

No. 747,815.

PATENTED DEC. 22, 1903.

E. S. WEAVER.  
AUTOMOBILE SLEIGH.  
APPLICATION FILED SEPT. 5, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

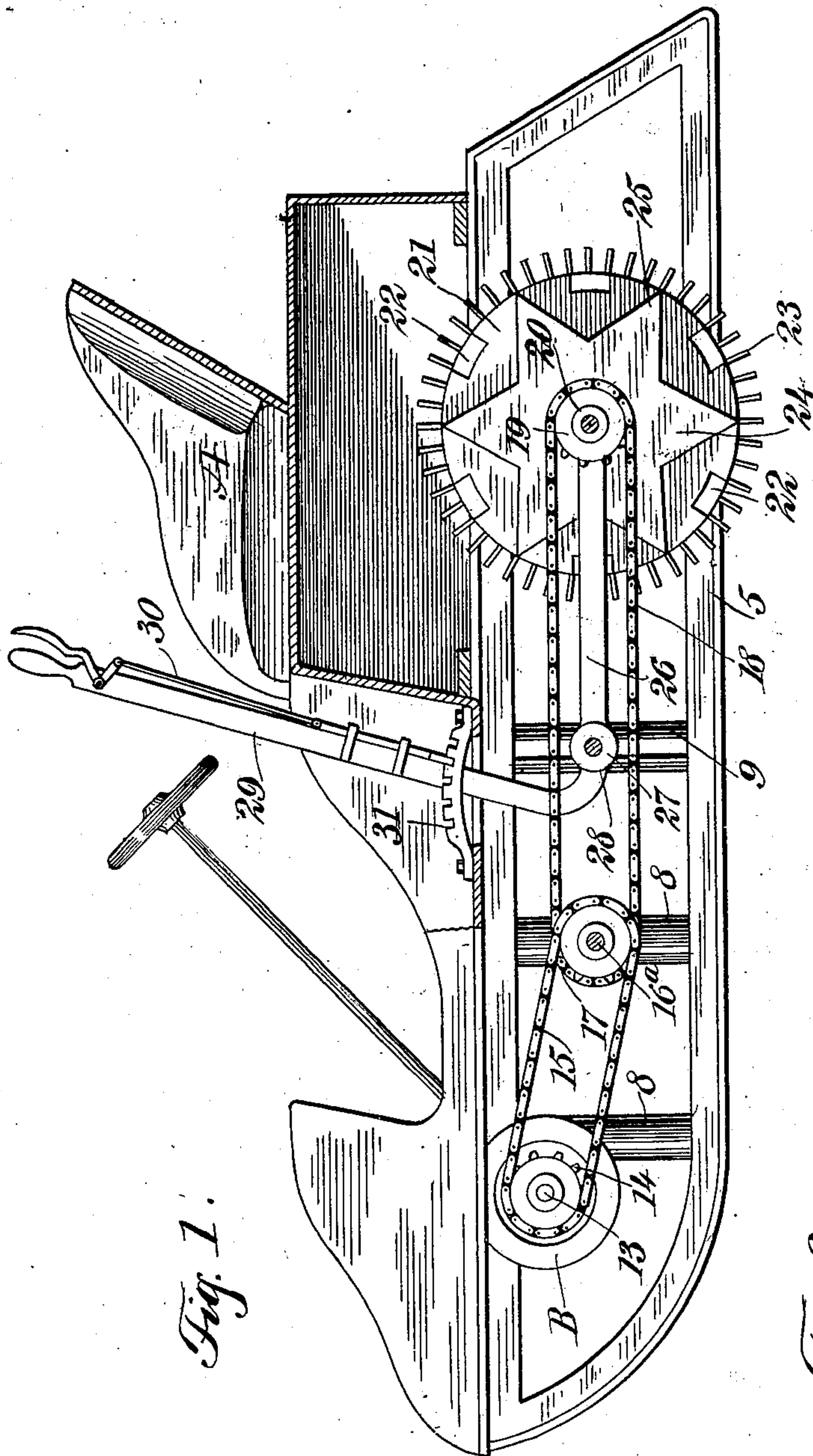


Fig. 1.

