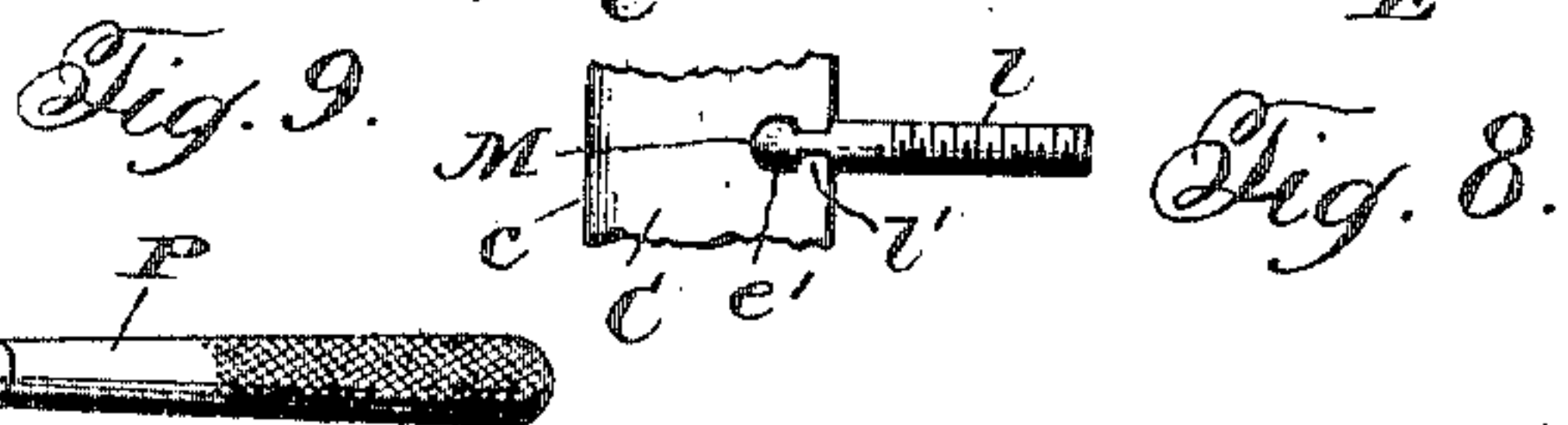
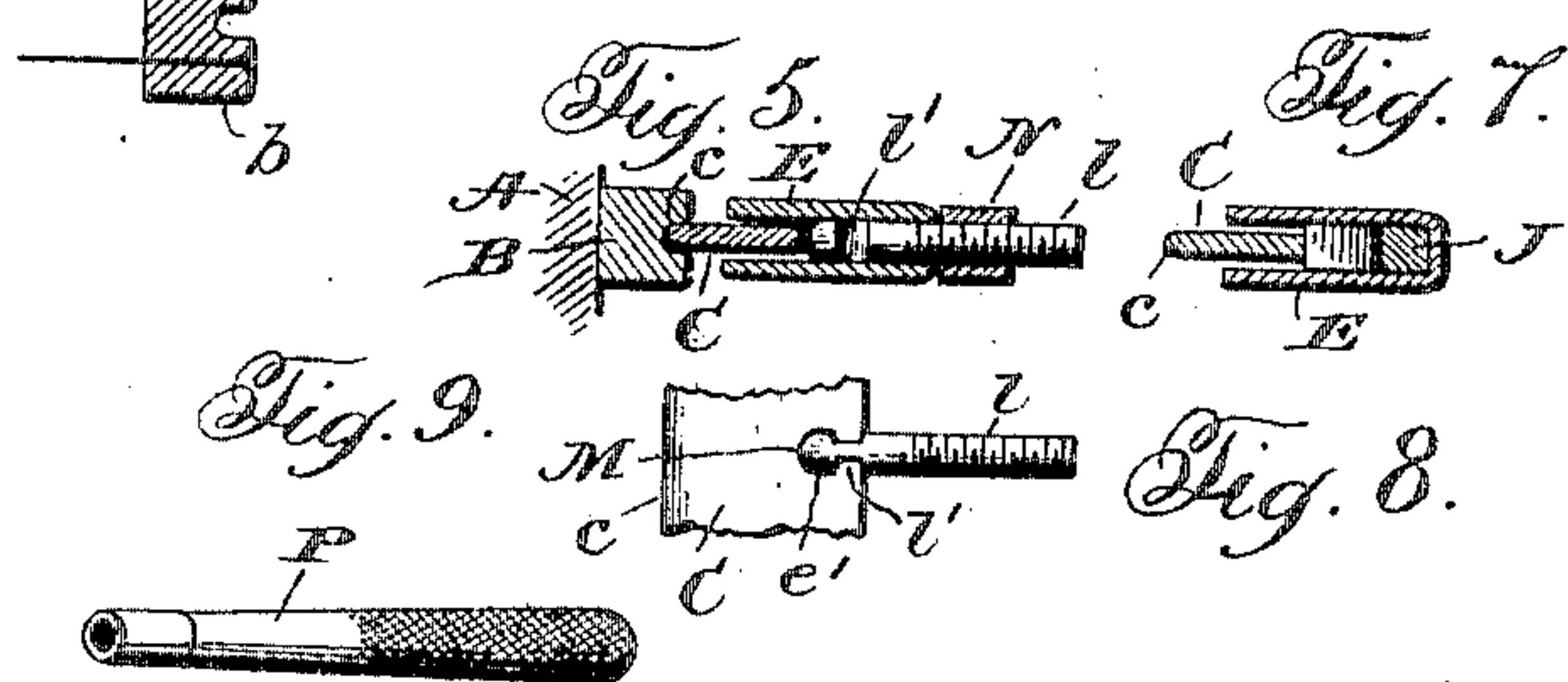
