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J. H. KONIGSBERG ET AL.  
FOLDABLE SLED  
FILED MAY 9, 1921.

1,440,784

3 SHEETS-SHEET 1

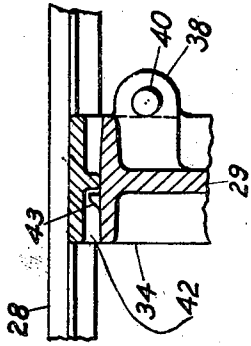


Fig. 10

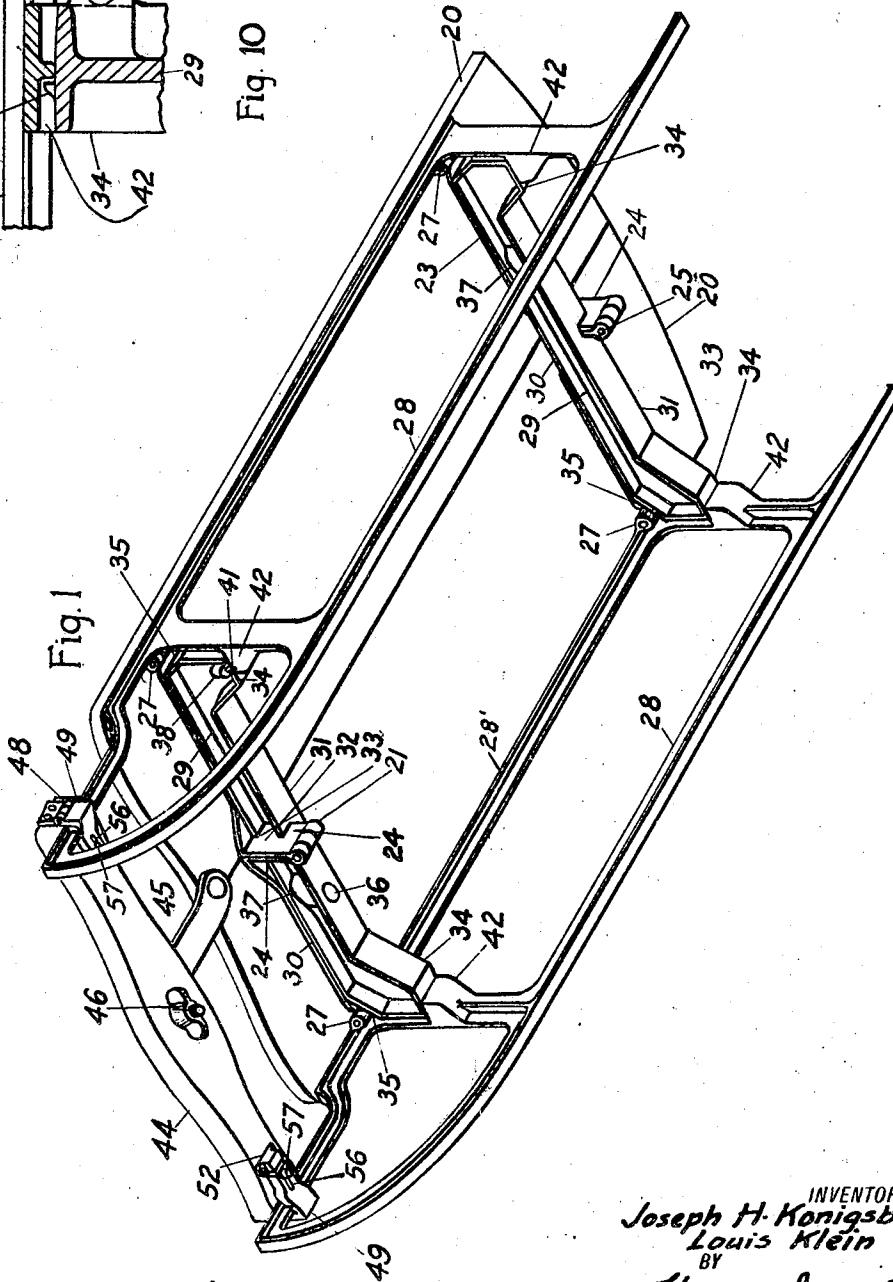


Fig. 1

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3 SHEETS-SHEET 2

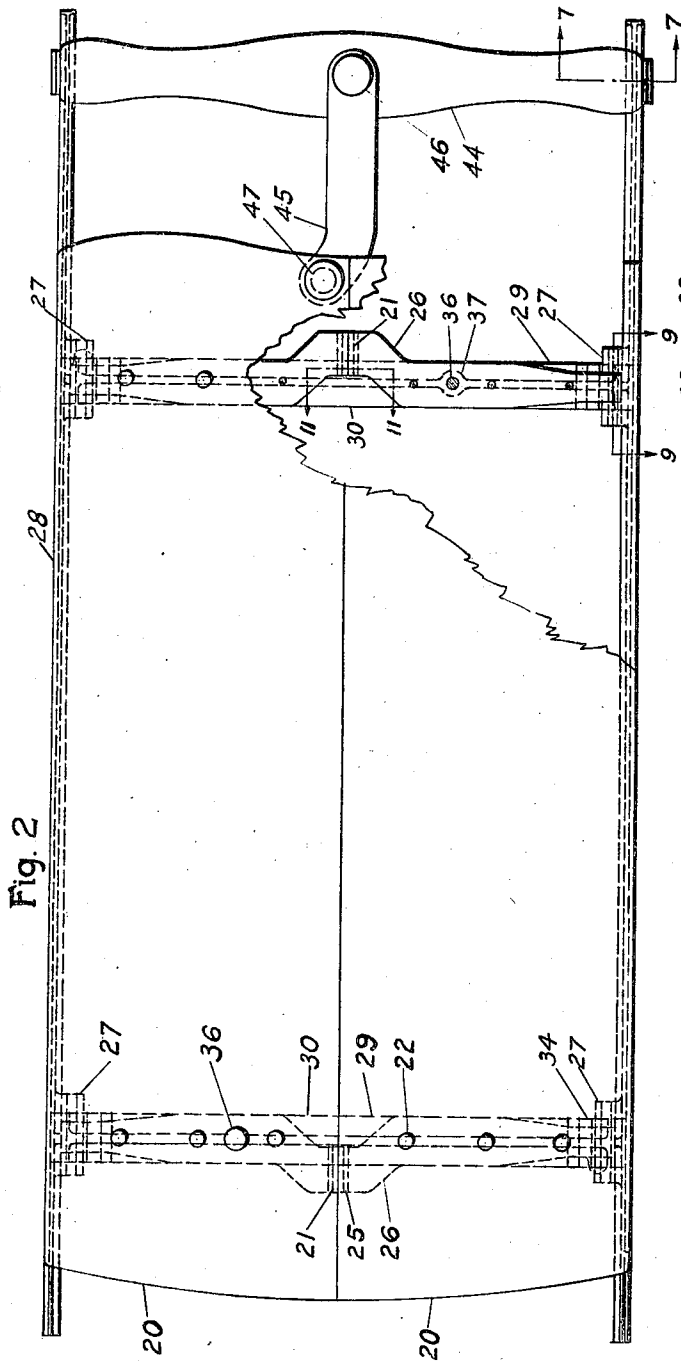


Fig. 2

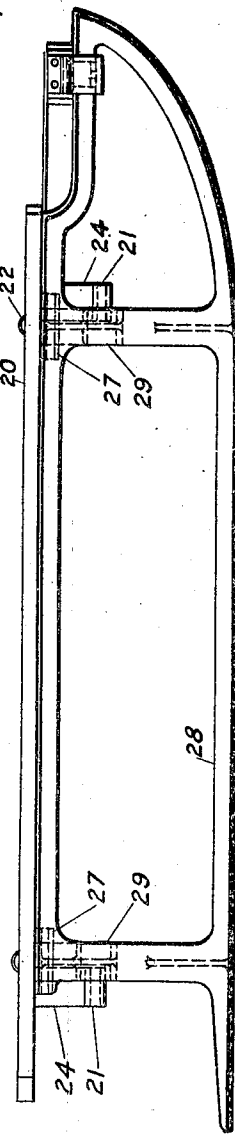


Fig. 3

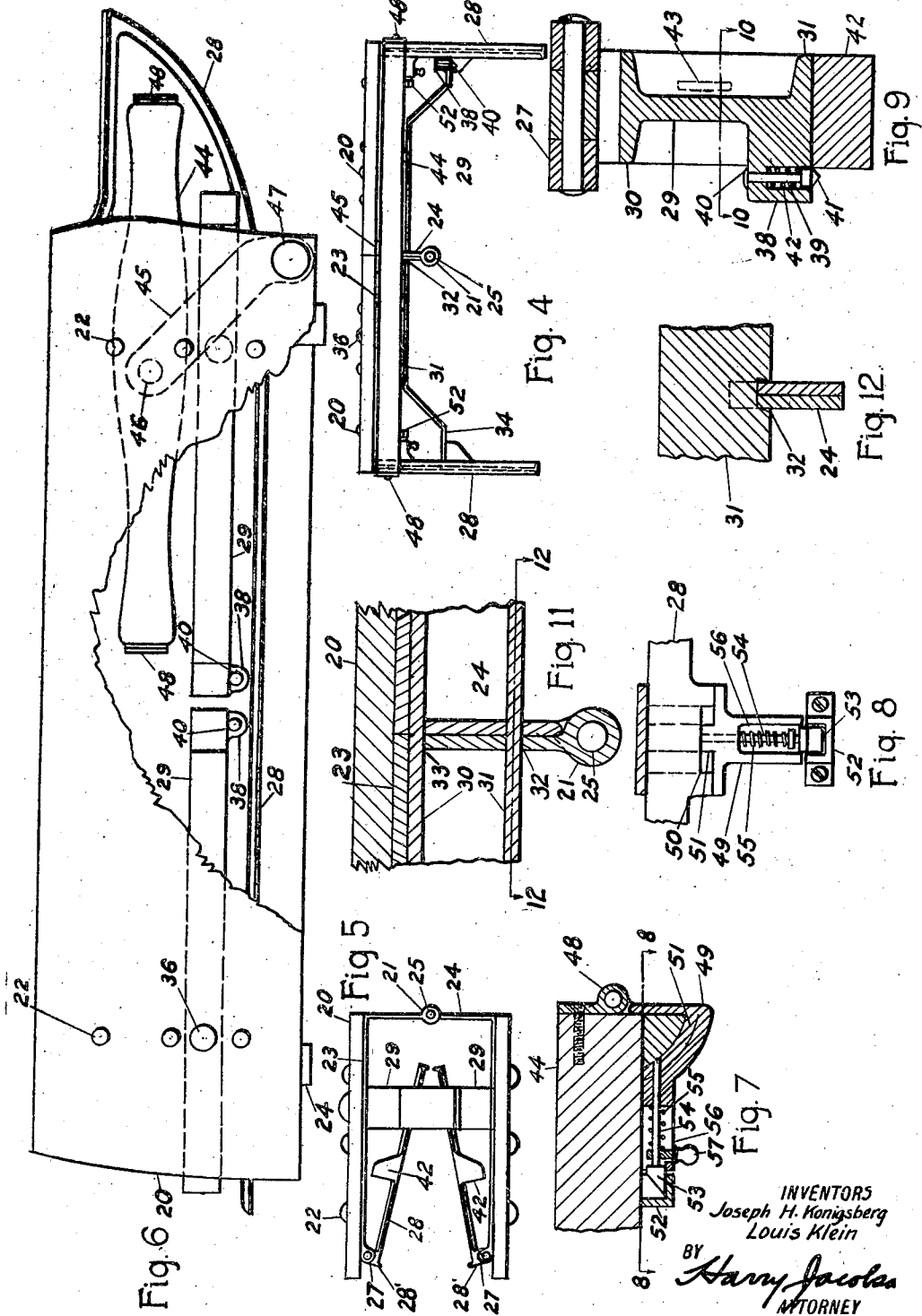
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3 SHEETS-SHEET 3



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# UNITED STATES PATENT OFFICE.

JOSEPH H. KONIGSBERG AND LOUIS KLEIN, OF NEW YORK, N. Y.

## FOLDABLE SLED.

Application filed May 9, 1921. Serial No. 467,880.

*To all whom it may concern:*

Be it known that we, JOSEPH H. KONIGSBERG and LOUIS KLEIN, citizens of the United States, and residents of the city of New York, in the counties of Kings and Bronx, respectively, and State of New York, have invented certain new and useful improvements in Foldable Sleds, of which the following is a specification.

This invention relates to foldable sleds, and has for its object the provision of a simple, light weight and efficient sled, strong enough to withstand hard usage, though adapted to be quickly and easily collapsed to fit into a comparatively small space.