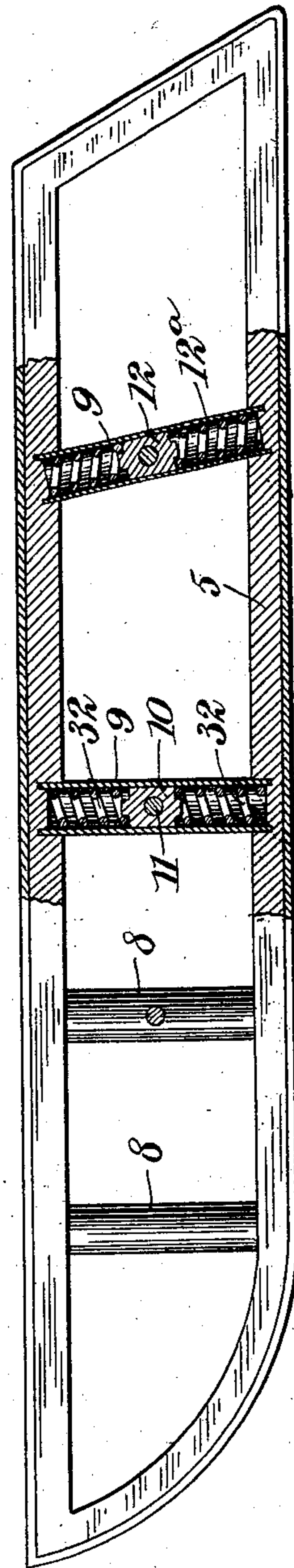


Fig. 2.

WITNESSES:

A. B. Mattingly  
R. B. Curran

INVENTOR

Eugene S. Weaver

BY

M. M. C.

ATTORNEYS

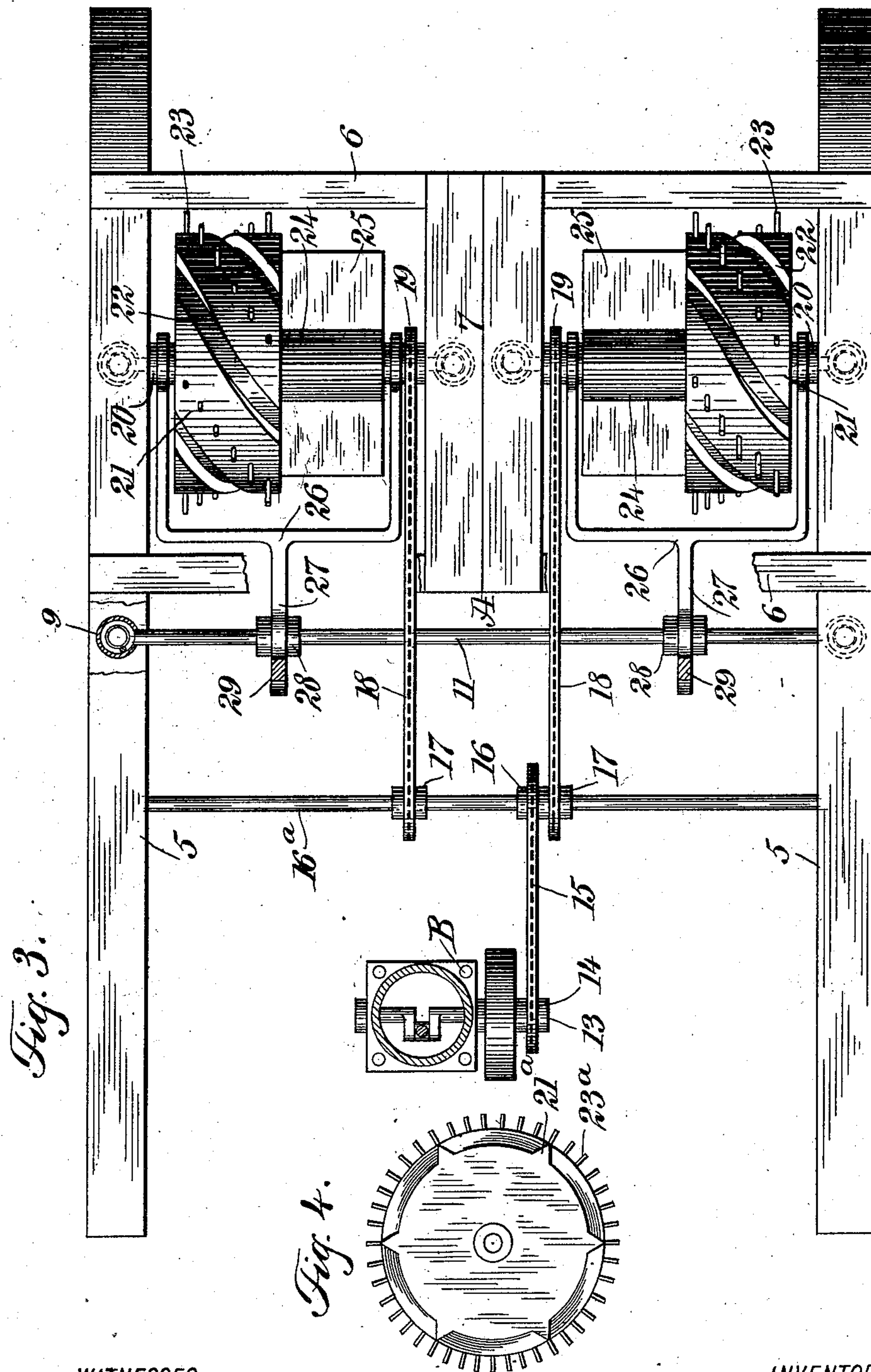
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WITNESSES:

