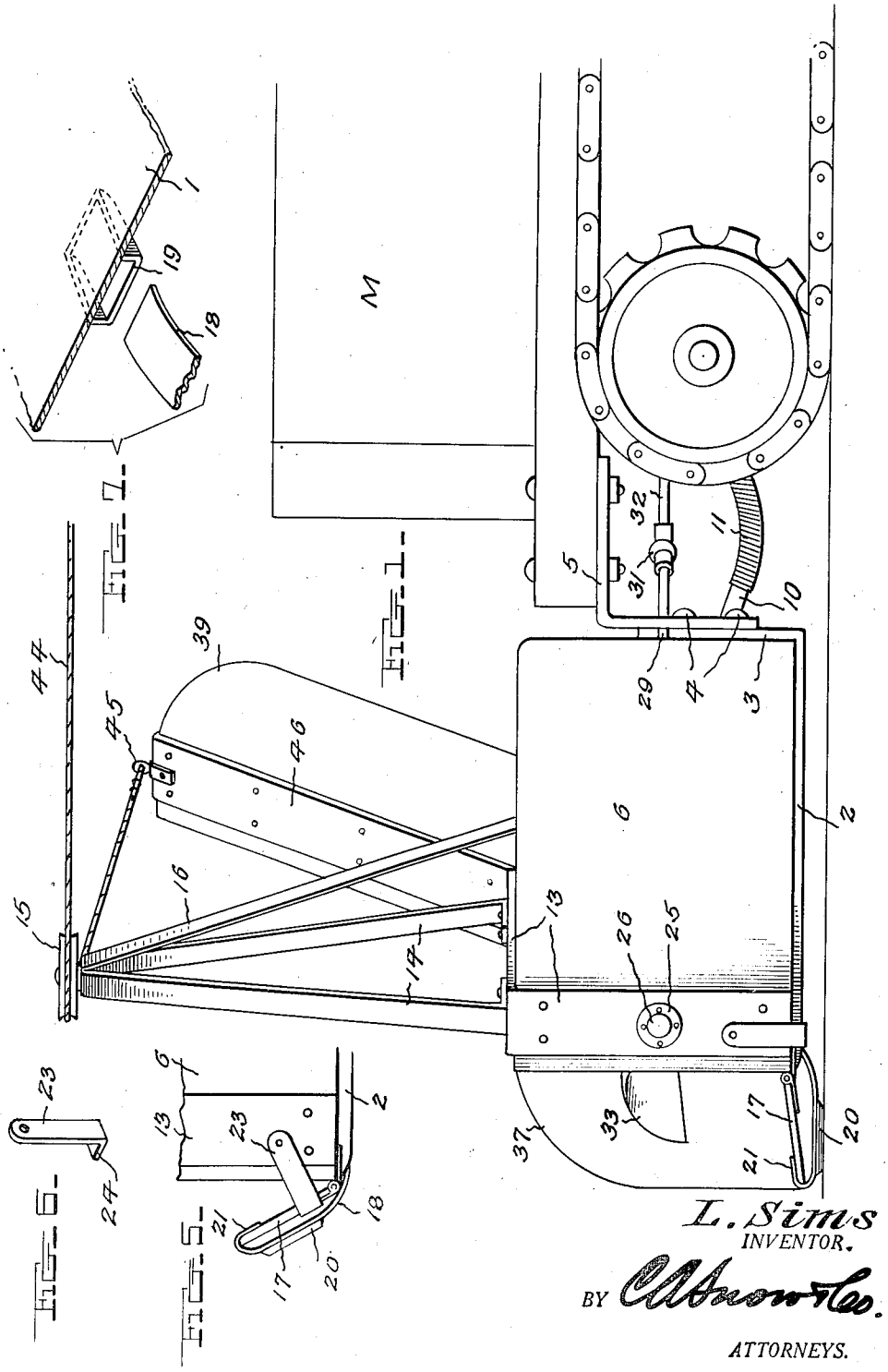
June 17, 1941. L. SIMS 2,246,015

SNOWPLOW

Filed Aug. 16, 1940 4 Sheets-Sheet 1