A further object of this invention is the provision in a folding sled, of a simple, detachable and readily foldable steering attachment, foldable runners and foldable braces for said sled, all of which parts while of the full strength needed for an article of this character, are designed to occupy a minimum amount of space in the folded position thereof.

A still further object of this invention is the provision of means for preventing the collapse of the sled parts and for maintaining said parts in their extended positions while said sled is in use.

Other objects of this invention will appear as the detailed description progresses, reference being had to the accompanying drawings which show the preferred forms of our improved sled.

In the drawings, Fig. 1 is a perspective view of our invention as it appears in its extended position. Fig. 2 is a top plan view of the same, the top being partly broken away to show the structure underneath. Fig. 3 is a side elevation of the same. Fig. 4 is a front end elevation of the same. Fig. 5 is a rear end elevation of the sled in its folded position. Fig. 6 is a top plan view of the catch for locking the steering handle in position, taken on the line 7-7 of Fig. 2. Fig. 8 is a horizontal section of the same on the line 8-8 of Fig. 7. Fig. 9 is a vertical section of the means for maintaining the cross brace in its extended position, taken on line 9-9 of Fig. 2. Fig. 10 is a horizontal section of the cross brace taken on line 10-10 of Fig. 9. Fig. 11 is a vertical section of the hinge for the sled top taken on line 11-11 of Fig. 2. Fig. 12 is

a horizontal section of the same taken on line 12-12 of Fig. 11.

The illustrated embodiment of our invention being substantially symmetrical about a vertical central plane, a description of one half thereof will suffice. The invention comprises a top 20 foldable about its middle, runners which are inwardly foldable toward the said top, and foldable cross braces acting to maintain the runners normally in their extended positions, each of which parts will now be taken up in detail. The top is made of two separable members 20 which are foldably secured together by means of a strap hinge as 21. Each of the members of said hinge has a substantially right angle bend therein, the horizontal part 23 thereof being secured to the under side of said sled top members 20 as by means of the rivets 22, while the vertical parts 24 terminate in the hinge 21 and are held together by the pivotal pin 25. Near the bends thereof, the parts 23 are preferably offset outwardly toward the sled ends as at 26 (Fig. 2) in order to bring the hinge 21 as far forward as possible to allow room enough for the cross brace to partially clear said hinge in the extended position of the parts, as will be more fully described hereinafter.

It will be understood from the drawings that substantially similar hinge and cross members are provided, one of each at each end of the sled. At the outer extremities of each of the members 24, a hinge 27 connects each end of each of said members with one of the runners 28, about which hinge the runners may be folded inwardly (Fig. 5), part of said hinge being preferably formed from said members 24, and part from said runner, a projection 28' extending outwardly from said runner for limiting the outward or unfolding movement of the foldable runner to a position substantially at right angles to the top 20.

For normally maintaining said runners in the operative positions thereof, suitable foldable cross braces 29 are provided. Said braces are preferably I-shaped in cross section, the upper and lower flanges 30 and 31 respectively thereof, being arranged preferably by means of the half lap joints as 32 and 33 to fit into the hinge 21 for holding the hinge parts 24 securely together against possibility of opening apart in the operative or

unfolded position of the sled. The ends 34 of said cross braces are enlarged, the upper corners of the enlargement being preferably bevelled to clear the runner hinge 27. The pivot pin 36 passes through the cylindrical bearing 37 of said brace and is suitably secured to the top 20, said pin 36 being disposed preferably on one side of the center line of the sled in such a manner that each of said braces is pivoted on said hinge to a different one of the parts 20 of said top, and in the folded position of said top and said braces, allows the collapse of the parts without interference with each other. (Figs. 5 and 6). Said ends 34 of the brace are adapted to seat themselves on the projecting brackets 42 of the runners, a stop lug 43 on the runners above said brackets serving to limit the possible rotary movement of the brace about the pivot 36, while the catch pin 40 is adapted to be pressed inwardly into the hole 39 by the top of the bracket 42, at the time that the brace is being swung into its folded or operative position. As said brace reaches said position, the pin 40 is released and being urged downwardly by the spring 42, is pushed out beyond the bottom of the extension 33, whereby said pin acts as a stop for preventing the brace from rotating back to its unfolded position due to the vibrations or shocks to which the sled may be subjected, the lug 43 acting to prevent movement of the brace past the operative position thereof during the unfolding operation, whereby both ends of the brace are controlled and maintained in the proper positions.

