No. 658,167. Patented Sept. 18, 1900.

W. WESTLAKE.

SNOW COMPRESSOR.

(Application filed Oct. 24, 1899.)

(No Model.) 4 Sheets—Sheet 1.

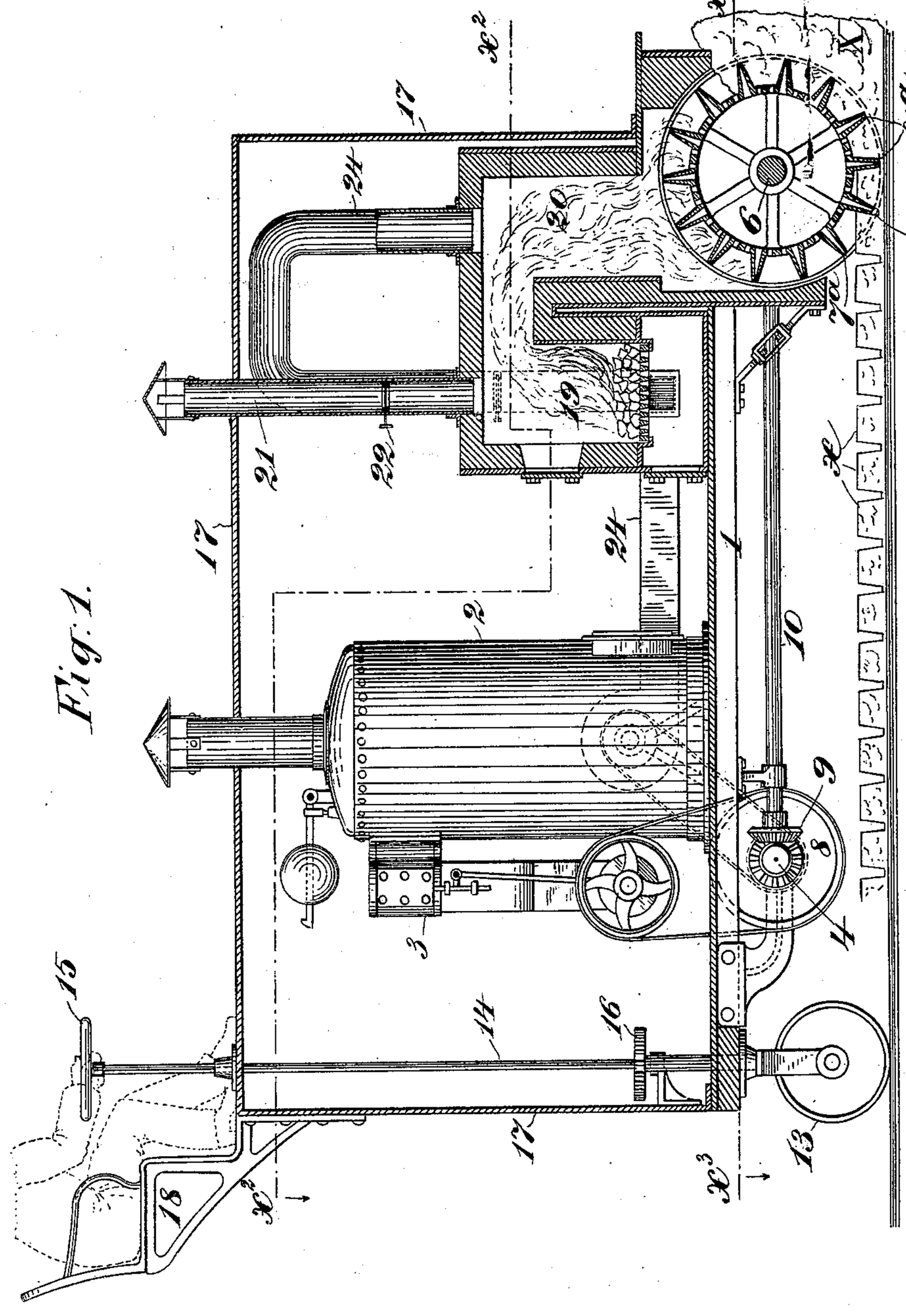

Fig. 1.

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Fig. 2.