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SNOWPLOW

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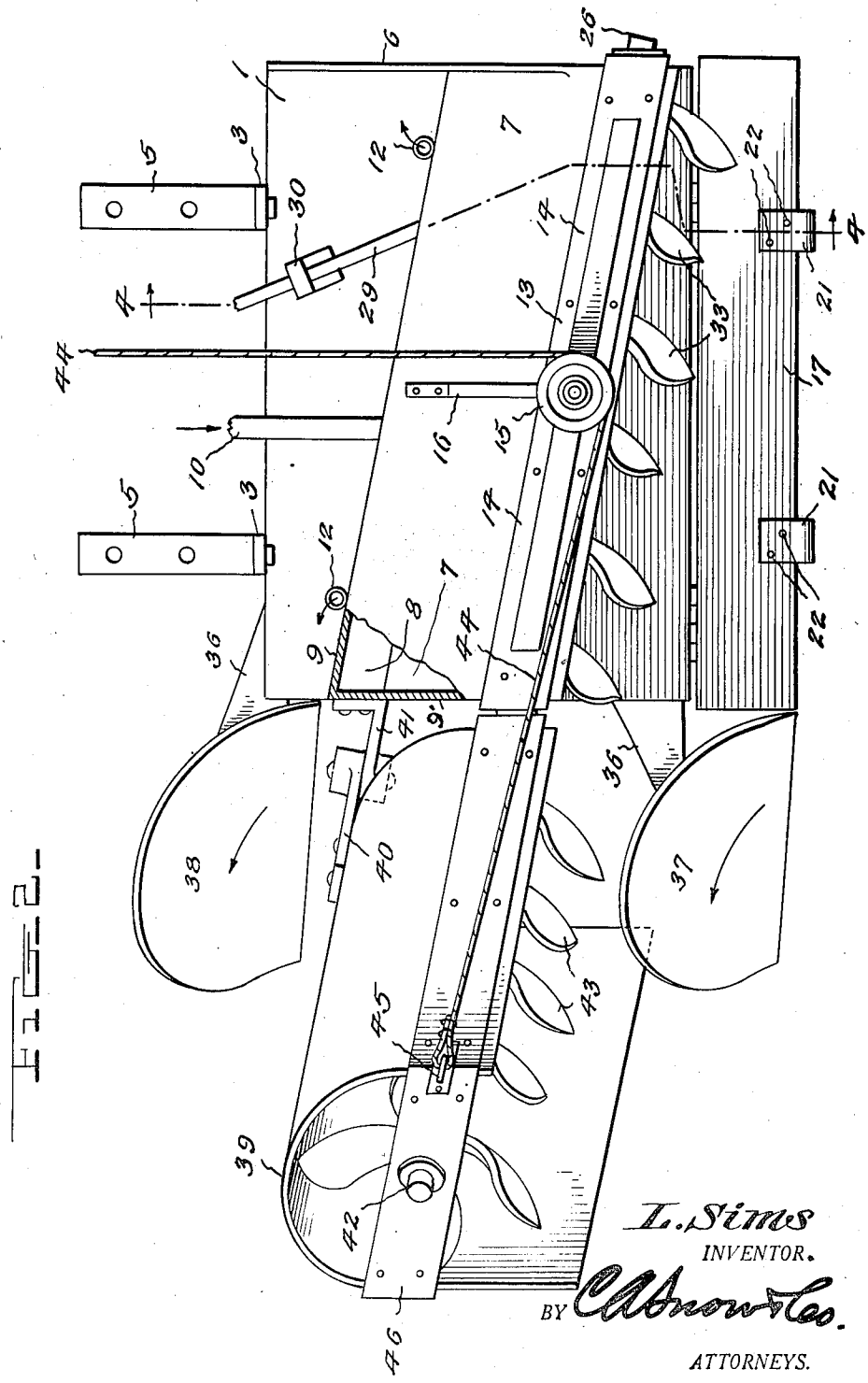



FIG. 2.

