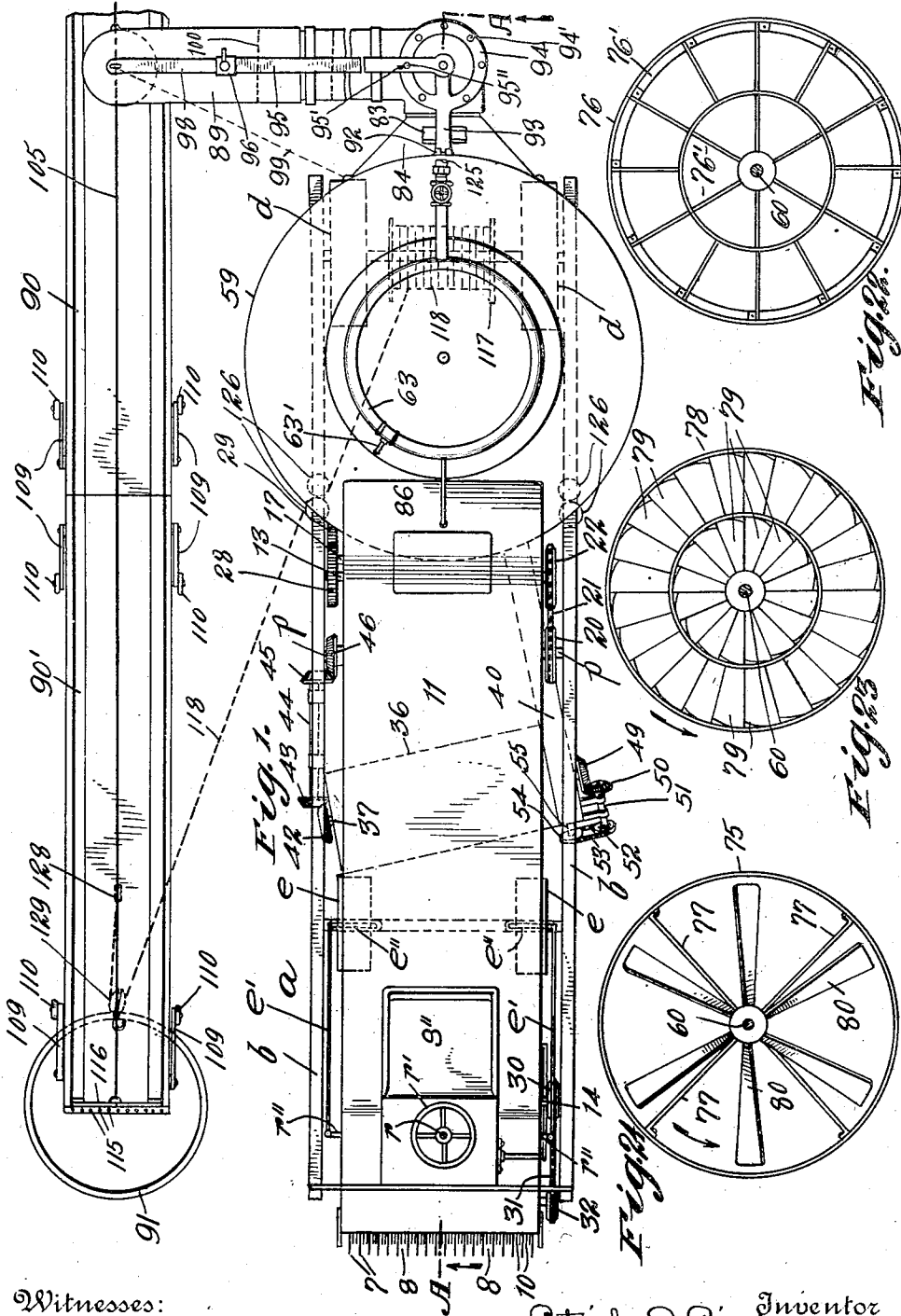


P. D. RIORDAN.
 SNOW DESTROYER.
 APPLICATION FILED MAY 5, 1911.

1,051,969.

Patented Feb. 4, 1913.

6 SHEETS—SHEET 1.



Witnesses:
W. Hamilton.
W. Reimer.