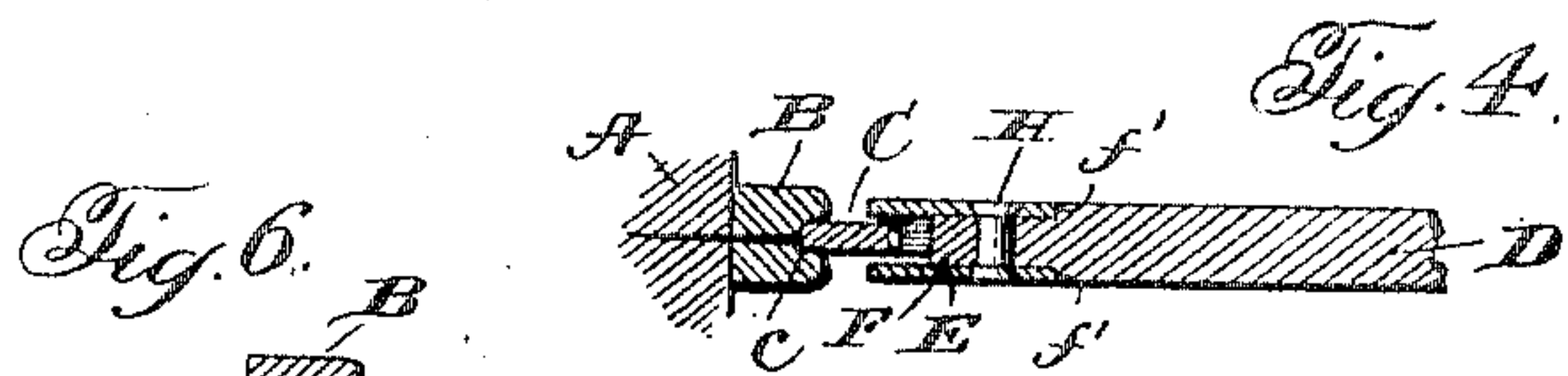
