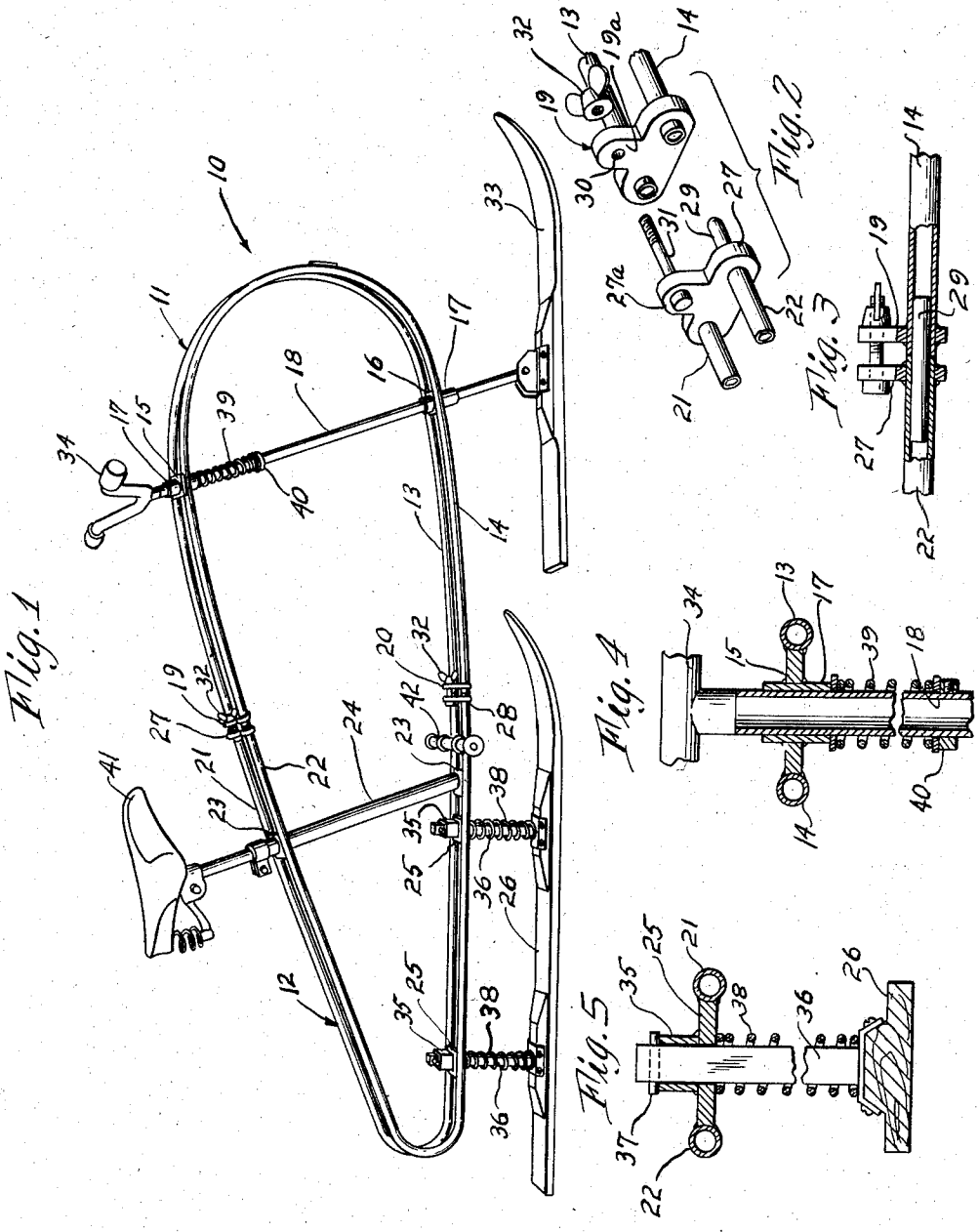
April 21, 1959 S. DULSKI 2,883,205

KNOCKDOWN TANDEM RUNNER BICYCLE TYPE SLED

Filed Feb. 8, 1957 2 Sheets-Sheet 1



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Fig. 6

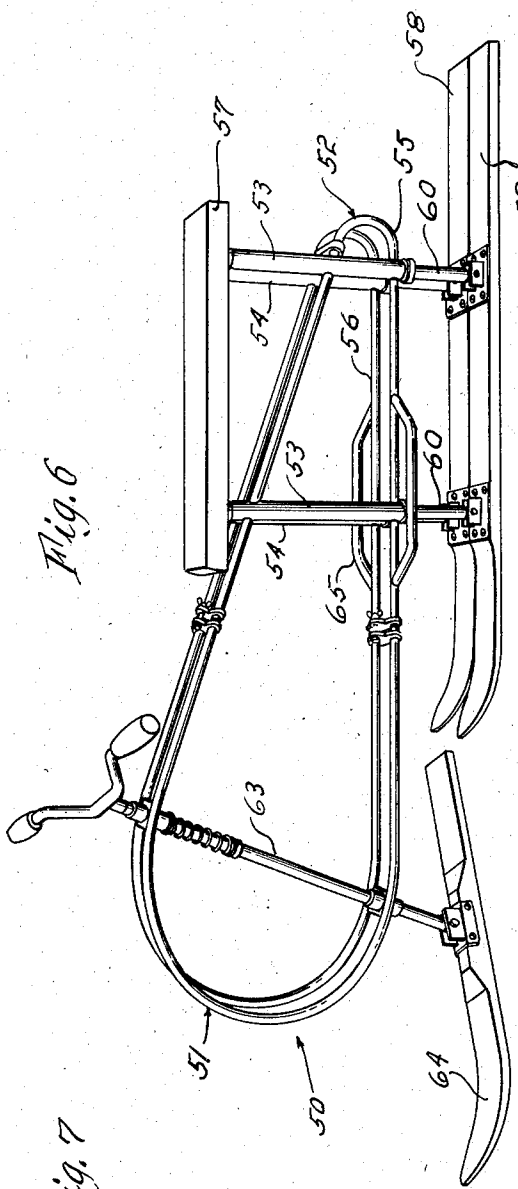
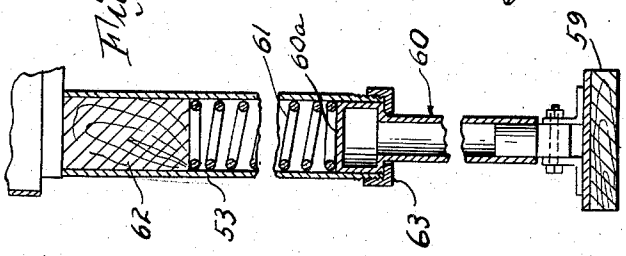


Fig. 7



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KNOCKDOWN TANDEM RUNNER BICYCLE TYPE SLED

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Application February 8, 1957, Serial No. 639,037

2 Claims. (Cl. 280—16)

This invention relates to a snow vehicle and more specifically to a skiing device.

Heretofore, skiing devices of the type to be hereinafter described, comprised an integral unitary frame structure which was relatively bulky, heavy and complex, difficult to fabricate and relatively expensive to manufacture. While efforts have been made to simplify these constructions, any simplification that was achieved was done so only at the sacrifice of some of the efficiency, speed and maneuverability of the device. Further, even the most simple of the prior known constructions were not readily portable or easily carried from place to place. Consequently, the difficulty of portage of the prior constructions constituted a serious handicap as to their utility and versatility.

Another disadvantage of the prior known constructions was that the ski shoes which served as runners for the device were rigidly attached to the frame, thus causing the device to ride hard and rendering it very uncomfortable for the rider. The rigid attachment of the ski shoes to the frame further substantially reduced the speed of the device because the rigidly attached ski shoes had a tendency to dig into the snow, thereby increasing the resistance required to be overcome by inertia. This condition was particularly aggravated on rough and uneven terrain. For the foregoing reasons, the prior known skiing devices have failed to achieve public acceptance, and as a result they have not become commercially popular.