*A. B. Mattingly*  
*R. B. Cavanagh*

INVENTOR

*Eugene S. Weaver*

BY

*Munn & Co.*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

EUGENE S. WEAVER, OF JERSEY CITY, NEW JERSEY.

## AUTOMOBILE SLEIGH.

SPECIFICATION forming part of Letters Patent No. 747,815, dated December 22, 1903.

Application filed September 5, 1903. Serial No. 172,103. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE S. WEAVER, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Automobile Sleighs, of which the following is a full, clear, and exact description.

This invention relates to novel and useful improvements in self-propelling sleighs.

In the present instance I have in view as an object the provision of a sleigh which will be self-propelling, the mechanism being so arranged and of such character that said sleigh may be driven easily and readily over the ground when covered with snow or ice.

A further object of my invention is to provide my improved sleigh with driving-wheels or propelling devices of peculiar character which will enable the sleigh to travel over rough or uneven ground covered with snow or ice, the propelling devices also assisting in the steering operation of the vehicle.

Still another object of my invention is to provide the steering and propelling parts of the sleigh with cushion or spring bearings, so that jars or shocks occasioned by the vehicle traveling over uneven or lumpy surfaces of the ground will be obviated.

With the above-recited objects and others of a similar nature in view my invention consists in the construction, combination, and arrangement of parts, as is described in this specification, delineated in the accompanying drawings, and set forth in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal vertical sectional view taken through a machine embodying my improvements. Fig. 2 is a view, partly in elevation and partly in section, of one of the runners of my sleigh. Fig. 3 is a top plan view of the sleigh, a portion of the flooring of the body being removed to show the situation of the operating mechanism; and Fig. 4 is a detail view of a modified form of a propelling-wheel used in connection with my sleigh.

Referring now to the accompanying draw-

ings in detail, A designates the body of the machine, including, as it does, two longitudinal side runners 5 5, connected by a cross-frame 55 composed of the parallel cross-bars 6 6 and the central bars 7. Each runner is provided with a number of vertical supporting-tubes 8 8 and 9 9, the tubular supports 9 at approximately the center of the runners having therein bearing-blocks, as shown at 10, said bearing-blocks supporting the ends of the transversely-extending horizontal shaft 11, while the rearmost tubular supports 9 are slightly inclined, as will be seen by reference to Fig. 2, said inclined supports also having bearing-blocks 12 12, designed to act as supports for the ends of the axles of the propelling devices, as will be hereinafter described, said blocks being cushioned by springs, as shown at 12<sup>a</sup>.

At the front of the machine is mounted a motor B of any suitable character, the driving-shaft 13 of said motor having thereon a sprocket-wheel 14, adapted to drive the endless chain 15, which in turn is connected with the sprocket-wheel 16 upon the shaft 16<sup>a</sup>. Upon this shaft 16<sup>a</sup> are also mounted sprocket-wheels 17 17, designed to turn therewith and drive the encircling endless chains 18 18, which chains pass around sprocket-wheels 19 19, mounted upon the shafts or axles 20. As will be observed, the ends of the axles 20 are mounted to move vertically in the inclined tubular supports 9 at the rear portion of the runners, said tubes having slots therein to permit such movement when the blocks 12 slide up and down. The tubes that support the inner ends of the axles may be in the nature of hanger-tubes—that is to say, they depend from the central bars 7 of the frame—and are similar in construction to the vertical tubular supports and are provided with similar springs and bearing-blocks, the ends of the inner depending tubular supports, however, being closed to prevent the blocks and springs dropping out. Mounted upon each axle is a wheel 21, which may be of rubber or any suitable material, such wheel having therein a number of inclined or spiral grooves 22, and the shoulders formed by said grooves are designed to have embedded therein a number of metallic pins 23, these wheels being what may be for the sake of convenience termed the “ice-wheels” and designed to pene-