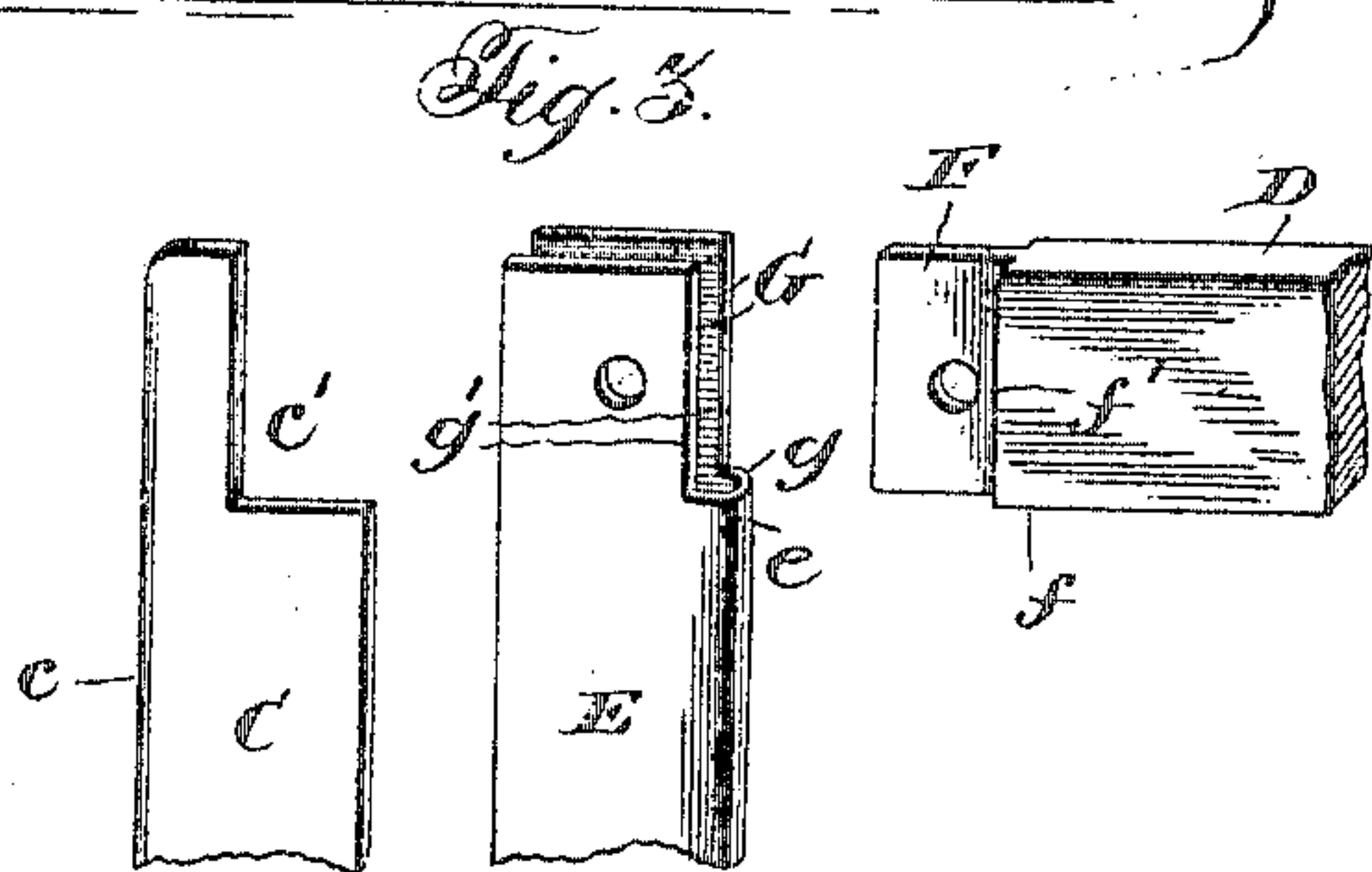
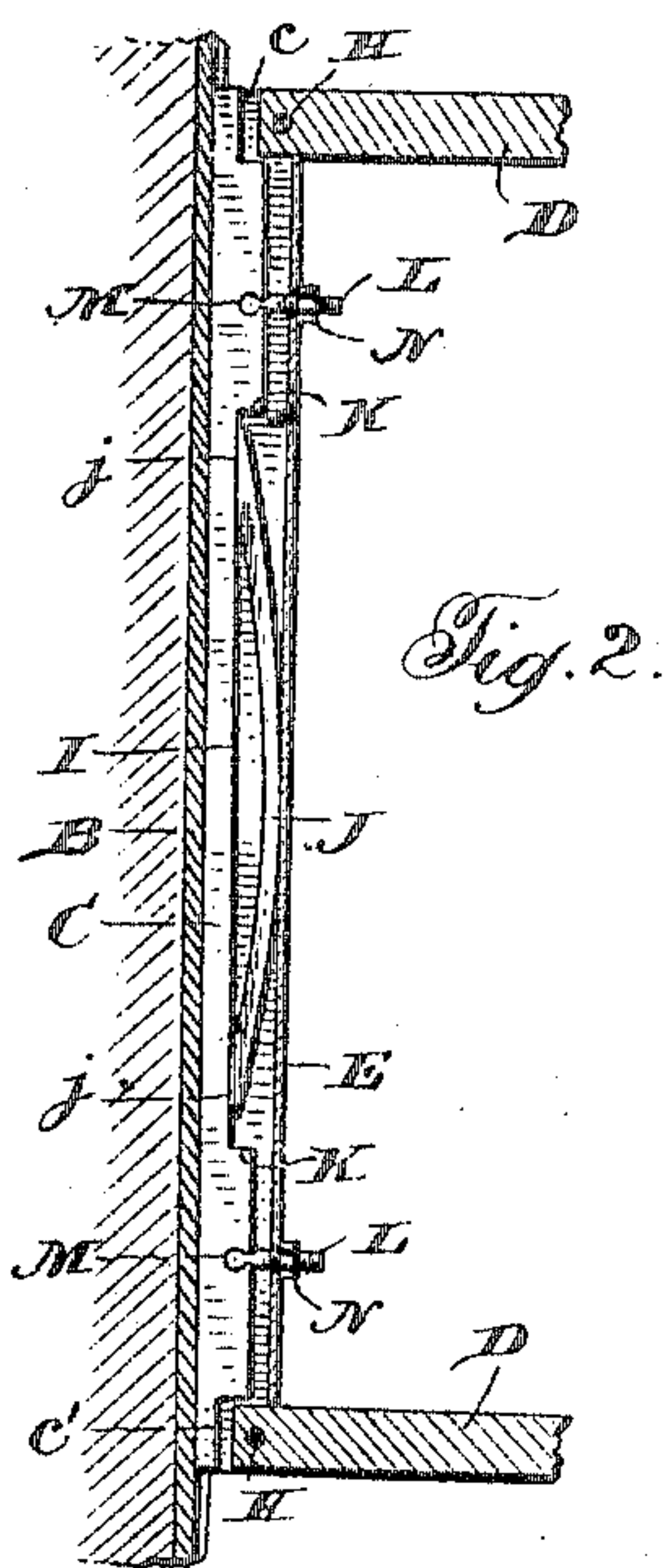
