(No Model.)

G. HAYES.

BAR FOR SKYLIGHTS, CONSERVATORIES, &c.

No. 385,352. Patented July 3, 1888.

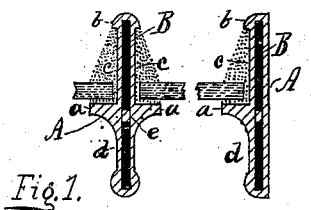

Fig. 1.

Fig 2.

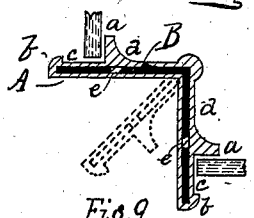

Fig. 9.

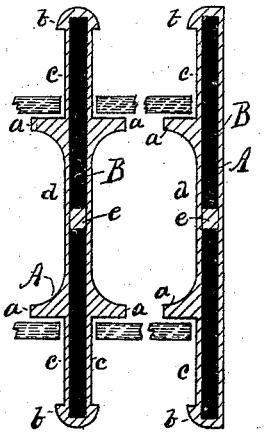

Fig. 3.

Fig. 4.

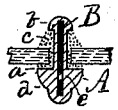

Fig. 5.

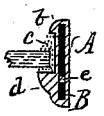

Fig. 6.

Fig. 7.

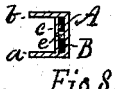

Fig. 8.

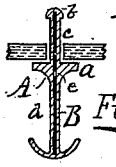

Fig. 10

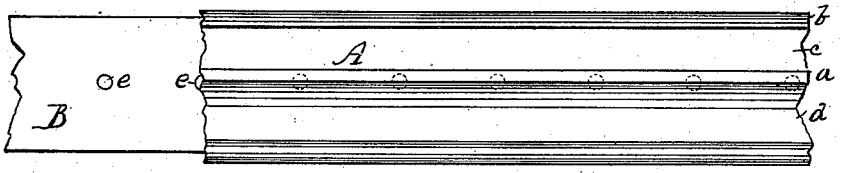

Fig. 11.

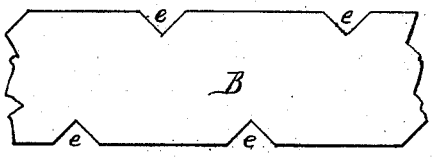

Fig. 12.

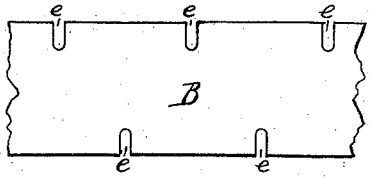

Fig. 13.

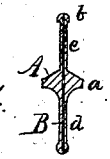

Fig. 14.

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UNITED STATES PATENT OFFICE.

GEORGE HAYES, OF NEW YORK, N. Y.

BAR FOR SKYLIGHTS, CONSERVATORIES, &c.

SPECIFICATION forming part of Letters Patent No. 385,352, dated July 3, 1888.

Application filed July 30, 1887. Serial No. 245,675. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HAYES, a resident of the city, county, and State of New York, have invented new and useful Improvements in Bars for Skylights, Conservatories, Ceiling-Lights, Window and other Sashes, of which the following is a specification.

My improvements consist of sash-bars, having rabbets or ledges to receive and sustain glass plates, formed of a soft, ductile, flexible, and pliable metal, preferably lead or copper, (or a metallic composition analogous thereto,) molded solid upon a hard-metal strip as a base or core—preferably of sheet-iron or band-iron—completely enveloping it, the said strip arranged therein to be at right angles to the rabbets and surface of the glass plates which the bars are to hold, the core strips or plates being specially made with perforations, apertures, or spaces intermediate of their width and at intervals throughout their length—entirely through their thickness—to admit of a junction of the soft metal through the hard metal, whereby the parts become firmly united, rendering the bar, with its core as a re-enforcement, one homogeneous body.

The object of this construction is to obtain bars which, while having sufficient strength and rigidity lengthwise, and also crosswise, or in the direction of their depth, will be sufficiently flexible to admit of their being readily bent or curved—laterally or sidewise—into ornamental forms without additional expense and without sacrifice of homogeneity. Hitherto it has been necessary in constructions of metal frame-work for glazing to make curves, circles, and other ornamental forms by casting them specially in the required shape, rendering a mold necessary for each form, adding very materially to the cost of the structure, a necessity which is entirely obviated by the peculiar construction of the bars, as herein described.

In the accompanying drawings, Figure 1 represents a transverse section of a bar having rabbets both sides, a stiffening-strip centrally located, edges of glass plate shown on the rabbets, a cap above the glass to secure putty, and a body below the glass forming a molded ridge. Fig. 2 represents a transverse section of a side bar to go in frame with that of Fig. 1, and therefor having rabbet only on one side, the other features corresponding with Fig. 1. Fig. 3 represents a transverse section of a bar suitable for double glazing in hot-houses and like structures. It has double sets of rabbets or ledges for glass, a body between them, and caps at both edges also. Fig. 4 is a vertical section of a half-bar to go with that of Fig. 3 for double glazing. Figs. 5 and 6 are sections of a bar and half-bar, reduced in size by having the body form a small molding. Figs. 7 and 8 are sections of bars suitable for introduction between larger bars in fancy glazing around colored or stained glass. Fig. 9 is a section of a bar suitable for a corner or angle, formed as a right angle, but admitting of being bent to other angles, essentially as shown by dotted lines thereto. This is intended for corners to conservatories, bay-windows, and like structures. Fig. 10 is a section of a bar especially suitable for skylights and glazed roofs having gutters to catch and carry water, resulting from leakage and condensation wherever desirable. Fig. 11 is a side elevation of a bar with part broken away to show the core with perforations. Figs. 12 and 13 are side elevations of cores only, to illustrate other forms of apertures or spaces for the soft metal to unite and key therewith. Fig. 14 is a section of a bar suitable for the ridge of a skylight. It may also serve as an angle-bar in vertical structures. The only peculiarity therein is the sloping rabbets.

