C. I. SHIRLEY & F. W. MUELLER.

SASH HINGE FIXTURE.

APPLICATION FILED OCT. 1, 1913.

1,166,550.

Patented Jan. 4, 1916.

3 SHEETS—SHEET 1.

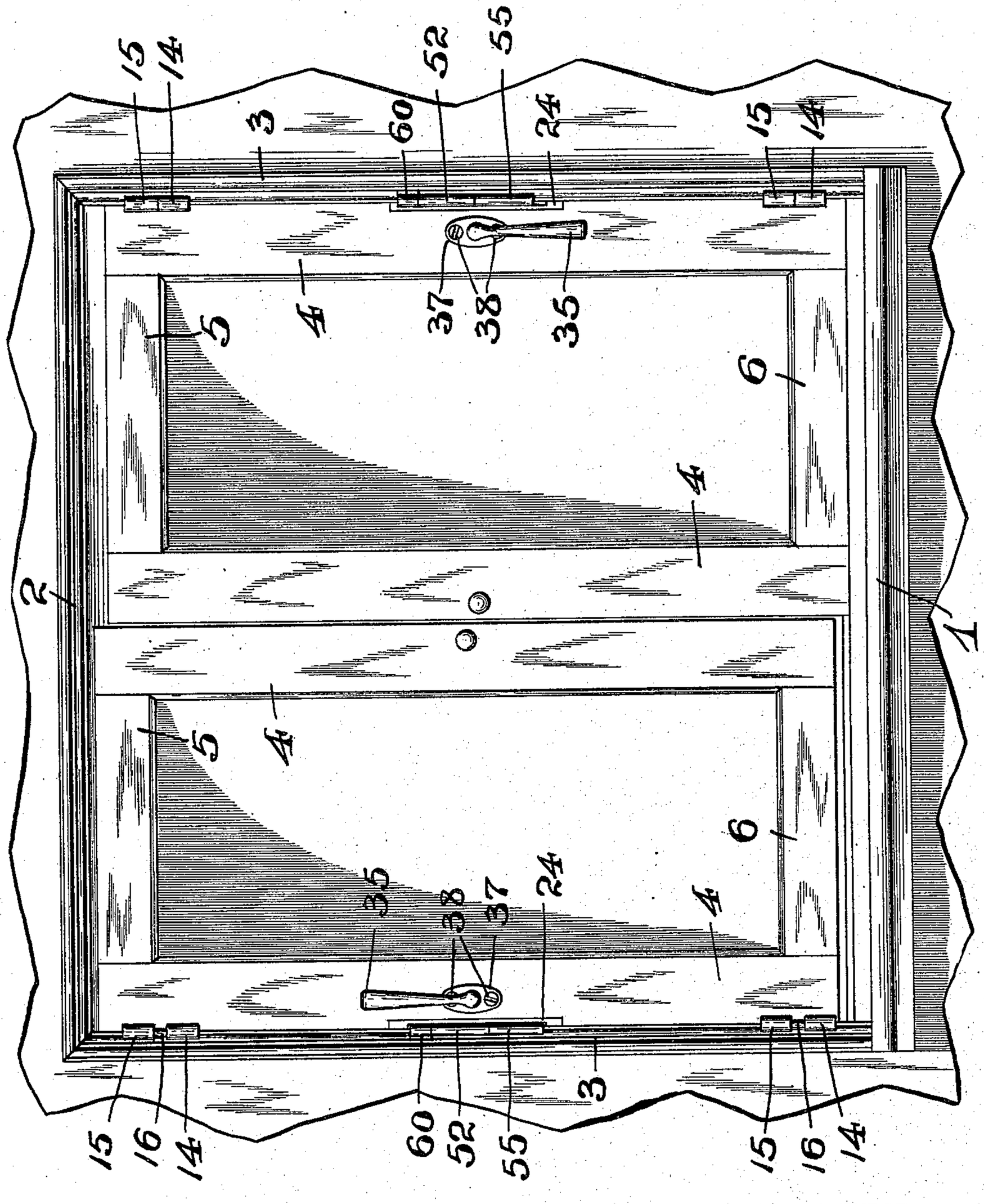

FIG. 1.

WITNESSES:

Fredk W. Fraentzel

Clayton S. Cadmus.

INVENTOR

Cephas I. Shirley and

Frederick Walter Mueller,

BY

Fraentzel and Richards,

ATTORNEYS

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

C. I. SHIRLEY & F. W. MUELLER.

SASH HINGE FIXTURE.

