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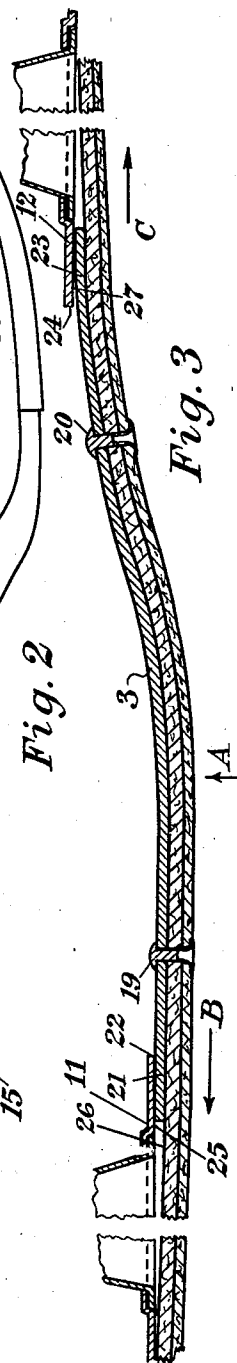
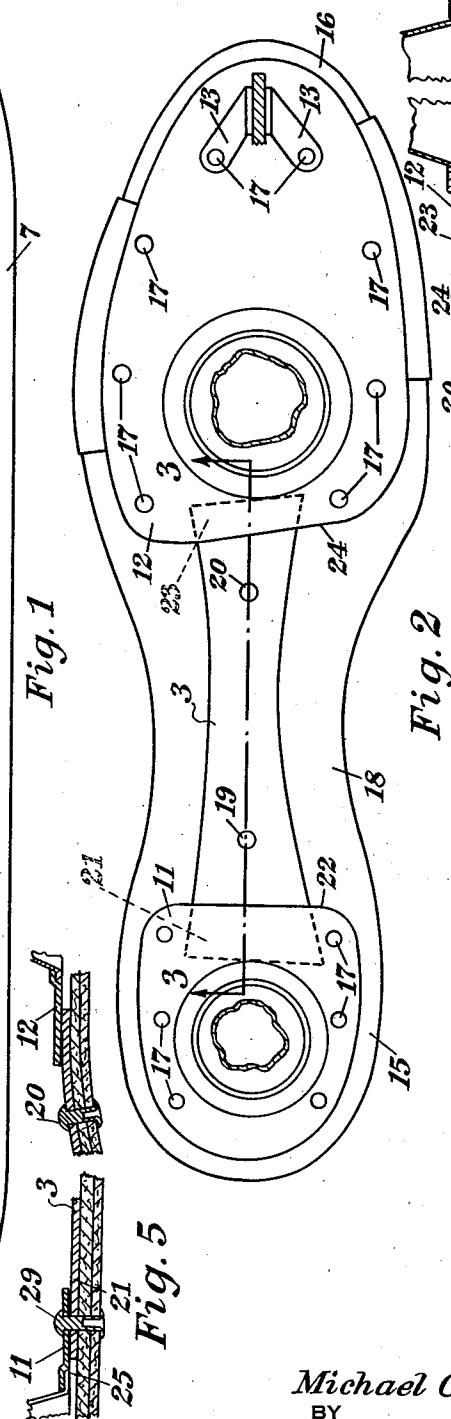
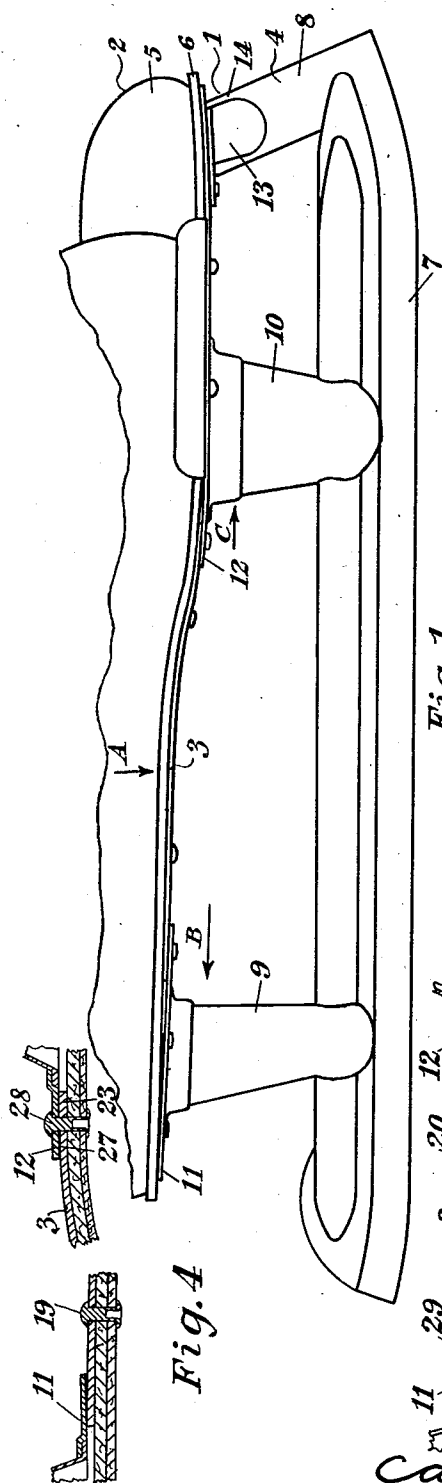
M. GOLDENBERG

