J. H. HAYES.

SELF PROPELLED SLEIGH.

APPLICATION FILED MAY 1, 1909.

939,194.

Patented Nov. 2, 1909.

2 SHEETS—SHEET 1.

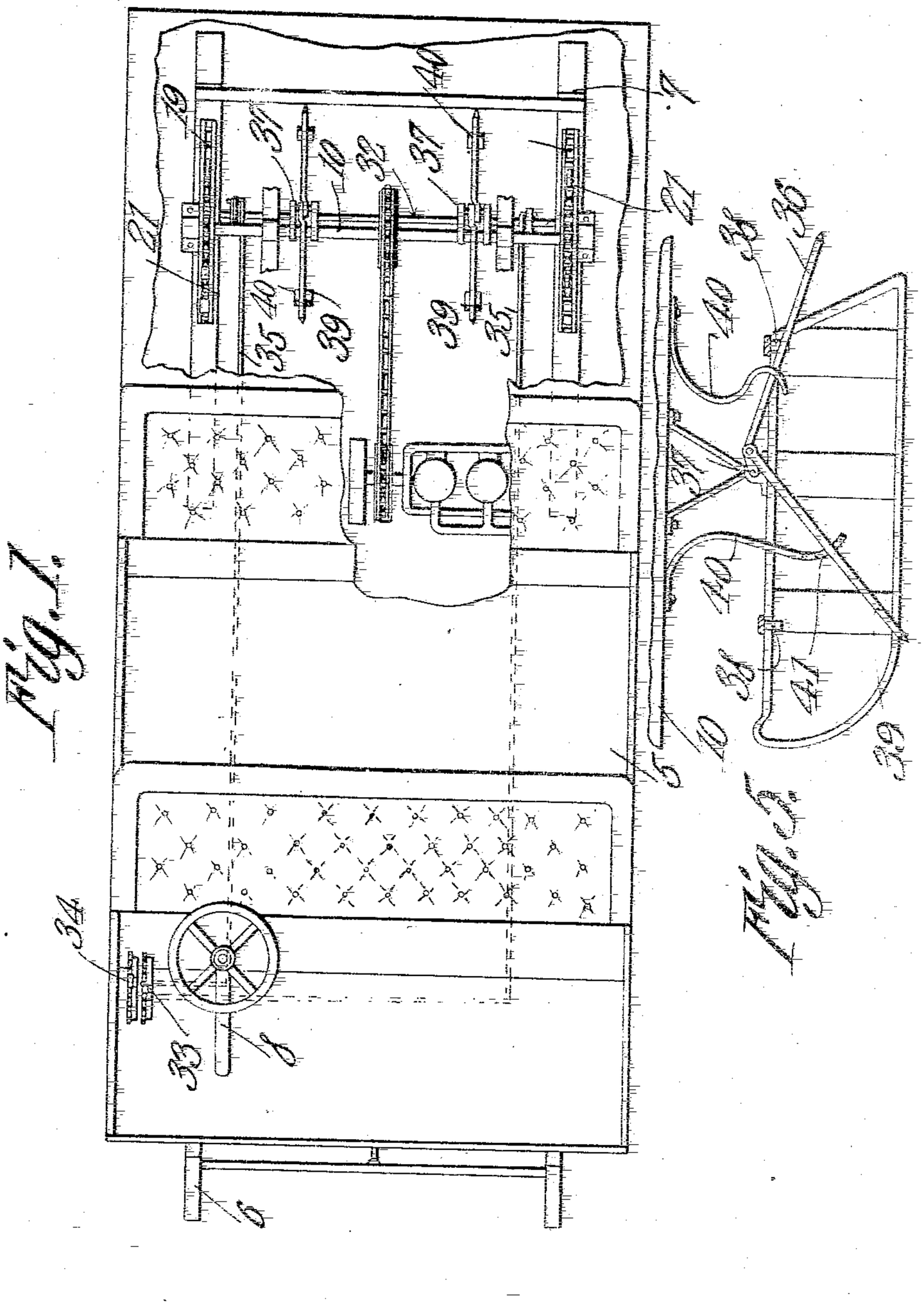

Fig. 1.

Fig. 2.