APPLICATION FILED OCT. 1, 1913.

1,166,550.

Patented Jan. 4, 1916.

3 SHEETS—SHEET 2.

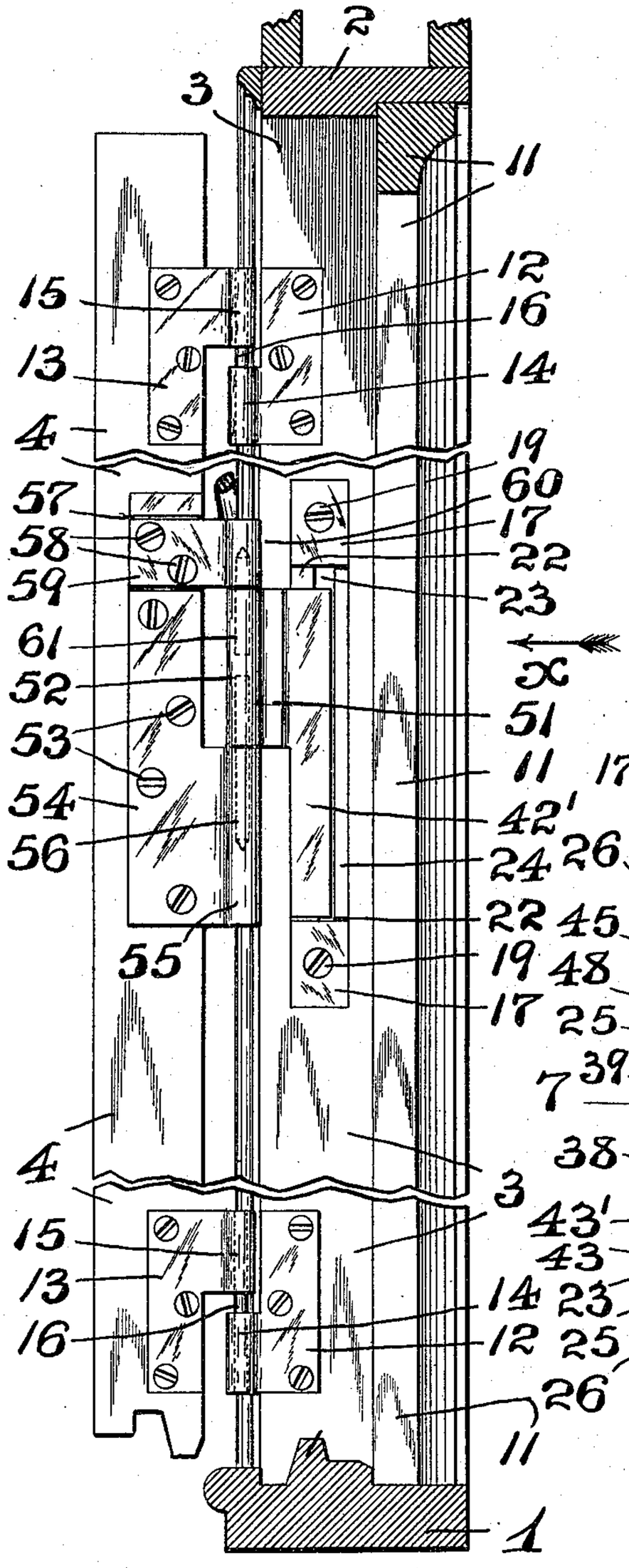

Fig. 2

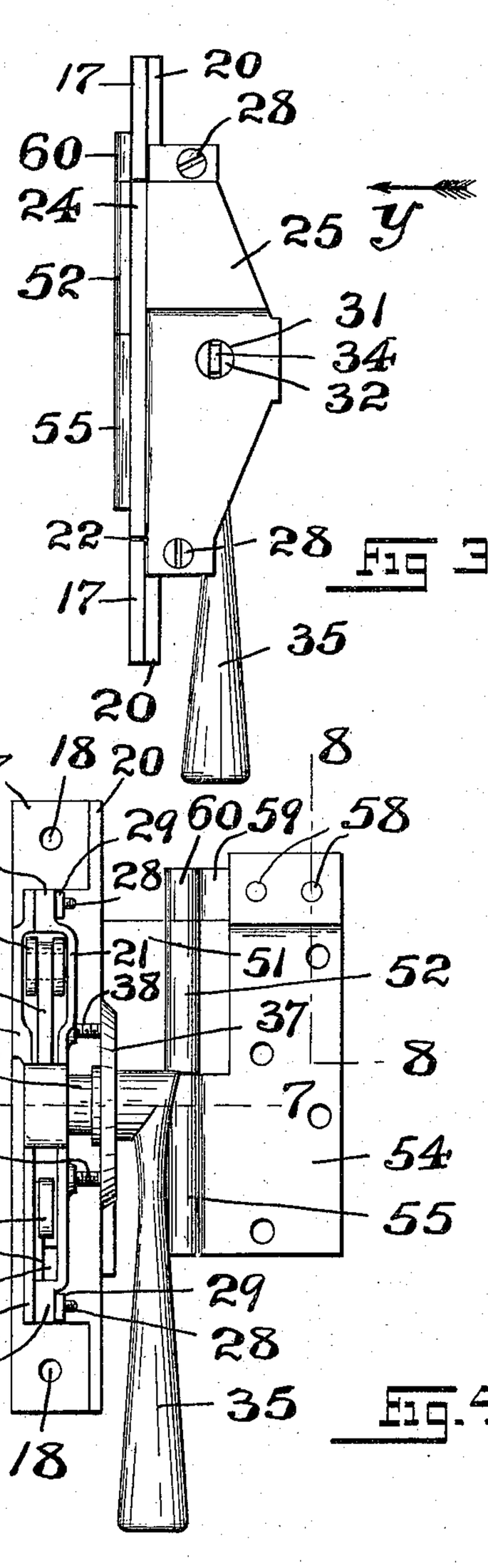

Fig. 3

Fig. 4

WITNESSES:

Fredk. H. W. Graentzel.

Clayton S. Cadmus.

INVENTOR

Cephas I. Shirley and

Frederick Walter Mueller,

BY

Graentzel and Richards,

ATTORNEYS

C. I. SHIRLEY & F. W. MUELLER.

SASH HINGE FIXTURE.

APPLICATION FILED OCT. 1, 1913.

1,166,550.

Patented Jan. 4, 1916.

