(No Model.) 2 Sheets—Sheet 1.

E. WARD.

ICE VELOCIPEDE.

No. 567,526. Patented Sept. 8, 1896.

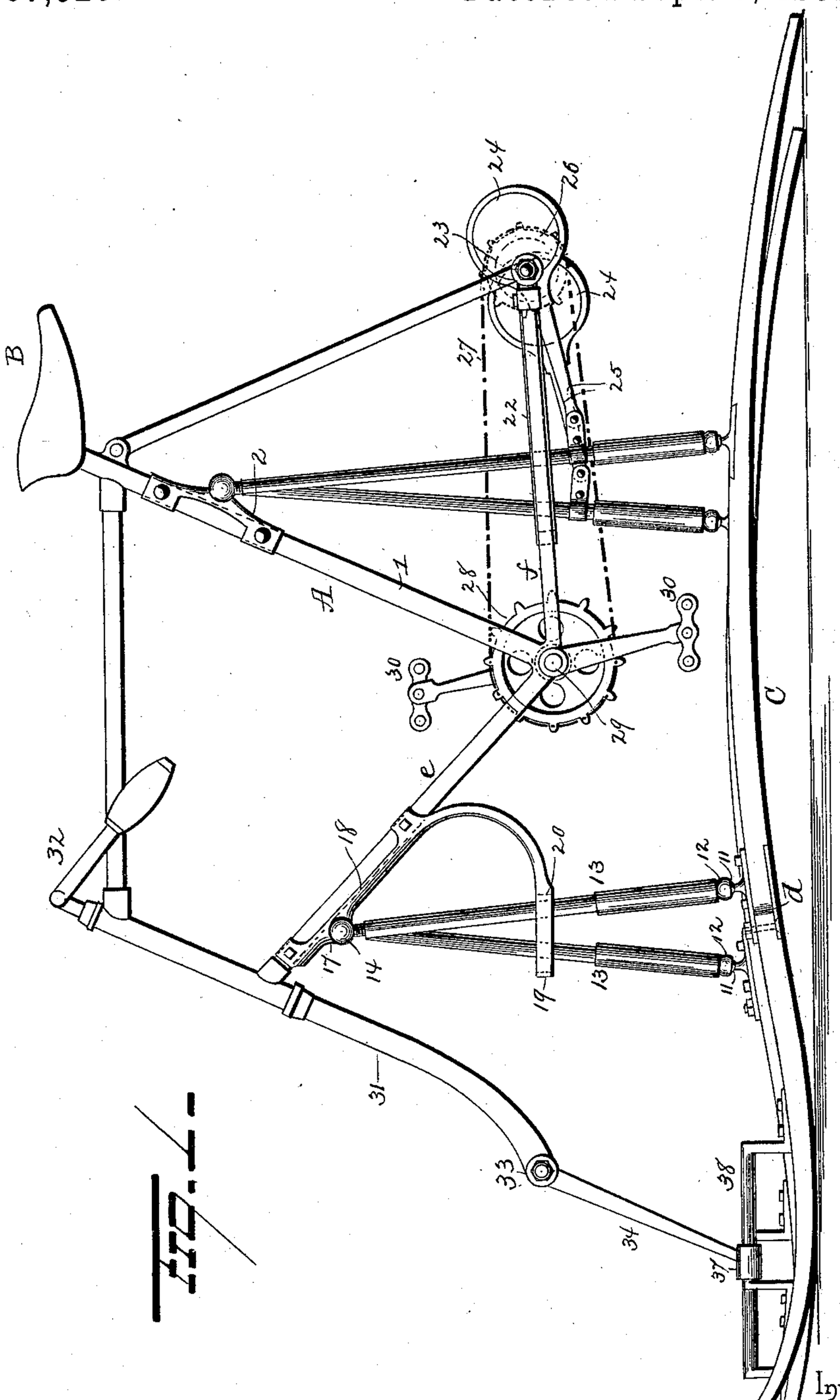

