

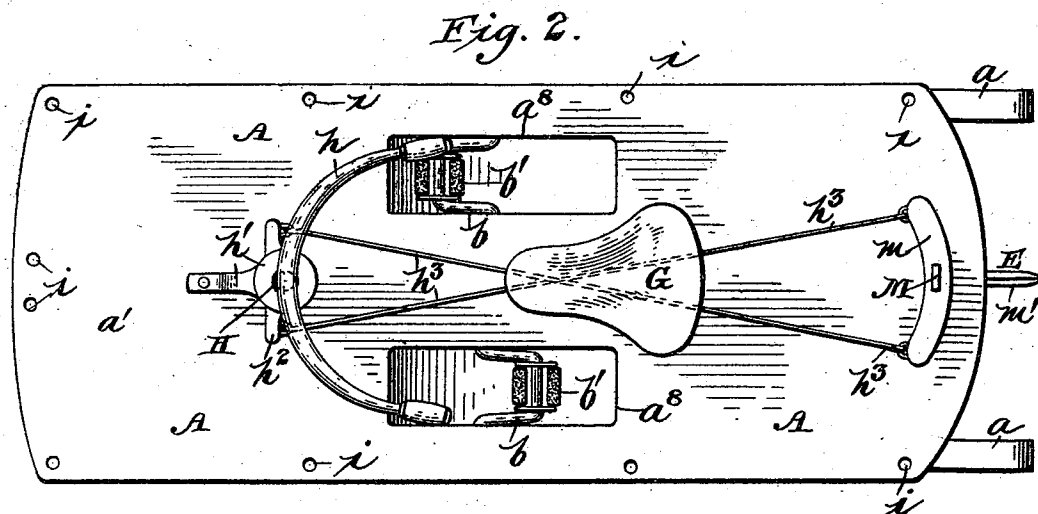
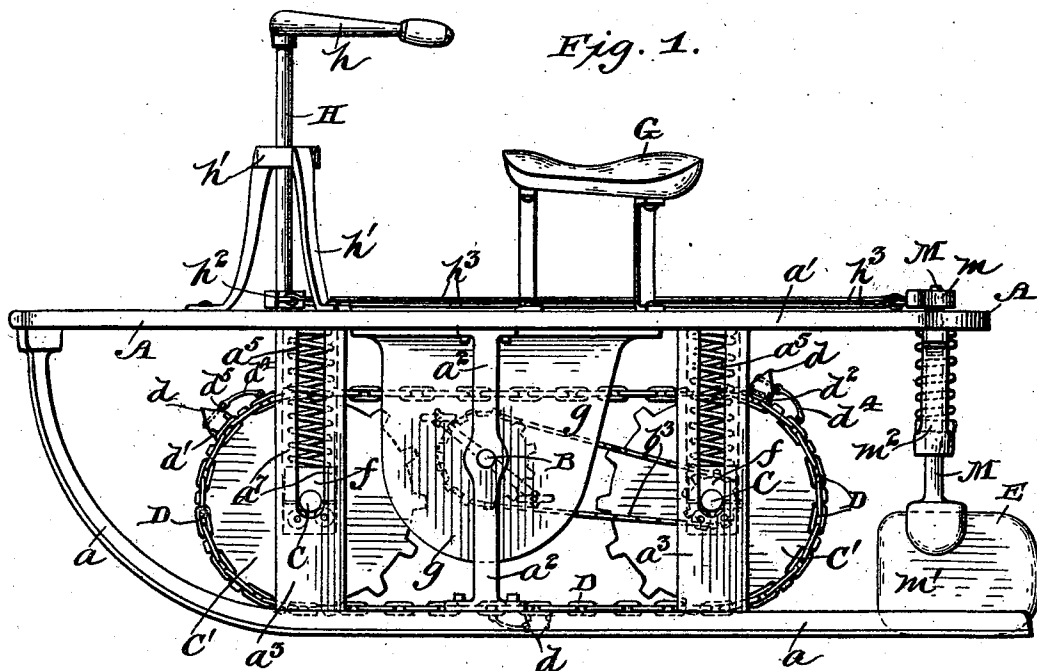
(No Model.)