Witnesses

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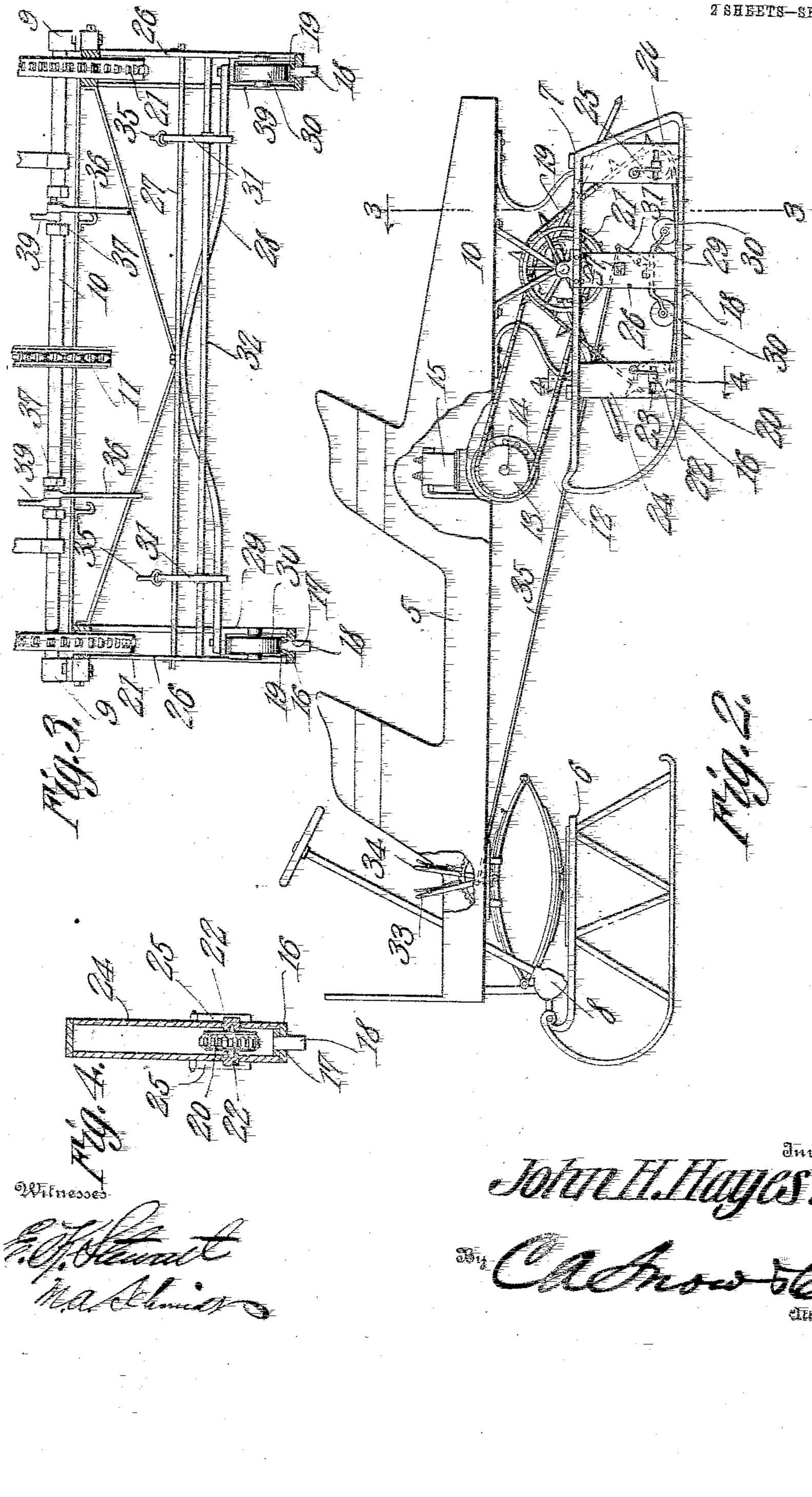

Fig. 2.

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN H. HAYES, OF ONAWAY, MICHIGAN.

SELF-PROPELLED SLEIGH.

939,194. Specification of Letters Patent. Patented Nov. 2, 1909.

Application filed May 1, 1909. Serial No. 493,350.

To all whom it may concern:

Be it known that I, JOHN H. HAYES, a citizen of the United States, residing at Onaway, in the county of Presque Isle and State of Michigan, have invented a new and useful Self-Propelled Sleigh, of which the following is a specification.

This invention relates to the propelling mechanism of a self-propelled or auto-sleigh, and its object is to provide a mechanism of this kind which is simple in structure, and highly efficient in operation.

Another object is to provide an independently operated propelling mechanism for each side of the sleigh in order that a differential gear may be dispensed with, together with novel and improved means for controlling said mechanism.

With the foregoing objects in view, the invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed, reference being had to the drawings hereto annexed forming a part of this specification, in which drawings—

Figure 1 is a plan view of the sleigh with the body partly broken away. Fig. 2 is a side elevation. Fig. 3 is a vertical section on the line 3—3 of Fig. 2. Fig. 4 is a vertical section on the line 4—4 of Fig. 2. Fig. 5 is a detail of the auxiliary propelling mechanism.

Referring more particularly to the drawings, 5 denotes the body of a bob sleigh, the front sleigh being indicated at 6, and the hind sleigh at 7. The front sleigh is pivotally connected to the body 5, and a suitable steering gear 8 is provided. The hind sleigh 7 carries bearings 9 in which the drive shaft 10 of the propelling mechanism is mounted. On the drive shaft is fixed a sprocket wheel 11 which is connected by a chain 12 to a sprocket wheel 13 on the crank shaft 14 of the motor 15, the latter preferably being an internal combustion engine of that type usually employed on automobiles. The particular kind of motor used is immaterial to the present invention, and a detailed description thereof is therefore thought unnecessary. It may be stated, however, that the motor is preferably carried adjacent to the front end of the sleigh body 5 as shown in Figs. 1 and 2 of the drawings.