2,206,397

ICE SKATE AND SHOE

Filed Jan. 26, 1939

4 Sheets-Sheet 1



INVENTOR

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Caesar and Rivise
ATTORNEYS

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July 2, 1940.

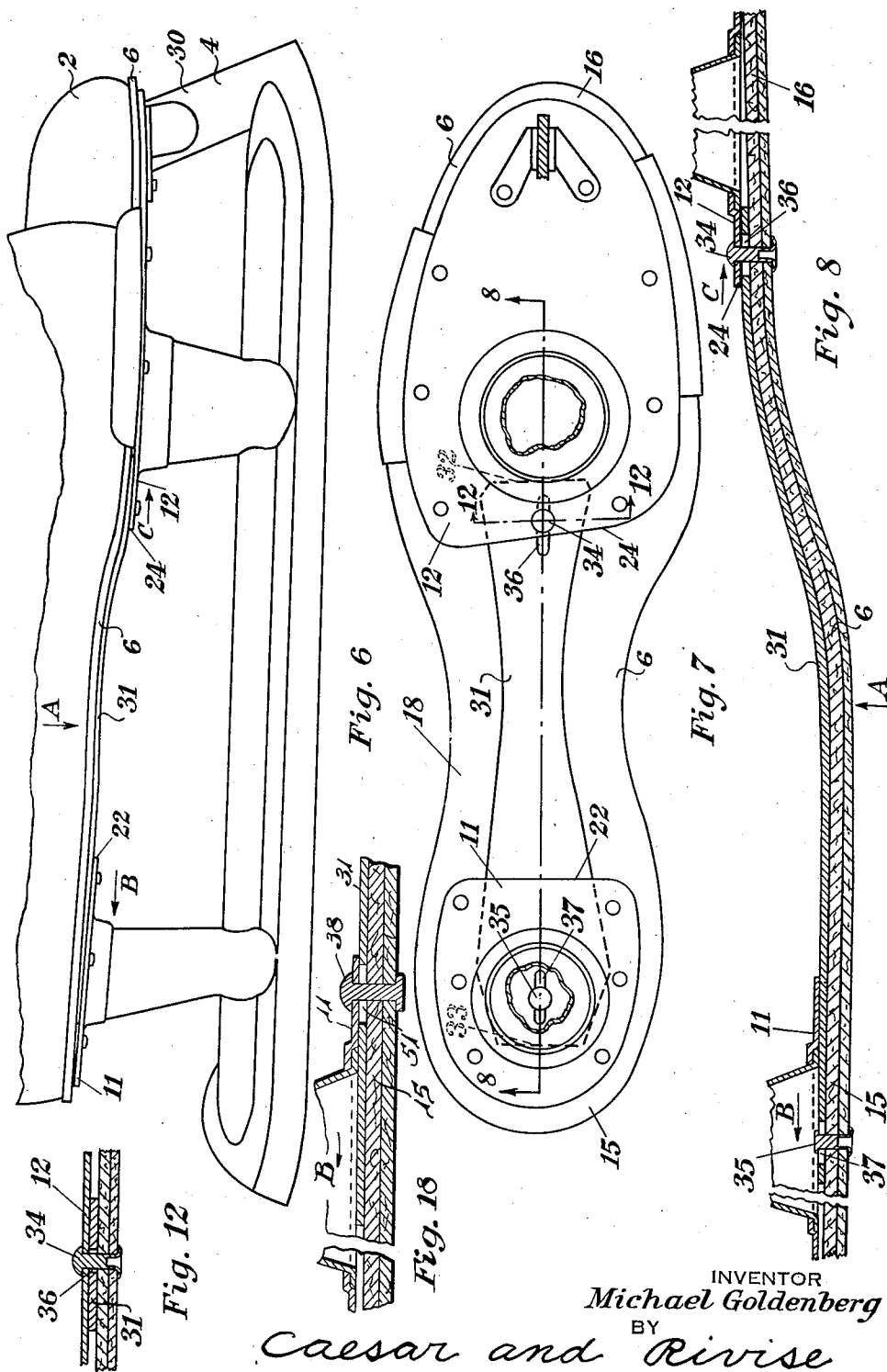
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ICE SKATE AND SHOE

