

C. A. BELLRUD.

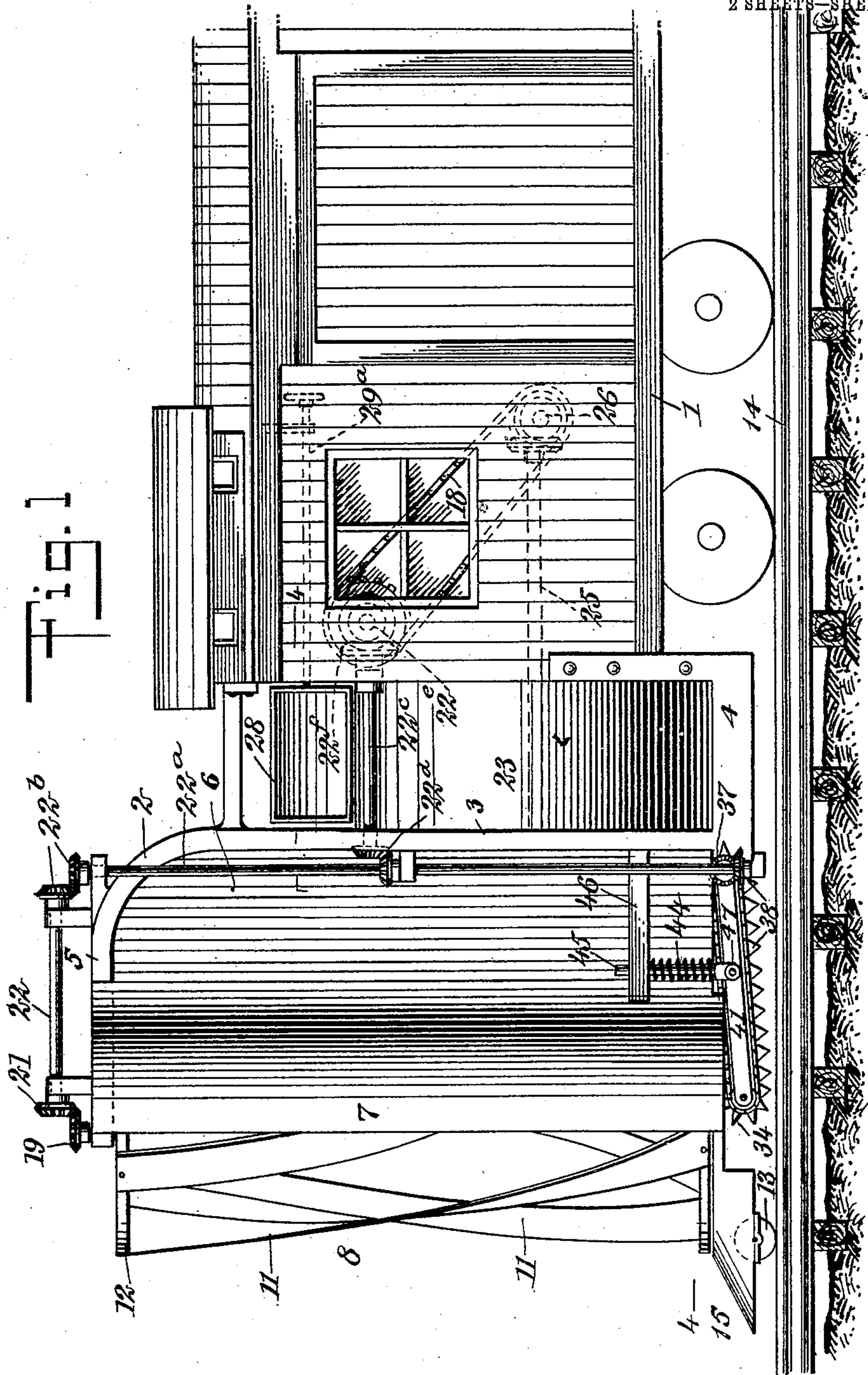
SNOW PLOW.

APPLICATION FILED APR. 10, 1909.

931,559.

Patented Aug. 17, 1909.

