

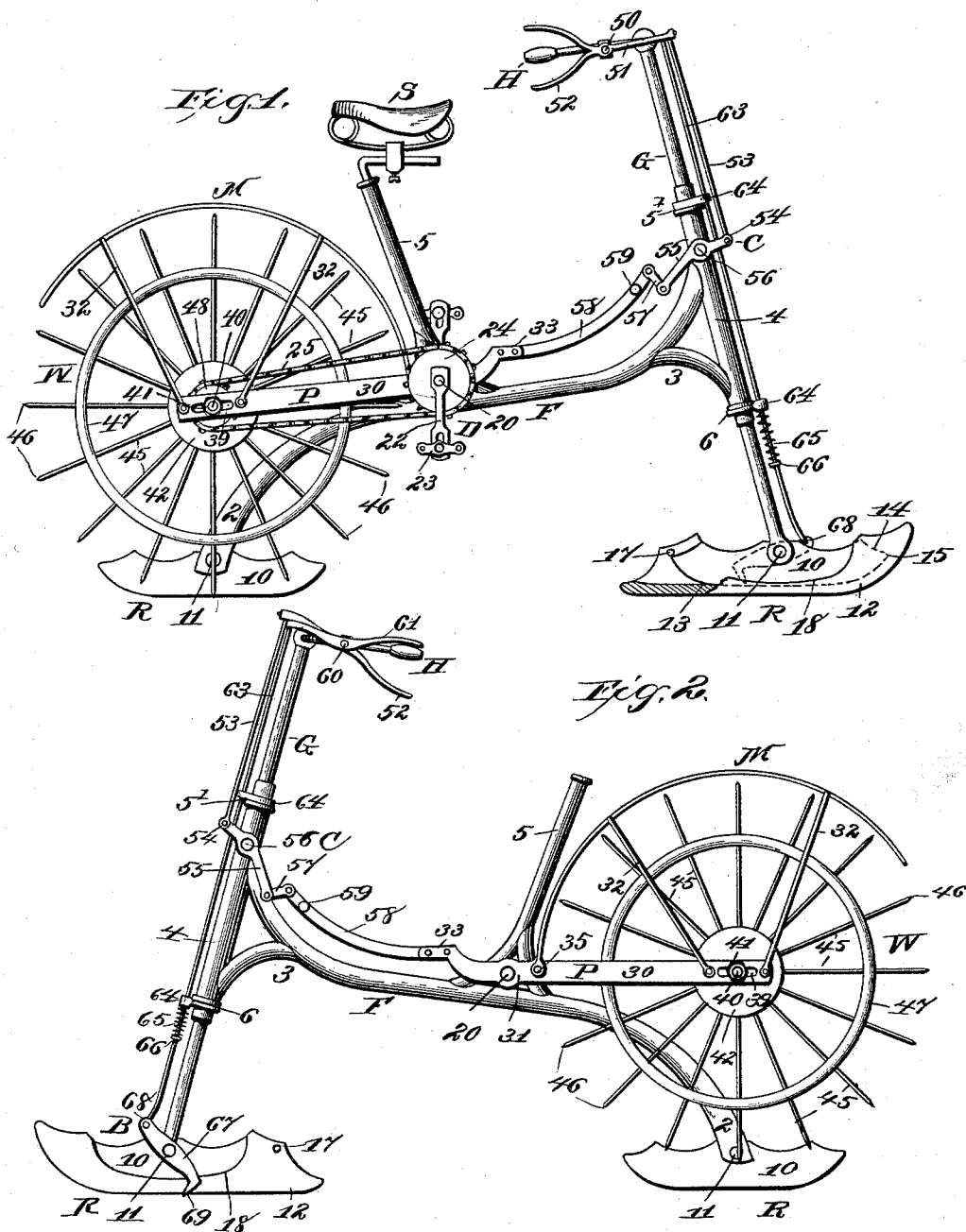
(No Model.)

2 Sheets—Sheet 1.

M. B. GIBSON.
ICE VELOCIPEDE.

No. 485,345.

Patented Nov. 1, 1892.



Witnesses

E. Hurdeman

A. C. Collamer

Inventor

Myron B. Gibson

By *his* Attorneys,

C. A. Snow & Co.

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Fig. 3.