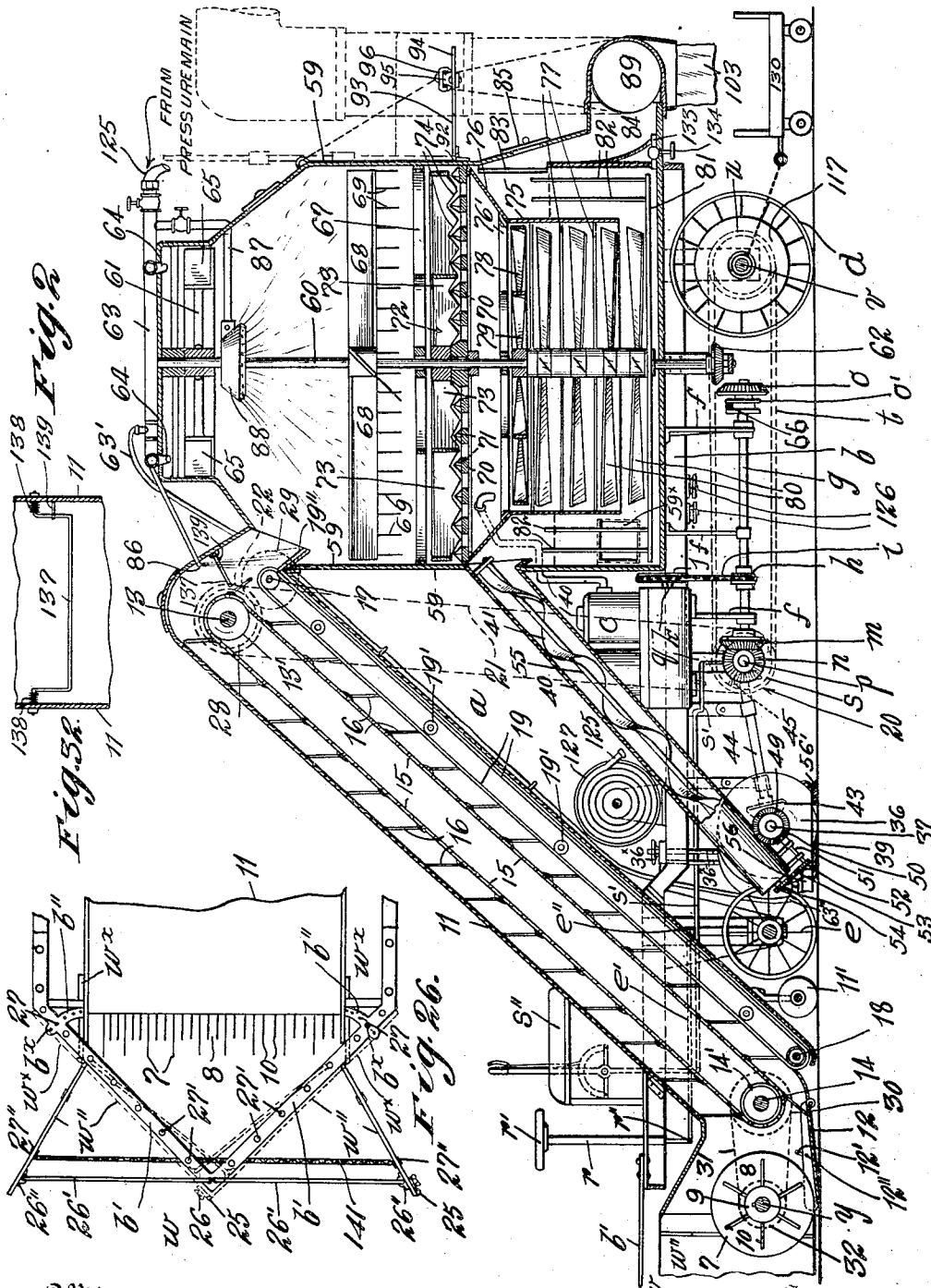
Patrick D. Riordan Inventor
By his Attorney
James Hamilton

SNOW DESTROYER.

Patented Feb. 4, 1913.

6 SHEETS—SHEET 2.

1,051,969.

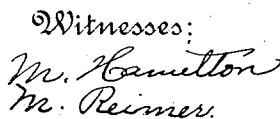


Witnesses:
M. Hamilton.
M. Reimer

Patrick D. Riordan Inventor
By his Attorney James Hamilton

1,051,969.

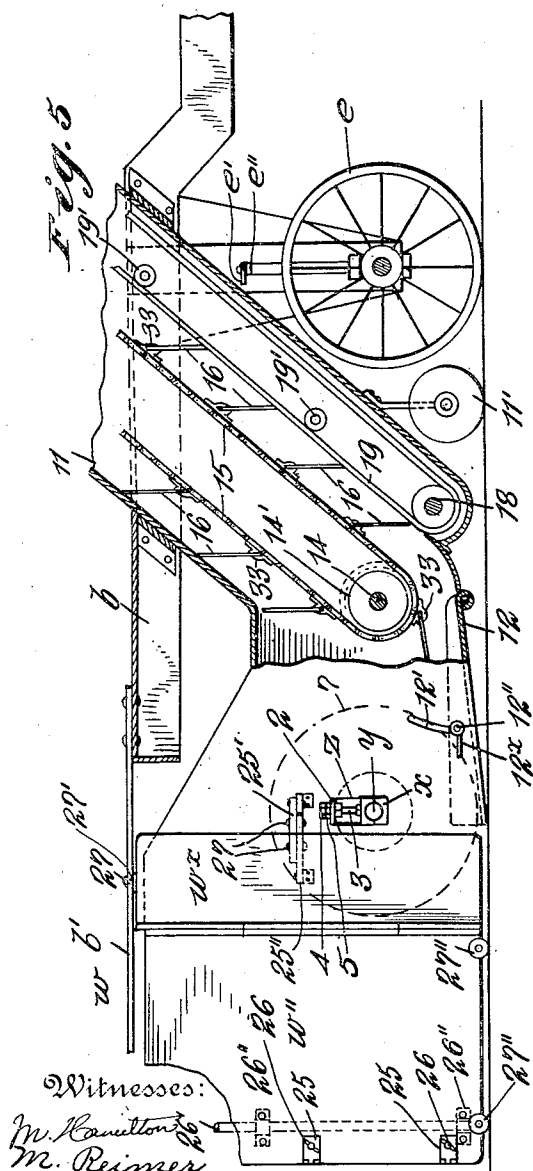
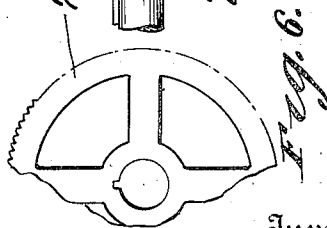
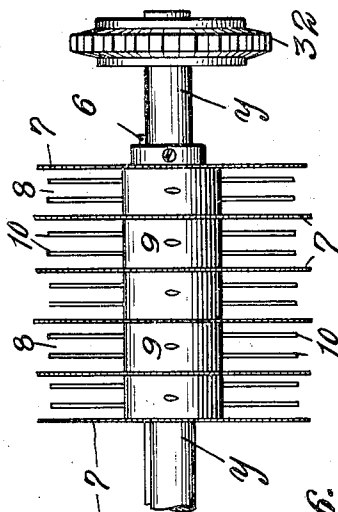
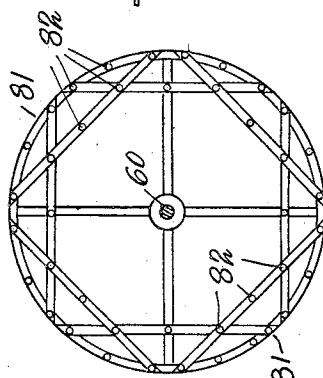
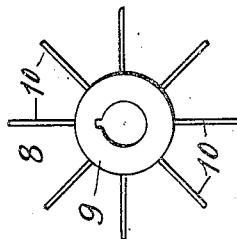
6 SHEETS--SHEET 3.