An object of this invention is to provide an efficient, practical and simplified arrangement of an improved skiing device that is relatively simple to fabricate, inexpensive to manufacture, light in weight, easily portable from site to site, particularly up hill on a ski slope, and positive in operation.

Another object of the instant invention is to provide a sturdily constructed skiing vehicle having a knock down frame arrangement that can be readily assembled and disassembled in a matter of seconds without the use of tools.

Still another object is to provide a skiing vehicle having shoes or runners yieldingly connected to the frame to absorb the shocks of uneven terrain resulting in a smoother ride.

A further object is to reduce sliding friction of the instant snow device a minimum in order to achieve maximum speed.

The objects and advantages of the instant invention are accomplished by a readily knock down frame construction including a front and rear section which can be simply and easily assembled and disassembled without the use of any tools. Each section comprises a pair of equidistantly spaced tubular members in which the terminating end portions of each sections are arranged to be detachably connected and securely fastened together to form a unitary, sturdy, streamline frame. A steering post having a pivotally mounted ski shoe thereon is yieldingly connected to the front section and a seating means for accommodating a rider is connected to the rear frame

section, the latter section also including means for yieldingly connecting thereto either a single rear ski shoe or a pair of rear ski shoes. The individually yieldingly mounted ski shoes not only provide for a smoother ride, but it has been also discovered that the yielding ski shoes reduce the amount of sliding friction thereby increasing the speed attainable by such ski vehicles.

