

March 10, 1931.

J. A. SHARP

1,796,166

SNOW PACKING MACHINE

Filed Dec. 9, 1929

5 Sheets-Sheet 1

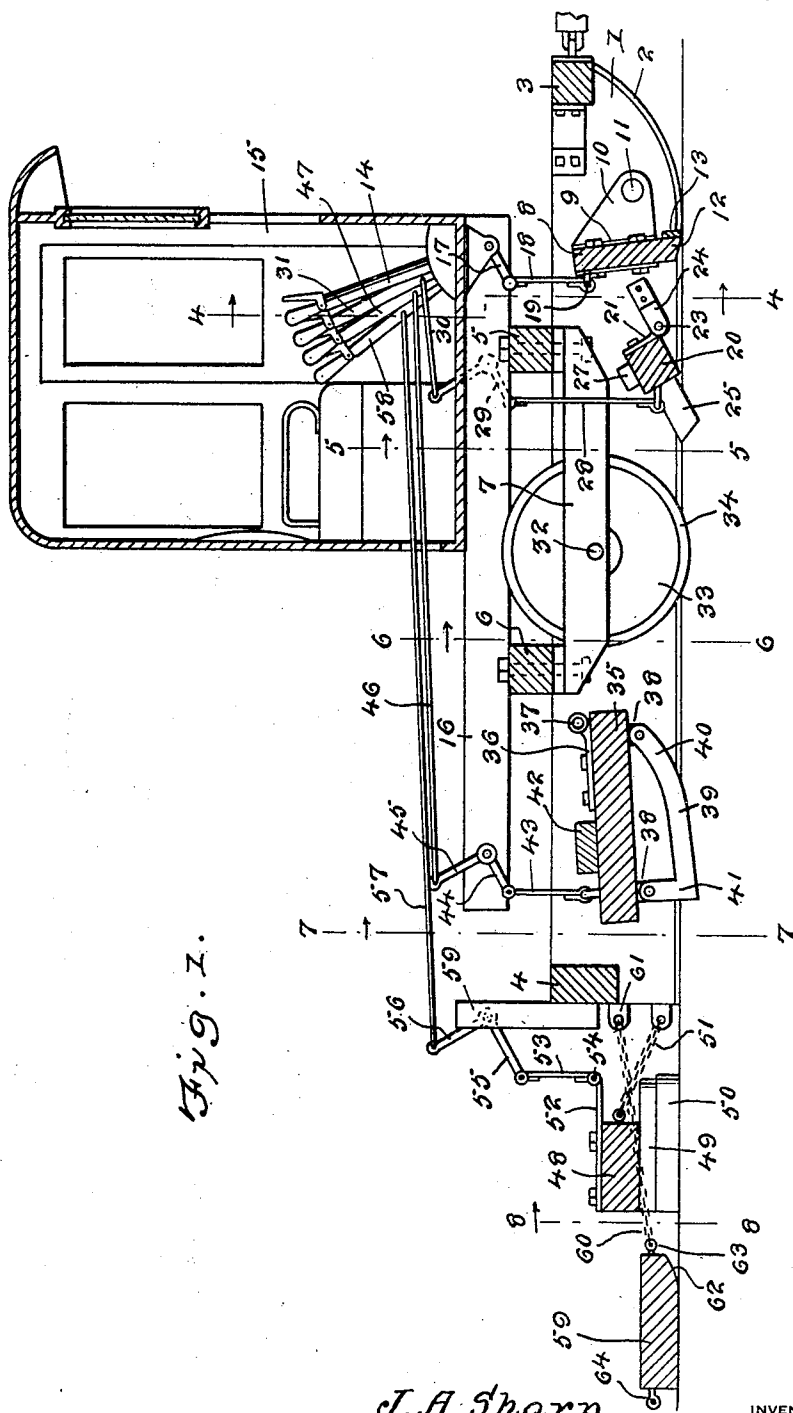


Fig. 1.

J. A. Sharp

BY

Victor J. Evans

INVENTOR

ATTORNEY

March 10, 1931.

