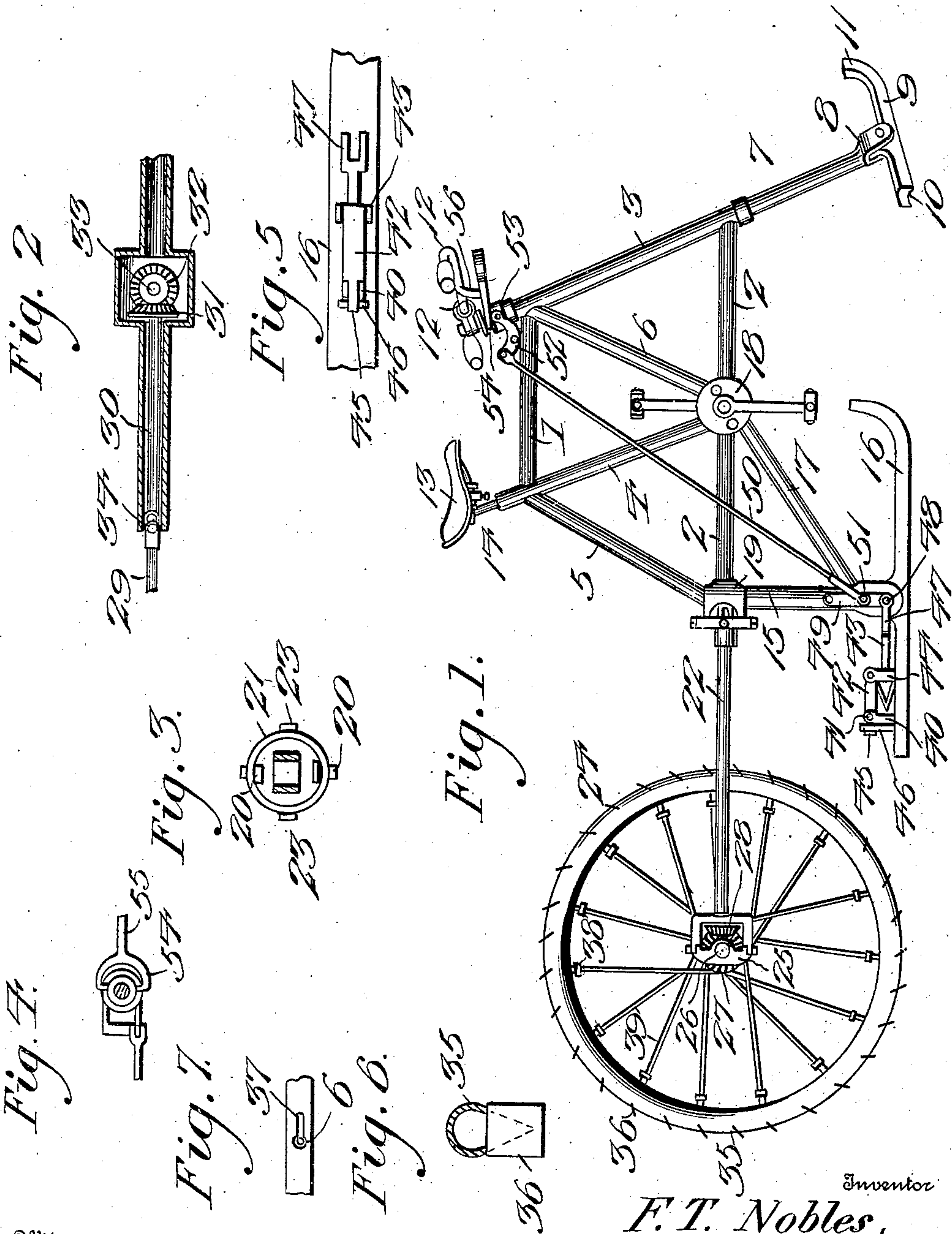


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F. T. NOBLES.
MANUALLY PROPELLED SLED.
APPLICATION FILED JUNE 2, 1906.



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UNITED STATES PATENT OFFICE.

FRANK T. NOBLES, OF McCLOUD, CALIFORNIA.

MANUALLY-PROPELLED SLED.

No. 848,488.

Specification of Letters Patent.

Patented March 26, 1907.