3 SHEETS—SHEET 3.

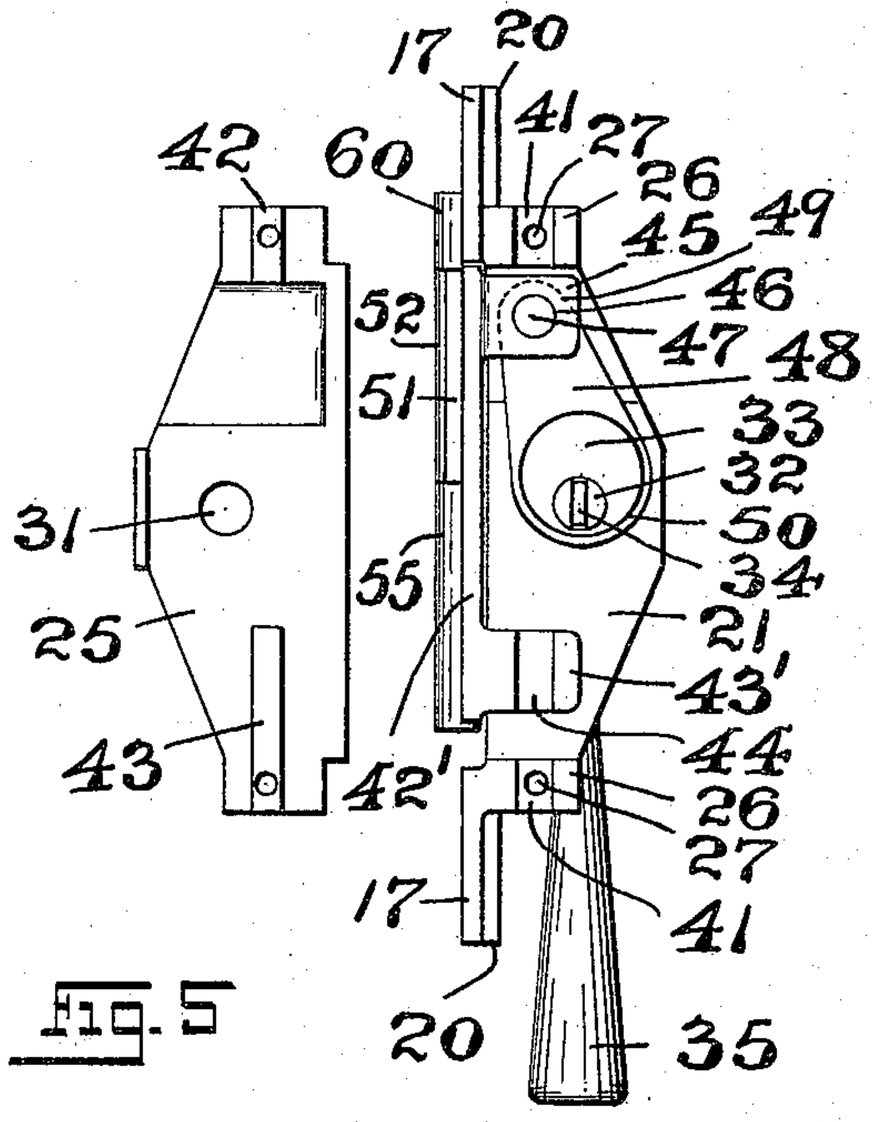

Fig. 5

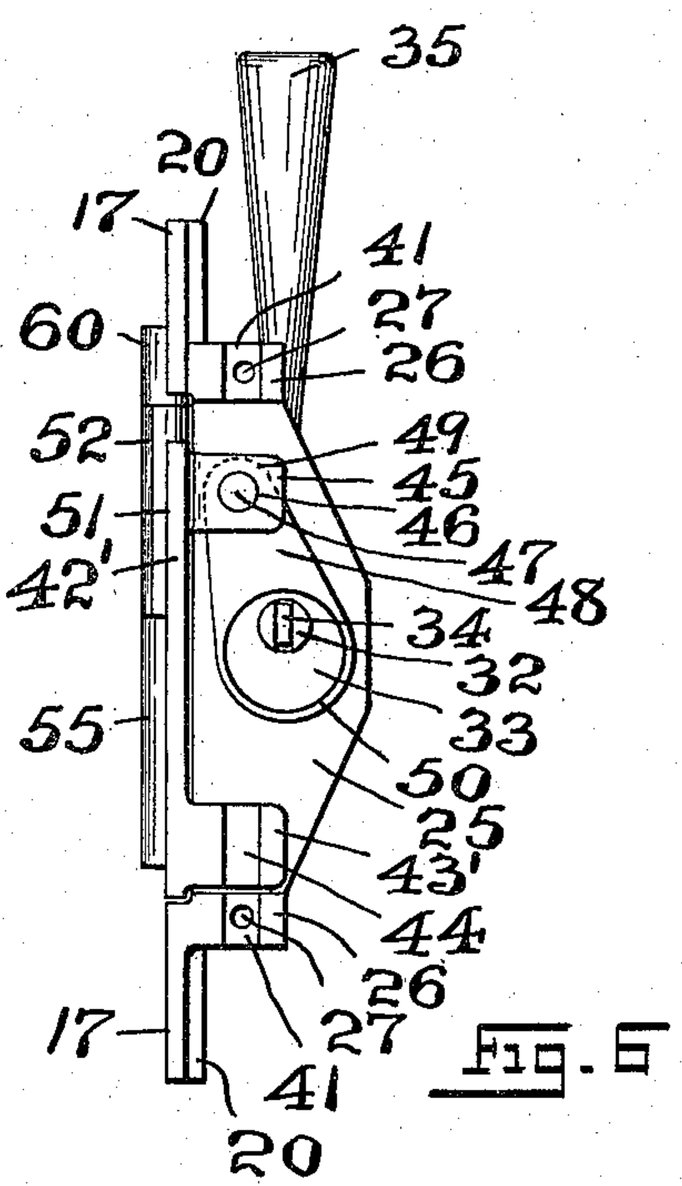

Fig. 6

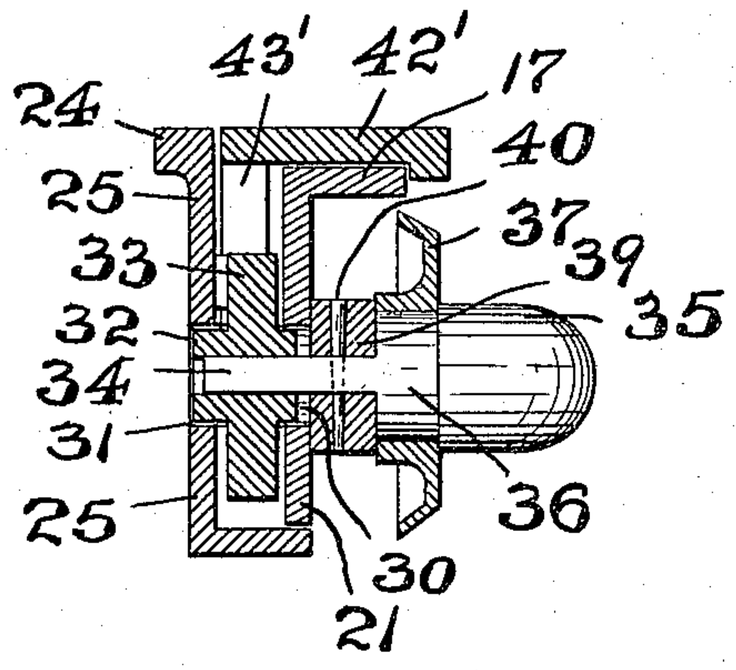

Fig. 7

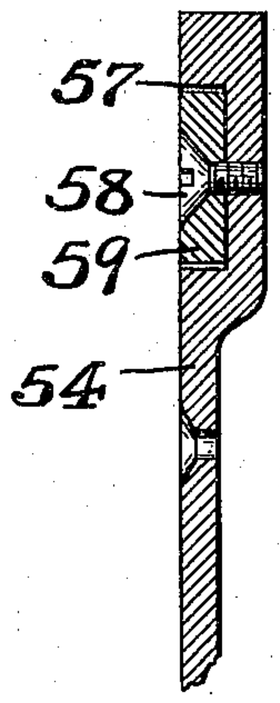

Fig. 8

WITNESSES:

Fredk W. Frantzel.

Clayton S. Cadmus.

INVENTOR

Cephas I. Shirley and

Frederick Walter Mueller,

BY

Frantzel and Richards,

ATTORNEYS

UNITED STATES PATENT OFFICE.

CEPHAS I. SHIRLEY, OF GLEN RIDGE, AND FREDERICK WALTER MUELLER, OF NEWARK, NEW JERSEY, ASSIGNORS TO TABOR SASH FIXTURE CO., A CORPORATION OF NEW JERSEY.

SASH HINGE-FIXTURE.

1,166,550. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed October 1, 1913. Serial No. 792,727.

To all whom it may concern:

Be it known that we, CEPHAS I. SHIRLEY and FREDERICK WALTER MUELLER, citizens of the United States, residing at Glen Ridge and Newark, in the county of Essex and State of New Jersey, respectively, have invented certain new and useful Improvements in Sash Hinge-Fixtures; and we do hereby 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 characters of reference marked thereon, which form a part of this specification.

The present invention has reference, generally, to improvements in hinges; and, the invention relates, more particularly, to that class of hinge-fixtures which are applicable to windows in which the sash or sashes swing horizontally in the frame of opening and closing the same, upon hinges, the latter and the hinge-fixture comprising vertically movable members for the purpose of raising and lowering the window-sash or sashes, for unlocking and locking the same.