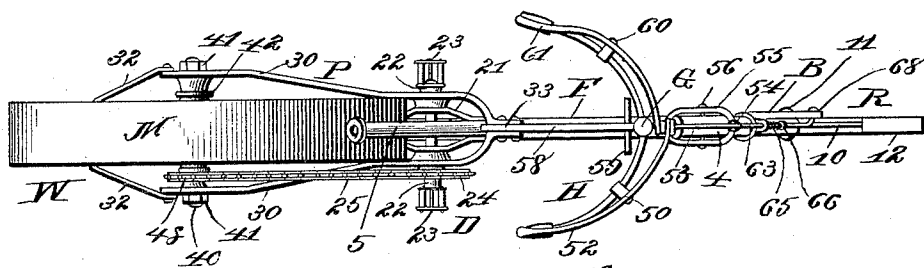


Fig. 4.

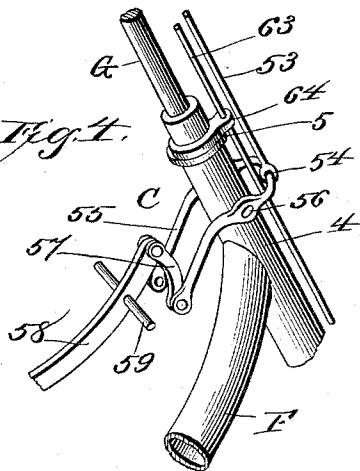
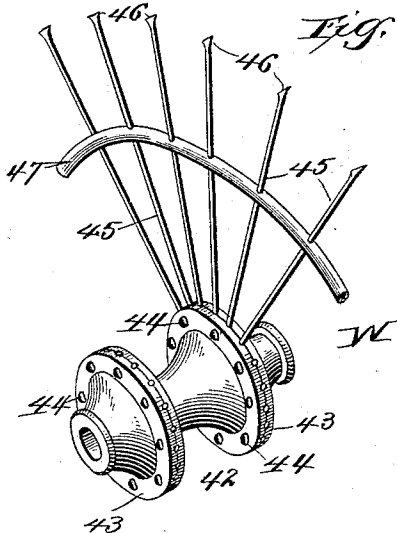


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

MYRON B. GIBSON, OF UKIAH, CALIFORNIA.

ICE-VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 485,345, dated November 1, 1892.

Application filed December 7, 1891. Serial No. 414,323. (No model.)

To all whom it may concern:

Be it known that I, MYRON B. GIBSON, a citizen of the United States, residing at Ukiah, in the county of Mendocino and State of California, have invented a new and useful Ice-Velocipede, of which the following is a specification.

This invention relates to ice-velocipedes of that class known as "rear-driving safety-machines," and more especially thereto when constructed and adapted for use upon snow or ice; and the object of the same is to effect certain improvements in machines of this class.

To this end the invention consists in an ice-bicycle constructed substantially as hereinafter more fully described and claimed, and as illustrated on the two sheets of drawings, wherein—

Figure 1 is a side elevation of the machine complete, viewed from the right side and showing one of the runners as provided with its sled-shoe. Fig. 2 is a left-side elevation of the framework and guide-rod, showing, also, the pivoted framework held elevated by the coasting device, and, further, showing the brake as being applied. Fig. 3 is a plan view of the machine complete with the exception of the seat. Fig. 4 is a perspective detail showing the loop of the coasting device and a portion of the head and brake-rod and also illustrating the foot-rests. Fig. 5 is a perspective detail of the hub and a sector of the driving-wheel.

This improved ice-bicycle comprises a main framework F, through whose steering-head extends the guide-rod G, carrying the handle-bar H. Runners R support the lower end of the guide-rod and the rear end of the framework, and from the latter rises a standard supporting a seat S.

D is the driving mechanism, on whose shaft is pivoted a swinging or pivoted framework P, carrying the driving-wheel W, which is covered by a mud-guard M.

To the front end of the pivoted framework is connected the coasting device C, operated by a device similar to a brake-handle and adjacent one end of the handle-bar, while a brake proper is provided, as at B, which is operated by a brake-handle adjacent the other end of the handle-bar. The details of

construction, whether illustrated and described or not, depend to a great extent on the fancy of the manufacturer, the wishes of the rider, and the desired selling-price of the finished machine, and hence it will be understood that they are susceptible of a great degree of modification without departing from the spirit of my invention. The latter possesses as its principal features the points covered by the claims hereto appended, and even in these some change can be made, as will be understood.

The various parts of the machine as designated by reference letters and figures are each of the specific construction, preferably, described below.

The main framework F.—This is preferably tubular and of drop-steel forging, the body standing nearly horizontal, the rear end being turned down to the rear runner R and the front end being forked, as at 3, and connected by bolting or otherwise with the tubular steering-head 4. From the horizontal body rises a standard 5', which supports a seat or saddle S, that may, of course, be of any preferred construction, and hence needs no further description.

