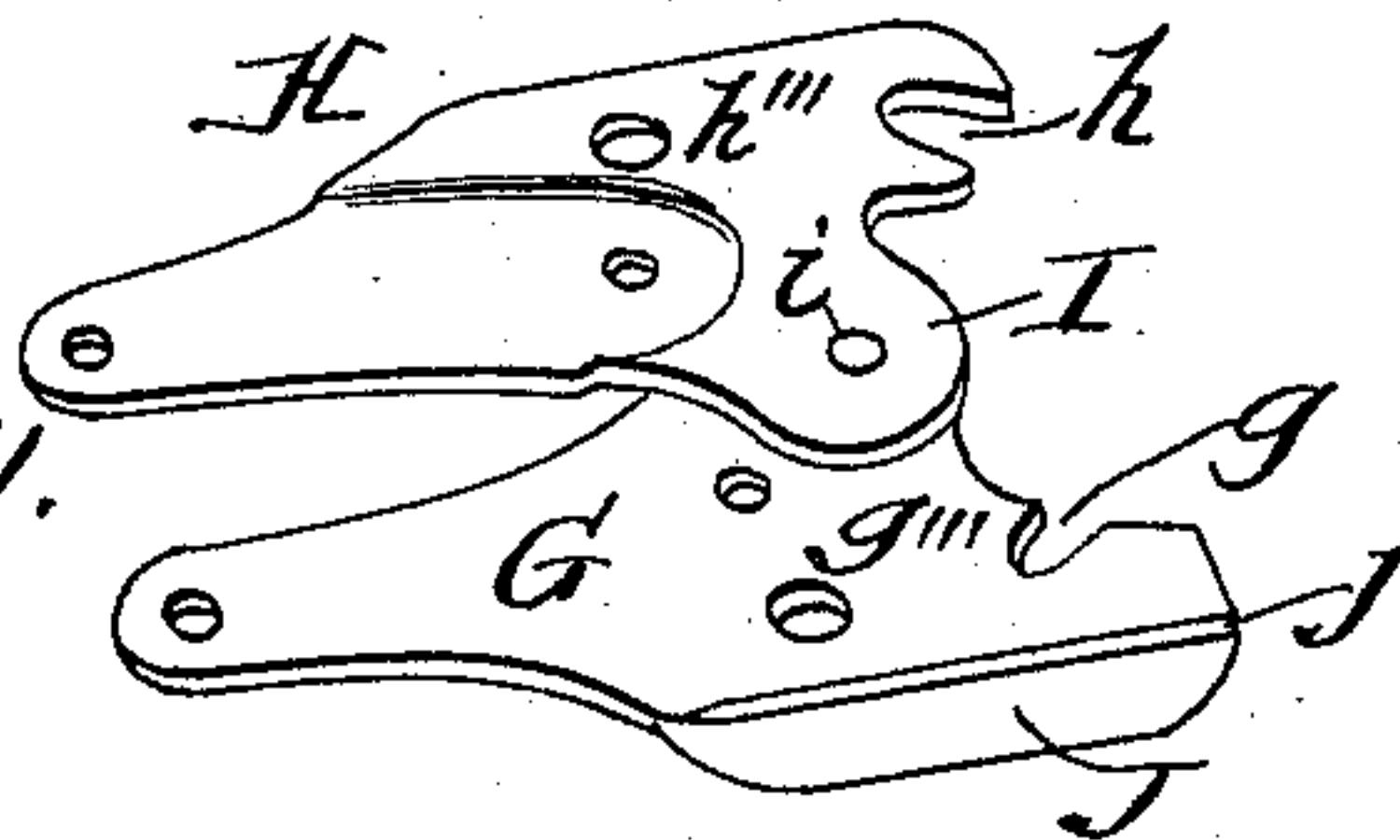
Patented May 10, 1898.



Witnesses

Wm. J. Hanning
attest.

Fig. 11.



Inventor
Reuben Hoffheins

UNITED STATES PATENT OFFICE.

