Sept. 27, 1938. O. M. EDWARDS 2,131,099

KNOCK-DOWN WINDOW FRAME

Filed March 8, 1937 2 Sheets-Sheet 1

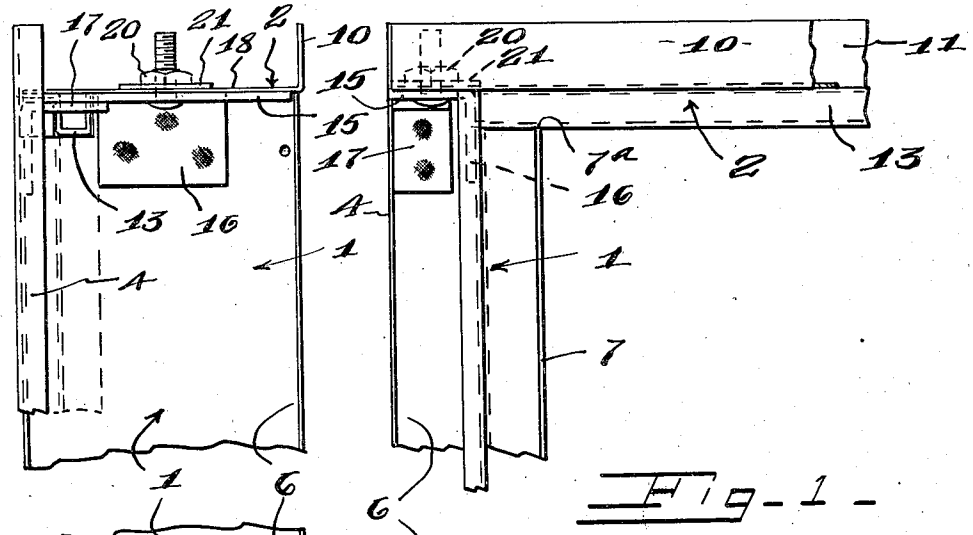


Fig-1-

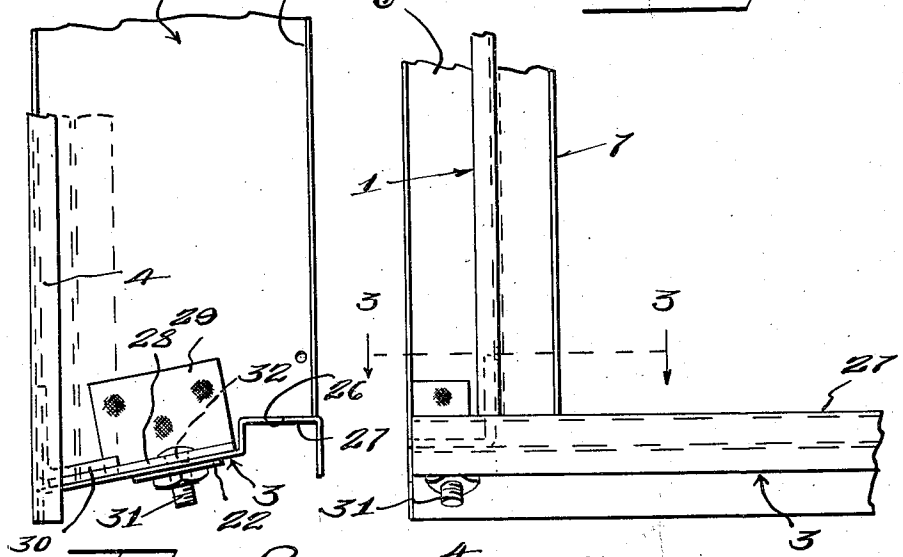


Fig-2-

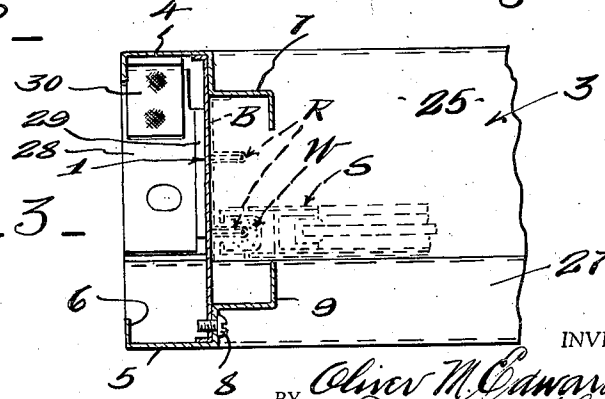


Fig-3-

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KNOCK-DOWN WINDOW FRAME

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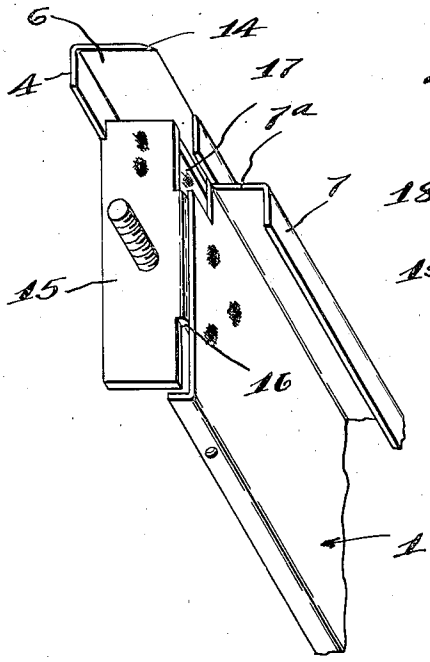