The guide-rod G.—This is also preferably tubular, although in cheaper grades of machines it may be solid, as, indeed, can the framework. The body of the rod is preferably straight, as shown, and stands oblique, so that the jars which the machine receives in running over obstructions may not weaken or wear the bearings of this rod in the steering-head. Said bearings are preferably located at the upper and lower ends of the head, as at 5 and 6, and may be ball, conical, or otherwise.

The runners R.—Each runner comprises a skate-shoe 10 of thin strong steel and pivoted at 11 to the lower end of the framework or the guide-rod, which it will be understood is forked, so as to set astride the skate-shoe. In Fig. 1 one sled-shoe 12 is shown as applied to the skate-shoe for the obvious purpose of increasing the length and breadth of the runner, as the sled-shoe is considerably larger than the skate-shoe. The latter is used on ice or thick crusted snow, while the sled-shoe is for softer snow and perhaps slush and sleet. It is provided with a deep groove 13 of a size

and shape to receive the skate-shoe, and the pointed front end 14 of the skate-shoe fits into a socket 15 at the front end of said groove, while the rear end thereof is open, as at 16. 5 After the sled-shoe is applied as shown a screw or bolt 17 is passed through its body and across its groove above the rear end of the skate-shoe to hold the parts together. The sides of the sled-shoe are cut away, as at 10 18, to permit the turning of the runner on its pivot 11.

The handle-bar H.—I do not limit myself to the shape and size of this bar, though it is preferably curved, as shown, and provided 15 with rubber handles, as are common. The bar is centrally secured to the upper end of the guide-rod G and stands in the proper and most convenient position for the rider when sitting on the seat.

20 *The driving mechanism D.*—I preferably employ a shaft 20, mounted in ball-bearings supported by braces 21, that are connected to the main framework, the shaft extending through the forked lower end of the standard 25 5 and having cranks 22 on its ends, which carry pedals 23. Near the right crank 22 is a driving sprocket-wheel 24, from which a sprocket-chain 25 leads rearwardly to the driving-wheel W, hereinafter described, as is 30 usual in rear-driving safeties. Although not so shown, the entire driving mechanism may be covered by a shield or protector to prevent snow and ice and possibly the rider's clothing from getting into the same; but these details 35 will readily suggest themselves. The pedals preferably have ball-bearings on the crank-pins.

The pivoted framework P.—A strong framework 30, approximately U-shaped in plan, has 40 bearings 31 on the shaft 20 of the driving mechanism inside the cranks 22, the ends of this framework extending to the rear normally in about a horizontal plane, as seen. From these ends rise rods 32, which support the mud-guard M. The bent front end of this frame- 45 work is bolted or otherwise connected, as at 33, to the coasting device C, hereinafter described, whereby the entire framework P can be rocked around its pivot—the shaft 20—to 50 raise the driving-wheel when it is desired to coast or to depress the driving-wheel when it becomes necessary to apply greater force, as in ascending steep hills.

The driving-wheel W.—In Fig. 5 this wheel 55 is perhaps best illustrated. It comprises duplicate halves, as will be seen, the object being that the halves may work on opposite sides of the main framework and of the rear runner. A shaft 40 is adjustably secured by 60 nuts 41 in slots 39 in the rear ends of the pivoted framework, and on this shaft is mounted, by cone or ball bearings, the double hub 42, whose center is preferably solid and whose two ends 43 are secured to the center by bolts 65 44 or otherwise. Between each end of the center and its adjacent end piece is tightly clamped a number of radiating spokes 45,

each of which is preferably of stout tubing for the sake of lightness, with its outer end reduced, sharpened, or pointed, as shown at 70 46. A ring 47, preferably, also, of tubing, though somewhat larger, connects the spokes near their outer ends and is concentric with the hub, the spokes in the two halves alternating with each other, so that the periph- 75 eries of the halves will present as nearly as possible a perfect circle to the ground. If preferred, the hub may be made solid and the spokes threaded thereinto; but the hub should in all cases be of about six inches diameter, 80 for the obvious purpose of giving greater strength to the spokes. Secured to one end of the hub is a sprocket-wheel 48, over which the chain 25 from the driving mechanism passes and by which power is communicated 85 to the wheel, the sprocket-wheels 24 and 48 preferably differing in size in order that the speed of the machine may be "geared up," as will be understood. A larger or smaller wheel 90 48 can be substituted to change the gearing by adjusting the shaft 40 in the slots 39, and the chain 25 can also be tightened in this manner when it becomes necessary.