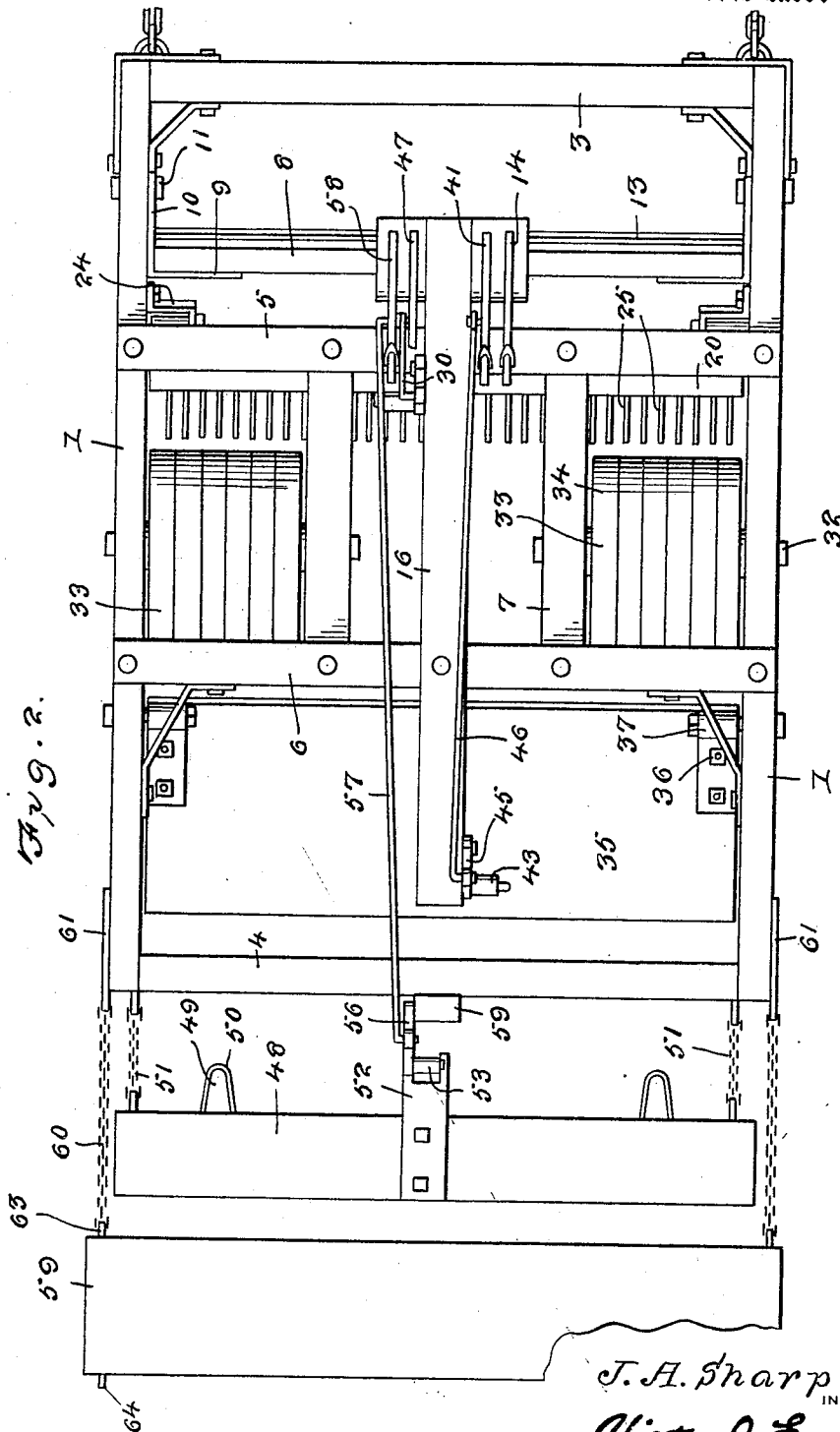
J. A. SHARP

1,796,166

SNOW PACKING MACHINE

Filed Dec. 9, 1929

5 Sheets-Sheet 2



J. A. Sharp
INVENTOR

BY Victor J. Evans
ATTORNEY

March 10, 1931.