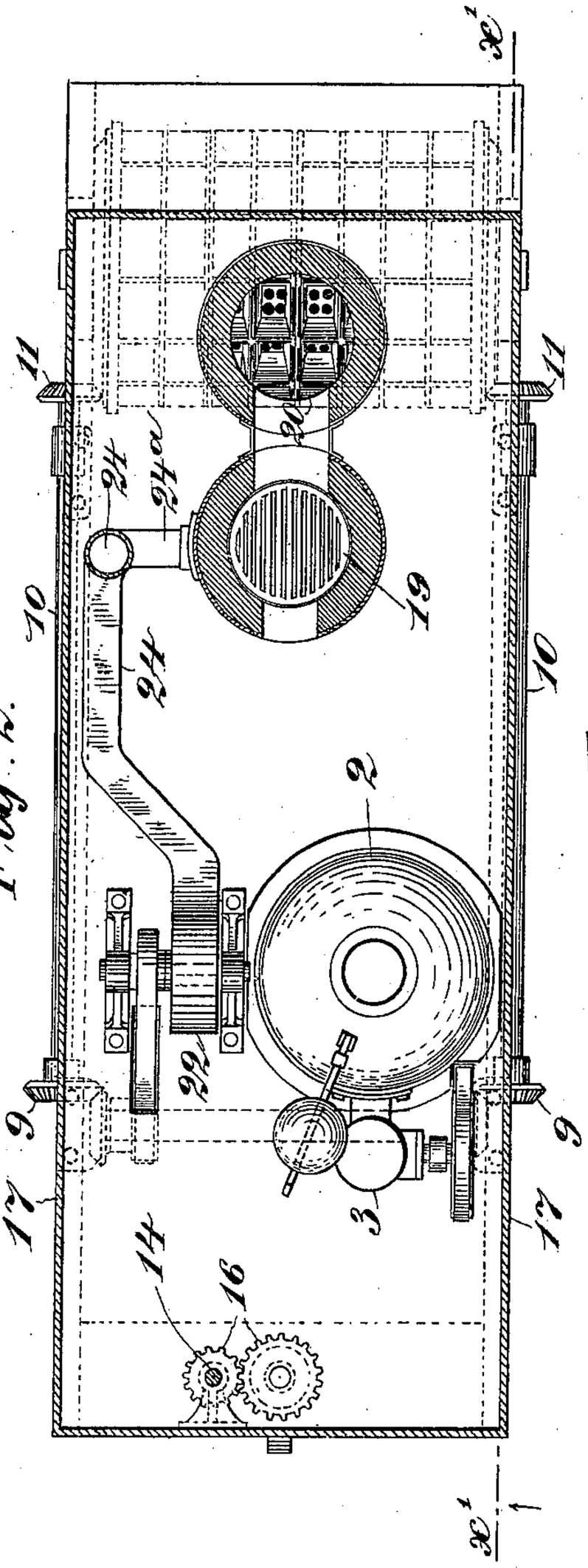
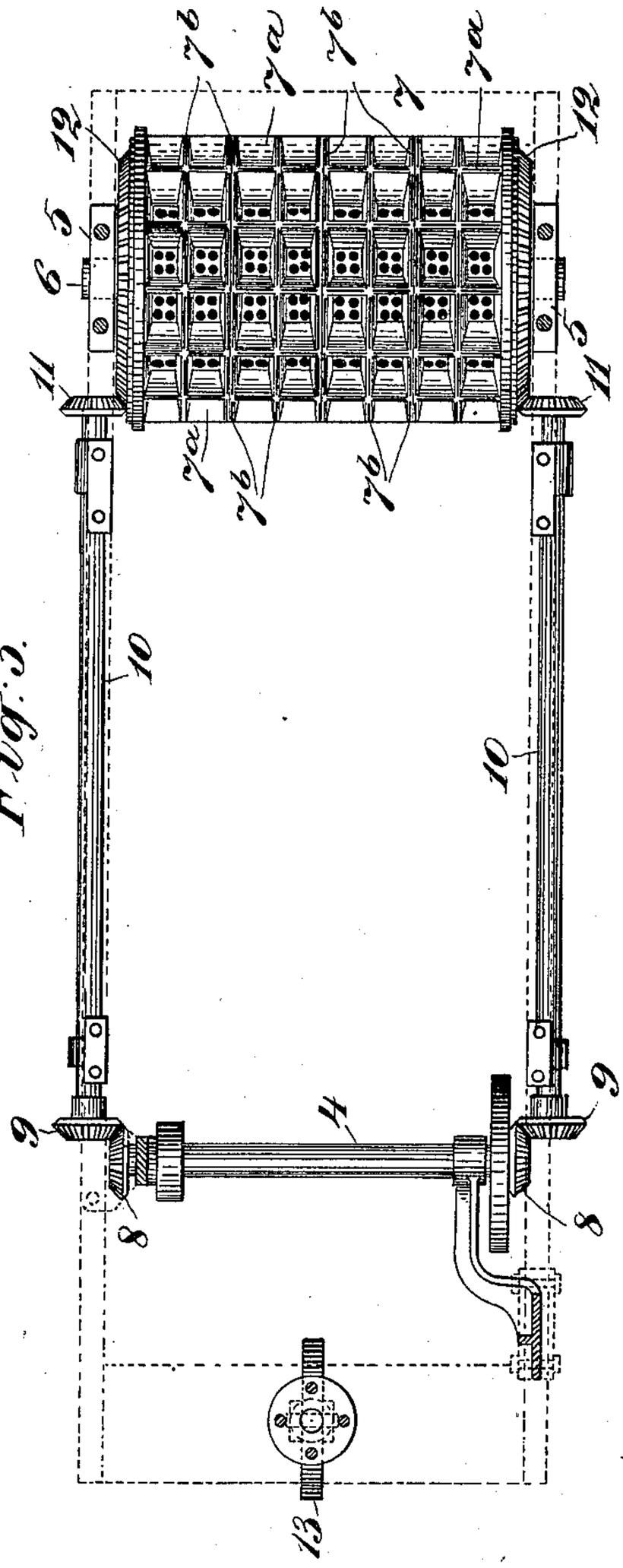