The coasting device C.—Pivoted at 50 to the right arm of the handle-bar is a lever 51, hav- 95 ing a branched outer end 52, whose arms stand above and below the right handle, and 53 is a stiff rod pivotally connected with the inner end of this lever and leading down in front of the guide-rod G, its lower end being 100 connected by a ball-and-socket joint 54 with a loop 55, (see Fig. 4,) which surrounds the head 4 and is pivoted, as at 56, to opposite sides thereof. 57 is a link pivotally connect- 105 ing the rear end of this loop with the front end of a stout arm 58, which extends to the rear just above the body of the main frame- work, and is connected by bolts 33 to the front end of the pivoted framework above de- 110 scribed. From this arm 58 preferably project the foot-rests 59, which, as seen, are properly located to receive the rider's feet, as in coasting.

The brake B.—Pivoted at 60 to the left arm of the handle-bar is a brake-lever 61, whose 115 outer end stands above the left handle, and 63 is a small rod pivotally connected with the inner end of this lever and leading down in front of the guide-rod G through eyes or guides 64, preferably carried by the guide- 120 rod through the loop 55 and through an expansive spring 65, located between the lowermost guide 64 and an enlargement 66 on the rod to the brake proper. The latter consists of a steel body 67, its front end being 125 pivoted, as at 68, to the lower end of the rod 63, its sides standing outside the forked lower end of the guide-rod G and being pivoted on the bolt 11, which connects said forked end with the skate-shoe and its rear ends being 130 turned down and pointed, as at 69.

The mud-guard M.—More strictly speaking, this device is a snow-guard or slush-guard, since the device will hardly be operated or

used in the mud. The guard differs from those in general use only as to its width, being, of course, wide enough to cover both halves of the driving-wheel, so as to prevent any snow or slush which may be taken up by the spokes from being thrown on the operator's back. It follows the curvature of the wheel, is supported by the rods 32, above described, and is connected at its front end, as at 35, with the pivoted framework P, so as to rise and fall therewith.

The operation and uses.—To use the machine on ice or hard-crust snow, the sled-shoes are not necessary; but if the snow be soft they will be applied in the manner described. The rider, taking his seat on the saddle, puts his feet on the pedals, and through the driving mechanism transmits power to the driving-wheel. As the latter revolves, the sharpened points of its spokes alternately engage the ice or snow and the machine is driven over the ground. Under ordinary circumstances the weight of the pivoted framework and the driving-wheel will be sufficient to embed the points of the spokes enough to give them the necessary hold in the snow or ice; but when a steep hill is reached the operator with his right hand grasps the handle and the lower end 52 of the branched lever 51 and by drawing up on said end he bears the shaft 40 down, and therefore forces the points of the spokes deeper into the snow or ice. On reaching a downgrade, or whenever he desires to "coast," he depresses the upper end 52 of this lever, which raises the wheel off the ice; or by applying his feet to the foot-rests 59 their weight will hold the wheel raised, and the machine will then slide over the ice without the driving-wheel turning at all. At this, or, in fact, at any other time, the brake is applied by depressing the lever 61 and thereby throwing the point 69 into the ice alongside the front runner, and when the pressure is removed the spring 65 will throw this point out of the ice. The steering is, of course, done in the usual manner. If the pivot 11 at the lower end of the guide-rod G passes through the runner forward of the longitudinal center of the latter, so that it can trail like a rudder, it is obvious that the operator could remove his hands from the handle-bar. The machine can be suitably ornamented to make it neat as well as serviceable, and it presents a bicycle which can be used on ice or snow by a gentleman or a lady. By the necessary changes the machine may be made in the form of a tricycle, a sociable, or a tandem bicycle.

What is claimed as new is—

1. In an ice-bicycle, a main framework turned down and forked at its rear end, a double driving-wheel supported by the framework, and a guide-rod journaled in a steering-head at the front end of the framework and having a forked lower end, in combination with a runner pivotally mounted in each of said forks, the driving-wheel standing

astride the rear runner, substantially as described.

2. In an ice-velocipede, the combination of the main framework, the guide-rod journaled therein, said framework and guide-rod being forked at their lower ends, the driving mechanism, and runners at the lower ends of said framework and guide-rod, each runner comprising a skate-shoe, the said driving mechanism consisting of a propelling-wheel having two sets of spokes, substantially as described.

3. In an ice-velocipede, the combination, with the main framework, the guide-rod journaled therein, and propelling mechanism, of runners at the lower ends of the framework and guide-rod, each comprising a skate-shoe secured to said lower end and having a pointed front end, a sled-shoe having a deep groove in which the skate-shoe fits removably, the front end of said groove having a socket engaging said point and the rear end thereof being open, and a fastening-pin removably passing across said open end for holding the shoes together, substantially as described.