2 Sheets—Sheet 1.

W. J. CULNAN.
SLED PROPELLER.

No. 554,582.

Patented Feb. 11, 1896.



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

WILLIAM JAMES CULNAN, OF BRULE, WISCONSIN, ASSIGNOR OF ONE-HALF
TO WILLIAM B. FOLLIS, OF SAME PLACE.

SLED-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 554,582, dated February 11, 1896.

Application filed September 5, 1895. Serial No. 561,514. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JAMES CULNAN, a citizen of the United States, residing at Brule, in the county of Douglas and State of Wisconsin, have invented certain new and useful Improvements in Sleds; 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 improvements in sleds, and has more particular relation to sleds propelled by the person sitting upon the same.

The invention consists of the combination, with a sled, of a crank-shaft mounted thereon and carrying pedals, independent shafts carrying sprocket-wheels, an endless propelling-chain provided with snow-engaging teeth and passing about said sprocket-wheels, means connecting the crank-shaft with said independent shafts and means for guiding the sled.

It also consists of certain other novel constructions, combinations, and arrangements of parts, all of which will be hereinafter more particularly set forth and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 represents a side elevation of the sled embodying my invention. Fig. 2 represents a top plan view of the same. Fig. 3 represents a bottom plan view of said sled with the crank-axle housings removed. Fig. 4 represents a detail perspective view of a portion of the endless propelling-chain and one of the teeth. Fig. 5 represents a detail central vertical section through one of the runner-standards, and Fig. 6 represents a rear elevation of said sled.

A in the drawings represents the sled; B, the crank-shaft; C C, the independent shaft; D, the propelling-chain, and E the rudder.

The sled A is provided with runners *a*, top *a'*, and supporting-standards *a²* and *a³*. The crank-shaft B has its ends journaled in the standards *a²* and is provided near each end with crank-bends *b*, upon which are mounted suitable pedals *b'*, upon which the feet of the rider are placed to operate said shaft. Sprocket-wheels *b²* are mounted side by side but at a suitable distance apart. Near the

middle of the said shaft B a sprocket-chain *b³* connects either one or the other of these sprocket-wheels, as desired, with either the forward or rear shaft C C by means of sprocket-wheels *c c* mounted on the respective shafts. Said shafts C C are each provided at the middle with a large sprocket-wheel *C'*, and said wheel *C'* is connected by the propelling-chain D. The links of said chain are provided at intervals with snow-engaging teeth *d*, which are either cast integral with or otherwise suitably secured to said links. I prefer to attach said teeth in the manner shown in the drawings, in which the link that is to receive the tooth is provided with two outwardly-projecting lugs *d'*, between which the tooth *d* has its upper end secured by a bolt *d²*, which passes through said tooth and said lugs.

Each tooth is provided with a passage *d³*, into which the eye of a brace-rod *d⁴* is secured by a bolt *d⁵*, the opposite end of said brace-rod being secured to a stud *d⁶* on the adjoining solid link. Each tooth is approximately chisel-shaped, being beveled on its forward face and having its rear face flat. The contacting edge of each tooth is roughened or serrated, so that it will readily take hold of the snow and not slip over the same when the machine is in operation.

The ends of the shafts C C are journaled in slots *a⁵* in the standards *a³*, resting upon friction-rollers *a⁶* in the bottoms of said slots. Journal-blocks *f*, mounted in guiding-grooves *a⁷* in said standards, are forced respectively into engagement with the ends of the shafts by spiral springs *f'* mounted in the upper ends of the slots *a⁵*.

It will be seen from the foregoing that the shafts C C can rise and fall vertically and thus allow for any unevenness in the snow or ice over which the sled is passing, which obstructions or unevenness of course strike the teeth on the endless propelling-belt and force said belt upward.

A suitable seat G for the rider is provided on the top *a'*, and slots *a⁸* are cut through said top, so that the rider's legs may pass therethrough, so that his feet may rest upon the pedals. Housings *g* are provided about the crank-bends of the shaft so that the

rider's feet are protected from the snow and cold.