Fig. 3.



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(No Model.) 4 Sheets—Sheet 3.

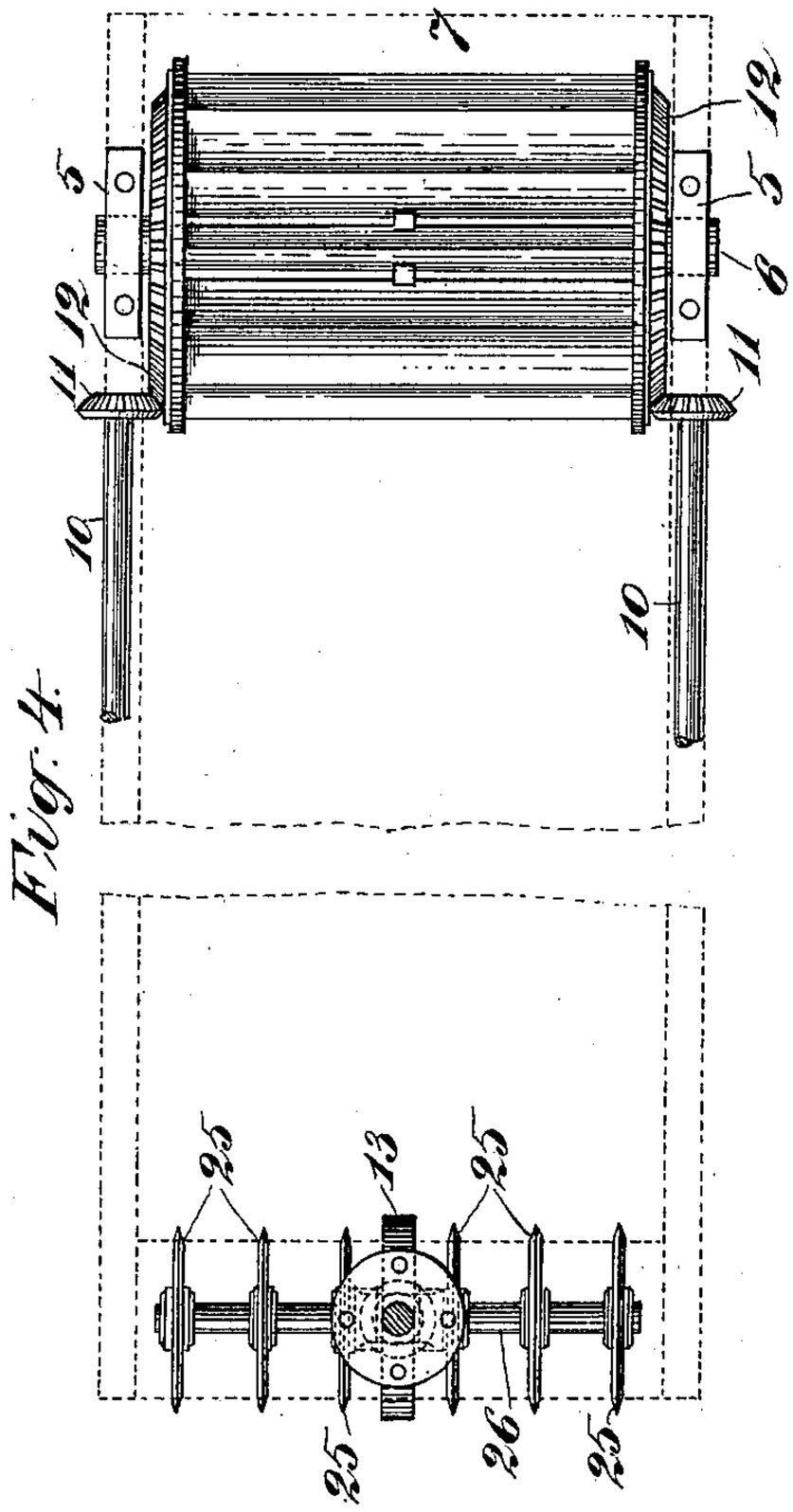

Fig. 4.