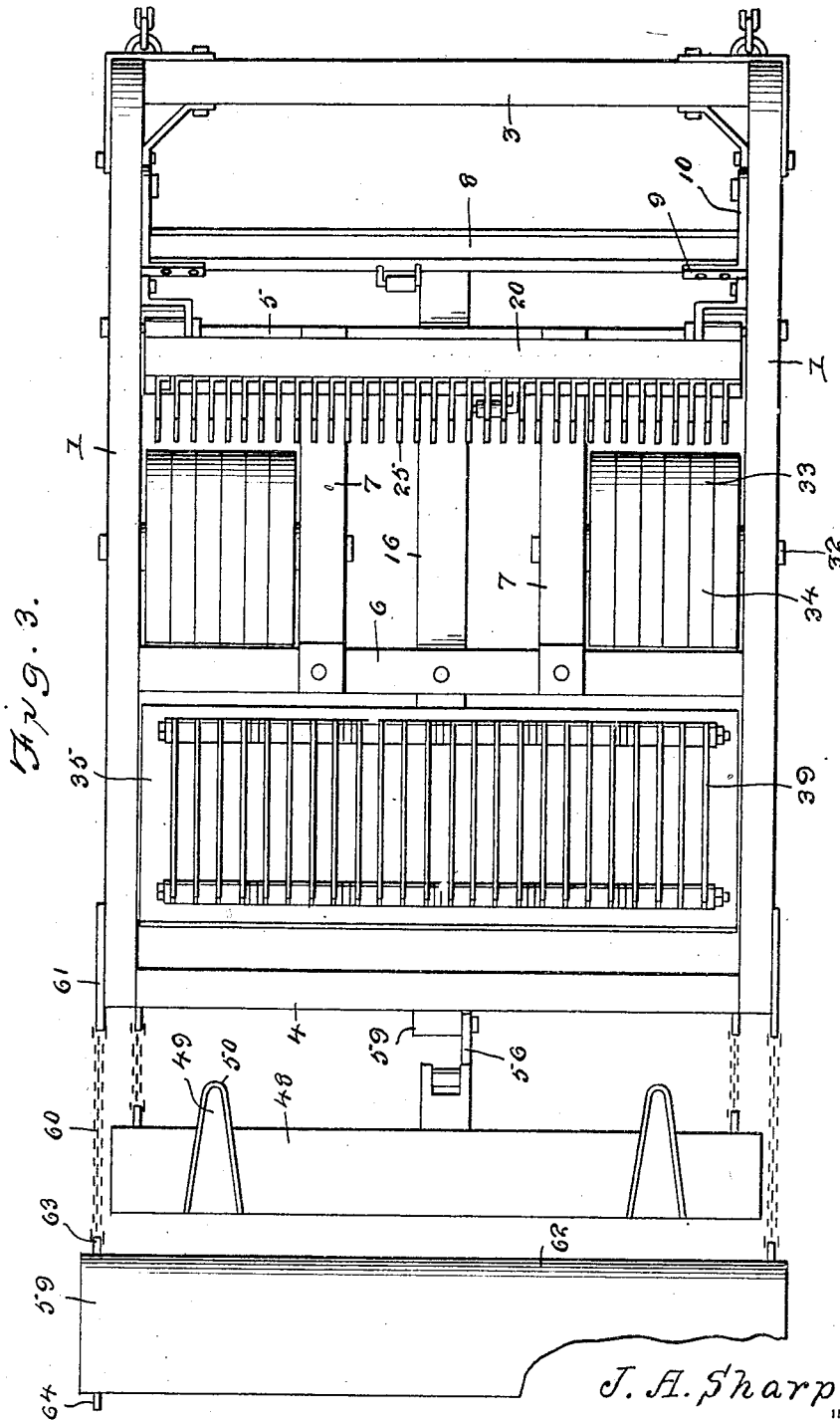
J. A. SHARP

1,796,166

SNOW PACKING MACHINE

Filed Dec. 9, 1929

5 Sheets-Sheet 3



J. A. Sharp
INVENTOR
BY Victor J. Evans
ATTORNEY

March 10, 1931.