FIG. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

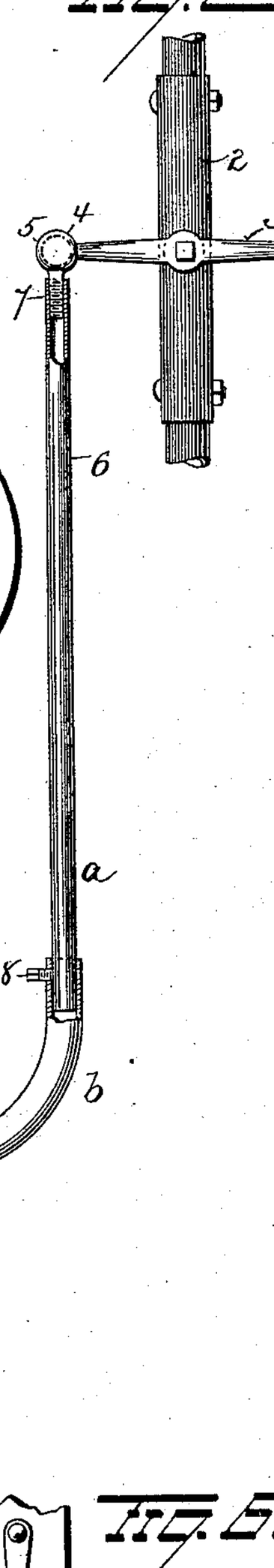


Fig. 3.

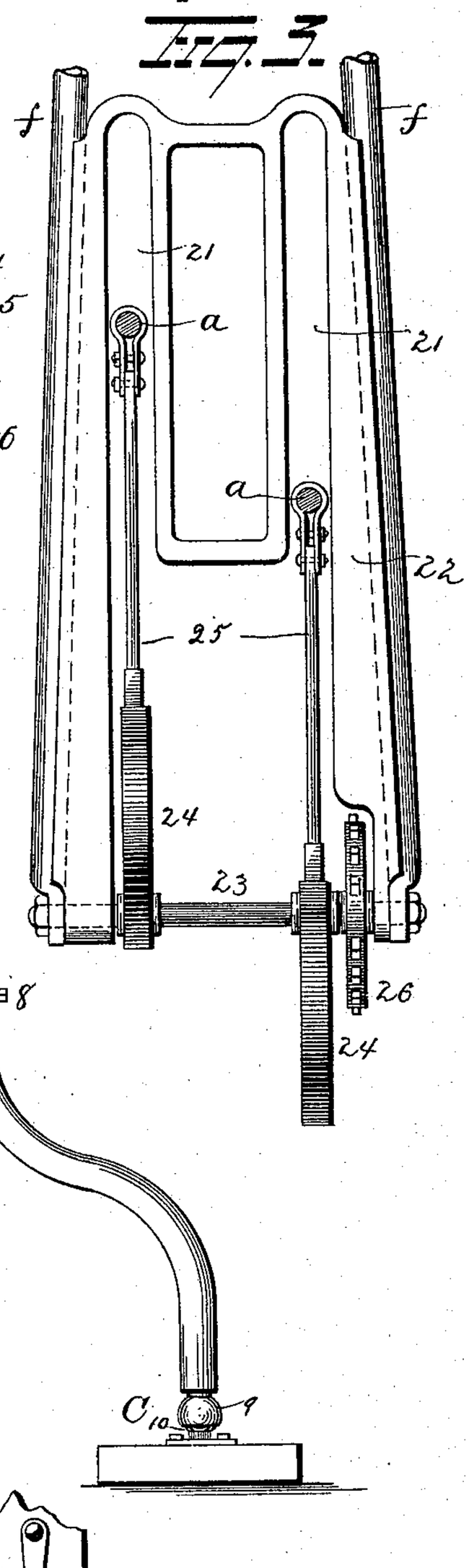


Fig. 4.