Just in front of the seat is arranged the steering-gear, which consists of a vertical shaft H provided with a handle-bar *h* at its upper end, said shaft having its lower end journaled in the top *a'*, and being supported by a tripod *h'*, having a journal-box at its upper end through which said shaft passes.

10 A cross-piece *h*² is mounted on shaft H near its lower end, and is connected by crossed wires *h*³ with a cross-piece *m*, mounted in the top of the rudder-stern M. This stern is provided at its lower end with a blade *m'*, having

15 a sharp lower edge adapted to engage the ice or snow. The stern is mounted at the rear of the sled and passes through the top *a'* and a yoke *m*², and is movable vertically but under the tension of a spiral spring which surrounds the upper end of said stern, and is

20 connected thereto at its lower end and bears against the under side of the top *a'* at its upper end.

It will be seen from the foregoing that the rudder is capable of vertical movement when it strikes any obstruction in the same manner as that before described in regard to the endless propelling-chain.

The top *a'* is provided about its edges with

30 holes *i*, in which standards may be supported if so desired, whereby a housing can be erected upon the sled to protect the rider. By means of the two sprocket-wheels on the crank-shaft and the small sprocket-wheels on the shafts

35 C C, I am enabled to gear both of said latter shafts to the crank-shaft or one alone, as desired. I am also enabled to make such connection on either side of the machine as desired.

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

1. In a sled the combination of a sled proper, independent shafts carrying sprocket-wheels,

45 a crank-shaft carrying pedals and mounted on the sled between the sprocket-wheels an endless propelling-chain provided with snow-engaging teeth and passing about said sprocket-wheels, means connecting the crank-shaft

50 with said independent shafts, and means for guiding the sled, substantially as described.

2. In a sled the combination of a sled proper, a crank-shaft mounted thereon and carrying pedals, independent shafts carrying sprocket-wheels and capable of vertical movement,

55 springs for restraining said vertical movement, an endless propelling-chain provided with snow-engaging teeth and passing about said sprocket-wheels, means connecting the

crank-shaft with said independent shafts, and means for guiding the sled, substantially as described.

3. In a sled the combination of a sled proper, independent shafts carrying sprocket-wheels, a crank-shaft carrying pedals and mounted

65 on the sled between the sprocket-wheels, sprocket-chains connecting the crank-shaft to said latter shafts, an endless propelling-chain provided with snow-engaging teeth and passing about the sprocket-wheels on the inde-

70 pendent shafts, a rudder, and a handle-bar and connection for operating said rudder, substantially as described.

4. In a sled the combination of a sled proper, a crank-shaft mounted thereon and carrying

75 pedals, independent shafts carrying sprocket-wheels and capable of vertical movement, springs for restraining said vertical movement, an endless propelling-chain provided with snow-engaging teeth and passing about

80 said sprocket-wheels, sprocket-chains for connecting the crank-shaft with said independent shafts, a vertically-movable rudder, a spring for restraining said movement, and a

85 handle-bar and connections for operating said rudder, substantially as described.

5. In a sled the combination of a sled proper, a crank-shaft mounted thereon and carrying pedals, independent shafts having their ends mounted in slots in the sled-standards and

90 provided with sprocket-wheels, antifriction-wheels in the bottom of said slots to support the ends of said independent shafts, bearing-blocks movably mounted in said slots above the shaft ends, spiral springs forcing said

95 blocks into engagement with said shaft ends, means for connecting the crank-shaft with said independent shafts, and means for guiding the sled, substantially as described.

6. In a sled the combination with a sled

100 proper, of a crank-shaft mounted thereon and carrying pedals, independent shafts carrying sprocket-wheels and connected to the crank-shaft, an endless propelling-chain having

105 snow-engaging teeth and passing about said sprocket-wheels, protecting-housings about the cranks of the crank-shaft, a rudder, a handle-bar, a vertical shaft operated thereby, crossed wires connecting said shaft and said

110 rudder whereby upon the turning of said handle said rudder is operated, substantially as described.

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

WILLIAM JAMES CULNAN.

Witnesses:

A. W. MORLEY,
M. P. NUGENT.