2 SHEETS—SHEET 1.



WITNESSES

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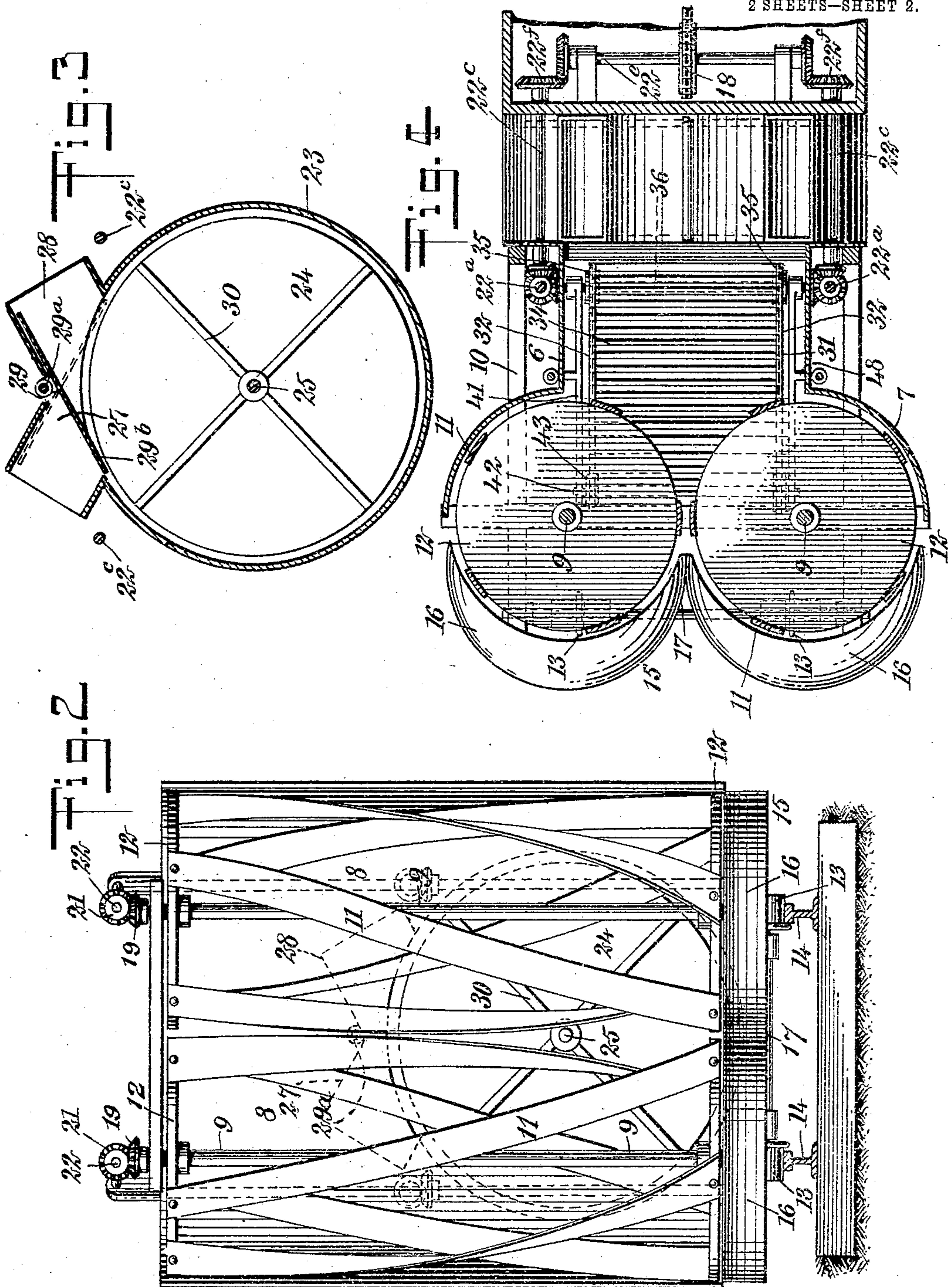
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WITNESSES

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UNITED STATES PATENT OFFICE.

CARL ANTON BELLRUD, OF FAIRDALE, NORTH DAKOTA.

SNOW-PLOW.

No. 931,559.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed April 10, 1909. Serial No. 489,077.

To all whom it may concern:

Be it known that I, CARL ANTON BELLRUD, a citizen of the United States, and a resident of Fairdale, in the county of Walsh and State of North Dakota, have invented a new and Improved Snow-Plow, of which the following is a full, clear, and exact description.