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SNOWPLOW

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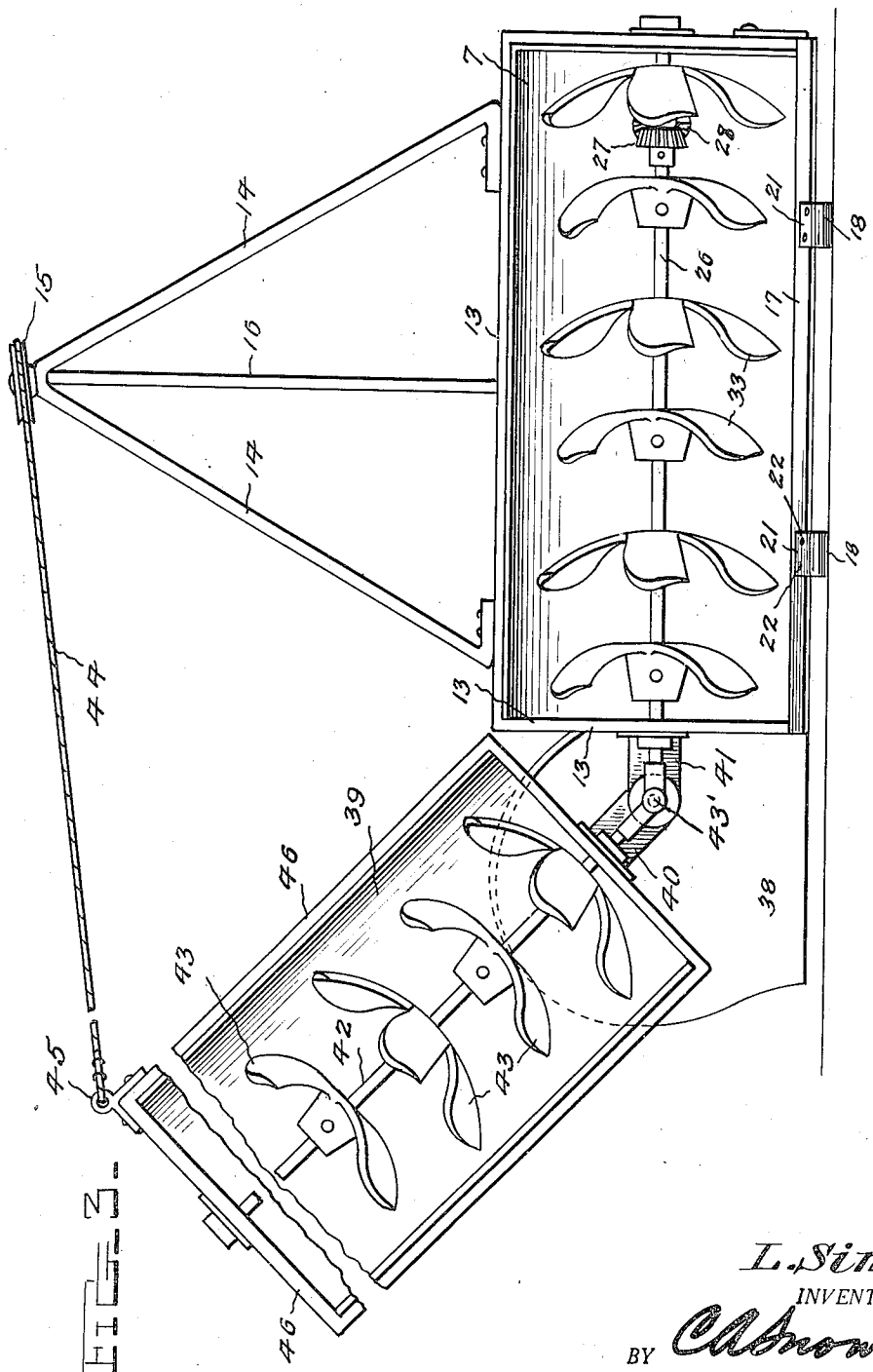



FIG. 2.