J. A. SHARP

1,796,166

SNOW PACKING MACHINE

Filed Dec. 9, 1929

5 Sheets-Sheet 4

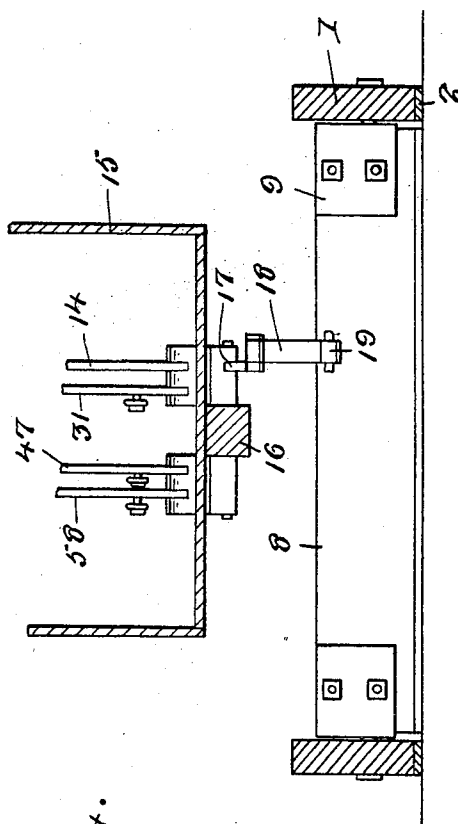


Fig. 4.

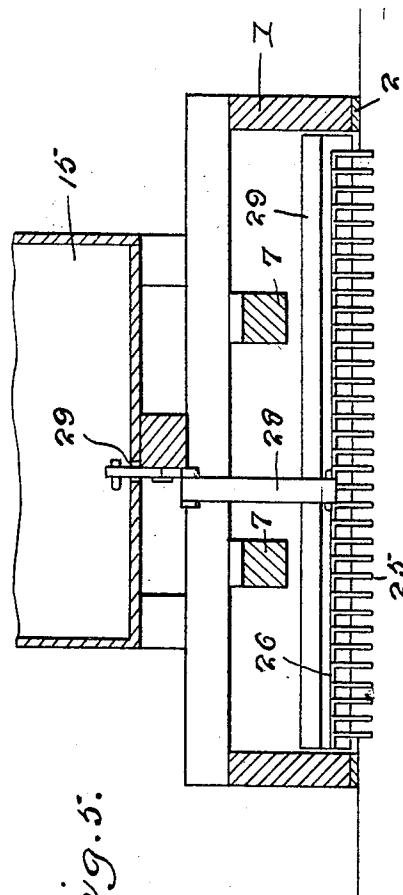


Fig. 5.

J. A. Sharp

INVENTOR

BY

Victor J. Evans

ATTORNEY

March 10, 1931.