This invention relates to snow plows, and particularly to such as are employed to clear snow from railway tracks.

The object of the invention is to produce a snow plow of simple construction which will operate effectively to cut the snow from the track and eject it at the side.

In its general construction the plow comprises a pair of cutter wheels which are mounted at a forward point, and behind these cutter wheels an apron is provided which assists in throwing the snow rearwardly into a drum, from which it is discharged laterally, or at right angles to the track.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the 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 side elevation of a snow plow constructed according to my invention, showing the forward end of the car on which the plow is mounted, this view shows a short portion of the track under the plow; Fig. 2 is a front elevation of the plow; Fig. 3 is a cross section taken through the barrel behind the cutter wheels and from which the snow is ejected; and Fig. 4 is a cross section taken on the line 4-4 of Fig. 1.

Referring more particularly to the parts, and especially to Figs. 1 and 4, 1 represents a car, at the forward end of which a plow frame 2 is attached. This plow frame 2 comprises vertical frame bars 3 which are attached forward of the forward wall of the car by means of brackets 4 attached to the front end of the plow, as indicated. The upper ends of the vertical frame bars 3 are bent forwardly so as to present horizontal extensions 5, and these extensions support the side plates 6 of the plow. These side plates are curved at their forward ends so as to form shields or guards 7 on the rear

sides of the cutter wheels 8 of the plow. These cutter wheels 8 are formed on vertical shafts 9, the lower ends of which are stepped in the base frame 10 of the plow, as indicated. The shafts 9 are provided at their ends with circular heads 12, and these heads are connected by helical knives or cutters 11 formed of flat bars. The forward end of the base frame 10 is supported on wheels 13 which run upon the rails 14, as indicated. Just forward of the cutter wheels 8, a snow scoop 15 is provided. This scoop 15 is formed of two curved shoes 16 constructed of substantial sheet metal, and these are united at their adjacent sides so as to form a deep angle or gutter 17, the said gutter being disposed on a central axis of the plow.

As shown in Fig. 1 the cutter wheel shafts 9 extend upwardly and are provided with bevel gears, 19. These bevel-gears are driven by bevel-gears 21 carried by stub shafts 22; these stub shafts extend forwardly on the upper side of the case and are driven by vertical side shafts 22^a through bevel-gears 22^b. The side shafts 22^a are driven by horizontal stub shafts 22^c through bevel gears 22^d and these shafts 22^c and driven through a cross-shaft 22^e and bevel gears 22^f; the shaft 22^e is actuated by a sprocket chain 18 from the engine shaft 26.

The side plates 6 extend rearwardly and guide the snow into a circular case or barrel 23, and in this barrel there is provided a fan 24 which is rigidly attached to the forward end of a shaft 25. This shaft extends forwardly from the interior of the car and is driven in any suitable manner from the engine shaft 26, as indicated in Fig. 1. The drum or barrel 23 is provided with two spouts or delivery nozzles 27 and 28 which project toward opposite sides of the plow and incline upwardly as shown. Through either of these nozzles the snow is ejected by means of the fan. At the point of junction of the nozzles an opening 29 is provided in the wall, across which projects a spindle 29^a. This spindle extends forwardly at this point from the interior of the car where it is provided with a hand wheel for rotating it. To the forward end of the spindle there is attached a shutter 29^b which can close either of the nozzles. In the position which closes one nozzle it lies along the upper wall of the nozzle which is still active, as shown in Fig. 3. The fan 24 is formed of radial blades 30. As the fan rotates it

throws the snow out through the nozzle 28, as will be readily understood.