REUBEN HOFFHEINS, OF CHICAGO, ILLINOIS.

CURTAIN-STRETCHER.

SPECIFICATION forming part of Letters Patent No. 603,690, dated May 10, 1898.

Application filed January 9, 1897. Serial No. 618,512. (No model.)

To all whom it may concern:

Be it known that I, REUBEN HOFFHEINS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Curtain-Stretchers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a top or plan view showing the frame open and ready for use. Fig. 2 is a top or plan view showing the frame folded lengthwise or closed for stowing away out of use. Fig. 3 is a top or plan view showing the frame folded and one end crossed for hanging up out of use. Fig. 4 is an end elevation showing the frame open and set in an inclined position and supported by legs or easels. Fig. 5 is a detail, partly in section, showing a corner with both rails clamped together and the squaring-plate in position. Fig. 6 is a perspective view of the squaring-plate. Fig. 7 is a detail showing a rail in section with the self-locking spring support or base and attaching-pin in elevation. Fig. 8 is a perspective of the self-locking spring support or base and detaching-pin. Fig. 9 is a perspective view of the head for the leg or easel. Fig. 10 is a detail showing an edge or side elevation of the connecting-hinge for the folding side bars. Fig. 11 is a perspective view of the connecting-hinge closed. Fig. 12 is a perspective view of the hinge closed, showing the under face of the two sections. Fig. 13 is a cross-section through the hinge open. Fig. 14 is a plan view of the hinge, showing a portion of the two parts of the side piece.

This invention relates to adjustable frames having retaining or attaching pins more especially adapted for use as curtain-stretchers, but which can also be used for other analogous purposes—such as, for instance, quilting-frames—and has for its objects to enable the pieces composing the frame to be readily and quickly opened out and adjusted for use with curtains or other articles of different sizes and to be closed or folded together for storing away out of use; to insure a perfect and true squaring of the pieces at the corners

when opened out for use; to have the operation of opening and folding easily and readily performed; to improve the construction and operation of the folding or hinging connection; to improve the construction and operation of the supports for the retaining and attaching pins, and to improve generally the construction and operation of the frame as a whole; and its nature consists in the several parts and combination of parts hereinafter described, and pointed out in the claims as new for attaining the objects sought.

In the drawings, A represents the side rails or pieces of the frame, each having at both ends a longitudinal slot *a* for the passage of the connecting-bolt and for adjusting purposes.

B are the end rails or pieces of the frame, each having at both ends in the form shown a slot *b* for the passage of the connecting-bolt and for adjusting purposes.

C are the connecting and clamping bolts, one for each corner of the frame, each bolt passing through a slot *a* and a slot *b* and each bolt having an eye or head on one end, between which and the face of the frame rail or piece is a washer or guard *c'*, and the opposite end of each bolt receives a thumb-nut *c*, by means of which the parts are drawn together and clamped, and, as shown, between the nuts and the frame rail or piece of two of the bolts is a washer or guard *c'*.

D are the squaring-plates, one for each end of the frame on one side, as shown, and held in place by the corner-bolt C, passing through a hole *d* in the body of the plate, as shown in Figs. 5 and 6. Each plate has at one end guide and stop plates *d'* and *d''*, standing at right angles one to the other, forming a corner by means of which the side and end rails or pieces are brought at right angles to each other when the frame is open for use and the frame squared by the engagement of the side rail or piece with the angle-plate *d'* and the engagement of the angle-plate *d''* with the end rail or piece, as shown in Fig. 1. Each plate D has a guide or stop pin *d'''* entering the slot *b* of the end rail or piece, by means of which the squaring-plate is held in proper position when in place, and when the frame is opened out for use the plates D, by reason of the engagement of the flanges or angle-plates *d'* and

d'' with the edges of the side and end rails and through the clamping-bolts C, furnish a firm corner-support by which the frame is held against twisting or turning and is made
 5 very strong and rigid against strain in securing the curtain or other article in position to be stretched or otherwise operated upon.