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4 Sheets-Sheet 2



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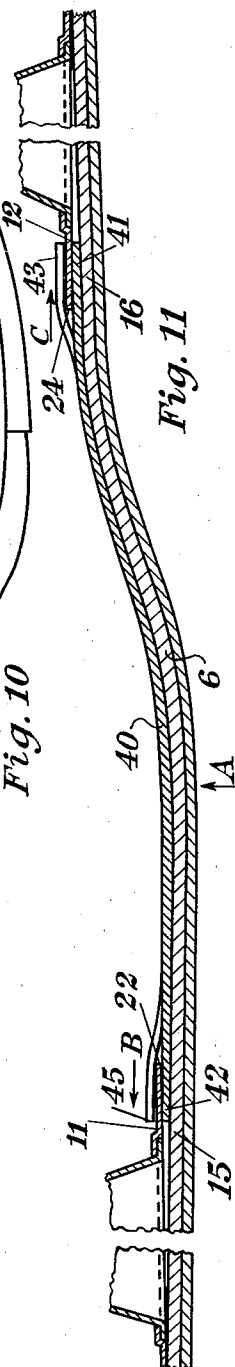
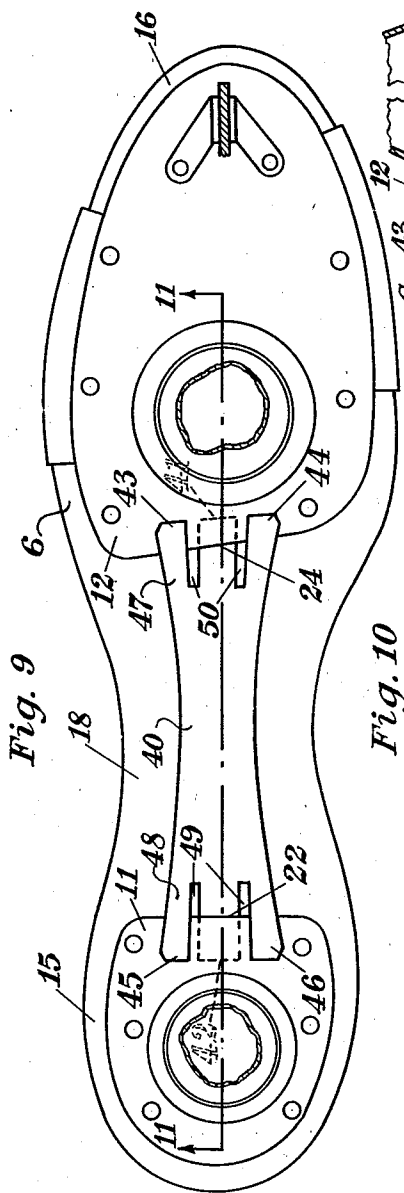
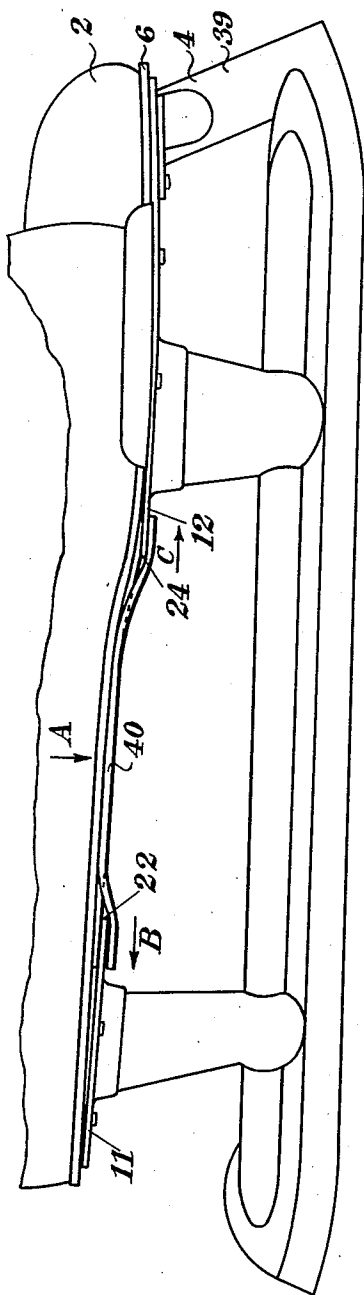
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ICE SKATE AND SHOE