24/7/6w
Inventor
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1,051,969.

6 SHEETS—SHEET 5.



Witnesses:
M. Hamilton
M. Reimer

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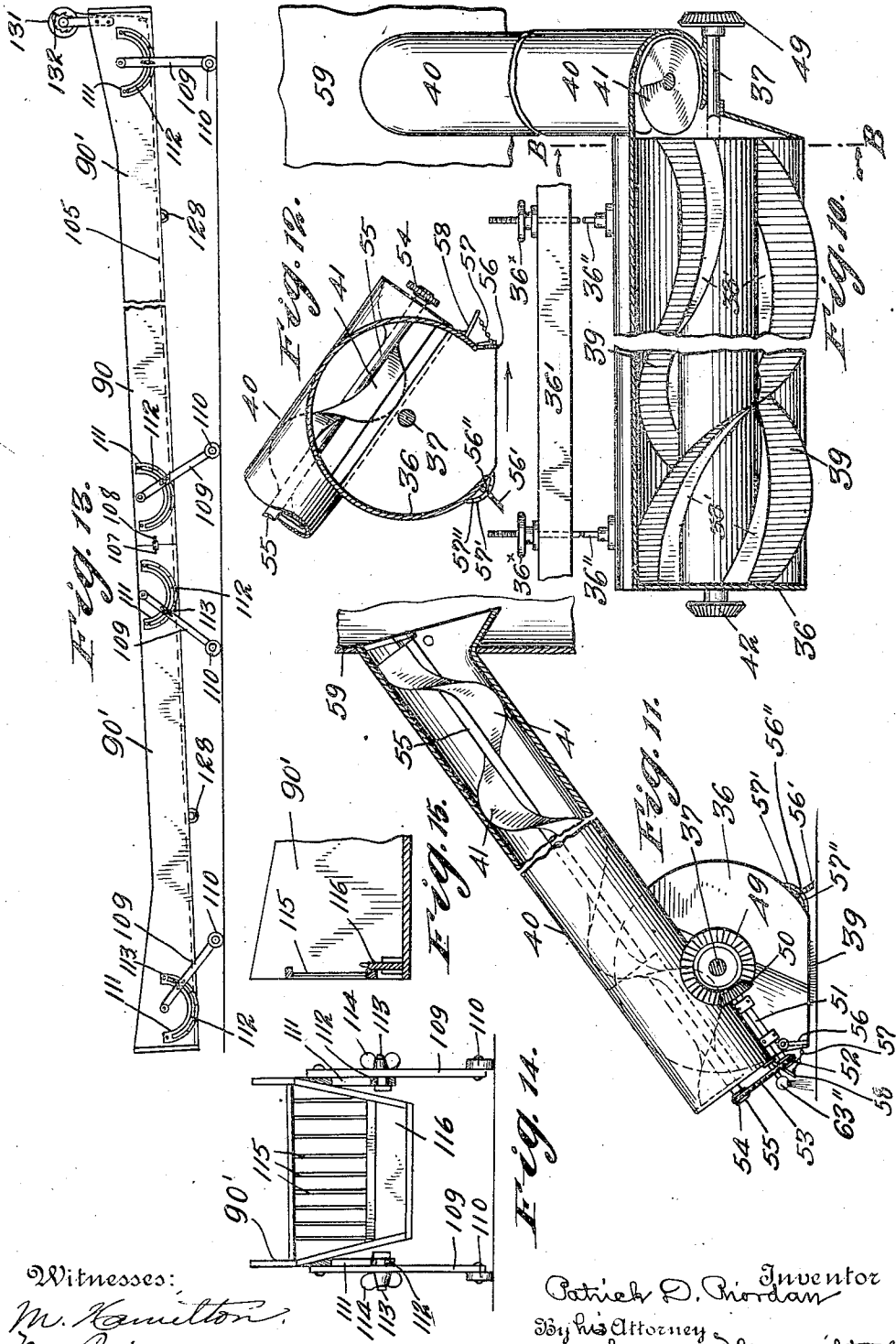
P. D. RIORDAN.
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6 SHEETS—SHEET 6.

1,051,969.



Witnesses:

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UNITED STATES PATENT OFFICE.

PATRICK D. RIORDAN, OF NEW YORK, N. Y.

SNOW-DESTROYER.

1,051,969.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed May 5, 1911. Serial No. 625,320.

To all whom it may concern:

Be it known that I, PATRICK D. RIORDAN, a citizen of the United States, residing in the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Snow-Destroyers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in snow-destroyers; and an object of this invention is to provide a snow-destroyer which will be practical, which will be complete in all its parts and by which the ice and snow may be removed mechanically and directly from the highway, reduced to a fluent state and discharged into a drain or sewer.

Another object of this invention is to provide a snow-destroyer with snow-plow mechanism.

A third object of this invention is to provide a snow-destroyer with mechanism so arranged that it may be used at will either as a snow-plow or as an intake mechanism.

A fourth object of this invention is to provide a snow-destroyer with street-sweeping mechanism by which the snow may be swept from the streets, reduced to a fluent state and discharged from the machine into a sewer or drain.

A fifth object of this invention is to provide a snow-destroyer with means for removing ice from the roadway and conveying it to the snow-destroying mechanism.

A sixth object of this invention is to provide a snow-destroyer with efficient triturating devices by which the snow and ice will be reduced to a fluent state.

An eighth object of this invention is to provide a snow-destroyer with efficient and convenient discharge mechanism.