E is an inclined face on the inner edge of each side and end rail or piece of the frame
 10 and terminating on each side in a groove or recess e and extending, as shown, the full length of each frame rail or piece.

It is desirable to have the points of the retaining-pins below the top or upper face of
 15 the rail or piece, and for this purpose the front or inner edge should be depressed or be located in a lower plane. The inclined face E gives the depression and at the same time permits the pin-receiving portion to be formed
 20 and have the full strength of the material at the rear edge, where if the face and groove were in a plane parallel with the bottom or lower face of the rail or piece it would be weak and liable to break off in handling and use,
 25 as but a slight depth of the material could be had, making, owing to the width of the face and groove, a weak construction for the front edge of the rail or piece.

F are the pin-supports, each formed integral with its pin f by bending a piece of wire on itself to have two side arms or pieces f' and f'' , connected at one end by a cross-piece f''' and having the pin f at the free end of the arm or side piece f' united therewith by
 35 an inward and upward bend or curve f'''' , by which the pin is brought in clear of the edge of the slot or groove e , and the arm or side piece f' is brought within the slot or recess e , as shown in Fig. 7. The arms or side pieces
 40 f' and f'' are thrown outward at their free ends, and, as shown, this end of the arm or piece f'' is turned inward slightly to permit the ready entrance of each support on the inclined face E, with the arms or side pieces f'
 45 and f'' within the slots or grooves e , and by giving the arms or side pieces an outward spread at their free ends a spring action is had by which the support, when adjusted, is self-held in place by the contact of the arms
 50 or side pieces with the side walls or bottoms of the slots or grooves e , and at the same time the spring does not have sufficient force to interfere with the ready changing of the pins to suit the requirements of the use. The two
 55 side arms or pieces can both be spread at their free ends, or one of them only can be so spread or formed as to furnish the necessary spring for the purpose of holding the pin adjusted and not interfere with the ready
 60 and easy adjustment of the pins.

G is one section or plate of the connecting-hinge having in its inner edge a slot or opening g and secured to one part or half of the side rail A by screws, as shown, or in any
 65 other suitable manner, and through the part or half of the side rail and a hole g''' in the section or plate G a pin or bolt h' passes, which

pin or bolt has a thumb or locking nut h'' for clamping purposes.

H is the other section or plate of the connecting-hinge, having in its inner edge a slot or opening h and secured to the other half or part of the side rail A by screws, as shown, or in any other suitable manner, and through the part or half of the side rail and a hole h'''
 75 in the section or plate a pin or bolt g' passes, which pin or bolt has a thumb or locking nut g'' for clamping purposes. The inner ends of the plates G and H project beyond the ends of their respective portions of the side
 80 rail or piece to which they are attached and overlap each other and the ends of the rail or piece when the hinge is opened out and the rail or piece is straight, as shown in Figs. 10 and 13, and the under face of the plate H has
 85 a recess H' with one end and side wall to receive the projecting end of the plate G when the hinge is open. The pins or bolts g' and h' are located to enter, respectively, the slots g and h when the hinge is open, and when
 90 entered the nuts g'' and h'' are turned down, effectually clamping and holding the hinge against closing, and to close the hinge and fold the side rail or piece all that is necessary is to loosen the nuts g'' and h'' , releasing the
 95 clamp and permitting the hinge to be closed, as shown in Figs. 2, 3, and 11.

I are coinciding ears, one for each plate G and H, by means of which and a pin or pivot
 100 the plates are hinged or pivoted together to form the hinge, the pin or pivot being in line with the break or dividing line of the two parts of the rail or piece A, as shown in Fig. 1.

J is a flange or wall on the outer side of the plate G, overlapping both ends of the side
 105 rail and supporting the joint when the rail is straight and forming also with the side wall of the recess H' a stop and support for the hinge when open. The upper outer corner j of the plate G is slightly rounded or beveled
 110 to permit of the easy opening and closing of the hinge, and the under outer corner of the plate H has a head or ledge j' , which when the hinge is open bears upon the face of the plate G at the outer edge and forms a contact or
 115 locking engagement by which the two plates are held against the easy closing of the hinge.

