

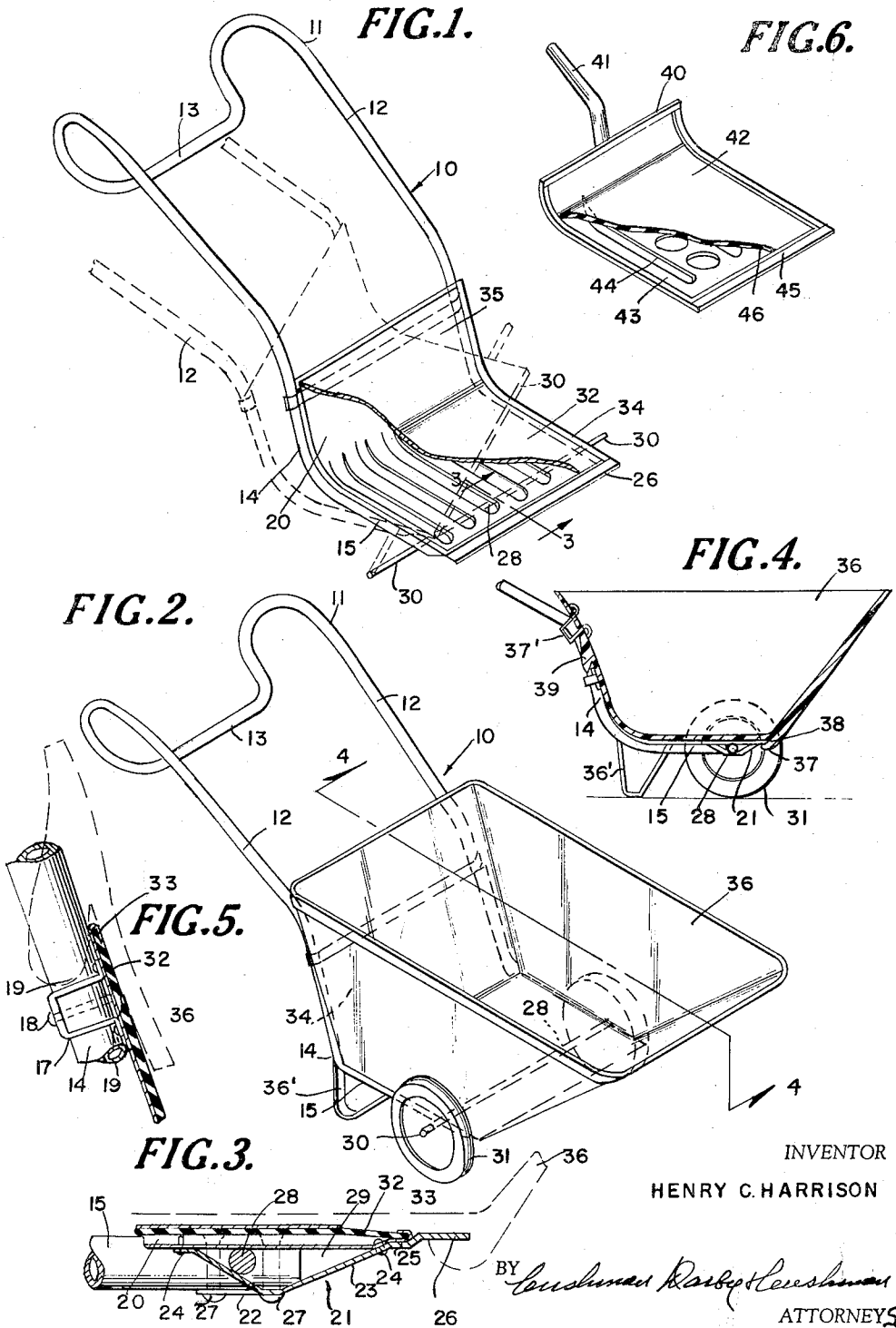
March 13, 1962

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3,024,547

COMBINED SNOW PLOW AND CART

Filed Aug. 26, 1959



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COMBINED SNOW PLOW AND CART

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Filed Aug. 26, 1959, Ser. No. 836,283

8 Claims. (Cl. 37-130)

The present invention relates to an improved snow remover which may be in the form of a shovel or hand plow.