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4 Sheets-Sheet 3



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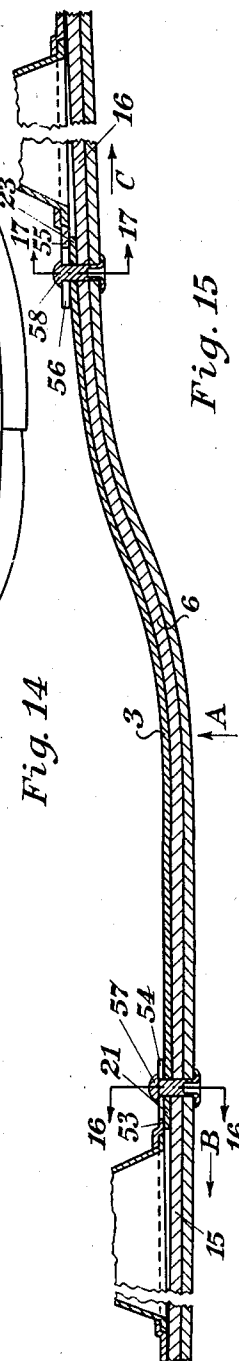
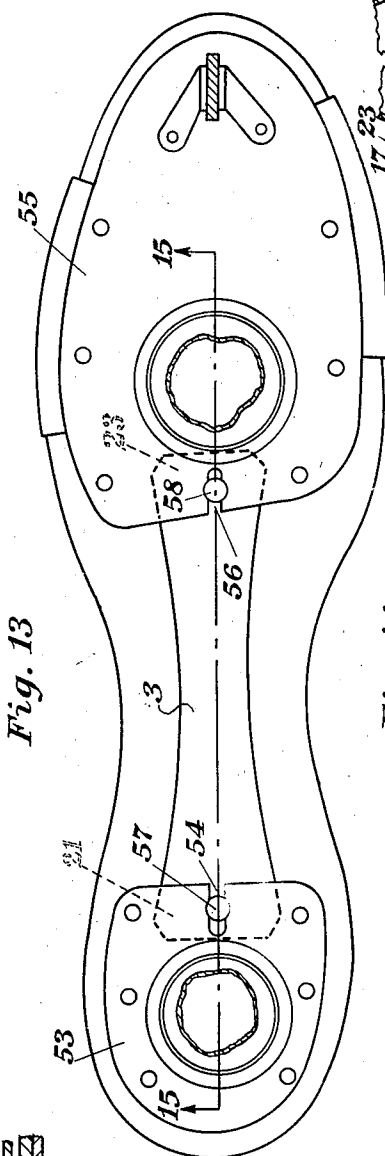
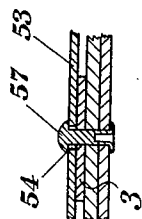
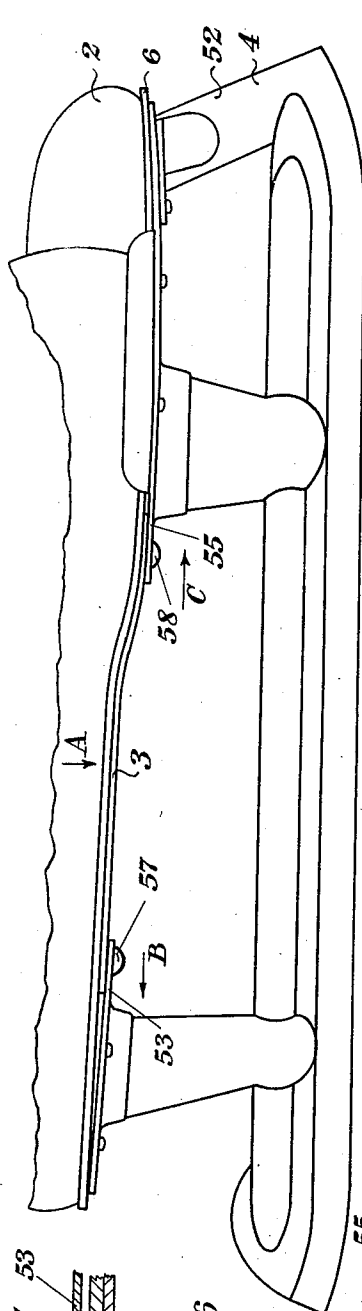
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ICE SKATE AND SHOE