K is a scale or measure on each rail or piece of the frame, formed of lines k , extending across the face of the rail, and intermediate
 120 shorter lines. The full lines k can be an inch apart and the intermediate lines can divide the space into half and quarter inches, or the division of the scale or measure can be some other proportions than inches. The length
 125 of the support or base F can be an inch, the same as the distance between the full inch lines on an inch scale or measure, so that in adjusting the pins f a positive and correct
 130 adjustment can be had by bringing the cross bar or arm f''' in line with a full division-line k , which will bring the pin f in line with the next division-line k , thereby giving a double adjustment, one by the cross bar or arm f'''

and a division-line and the other by the pin *f* and a division-line, and this rule holds equally as good with the intermediate division-lines as with the full division-lines, and it is to be understood that the length of the support or base *F* in relation to the pin *f* can be other than an inch, so long as there is a distinct ratio between the length of the base or support and spacing of the scale or measure, by which a double and accurate adjustment of the pins can be made.

L are legs, one for each end of the frame and detachable therefrom, so as to furnish a support or easel for setting the frame in an inclined position, as shown in Fig. 4. Each leg at its upper end has a plate *L'*, secured thereto by screws or otherwise, from which plate extends outward at an incline a shank or neck *l'* with a cross head or piece *l*, which can be entered into and passed through a slot *a* of a side rail for the shank or neck *l'* to be within the slot, as shown in Fig. 4, with the cross head or piece on the outside of the rail and the leg or support on the opposite side and standing at an incline to support the frame, as shown in Fig. 4.

The side rails or pieces, if folded, are opened out full length, which is done by opening the hinges on the side rails or pieces *A*, and with the opening of the side rails or pieces the end rails or pieces are turned crosswise, which is permitted by loosening the clamping-bolts *C*, and with the turning of the end rails or pieces the squaring-plates *D* follow the turning, bringing the corner into position at the corner of the frame. When the frame is thus opened out, it is set as to length and width for the reception of the curtain or other article, which is permitted by the adjusting-slots *a* and *b*, and when the correct size is had the clamping-bolts *C* are tightened by their nuts *c*, fastening the rails or pieces at the corners, and the clamping-nuts *g''* and *h''* are tightened, fastening the hinge at the joint of the side rails or pieces. The pins *f* are moved on the inclined faces *E* of the rails or pieces and set at the required distance apart to engage the scallops of a curtain or for the attachment of other articles, as desired, and when the adjustment is had the curtain or other article is attached to the pins in the usual manner, and the frame can have the legs or easel *L* attached thereto and be set at an inclined position to one side out of the way, if so desired.

The frame when not in use can be folded up without removing any of the parts but the legs or easel, as shown in Fig. 2, by loosening the clamping-nuts *c* of the bolts *C* and the clamping-nuts *g''* and *h''*, permitting the folding of the side rails *A* at the joint of the hinge, and then turning the end rails or pieces lengthwise and parallel with the folded side rails and tightening the nuts *c*, holding the frame in its folded condition. This folding of the frame brings it into a small compass for storing away when not in use and for shipping

purposes, and retains all the parts together. The frame can also be folded, as shown in Fig. 3, by folding the side rails at the points after loosening the clamping-nuts *c* and *g''* *h''* and then turning one of the end rails crosswise and the other lengthwise and then tightening the clamping-nuts *c*, and when so folded the frame can be hung up out of use by means of the cross end piece.

It is desirable in frames of this character that the rails or pieces should readily square at the corners, and this result is had by means of the plate *D*, with its corner, which corner engages with and fits the corner of the frame and insures a positive and certain squaring of the frame. These plates also, by engagement with the rails at the corner, furnish a strong support and, in connection with the clamping-bolts, give a rigid and firm corner for the frame.