trate snow and engage with the ice beneath the surface of the same. Mounted upon each axle 20 adjacent to the ice-wheels is a second propelling-wheel 24, preferably in the shape of a star—that is to say, having a number of points or teeth, such as shown at 25, which are designed to engage with the snow when the vehicle is in use. The grooves in the ice-wheels correspond with or are in alinement with the recesses between the points or teeth of the snow-wheels, so that when the pins of the ice-wheels sink beneath the snow and engage with the ice the peripheries of the snow-wheels and the ice-wheels will be in alinement.

In order to move the shafts of the propelling-wheel vertically in their supports and to assist in directing the vehicle, I have provided for each shaft a yoke-lever 26, the shank portion 27 thereof being connected at 28 with the shaft 11, while a relatively long handle or lever portion proper, 29, extends at an angle to the yoke portion of the lever and to a point where it may be easily reached by an occupant on the seat of the sleigh, said handle portion 29 carrying a locking-lever 30, designed to engage with notches in the segmental rack 31, so that when such lever is swung back and forth over the segmental rack the axles, and consequently the propelling devices carried thereby, may be raised or lowered. It will be noted that I have provided two of such steering yoke-levers, so that each axle may be raised independently, thereby enabling the vehicle to be steered, as well as rendering it possible to cause the wheels to penetrate the snow to any desired depth.

In Fig. 4 I have shown a slightly-modified form of ice-wheel. In this case the shoulders on the periphery are brought to a point so that triangular ridges 21<sup>a</sup> are formed transversely of the wheel, said ridges being surmounted by metallic pins 23<sup>a</sup>, this construction obviating the clogging of the wheels by snow or slush.

It will be noted that the springs cushioning the axles prevent the occupant receiving shocks and jars ordinarily incident to passing over an obstruction or a depression, while the yoke-levers may be used to raise and lower the wheels for steering and also to clear obstacles, or they may be used as a brake for the sleigh, as by throwing the levers forward the sleigh may be stopped slowly or quickly, as required. It will be noted that the blocks 10 are cushioned by springs 32, which prevent a rocking or jerking motion when said levers are being operated.

The sleigh may be of any light material or of any dimensions, and various changes may be made in minor details without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. The combination of a frame including runners, a rotatable shaft carried by said frame, inclined tubular supports mounted on the frame, spring-tensioned bearing-blocks in said supports, axles resting upon said blocks, a plurality of propelling-wheels carried by said axles, certain of said wheels having inclined grooves formed in the periphery thereof, means for imparting rotation to the wheels from the shaft, and means for independently raising and lowering the axles.

2. The combination of a frame, including runners, a plurality of axles mounted in said frame, means for rotating the axles, a wheel carried by each of said axles, said wheel having grooves in its periphery and provided with a plurality of projecting pins arranged between the grooves, designed to engage with ice or the like, a toothed wheel arranged adjacent to the first-mentioned wheel on each axle, and means for raising and lowering the axles independently of each other, substantially as set forth.

3. The combination of a frame, including runners, a plurality of axles mounted in said frame, means for rotating the axles, a wheel carried by each of said axles, said wheel having grooves in its periphery and provided with a plurality of projecting pins, designed to engage with ice or the like, a toothed wheel arranged adjacent to the first-mentioned wheel on each axle, springs for cushioning the axles, means, including a yoke-lever, connected with each axle for raising and lowering said axles and their wheels and a toothed segmental rack and locking-lever for holding the yoke-lever and wheels in a desired position, substantially as set forth.

4. The combination of a frame, including runners, a plurality of axles carried by said frame, a shaft journaled in said frame, means for rotating said shaft, a connection between the shaft and the axles for turning the latter, a series of propelling-wheels carried by each axle, each series comprising a wheel having pins arranged around the periphery thereof, a toothed wheel arranged adjacent to the wheel carrying the pins, a second shaft mounted in the frame, between the first-mentioned shaft and the axles, yoke-levers for raising and lowering each series of wheels independently of the others, and means including a locking-lever, and a toothed segmental rack for holding the wheels in any desired position, substantially as set forth.

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

EUGENE S. WEAVER.

Witnesses:

RICHARD B. CAVANAGH,  
JNO. M. RITTER.