Filed Jan. 26, 1939

2,206,397

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,206,397

ICE SKATE AND SHOE

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Application January 26, 1939, Serial No. 252,972

9 Claims. (Cl. 280—11.37)

This invention relates to a combined ice skate and shoe of the type wherein the ice skate member has a heel attaching plate and a ball attaching plate spaced from said heel attaching plate and wherein the heel portion of the sole of the shoe member is attached to said heel attaching plate and the ball portion of said sole is attached to said ball attaching plate. The invention has as its object the production of an ice skate and shoe of the type hereinabove described wherein the arch of the skater's foot will be supported without appreciably affecting the flexibility of the skater's foot.

One of the great objections to combined ice skates and shoes of the type wherein the shoe is attached to two spaced apart plates carried by the runner is the fact that the skater's arch is not properly supported.

In an effort to obviate this objection shoes having a "built in" arch have been used as one of the elements of the combination. This structure, however, has not proved satisfactory because the "built in" arch appreciably affected the flexibility of the skater's foot. I have discovered that the necessary support can be obtained without appreciably affecting the flexibility of the skater's foot by so associating an arch supporting shank with the skate member and shoe member that it bridges the gap between the heel and ball attaching plates, that it is held in said arch supporting or gap bridging position at all times, and that at least one of its ends is free to move in a horizontal plane in at least the direction of the long axis of the skate.

For the purpose of illustrating my invention, I have shown in the drawings which form a part hereof and I shall now describe some of the many combined ice skates and shoes made in accordance with my inventive concepts.

In said drawings

Figure 1 is a side view of my novel ice skate and shoe with the upper portion of the shoe broken away.

Figure 2 is a bottom plan view of the ice skate and shoe shown in Figure 1 with the runner and piers broken away for the purpose of showing otherwise hidden parts.

Figure 3 is an enlarged section of a fragment taken along the line 3—3 of Figure 2. A portion of the skate and shoe intermediate the ends of the piers has been broken away to permit the showing of the remaining parts on as large a scale as possible.

Figure 4 is another fragmentary section taken along a line the same as 3—3 of Figure 2 showing

one of the shank attaching rivets in an alternative position. A portion of this fragment intermediate its ends has been broken away to permit the showing of the remaining parts on as large a scale as possible.

Figure 5 is another fragmentary section taken along a line the same as 3—3 of Figure 2 showing an alternative position for the other of the shank attaching rivets. A portion of this fragment intermediate its ends has been broken away to permit the showing of the remaining parts on as large a scale as possible.

Figure 6 is a side view of a modification of my novel ice skate and shoe with the upper portion of the shoe broken away.

Figure 7 is a bottom plan view of the ice skate and shoe shown in Figure 6 with the runners and piers broken away for the purpose of showing otherwise hidden parts.

Figure 8 is an enlarged section of a fragment taken along the line 8—8 of Figure 7. A portion of the skate and shoe intermediate the ends of the piers has been broken away to permit the showing of the remaining parts on as large a scale as possible.