An important object is to provide a snow remover with a blade which will free itself easily from the snow, so that the snow does not stick to the blade, and can be easily thrown off. Under many conditions, shoveling snow packs it into a weak solid, which conforms accurately to the shape of the shovel blade. If the snow is near the freezing temperature it may freeze to the shovel surface. Above freezing temperature it may be sealed to the scoop or blade of the shovel by a film of water which creates suction when one tries to throw the snow off. Accordingly, it is an object of this invention to provide a loose membrane cover, secured only at its edges to the blade of the shovel, preferably of rubber-like material or smooth surfaced fabric which minimizes adhesion, which peels from the solidified snow mass with a minimum of resistance to stripping away of the snow. By making the membrane cover loose from the blade of the shovel I also introduce some shock effect which assists in stripping away any areas of the snow mass which may adhere to the membrane.

Another object of my invention is to provide a membrane or smooth fabric cover which permits the metal blade or scoop portion of the shovel to be skeletonized, and therefore allows the snow remover to be made very light and economical to manufacture and at the same time adequately strong and rugged to satisfy the most exacting service demands a device of this character must meet.

An additional object is to provide a snow remover with a shovel blade having its exposed outer surface covered with a loose insulated sheet of material, such as a rubber coated fabric or membrane, secured at its outer edges only to the shovel blade. The use of the loose fabric, as compared with a tight smooth surface, not only prevents adhesion but also serves to break the suction of a wet packed mass of snow, and has been found superior to a solidly secured surface of the same material. Additionally, the shape, size and loose connection of the rubber coated fabric to the shovel blade provides a shovel, which is economical to manufacture, extremely light in weight, and sufficiently rugged as to satisfy the most exacting demands a device of this character must meet in operation.

A further object is to provide a combination snow remover and garden or wheel cart having means for readily converting the device from a snow remover to a wheel cart or conversely from a wheel cart to a snow remover. When the combination device is used as a snow remover, it is so shaped that the blade picks up relatively large amounts of snow, and the snow can easily be dumped off to one side by pivoting on one end of the axle. Additionally, the front edge of the snow remover has on the underside thereof one or more substantially wedge-shaped skids or shoes for sliding the loaded snow remover over the ground and also to provide a fulcrum for guiding the edge over small irregularities in the ground and to serve to control the depth of the blade in very deep snow. Additionally, the snow remover is formed with two handles so as to provide means for tipping the snow remover easily for dumping

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off a snow load and insure proper balancing of the shovel or plow when in operation.

Other objects and advantages of the invention will become apparent from the following description when taken in connection with the accompanying claims and drawings.

Referring to the drawings in which are shown several preferred embodiments, the invention may assume:

FIGURE 1 is a perspective view of a combined snow shovel and wheel cart assembly showing the parts which form the snow shovel, and in dotted lines how the shovel is tilted so as to discharge the snow from one side thereof;

FIGURE 2 is a perspective view showing the combined shovel and cart when operating as a wheel cart;

FIGURE 3 is a sectional view taken substantially along the line 3-3 of FIGURE 1;

FIGURE 4 is a sectional view taken substantially along the line 4-4 of FIGURE 1;

FIGURE 5 is a detail view showing the detachable connection of the upper portion of the cart basket with the handle of the assembly; and

FIGURE 6 is a detail perspective view of a snow shovel having its outer surface covered with a loose sheet of rubber coated fabric or the like.

Referring to the drawings, 10 indicates a combined snow plow and wheel cart (FIG. 2), which includes a tubular handle portion 11, preferably formed of spaced inclined arms 12 connected at their upper ends by a transverse portion 13, but which may, if desired, be formed separate. Connecting the two arms 12 by the transverse portion 13 imparts a substantial amount of torsional rigidity to the structure of the device, and also provides a convenient handle for pushing or dragging the device with one hand. Each of the arms 12 intermediate its length is bent downwardly as at 14 and terminates in an outer lower end portion 15 (FIG. 1). A transverse member 17 of hat shaped cross section channel connects intermediate portions of the arms 12 and is secured to them. A metal plate or steel deck 20 extends across the space between arms 12 and to their outermost extension. It may be secured to the arms 12 and to the hat section channel 17 by any suitable means, but it is preferred to fasten it to the arms 12 by rivets 18, two of which pass through the ends of the channel also; and it is preferred to fasten it to both flanges of the hat section channel by metal wire stitches or staples 19. By this preferred method of fastening, a minimum amount of fastening effort is required to develop a satisfactory torsional rigidity in the structure. Secured to the underside of both of the end portions 15 of the handle 12 is a wedge-shaped skid 21. As shown in FIGURE 3, the skid 21 has diverging faces 22 and 23 connected to the underside of the deck 20 by any suitable fastening means, such as the metal stitches or clinched staples 24. The face 23 has a forward depressed or countersunk transverse portion 25 and terminates in a tapered scraping edge 26. The skid 21 is secured to the end portions 15 of the handle by suitable fastening means, such as the rivets 27, which also pass through the metal deck, so as to maintain these parts in a torsionally rigid relationship. A shaft 28 extends transversely through the end portions 15 of the handle and through the space 29 formed by the plate 20 and skids 21. The shaft 28 has end portions 30 extending outwardly from the sides of the arms 15 of the handle, so as to provide a fulcrum or pivot for tilting the plow to one side so as to dump the snow therefrom, when the device is used as a shovel and to provide axles or trunnions for the detachable wheels 31, when the device is converted to a two-wheel garden cart or the like. The deck 20 is covered with a loose flexible sheet of rubber-coated fabric or membrane 32, which is