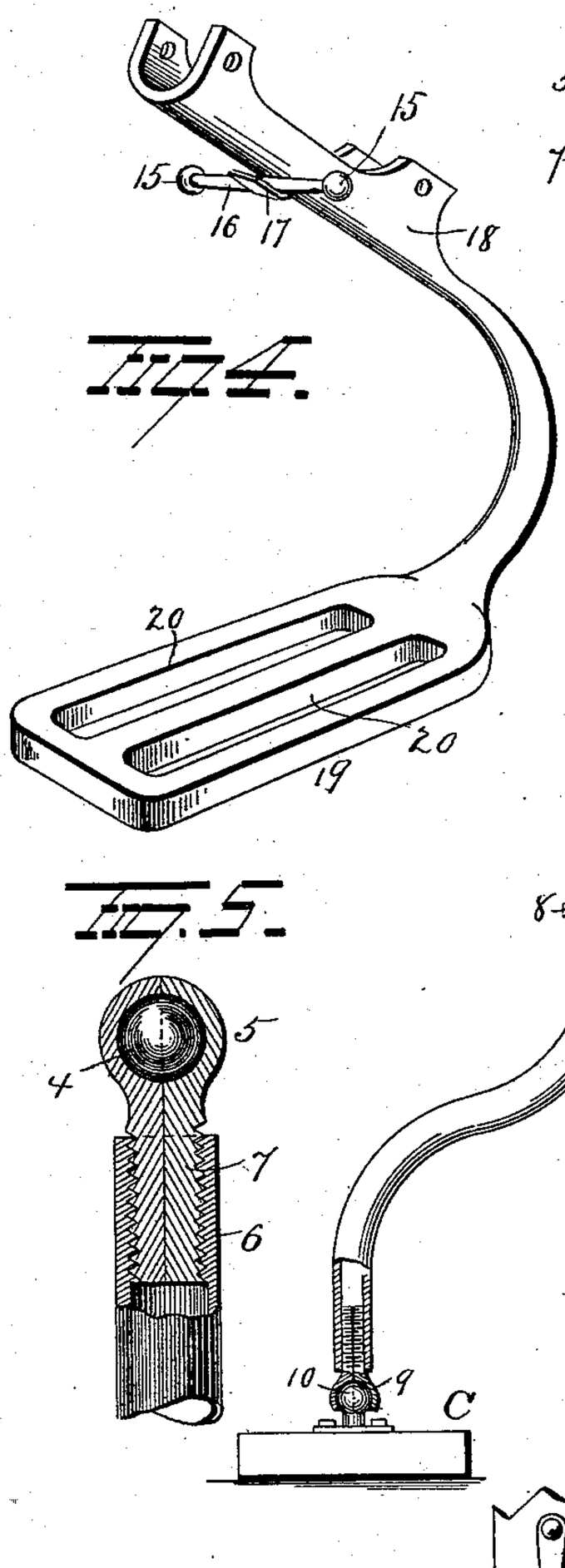
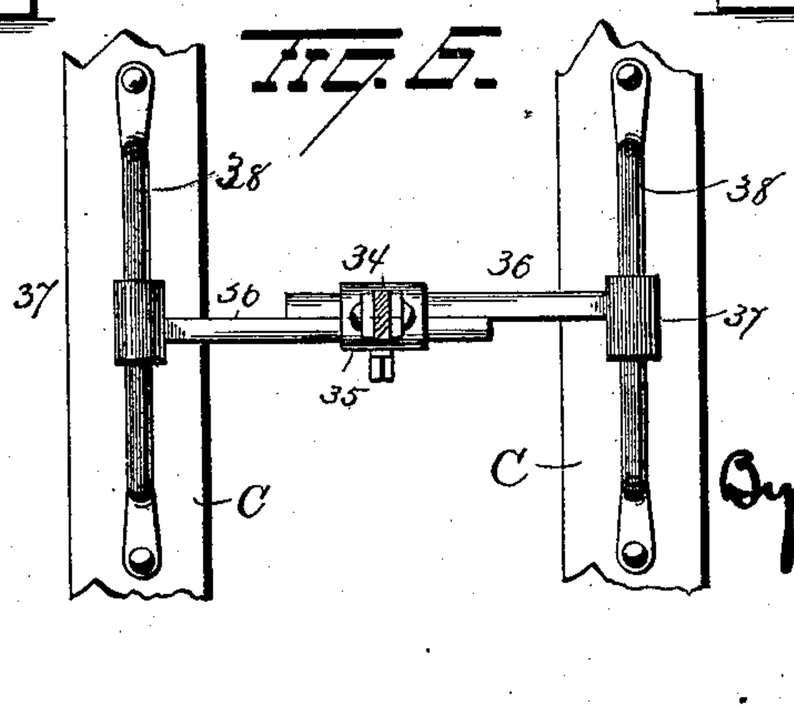


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

EUGENE WARD, OF ST. PAUL, MINNESOTA.

ICE-VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 567,526, dated September 8, 1896.

Application filed November 15, 1895. Serial No. 569,107. (No model.)

To all whom it may concern:

Be it known that I, EUGENE WARD, a resident of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in vehicles, and more particularly to such as are adapted for carrying persons over snow and ice. The movement of persons over snow and ice has been facilitated for many years by attaching to their feet skees or runners, but such attachments require considerable personal exertion and skill and the speed attained is limited. In using skees, which are usually from five to ten feet long, the user straps the same to his feet and then, by an ordinary sliding step, first one foot and then the other, attains more or less speed.