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SNOWPLOW

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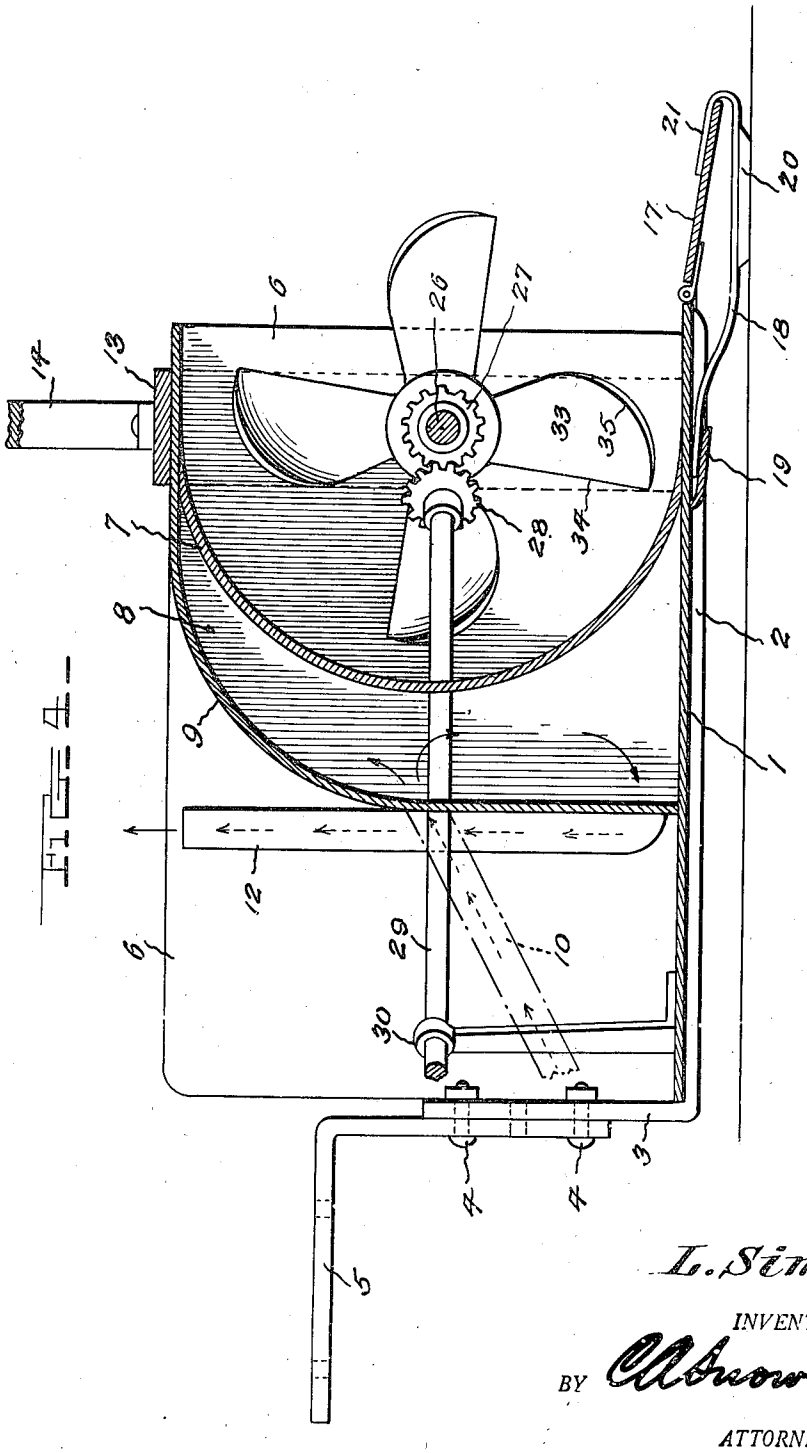



FIG. 4.

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Patented June 17, 1941 2,246,015

# UNITED STATES PATENT OFFICE

2,246,015

## SNOWPLOW

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Application August 16, 1940, Serial No. 352,951

7 Claims. (Cl. 37—43)

This invention relates to a snow plow.

One of the objects is to provide a structure of this character adapted to be mounted in front of a truck or other suitable motor-propelled vehicle whereby, when the snow plow is in operation, it will remove the snow from the path of the truck and deliver it laterally to one side of the road being cleared.

A still further object is to provide a snow plow utilizing a series of rotatable blades arranged and shaped in a new and novel manner whereby, as the snow plow is forced into the snow in the path thereof, these blades will cut into the snow, compress it into lumps, and direct these lumps laterally from the apparatus.