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To all whom it may concern:

Be it known that I, FRANK T. NOBLES, a citizen of the United States, residing at McCLOUD, in the county of Siskiyou and State of California, have invented new and useful Improvements in Manually-Propelled Sleds, of which the following is a specification.

This invention relates to manually-propelled sleds; and the object in view is to provide a simple and effective machine of the class referred to, which may be termed a "monocycle" sled, being similar in construction and general arrangement and operation to an ordinary bicycle, the machine being adapted to be propelled by pedals in the usual manner, but being especially designed with reference to use upon ice.

A further object of the invention is to provide novel propelling mechanism whereby the propelling-wheel has a universal-jointed connection with the main frame of the machine, so that the driving-wheel may rest by its own weight on the ice and by its own traction propel the machine.

A further object of the invention is to provide novel braking mechanism whereby the rider may check the progress of the machine and bring the same to a stop within a short distance.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying the present invention. Fig. 2 is a sectional view of a portion of the driving mechanism. Fig. 3 is a cross-section through the universal joint which connects the rear fork to the main frame of the machine and also connects two sections of the driving-shafts. Fig. 4 is a detail sectional view showing a portion of the brake mechanism. Fig. 5 is a plan view of another portion of the brake mechanism. Fig. 6 is a sectional view of the rim of the driving-wheel, showing one of the traction-ribs. Fig. 7 is a detail view of a portion of the rim, showing the manner of connecting the spokes therewith.

The main frame of the machine comprises the top and bottom runs 1 and 2, respectively, the head-tube 3, the seat-post tube 4,

the rear brace or braces 5, and an intermediate brace or reach-bar 6.

Mounted to turn within the head-tube 3 is the stem 7 of the front fork 8, in which is pivotally mounted the steering or guide runner 9, which, it will be observed, has its lower face concaved, as shown at 10, and forward portion thereof upturned, as shown at 11. The upper end of the stem 7 has connected thereto a handle-bar 12 for the usual steering purpose.

13 designates the rider's seat, the post 14 of which is fitted in the upper end of the seat-post tube 4, as shown in Fig. 1.

Extending downward from the rear portion of the main frame is a post or standard 15, to the lower end of which is connected the main supporting-runner 16, which resembles the forward runner 9, but which is considerably longer than said forward runner and is pivotally connected to the bottom of the post 15, so that it may rock to accommodate itself to any unevenness in the surface of the ice. The forward runner 9 is also pivotally connected to the stem, as shown in Fig. 1, for a like purpose.

17 designates a brace which is interposed between the lower end of the post or standard 15 and the crank-hanger 18.

The bars 2 and 5 of the main frame are connected together at their rear ends by a cluster-coupling 19, having rearwardly-projecting lugs 20, to which is pivotally connected a ring 21. Extending backward from the ring 21 is a bearing tube or sleeve 22, which is provided with diametrically opposite lugs 23, which are pivotally connected to the ring 21 at points intermediate the pivot-lugs 20, thus providing a universal joint between the main frame of the machine and the tube 22. The tube 22 is forked to straddle the driving-wheel 24, and the branches of said tube are provided at their rear ends with bearings 25, in which the axle 26 of the driving-wheel is journaled. The axle 26 is provided with a bevel-pinion 27, which meshes with a bevel-pinion 28 on the rear end of the rear section 29 of the main driving-shaft, the forward section 30 of said shaft being provided with a bevel-pinion 31, which meshes with and is driven by a bevel-pinion 32 on the crank-axle 33, journaled in the crank-hanger 18. The sections 29 and 30 of the driving-shaft are connected at their

adjoining ends by a universal joint 34, which is directly in the center of the ring 21, so that the rear section of the driving-shaft may swing simultaneously with the rear fork or frame-piece 22 to permit the driving-wheel 24 to accommodate itself to the surface upon which the machine is traveling, said driving-wheel being adapted to rise and fall and also to move laterally without interfering with the driving connections whereby said wheel is actuated.