Figure 12 is an enlarged section taken along the line 12—12 of Figure 7.

Figure 18 is an enlarged fragmentary section of the heel portion shown in Figure 7 taken along a line the same as 8—8 of Figure 7 but showing the shank attaching rivet in an alternative position. The remainder of the unit is exactly the same as shown in Figure 8.

Figure 9 is a side view of still another modification of my novel ice skate and shoe with the upper portion of the shoe broken away.

Figure 10 is a bottom plan view of the ice skate and shoe shown in Figure 9 with the runners and piers broken away.

Figure 11 is an enlarged section of a fragment taken along the line 11—11 of Figure 10. A portion of the shoe intermediate the ends of the piers has been broken away to permit the showing of the remaining parts on as large a scale as possible.

Figure 13 is a side view of still another modification of my novel ice skate and shoe with the upper portion of the shoe broken away.

Figure 14 is a bottom plan view of the ice skate and shoe shown in Figure 13 with the runner and piers broken away for the purpose of showing otherwise hidden parts.

Figure 15 is an enlarged section of a fragment taken along the line 15—15 of Figure 14. A portion of the skate and shoe intermediate the ends

of the piers has been broken away to permit the showing of the remaining parts on as large a scale as possible.

Figure 16 is an enlarged section of a fragment taken along the line 16—16 of Figure 15.

Figure 17 is an enlarged section of a fragment taken along the line 17—17 of Figure 15.

Referring more particularly to the drawings wherein similar reference numerals denote similar parts, reference numeral 1 denotes my novel ice skate and shoe shown in Figures 1, 2, 3, 4, and 5 as a unit. The ice skate and shoe 1 comprises a shoe member 2, an arch supporting shank 3 and a skate member 4.

The shoe member 2 is of the type well known in the art and comprises the "upper" 5 and the sole 6. The skate member 4 is of the type well known in the art and comprises the runner 7 which terminates at its front end in the shaft 8, the piers 9 and 10, the heel attaching plate 11 carried by the pier 9, and the ball attaching plate 12 carried by the pier 10 and the arms 13 which are attached to the upper end 14 of the shaft 8. The heel portion 15 of the shoe sole 6 is attached to the heel attaching plate 11 in the manner well known in the art. The ball portion 16 of the shoe sole 6 is attached to the ball attaching plate 12 by means of the rivets 17 in the manner well known in the art.

The arch supporting shank is made of material, such as steel or aluminum, having rigidity and a certain amount of resiliency. It is attached to the arch portion 18 of the shoe sole 6 by means of the rivets 19 and 20. The arch supporting shank 3 is of such length that a portion 21 extends beyond the edge 22 of the heel attaching plate 11 and a portion 23 extends beyond the edge 24 of the ball attaching plate 12. In the modification shown in Figures 1, 2 and 3 the end portion 21 of the arch supporting shank 3 is not attached to the heel attaching plate 11 and the end portion 23 of said shank is not attached to the ball attaching plate 12. As a result the end portion 21 will freely slide between the surface 25 of the heel attaching plate 11 and the surface 26 of the shoe sole 6 in the direction of the arrow B, and the end portion 23 will freely slide between the surface 27 of the ball attaching plate 12 and the surface 26 of the shoe sole 6 in the direction of the arrow C, whenever force exerted upon the arch supporting shank 3 by the skater results in a force a component of which in the direction of the arrow A would normally cause the arch supporting shank to straighten out. By incorporating the arch supporting shank 3 into the ice skate and shoe structure in the manner herein described, I have produced an ice skate and shoe wherein the arch of the user is properly supported without interfering appreciably with the flexibility of the skater's foot.

Although the structure which I prefer at the present time is that shown in Figures 1, 2, and 3 wherein neither end of the arch supporting shank 3 is attached to that attaching plate of the skate which it overlies, nevertheless I have found that a satisfactory result may be attained by leaving only one of the ends of the arch supporting shank free and attaching the other of said ends to that attaching plate of the skate which it overlies. Structures of the latter type are shown in Figures 4 and 5.

The ice skate and shoe shown in Figure 4 differs from that shown in Figures 1 to 3 only in the following respects:

(a) The end portion 23 of the arch support-

ing shank 3 is attached to the ball attaching plate 12 by the rivet 28.