A ninth object of this invention is to provide a snow-destroyer with a sluiceway for receiving the fluent mass from the discharge conduit and leading the same to a sewer or drain.

A tenth object of this invention is to provide a snow-destroyer with mechanism for hauling a sluiceway, hosepipe and the like from one point in the street to another.

Other features of this invention will be hereinafter referred to in the description and claims.

Generally described my new snow-de-

stroyer comprises in combination intake mechanism, conveying mechanism, snow-destroying mechanism and discharge mechanism. The vehicle upon which the parts of these mechanisms are carried is preferably self-propelled; and as the vehicle advances along the street, the intake mechanism removes the snow and ice therefrom and directs the same to the conveying mechanism by which it is led to the snow-destroying mechanism. By the latter mechanism the snow and ice are reduced to a fluent state in the machine. The fluent mass is then discharged into a sluiceway and led to the sewer or drain.

In the preferred embodiment of my invention hereinafter described the snow-destroying mechanism is of the triturator type. Water is led to the triturator from the pressure mains of the city's water system and is caused to fall in the triturator upon the snow and ice in the form of a shower, which is nature's most effective means of melting snow. To aid in the reduction of the mass of snow and ice to a fluent condition, it is ground in the presence of water, or triturated. Suitable means are provided for cleaning the roadway thoroughly of the snow and ice in a highly efficient manner.

In the drawings illustrating the principle of this invention and the best mode now known to me of applying that principle, Figure 1 is a plan; Fig. 2 is a section on the line A—A of Fig. 1; Fig. 3 is a bottom plan view; Fig. 4 is an end view; Fig. 5 is a detail on an enlarged scale of the intake mechanism; Figs. 6 to 9, inclusive, are details illustrative of the ice-cutting and breaking mechanism; Figs. 10, 11 and 12 are details showing the street-sweeping mechanism and its conveyer; Fig. 13 is a side elevation and Fig. 14 is an end elevation of the sluiceway; Figs. 15, 16 and 17 are details of the construction of the sluiceway; Figs. 18 to 24, inclusive, are details of the triturating mechanism; Fig. 25 shows in plan an agitator; Fig. 26 is a detail in plan of the front part of the intake mechanism; Fig. 27 is a detail showing an intake mechanism provided with a rotary broom; Figs. 28, 29 and 30 show details of the construction of the conveyer leading from the intake; Fig. 31 is a detail showing the construction at a joint in the discharge conduit; Fig. 32 is a detail showing a device

for cleaning the conveyer plates; and Fig. 33 is a detail in section showing the mode of fastening the plate-holding brackets to the conveyer-chains so as to allow play of the brackets.

The working parts of the snow destroyer are carried by a vehicle *a* which is preferably of the self-propelled type. The vehicle frame or chassis *b* is preferably of metal, such as structural or angle steel. In this vehicle frame is supported in any suitable manner an engine or motor *c*, which may be of any suitable type, such as an internal combustion or gas engine. The vehicle frame *b* is supported upon the rear wheels *d* and the front wheels *e*; and to propel the vehicle, the following arrangement of parts is provided: In shaft hangers *f* the upper ends of which are fastened to the vehicle frame in any suitable manner there is mounted a lengthwise-extending shaft *g* on which is mounted fast a sprocket wheel *h* connected by a chain *i* with the sprocket wheel *j* fast upon the engine shaft *k*. On the front end of the shaft *g* there is mounted fast a bevel gear *m* which meshes with a bevel gear *n*; and upon the rear end of the shaft *g* there is mounted a bevel gear *o* which is keyed to the shaft *g* and is, therefore, lengthwise movable thereon. Near the middle of the vehicle there is mounted or journaled in the lower end of the shaft hangers *g* a transverse shaft *p*; and on the latter there is loosely mounted a sprocket wheel *s*, while the bevel gear *n* just referred to is fast on the shaft *p*. The sprocket wheel *s* is connected by the sprocket chain *t* with the sprocket wheel *u* which is fast upon the rear axle *v* and which drives the rear wheels *d* to propel the vehicle. Integral with the bevel gear *n* is a sleeve *n'* upon which is keyed a slidable clutch *n''* adapted to be thrown by a system of levers *s'* into and out of engagement with the sprocket wheel *s* to start and stop the propulsion of the machine. By reversing the engine *c* the vehicle may be moved to the rear. Near the driver's seat *s''* there is carried a steering-shaft *r* on the upper end of which is mounted fast a steering-wheel *r'* and on the lower end of which is carried a transverse bar *r''* the ends of which are connected by links *e'* with the swinging axle-ends *e''* on which are mounted in the usual manner the front wheels *e* of the vehicle.

At the front end of the machine there is carried a bell-mouthed or trumpet-shaped intake *w*; and extending transversely thereof is a rotary shaft *y* which is journaled in the journal-boxes *x* mounted slidably in the slots or openings *z* in the side walls of the intake. Fastened to the sides of the intake *w* is a pair of brackets 2 through which extend the threaded upper ends of the screw-studs 3 the lower ends of which are attached

to the journal-boxes *x*. Upon the threaded upper end of each of the screw-studs 3 there is mounted an adjusting nut 5 which bears upon the bracket 2 and by turning which the shaft *y* may be raised and lowered. By means of the lock-nut 4 the screw-studs 3 may be held in their adjusted positions. Fastened upon the transverse shaft *y* by a spline or feather 6 is a series of ice-cutting circular saws 7 between each pair of which is mounted a rotary ice-breaker 8. The hub 9 of each of these ice-breakers 8 is secured to the transverse shaft *y* by the spline or feather 6 and from each of the hubs 9 extend radially the ice-breaking blades 10 which are of less length than the radius of the saws 7, whereby the latter are permitted to sink into the ice to cut the same. By means of the adjusting nuts 5 the shaft *y* may be raised and lowered so as to adjust the saws 7 and blades 10 for different thicknesses of ice upon the roadway. When there is no ice on the pavement, the ice-cutting and breaking mechanism just now described may be replaced by a rotary brush or broom 7' shown in Fig. 27. The intake *w* communicates with the lower end of the belt-conveyer casing 11 to the bottom wall of which at the lower end thereof is pivotally mounted the rear end of a shovel 12. As the vehicle moves forward, the shovel 12 directs the snow and ice into the conveyer casing 11. In the top of the latter there is mounted a rotary shaft 13 and in its bottom is mounted another rotary shaft 14; and over sprocket-wheels 13', 14', on these rotary shafts 13, 14 respectively pass endless chain belts 15 to which are fastened the conveyer plates 16. At the top and bottom, respectively, of the conveyer casing 11, there are mounted the rotary shafts 17, 18 over which and the rollers 19' passes the endless supporting belt 19, by which the weight of the incoming snow and ice is supported.