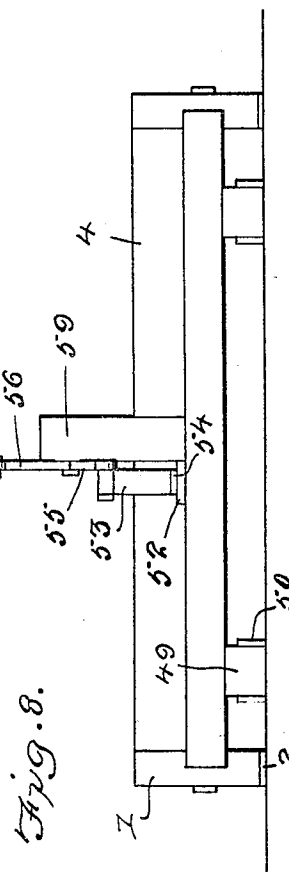
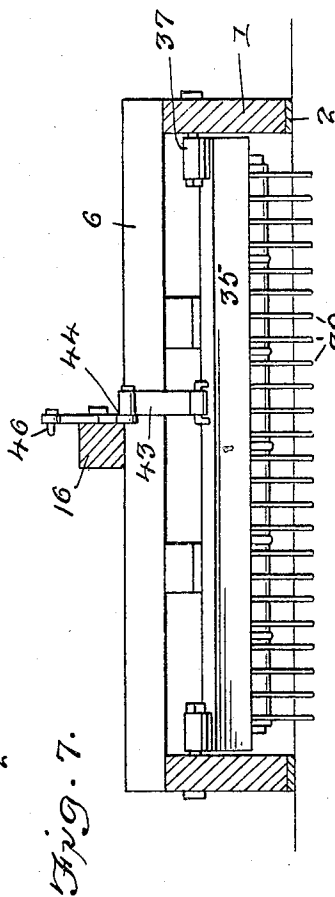
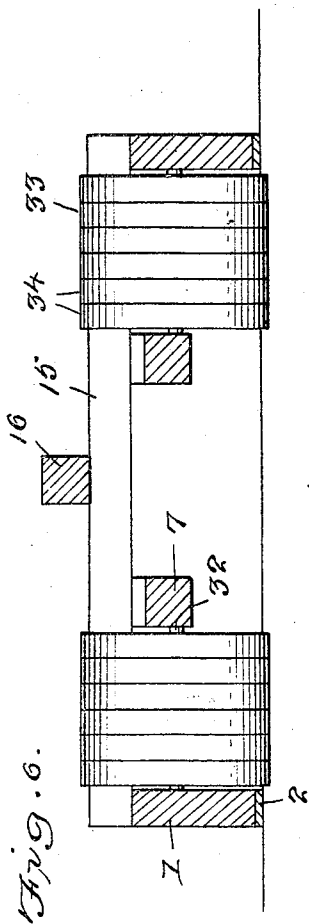
J. A. SHARP

1,796,166

SNOW PACKING MACHINE

Filed Dec. 9, 1929

5 Sheets-Sheet 5



J. A. Sharp
INVENTOR
BY Victor J. Evans
ATTORNEY

UNITED STATES PATENT OFFICE

JAMES A. SHARP, OF HAMILTON, NORTH DAKOTA

SNOW-PACKING MACHINE

Application filed December 9, 1929. Serial No. 412,827.

This invention relates to snow packing machines, and has as its primary object to provide a means especially designed for use in localities where the snow lies on the roads for as many as five months each winter and where it is practically impossible to clear the roads of the snow so that the road may be used for travel. It is true that snow plows have been employed for the purpose of clearing the road, temporarily of snow, by casting the snow to one side of the road or to both sides of the road, but this only results in the accumulation of more snow in a very short time, and a road thus repeatedly cleared becomes impassable for automobile and truck travel. In view of the foregoing the present invention has as its primary object to provide a snow plow which will when drawn over the road, pack the snow in such a manner that traffic may travel over the road with substantially the same facility as though the road was not covered with snow.

In order to accomplish the results above outlined, the invention further contemplates the provision of a machine of this type embodying a number of units, each performing a different function with the final result that the snow which is accumulated on a road surface may, as stated be so packed and leveled as to permit the ready passage of traffic thereover.

This invention also consists in certain other features of construction, and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings, and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings, wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a vertical longitudinal sectional view through the snow packing machine embodying the invention.

Figure 2 is a top plan view of the machine.

Figure 3 is a bottom plan view of the machine.

Figure 4 is a vertical transverse sectional

view taken substantially on the line 4—4 of Figure 1.

Figure 5 is a similar view on the line 5—5 of Figure 1.

Figure 6 is a similar view on the line 6—6 of Figure 1.

Figure 7 is a similar view on the line 7—7 of Figure 1.

