A. WINDEKNECHT.

SASH BAR FOR GLASS ROOFS.

APPLICATION FILED JULY 16, 1906.

947,009. Patented Jan. 18, 1910.

Fig. 1.

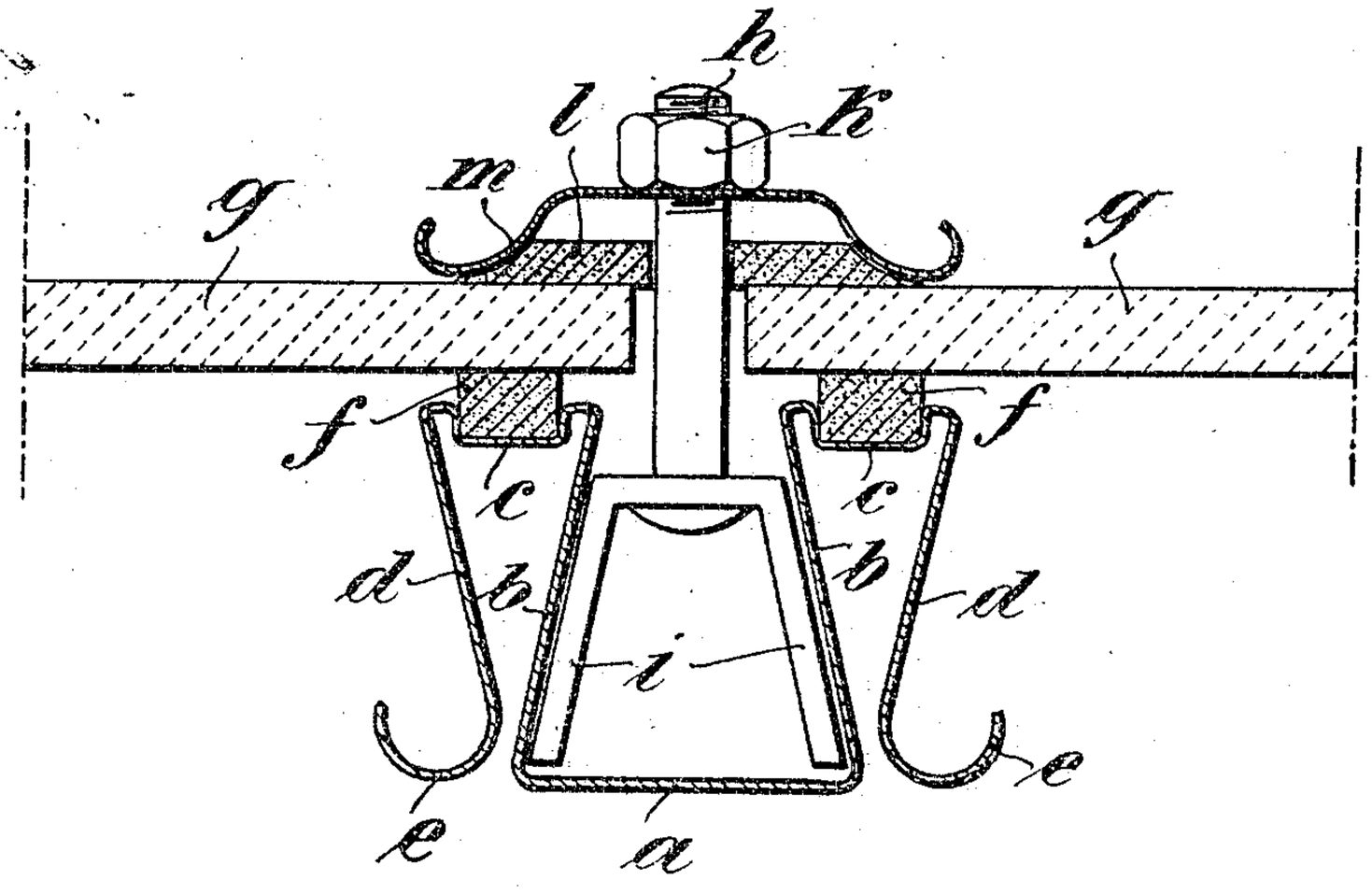
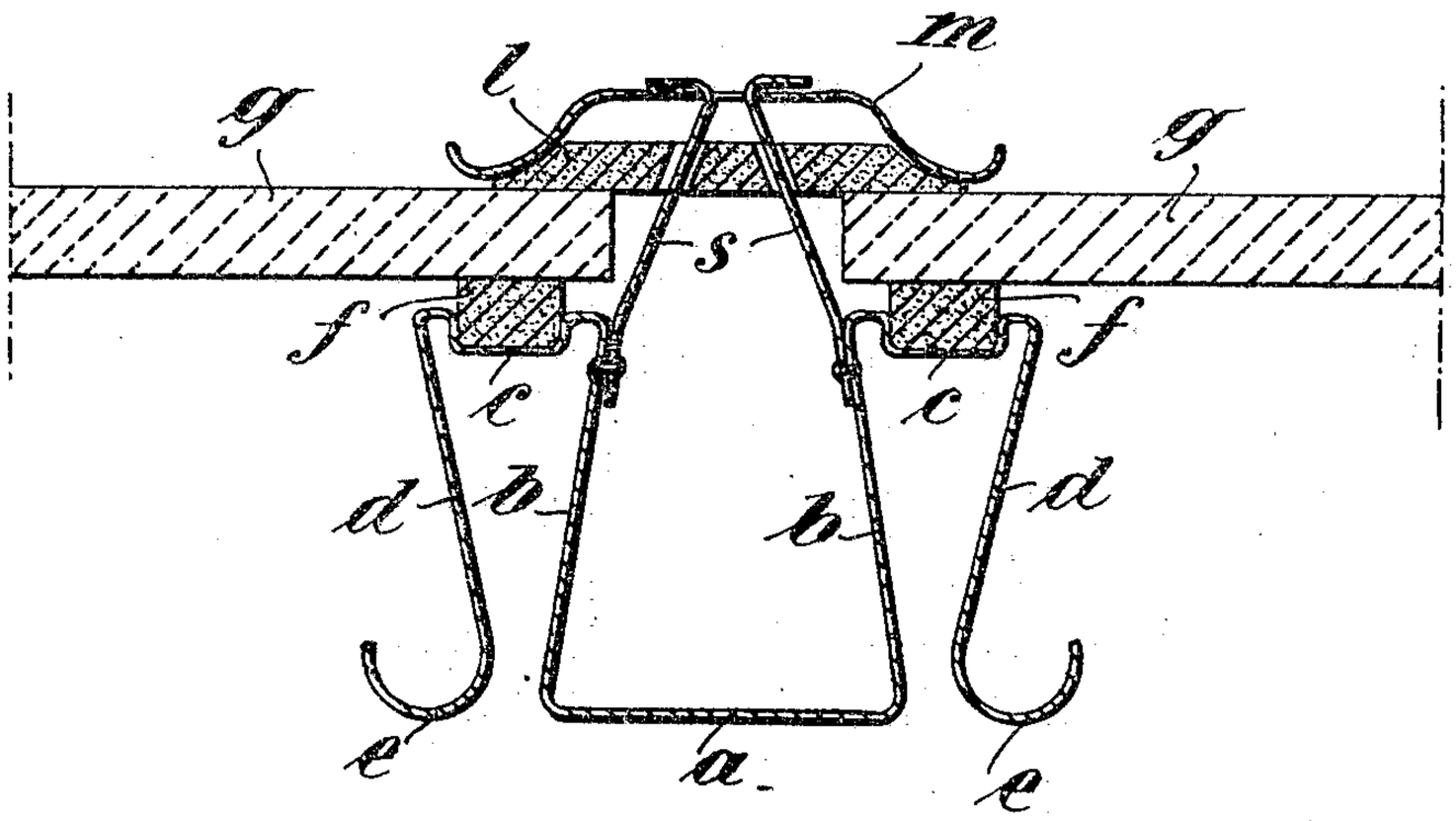