The chain belts 15 are driven in the following manner: Upon one end of the transverse shaft *p* there is loosely mounted a sprocket wheel 20 which is connected by the sprocket chain 21 with the sprocket wheel 22 mounted fast upon the upper rotary shaft 13. Keyed upon the shaft *p* is a slidable clutch 23 which may, by means of the clutch lever 24, be thrown into and out of engagement with the sprocket wheel 20 to clutch the latter to the transverse shaft *p*, which is driven by the bevel gear *n* fast thereto. The lower rotary shaft 14 is driven by the chain-belts 15 from the shaft 13. Upon the latter there is mounted fast a spur gear 28 which meshes with a spur gear 29 fast upon the rotary shaft 17, whereby this rotary shaft 17 is driven from the shaft 13. Upon one end of the lower rotary shaft 14 there is mounted fast a sprocket wheel 30 connected by the sprocket chain 31 with a

sprocket wheel 32 fast upon one end of the transverse rotary shaft y which drives the ice-breaking and cutting mechanism hereinbefore described or the rotary broom 7' when the same is substituted for the latter mechanism. The conveyer plates 16 are fastened to the chain-belts 15 in the following way: To the latter are fastened plate-holding brackets 33 formed with slots 34 into which are slipped the plates 16. These plates at their inner edges are formed with a tube 16' and with notches 16*; and a locking pin 16'' is slipped through this tube 16' and through the holes 35 in the bases of the brackets 33 to hold the plate 16 in place. This arrangement of parts enables the conveyer plates 16 to be fastened to and removed most readily from the endless chain-belts 15 in case of need. The bottom faces of the plate-holding brackets 33 are curved and recessed to permit the same to conform to the curvature of the sprocket-wheels 13', 14' and to pass readily thereover. To add to the rigidity of the structure, the lower end of the conveyer casing 11 is supported upon rollers or small wheels 11'.

To enable the vehicle to plow its way through the snow the chassis b of the vehicle is made V-shaped at its front end, as is shown at b' and to each side of the intake w is hinged a door w'' having a rearwardly-extending wing w^* . One of the doors w'' is provided at its front edge with hinged clasps 25 having at their free ends winged screw-bolts 26 by which the clasps may be fastened to the other door to lock the doors together in closed position to form a snow-plow. Each side b' of the V-shaped front part of the chassis b is formed with lugs b'' having holes b^* through one of which and a hole in the top part of the wing w^* in register therewith may be passed a pin 27. To insure that the wing w^* and the door w'' of which it forms a part shall be held firmly in adjusted position, each side of the intake w is provided with an outwardly-extending perforated arm 25' and each wing w^* is provided with an inwardly-extending perforated arm 25'' arranged to lie close to the arm 25'. A pin 27 may be dropped through any pair of holes in the arms 25', 25'' which are in register with each other to lock the arms together. When it is desired to use the doors w'' to guide the snow into the intake, they are thrown outwardly from each other as is shown in Fig. 26, and each door is held in this position by an L-shaped locking-bar 26' the vertical leg of which is mounted in clips 26'' fastened to the outside of the door w'' and the free end of the horizontal arm of which hooks into one of the holes 27' in the V-shaped part b' of the chassis b . When the doors are closed, the wings w^* are thrown outwardly and serve to cut a sufficiently wide path through the

snow to insure the free movement of the vehicle; and the horizontal arms of these locking-bars are placed across each other as shown by the dotted lines in Fig. 26 and the full lines in Fig. 3. The bottom edge of each door w'' is provided with rollers 27'' by which the door is in part supported. Each side of the intake w is formed with a curved slot 12' through which projects outwardly a threaded stud 12'' from the adjacent side of the shovel 12. By tightening the handled nuts 12* on the outer ends of the studs 12'' the shovel 12 may be held in adjusted position.

To insure that the pavement will be thoroughly cleaned of the snow, I have provided in the rear of the conveyer casing 11 a street-sweeping mechanism which may be described as follows: Journaled in the ends of a suitable casing or housing 36 is a rotary shaft 37 upon which is mounted within the casing 36 a drum 38. The latter carries brush material 39 of any suitable character which is held in a groove in helical ribs 38' upon the drum 38. The shaft 37 is preferably inclined to the longitudinal axis of the vehicle and the sweepings are collected at one end of the brush casing 36 from which extends upwardly and rearwardly a screw-conveyer casing 40 within which is mounted a screw-conveyer 41. To drive the shaft 37 there is mounted upon one end thereof a bevel gear 42 which meshes with a bevel gear 43 on one end of the lengthwise-extending shaft 44 on the other end of which is a bevel gear 45 in mesh with a bevel gear 46 loose upon the transverse shaft p . Adjacent to the bevel gear 46 there is keyed upon the transverse shaft p a slidable clutch 47 which is controlled by the clutch-lever 48. By manipulating the latter the bevel gear 46 may be clutched to and unclutched from the transverse shaft p to throw the sweeper or brush 38 into and out of operation. Upon the end of the shaft 37 opposite from that upon which is mounted the bevel gear 42 there is mounted another bevel gear 49 in mesh with a bevel gear 50 mounted fast upon one end of the shaft 51 upon the other end of which is mounted fast a sprocket wheel 52 connected by a sprocket chain 53 with the sprocket wheel 54. The latter is mounted fast upon the projecting lower end of the screw-conveyer shaft 55. The brush or sweeper 39 will throw the sweepings from the street pavement into the screw-conveyer casing 40 at the lower end thereof whence they will be carried up by the screw-conveyer 41. To the lower end of the screw-conveyer casing 40 there is pivotally fastened a flap or plate 56 to the lower end of which is secured one end of an adjusting chain 57 the other end of which is detachably fastened to a support 58. The flap or plate 56 may be adjusted

by the chain 57 and will prevent the sweepings from being thrown outwardly to the front and beyond the flap by the sweeper 39.

