March 18, 1930. G. E. SCHMIDT 1,750,690

TUBULAR SUPPORT FOR SKATE RUNNERS AND PROCESS

Filed Jan. 23, 1928

Fig. 1

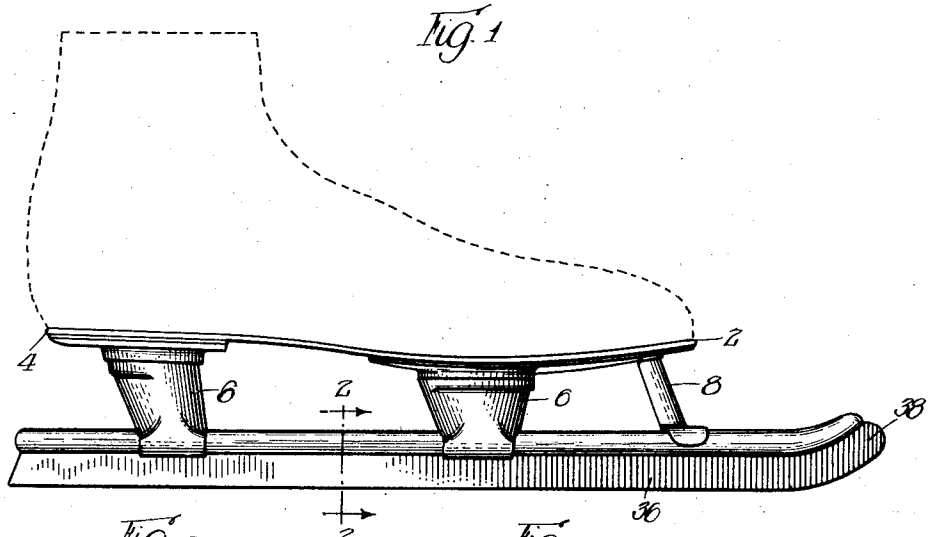


Fig. 2

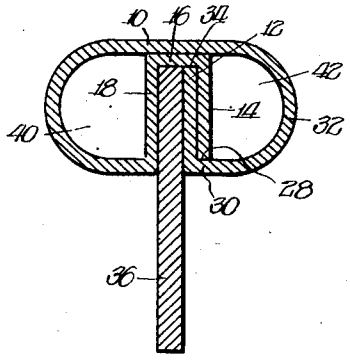


Fig. 3

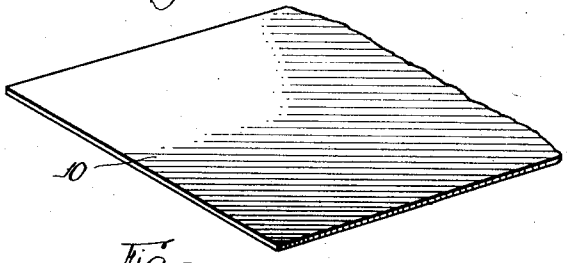


Fig. 4

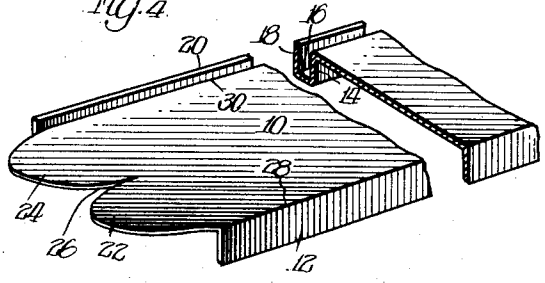


Fig. 6

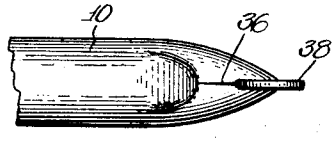
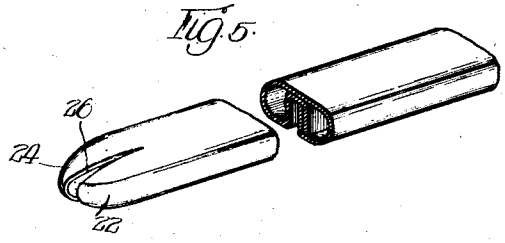


Fig. 5



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Patented Mar. 18, 1930 1,750,690

UNITED STATES PATENT OFFICE

GUSTAV E. SCHMIDT, OF CHICAGO, ILLINOIS

TUBULAR SUPPORT FOR SKATE RUNNERS AND PROCESS

Application filed January 23, 1928. Serial No. 248,684.