Figure 8 is a similar view on the line 8—8 of Figure 1.

The mechanism of the machine is supported by runners, indicated by the numerals 1 and these runners are of wood and provided upon their lower curved forward end portions with shoes 2 of strap iron to prevent wear of the runners and facilitate the passage thereof over the snow. The runners are connected at their forward ends by a cross beam 3, and at their rear ends by a cross beam 4, and two other cross beams 5 and 6 are mounted at their ends upon the upper sides of the runners 1 and secured thereto, and longitudinal beams 7 are secured at their ends to the under sides of the cross beams 5 and 6 and are parallel to and suitably spaced from the respective runners 1. The cross beam 3 constitutes means for the attachment of draft chains or other connections whereby the machine may be drawn by horses.

The unit of the machine which first functions, as the machine is drawn over the snow covered highway, is in the nature of a snow distributor which comprises a wooden oblong rectangular blade, indicated by the numeral 8, and which blade has secured to its rear side, metal plates 9 having forwardly extending wings 10 of substantially triangular form, which wings are pivotally connected by bolts 11 to the runners 1 and thus support the blade 8 of the distributor, the lower edge of the blade being beveled in a rearward direction as indicated by the numeral 12 and a bar 13 of metal being secured to the front face of the blade and extending along the lower edge thereof to prevent wear.

The numeral 14 indicates one of a number of hand levers which are mounted within a cab 15 mounted upon the longitudinal beam 16, in turn mounted upon the cross beams 5 and 6 intermediate the ends thereof. A crank

arm 17 extends from the lower end of the lever and a connecting rod 18 is connected to the rear end of the crank arm and at its lower end to the rear side of the distributor blade 8, at a point near the upper edge thereof, as indicated by the numeral 19. The adjustment of the lever 14, of course, effects raising or lowering movement of the distributor blade 8, and this blade is designed to level the surface of the snow by evenly distributing the same over the road surface.

The second unit of the machine is designed as a snow or crust cutter and comprises a beam 20 which is provided with hinge members 21, at its ends, connected to pintle pins 23 mounted upon the inner sides of the runners 1 and restrained against displacement by hammer straps 24, each of which is likewise secured to a respective runner at one of its ends, and has its other end positioned over a pintle pin 23. A number of plates 25 are provided at their forward ends with right angularly directed attaching portions 26 which are secured to the rear side of the beam 20 so that the plates 25 are positioned in spaced parallel relation to one another throughout the entire series.

A weight 27 is mounted upon the beam 20 and imposes weight on the beam so as to cause the blades 25 to enter into the snow. A connecting rod 28 is connected at its lower end to the beam substantially midway between the ends thereof and at its upper end is connected to one arm of an angle lever mounted upon the front cross beam 5 and, to the other end of this angle lever is connected a rod 30 leading to and connected to another hand lever, which is indicated by the numeral 31, and which is located beside the hand lever 14 within the cab 15. The lever 31 constituting means whereby the beam and the blades carried thereby may be raised and lowered. The purpose of the blades is to cut into the snow and loosen the same, thereby disintegrating any clods of snow which may be present upon the highway.

The third unit of the machine comprises shafts 32 each of which is mounted at one end in one of the beams 7 and at its other end in the respective runner 1 mounted upon each of these shafts are wheels 33, these wheels being preferably six in number in each series, and provided with rims or tires 34, these wheels serving to level and somewhat pack the snow which has been loosened by the blades 25.

The fourth unit of the machine is a snow packing unit and comprises a flat sided rectangular wooden platform body 35 which is provided at its forward corners with hinge members 36 pivotally supported upon pivot bolts 37 upon the inner sides of the runners 1. Ears 38 are mounted upon the under side of the platform 35 near the front and rear edge thereof, and blades 39 having upstand-

ing curved forward end portions 40 are secured at their forward ends to the forward ones of the ears 38, the blades at their rear ends being provided with upstanding portions 41, which are connected to the corresponding rear ears. The said blades are arranged in spaced parallel relation to one another in a series located midway between the runners 1. A weight 42 is arranged upon the upper side of the platform 35 and serves to impose a certain weight upon the blades 39 to cause them to pass through the snow. A connecting rod 43 is connected at its lower end to the platform 35 near the rear side thereof and substantially midway between the ends of the platform, and is connected at its upper end to one arm 44 of an angle lever, the other arm 45 of the said lever, which lever is mounted upon the beam 16 at the rear end thereof, having connected to it a connecting rod 46 which extends forwardly and is connected to a hand lever 47 located within the cab 15 beside the lever 41.