The present invention has for its principal object to provide a novel and simply-constructed hinge-fixture of the general character hereinafter set forth, the parts of which are readily secured in their operative relations with respect to the window sash and the frame in which the sash swings; and, the invention has for its further object to simplify the hinge-fixture-construction, so that the sash may be easily raised and lowered, and when in its lowered relation to the window-frame providing a weather-tight joint between the sash and frame.

The invention has for its further object to provide a joint-construction between the window-sash and the window-frame which will prevent the window-sash from springing out of its alined closed relation with the window-frame; or, in case the window sash has been opened and is swung horizontally into its closed position within the frame, a stop is provided which will prevent the sash from being moved too far, so that a perfect non-alinement is prevented, and the sash or sashes will be retained in their horizontally as well as vertically movable relations within the window-frame, without the sticking or jamming, and whereby the window sash or sashes can be manipulated with the greatest ease.

Other objects of this invention not at this time more particularly enumerated will be clearly understood from the following detailed description of the present invention.

With the various objects of the present invention in view, the invention consists, primarily, in the novel hinge-fixture for swing-sashes hereinafter set forth; and, the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the said parts, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claim which is appended to, and which forms an essential part of this specification.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a face view of the inside of a window frame and a pair of hinged and horizontally swinging window-sashes, provided with hinge-fixtures made according to and embodying the principles of the present invention, said view showing one of the window sashes in its raised position, ready to be swung horizontally, and the other window sash being shown lowered and in closed relation to the window frame. Fig. 2 is a fragmentary vertical transverse section thereof, on an enlarged scale, showing the sash raised into its unlocked position and swung horizontally into its open relation with the window frame. Fig. 3 is a side-edge view of the hinge-fixture detached from the window sash and window frame, looking in the direction of the arrow *x* in said Fig. 2, but the hinge-leaves of the fixtures being represented in their relative positions, when the window sash is in its closed position; and Fig. 4 is a face view of the hinge-fixture, looking in the direction of the