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secured only at its edges to the handle 10, by having the marginal edges of the plate 26 pinched down over the adjacent edges of the fabric 32 as at 33 (FIG. 3).

The snow plow or shovel is arranged to clear large areas or wide paths with maximum speed and at a minimum expenditure of physical effort. The plow picks up and carries a relatively large amount of snow and is arranged so that the snow may easily be dumped off to the side without any lifting of the operator's body weight when tilted to its dotted line position, as shown in FIGURE 1, and with relatively little lifting of the weight of the plow and regardless of the depth and consistency of the snow being removed. The plow blade or scoop 34 (FIG. 1) is slightly wider than the usual snow shovel and considerably longer. Further, it is bent up at the back as at 35 to stop the snow and back up a load as the snow slides over the plow. The scraping or leading edge 26 is supported underneath by the wedge-shaped skid 21 which is spaced rearwardly a short distance from the leading edge so as to provide a shoe for sliding the plow over the ground, and also provides a fulcrum for guiding the edge 26 over small irregularities in the ground and for controlling its depth in very deep snow. The metal plate or deck 20 is constructed so as to provide torsional stiffness and a rigid connection between the two spaced handles 12. The end portions 30 of the shaft 23, each constitute a ground engaging member which, when the plow is tilted, provides a fulcrum for raising the snow load to the top of the snow level where it is to be dumped. Shaft 28 is secured in position by friction so that it may easily be adjusted by tapping to extend on either side of the plow to the desired amount.

To clear the snow the operator moves the plow or shovel in under the snow, pushing it sufficiently far along the path to be cleared to collect a load of snow in the scoop. Then he turns or twists the two handles so as to throw the snow up to one side. Thus it will be seen that snow can be removed to any reasonable distance without rehandling and at a speed much faster than shoveling. In seasons when there is no snow, the device can readily be converted to a wheel cart or the like by securing to the end portions 30 of the shaft 28, the wheels 31 and detachably connecting to the plow a receptacle or container 36 which may be made of any suitable durable material, such as plastic wood veneer strips, expanded metal screening or the like. The forward portion of the receptacle 36 adjacent the bottom thereof is formed with spaced hooks 37, each forming a recess 38 into which extends the leading edge 26 of the shovel or plow 10. Additionally, the upper rear side of the receptacle 36 has depending hooks 39, each provided with a slot 40 into which extends the rearward edge of plate 20, so as to coact with the hooks 37 in order to firmly maintain the container 36 in a fixed position when the device is converted to a garden cart or the like. The receptacle or container 36 is also provided with depending legs 36' adjacent the rear thereof so as to form stops for limiting the downward movement of the handle 10 and its associated parts. The upper portion of the receptacle 36 at the rear thereof is detachably connected to the arms 12 by wire fastening means 37' (FIG. 4). Thus it will be seen that the snow plow or shovel can be readily converted into a two-wheel cart or wheelbarrow that is easy to balance, and may be manipulated at a minimum expenditure of time and effort.

In the modification shown in FIGURE 6, a manually operable shovel 40 is provided, having a straight handle 41 and a blade or scoop 42 connected to the lower end of the handle. The blade 42 has a flat body and is about 14" wide as contrasted with 18" wide of the standard snow shovel now in use. The rear of the blade 42 is turned up to form a back or heel capable of packing a substantial amount of snow into the shovel. The

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blade 42 may be similar to the blade 34, previously described, and includes a metal plate or deck 43 which may be provided with spaced corrugated portions 44 to strengthen the same, and has its marginal edges bent upwardly as at 45, so as to overlap and engage the edges of a cover 46 formed of a loose sheet of rubber-coated fabric or membrane, and maintained firmly in a fixed position on the blade by the pinched or bent down rolling edges 45 of the plate 43. The metal plate or deck 43 may also be provided with cutouts, so that the weight of an aluminum deck can be approximated in a strong deck formed of high-strength steel, which is less expensive.

