

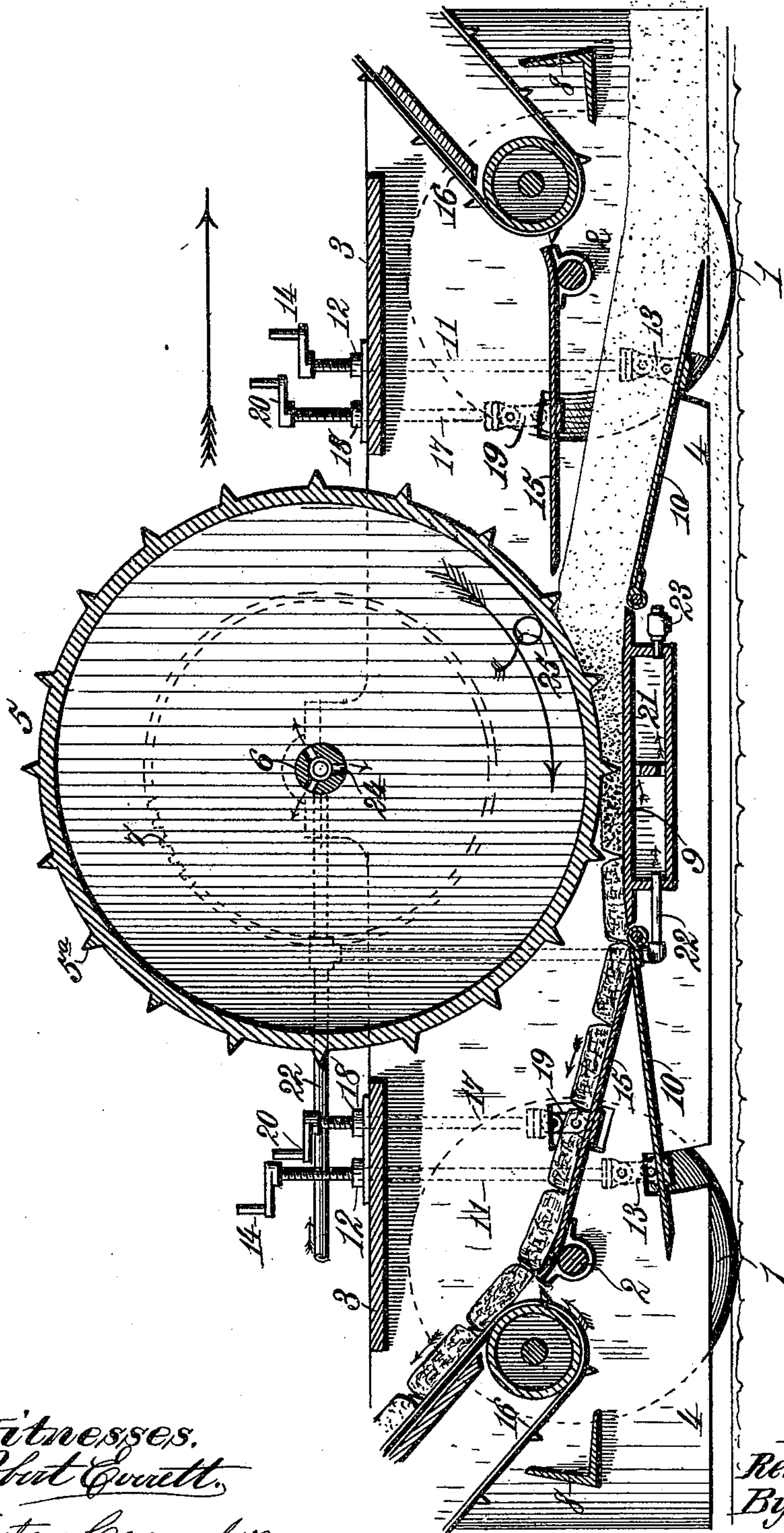
No. 641,803.

Patented Jan. 23, 1900.

R. SHIRREFFS.
SNOW REMOVING APPARATUS.

(Application filed May 13, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

REUBEN SHIRREFFS, OF RICHMOND, VIRGINIA.

SNOW-REMOVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 641,803, dated January 23, 1900.

Application filed May 13, 1899. Serial No. 716,717. (No model.)

To all whom it may concern:

Be it known that I, REUBEN SHIRREFFS, a citizen of the United States of America, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Snow-Removing Apparatus, of which the following is a specification.

My invention relates to improvements in snow-removing apparatus for cleaning from streets or railroad-tracks, and resides in an apparatus of the general type disclosed in my applications for Letters Patent filed February 23, 1899, Serial No. 706,583, and March 24, 1899, Serial No. 710,307—that is to say, apparatus wherein the snow gathered is compressed or densified and delivered from the machine in a compacted mass or masses.

