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C. RUPP

SASH OPERATING MECHANISM

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FIG. I.

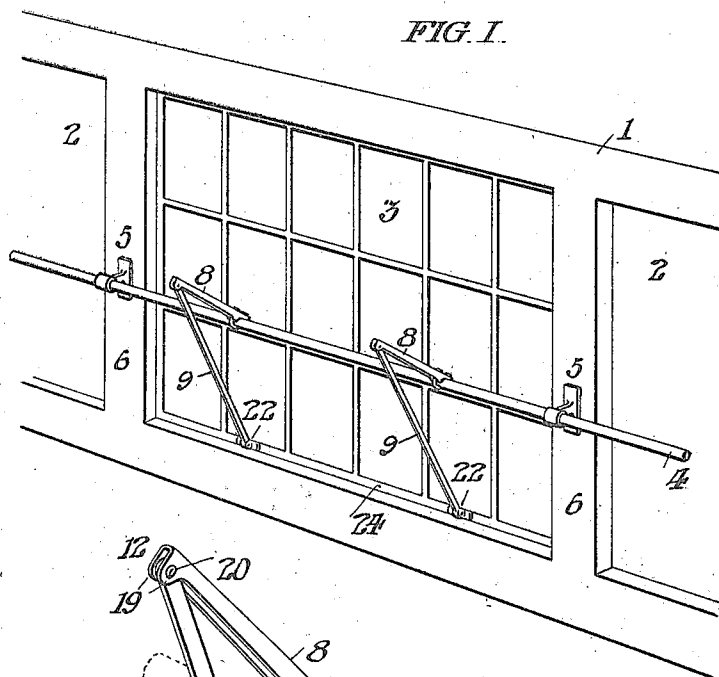


FIG. II.

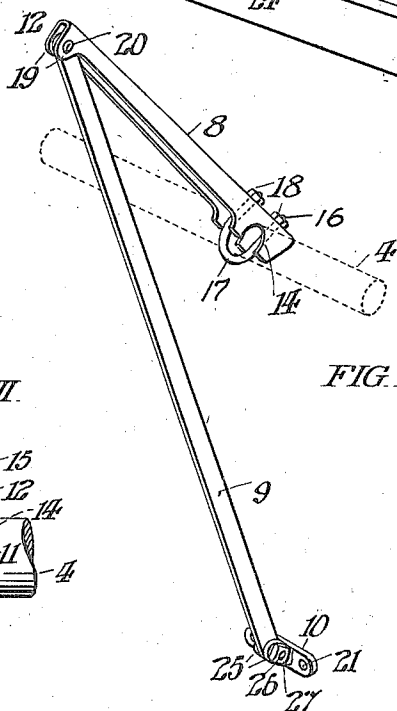
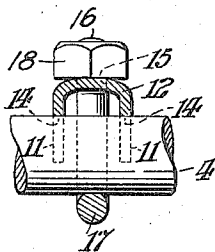


FIG. III.



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SASH-OPERATING MECHANISM.

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To all whom it may concern:

Be it known that I, CHARLES RUPP, a citizen of the United States, residing at Stenton, Germantown, in the city and county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Sash-Operating Mechanism, whereof the following is a specification, reference being had to the accompanying drawing.

My invention is particularly applicable to operate a series of sashes separately tiltable upon horizontal pivots but arranged to be tilted by a rock shaft which is common to all of the sashes and has lever arms connected by links with the respective sashes; so that all of said sashes may be simultaneously swung open or shut, by turning movement of said rock shaft. Ordinarily, such lever arms are formed of cast iron, each having a hub with a cylindrical hole through which the rock shaft extends and secured upon the rock shaft by a single set screw. Such construction is objectionable in that unless the set screw is jammed very tight, the shaft may turn in the lever without turning it and, if the set screw is thus jammed, the metal of the lever is so far strained that its hub is liable to crack under the additional stress to which the lever is subjected in operating the sash. Of course, when any lever is thus cracked, it is released from rigid engagement with the rock shaft upon which it is mounted, is consequently useless, and must be replaced, and, to replace it, the entire rock shaft must be dismantled, for the reason that the new lever must be slipped to its position upon the rock shaft from one end thereof.