The driving-wheel 24 comprises a tubular metallic rim 35, which is of the cross-sectional shape illustrated in Fig. 6, said rim being formed of a strip of metal of suitable width bent to comprise a semicircular inner portion or surface and a V-shaped outer or tread surface, while the outer portion of the rim is provided with oblique or tangentially-disposed slits in which are fitted traction-ribs 36, substantially square or rectangular, as shown in Fig. 6, and composed of sheet metal of any suitable gage. It will be noted that the traction-ribs 36 are inclined rearwardly from their bottom to their top edges at the bottom of the wheel, as shown in Fig. 1, whereby the flat surfaces of the ribs are disposed toward the surface of the ice so as to obtain a firm hold thereon without cutting into the ice, the arrangement described enabling the traction-ribs to withdraw from the ice without lifting or throwing upward the fine ice chopped from the surface thereby.

Upon its inner side the rim 35 is provided with keyhole-slots 37 to receive the headed outer ends of a corresponding number of nipples 38, which are mounted upon the outer ends of spokes 39, which connect the rim with the hub, the inner ends of said spokes being connected to the hub in any desired manner. The construction described enables the spokes to be connected to the rim and disconnected therefrom in an easy manner whenever occasion requires.

The brake mechanism embodies a brake-shoe 40 in the form of a vertically-movable spike which operates through a hole in the main runner 16. This brake-shoe 40 is pivotally connected at 41 to an elbow-lever 42, which is fulcrumed at 43 on a post 44, extending upward from the runner 16, the lever 42 being provided with a guide lug or extension 45, which works in a slot in a guide-post 46, also extending upward from the runner 16 in rear of the vertically-movable brake-shoe 40. Extending forward from the elbow-lever 42 is a link 47, which is pivotally connected at 48 to the lower end of a power-transmitting lever 49, pivotally connected at its upper end to the post or standard 15.

50 designates a connecting-rod which is pivotally connected at 51 to the lever 49 and pivotally connected at its opposite end to a bell-crank lever 52, fulcrumed centrally on

the machine-frame and having its forward end forked to embrace and pivotally connect with a slide-collar 53, movable up and down on the stem 7 of the steering-head. The slide-collar 53 is provided with a groove 54, in which operates the fork 54^a of a brake-lever 55, the latter extending beneath the handle-bar 12 and being pivotally mounted on a bracket-arm 56, extending downward from said handle-bar, as shown in Fig. 1.

By means of the construction above described the rider may propel and steer the machine in the manner similar to an ordinary bicycle, the machine being supported by the main and steering runners and being propelled by the driving-wheel 24, which is driven by the pedal mechanism above described and which is adapted to rise and fall or move laterally to accommodate itself to any unevenness in the surface upon which the machine is being propelled. The brake is arranged to be conveniently operated by the rider after the manner of an ordinary bicycle-brake, and the brake-shoe 40 is adapted to be forced downward through the bottom of the main runner, so as to engage and dig into the ice to arrest the onward progress of the machine and bring the same to a stop. A suitable clutch may be interposed between the crank-shaft 33 and the forward section 30 of the driving-shaft, so as to release the driving-shaft section 30 and allow the pedals to be held stationary after the manner of an ordinary coaster-brake.

I claim—

1. A manually-propelled sled comprising a main frame, supporting and steering runners therefor, a driving-wheel, a fork or frame-piece connecting said driving-wheel with the main frame, a universal joint between said fork or frame-piece and the main frame, and a driving-shaft for transmitting motion from the pedal-shaft to the driving-wheel, said driving-shaft having a universal joint in line with the joint between the rear fork and main frame, substantially as described.

2. A manually-propelled sled embodying a main frame, pivotally-mounted main supporting and steering runners connected therewith, a driving-wheel and a driving-shaft therefor both connected with the machine-frame by universal joints to permit the driving-wheel to accommodate itself to the surface upon which the machine is moving without interfering with the driving mechanism, and a brake mounted on one of said runners and provided with operating connections embodying a hand-lever located adjacent to the handle-bar of the machine.

3. A manually-propelled sled embodying a main frame, main supporting and steering runners therefor, a fork extending rearward from the main frame and having a universal-joint connection therewith, a driving-wheel carried by said fork, a driving-shaft for said

wheel having a universal joint intermediate
its ends, a crank-shaft geared to said driving-
shaft, and traction-ribs projecting from the
rim of said driving-wheel and set at an oblique
5 inclination so as to incline forward toward
their outer edges at the bottom of the driv-
ing-wheel, substantially as described.

In testimony whereof I affix my signature
in presence of two witnesses.

FRANK T. NOBLES.

Witnesses:

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C. G. GAGE.