(b) The rivet 20 shown in Figures 1 to 3 has been omitted since its function is performed by the rivet 28.

The ice skate and shoe shown in Figure 5 differs from that shown in Figures 1 to 3 only in the following particulars:

(a) The end portion 21 of the arch supporting shank 3 is attached to the heel attaching plate 11 by means of the rivet 29.

(b) The rivet 19 shown in Figures 1 to 3 has been omitted since its function is performed by the rivet 29.

The foregoing disclosure is to be understood as being for the purpose of illustration only and not for the purpose of limitation, since many changes may be made in the structures herein shown without departing from the spirit of my invention which consists in so incorporating an arch supporting shank in an ice skate and shoe that at least one of the ends of said arch supporting shank is free to move relatively to the skate member. Some of the many possible changes which may be so made are illustrated in the embodiments shown in Figures 6 to 15 inclusive.

The ice skate and shoe 30 shown in Figures 6, 7, 8, 12 and 18 differs from that shown in Figures 1, 2, and 3 only in the following particulars:

(a) The arch supporting shank 31 having formed therein the elongated slots 36 and 37 has been substituted for the arch supporting shank 3.

(b) The arch supporting shank 31 is attached at its end 32 to the ball attaching plate 12 and the ball portion 16 of the sole 6 by means of the rivet 34 which extends through the slot 36 formed in said arch supporting shank 31.

(c) The arch supporting shank 31 is attached at its end 33 to the heel portion 15 of the sole 6 by means of the rivet 35 which extends through the slot 37 formed in the arch supporting shank 31.

In the structure shown in Figures 6, 7, 8, and 12 the slot 36 permits the end 32 of the arch supporting shank 31 to move freely relatively to the ball attaching plate 12 of the skate member 4. Since the rivet 35 attaches the end 33 of the arch supporting shank 31 only to the heel portion 15 of the sole 6 and not to any portion of the skate member 4, said end 33 is free to move relatively to the heel plate 11 of said skate member 4. It is obvious that the slot 37 may be omitted if desired.

Since it is only necessary that one end of the arch supporting shank 31 be free to move relatively to the skate member 4, the end 33 of the arch supporting shank 31 may be attached to both the heel portion 15 of the sole 6 and the heel plate 11 of the skate member 4. Such a structure is illustrated by the rivet 38 shown in Figure 18. This rivet may extend through a slot 51 similar to the slot 37 or, if desired, the slot may be entirely omitted.

The ice skate and shoe 52 shown in Figures 13, 14, 15, 16 and 17 differs from that shown in Figures 1, 2, and 3 in the following particulars:

(a) The heel attaching plate 53 having formed therein the slot 54 has been substituted for the heel attaching plate 11.

(b) The ball attaching plate 55 having formed therein the slot 56 has been substituted for the ball attaching plate 12.

(c) The arch supporting shank 3 is attached at its end 21 to the heel attaching plate 53 by means of the rivet 57 which extends through the slot 54.

(d) The arch supporting shank 3 is attached at its end 23 to the ball attaching plate 55 by means of the rivet 58 which extends through the slot 56.

In the structure shown in Figures 13, 14, 15, 16 and 17 the slot 54 permits the rivet 57 and the end 21 of the arch supporting shank 3 to which it is attached to move freely relatively to the heel attaching plate 53. Further the slot 56 permits the rivet 58 and the end 23 of the arch supporting shank 3 to move freely relatively to the ball attaching plate 55.

The ice skate and shoe 39 shown in Figures 9, 10, and 11 differs from that shown in Figures 1, 2, and 3 in the following particulars:

(a) The arch supporting shank 40 terminating in the forked ends 47 and 48 has been substituted for the arch supporting shank 3.

(b) The arch supporting shank 40 is attached to the skate member 4 by the engagement of the prongs 43, 41 and 44 of the forked end 47 with the ball attaching plate 12 and the engagement of the prongs 45, 42 and 46 with the heel attaching plate 11.

(c) The arch supporting shank 40 is not attached to the shoe sole 6.

In the structure shown in Figures 9, 10, and 11 the cut-outs 49, which define the fingers 45, 42, and 46, permit the end 48 of the shank 40 to move freely in the direction arrow B whenever the skater exerts a force upon the shank 40 which results in a component in the direction of the arrow A which would normally tend to cause the arch supporting shank 40 to straighten out. Under the same conditions the cut-outs 50, which define the fingers 43, 41, 44, permit the end 47 of the shank 40 to move in the direction of the arrow C.