Under the lower heads of the cutter wheels 8, an endless belt or apron 31 is provided. This belt is formed of sprocket chains 32 which support triangular slats or bars 34 disposed transversely, as shown. These sprocket chains 32 pass around sprocket wheels 35 at their rear ends, which sprocket wheels are rigidly mounted on a transverse shaft 36. This shaft 36 projects at the sides of the plow and is provided with bevel gears 37, driven by bevel gears 38 which are attached to the shafts 22^a. The endless belt or apron 31 is mounted on a suitable frame composed of side bars 41. These side bars 41 are rotatably mounted at their rear ends on the shaft 36. Their forward ends support a cross shaft 42, on which sprocket wheels 43 are provided, and over these sprocket wheels 43, the sprocket chains 32 pass, as will be readily understood. The forward end of the apron is compressed resiliently by means of coil springs 44 which are disposed at the sides of the plow. These springs are disposed about vertical stems 45, the upper ends of which slide through cross bars 46. The lower ends of these stems 45 are pivotally attached at 47 to arms 48 which project laterally from the side bars 41. From this arrangement it should be understood that if an obstruction such as ice, is encountered in the roadway, the forward end of the apron will tip upwardly, compressing the springs 44. As soon as the obstruction is passed, the apron will be returned to its normal position by the springs.

When the plow is in operation, it should be understood that the wheels 8 rotate in opposite directions, the forward side of each wheel moving toward the central axis of the plow. From this arrangement the wheels tend to advance the snow toward the rear and onto the apron 31. The snow near the rails is raised by the scoop 15 and passes back through the lower parts of the cutter wheels 8. The snow in this way passes back between the side plates 6 of the plow and passes into the drum 23, from which it is ejected by the blades 30 of the fan. The arrangement of the frame is such that the apron 31 on its upper side travels rearwardly so as to assist in advancing the snow toward the fan. The fan case extends completely across the full width of the car as shown.

Having thus described my invention, I claim as new and desire to secure by Letters Patent,—

1. In a snow plow, in combination, a frame, a pair of cutter wheels mounted to rotate on a vertical axis, an endless apron disposed under and behind said cutter wheels and adapted to take the snow therefrom, an ejecting device behind said apron adapted

to throw snow to one side, and means for actuating said apron and said cutter wheels.

2. In a snow plow, in combination, a frame, a pair of cutter wheels mounted to rotate on a vertical axis, an endless apron disposed under and behind said cutter wheels and adapted to take the snow therefrom, an ejecting device behind said apron adapted to throw snow to one side, means for actuating said apron and said cutter wheels, and resilient means for resisting the upward movement of said apron.

3. In a snow plow, in combination, a frame, a pair of cutter wheels mounted forwardly thereupon, an apron frame mounted on a horizontal axis under and behind said cutter wheels, springs resisting the upward movement of said apron frame, an endless apron carried on said apron frame, means for driving said cutter wheels and said apron, and an ejecting device behind said apron and receiving the snow therefrom.

4. In a snow plow, in combination, a frame, a pair of cutter wheels mounted forwardly on said frame and rotating on a substantially vertical axis, said cutter wheels having heads at the ends thereof and knives connecting said heads, an endless apron disposed under and behind said cutter wheels, a barrel disposed behind said apron and adapted to receive snow therefrom, means for driving said cutter wheels and said apron, and a fan within said barrel adapted to eject snow laterally.

5. In a snow plow, in combination, a frame, a pair of cutter wheels mounted forwardly on said frame and rotating on a substantially vertical axis, an apron disposed under and behind said cutter wheels supported at its rear end depressible at its forward end, an ejecting fan disposed behind said apron and adapted to throw snow laterally from the track, and means for driving said fan, said apron and said cutter wheels.

6. In a snow plow, in combination, a frame, a barrel, an ejecting fan mounted in said barrel, a pair of cutter wheels mounted forward on said fan, side plates partially inclosing said cutter wheels and extending rearwardly to said barrel, an endless apron disposed behind said cutter wheels and adapted to advance snow to said fan, and means for driving said fan, said apron and said cutter wheels.

7. In a snow plow, in combination, a frame, a barrel, means for passing snow rearwardly thereto, said barrel having delivery nozzles projecting on opposite sides therefrom and having a junction point, and a shutter mounted at said junction point affording means for closing either of said nozzles and simultaneously maintaining the opposite nozzle open.

8. In a snow plow, in combination, a frame, a barrel, a fan rotating in said barrel,

said barrel having delivery nozzles projecting in opposite directions therefrom, and a shutter rotatably mounted at the junction of said nozzles adapted to close either of said
5 nozzles to render the same inactive and constituting an extension of the wall of the active nozzle.

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

CARL ANTON BELLRUD.

Witnesses:

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P. L. SOLBERG.