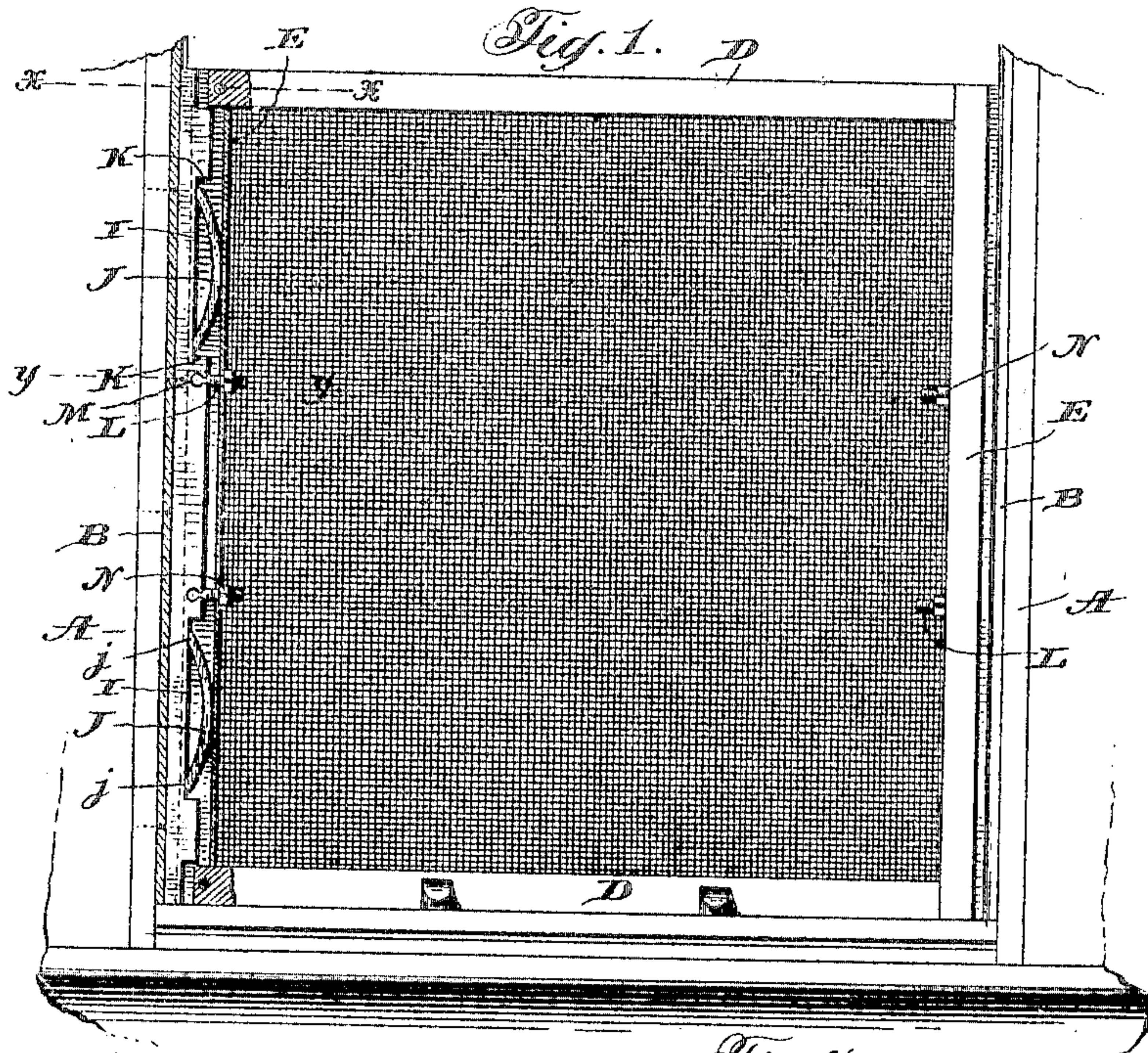