arrow *y* in said Fig. 3. Fig. 5 is a view of the hinge-fixture. with the back-plate shown removed to one side of the main portion of the fixture, said view illustrating the inner arrangement of the raising and lowering mechanism of the hinge-fixture, when the sash is closed, said view showing also in connection therewith the inner face of the removed back-plate; and Fig. 6 is a view of the hinge-fixture, with the back-plate removed, said view showing the relative position of the raising and lowering mechanism of the hinge-fixture, when the sash is raised. Fig. 7 is a horizontal section of the hinge-fixture. on an enlarged scale, said section being taken on line 7—7 in said Fig. 4, with the one hinge-leaf or member omitted from said view; and Fig. 8 is a detail vertical section taken on line 8—8 in said Fig. 4, said view being also made on an enlarged scale.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to the figures of said drawings, the reference-character 1 indicates the lower horizontal sill, 2, an upper horizontal jamb or head, and 3, the vertical side jambs of a window-frame. Fig. 1 shows an arrangement of two horizontally swinging window sashes, each sash comprising two vertical side rails or stiles 4, 4, a top rail 5, and a bottom rail 6.

The sashes are so mounted in the opening of the window frame that they can be independently lowered or raised in their relatively closed positions in the frame for locking or unlocking the same, and when either sash has been brought into its raised position, as illustrated at the left of Fig. 1 of the drawings, the sash is also capable of being swung into its opened or closed position, such opened position of the window sash being shown in Fig. 2 of the drawings.

The window sashes are usually connected with the window frame by means of hinges comprising two leaves, as 12 and 13, secured thereto in the usual manner, and the said leaves being provided with the usual knuckles 14 and 15, connected by a pivot-pin or pintle 16, in such a manner, so that the sash and the leaf attached thereto are capable of both swinging horizontally and sliding vertically relatively to the frame and the other hinge-leaf which is attached to said frame. While in the accompanying drawings, I have shown each window sash and frame provided with a pair of such hinges, only one hinge may be applied, the sash-lifting or raising and lowering hinge-fixture, which will now be described, serving as the other hinge for swinging the sash horizontally after it has been raised. This raising and lowering hinge-fixture consists, essentially, of a plate-like member 17 provided near its respective end-portions with holes or perforations 18 for the reception of screws 19 for the attachment of said member 17, in the position desired, to the vertical side-jamb 3 of the window frame. In practice, this plate 17 is let into the wood, which is cut-away sufficiently back of the plate, so as to receive the flange-like portions 20 and 21, which extend rearwardly from the said plate-like member 17 and usually form an integral part of the same. In its face, the said plate-like member 17 is made with a depressed part 22 which is provided with a longitudinal extending opening, as 23, both said depressed part 22 and said opening 23 forming suitable guides for the purposes to be presently described. Suitably fitted in a portion of said depressed part 22 is a guide plate or member 24, said member being also provided with a rearwardly extending flange-like portion 25, of the general configuration of the flange-like portion 21. At its ends, the latter flange-like portion 21 is made with perforated lugs, as 26, upon which the end-portions of said flange-like portion 25 rest, as shown in Figs. 2, 3 and 4 of the drawings, said end-portions being provided with perforations 27 for the reception of tightening screws 28. These screws are inserted in said perforations 27 and extend through the perforated lugs 26, the parts being positively held in their assembled relations by means of nuts 29 which are screwed upon the projecting end-portions of the respective screws 28, as shown in Fig. 4.

Rotatably arranged in bearing-portions 30 and 31, formed in the respective flange-like portions 21 and 25, are the journal-like members 32 of a suitably-formed cam or eccentric 33. The said members 32, as well as that portion of the cam or eccentric 33 are formed with an opening of a rectangular shape, in cross-section, in which is arranged the correspondingly formed member 34 of an operating handle or lever 35. This handle or lever has a bearing portion, as 36, with which the member 34 is connected, as shown in Fig. 7 of the drawings. The bearing portion 36 is rotatably mounted in an escutcheon, as 37, suitably secured upon the front face of the vertical jamb 3 by means of screws 38, as shown in Figs. 1 and 4 of the drawings, the inner end-portions of said screws being also, preferably, screwed into correspondingly located screw-holes in the flange-like portion 21. Upon the member 34, at a point between the said bearing-portion 36 and the face of the flange-like portion 21 is a suitable collar or washer, as 39, which may be secured in its fixed position upon said member 34 by means of a pin 40, if desired. The lugs 26 may be provided with centering grooves or