It is the object of my invention to provide mechanical contrivances for operating skees or runners.

The invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation showing an embodiment of my invention. Figs. 2, 3, 4, 5, and 6 are views illustrating various details.

A represents the frame provided with a seat B, and C represents skees or runners on which the frame A is mounted in such manner as to permit them to have a reciprocating motion imparted to them, as presently fully explained. To the central post 1 of the frame A a bracket 2 is clamped, and to this bracket a transverse bar 3 is secured at a point centrally between its ends. The respective ends of the bar 3 terminate in balls 4, adapted to enter sockets 5 at the upper ends of legs or standards 6. Each socket 5 is preferably made in two parts and having a screw-threaded shank 7, (one half of said shank being integral with the respective halves of the socket-piece,) adapted to screw into the screw-threaded upper end of the respective legs or standards 6. Each leg or support 6 is also made in two parts *a b*, adjustably secured together by means of set-screws 8. The lower part *b* of each leg or support 6 is curved and internally screw-threaded at its lower end for the reception of the shank of a socket-piece 9, similar in all respects to the socket-piece 5 above referred to, for the reception of balls 10, secured to the respective skees or runners C. Each skee C is made of the usual construction, with the exception of the forward portion of the same, said forward portion *c* being hinged at *d* to the rear or main body of the skee, so that said forward portion can be moved laterally. Just rearwardly of the hinged forward ends of the skees, balls 11 are secured thereto and adapted to enter socket-pieces 12, screwed into the lower ends of forward legs or standards 13. Each leg or standard 13 is made in two parts adjustably connected together and the lower parts made curved, the same as above described in connection with the rear legs or standards 6. The upper end of each forward leg or standard 13 is provided with a socket-piece 14 for the reception of balls 15 at the respective ends of a transverse bar 16. The transverse bar 16 is secured at a point centrally between its ends to a lug or enlargement 17, projecting from a bracket 18, the latter being secured to the forwardly-extending bar *e* of the frame A. The lower end of the bracket 18 is curved and terminates in a horizontally-disposed arm 19, having parallel slots 20, through which the forward legs or standards 13 pass and by which the said legs or standards are guided. The rear legs or standards 6 are similarly guided in slots 21 in a frame 22, secured between the rear bars *f f* of the frame A, the sides of said frame 22 being made with grooves for the reception of the bars *f* of the frame A. The rear end of the frame 22 terminates at the rear extremity of the main frame A, and in said rear end of the frame 22 a shaft 23 is mounted. On this shaft two cams or eccentrics 24 are secured and connected by means of pitmen 25 with the rear legs or standards 6, the connection between said cams or eccentrics and legs or supports being adjustable. A sprocket-wheel 26 is also secured to the shaft 23 and receives motion from a sprocket-chain 27, the latter receiving its motion from a sprocket-wheel

28, secured to a shaft 29, the latter being mounted in the main frame A at the base of the center post or upright 1. The shaft 29 is provided at its ends with crank-arms, and to the free ends of the latter pedals 30 are attached. Thus it will be seen that the frame A is supported on the skees by means of the legs or supports 6 13, and by making the lower portions of these legs curved and adjustably connecting said lower portions to the straight upper portions of the legs the said lower portions may be turned more or less to adjust the distance apart of the skees. It will also be seen that when the crank-shaft is turned by the rider motion will be imparted to the eccentrics and the latter will transmit a vibratory motion to the legs or standards 6, thus imparting a reciprocating motion to the skees, first one skee and then the other. A "sliding-step" motion will therefore be imparted to the skees, similar in all respects to the motion imparted to skees when worn on the feet of the user. By the use of my improvements, however, a much more rapid motion can be imparted to the skees than when the latter are worn on the feet and the user can make decidedly more rapid progress by the use of my improvements and with far less fatigue.

It is evident that means other than the pedal mechanism herein described might be employed for imparting the necessary reciprocating motion to the skees, such, for instance, as an electric or other motor, and I do not wish to restrict myself to any particular motive power.

A head 31 is swiveled to the forward end of the frame A and provided with handle-bars 32, said head terminating at its lower end in a curved portion 33. To the lower end of said head a bar 34 is secured, and at the lower end of said bar a clamp 35 is attached. Two rods or bars 36, projecting inwardly from sleeves 37, enter and are secured in said clamp. The sleeves 37 are mounted loosely on rods or guides 38, secured to the forward ends of the skees. By means of the rods or bars 36 and the clamp 35 the forward ends of the skees can be properly spaced apart.