A indicates the bar proper, of soft metal, and B indicates the hard-metal stiffening strip or core, the latter being simply a flat strip, of thickness suitable to the strength required, and the former being molded thereon with all the requisite features of a sash-bar given it in the process of formation. To cause the soft metal to hug closely the hard-metal core and prevent any tendency to spread away therefrom, portions of the hard-metal core are removed (or left out) at intervals throughout its length and at such points as may be desirable—as perforations, apertures, or spaces—through which or into which the soft metal enters from both sides, uniting and amalgamating, interlocking and keying with the core, rendering the bar with its core one homogeneous body.

A indicates the rabbets or ledges, against or upon which the edges of the glass plates rest.

b indicates the caps to protect the putty. Between said caps and rabbets a groove, *c*, is formed, into which the edges of the glass enter, leaving space above (or outside) to receive putty, about as shown by the dotted filling on the drawings, Figs. 1 and 2.

d indicates the body of the bar inside (or beneath) the glass, formed of depth sufficient to suit the necessary core required, the thickness and depth of core varying according to the purpose for which the bar is to be used. The body of the bar may be molded into any form desired.

e indicates the apertures or spaces of the core or stiffening plate, which allow the soft metal to unite both sides together and bind the same closely to the core.

The bars are formed with rabbets or ledges both sides of the core, as in Figs. 1, 3, 5, 7, and 10; also with rabbet or ledge one side only, as in Figs. 2, 4, 6, 8, and 9, the latter serving for side bars and the former for intermediate bars. They are also made for double glazing, as in Figs. 3 and 4, this form being sometimes desirable in conservatories, hot-houses, and like structures. They are also formed, as in Figs. 7 and 8, without the body extended below (or inside) the glass and ledges, this form being suitable for colored or stained glass work between other and deeper bars. They are also formed, as in Figs. 5 and 6, with a simple molding inside, for ceiling-lights, and used with or without other bars in connection. They are also formed, as in Fig. 9, to serve for corners or angles, and when thus made they may be readily adjusted by bending the angle to suit form of structure, about as shown by the dotted lines in said figure. They are also made, as in Fig. 10, with gutters, when desired for skylights and glazed roofs, to collect and convey water resulting from leakage or condensation. They are also made, as in Fig. 14, with the surface of the rabbets or ledges sloping, for ridge-bars in skylights and like structures. This form may also be used for angles in vertical structures.

The core or stiffening plate may be formed with perforations, as in Fig. 11, or by having portions removed, (or left out,) as in Figs. 12 and 13, in either case spaces being formed to permit the union of the soft metal through the core intermediate of its width to unite the parts and hold them together and to the core.

It has been found in practice that a casting of lead upon an iron strip of over one-fourth of an inch in depth will not unite, adhere, bind, or hold sufficiently well to the iron, owing to the difference in expansion and contraction of the two metals, and unless some mechanical means is used to hold it in place, during transportation, handling, and working, the lead portion is liable to slide off lengthwise and leave the core, and also to lose its shape with liability of breakage. It has also been found that the cast portions have a tendency to spread away from the core of iron sidewise, thereby weakening the bar through lack of homogeneity; hence the advantage of preparing the core as herein set forth to obviate the difficulty. This method of securing the parts together is inexpensive and thoroughly effectual, no riveting or soldering being requisite, and consequent labor being dispensed with.

The position of the core within the bars admits of their being bent to any desired curve and to conform to the edges of the glass plates, not materially interfering with the flexibility of the bars when bent laterally or sidewise, but serving to prevent the bars bending or being bent in the opposite or edgewise direction.

The bars are made in straight lengths, finished, and sold in that form, the cutting for shorter lengths and bending into ornamental forms, curves, circles, &c., being done by the constructor of the structure into which they are to be placed.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A solid sash-bar of soft, flexible, ductile, and pliable metal, molded upon a hard-metal core apertured at intervals throughout its length, through which apertures the soft metal unites, securing the parts together, essentially as shown and described.

2. A solid soft-metal sash-bar, A, grooved, as at *c*, re-enforced and stiffened edgewise by a hard-metal core, B, completely inclosed within the soft metal, said core apertured, as at *e*, the soft metal uniting in said apertures and keying with said core, essentially as shown and described.

3. A solid sash-bar formed of soft metal, having two sets of rabbets for double glazing, two caps, one at each edge, and a body between the rabbets, completely inclosing a hard-metal core provided with spaces through which the soft metal unites and keys with the core, essentially as shown and described.

4. A soft-metal sash-bar having an outward ridge with cap solid thereto, grooves to receive glass plates, rabbets or ledges to sustain glass plates, narrow body below the rabbets, and gutters at the base or interior edge, all molded solid upon a hard-metal core provided with apertures or spaces intermediate of its width, through which the soft metal unites and keys with the core, essentially as shown and described.

5. An angle-bar formed as two wings of soft, ductile, flexible, and pliable metal molded solid upon a core of hard metal apertured at intervals throughout its length and adapted for adjustment to suit angles, essentially as shown and described.

GEO. HAYES.

Witnesses:
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JAMES R. MCAFEE.