A still further object is to provide the snow plow with a front scraper which serves to direct the snow upwardly where it can be engaged by the blades, the said scraper being mounted on yieldable shoes whereby it is prevented from becoming caught on any obstructions which may be located unyieldingly on the surface of the road.

A still further object is to utilize the exhaust from the engine of the motor vehicle as a means for expediting the lateral delivery of the snow blocks or cakes from the apparatus.

A still further object is to provide the apparatus with an extension delivery device capable of being adjusted to any predetermined angle relative to the road surface and which operates to receive the blocks or cakes of snow from the main plow portion of the apparatus and convey it upwardly at a desired angle to a point beyond the path of the vehicle.

A still further object is to provide means for guiding the snow in its passage from one conveyer to the other, this guiding means also operating to deflect any snow in the path thereof and insure lateral delivery of the snow thus deflected.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings,

Figure 1 is a side elevation of the front portion of a motor vehicle equipped with the present improvements.

Figure 2 is an enlarged top plan view of the snow plow.

Figure 3 is a front elevation of the device, a portion of the supplemental conveyer being broken away and the front mold-board or deflector being removed.

Figure 4 is a section on line 4—4, Figure 2.

Figure 5 is a side elevation of the scraping blade supported in its raised position.

Figure 6 is a detail view of the latch used in connection with said blade.

Figure 7 is a perspective view of the rear portion of the shoe spring and showing the socket in which it is adapted to be seated.

Referring to the figures by characters of reference, 1 designates the flat bottom of the snow plow which can be reenforced by longitudinal bars 2 the rear ends of which can be upturned as at 3 for adjustable attachment, as at 4, to brackets 5 adapted to be secured to the front end portion of a motor vehicle M as shown for example in Figure 1. The bottom is provided at one side with an upstanding shield 6 which can be integral therewith or can be secured thereto, this shield preferably extending throughout the length of the bottom from front to rear. This shield constitutes a closure for one end of a substantially semi-cylindrical snow receiver 7 which extends transversely across and is joined to the bottom 1. The receiver is obliquely disposed on said bottom, that end nearest the shield 6 being close to the forward edge of the bottom while the opposite end is spaced well back from said edge as clearly shown in Figure 2. This main receiver forms the front wall of a heating chamber 8 the back wall 9 of which extends throughout the height of the receiver and from the shield 6 to an end wall 9' closing the chamber at that side remote from the shield. The bottom of the chamber 8 is closed by the bottom 1 and leading to this chamber is an exhaust pipe 10 having a flexible hose 11 extending therefrom to the engine of the motor vehicle so that hot products of combustion exhausted from the engine will be directed into the chamber 8 and thus operate to raise the temperature of the receiver 7 to a high degree. A vent pipe 12 is extended from the lower portion of the chamber and is adapted to discharge upwardly as shown in Figure 4.

A reenforcing yoke 13 extends over the top of the receiver 7 and downwardly along the sides thereof, the ends of the yoke being connected to the bottom 1 at the sides thereof. Thus the receiver is stiffened throughout its height and

width, the yoke providing a rigid base for upwardly converging standards 14 joined at their upper ends and constituting a support for a guide sheave 15. These standards may be braced as indicated at 16.

Hingedly connected to the front edge of the bottom 1 is a scraping blade 17 over the front edge of which are hooked the folded ends of spring strips 18. The rear ends of these springs are removably seated in socket members 19 attached to the bottom surface of the bottom 1. Wear and supporting shoes 20 are secured to the bottom faces of the spring strips and are adapted normally to contact with the road surface thereunder. These strips also operate to hold the scraping plate or blade pulled downwardly as shown in Figure 4, it being understood that the back and forward ends of each strip 18 and which has been shown at 21, may be fastened to the top of the scraping blade 17 as shown at 22.

When it is not desired to use the scraping blade 17, the same can be swung upwardly against the action of the spring strips 18 and into the position shown in Figure 5 at which time a side latch 23, which is pivotally mounted on the side of yoke 13, can be swung forwardly so that the offset end 24 thereof can lap and support the scraping blade.