E. T. BURROWES.
METALLIC WINDOW SCREEN.
APPLICATION FILED APR. 29, 1905.



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UNITED STATES PATENT OFFICE.

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METALLIC WINDOW-SCREEN.

No. 804,519.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD T. BURROWES, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Metallic Window-Screens, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in window-screens, and has for its primary object the provision of a device of this character having a metallic supporting-frame and an adjustable flange or flanges of similar material carried by said frame adapted to work in suitable runways provided therefor, the formation of the frame and flanges of metal being induced by the inherent highly-desirable characteristics of this material, such as rigid-
20 ity, durability, and capability of resisting the damaging influence of changing weather to which wooden frames are subjected, resulting in the warping or loosening of the joints thereof.

25 With the foregoing and other objects in view a practical embodiment of the invention embraces any or all of the following features of novelty: First, a metallic frame comprising metallic cross-bars, similar-channeled side bars, and adjustable flanges in the latter, said flanges being disposed to enter and have sliding movement within complementary guides or runways therefor upon a window-casing, sash-frame, or the like; second, an interfitting
30 corner or connection between the meeting ends of the cross-bars and the channeled side members forming and adapted to maintain a true angular relation thereof; third, a relatively long bow spring or springs loosely inserted within the channeled side members and interposed between the connected edge thereof and the inner edge of the adjustable flange, said flange or the channeled member having one or more abutments for the end or ends of
40 the spring, whereby to keep the same in a predetermined or normal operating position; fourth, means operatively associated with the channeled side member or members, as the case may be, and the flange therein for positively adjusting the latter against the tension of the interposed spring or springs to give the same an initial or primary protrusion or adjustment relative to the channeled side member, said means also performing the additional function of causing the outer or working edge of the flange to assume an angular

position relative to the edge of the channeled side member to conform to the base of the runway with which it is to engage and which is oftentimes not truly plumb; fifth, more specifically, said last-mentioned means including a headed screw having a laterally-removable engagement with a recessed portion of the inner edge of the flange, said engagement being preserved while said head and inner edge
60 are within the channel of the side member, but separable when they are thrown there-without and a nut engaging the threaded end of the screw, which projects through the connecting edge of said channeled member and
70 into the open space within the frame at one side of the screen fabric thereon.