Fig-4-

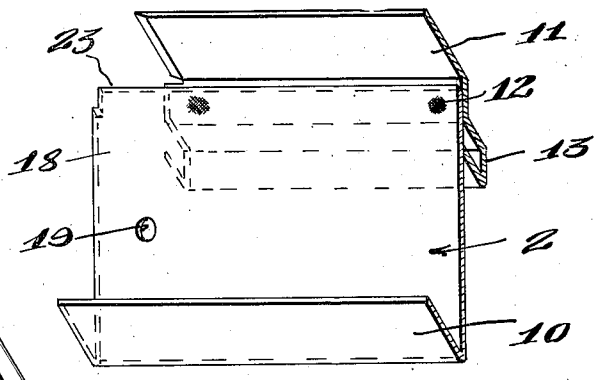


Fig-5-

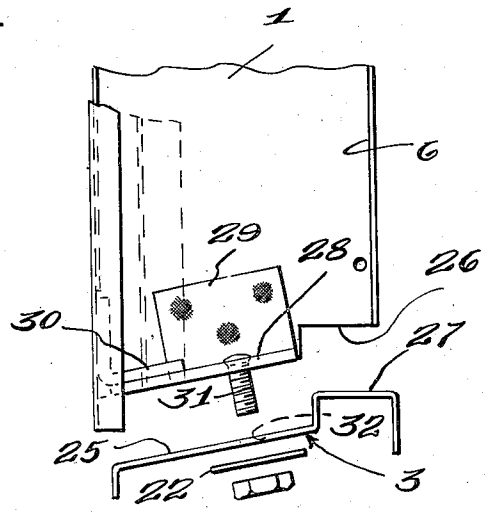


Fig-6-

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2,131,099

UNITED STATES PATENT OFFICE

2,131,099

KNOCK-DOWN WINDOW FRAME

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Application March 8, 1937, Serial No. 129,615

1 Claim. (Cl. 189—75)

This invention relates to knock-down window frames, particularly metal window frames, for the window openings of buildings, as dwellings, hospitals, factories, schools, office buildings, and building structures generally, as distinguished from window frames for railway cars, buses, etc., although this window frame is usable in railway cars, buses, etc., but it is more particularly designed for large windows, as those for buildings, etc.

Window frames of this character have heretofore been shipped for the most part ready to place in the window openings and due to handling during loading and unloading from the trucks and from cars, are quite liable to be sprung, distorted or damaged, so that they are useless, or additional work is required to make them usable. Also, when supplied in large quantities to buildings, they are temporarily stored, one against the other, with the end ones leaning against a pillar or wall. This subjects those frames nearest the pillar or wall to heavy strains tending to distort them. The replacement or repairing of damaged frames is an item that results in a loss to the manufacturer or supplier. By making these metal frames in knock-down form, not only do they take up less shipping and storage space, but the liability of becoming damaged and distorted is almost eliminated.

More particularly, the invention has for its object a particularly simple joint between the upright and transverse frame members of the window frame, which joint lends itself to the ready assembly or setting up of the window frame for placement in the window opening and rigidly holds the frame members in rectangular form, or the object of the invention is a knock-down frame with a joint which is readily assembled in square or true relation to each other without the exercise of skill on the part of workmen.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary elevation of a window frame embodying this invention.

Figure 2 is an elevation looking to the right in Figure 1.

Figure 3 is a sectional view on line 3—3, Figure 1, one of the sashes and its guide and the sash guide for the other sash being shown in broken line, it being understood that the window is a double hung window.

Figures 4 and 5 are fragmentary isometric views of one of the upright and transverse members respectively of this frame.

Figure 6 is an inner face view of the lower end of one of the upright members, the lower transverse member or sill being shown in end elevation and as separated therefrom.

1 and 2 designate respectively the upright members and the upper rail member of the window frame, and 3 the lower rail member or sill of the frame, these being formed up of metal, usually sheet metal. Each upright member 1 is formed with a flat body portion and has outwardly extending marginal flanges 4, 5 which form an outwardly facing channel. The channel constitutes a box 6 for housing the sash weights, which counterbalance the sash S. One of these flanges, as 4, is integrally secured or welded to the body of the upright member 1 and is provided with an integral angular extension 7 which forms an outer window stop on the opposite side of the body of the member 1 to that on which the sash weight box 6 is located. The other flange 5 is demountably secured to the body 1 as by screws 8 and is formed with an extension 9, similar to the extension 7, forming an inner window stop.