depressions, as 41, and the flange-like portion 25 may be provided with ribs, as 42 and 43, which are adapted to register with the respective grooves or depressions 41, for easily securing the parts in their properly assembled relations, as will be clearly evident. Vertically slidably disposed in the depressed part 22 of the plate-like member 17 is a slide 42′, said slide being provided with a rearwardly extending guide-post 43 having a groove or depression 44 with which the previously-mentioned rib 43 registers, so as to properly guide the said slide vertically during its upward and downward movements, said guide-post extending through the elongated opening 23 and between the two flange-like portions 21 and 25. The said slide is also provided with a stirrup, as 45, also extending through said opening 23 and movably arranged between said flange-like portions 21 and 25, said stirrup comprising a pair of lugs or ears having bearing-portions or perforations, as 46, in which are suitably mounted the end-portions of a pin 47. Pivotally mounted upon said pin 47 is the perforated end-portion 49 of a suitably formed link, as 48, said link being provided in its opposite end-portion with a large opening 50, conforming to the marginal configuration of the previously-mentioned cam or eccentric 33, and in which said cam or eccentric is movably and operatively disposed, to raise or lower said slide 42, according to the direction in which the handle or lever 35 is turned. Suitably connected with and extending from the edge of said slide 42, is a member 51 formed with a pintle-recceiving portion 52. Suitably secured to the vertical pivot-stile 4 of the window-sash, by means of screws 53, or in any other suitable manner, is a hinge-plate 54 formed with a pintle-receiving member 55, adapted to be brought into vertical alinement with the pintle-receiving portion 52, and the parts being pivotally connected in a hinge-like manner by means of a pintle 56. In its upper portion, the said hinge-plate 54 may be provided with a lateral groove or depression, as 57, in which is detachably secured, by means of screws 58, an auxiliary hinge-plate 59, which is formed with a pintle-receiving member 60 and is connected in a hinge-like manner with the pintle-receiving portion 52 of the slide 42 by means of a hinge-pin or pintle 61.

The operation of the sash-lifting and lowering mechanism will readily be understood from the foregoing description, and from an inspection of the several figures showing the several devices, and need, therefore, not be further described; and, the manner of raising or lowering the window-sash, for swinging it into its open relation with the window frame, or for locking the sash when closed will be particularly understood from an inspection of Fig. 2 of the drawings.

We are fully aware, that various changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the description of said parts, without departing from the scope of the present invention as set forth in the foregoing specification, and as defined in the clauses of the claim which are appended thereto. Hence, we do not limit our present invention to the exact arrangements and combinations of the various devices and parts as described in the said specification, nor do we confine ourselves to the exact details of the construction of the said parts, as illustrated in the accompanying drawings.

We claim:—

1. A hinge-fixture for windows having a sash which is mounted in the frame to move vertically and also swing horizontally comprising an element adapted to be secured to the frame, a slide movably connected with said fixed element, said slide being made in the manner of a hinge-leaf, a hinge-leaf secured to the window sash and pivotally connected with said slide, a cam or eccentric rotatably connected with said fixed element, a spindle and lever for operating said cam or eccentric, and a link interposed between said cam or eccentric and said slide for reciprocally moving said slide and the hinge-leaf pivotally connected with said slide.

2. A hinge-fixture for windows having a sash which is mounted in the frame to move vertically and also swing horizontally comprising a plate-like element adapted to be secured to the frame, said plate-like element having a slide-receiving depression and an elongated opening, a slide arranged in said depression, said slide being made in the manner of a hinge-leaf, a flange-like member extending rearwardly from said plate-like element, a guide-plate also provided with a rearwardly extending flange-like element, secured to said first-mentioned flange-like element so as to provide a space between said flange-like elements, a guide-post connected with said slide, said post extending through said elongated opening and coöperating with a rib on said guide-plate, and a hinge-leaf secured to the window sash and pivotally connected with said slide.