All of the above, as well as other novel details in construction and arrangement of parts, will be apparent from the detailed description hereinafter contained, when read in connection with the accompanying drawings, forming part hereof, and wherein convenient
75 embodiments of the invention are illustrated.

In the drawings, Figure 1 is an elevation of the screen, part of one of the side or channeled members being broken away to show the interior construction, fragmentary portions of the window-casing and runway also appearing in this view. Fig. 2 is a vertical sectional view of one of the side or channeled members, showing a slightly-modified arrangement. Fig. 3 is a detail perspective view illustrative of one of the interfitting corner connections, the parts in this instance
80 being separated. Fig. 4 is a sectional view on a line *x x* of Fig. 1. Fig. 5 is a similar view on line *y y*, same figure. Fig. 6 is a cross-sectional view of a slightly-modified form of strip, constituting a runway. Fig. 7
85 is a section through the center of one of the springs and immediately associated parts. Fig. 8 is a detail elevation of a portion of one of the flanges and an adjusting-screw, and Fig. 9 is a perspective view of an adjusting-tool.

Referring more specifically to the drawings, wherein like reference characters designate corresponding elements in the several views, A represents the ordinary sash-frame or window-casing, upon the inner faces of the sides of which are secured strips B, each having a groove, preferably with a rounded base, and rounded edges for the reception of flanges C on the screen, the complementary outer edges of which are similarly rounded at *c*, these strips B being fastened in place through the medium

of tacks passing through the base of the groove thereof, as in Fig. 4, or through laterally-extended portions *b* thereof, as illustrated in Fig. 6. The purpose of rounding the base and edges of the strips bordering the grooves therein, as also the engaging edge of the flanges, is to reduce friction between the parts and facilitate an easy working of the screen up and down.

The screen comprises metallic top and bottom bars *D*, preferably solid, and channeled side members *E*, preferably sheet metal bent upon itself, as shown, for instance, in Fig. 7, the connected edge *E* of which is disposed inwardly relative to the body of the screen. The flanges *C* before referred to are designed to be adjustably mounted within the channels of the side bars *E*. The means for connecting the top, bottom, and side members of the frame, whereby to constitute the corners thereof, comprises a tongue *F* at each end of the bars *D*, adapted to enter between and snugly fit within the space intermediate a pair of ears *G* at each end of the side members *E*, the ears being provided by cutting out an angular portion of the connected edge *e* of the side members, by which cutting out I also afford a substantially U-shaped shoulder *g* to abut the wide inner edge *f* of the top and bottom bars immediately adjoining the tongues *F*. When the two members are brought together and the one firmly seated within the other, a rivet *H*, passing transversely there-through, effectually locks the parts against any play whatever and will maintain them in a true angular relation, it being also observed that when thus associated the straight edges *f'*, of the top and bottom bars engage the corresponding edges *g'* of the side members. To enable the flanges *C* to properly work back and forth within the channeled side members, as also to preserve a continuous bearing of the outer edge of said flange throughout the entire length of the screen, the inner corners thereof are cut away, as at *c'*, to accommodate the tongues *F* of the inter-fitting corners, as clearly shown in Figs. 1, 2, and 3.