My invention relates to ice skates and, more particularly to an improved construction of the tubular support upon and in which the runner of the skate is mounted.

One of the objects of my invention is to provide an improved ice skate construction combining a minimum lightness in weight with ruggedness of construction, and wherein the skate blade or runner is rigidly mounted and reinforced in and by the tubular support.

Still another object of my invention resides in such a construction wherein the blade or skate runner is easily and firmly mounted within its support, and likewise may be facilely removed without injuring the runner or the support.

Yet another object of my present construction resides in the manner in which the tubular support is formed of sheet metal, preferably sheet steel, and wherein the sheet metal blank is bent or formed to provide spaced apart tubes and an intermediate pocket, which pocket is formed by the over-flanged and interlocked walls of the sheet metal forming the tubes and in a manner singularly to receive the skate runner.

Yet another object of my invention resides in the detailed manner in which the sheet metal blank is folded. Particularly, it is flanged along its longitudinal marginal edges and is thereafter bent or curled whereby to provide the spaced apart tubes and the interlocking relation of the flanges forming the pocket for the skate runner. A further object of my invention resides in the process for forming the skate construction illustrated and disclosed in the present application.

These and other objects of my invention will be apparent from a perusal of the following specification and taken in connection with the accompanying drawings wherein,

Referring now to the drawings in general, Figure 1 is a side view of my improved skate construction.

Figure 2 is a section taken on line 2—2 of Figure 1.

Figure 3 is a perspective view showing the end portion of the blank of sheet metal from which the tubular support is formed.

Figure 4 is a perspective view showing the next operation performed on the blank of Figure 3.

Figure 5 is a view showing the next succeeding step, and

Figure 6 is a view showing the top portion of the front of the tubular support with the skate runner in position in the slot.

Referring now to the drawings in detail, my improved skate comprises the usual toe plate 2 and heel plate 4. These plates 2 and 4 have the usual cups 6 and toe brace 8 rigid therewith. These cups and the toe brace are adapted to be rigidly connected with the tubular support which forms a novel part of the subject matter of my present application. These cups and brace may be connected by soldering or welding or in any approved manner.

The present application is concerned with the construction of the tubular support for the skate blade or runner whereby a very light yet rugged and strong mounting for the blade is provided. The invention will be described and illustrated by reference to the process of forming this tubular support. I prefer to start with a relatively long and preferably rectangular shaped sheet metal blank 10, preferably formed of sheet steel. This blank is shown in fragment in Figure 3. In the succeeding operations the blank is formed along its longitudinal margins with flanges. One of these flanges, 12, relatively short, extends preferably at right angles to the main body of the blank before it is bent to final form. The other flange is considerably wider and is formed substantially U shaped in cross sections, being provided with a depending portion 14, which is of the same dimension and depth and parallel to the flange 12. In addition, this flange extends outwardly as at 16 at right angles to the portion 14 and is then bent upwardly again as at 18 to provide a free edge 20. The flange portion 18 is formed parallel with the flange 14 and substantially the same dimensions therewith. Either simultaneously with the flanging of the blank 10 as shown in Figure 4, or thereafter or before, the end or ends of blank 10 is cut out intermediate the flanged portions to provide two somewhat rounded