3. A hinge-fixture for windows having a sash which is mounted in the frame to move vertically and also swing horizontally comprising a plate-like element adapted to be secured to the frame, said plate-like element having a slide-receiving depression and an elongated opening, a slide arranged in said

depression, said slide being made in the manner of a hinge-leaf, a flange-like member extending rearwardly from said plate-like element, a guide-plate also provided with a rearwardly extending flange-like element, secured to said first-mentioned flange-like element so as to provide a space between said flange-like elements, a guide-post connected with said slide, said post extending through said elongated opening and coöperating with a rib on said guide-plate, a hinge-leaf secured to the window sash and pivotally connected with said slide, said flange-like elements being provided with bearing-portions, a spindle rotatably mounted in said bearing-portions, and a lever connected with said spindle, and means interposed between said spindle and said slide for reciprocally moving said slide and the hinge-leaf pivotally connected with said slide.

4. A hinge-fixture for windows having a sash which is mounted in the frame to move vertically and also swing horizontally comprising a plate-like element adapted to be secured to the frame, said plate-like element having a slide-receiving depression and an elongated opening, a slide arranged in said depression, said slide being made in the manner of a hinge-leaf, a flange-like member extending rearwardly from said plate-like element, a guide-plate also provided with a rearwardly extending flange-like element, secured to said first-mentioned flange-like element so as to provide a space between said flange-like elements, a guide-post connected with said slide, said post extending through said elongated opening and coöperating with a rib on said guide-plate, a hinge-leaf secured to the window sash and pivotally connected with said slide, said flange-like elements being provided with bearing-portions, a spindle rotatably mounted in said bearing-portions, and a lever connected with said spindle, a cam or eccentric mounted upon said spindle, and a link interposed between said cam or eccentric and said slide for reciprocally moving said slide and the hinge-leaf pivotally connected with said slide.

5. A hinge-fixture for windows having a sash which is mounted in the frame to move vertically and also swing horizontally comprising a plate-like element adapted to be secured to the frame, said plate-like element having a slide-receiving depression and an elongated opening, a slide arranged in said depression, said slide being made in the manner of a hinge-leaf, a flange-like member extending rearwardly from said plate-like element, a guide-plate also provided with a rearwardly extending flange-like element, secured to said first-mentioned flange-like element so as to provide a space between said flange-like elements, a guide-post connected with said slide, said post extending through said elongated opening and cooperating with a rib on said guide-plate, a hinge-leaf secured to the window sash and pivotally connected with said slide, said flange-like elements being provided with bearing-portions, a spindle rotatably mounted in said bearing-portions, and a lever connected with said spindle, a stirrup extending rearwardly from said slide, through said elongated opening and into the space between said flange-like elements, a pivot-pin connected with said stirrup, and means interposed between said spindle and said pivot-pin for reciprocally moving said slide and the hinge-leaf connected with said slide.

6. A hinge-fixture for windows having a sash which is mounted in the frame to move vertically and also swing horizontally comprising a plate-like element adapted to be secured to the frame, said plate-like element having a slide-receiving depression and an elongated opening, a slide arranged in said depression, said slide being made in the manner of a hinge-leaf, a flange-like member extending rearwardly from said plate-like element, a guide-plate also provided with a rearwardly extending flange-like element, secured to said first-mentioned flange-like element so as to provide a space between said flange-like elements, a guide-post connected with said slide, said post extending through said elongated opening and coöperating with a rib on said guide-plate, a hinge-leaf secured to the window sash and pivotally connected with said slide, said flange-like elements being provided with bearing-portions, a spindle rotatably mounted in said bearing-portions, and a lever connected with said spindle, a stirrup extending rearwardly from said slide, through said elongated opening and into the space between said flange-like elements, a pivot-pin connected with said stirrup, a cam or eccentric mounted upon said spindle, and a link interposed between said cam or eccentric and said pivot-pin for reciprocally moving said slide and the hinge-leaf pivotally connected with said slide.

7. A hinge-fixture for windows having a sash which is mounted in the frame to move vertically and also swing horizontally, comprising an element adapted to be secured to the frame, a slide movably connected with said fixed element, said slide being made in the manner of a hinge-leaf, a hinge-leaf secured to the window sash and pivotally connected with said slide, said hinge-leaf being provided with a depression, and a hinge-plate detachably secured in said depression, said hinge-plate being pivotally connected with said slide, a cam or eccentric rotatably connected with said slide, a spindle and lever for operating said cam or eccentric, and

a link interposed between said cam or eccentric and said slide for reciprocally moving said slide, and said hinge-leaf and the hinge-plate pivotally connected with said slide.

In testimony, that we claim the invention set forth above we have hereunto set our hands this seventeenth day of September, 1913.

CEPHAS I. SHIRLEY.
FREDERICK WALTER MUELLER.

Witnesses:
FREDK. C. FRAENTZEL,
FRED'K H. W. FRAENTZEL.