The fifth unit of the plow is a rut forming unit which follows the last part of the machine and this unit comprises an oblong rectangular head 48 to the under side of which are secured two relatively spaced shoes 49 which are made of wood and which are of substantially wedge formation and which have their pointed ends presented forwardly, a band 50 of iron being applied about the sides of each shoe and extending around the pointed end thereof. The head 48 is connected by chains 51 with the rear ends of the runners 1, and in order that the unit may be elevated or tilted, a plate 52 is secured upon the upper side of the head 48 midway between the ends thereof and a connecting link 53 is hinged at its lower end to the forward end of the plate, and is connected at its upper end to one arm 55 of an angle lever, the other arm of the angle lever, indicated by the numeral 56, having connected to it the rear end of a connecting rod 57 which extends forwardly and is connected to a lever 58 located within the cab 15 beside the lever 47, the angle lever 56 being mounted for rocking movement upon an upright 49 mounted upon the rear cross beam 4. The shoes 49 are spaced apart the same distance as the wheels of an automobile and serve to displace the snow in the ruts which have been formed by the blades 25, wheels 33, and the blades 39.

The sixth or final unit of the machine constitutes a rear drag, which is indicated by the numeral 59 and comprises an oblong rectangular slab of wood or iron which is drawn over the surface of the snow through the medium of chains 60 which are connected to the end of the drag and to ears 61 upon the rear ends of the runners 1. In order that the drag may readily pass over the surface of the packed snow, the drag is formed at its under and forward sides with a rounded sur-

face, indicated by the numeral 62 and it will be observed by reference to Figure 1 that this drag is located rearwardly of the beam of the head 48 carrying the shoes 49 and, by reference to Figure 2 that it is slightly longer than the said head 48. It will be observed by reference to Figures 1 and 2 of the drawing that the rear ends of the chains 60 are connected to eye members 63 at the forward edge of the drag and preferably, similar eye members 64 are arranged at the rear edge of the said drag at the ends thereof so that the drag may be reversed, and when the drag is used to smooth the snow the rounded side 62 is presented forwardly, and when it is used to level the snow and remove waves in the surface thereof and assist in filling up holes in the road, the drag is reversed and the shoes 59 are connected to the eyes 64 and is let down when the drag is employed as a means for pushing the snow from the road, at which time, the chains will be preferably arranged in diagonal crossed relation to each other. When the drag is employed to level off the sides of the road, the chains 60 are arranged diagonally, one chain being secured to the rear end of the right hand runner of the machine and the other chain being secured to the other side of the right hand runner at a point several feet in advance of the rear end of said runner.

What I claim is:—

1. In a snow packing machine, runners, a snow distributing blade mounted between the runners, means operable to effect up and down adjustment of the blade, a snow and snow crust cutting unit comprising a cross beam mounted between the runners, and a plurality of spaced blades mounted thereon, the said beam being mounted in rear of the distributing blade, rotary packing wheels mounted in rear of the said snow and snow crust cutting blades, a unit for further packing the snow comprising a platform located in rear of said packing wheels, and blades mounted upon the underside thereof, and a rut forming unit comprising a pair of spaced shoes to follow the last mentioned unit and form ruts in the packed snow.