Mounted free to swing near the rear lower edge of the housing 36 opposite the flap 56 is a transversely-disposed trailer-broom 56' having a hole in each end into which and through one of the holes 57'' formed in the lug 57' may be thrust a pin-bolt 56'' to hold the trailer-broom 56' at its adjusted height. The trailer-broom insures that the roadway shall be swept clean. Supported by the chassis 5 is a transverse beam 36' through which project the threaded upper ends of the posts 36'' the lower ends of which are fastened suitably to the top of the casing 36. By turning the adjusting nuts 36* the latter may be raised and lowered. To permit this adjustment the upper end of the screw-conveyer casing 40 is fitted yieldingly in the shell 59 of the triturator. From the water-pipe 63 hereinafter referred to is led a hose pipe 63' the other or lower end of which is provided with a sprinkler 63'' which distributes water in front of the rotary broom 39.

Centrally disposed within the triturator shell 59 is an upright or vertical shaft 60 upon the upper end of which is mounted fast a water-wheel or water-motor 61 of any suitable type and upon the lower end of which is mounted a bevel gear 62. Water is led from the water-pressure mains (not shown) to the hydrant 136 and thence through the hose-pipe 125 to the water pipe 63 from which it flows in jets through the nozzles 64 and is directed by the latter against the buckets or vanes 65 of the water-wheel 61 to drive the latter. If it be desired to have the assistance of the engine *c* in driving the vertical shaft 60, the bevel gear *c* is thrown into mesh with the bevel gear 62 by means of the clutch-lever 66 the working end of which is engaged with the grooved hub *c'* of the bevel gear *c*. The latter is mounted slidably upon the shaft *g* by being keyed thereon.

The triturator shell 59 is braced by means of a spider 67 the outer ends of the arms of which are suitably fastened to the shell 59 and through the hub of which passes free to rotate the central vertical shaft 60. Mounted upon the latter above the spider 67 is a distributor the arms 68 of which are inclined to the vertical and which carry downwardly-projecting teeth or prongs 69. By reason of their inclination to the vertical, the distributor arms 68 will allow the mass of snow, ice and water to fall freely through between them and will tend to force downwardly the snow and ice, distributing the same between the arms of the spider 67; and the teeth or prongs 69 will break up any lumps in the mixture. About midway of the triturator-shell 59 there is mounted a

grating 70 having upwardly-projecting teeth 71; and between the grating 70 and the spider 67 there is mounted fast upon the central vertical shaft 60 a cutter 72 the blades 73 of which are inclined downwardly and are formed with serrated cutting edges 74, the teeth of which co-act with the teeth 71 to grind and pulverize any hard substance, such as small stones or pieces of ice, that may have accumulated upon the grating 70. The upper edges of the blades 73 sweep past the arms of the spider 67 and cut away the downwardly moving parts of ice and snow falling between the arms. It is to be observed that there are an inner series of blades and an outer series of blades 73 with openings 73' between the blades of each series. The outer series contains about twice as many blades as the inner series. In the lower part of the triturator shell 59 there is mounted an inner shell or annular wall 75 the upper end of which is connected to the shell 59 by the frusto-conical ring or section 76. The lower part of the latter is braced by a spider 76' and the inner shell 75 is braced by means of a series of spiders 77. Within the inner shell 75 and near the top thereof there is mounted fast upon the central vertical shaft 60 a sweep 78 the blades 79 of which are inclined to the vertical and will cut away the triturated material falling between the arms of the spider 76' and projecting downwardly there-through into the path of the blades. The latter will also press downwardly the mass below them.

Mounted fast upon the vertical shaft 60, one between each pair of spiders 77, is a series of agitators the blades 80 of which agitate and break up the mass within the inner shell 75. The screw conveyer 41 discharges the sweepings into the space between the inner shell 75 and the lower portion of the triturator shell 59 and just below the frusto-conical shell 76. Near the bottom of the triturator shell 59 there are fastened to the central shaft 60 agitator-frames 81 the sides of which carry upright agitator-posts 82 which stir up the fluid mass within the space just referred to. This fluid mass overflows through the discharge opening 83 into the discharge conduit 84 and its outward movement is assisted by the centrifugal action of the agitator posts 82. The conduit 84 is formed with a manhole closed by a manhole-cover 85 by removing which access may be obtained to the interior of the conduit. The belt conveyer 15 discharges into the triturator near the top thereof the mass of snow, and finely broken ice particles scooped up by the shovel 12. A stationary scraper 19'' fastened to the shell 59 cleans off the belt 19 thoroughly. Upon its discharge from the belt conveyer 15, this mass is thor-

oughly saturated with water flowing under high pressure from a spout 86 which is connected with the inlet-water pipe 63. A valve-controlled branch-pipe 87 leads water from the water-pipe 63 to the shower-producer 88. (In this way there is artificially reproduced in principle nature's most effective method of melting snow,—a rain storm.) The water pours down upon the snowy mass beneath and aids thereby in reducing the same to a condition in which it is readily triturated by the triturating devices below the shower-producer 88 and hereinbefore fully described. Moreover, the supply of water under pressure thus provided produces a rapid flow of the contents of the triturator shell outwardly through the opening 83 and conduit 84 and thence into the sectional discharge-pipe 89 from which it is discharged into the sluiceway 90 and from the latter into the drain 91 from which it flows into the city sewer.