The projecting ends of the plates *G* and *H* overlap each other and extend over each side of the joint of the side rail, making the rail at the joint very strong and rigid, so that the strength of the rail is not impaired at the joint. This overlapping feature of the hinge gives a double strength at the joint when the parts are brought snugly together by clamping-bolts or otherwise, and this double strength at and on each side of the rail-joint effectually prevents any sagging or bending of the rail or piece at the joint and gives additional strength at the point where the greatest strain is had and the greatest strength is needed, and this without any other support than that had in and by the hinge itself and its clamp.

The attaching-pins *f*, each with its support or base, are readily applied to the frame, as all that is necessary to do is to enter the side arms or pieces of the base or support into the slots or recesses *e* on each side of the face *E* and slide the base or support on the face, and in adjusting the pins each pin can be moved to the desired point, and when such point is reached the pin will be held against self-moving by means of the spring action of the base or support through the side arms or pieces thereof engaging with the bottoms of the slots or grooves *e*, and at the same time this spring action is not sufficient to prevent the ready adjustment of the pin when required. This self holding or locking of the pin by means of a spring action in its base or support is very desirable and essential in adjusting the pins, as it enables each pin to be adjusted and held without further attention from the operator and without any danger or liability to slide or slip after an adjustment is once obtained, and at the same time the base or support is one to give a firm support for the pin in connection with the bearing-face *E* and slots or grooves *e*, into which the side arms or pieces of the base enter and are held.

The scale or measure on the rails or pieces, in addition to furnishing a guide for the ad-

justment of the attaching-pins, also furnishes a means for setting the side and end pieces to any designed size by bringing the edges of the pieces in line with the scale or measure for the size wanted.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a stretcher, of a frame having side and end rails or pieces with adjusting-slots, a clamping-bolt for each corner of the frame passing through the slots of the side and end rail or piece, and a plate mounted and swinging on and moving with the clamping-bolt and having on one face two flanges forming a corner with side faces at right angles to each other fitting the frame-pieces at the outer corner, with the right-angle faces of the corner engaging the edge faces of the frame-pieces in every adjustment of the frame for squaring the frame and maintaining the rigidity at the corners, substantially as specified.

2. The combination, with the divided rail of a stretcher-frame, of a clamping-hinge consisting of two companion plates each having a projecting clamp end, each clamp end overlapping onto the body of the opposite plate and extending over the abutting ends of the rail on each side of the joint, for each clamp end and the body of the adjacent plate and the rail end to be rigidly clamped together and to each other when the rail is opened out for use, thereby engaging each other and supporting and strengthening the joint of the divided rail, substantially as and for the purposes specified.

3. The combination, with the divided rail of a stretcher-frame, of a fastening-hinge consisting of two companion plates, each having a clamp end overlapping onto the body of the opposite hinge-plate on each side of the rail-joint, and clamps common to the clamp end, the body of the hinge-plate and the rail end, whereby the adjacent and overlapping parts can be drawn tightly together, rigidly uniting the hinge and the rail one to the other, thereby supporting and strengthening the joint of the divided rail, substantially as and for the purposes specified.

4. The combination, in a stretcher, of a frame having side and end rails or pieces with adjusting-slots, a clamping-bolt for each corner of the frame passing through the slots of the side and end piece, a plate mounted on the clamping-bolt and having flanges standing at right angles to each other, and a guide or stop on the plate entering the slot of a frame-piece, substantially as and for the purposes specified.

5. The combination, in a stretcher, of a frame having side and end pieces, each provided with an inclined face on the inner edge, terminating in a slot or groove on each side, and a series of attaching or retaining pins, each pin formed integral with its support or base by bending a piece of wire on itself to furnish a rectangular base or support with

side arms or pieces free at one end and having an outward spring for the side arms or pieces to enter the side slots or grooves of the face and engage the wall of such slots or grooves of the inclined face, and hold the pins in position when adjusted, substantially as and for the purposes specified.