tongues 22 and 24 and to provide a centrally arranged slot 26 which extends inwardly longitudinally of the body 10 and lies substantially midway between the longitudinal corner 28 and the opposite longitudinal corner 30. The blank shown in Figure 4 is then curled into position shown in Figures 2 and 5 so that the flange 12 and the flanges 14, 16 and 18 are overlapping and arranged in interlocking engagement in the manner illustrated in cross section in Figures 2 and 5. At the same time during this curling and die-pressing operation the tongues 22 and 24 are pinched into position shown in Figure 5, leaving the slot 26 in position to extend longitudinally of the end of the blank and in registration with the pocket formed between the flanges 12 and 18. It will thus be seen that the end of the blank is pinched or die-pressed into finished and substantially rounded formation and is formed with the intermediate slot 26 for the reception of the end of the skate runner. By reference to Figure 2 it will be seen that the flange 16 of the blank form contacts with the inner wall of the intermediate portion of the blank 10 and that the end 28 of the flange 14 abuts the opposite portion 30 of the tubular curl 32 and that the end 34 of blank 12 abuts the inner face of the flange 16, thereby providing not only a firm interlock between these portions and the main body of the tubular blank, but also providing a rigidly reinforced multi-walled construction providing the pocket or recess extending longitudinally of the tubular support and into which the skate runner 36 is snugly fitted. When the skate runner is in position its inner longitudinal edge firmly and snugly contacts with the flange 16. When the tubular support is formed as herein described the skate runner 36 is inserted into the socket in the manner illustrated with the nose 38 of the runner inserted in the slot 26 of the front edge of the tubular support and with the heel of the runner in the other slot formed in like manner at the rear of the blank 10. The skate runner is soldered in position.

It will thus be seen from my present construction that I provide a very light sheet metal construction which, because of its tubular formation and partly because of the spaced apart formation of the tubes 40 and 42 with the intervening pocket in which the skate runner is mounted, and in which construction the flanged or free longitudinal marginal edges of original blank are arranged overlappingly interlocked to provide not only the longitudinally arranged snug pocket for the skate blade, but also to provide a three walled construction for rigidity, I provide a very strong support for the blade. A further advantage of my construction resides in the manner in which the integral metal of the blank is folded so that the U-shaped flange at its inner marginal edge has a horizontal flange 16 thereof firmly backed against the opposite flat wall of the blank 10 and wherein the flanges 14 and 18 of this U-shaped flange form the pockets and receive the overlying flange 12 of the blank. Particular attention is directed to the fact that the pocket as thus formed is relatively deep, that it provides three rigid walls of sheet steel and that upon each side of this rigid pocket construction there is provided a tubular supporting and reinforcing construction. These two tubular portions of the support, because of their relatively large area and their location on each side of the multi-walled pocket of the blade, and because of the depth of this pocket, provide the maximum strength in combination with a minimum lightness of construction, and in addition provide a pocket which serves rigidly and firmly to hold the blade in true position without permitting it to warp or twist. Further, by reason of the fact that the blade is soldered and not welded or riveted, it is not subjected to any of the warping found in the latter constructions. So also, after the plate is once inserted the rigidity of the melting prevents any warping operation.

Another practical advantage of my improved construction resides in the ease with which the blade may be inserted in its pocket, and if replacement or repair is desirable, the ease with which it may be withdrawn from its permanent pocket and without impairing the blade or its mounting.

It will also be appreciated by reason of the substantially flat surface of the main body of the blank directly opposite and in contact with the flange 16, as shown in Figure 2, I provide a very strong reactive pressure surface forming the base of the pocket and in addition by means of the flat upper surface of the tube it is easier to mount the cups 6 and 8 on the tubular support.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. An ice skate having a tubular support formed of sheet metal, said sheet metal being bent to provide spaced apart tubular portions extending longitudinally of the support, the adjacent walls of the tubular portions being interfolded and arranged to provide a pocket extending longitudinally of and between the tubular portions, and a skate runner seated in said pocket and permanently mounted therein.