Having defined my invention, what I claim as new and useful is:

1. An article of manufacture comprising a shoe member; an ice skate member having a heel attaching plate and a ball attaching plate; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; an arch supporting shank positioned intermediate said sole and said heel attaching and ball attaching plates and extending from said heel attaching plate to said ball attaching plate; and means attaching said arch supporting shank to said sole.

2. An article of manufacture comprising a shoe member; an ice skate member having a heel attaching plate and a ball attaching plate spaced from said heel attaching plate; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; an arch supporting shank positioned intermediate said sole and said heel attaching and ball attaching plates and extending from said heel attaching plate to said ball attaching plate; and means attaching said arch supporting shank to said sole and to one of said attaching plates.

3. An article of manufacturing comprising a shoe member; an ice skate member having a heel attaching plate and a ball attaching plate spaced from said heel attaching plate; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said shoe; an arch supporting shank positioned intermediate said sole and said heel attaching

and ball attaching plates and bridging the space between said attaching plates; and means connecting an end of said arch supporting shank to that attaching plate which is contiguous to said end for sliding movement in at least one direction in a horizontal plane relative to said attaching plate.

4. An article of manufacture comprising a shoe member; a skate member having a heel attaching plate and a ball attaching plate spaced from said heel attaching plate; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; an arch supporting shank having at least one slot formed therein near one of the ends thereof positioned intermediate said sole and said heel attaching and ball attaching plates and bridging the space between said attaching plates; and means extending through said sole, said slot, and that attaching plate which is contiguous to said slot for attaching said arch supporting shank to said sole and said attaching plate.

5. An article of manufacture comprising a shoe member; a skate member having a heel attaching and a ball attaching plate spaced from said heel attaching plate; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; an arch supporting shank having two spaced apart slots formed therein positioned intermediate said sole and said heel attaching and sole attaching plates and bridging the space between said attaching plates with each of said slots overlying one of said attaching plates; means extending through said sole, said slot overlying said heel attaching plate, and said heel attaching plate for attaching said arch supporting shank to said sole and said heel attaching plate; and means extending through said sole, said slot overlying said ball attaching plate, and said ball attaching plate for attaching said arch supporting shank to said sole and said ball attaching plate.

6. An article of manufacture comprising a shoe member; a skate member having a heel attaching plate and a sole attaching plate spaced from said heel attaching plate with at least one of said attaching plates having a slot formed therein; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; an arch supporting shank positioned intermediate said sole and said heel attaching and ball attaching plates and bridging the space between said attaching plates; and means extending through said sole, said arch supporting shank, and said slot in said attaching plate having said slot formed therein for attaching said arch supporting shank to said sole and said attaching plate.

7. An article of manufacture comprising a shoe member; a skate member having a heel attaching plate and a ball attaching plate spaced from said heel attaching plate with each of said attaching plates having a slot formed therein; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; an arch supporting shank positioned intermediate said sole and said heel attaching and ball attaching plates and bridging the space between said plates; means extending through said sole, said arch supporting shank and said slot in said heel attaching plate attaching

said arch supporting shank to said sole and said heel attaching plate; and means extending through said sole, said arch supporting shank, and said ball attaching plate attaching said arch supporting shank to said sole and said ball attaching plate.

8. An article of manufacture comprising a shoe member; a skate member having a heel attaching plate and a ball attaching plate spaced from said heel attaching plate; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; and an arch supporting shank terminating in at least one forked end bridging the space between said heel attaching and ball attaching plates with the prongs of said forked end in engagement with

that attaching plate which is contiguous thereto.

9. An article of manufacture comprising a shoe member; a skate member having a heel attaching plate and a ball attaching plate spaced from said heel attaching plate; means attaching said heel attaching plate to the heel portion of the sole of said shoe member; means attaching said ball attaching plate to the ball portion of said sole; and an arch supporting shank forked at each of its ends bridging the space between said heel attaching and ball attaching plates with the prongs of one of said forks in engagement with said heel attaching plate and the prongs of the fork of the other of said forked ends in engagement with said ball attaching plate.

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