Hingedly mounted in a bracket lug 92 fastened to the rear of the triturator shell 59 is an arm 93 which carries at one end a ring 94 having a series of holes 94'. At the center of the ring 94 there is pivoted one end of a bar 95 to the other end of which is fastened by a suitable clamp 96 a bar 97; and to the latter is clamped a third bar 98 to the outer end of which is fastened one end of a guy rope or cable 99 which passes over a roller 99' and the other end of which is wound on a drum 99'' controlled by a pawl 99^x, the drum and the roller being supported by the shell 59. The clamps 96 are slidable with respect to the bars upon which they are mounted and from this it follows that the bars 95, 97 and 98 may be adjusted relatively to each other to lessen or to increase the total length of the support made up of these bars. From the latter are suspended or slung by means of the sling chains 100 the sections of the discharge pipe 89. These sections are arranged to telescope into each other, so that the total length of the discharge pipe 89 may be increased or diminished as may be found necessary. The joint between any two sections is watertight; and this watertight construction is illustrated in Fig. 31. The ends of both the inner and outer sections at the joint are formed with flanges 89', 89'' which extend in opposite directions and between which is mounted a rubber packing ring or gasket ring 101. The end of the outer section is slitted to make it yield readily and over this slitted end is fitted a split hoop or band 102 the ends of which may be pressed together by any suitable device, as by tightening the bolt 102'. The bar 95 is formed with a hole 95' adapted to be swung into register with any one of the series of holes 94' in the ring 94; and when the bar 95 is

properly positioned, it is held in place by a lock-pin 95'' which passes through the hole 95' and the hole 94' in register therewith. From this arrangement of parts it follows that the system of bars 95, 97, 98 may be swung in a horizontal plane from side to side of the machine. Further, the inlet end of the discharge pipe 89 is pivotally mounted upon the outlet end of the conduit 84 so that the discharge pipe 89 may be swung in a vertical plane from side to side of the machine, the sling chains 100 having first been removed. The outlet end of the discharge pipe 89 is provided with a canvas pipe 103 to which is fastened a chain 104 one end of which is attached to a ring at the outlet of the conduit and the other end of which is provided with a split ring 104' slidably engaged with a guide wire 105 which extends lengthwise of the sluiceway 90. The latter is sectional in construction and the joint between abutting sections or gutters is made watertight by means of a strip of rubber or other suitable packing 106 fitted in grooves in the opposed ends of the sections. To lock the abutting sections securely together, one of the opposed ends is provided with a loop 107 and the other end with a pivoted clasp 108 adapted to pass through the loop 107 and then to be thrown against the wall of the gutter to lock these ends together after the manner of a trunk fastener. The gutter sections are supported on legs 109 provided at their lower ends with rollers 110 and pivoted at their upper ends to the sides of the gutter sections. These sides are provided with graduated semicircular segments 111 each formed with a slot 112 through which and a hole in the leg 109 passes a bolt 113 upon the threaded outer end of which is screwed a wing nut 114. By loosening the latter the legs 109 may be adjusted so as to give the gutter any suitable inclination desired. Each end section 90' of the sluiceway 90 has its lateral walls at one end raised above the general level of the section and the end section next the drain 91 may be provided with a suitable grating 115 which is designed to prevent rubbish and debris floating in the stream in the sluiceway from falling into the drain. To permit this end section to be cleaned, it is provided with a slidable gate 116, which may be raised vertically to allow the sediment collected in the bottom of the section to be cleaned out.

Mounted loosely on and, therefore, free to rotate independently of, the axle *v* is a drum 117 upon which is rove a rope 118 carrying at its outer free end a swivel-hook 119. Fast to the drum 117 is a sprocket wheel 120 which is connected by the sprocket chain 121 to a sprocket wheel 122 loosely mounted upon the transverse shaft *p*.

Keyed upon the latter is a clutch 123 which may be thrown into and out of clutching engagement with the sprocket wheel 122 by means of the clutch lever 124. When the machine has proceeded along the city street to the next hydrant, the hydrant end of the hose-pipe 125 is uncoupled from the hydrant and made fast to the hook 119 of the windlass rope 118. Upon the bottom face of each side member of the chassis *b* is pivotally mounted a pair of pulleys 126; and the rope 118 is passed between one pair of these pulleys. By means of the clutch-lever 124 the clutch 123 is thrown into clutching engagement with the sprocket wheel 122 and thereby the windlass is rotated to wind up the rope 119 and pull the hydrant end of the hose-pipe 125 up to the next hydrant. When the hose-pipe is not in use, it will be wound upon the hose reel or spool 127. Each of the end sections of the sluiceway is provided upon its bottom with an eye 128 with which may be engaged the swivel hook 119, the rope 118 being passed or rove through pulley or sheave of a block 129 hooked or otherwise suitably fastened to the wall of the drain 91. By winding the rope 118 upon the drum 117, the sluiceway 90 may be moved from one drain to the next. A suitable truck 130 may be attached to the rear of the vehicle *a* for the transportation of the sections of the sluiceway, when the same is not in use. One of the end sections of the sluiceway is provided with a reel 131 upon which may be wound the part of the guide-wire 105 not in use. The reel is prevented from unwinding by a pawl-and-ratchet mechanism 132.

A conduit 133 leads from the bottom of the triturator shell 59 to the conduit 84 and is controlled by a valve 134, by opening which the triturator-shell may be drained of its liquid contents. The hydrant-end of the hose-pipe 125 is provided with a valve 135 by which the water in the hose-pipe may be retained therein, after it has been uncoupled from the hydrant 136. In this way the street is kept free from water which might otherwise overflow it from the hose-pipe. The discharge pipe 89 is provided with a valve 141 which is thrown into closing position, when the operation of the machine is stopped.