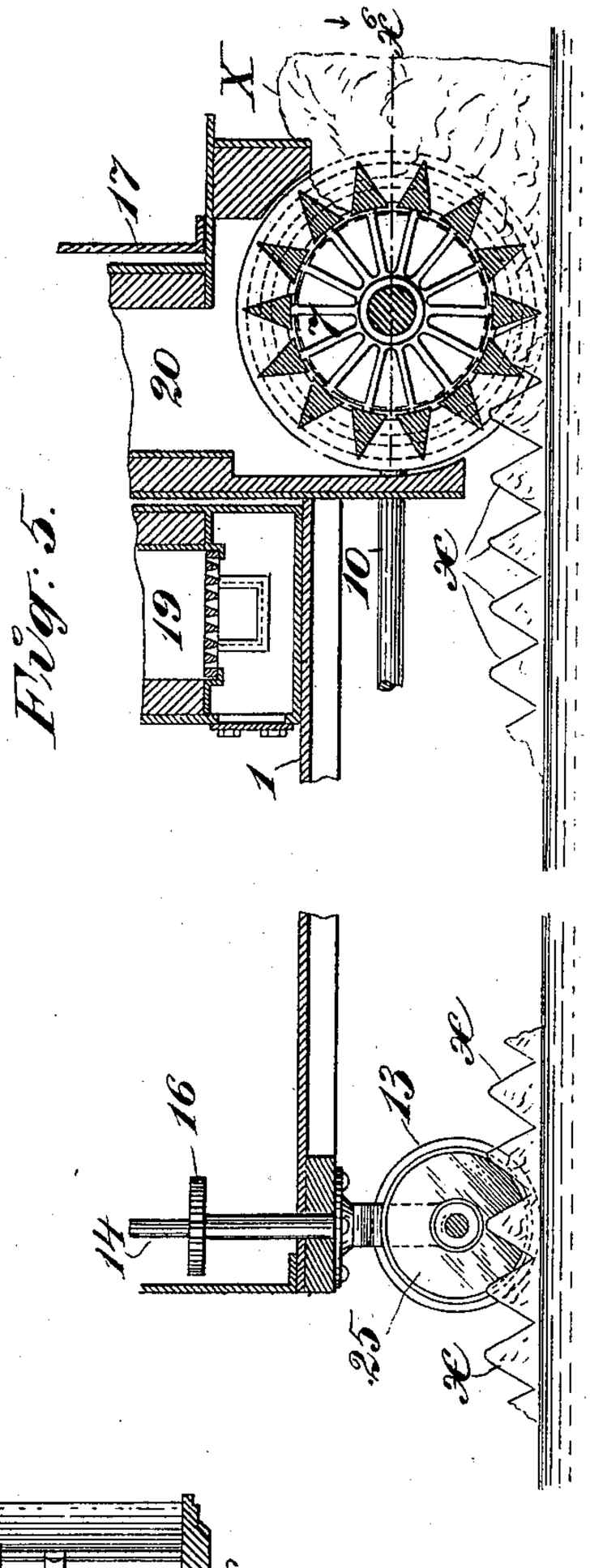

Fig. 5.

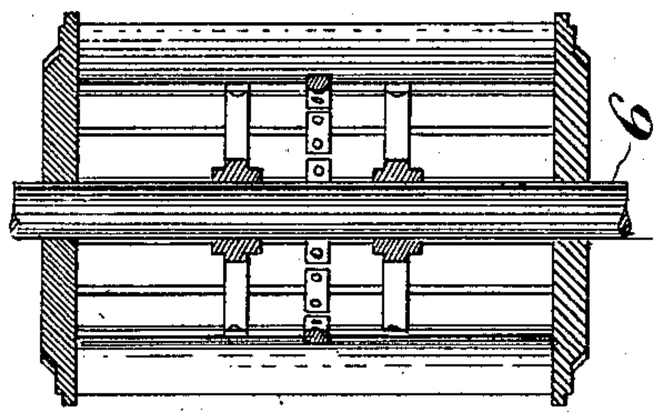

Fig. 6.

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(No Model.) 4 Sheets—Sheet 4.

Fig. 7.