From the construction and arrangement of parts above described it will be seen that the rider can move the forward ends of the skees laterally by operating the handle-bars, and thus guide the vehicle.

My improvements are simple in construction, comparatively cheap to manufacture, and effectual in the performance of their functions.

The particular construction of the frame A is not material, as any suitable frame may be employed, and various other changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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

1. The combination with supporting and reciprocating skees or runners having laterally-movable forward ends, of means for supporting a rider on said skees and means for moving said forward ends of the skees laterally for guiding the machine, substantially as set forth.

2. The combination with supporting-skees and a frame, of legs or standards pivotally connected to said skees and frame, and means for vibrating said legs or standards whereby to reciprocate the skees or runners, substantially as set forth.

3. The combination with supporting-skees and a frame, of legs or standards pivotally connected with the frame and with the skees, means for adjusting said legs or standards whereby to adjust the skees relatively to each other and means for vibrating said legs or supports, substantially as set forth.

4. The combination with supporting-skees and a frame, of legs or supports, a ball-and-socket connection between each leg or support and the frame and a ball-and-socket joint between each leg or support and the respective skees and means for vibrating said legs or supports, substantially as set forth.

5. The combination with skees and a frame, of legs or standards pivotally connected at their respective ends to the frame and skees, each leg or standard being made in two parts adjustably secured together, the lower portion of each leg or standard being made curved, substantially as set forth.

6. The combination with skees and a frame, of legs or standards pivotally connected at their respective ends to the frame and skees, slotted guides secured to the frame, through which said legs or standards pass and means for vibrating said legs or standards, substantially as set forth.

7. The combination with a frame and skees, of legs having sockets at their respective ends, balls secured to the skees and adapted to enter the skees at the lower ends of the legs, brackets secured to the frame, transverse bars secured to said brackets, balls at the respective ends of said transverse bars and adapted to enter the sockets at the upper ends of the legs, and means for vibrating said legs, substantially as set forth.

8. The combination with skees and a frame, of brackets secured to the frame, transverse bars secured to said brackets and provided at their ends with balls, legs or standards, a socket-piece made in two parts and screwed in the upper end of each leg or standard and adapted to receive the balls on the ends of the transverse bars and ball-and-socket connections between the lower ends of said legs and the skees, substantially as set forth.

9. The combination with a frame and skees and means for supporting the rear portion of the frame on said skees, of a bracket secured to the forward portion of the frame, said

bracket terminating in a horizontally-disposed slotted arm, and legs pivotally connected at their respective ends to said bracket and the skees and passing through said slotted arm, substantially as set forth.

10. The combination with a frame and skees, of a frame having slots disposed between the rear bars of the main frame, of legs or supports pivotally connected to the frame and to the skees and passing through said slotted frame, and legs pivotally connected to the forward portion of the main frame and to the skees, substantially as set forth.

11. The combination with a frame and skees, of legs pivotally connected at their respective ends to said frame and the skees, eccentrics mounted in the frame, pitmen connecting said eccentrics and legs and means for driving said pitmen, substantially as set forth.

12. The combination with a frame and supporting-skees, of legs or standards pivotally connected at their respective ends to said frame and the skees, a crank-shaft, pedals on the crank-arms of said shaft, eccentrics mounted in the frame and connected with said legs, a sprocket-wheel on the shaft of said eccentrics, a sprocket-wheel on the crank-shaft and a sprocket-chain passing over said sprocket-wheels, substantially as set forth.

13. The combination with a frame and skees, of legs pivotally connected at their respective ends to said frame and skees, means for vibrating said legs and a movable support for the forward end of the frame on the skees, substantially as set forth.

14. The combination with skees having forward hinged ends and a frame mounted on said skees, a swiveled head on said frame and connections between said swiveled head and the forward hinged ends of the skees, substantially as set forth.

15. The combination with skees having forward hinged ends adapted to be moved laterally, a frame and legs pivotally connected at their respective ends to the frame and skees in rear of the hinged forward ends, of a swiveled head on the front end of said frame, a bar connected to said swiveled head, rods or guides secured to the hinged ends of the skees, sleeves mounted loosely on said guides, rods on said sleeves and a clamp connecting said guide-rods, said clamp being secured to the bar connected with said swiveled head, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EUGENE WARD.

Witnesses:
HOMER C. ELLER,
OLIVER DELANCEY WARD.