To clean from the plates 16 any material which may cling to them, a cleaning-bar or wiper 137 is mounted free to rock in the side-walls of the conveyer-casing 11 and is controlled by the torsional springs 138 mounted on its ends and thereto attached, the springs being also attached at one end to the adjacent wall of the casing 11. A stop-pin 139 limits the downward movement of the wiper 137. As each plate 16 moves around the upper shaft 13, its working face is wiped by the yieldingly-mounted wiper

and the caking of snow between and on the plates is prevented.

The exhaust gases from the gas engine *c* are led to the interior of the triturator shell 59 through an exhaust-pipe 140.

When the doors *w''* are open, as shown in Fig. 26, a wire-mesh grating 141 is fastened to and between them in order to exclude debris which might otherwise reach the conveyer and therethrough the interior of the machine. The shell 59 of the triturator is formed near its bottom with a man-hole normally kept closed by a suitable cover 59'. By removing the latter access may be obtained to the interior of the shell for the purpose of cleaning.

To insure the easy passage of the brackets 33 over the sprocket-wheels 13', 14', and reduce the shock which accompanies the change in direction and thereby to prevent breakage of the parts, the brackets 33 are so connected to the chains 15 that there is play between the connecting and connected parts. Thus, the holes 33' in the brackets 33 are made larger than the rivets 33'' which fasten these brackets to the conveyer-chains 15, whereby some play is allowed the brackets. In this way the strain at the turn is brought upon the chain and not upon the brackets and some resiliency is given to the conveyer-plates 16.

I claim:

1. A machine of the character described comprising a vehicle; snow-destroying mechanism mounted thereon; street-sweeping mechanism arranged to sweep the street; and conveying means into which said street-sweeping mechanism discharges the street-sweepings and which delivers the same to said snow-destroying mechanism.

2. A machine of the character described comprising a vehicle; snow-destroying mechanism mounted thereon; a rotary broom for sweeping the street; and a conveyer for delivering the street-sweepings from said broom to said snow-destroying mechanism; said broom being arranged to discharge the street-sweepings into said conveyer.

3. A machine of the character described comprising a casing provided with an outlet; snow-reducing mechanism arranged within said casing; a sectional discharge conduit which is mounted upon said outlet free to swing; a sectional support for said conduit mounted free to swing; and mechanism for swinging said support into and out of operative position.

4. A machine of the character described comprising a casing provided with an outlet; snow-reducing mechanism arranged within said casing; a discharge conduit which leads from said outlet; and a sluiceway into which said conduit discharges and which is provided with guiding means connecting said sluiceway and conduit.

5. A machine of the character described comprising a vehicle; a casing mounted thereon and provided with an outlet; snow-reducing mechanism arranged within said casing; a sluiceway provided with tiltable legs for varying the inclination thereof; and a discharge conduit which leads from said outlet and discharges into said sluiceway.

6. A machine of the character described comprising a vehicle provided with a windlass; a casing provided with an outlet and mounted on said vehicle; snow-reducing mechanism arranged within said casing; a discharge-conduit which leads from said outlet and a water-conduit into which said discharge conduit empties and which is arranged to be hauled by said windlass from place to place on the roadway.

7. A machine of the character described comprising a vehicle provided with a windlass; mechanism which propels the vehicle and drives the windlass; a casing provided with an outlet and mounted on said vehicle; snow-reducing mechanism arranged within said casing; a discharge-conduit which leads from said outlet and a water-conduit into which said discharge conduit empties and which is arranged to be hauled by said windlass from place to place on the roadway.

8. A machine of the character described comprising a casing; feeding means which discharge snow into said casing; a shaft mounted within the latter; blade-like arms which extend laterally from said shaft and are inclined to the horizontal and which are provided with triturating devices; and triturating devices arranged within said casing below said arms.

9. A machine of the character described comprising a casing; feeding means which discharge snow thereinto; a shaft mounted within said casing; blade-like arms which extend laterally from said shaft and are inclined to the horizontal and which are provided with snow-triturating projections; and triturating devices arranged within said casing below said arms.

10. In combination in a machine of the character described a grating; a snow-triturating device provided with spaced blades which are inclined to the horizontal and which are provided with triturating devices and are arranged above said grating and which press the snow therethrough; and feeding means which discharge snow down upon said device.

11. In combination in a machine of the

character described, a grating formed with projections; and a snow-triturating device which is provided with spaced blades having serrated edges and inclined to the horizontal and which is arranged adjacent to said grating and presses the snow there-through.

12. In combination in a machine of the character described, a grating; a spider; and a snow-triturating device provided with spaced blades which are inclined to the horizontal and are arranged between said grating and spider.

13. Snow-triturating mechanism comprising a series of spiders; and a series of triturating devices which are provided with inclined blades and which alternate with said spiders.

14. Snow-triturating mechanism comprising a series of spiders; a series of triturating devices which are provided with inclined blades and which alternate with said spiders; and an agitator for stirring the material.

15. A machine of the character described, comprising a vehicle; snow-destroying mechanism mounted thereon; feeding means which deliver the snow thereto; means which directs the snow to said feeding means; street-sweeping mechanism; and a conveyer into which the street-sweepings are discharged by the latter and which delivers the street-sweepings to said snow-destroying mechanism.

16. A machine of the character described, comprising a vehicle; snow-destroying mechanism mounted thereon; and mechanism which sweeps the street and delivers the street-sweepings to said snow-destroying mechanism.

17. A machine of the character described, comprising a vehicle; snow-destroying mechanism mounted thereon; a snow-plow carried by said vehicle and including a pair of swinging members arranged to fold toward each other and pivoted intermediate their ends, the projecting rear ends forming wings.

In testimony whereof I hereunto set my hand at New York city this fourth day of May, 1911, in the presence of the two undersigned witnesses.

PATRICK D. RIORDAN.

Witnesses:

E. I. MCCARTHY,
JAMES HAMILTON.