Therefore, it is an object of my invention to provide a more efficacious and durable structure by substituting for the cast iron levers aforesaid levers made of pressed sheet steel, so constructed and arranged that they not only withstand the initial strains imposed upon them by rigid connection with the rock shaft, but also withstand the additional stresses incident to the operation of the sash.

As hereinafter described, my invention includes a lever arm of pressed sheet metal of U-shaped cross section having at one end means to detachably rigidly engage said lever with the rock shaft without dismantling the latter and having, at the other

end, a pivotal connection for a link embraced between the flanges of the lever.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawing; Fig. I is a fragmentary perspective view of a ventilating sash structure embodying my improvement.

Fig. II is a perspective view of one of the unit sash operating mechanisms, embodying my invention, of which two are indicated in Fig. I.

Fig. III is a fragmentary sectional view showing the construction and arrangement of the end of said lever provided with means for rigidly engaging the rock shaft.

Referring to Fig. I; it is to be understood that the frame 1 forms a longitudinal series of similar sash openings 2, each provided with a tiltable sash 3, of which only one is shown. The rock shaft 4, which is coextensive with the entire series of sashes 3, is journaled in suitable brackets 5 upon the mullions 6, so that said shaft is parallel with the axes of the pivots upon which the sashes are arranged to oscillate. Each of said sashes 3 may be hingedly connected to said frame 1 at its top and arranged to be tilted outwardly to uncover the opening 2 or swung back to the normal position shown in Fig. I to close said opening. Such opening and closing movement of the series of sashes 3 may be effected by turning movement of said rock shaft 4 by any suitable means, for instance, a worm gear wheel may be fixed on said shaft 4 at one end thereof, and a worm operatively connected with said gear.

In order to operatively connect said rock shaft 4 with the respective sashes 3, I provide a series of unit sash operating mechanisms, such as shown in detail in Fig. II; each including a lever arm 8 rigidly connected with said shaft 4 and pivotally connected with the upper end of a link 9, which link has its lower end pivotally connected with a bracket 10 attached to the sash 3.

I find it convenient to employ two such mechanisms for a sash of the proportions of the sash 3 indicated in Fig. I, but other numbers may be employed in accordance with the dimensions of the sash.

As shown in Figs. II and III; each of said levers 8 is of U-shaped cross section, being conveniently pressed from primarily flat

sheet steel so as to form a channel bar with opposite flanges 11, 11 as best shown in Fig. III; said flanges being connected by the arched web 12 in unitary relation therewith.

5 As best shown in Fig. II; said flanges 11 are wider at the end engaging said rock shaft 4 than at the opposite end toward which they taper, and have respectively semicircular recesses 14 fitted to the cylindrical surface of
10 said rock shaft 4. Said web 12 is punched with two holes 15 in symmetrical relation to said recesses 14 to receive the U-bolt 16 which has the semicircular bight 17 complementary to said recesses 14 to form a bearing for said
15 rock shaft; said bolt 16 having nuts 18 to draw and hold it in the position shown in Fig. III, encircling said shaft 4 between said flanges 11 of the lever 8 so as to rigidly clamp the latter upon said shaft in any de-
20 sired angular relation with said shaft. It may be observed, with reference to Fig. III, that the stress upon said bolt 16 comes between the flanges 11 of said lever 8, so as to engage said rock shaft 4 at three zones in
25 axially spaced relation and thus stabilize and continually maintain said lever in rigid relation with said shaft 4, whereas, a cast iron lever provided with a cylindrical hole and a set screw, as above contemplated, has
30 no such stabilizing capacity.