The present invention has for its object the provision of novel means for performing these operations and to improve in matters of construction and arrangement mechanism of this class.

To such ends my invention consists in the novel combination, arrangement, construction, and operation of parts, as hereinafter described and claimed, reference being made to the accompanying drawing, wherein the figure is a longitudinal central section.

In the said drawing the reference-numerals 1 indicate the driving or ground wheels of the apparatus, mounted on axles 2.

3 indicates the platform of the machine, which is partly broken away, and 4 one of the side walls thereof.

The numeral 5 indicates a rotating cylinder or drum suitably journaled in the framework of the apparatus and provided with snow pushers and cutters or dividers, such as ribs 5^a. The axle 6 of this drum in the instance shown in the drawing is provided with a gear 7, which is adapted to be engaged alternately, according to the direction in which the apparatus is moving, by shiftable gears driven from the ground-wheels, as in my aforesaid applications for Letters Patent.

I have not shown the means for rotating the drum in the drawing of the present application, as the same forms no part of this invention, and I contemplate within the scope of my invention driving it by any suitable in-

dependent motor instead of from the ground-wheels in cases where such may be desirable.

As in my application before mentioned, Serial No. 710,307, I support in the framework of the apparatus snow-levelers 8, which serve to prevent the passage of snow into the active parts of the apparatus above the level of the axles 2. Spanning the space between the side walls of the machine and securely supported thereby is a stationary member, such as a plate 9, arranged below and in the axial line of and opposed to the rotating drum or cylinder 5 in such manner as to cooperate therewith in compressing or densifying the snow removed by the shovels, as shown. Adjustably mounted at the sides of this plate are snow-shovels 10, which are adapted to be lowered to a position close to the ground, as at the right of the drawing, for the purpose of cleanly removing the snow therefrom and, as shown at the left of the drawing, adapted to be raised out of operation. It is designed that the snow-shovel which happens to be forward during the travel of the apparatus shall be lowered for operation and the other shovel raised or lifted out of operation. This is accomplished by means of screw-threaded stems 11, working in nuts 12, secured to said platform, the said stems being pivotally connected to the shovels by links 13. The stems are provided with operating-handles 14.

Adjustably mounted, and preferably upon the axles 2, are snow-inclines 15, the free ends pointing toward the transverse median line of the machine and, as illustrated in the drawing, performing the dual function of preventing the snow from packing in front of the drum or cylinder and guiding the same to the stationary plate, as illustrated at the right of the drawing, and also as inclines along which the snow after being compressed is transmitted to the delivery aprons or chains 16. I have not shown these delivery-chains complete, as their construction and point of delivery is not important in respect of this invention. They may deliver the compressed snow to elevated tables or other place of deposit, as may be desired. The said snow-inclines 15 are adjusted to perform their dual function by means of mechanism similar to that for adjusting the snow-shovels, wherein

the numerals 17 indicate the threaded stem; 18, the threaded nuts; 19, the link connection of said stem with the inclines, and 20 the operating-handles.

5 In the operation of the apparatus the snow is directed into the line of the machine to be taken by the snow-shovels in any suitable way—as, for instance, by brushes, as disclosed in my aforesaid application for Letters
10 Patent. During travel of the machine the snow is taken up by one or other of the snow-shovels 10, according to the direction in which the machine is moving, and is carried back upon said shovels and delivered between the
15 compressing drum or cylinder 5 and the stationary plate 9, being forced to take this course by means of the forward snow-incline 15, which has been adjusted to the proper position for that purpose. The snow is then
20 engaged by the snow pushing and cutting devices 5^a, with which the cylinder or drum is provided, (and which in the present instance are in the shape of peripheral ribs or paddles formed upon said cylinder or drum,) that
25 compel the snow to pass between and through the space between the cylinder or drum and plate, and thus be gradually compressed or densified. During this operation of compression or densification the ribs 5^a, which are
30 located at separated points on the periphery of the cylinder or drum, more or less completely separate the compacted snow into cakes, as shown in the drawing. After compression the snow is delivered onto the rear
35 snow-incline 15, which has been adjusted, as shown at the left of the drawing, to the proper position therefor, and is pushed along said incline by the subsequently-compressed cakes of snow. From these inclines the compressed
40 or densified cakes of snow are taken by the delivery aprons or chains 16, whence they are delivered, according to the desire of the operator, upon tables or other suitable depository.