A feature of this invention resides in the provision of a skiing device having individually yielding ski shoes connected to the frame for providing a smoother ride at increased speeds.

Another feature of the invention resides in a double frame construction that is readily knocked down, stable, well balanced and light in weight.

Another feature resides in the novel arrangement and means by which the front and rear sections are detachably connected and secured.

Still another feature resides in a yieldingly connected steering post.

Other features and advantages will be readily apparent when considered in view of the drawings and accompanying description in which:

Figure 1 is a perspective side view of the improved skiing vehicle according to this invention.

Figure 2 is an enlarged, exploded, detail, perspective view of the novel detachable connecting and securing means.

Figure 3 is an enlarged, detail fragmentary view showing parts in section of the connecting means in assembled position.

Figure 4 is a fragmentary, detail view shown in section of the steering post connection.

Figure 5 is an enlarged, detail view in section showing the rear ski shoe connection.

Figure 6 is a perspective view of a modified form.

Figure 7 is a detail, sectional view of the rear ski shoe connection of the modified form of the invention.

Figures 1 to 5 illustrate a form of an improved skiing vehicle according to this invention. As shown the instant device includes a frame **10** having a front section **11** and a rear section **12**. Each section is composed of a pair of equidistantly spaced members. While the spaced members may be formed of rods and the like, the illustrated frame members are preferably constructed of tubular members.

Accordingly, the front section **11** is made of two substantially U-shaped tubular members **13** and **14** which are maintained in equidistantly spaced relationship by a plurality of spacers; spacers **15** and **16** include a bearing means **17** for receiving a steering post **18** and spacers **19** and **20** connect the adjacent spaced end portions of the tubular members **13** and **14**.

The rear section **12** of the frame is likewise formed of two equidistantly spaced tubular members **21** and **22** which are generally U or V shaped. Spacers also maintain the rear tubular members equidistantly spaced; spacers **23** form a bearing means for the seat post **24**, spacers **25** accommodate the rear ski shoe **26** as will be hereinafter described, and spacers **27** and **28** connect the adjacent terminating end portions of the tubular members **21** and **22**.

According to this invention means are provided for detachably connecting the front and rear frames sections together to form a sturdy, unitary, streamline frame. As shown, projecting beyond each end portion of the tubular members of one frame section is a pin or stud rigidly connected thereto in any suitable manner. These pins are adapted to be snugly received within the tubular end portions of the other frame section in the assembled position and a fastening means secures the frames sections together.

In the illustrated form, pins **29** project beyond the end

portions of the tubular members **21** and **22** of the rear section. See Figures 2 and 3. In Figure 2 it will be seen that in the assembled position the pins **29** are snugly received in the tubular end portions of members **13** and **14**.

In order to securely fasten the two frame sections **11** and **12** in assembled position, the spacers **19** and **27** are provided with an ear portion **19***a* and **27***a* respectively, each having an aligned opening **30** therein through which a fastening means **31**, preferably in the form of a bolt, extends there through. A wing nut **32** threaded to the bolt securely fastens the frame sections **11** and **12** together. Both the upper and lower ends of the U-shaped front and rear sections are so detachably connected in the assembled position. Thus the two sections can be readily disassembled by simply removing the wing nut **32** from its respective bolt. As a result no tools are required for either assembling or disassembling.

A steering post **18** is slidably connected to the front section in suitable bearings sleeves **17** connected to spacers **15** and **16**. A ski shoe **33** is pivotally mounted to the lower end of the post **18** and a handle bar means **34** is connected to the upper portion of the post **18**. Thus any movement of the steering post **18** in response to the manipulation of the handle bars **34** positions the ski shoe **33** accordingly.

In the form of the invention of Figure 1 a rear ski shoe **26** is yieldingly connected to the rear section **12**. Square guides **35** connected to spacers **25** each receive a square strut **36** connected to the ski shoe **26** and a removable bolt or pin **37** or the like is extended through an opening in the upper end of each strut **36** to prevent the ski shoe **26** from becoming separated from the frame section. A helical spring **38** encircles each of the struts to normally bias the ski shoe **26** away from the frame.

The front ski shoe **33** is likewise yieldingly connected to the frame. This is accomplished by positioning a helical compression spring **39** about the steering post **18** between the bearing **17** and a collar **40** fixed to the post **18**. Thus it will be noted front and rear ski shoe are individually yieldable so that each can separately compensate for uneven or rough terrain. In this manner the ski shoes readily absorb the shocks of uneven ground, thereby rendering the ride smooth and comfortable.

A seat **41** is adjustably mounted in the seat post **24** and a foot resting bar **42** is provided to prevent a rider's feet from accidentally dragging.