The runners 16 of the hind sleigh are slotted longitudinally for a portion of their length as indicated at 17, through which slots are adapted to project spurs 18 carried by an endless chain 19. The lower stretch of this chain is guided to travel along the top of the slotted portion of the runner by means of a pair of idler sprocket wheels 20. The chain also passes over a sprocket wheel 21 fixed to the shaft 10, whereby it is driven.

The idler sprocket wheels 20 are yieldable, they being each supported in bearings 22 mounted in slots 23 made in a suitable framework 24 carried by the hind sleigh 7. The idler pulleys are movable toward and from each other, and they are normally held spread apart by means of springs 25 connected at one end to the frame 24, and pressing at their other ends against the bearings 22. The purpose of this yielding support for the idler sprockets will be presently made clear.

The hind sleigh 7 carries on each side a framework 26 which is connected by a cross-bar 27. To the cross-bar is fastened, intermediate its ends, a strong flat spring 28. To one of the free ends of this spring is connected a frame 29 carrying a pair of rollers 30, this frame being so located that the rollers may bear against the lower stretch of the chain 19. Said chain, on the other side of the sleigh 7, is engaged by a similar pair of rollers carried by the other free end of the spring 28. Both runners of the sleigh 7 are equipped with the hereindescribed propelling mechanism which mechanism is operable independently in order that a differential gear may be dispensed with.

The spurs 18 are brought into operating position by being projected through the slots 17, by means of the rollers 30. The spring 28 normally presses said rollers against the lower stretch of the chain 19 and presses said stretch outwardly sufficiently to project the spurs 18 through the slots 17. There is sufficient slackness in the chain 19 to permit the same to be pressed outwardly as stated. Upon elevating the rollers 30 the chain becomes slack, and this slack is taken up by the outward movement of the idler sprockets 20 they being spread apart by the springs 25. This spreading apart of the idler sprockets has the effect of elevating the lower stretch of the chain 19, whereby the spurs 18 are retracted and carried into inoperative position.

The means for elevating the rollers 30 as hereindescribed comprise bell crank levers 31 engageable with the respective free ends

of the spring 28. These levers are fulcrumed on a rod 32 extending between and carried by the frames 26. Adjacent to the driver's seat are fulcrumed hand levers 33 and 34 one of which is connected to one of the bell-cranks, and the other to the other bell-crank by a rod 35 or other suitable connection. The levers 33 and 34 are provided with the usual toothed segments and spring latches for locking the same. It will be understood from the foregoing that the bell-cranks 31 are independently operable, by reason of which the chains 19 may be independently operated as hereindescribed to draw the spurs 18 into inoperative position, and also to advance the same, by reason of which a differential gear on the drive shaft may be dispensed with.

In case of deep snows, where the spurs 18 cannot start the sleigh, an auxiliary propelling mechanism is employed. This mechanism comprises a pair of levers 36 each loosely mounted at one end on a crank 37 on the shaft 10. The levers are of such a length that when their free ends are released, they extend at an inclination to the ground, the free ends being engageable therewith. With the levers in this position, when the shaft 10 is turning, said levers operate to push the sleigh forwardly. When not in use they may be elevated and held in such position by means of a catch 38 carried by the sleigh 5. On the cranks 37 is also mounted a second pair of levers 39 operating in the same manner as the levers 36, but extending in an opposite direction so that when they are swung downwardly into operative position, the sleigh will be backed. To the hind sleigh body are fastened leaf springs 40 having at their free ends slots 41 through which the levers 36 and 39 loosely pass, and whereby they are guided. The springs have sufficient flexibility to permit the levers to be elevated and placed in the catches 38. Fig. 5 shows one of the levers in operative position, and the other one elevated and in inoperative position.

What is claimed is:

1. In a sleigh propeller, the combination with a runner, of an endless chain, spurs carried by the chain, a pair of sprockets for guiding the lower stretch of the chain along the runner, said sprockets being movable toward and from each other, and yielding means for normally holding the sprockets spread apart, and means for pressing the lower stretch of the chain outwardly to advance the spurs, said outward movement of the chain being accompanied by a movement of the sprockets toward each other.

2. In a sleigh propeller, the combination with the runner, of an endless chain, spurs carried by the chain, a pair of sprockets for guiding the lower stretch of the chain along the runner, said sprockets being movable toward and from each other, yielding means for normally holding the sprockets spread apart, a spring supported frame supported by the runner, and a pair of rollers carried by the frame, and engageable with the lower stretch for pressing the same outwardly to advance the spurs, and means for elevating the spring supported frame.

3. In a sleigh propeller, a drive shaft, a crank on said shaft, levers pivotally connected at one of their ends to the crank, and extending in opposite directions, and at an inclination to the ground, the free ends of the levers being in contact therewith, and means for holding the levers in elevated position to clear the ground.

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

JOHN H. HAYES.

Witnesses:
HERBERT H. VAUGHN,
JAMES R. SNODY.