45 The stationary plate 9 is hollow, as shown, to provide a steam or heat chamber 21, into which steam or heat from any suitable source is delivered by the pipe 22 and exhausted through the port 23. Where steam is the medium of heat employed, this port may be a
50 valved one of any known type, which will permit the steam to exhaust at a predetermined pressure in the hollow plate. Sufficient heat for the purpose of my invention
55 may be attained in the case of steam by the mere passage of the steam through the plate, and in such instances the port need not necessarily be valved. The compressing drum or cylinder 5 is also hollow, as shown, and the
60 journal 6 thereof serves as a conduit for steam or other heat and is provided with inlet-ports 24 to deliver the heat to the interior of the drum, the ends of which are provided with exhaust-ports 25. I contemplate introducing into the hollow plate and drum heat
65 of a temperature which will soften the snow at the face of contact with said plate and

drum, as I find it may be desirable so to do to facilitate the discharge of the compressed cakes. I desire it understood, however, that
70 I do not limit my invention to an apparatus in which heat is supplied and also that it is not my purpose, which I distinctly negative, to melt the snow, desiring only to soften the face thereof to facilitate the discharge of the
75 compressed snow-cakes. Other means of heating the plate and drum, or either of them, without departing from my invention may be employed.

Having thus described my invention, what
80 I claim is—

1. A snow-removing apparatus, comprising means for gathering snow and snow-compressing mechanism consisting of a stationary member and an opposed rotating member,
85 substantially as described.

2. A snow-removing apparatus, comprising means for gathering snow and snow-compressing mechanism consisting of a stationary member and a rotating drum or cylinder, sub-
90 stantially as described.

3. A snow-removing apparatus, comprising means for gathering snow and snow-compressing mechanism consisting of a stationary member and a rotating drum or cylinder provided with snow-pushers, substantially as de-
95 scribed.

4. A snow-removing apparatus, comprising means for gathering snow and snow-compressing mechanism consisting of a stationary
100 member and a rotary drum or cylinder provided with peripheral snow pushing and dividing ribs, substantially as described.

5. A snow-removing apparatus comprising means for gathering snow and heated snow-
105 compressing mechanism, substantially as described.

6. A snow-removing apparatus comprising means for gathering snow, snow-compressing mechanism and means for heating the latter,
110 substantially as described.

7. A snow-compressing apparatus, comprising means for gathering snow and snow-compressing mechanism consisting of two hollow members provided with means for introducing
115 heat thereinto, substantially as described.

8. A snow-removing apparatus, comprising means for gathering snow, snow-compressing mechanism consisting of a hollow stationary member provided with means for introducing
120 heat thereinto, and a rotary drum or cylinder arranged in operative relation thereto, substantially as described.

9. A snow-removing apparatus, comprising means for gathering snow, snow-compressing
125 mechanism consisting of a stationary member and a hollow rotary member provided with means for introducing heat thereinto, substantially as described.

10. A snow-removing apparatus, comprising
130 means for gathering snow, snow-compressing mechanism consisting of a hollow stationary member and a hollow rotary drum or cylinder, both thereof provided with means for in-

troducing heat thereinto, substantially as described.

11. In a snow-removing apparatus, the combination of a rotary drum and an opposed stationary plate operatively arranged to compress the snow, and a snow-shovel leading to said stationary plate, substantially as described.

12. In a snow-removing apparatus, the combination of a rotary drum and a stationary plate operatively arranged to compress the snow, and an adjustable snow-shovel leading to said stationary plate, substantially as described.

13. In a snow-removing apparatus, the combination of a rotary drum and a stationary plate operatively arranged to compress the snow, and adjustable snow-shovels leading to said stationary plate, substantially as described.

14. In a snow-removing apparatus, the combination with snow-compressing mechanism, of means for delivering the snow from the machine, and adjustable snow-inclines, adapted to be adjusted to bridge the space between the compressing and delivering mechanisms, substantially as described.

15. In a snow-removing apparatus, the combination with snow-compressing mechanism,

of adjustable snow-inclines operatively arranged in relation thereto, and connected to be adjusted to serve as guides to direct the snow to the compressing mechanism and as inclines to deliver the compressed snow therefrom, substantially as described.

16. In a snow-removing apparatus, the combination with snow-compressing mechanism, of snow-inclines adjustably connected to the wheel-axles of the vehicle, substantially as described.

17. In a snow-removing apparatus, the combination with snow-compressing mechanism, of snow-shovels connected thereto, and adjustable snow-inclines, substantially as described.

18. In a snow-removing apparatus, the combination with snow-compressing mechanism consisting of a stationary plate and a rotary drum, of snow-shovels leading to said plate, and adjustable snow-inclines leading therefrom, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

REUBEN SHIRREFFS.

Witnesses:

CARY SHEPPARD,
E. L. DAVIS.