The mechanism for steering our improved sled comprises the usual steering arm 44, removably connected to the runners 28 by means more fully described hereinafter and operatively connected to the top 20 by means of the link 45, which is secured at 46 as by means of a suitable bolt and wing nut to said steering arm tightly enough to cause said link and arm to act as a unit during the steering operation, said link being pivoted to said top at 47, about which point said arm is adapted to be rotated when pressure is put upon said arm for warping the runners.

At the front ends thereof, the runners 28 are preferably depressed to allow the said steering arm 44 and the link 45 connected thereto to fold under said top 20 as will be understood from Fig. 1. The hinge 48 having one leaf 49 thereof secured to the end of the steering arm 44 serves to removably connect said arm to said runners, which are suitably grooved at the front ends thereof as at 50, to receive the projections 51 of said leaf 49 loosely, whereby said steering arm is prevented from sliding unduly relatively to said runner. A suitable latch member 52 is secured to the under side of said steering

arm and is adapted to receive the catch 53 carried by the rod 54 which is suitably mounted in said leaf 49 of the hinge 48, and which is urged by the spring 55 into engagement with said catch 52, a handle 57 being secured to said rod 54, and projecting through a suitable slot 56 in said leaf 49, whereby said catch may be released by pressing the handle 57 backwardly against the action of the spring 55. (Figs. 7 and 8).

The operation of our improved sled is as follows:

It being assumed that the sled is in its unfolded or operative position, and that it is desired to fold up said sled for packing away or for any other purpose, the steering arm 44 is first disconnected from the runners 28 by first sliding back the catch 53, then swinging the leaf 49 about its pivot 48 until said leaf clears the runner, then loosening the wing nut of the bolt 46, after which the entire steering arm together with the link 45 may be readily folded underneath the top 20 as will be seen from Fig. 6, the leaf 49 being allowed to snap back into the latch provided therefor, out of the way. The cross braces 29 may now be swung about their pivots 36 out of engagement with the brackets 42 into the positions shown in Figs. 5 and 6, the end 41 of the pin 40 riding up on said bracket only when a brace is intentionally swung about its pivot, whereby the runners are completely freed and may be rotated about the hinges 27 to reach points comparatively close to the top 20.

After the cross braces and runners have been folded, the final step in the folding operation is the rotation of said top members 20 about the pin 25 of the hinge 21, which is readily accomplished. It will be seen that in the completely folded position of the sled, said sled occupies about one quarter of the volume it occupies when expanded, the consequent advantages being obvious. It will also be seen that by reason of the peculiar construction of our improved sled, the parts may be made of very light material, while at the same time maximum strength for the purposes involved may be attained. It will also be understood that various changes may be made in the mechanism shown without departing from the spirit of our invention, such as changes in the shape and mounting of the cross braces, in the hinge construction, and in the means for securing the steering arm to the runners.

We claim:

1. In a foldable sled, a top foldable about its middle comprising a pair of substantially similar units arranged with the adjacent edges thereof along the middle of said top, runners, hinges joining said runners to said top, a rigid one-piece cross brace independent of said runners adapted to extend across the width of said top to engage said runners,

a pin passing through said top and said brace for pivoting said brace to said top, and means for detachably maintaining said brace in its operative position.

5 2. A foldable sled comprising a longitudinally foldable top having a pair of substantially similar units arranged with the adjacent edges thereof along the middle of said top, a pair of runners, hinges foldably joining said runners to said top, and rigid, unitary, foldable means independent of said runners for detachably maintaining said runners in the operative positions thereof.

15 3. A foldable sled comprising a longitudinally foldable top comprising a pair of similar members, a pair of runners, hinges joining said runners to said top, rigid, unitary cross braces pivoted to and adapted to extend across the entire width of said top, said cross braces being independent of said runners in the inoperative positions thereof, and foldable means adapted to be removably connected to said runners for steering said sled.

25 4. A foldable sled comprising a longitudinally foldable top comprising a pair of similar members, foldable runners, foldable means for maintaining said runners in the operative positions thereof, foldable steering means adapted to be removably connected to said runners and means for locking said steering means in the operative position thereof.