Figures 6 and 7 illustrate a modified form of the invention. In this embodiment the frame **50** likewise comprises a front and rear section **51** and **52** respectively formed of spaced tubular members, the two sections being detachably connected as hereinbefore described. See Figures 2 and 3.

As shown the rear section **52** is provided with two pair of post members **53** and **54**, each pair being integrally formed with the tubular members **55** and **56** respectively and supporting an elongate seat **57** thereon.

Resiliently connected to the rear section **52** are a pair of ski shoes **58** and **59**. Each ski shoe **58** and **59** is provided with a pair of spaced struts **60** having an enlarged end portion **60***a* which is slidably received and yieldingly mounted within the lower end of the hollow seat posts **53**, **54**. In the illustrated form a compression spring **61** is disposed between the end portion **60***a* of the struts **60** and a filler block **62** positioned within each respective seat post; a threaded flanged collar **63** retaining the struts to the seat posts. Thus it will be noted that the struts **60** function as a piston acting against the spring bias to absorb the shocks of uneven ground; the ski shoes **58** and **59** being similarly mounted in side by side arrangement.

The steering post **63** and pivotally connected ski shoe **64** assembly and the mounting means therefor is similar to that of the embodiment shown by Figure 1, as hereinbefore described. Foot rests **65** are integrally connected to the rear section **52**.

With the embodiment of Figure 6 experience has shown that the double rear ski renders the instant device much faster. It has been further discovered that by yieldingly connecting the rear ski shoes to the frame frictional resistance is decreased, resulting in increased speed. This is probably due to the fact that rigidly attached ski shoes, as in the devices heretofore known, had a tendency to dig into the snow particularly where the ground was rough and uneven. Consequently, the digging of the ski shoes into the snow increased the amount of resistance which was required to overcome the inertia of the device. However, by yielding mounting the ski shoes to the frame according to the instant invention, the spring means permit the ski shoes to give and absorb the shocks of rough and uneven ground. As the tendency of the ski shoe is to give rather than to dig into the snow resistance is decreased and the speed is increased accordingly.

Consequently, not only is the ride rendered much more smooth, but the speed attainable with the device is substantially increased; thereby giving the rider a much more daring and exciting ride.

Since the speed of the instant device can be quite high at times, the form of the invention illustrated in Figure 6 is provided with an elongate seat to protect a rider from receiving a groin injury in the event a rider is momentarily lifted off the seat as the result of taking a bounce. The elongate seat provides sufficient area to protect the rider from becoming completely unseated. Further the elongate seat is sufficient to accommodate another rider if desired.

From the foregoing it will be noted that the instant skiing device according to this invention is light in weight and sturdily constructed, the double frame construction rendering the device more stable and well balanced. Further the device is readily knock down and disassembled thereby facilitating shipping, storage and crating of the same and the novel detachable connecting means affords an effective means for assembling and disassembling the frame sections simply and quickly without the use of any hand tools. Further the individually yieldingly mounted ski shoes provide for a smoother and speeder ride.

If desired the rear shoe members of the modified form may be provided with boot straps (not shown) in the event it is desirable to utilize the ski shoes as conventional skis. On a ski slope where a hand held tow line is used, a rider with this device could readily utilize the rear ski shoes as conventional skis for towage while easily carrying the frame of the instant snow vehicle on his shoulders.

Although the invention has been described in detail, it will be understood that the description thereof is intended to be illustrative rather than restrictive, as many structural details are susceptible to modification and charge without departing from the spirit and scope of this invention.

I claim:

1. A knock down skiing device comprising a frame having a front section and a rear section, said front section including a pair of return bend tubular members, a steering post disposed therebetween, said steering post being resiliently and slidably connected thereto, a front ski shoe pivotally mounted to said post, said rear section including a second pair of return bend tubular members, a pair of seat posts connected to each tubular member of said second pair, an elongate seating means secured to said seat posts, a pair of rear ski shoes, each of said ski shoes having a pair of struts adapted to be slidably supported within said seat post, spring means being disposed within each of said seat posts for individually biasing the rear ski shoes and means for detachably connecting said front and rear frame sections together.

2. A skiing device having a knock-down frame comprising a frame including a readily separable front section and a rear section, each section being composed of a pair of spaced U-shaped tubular members, a spacer con-

necting the adjacent end portions of said tubular members for maintaining said tubular members equidistantly spaced, said spacer including an apertured ear portion between said tubular members, the tubular members of one of said sections having projecting means extending beyond said spacer, said projecting means being adapted to be received by the tubular members of said other section in the assembled position, a fastening means inserted through adjacent aligned apertured ear portion of said spacers for detachably securing said frame sections together in the assembled position, a steering post having a ski shoe pivotally mounted thereto connected to said front section and a rear ski shoe connected to said rear frame section, and means for yieldingly mounting

said steering port and rear ski shoe to said front and rear sections respectively.

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