At suitable points conveniently one disposed toward each end of the screen-frame I provide elongated pockets *I* in the flanges *C* for the reception of relatively long bow-springs *J*, the latter having flat ends *j* engaging the edge of the flange, while the back thereof is disposed toward and abuts the inner face of the connected edge *e* of the channeled side member, the shoulders *K* of the pockets confining the spring in a predetermined working position. The springs are square in cross-section, Fig. 7. The tendency of these springs is to force the flanges *C* outwardly into engagement with the base of the guide-groove in the strips *B*, as before stated, and to prevent complete separation of the flanges from the channeled members when the

screen is removed from the casing, as also to enable an initial adjustment of the flanges relative to the side members, I provide separated adjusting-screws *L*, one arranged adjacent to each of the springs *J*. Each screw comprises a threaded shank *l*, passing loosely through an aperture in the connected edge *e* of the member *E*, and a head *l'* at its inner end adjoining an intermediate restricted or neck portion *l''*, adapted to be inserted in a lateral direction into a complementary keyhole-slot *M* in the flange *C*, with which it is associated. A nut *N*, engaging the threaded shank *l* and abutting the surface of the connected edge *e*, will draw the screw, and incidentally the flange, inwardly against the tension of the springs *J* or permit them to be thrust outwardly by said springs, as desired.

It is to be noted that by my particular engagement between the headed ends of the screws and the flanges the two are preserved in fixed relation as long as they are positioned within the channeled side members; but as soon as the adjustment is loosened a sufficient extent to allow the headed ends of the screws and their engaging portions of the flanges to escape the outermost edges of said channeled members the flanges may be readily slipped away from said headed ends and detached.

While I have just described the use of two springs at each side of the screen, this description being with particular reference to the form illustrated in Fig. 1, it is clear that in many instances one spring will suffice, such as illustrated in Fig. 2. In all other respects the screen of this figure is quite similar to that of said first-mentioned form, the spring in the present instance being somewhat longer. It is to be further noted that a highly-desirable characteristic of both embodiments of my invention disclosed herein resides in the fact that by adjusting the screws *L* the outer edges of the flanges may be caused to assume a slightly-angular position relative to the sides of the screen-frame, so as to correspond to the position of the guideway incident to the window casing or frame being out of a true vertical plane. This is indicated in Fig. 2.

The screen material is soldered or otherwise secured to the flat outer surfaces of the top and bottom bars and side members.

At the bottom of the screen lifters *O* are provided to facilitate the raising and lowering thereof.

In applying the screen the flanges are simply sprung into the grooves of the strips *B*, and when the screen is to be removed a tool, such as *P*, may be applied to the nuts *M* and turned to effect a complete retraction of the flanges within the channeled side members whereby they may escape said grooves.

It is to be understood that the invention is susceptible of still other embodiments than those set forth herein and that the structures

shown may be altered and changed without departing from the spirit of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a screen, top, bottom and side bars, one of said side bars being bent to form an outwardly-opening channel therein, a flange in said channeled side bar arranged to be thrust outwardly therefrom, a spring interposed between the inner edge of said flange and the inner face of the connecting edge portion of the channeled side bar, and separated adjusting devices one above and one below the spring operatively associated with the flange and projecting outwardly through the channeled side bar whereby the flange may be positively adjusted against the tension of the spring.

2. In a screen, top, bottom and side bars, one of said side bars being bent to form an outwardly-opening channel therein, a flange in said channeled side bar arranged to be thrust outwardly therefrom, a spring interposed between the inner edge of said flange and the inner face of the connecting edge portion of the channeled side bar, and separated adjusting devices one above and one below the spring loosely connected with the flange and projecting outwardly through the channeled side bar whereby the flange may be adjusted to occupy an angular position to the channeled side bar.

3. A screen having metal top, bottom and side members, one of the side members being bent upon itself to form an outwardly-opening channel therein, in combination with a spring-pressed flange in said channel.

4. A screen having metal top, bottom and side members, one of the side members being bent upon itself to form an outwardly-opening channel therein, in combination with a spring-pressed flange in said channel, and means for adjusting said flange against the tension of its spring.

5. A screen having a frame comprising metallic top and bottom bars and channeled side members, spring-pressed flanges in said side members, and connections between the ends of the top and bottom bars and the side members comprising a tongue at each end of the bars and ears on the channeled side members overlying the same and riveted thereto.

6. A screen having a frame comprising metallic top and bottom bars and channeled side members, spring-pressed flanges in said side members, and connections between the ends of the top and bottom bars and the side members comprising a tongue at each end of the bars and ears on the channeled side members overlying the same and riveted thereto, the inner edge and end edges of the bars adjoining the tongues thereof abutting similar edges on the channeled members.