Each of said levers 8 has at its end remote from said shaft 4, and in unitary relation with said flanges 11, a pair of lugs 19, and a rivet 20 connecting said lugs through the
35 upper end of said link 9, in pivotal connection therewith. Each of said brackets 10 has two holes 21, for bolts or rivets 22 rigidly connecting it with the lower rail 24 of its sash 3 and, as indicated in Fig. II, each of
40 said brackets 10 has a pair of parallel lugs 25, embracing the lower end of the respective link 9, and carrying a bolt 26 extending through said link and secured by a nut 27 thus forming a pivotal connection between
45 said link and sash. Such construction permits the sashes to be disengaged from the links 9 without removing said brackets 10.

I do not desire to limit myself to the precise details of construction and arrangement
50 herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended claims.

55 I claim:

1. Operating mechanism for a pivoted sash including a rock shaft extending parallel with the axis of the sash pivots and carrying a lever connected to the sash by a
60 link; wherein said lever is a pressed sheet metal channel bar having parallel flanges connected by a web in unitary relation therewith; each of said flanges having a recess fitted to said rock shaft; a U-bolt encircling
65 said rock shaft between said lever flanges,

and having its ends extending through said web; and nuts on said U-bolt clamping said bolt and lever in rigid relation with said shaft.

2. A sash operating mechanism including 70 a lever, a link pivotally connected to said lever, and a bracket pivotally connected to the opposite end of said link; wherein said lever is formed of pressed sheet metal, of U-shaped cross section, having a pair of flanges 75 each with a substantially semicircular recess to fit a rock shaft; and a U-bolt carried by said lever having a bight extending between said flanges complementary to said recesses to form a bearing for said rock shaft. 80

3. A sash operating mechanism including a lever and a link pivotally connected therewith; wherein said lever is formed of pressed sheet metal, of U-shaped cross section, having a pair of flanges each with a 85 substantially semicircular recess to fit a rock shaft; and a U-bolt carried by said lever having a bight extending between said flanges complementary to said recesses to form a bearing for said rock shaft. 90

4. An article of manufacture, part of a sash operating mechanism, consisting of a lever formed of pressed sheet metal of U-shaped cross section, having a pair of flanges with recesses to fit a cylindrical shaft extending at right angles to said lever; said flanges being connected by a web in unitary relation therewith, and said web perforated to receive a clamp bolt between said recesses. 95

5. A lever element for pivoted window 100 sashes in the form of a metallic bar having a channeled cross sectional configuration and provided at one end with an integral lateral projection adapted to serve as a pivot lug.

6. A lever element for pivoted window 105 sashes in the form of a metallic bar having a channeled cross sectional configuration and provided at one end with a pair of integral lateral projections adapted to serve as pivot ears; said ears being spaced to receive a link 110 between them and a pivot connecting said lever with said link.

7. A lever element for pivoted window sashes in the form of a metallic bar having a channeled cross sectional configuration, the 115 flanges of said bar being of different depths, at different regions of the length thereof; said flanges forming integral lateral projections serving as pivot ears at the narrow end thereof and integral lateral projections 120 serving as semi-shaft journals at the wider end thereof.

8. A lever mounting for pivoted window sashes, comprising a rock shaft and a lever element rotatably adjustable on said rock 125 shaft, in the form of a channel bar, the flanges of said bar being of different depths at different regions of the length thereof, and provided at the narrow end with integral lateral projections adapted to serve 130

as pivot ears, in spaced relation, and provided at the wider end with integral lateral projections, in axially spaced relation, each of the latter projections having a substantially semicircular recess therein, adapted to fit said shaft; and a U-bolt, having its ends extending through said bar, intermediate of said flanges, and having its bight in coaxial relation with said recesses in said flanges; whereby said lever element may be engaged

with said shaft at three zones in axially spaced relation.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this fifth day of November, 1920.

CHARLES RUPP.

Witnesses:

ALBERT L. DOERING,
GEO. H. DOERING.