The sides of the yoke 13 provide bearings 25 for a transverse shaft 26 which is parallel with the open front of the receiver 7 and has secured to it near one end, a gear 27 in constant mesh with a drive gear 28. The drive gear is secured to the forward end of a shaft 29 which extends through chamber 8 and the walls thereof and is mounted in one or more bearings 30 back of said chamber. This shaft is adapted to be operatively connected in any suitable manner to the transmission of the motor vehicle M so that whenever desired, shaft 29 can be operated for the purpose of imparting rotation to the shaft 26 through the meshing gears 27 and 28. In Figure 1 there has been shown a universal joint 31 connecting shaft 29 to the power take-off shaft 32 of the motor vehicle.

Secured to shaft 26 so as to rotate therewith are regularly spaced series of blades 33 adapted to cut into snow in the path thereof, divide it into separate blocks, and propel these blocks laterally along the receiver 7 and away from the shield 6 which closes one end of said receiver. In the structure illustrated four of these blades 33 are contained in each series or group. Each blade has a substantially straight sharpened edge 34, this being the advancing edge of the blade. The opposite edge of each blade merges along curved lines into the rounded outer end 35 of the blade and all of the blades are so pitched that during their rotation, they will tend to deflect material in one direction longitudinally of the shaft 26 or, in other words, away from the shield 6 and toward the open end of the receiver 7. The blades are not perpendicular to the axis of rotation but, instead, all of the blades of each series diverge toward the open end of the receiver.

As a result of the construction and arrangement pointed out, it will be apparent that when the plow is advancing into snow on the road, the revolving series of blades will scoop through the snow, cutting it into chunks or blocks and, at the same time, deflecting these chunks or blocks laterally toward the open end of the receiver.

Extending from the bottom 1 at the front and back of the open end of receiver 7 are brackets 36. These brackets carry respectively a front mold-board or deflector 37 and a rear mold-board or deflector 38.

Located between these deflectors is a supplemental elongated receiver 39 having a bracket 40 which is pivotally connected to a bracket 41 extending from the adjacent side of the yoke 13. This supplemental receiver has a longitudinal shaft 42 provided with blades 43 similar to the blades 33 and arranged in groups so as to rotate with the shaft. One end of shaft 42 is connected by an universal joint 43' to one end of the shaft 26, the point of connection between the two shafts having the same axial center as the point of connection between the brackets 40 and 41. Thus the supplemental receiver 39 can be swung upwardly and downwardly without affecting the driving connection between the two shafts. Up and down movement of the supplemental receiver is effected by means of a cable 44 or the like attached, as at 45, to the outer end of the supplemental receiver and extended partly around the guide sheave 15 and thence backwardly to a point where it can be manipulated readily by the operator of the motor vehicle. Any suitable means, not shown, can be provided for holding this cable in any position to which it might be moved.

It is to be understood that the supplemental receiver is open at its ends but is reenforced by a frame 46 which extends longitudinally around the concave and bridges the two ends, these bridging portions providing bearings for the shaft 42.

In practice this snow plow is fixedly attached to the front end of a motor truck or the like as already explained and when adjusted to the proper elevation relative to the surface of the road to be cleared, the scraping blade 17 will have its shoes 20 in sliding contact with said surface as shown in Figures 1 and 4. The supplemental receiver 39 is adjusted to any desired angle if it is to be used, in order that the snow being removed can be carried upwardly away from the path of the motor vehicle as hereinafter explained. If this supplemental receiver is not essential, the bracket 40 can be disconnected from bracket 41, the two shafts can be disconnected and the entire supplemental receiver removed.

After the parts have been placed in position the motor vehicle is driven forwardly and the blade 17 will plow under the snow in the path thereof and direct it into the main receiver 7. Thus it will be brought into the path of the rotating blades 33 which, as before explained, will cut diagonally through the snow, separating it into chunks or blocks. They will also act to shift these blocks laterally toward the open side of the main receiver 7 from which they will be discharged between the deflectors 37 and 38. If the supplemental receiver is used, the rotating blades 43 therein will pick up these chunks or blocks after they have been delivered and carry them upwardly so that they will be forced out of the upper end of the supplemental receiver.

To facilitate movement of the chunks or blocks of snow and prevent any snow from adhering to the main receiver 7, the products of combustion from the engine of the motor vehicle are directed into the heating chamber 8 so that the wall of the receiver 7 is thus kept at a high temperature and the snow is prevented from clinging thereto. Instead the movement of the snow will be greatly facilitated as the blades revolve.