It will be noted that the loose sheet of rubber-coated fabric or membrane 46 is secured to the plate 43 only at its edges. This loose sheet of fabric prevents adhesion and peels easily from a wet packed mass of snow, and has been found to be superior to a tightly secured surface of the same material. The handle 41 is long and straight so as to do away with the necessity of the operator bending down, but may be curved down around the back edge of the scoop to improve the balance of the shovel when loaded. The proportions and size of the shovel have been carefully selected so as to reduce the load per shovel full and also to eliminate stooping. It has been found that the shoveler can often load as much snow on the narrow blade 42 as on the larger conventional blades. The motion in removing the snow is more of a forward scraping action, before lifting the shovel, which cuts a narrower and longer swath, and packs the snow together on the blade so that it can easily be removed due to the loose sheet of rubber-coated fabric serving to prevent adhesion of the snow on the shovel.

Thus it will be seen that in all forms of the invention a snow shovel or plow is provided which may be economically manufactured, extremely light in weight and rugged in construction so as to be efficient in operation under all working conditions. By reason of the cover being formed of a loose fabric or membrane, as compared to a tight smooth cover, means are provided for preventing adhesion and for also breaking the suction of a wet packed mass of snow that might adhere to the blade of the shovel.

It will be understood that the forms of the invention shown are merely illustrative, and that such changes may be made as come within the scope of the following claims:

I claim:

1. A combined snow remover and wheel cart assembly comprising a blade upwardly curved at its rearward end having a pair of spaced handles adapted to apply side-wise tilting torque to the blade extending outwardly therefrom, at least one wedge member connected to the lower end portions of the handles, transverse shaft means operatively connected to said blade and having its end portions projecting beyond the sides of the blades to provide means engageable with the ground so as to tilt the blade to discharge the snow from one side thereof when the assembly is used as a snow remover, a receptacle having opposed side walls and a front wall joined thereto, means for detachably connecting the receptacle to said blade, the end portions of said shaft when the assembly is used as a cart constituting axles, and wheels arranged to be detachably connected to said axles so as to convert the snow remover into a cart.

2. A combined snow remover and wheel cart assembly comprising a blade upwardly curved at its rearward end having a pair of spaced handles adapted to apply side-wise tilting torque to the blade extending outwardly therefrom, each of said handles including an upper end portion terminating in an intermediate bent portion and a lower end portion extending outwardly from the lower end of the intermediate portion, at least one wedge member connected to the lower end portions of the handles, transverse shaft means operatively connected to said

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blade and having its end portions projecting beyond the sides of the blade so that when the assembly serves as a snow remover the extended end portions of the shaft provide means for tilting the blade so as to discharge the snow from one side thereof, a receptacle having opposed side walls and a front wall joined thereto associated with said blade and having spaced hook means, and means on said handles for releasably receiving said hook means for connecting the receptacle to the assembly, the end portions of said shaft when the assembly is used as a cart constitute an axle, and wheels arranged to be detachably connected to said axles so as to convert the snow remover into a cart.

3. A combined snow remover and wheel cart assembly as called for in claim 1 in which a cover is provided for the blade, said cover being formed of a loose sheet of rubber-coated fabric, and means for securing the cover to the front and rear ends of said loose blade.

4. A combined snow remover and wheel cart assembly as called for in claim 2 in which the spaced hook means are located adjacent the upper and lower ends of the receptacle.

5. A snow remover of the class described comprising: a blade having an upwardly curved rearward portion; a blade cover of flexible and loose material joined to the forward and rearward ends of said blade, said blade cover normally conforming to the configuration of the surface of said curved blade but loosely movable away

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from said curved position thereof; and handle means for said blade extending upwardly and rearwardly therefrom.

6. A snow remover defined in claim 5 wherein said handle means includes a pair of spaced apart rod portions joined at their lower ends to said blade, and rod means joined to and extending laterally from at least one side edge of said blade adjacent the forward end thereof, whereby said blade may be tilted about said lateral rod means by rotation of said rod portions.

7. A snow remover defined in claim 5, said blade having apertures therethrough to facilitate separation of said blade cover from said blade during handling of snow or the like.

8. A snow remover defined in claim 6 wherein said rod means is frictionally joined to said blade.

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