The sashes S are located between the stops 7 and 9 and as here shown are provided with channels in their edges for receiving guide ribs R on a base plate B lying against the body 1 and secured in position in any suitable manner. The channels in the edges of the sash are preferably lined with a non-metallic weather strip W with which the ribs R coact. The mounting and guiding of the sash per se forms no part of this invention.

The transverse members or the upper and lower rails 2, 3 are also in the form of outwardly facing channels. One of the flanges 10 of the upper rail is integral with the body or base of the member 2, and the other flange 11 of which is integrally united thereto, as by welding at 12, this flange 11 being also formed with an angular window stop flange 13, against which abuts at 7a the end of the window stop 7, when the parts are assembled. The flange 11 also abuts at its ends against a side edge of the flange 4 at 14, when the parts are assembled.

The joint between the transverse member 2 and the upper end of each upright 1 comprises a flange 15 at the upper end of each upright 1 and located at the upper end of the channel 6, this flange being

usually a separate piece having an angular base 16 secured, as by welding, to the outer face of the body 1, the flange extending the full width of the channel of the upright member 1. The flange 15 is also secured to the flange 4 by a right angular bracket 17 secured to the flange 4 in any suitable manner, as by welding, so that the flange 4 is rigidly secured to the body 1. The end portion 18 of each transverse member 2 laps and bears flatwise on the flange 15 and is clamped thereto. It is here shown as clamped thereto by a stud, preferably provided on the flange 15 extending through an opening 19 in the lapping end portion 18 of the transverse frame member 2. A nut 20 threads on the stud against the upper face of the body of the frame member 2. The flanges 15 form a shelf on which the transverse member 2 rests and to which it is secured.

Owing to the wide bearing faces, due to the flange 15 and the lapping portion 18, the frame members are rigidly and squarely clamped together. In order to provide maximum bearing surface for the nut 20, it may be provided with an enlarged discoidal base 21 or instead of the discoidal base, a washer 22 may be provided, as shown in Figure 6.

When the frame members 1, 2 are assembled, the corner 23 of the lapping portion of the member 2 fits substantially squarely into the angle of the flange 4, thus locating the member 2 relatively to the member 1 and causing it to be in proper alinement with the upright member 1.

The corner 23 and the angular flange 4 constitute interfitting means which bring the frame members into proper alinement with each other, when being assembled, upon an endwise movement of the frame member 2, or to bring the upright and transverse members square with each other, when being assembled.

The lower transverse frame member or sill 3 is angular in form, as seen in Figure 6, with an inclined portion 25, and the lower end of each frame member 1 is shaped to conform to the contour of the sill 3 and hence formed with a notch 26 to receive a rectangular high beaded or stop portion 27 of the sill 3 corresponding to the stop 13 of the top rail 2, and with an inclined portion conforming to the inclined portion 25 of the sill 3. A flange 28, corresponding to the flange 15, is arranged in the lower end of the channel 6 of each upright member, but at an incline, in order to be in squarely abutting relation to the inclined portion 25 of the sill 3. It is provided with a base flange 29, corresponding to the base flange 16, which is secured, as by welding, to the body of the upright frame member 1, and it is also further secured to the body 1 by an angular bracket 30, corresponding to the bracket 17.

In shipping and storing the frame members can all lie flatwise or the members of each frame bundled together.

In setting the frame up, it is merely necessary to arrange the uprights with the studs 31 at the lower ends thereof extending through the holes 32 in the sills 3 and place and tighten the nuts thereon and in the same manner mounting the upper rail member 2 on the flanges 15 with the studs extending through the openings 19 in the lapping portions 18 of the transverse upper member 2 and tighten the nuts thereon, the notches 26 fitting the raised, beaded or stop portion 27 of the sill, and the corner portion 23 of the rail member fitting into the angle of the flanges 14. The fact that the flanges 15 and 28 press flatwise on the end portions of the upper transverse frame member 2 and on the inclined portions 25 of the sill 3, causes the frame members to come together in exact alinement, and tightening of the nuts clamp the frame members together in exact alinement.

What I claim is:—

A knock-down metal window frame consisting of upright and transverse members connectable together to form a substantially rectangular sash receiving opening, each of said members comprising a substantially flat sheet metal body strip having outwardly extending side flanges forming an outwardly facing channel, one member being arranged to lap the end of the adjacent members and each adjacent member being formed with a flange at its end forming a shelf on which each end portion of the body strip of the said one member laps, one of the side flanges of each adjacent member extending beyond said shelf forming an angular pocket receiving the corner of the lapping portion of the body strip of said one member to locate and square the upright and transverse members at the corners, and fastening members extending through the shelf and the portion lapping the same.

OLIVER M. EDWARDS.