35 5. In a foldable sled, a top foldable about its middle, a pair of runners hinged to said top, a cross brace adapted to engage both of said runners pivoted to said top, a spring pressed rod for engaging a runner and for maintaining said brace in its unfolded position, foldable steering means and means for detachably locking said steering means to said runners.

40 6. In a foldable sled, a foldable top comprising a pair of substantially similar members, a strap hinge joining said members, said hinge comprising a pair of leaves each having a strap adapted to extend across the width of said top members, and a portion bent substantially at right angles to said strap.

50 7. In a foldable sled, a foldable top, a pair of hinge members each having a right angle bend therein secured to said top, a pin on which the extremities of said hinge portions are pivoted, foldable runners, a cross brace adapted to engage said runners, and means at the points where said cross brace meets said hinge members for preventing the opening of said hinge when the cross brace is in its extended position.

60 8. In a foldable sled, a top, foldable runners, and means for bracing said runners and said top comprising a lever pivoted near one end thereof, a bracket on each of said runners, and a spring pressed pin carried

by said brace and cooperating with said bracket for preventing movement of said brace out of its operative position.

9. In a foldable sled, a steering arm, a pair of runners, and means for detachably securing said arm to said runners comprising a hinge secured to said arm, a leaf on said hinge adapted to encompass a part of a runner, a spring pressed latch carried by said leaf, and a catch on said arm for engaging said latch.

10. In a foldable sled, a top, steering means, a pair of runners, said steering means comprising a steering arm, hinged means for detachably securing said arm secured to said runners, and a link attached at the center of said arm for connecting said arm to said top.

11. In a foldable sled, a top adapted to be folded longitudinally about its center line, a pair of runners each adapted to be folded underneath a top section, hinges connecting said runners to said top, and cross braces for said runners independent of said runners in the inoperative positions thereof, each of said braces being pivoted underneath one of the top sections and being adapted to be swung to a position wherein the longitudinal axis of said cross brace is parallel to the longitudinal axis of said sled.

12. In a foldable sled, a top adapted to be folded longitudinally, a pair of foldable runners, cross braces for said runners and said top each adapted to be swung to a position lengthwise of a top section, and steering means removably connectable to said runners and adapted to be swung underneath a top section to a position substantially lengthwise of said section.

13. In a foldable sled, a top foldable longitudinally, runners hinged to said top, a pivoted cross brace for supporting said top and said runners, a spring pressed rod for engaging a runner for maintaining a brace in its unfolded position, a stop lug on each runner for cooperation with said rod, a steering arm, and means for detachably securing said arm to said runners comprising a hinge adapted to encompass a part of a runner, a spring pressed latch carried by said hinge, and a catch on said arm for engaging said latch.

14. In a foldable sled, a foldable top comprising a pair of substantially similar members, a pair of runners, a strap hinge connecting said members, said hinge comprising a pair of leaves each having a strap adapted to extend across the width of said top members, and a portion bent substantially at right angles to said strap, a hinge portion on a runner adapted to engage the extremity of said strap, a cross brace pivoted to a top member, and means adapted to engage said runners for maintaining said cross brace in its extended position.

15. In a foldable sled, a foldable top comprising a pair of substantially rectangular top members, a strap hinge joining said members, said hinge comprising a pair of  
5 leaves each having a strap portion secured to the under side of a top member, a portion bent substantially at right angles to said strap portion, runners hinged to the outer extremities of said strap portions, and  
10 a cross brace adapted to support said top members and said runners in the operative positions thereof.

16. In a foldable sled, a foldable top comprising a pair of substantially rectangular  
15 members, a pair of runners, a strap hinge secured to the under side of said members and to said runners for hinging said members to each other and to a runner, a cross brace pivoted to one of said top members,  
20 means on said runner for supporting said brace in the operative position thereof, means for engaging said brace supporting

means for preventing displacement of said brace, means for preventing the opening of said hinge when said brace is in its operative position, and foldable means for steering  
25 said sled.

17. In a foldable sled, a top foldable about its longitudinal center line, comprising a pair of substantially rectangular members, a  
30 brace pivoted on one side of its center to each of said members, a hinge secured to the under side of each of said members, a bent portion on said hinge by means of which said top members may be folded, a pair of run-  
35 ners, a second hinge at the extremities of said first hinge for foldably securing a runner to a top member, means on said runner for supporting a brace, steering means, and means for detachably securing  
40 said steering means to said runners.

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