4. In an ice-bicycle, the combination, with the main framework, the guide-rod journaled therein, said members being forked at their lower ends, and propelling mechanism, of runners at the lower ends of the framework and guide-rod, each comprising a skate-shoe pivoted in said fork, a sled-shoe having a deep groove in which the skate-shoe removably fits, and means for detachably connecting said shoes, the sides of the sled-shoe being cut away to permit the pivotal movements of the fork, substantially as described.

5. In a velocipede, the combination, with the main framework, the guide-rod, supports therefor, and the propelling mechanism mounted on said framework, of a pivoted framework mounted on the shaft of the driving mechanism and projecting therefrom, means for turning this pivoted framework, a driving-wheel journaled in bearings in the outer end of the pivoted framework, a lever or handle for operating said pivoted framework, located in the forward part of the machine, and connections between the driving mechanism and the hub of the wheel for rotating the latter, substantially as described.

6. In a bicycle, the combination, with the main framework, the guide-rod, supports therefor, and the driving mechanism mounted on said framework, of a pivoted framework mounted on the shaft of the driving mechanism and projecting to the rear, means for turning this pivoted framework, a driving-wheel formed in duplicate halves and journaled in bearings in the rear end of the pivoted framework, the halves standing astride the main framework, and connections between the driving mechanism and the wheel for rotating the latter, substantially as described.

7. In a bicycle, the combination, with the main framework, the guide-rod, supports

therefor, and a transverse crank-shaft mounted on said framework, of a U-shaped pivoted framework whose sides are journaled on said shaft and whose ends project to the rear, foot-rests carried by the bent center of this pivoted framework, a driving-wheel formed in duplicate halves and journaled in bearings in the rear end of the pivoted framework, the halves standing astride the main framework, and connections between the crank-shaft and the wheel for rotating the latter, substantially as described.

8. In an ice-bicycle, the combination, with the main framework, the guide-rod, runners at the lower ends thereof, and a transverse crank-shaft journaled in bearings on said framework and having a sprocket-wheel, of a pivoted framework mounted on said shaft and having slots in its outer ends, means for turning this pivoted framework, a shaft adjustably mounted in said slots, a driving-wheel whose hub is journaled on said shaft and whose body is formed in duplicate halves standing normally astride the rear runner, a sprocket-wheel on the hub, connected by a chain belt with that on the crank-shaft, and a mud-guard supported by the pivoted framework, substantially as described.

9. In a velocipede, the combination, with the main framework, the guide-rod, supports therefor, the pivoted framework, the driving-wheel journaled in said pivoted framework, and means for rotating this wheel, of an arm leading from said pivoted framework, a lever pivoted to the handle-bar, connections between said lever and arm, and foot-rests supported by the arm, as and for the purpose set forth.

10. In a velocipede, the combination, with the main framework, the guide-rod, supports for said framework and guide-rod, the pivoted framework, the driving-wheel journaled in said pivoted framework, and means for rotating this wheel, of an arm leading forwardly from said pivoted framework, a lever pivoted to the handle-bar and having its outer end branched, a loop surrounding the steering-head and pivoted at its sides thereto, a link connecting the loop with the front end of said arm, a stiff rod leading from the inner

end of said lever, and a ball-and-socket joint between said rod and the front end of the loop, substantially as described.

11. In a velocipede, the combination, with the main framework, the guide-rod, and supports therefor, of movable bearings, means for raising and lowering them, and a double driving-wheel mounted in said bearings, the wheel comprising a hub, stiff spokes radiating therefrom and having sharpened outer ends, and a ring connecting the bodies of said spokes concentric with the hub, as and for the purpose set forth.

12. In a velocipede, the combination, with a main framework, the guide-rod, and supports therefor, of a driving-wheel mounted in bearings supported by said framework, the wheel comprising a double hub, two sets of spokes radiating therefrom and having sharpened outer ends, and rings connecting the spokes in the sets concentric with the hub, substantially as and for the purpose set forth.

13. In an ice-bicycle, the combination, with the main framework, the guide-rod, and runners supporting them, of a driving-wheel mounted in bearings carried above the rear runner, the wheel comprising a double hub, and a set of spokes radiating from each end of the hub and adapted to move alongside the rear runner, substantially as described.

14. In an ice-bicycle, the combination, with the main framework, the guide-rod, runners supporting them, and another framework projecting to the rear from the main framework, of the driving mechanism on the main framework and a driving-wheel journaled in said other framework and connected with the driving mechanism, said wheel comprising duplicate halves adapted to stand astride the main framework and the rear runner, as and for the purpose hereinbefore set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MYRON B. GIBSON.

Witnesses:

G. W. CRITCHFIELD,
E. M. KNUST.