2. An ice skate having a tubular support formed of an integral piece of sheet metal bent so that the marginal, longitudinal edges of the sheet metal are interfolded to provide a pocket extending longitudinally of the support, said sheet metal being bent to provide longitudinally extending tubes on each side

of the pocket, and a skate runner mounted in said pocket.

3. An ice skate having a tubular support formed of sheet metal, bent so that one marginal edge thereof provides a substantially U-shaped pocket, the other marginal edge of said metallic sheet providing a flange bent over and lying in the U-shaped pocket and contacting with one of the inner walls of the U-shaped pocket and spaced over the other wall of the U-shaped pocket to provide a recess therebetween, extending longitudinally of the support, and a skate runner permanently mounted in said recess.

4. An ice skate having a tubular support formed of sheet metal, bent so that one marginal edge thereof provides a substantial U-shaped pocket, the other marginal edge of said metallic sheet providing a flange bent over and lying in the U-shaped pocket and contacting with one of the inner walls of the U-shaped pocket and spaced from the other wall of the U-shaped pocket to provide a recess there-between, extending longitudinally of the support, and a skate runner permanently mounted in said recess the free edges of the free flanges of said sheet metal abutting angularly disposed portions of the metal sheet.

5. An ice skate having a tubular support comprising a single sheet of metal bent to form a longitudinal extending upper flat wall and two extensions of said wall curving downwardly in opposite directions and thence inwardly to provide spaced apart longitudinal extending tubes, one of said walls having an integral extension extending parallel with the first mentioned flat wall and in contact therewith, said extension being bent at right angles to provide a free flange lying parallel to and in contact with the inward extension of the other curved wall, so as to provide a longitudinally extending pocket, and a skate blade seated and soldered in said pocket.

6. An ice skate having a longitudinally extending tubular support composed of a blank of sheet metal of substantially rectangular shape, said blank being bent to provide a marginal flange having a right angle bend therein, and a second marginal flange of substantially U-shaped formation with the flanges thereof lying at right angles one to the other, and said blank and flanges being bent into position whereby the U-shaped flange has its base extending within the bent blank and contacting with the under side thereof, and wherein the other flange is bent over the free flange which is U-shaped cross section and lying parallel to and in contact therewith to provide a longitudinal extending pocket, the free edge of the first mentioned flange lying within and abutting the inner face of the base of the U-shaped flange and the free edge of the free flange of the U-shaped flange abutting the under side of the sheet metal blank at the angle of the first mentioned flange with the blank and a skate runner lying in the recess or pocket and having its upper edge snugly abutting the base of the U-shaped flange.

7. An ice skate having a longitudinal extending tubular support formed of a single piece of sheet metal bent to provide two spaced apart tubular portions with the walls of the tubular portions overlapping and abutting to provide a longitudinal extending pocket, and a skate runner rigidly mounted and soldered in position in said pocket.

8. A skate runner having a tubular support formed of an integral piece of sheet metal curled upon itself to provide two spaced apart tubes, said blank being formed to provide a pocket disposed between said tubes and extending longitudinally of the said support, the ends of said support being pressed together to somewhat rounded form and being provided with slots lying in the plane of the pocket and a skate runner mounted in the pocket with its opposed ends mounted in the slots.

9. The herein described process which comprises forming a substantially rectangular shape of sheet metal with marginal flanges, one of which is of substantially U-shaped formation with its open mouth facing in the direction opposite to the extension of the other flange, and providing the ends of the blank with spaced apart tongues and an intervening slot disposed substantially intermediate to the main body of the blank, curling the blank and the U-shaped flange to contact the base of the flange with the under side of the blank and with the opposite flange overlapping and lying within the U-shaped flange and in contact with the inner face of a wall thereof whereby to provide a longitudinal extending pocket, and pressing the free tongues together to provide relatively rounded or blunt ends for the tubular support and mounting a skate runner in the pocket with the ends of the skate in the slots formed between the tongues.

In witness whereof, I have hereunto subscribed my name.

GUSTAV E. SCHMIDT.