Obviously various changes may be made in the construction and arrangement of the parts without departing from the invention as claimed.

What is claimed is:

1. A snow plow for attachment to the front end of a motor vehicle, including an obliquely disposed main receiver open at its front, a shaft within and extending longitudinally of the receiver, means for transmitting motion to the shaft from a motor vehicle to which the plow is connected and spaced annular series of blades mounted on and rotatable with the shaft, the blades of each series having sharpened advancing edges and all of the blades of each series diverging toward one end of the receiver, said end being open and the opposite end being closed.

2. A snow plow for attachment to the front end of a motor vehicle, including an obliquely disposed main receiver open at its front, a shaft within and extending longitudinally of the receiver, means for transmitting motion to the shaft from a motor vehicle to which the plow is connected and spaced annular series of blades mounted on and rotatable with the shaft, the blades of each series having sharpened advancing edges and all of the blades of each series diverging toward one end of the receiver, said end being open and the opposite end being closed, a scraper hingedly mounted in front of the bottom of the receiver, yieldable means extending under the blade for holding the blade normally pressed downwardly toward the road surface thereunder, and wear shoes carried by such means.

3. A snow plow for attachment to the front end of a motor vehicle or the like, including a bottom plate, a scraping blade hingedly connected to the forward edge thereof, yielding means extending under the blade for exerting a downward pull upon said blade toward the road surface thereunder, a receiver open at its front and at one end, said receiver being obliquely disposed on the bottom plate, said blade constituting means for directing snow into the receiver, and rotatable means within the receiver for cutting the snow into chunks and directing the chunks toward the open end of the receiver.

4. A snow plow for attachment to the front end of a motor vehicle or the like, including a bottom plate, a scraping blade hingedly connected to the forward edge thereof, yielding means extending under the blade for exerting a downward pull upon said blade toward the road surface thereunder, a receiver open at its front and at one end, said receiver being obliquely disposed on the bottom plate, said blade constituting means for directing snow into the receiver, and rotatable means within the receiver for cutting the snow into chunks and directing the chunks toward the open end of the receiver, said means comprising a shaft, means for rotating the shaft, and spaced series of blades on the shaft and rotatable therewith, the blades of each series diverging toward the open end of the receiver and each blade having an advancing cutting edge, each of the blades being also pitched to deflect the engaged chunk of snow toward the open end of the receiver.

5. A snow plow for attachment to the front end of a motor vehicle, including a receiver open at the front and diagonally disposed relative to the path of movement thereof, a scraper for directing snow into the open front of the receiver, means mounted for rotation in the receiver for cutting the snow into chunks, said means comprising a shaft, spaced series of blades rotatable with the shaft, the blades of each series having advancing cutting edges and diverging toward one end of the receiver, each blade being pitched to deflect the engaged chunk toward said end.

6. A snow plow for attachment to a motor vehicle, including a main receiver having an open front and an open end, means for directing snow into the receiver, a supplemental receiver connected to and mounted for up and down angular adjustment relative to the open end of the main receiver, means for adjusting the supplemental receiver, a longitudinal shaft in the main receiver, a longitudinal shaft in the supplemental receiver, an universal connection between the shafts, means for driving the shafts, and spaced series of blades on each of the shafts, the blades of each series diverging toward one end of the shaft and each blade having an advancing edge and being pitched to direct engaged material toward said end of the shaft.

7. A snow plow for attachment to a motor vehicle, including a main receiver having an open front and an open end, means for directing snow into the main receiver, a supplemental receiver connected to and mounted for up and down angular adjustment relative to the open end of the main receiver, means for adjusting the suplemental receiver, a longitudinal shaft in the main receiver, a longitudinal shaft in the supplemental receiver, an universal connection between the shafts, means for driving the shafts, spaced series of blades on each of the shafts, the blades of each series diverging toward one end of the shaft and each blade having a sharp advancing edge and being pitched to direct engaged material toward said end of the shaft, and front and rear deflecting means bridging the space between the receiver and supplemental receiver for guiding material from the main receiver to the supplemental receiver.

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