6. The combination of a frame-piece having at the inner edge a supporting-face terminating in a slot or groove on each side, and an attaching or retaining pin formed integral with its support or base from a single piece of wire bent to produce a support or base having independent side arms or pieces free at one end and having an outward spring for the side arms or pieces to enter the slots or grooves of the supporting-face and lock and retain the pin in an adjusted position by the spring action, forcing the side arms or pieces in contact with the wall of the slot or groove, substantially as and for the purposes specified.

7. An attaching or retaining pin for a stretcher, consisting of a single piece of wire bent to form the pin and a support or base therefor having free arms or side pieces, wider at the open than at the closed end to give a spring action for holding the pin in an adjusted position, substantially as and for the purposes specified.

8. The combination, in a stretcher, of a frame having divided side pieces, a hinge connection for joining the side pieces, consisting of plates attached to the abutting ends of the side pieces, one on each side of the joint, each plate having a clamp end extending over onto the body of the opposite hinge-plate and the rail end each side of the joint and each plate having a slot in its edge, a pivot for the two plates, and stationary clamping pins or bolts common to the clamp end, the hinge-plate and the rail end, and entering the slots of the clamp ends for drawing the clamp end, the hinge-plates and the body of the rail firmly and rigidly against each other, substantially as and for the purposes specified.

9. The combination, in a stretcher, of a frame having divided side pieces, a hinge connection for the side piece consisting of a plate attached to one part of the side piece with a projecting inner end having a slot in its edge and a flange on the side, a second plate attached to the other part of the side piece with a projecting inner end and having a slot in its edge, and pins or bolts entering the slots and having locking-nuts, substantially as and for the purposes specified.

10. The combination, in a stretcher, of a frame having divided side pieces, a hinge connection for the side piece consisting of a plate attached to one part of the side piece with a projecting inner end having a slot in its edge, a second plate attached to the other part of the side piece with a projecting inner end having a slot in its edge, and having on the outer edge of the plate and its projecting end a ledge or head engaging the face of the com-

panion plate at its outer edge, substantially as and for the purposes specified.

11. The combination, in a stretcher, of a divided side piece for the frame, and a hinge consisting of a plate attached to one part of the divided side piece, and a second plate attached to the other part of the divided side piece and having a ledge or head on its under face engaging the upper face of its companion plate, substantially as and for the purposes specified.

12. The combination of two companion plates forming a hinge, each plate having a clamp end, each clamp end overlapping onto the body of the opposite plate at the joint of the hinge, and clamping-bolts one on the body of each rail end, each bolt common to the clamp end, the hinge-plate and the rail end, for locking the clamp end, the body of the hinge-plate and the rail rigidly together, substantially as and for the purposes specified.

13. The combination, in a stretcher, of a frame having divided and hinged side rails or pieces each connected by a locking-hinge at the point of division and end rails or pieces, with adjusting-slots in such rails or pieces, clamping-bolts passing through the slots of the rails or pieces and squaring-plates mounted and swinging on and carried by the clamping-bolts for enabling the end pieces to be folded straight or crossed at one end, without

removal of any of the parts, substantially as and for the purposes specified.

14. The combination, in a stretcher-frame, of a rail or piece having an inclined face on its inner edge, a longitudinal slot or groove on each side of the inclined face with the front or lower groove below the plane of the rear or upper groove for strengthening the rail or piece at the inner edge, and a series of sliding pins engaging the slots or grooves of the rail or piece, substantially as and for the purpose specified.

15. The combination, in a stretcher-frame, of hinged slotted side rails or pieces, slotted end rails or pieces, each rail or piece having on its inner edge a receiving-face with a longitudinal slot or groove in each side, clamping-bolts passing through the slots of the side and end rails or pieces, a series of adjustable pins each having a base movable in the slots or grooves of the receiving-face with the points of the pins below the face of the frame, and a corresponding scale or measure on the side and end rails or pieces, for securing the adjustment of the frame and a correct and perfect alinement of the pins by one and the same scale, substantially as specified.

REUBEN HOFFHEINS.

Witnesses:

M. L. PRICE,
O. W. BOND.