Fig. 2.




Witnesses:

N. Reynolds.

M. Taylor.

Inventor:

August Windeknecht

by Georgii & Massid

Attorneys

# UNITED STATES PATENT OFFICE.

AUGUST WINDEKNECHT, OF BERLIN, GERMANY.

## SASH-BAR FOR GLASS ROOFS.

947,009. Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed July 16, 1906. Serial No. 326,454.

*To all whom it may concern:*

Be it known that I, AUGUST WINDEKNECHT, civil engineer, citizen of the German Empire, residing at the city of Berlin, Germany, have invented certain new and useful Improvements in Sash-Bars for Glass Roofs; and I 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.

The subject of my invention is a novel sash-bar for glass roofs. The essential condition which from a practical standpoint must be fulfilled by such sash-bars, in addition to cheapness, is lightness combined with great resistance to vertical and lateral bending; the sash-bars must also enable the glasses to be quickly fixed, while allowing a certain amount of resilience; they must prevent the entry of rain-water and the drip of "sweat" which collects on the inside of the roof. These conditions are only partly fulfilled by prior sash-bars. The majority of the latter consist of shaped rolled iron; the great weight and the relatively high price of which essentially increase the costs of the roofing. Furthermore it is impossible to secure the glasses to a rolled iron sash-bar with capability of yielding unless springs are employed. With a view to avoiding great weight and high price of the shaped rolled iron, sash-bars of smooth rolled iron and sheet metal or of sheet metal alone, have been manufactured. The former, however, differ but little in regard to weight and price from the sash-bars of shaped rolled iron, while the latter do not possess sufficient stability.