2. In a snow packing machine, runners, a snow distributing blade mounted between the runners, the said blade extending transversely between the runners, a bar extending along the blade at the lower edge thereof, the lower edge of the blade being beveled upwardly and rearwardly from the forward side of the blade, means operable to effect up and down adjustment of the blade, a snow and snow crust cutting unit comprising a cross beam mounted between the runners and a plurality of spaced blades mounted thereon, the said beam being mounted in rear of the distributing blade, rotary packing wheels mounted in rear of the said snow and snow crust cutting blades, a unit for further pack-

ing the snow comprising a platform located in rear of said packing wheels and blades mounted upon the underside thereof, and a rut forming unit comprising a pair of spaced shoes to follow the last mentioned unit and form ruts in the packed snow.

3. In a snow packing machine, runners, a snow distributing blade mounted between the runners, means operable to effect up and down adjustment of the blade, a snow and snow crust cutting unit comprising a cross beam mounted between the runners and a plurality of spaced blades mounted thereon, the said beam being mounted in rear of the distributing blade, the said beam being mounted for upward and downward swinging movement, means operable to swingingly adjust the beam, rotary packing wheels mounted in rear of the said snow and snow crust cutting blades, a unit for further packing the snow comprising a platform located in rear of said packing wheels, and blades mounted upon the underside thereof, and a rut forming unit comprising a pair of spaced shoes to follow the last mentioned unit and form ruts in the packed snow.

4. In a snow packing machine, runners, a snow distributing blade mounted between the runners, means operable to effect up and down adjustment of the blade, a snow and snow crust cutting unit comprising a cross beam mounted between the runners and a plurality of spaced blades mounted thereon, the said beam being mounted in rear of the distributing blade, rotary packing wheels mounted in rear of the said snow and snow crust cutting blades, a unit for further packing the snow comprising a platform located in rear of said packing wheels, and blades mounted upon the under side thereof, means at the forward side of the platform, supporting the platform for upward and downward swinging movement, means operatively connected with the rear portion of the platform and operable to adjust the same to raise and lower the platform, and a rut forming unit comprising a pair of spaced shoes to follow the last mentioned unit and form ruts in the packed snow.

5. In a snow packing machine, runners, a snow distributing blade mounted between the runners, means operable to effect up and down adjustment of the blade, a snow and snow crust cutting unit comprising a cross beam mounted between the runners and a plurality of spaced blade mounted thereon, the said beam being mounted in rear of the distributing blade, rotary packing wheels mounted in rear of the said snow and snow crust cutting blades, a unit for further packing the snow comprising a platform located in rear of said packing wheels, and blades mounted upon the under side thereof, a beam, draft means connecting the beam with the runners, a pair of spaced shoes mounted upon the under side of

the beam, and means operable to tilt the said beam, the said means having connection with the forward portion of the beam.

6. In a snow packing machine, runners, a
5 snow distributing blade mounted between the runners, means operable to effect up and down adjustment of the blade, a snow and snow crust cutting unit comprising a cross beam mounted between the runners and a plu-
10 rality of spaced blades mounted thereon, the said beam being mounted in rear of the distributing blade, rotary packing wheels mounted in rear of the said snow and snow crust cutting blades, a unit for further pack-
15 ing the snow comprising a platform located in rear of said packing wheels, and blades mounted upon the underside thereof, a rut forming unit comprising a pair of spaced shoes to follow the last mentioned unit and
20 form ruts in the packed snow, and a rear drag comprising an oblong slab of wood connected with the runners to be drawn in rear of the rut forming unit.

7. In a snow packing machine, runners, a
25 snow distributing blade mounted between the runners, means operable to effect up and down adjustment of the blade, a snow and snow crust cutting unit comprising a cross beam mounted between the runners and a plurality
30 of spaced blades mounted thereon, a weight upon the upper side of said beam, rotary packing wheels mounted in rear of the said snow and snow crust cutting blades, a unit for further packing the snow comprising a
35 platform located in rear of said packing wheels, a weight upon the said platform, and blades, mounted upon the underside thereof, and a rut forming unit comprising a pair of spaced shoes to follow the last mentioned unit
40 and form ruts in the packed snow.

In testimony whereof I affix my signature.

JAMES A. SHARP.

45

50

55

60

65