7. A screen having a frame comprising metallic top and bottom bars and channeled side members, spring-pressed flanges in said side

members, and connections between the ends of the top and bottom bars and the side members comprising a tongue at each end of the bars and ears on the channeled side members overlying the same and riveted thereto, an inner edge and an end edge of the bars adjoining the tongues thereof abutting similar edges on the channeled members.

8. A screen having a frame comprising metallic top and bottom bars and channeled side members, spring-pressed flanges in said side members, and connections between the ends of the top and bottom bars and the side members comprising a tongue at each end of the bars and an ear on the channeled side members overlying the tongue and riveted thereto.

9. A screen having a frame comprising metallic top and bottom bars and channeled side members, spring-pressed flanges in said side members, and connections between the ends of the top and bottom bars and the side members comprising a tongue at each end of the bars and an ear on the channeled side members overlying the tongue and riveted thereto, the inner edge and end edges of the bars adjoining the tongues thereof abutting similar edges on the channeled members.

10. A screen having a frame comprising metallic top and bottom bars and channeled side members, spring-pressed flanges in said side members, and connections between the ends of the top and bottom bars and the side members comprising a tongue at each end of the bars and an ear on the channeled side members overlying the tongue and riveted thereto, an inner edge and an end edge of the bars adjoining the tongues thereof abutting similar edges on the channeled members.

11. In a screen, a frame having channel side member and a spring-pressed flange therein, in combination with an adjusting device comprising a screw passing inwardly through the channel member and engaging the flange, and a nut on the protruding end of the screw.

12. In a screen, a channel member and a spring-pressed flange therein, in combination with an adjusting device comprising a screw passing through the channel member and engaging the flange, and a nut on the protruding end of the screw, the inner end of the screw being headed and engaging a complementary opening therefor in the flange.

13. In a screen, a channel member and a spring-pressed flange therein, in combination with an adjusting device comprising a screw passing through the channel member, and engaging the flange, and a nut on the protruding end of the screw, the inner end of the screw being headed and removably engaging a complementary opening therefor in the flange.

14. In a screen, a channel member and a spring-pressed flange therein in combination with an adjusting device comprising a screw passing through the channel member, and en-

gaging the flange, and a nut on the protruding end of the screw, the inner end of the screw being headed, and having a restricted intermediate neck portion, removably engaging a complementary opening therefor in the flange.

15. A screen having metallic top and bottom bars, metallic side members edge bent to form an outwardly-opening channel therein, an interfitting connection between the ends of the top and bottom bars and side members, and adjustable flanges in said channel side members.

16. A screen having metallic top, bottom and side members, one of said side members being bent upon itself to form an outwardly-opening channel therein, interfitting connections between the ends of the top and bottom members and the side members, and an adjustable flange in said channel side member.

17. In a screen, a channel member and a spring-pressed flange therein, in combination with an adjusting device including a screw passing through the channel member having a head at its inner end removably engaging a complementary opening therefor in the flange.

18. In a screen, a channel member and a spring-pressed flange therein, in combination with an adjusting device including a screw passing through the channel member and having a head at its inner end adjoining a restricted intermediate neck portion removably engaging a complementary opening therefor in the flange.

19. A screen having a frame comprising

top, bottom and side members, one of the side members being bent to form a channel, an adjustable flange in said channel, and connections between the ends of the top and bottom members and said channel member comprising interfitting tongues and ears rigidly secured together.

20. A screen having a frame comprising top, bottom and side members, one of the side members being bent to form a channel, an adjustable flange in said channel, connections between the ends of the top and bottom members and said channel member comprising interfitting tongues and ears rigidly secured together, and an end edge of the top and bottom members adjoining the tongues thereof abutting similar edges on the channel members.

21. A screen having a frame comprising a top, bottom and side members, one of the side members being bent to form a channel, an adjustable flange in said channel, connections between the ends of the top and bottom members and said channel member comprising interfitting tongues and ears rigidly secured together, and an inner edge on the top and bottom members adjoining the tongues thereof abutting a similar edge on the channel member.

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

EDWARD T. BURROWES.

Witnesses:

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STEPHEN W. CARLE.