The new sash-bar forming the subject of the invention consists of a strip of sheet metal fashioned in a certain manner on the creasing or swaging machine, as the drawing shows, in which the new sash-bar is illustrated in section in connection with two different kinds of devices for securing it.

The sash-bar consists essentially of a broad crossweb *a* combined with two vertical ribs *b*, forming in conjunction with the web *a* a deep trough with side walls slightly inclined toward each other. Laterally of these side walls *b* are two vertical ribs *d*, connected with the former by two shallow troughs *c*. The bottom edges of the vertical ribs *d* are outwardly and upwardly bent and thus constitute troughs *e* which serve to catch the moisture which collects on the inside of the glass roof, while the troughs *c* are destined to receive the packing material, *e. g.*, felt strips *f*, on which the glasses rest. The glasses lying on the so-shaped sash-bar can be secured to it in various ways. One extremely practical manner of fixing is shown in Figure 1. The bolt *h*, projecting between the glasses, carries at its lower end a fork with outwardly bent prongs *i*, which lie against the inside of the lateral walls *b* of the central trough of the sash-bar *b*. Between the glasses and the nut *k* at the top of the bolt there is a packing-strip *l* and above it a resilient strip of sheet-metal *m*, disposed in well-known manner.

The essential advantages of the new sash-bar over prior ones are the extreme cheapness due to the low price of the material and the simplicity of the construction, and the extremely light weight, combined with exceedingly great strength. For the vertical pressure is taken up by four high vertical ribs *b* and *d*, the height of which, and thus the strength, can be readily increased or decreased, depending upon the extent of projection of the roof and the load, such as is not possible with shaped rolled iron without considerable additional expense. Lateral pressure is taken up by five horizontal ribs, viz., the broad rib *a*, and the bases of the packing-ribs *c* and those of the troughs *e*.

A further essential advantage is the natural resilience, obtained for the first time by means of the new sash-bar and which renders it valuable particularly for open shed roofs. For if there is a strong wind-pressure acting from below upon the glasses, such as is frequently the case with shed roofs, the glasses can rise a little, the prongs *i* of the bolt *h* pressing the ribs *b* slightly apart and sliding up them. Any rain water which may enter despite the packing does not reach the covered space, but is carried off by the central trough *b a b*, which thus acts as an emergency trough.

Like the vertical rigidity, the lateral rigidity of the sash-bar also can be increased or decreased without trouble or expense, as desired, through suitably altering the length of the ribs, such as is not possible with rolled iron ribs. The ribs *b* and *d* can also be of different lengths, without the essential advantages of the sash-bar being affected.

Fig. 2 shows a simpler method of securing

the glasses to the sash-bar, which at the same time does not interfere with the natural resilience of the central trough *b a b*. There are here riveted or soldered to the upper part of the ribs *b b* strips of sheet copper *s*, which simply pass between the glasses *g* and through slots in the packing-strips *l m*, above which they are bent over outwardly. In order to prevent the formation of moisture on the underface of the sash-bar, it is sufficient that the strip *f* is not continuous but disposed in short sections, with small gaps between. The air entering between them then passes over the entire sash-bar and effects the necessary equalization of temperature.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:

1. A sash-bar for glass roofs consisting of a sheet metal trough with upwardly converging walls, plate-supporting flanges extending outwardly on each side from the trough, and ribs extending downwardly from the outer edge of the flanges and upturned at their lower extremities to form supplemental troughs.

2. A sash-bar for glass roofs consisting of a sheet metal trough with upwardly converging walls, plate-supporting flanges extending outwardly on each side from the trough, and provided with a shallow groove, and ribs extending downwardly from the outer edge of the flanges and upturned at their lower extremities to form supplemental troughs.

3. In combination, a sash-bar for glass roofs consisting of a sheet metal trough, plate supporting flanges extending outwardly on each side of the trough and ribs extending downwardly from the outer edges of the flanges and upturned at their lower extremities, contiguous glass plates supported by said flanges and yielding means for holding said glass plates against the flanges.

4. A sash-bar of resilient sheet metal having upwardly converging side walls, in combination with a wedge-shaped piece fitting between the side walls, and means for drawing the wedge-shaped piece upward with respect to the sash bar.

5. A sash-bar of resilient sheet metal having upwardly converging side walls and upper lateral flanges, in combination with a wedge-shaped piece fitting between the side walls, glass plates resting on said flanges. and means secured to the wedge-shaped piece for holding the glass plates against said flanges.

6. A sash-bar of resilient sheet metal having upwardly converging side walls, in combination with a wedge-shaped piece arranged in frictional engagement with the inner surfaces of the side walls, whereby the walls are spread apart when the wedge-shaped piece is pulled upward.

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

AUGUST WINDEKNECHT.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.