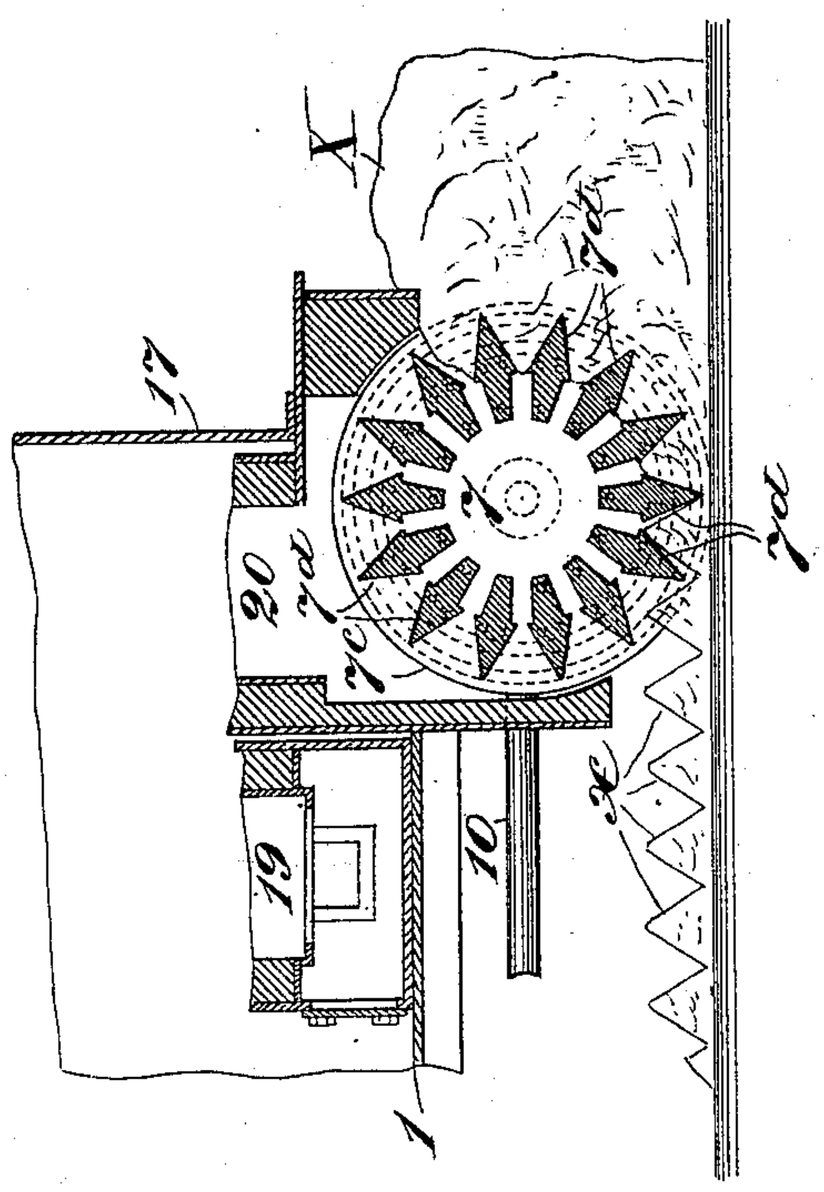
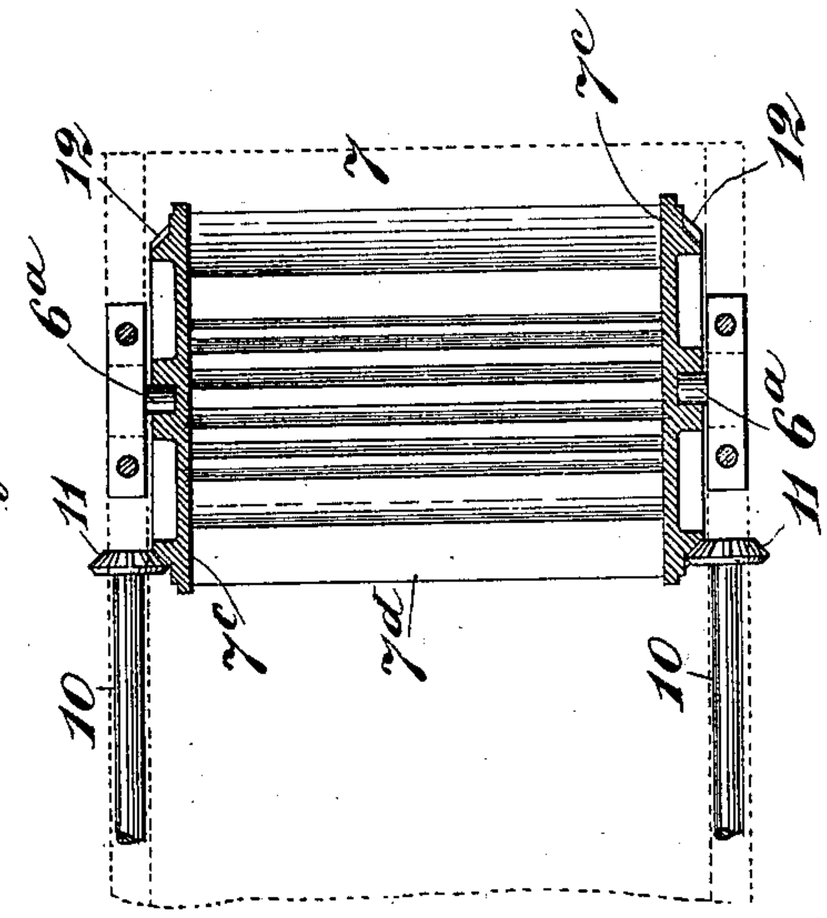


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM WESTLAKE, OF NEW YORK, N. Y.

SNOW-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 658,167, dated September 18, 1900.

Application filed October 24, 1899. Serial No. 734,624. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WESTLAKE, a citizen of the United States, residing in the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Snow-Compressors, of which the following is a specification.

This invention relates to the class of apparatuses used for clearing the snow from streets and roads; and the object is to compress the snow into compact pieces, bricks, or blocks with the aid of heat and pressure used conjointly, so that such bricks or blocks may be conveniently stacked at the side of the street or loaded into vehicles for removal.

The invention comprises a molding drum or roller which is quite heavy and is adapted to be rolled over the snow on the ground, so as to compress and mold it in the form of bricks, blocks, or pieces, and means connected with said drum or roller for forcing heated gases down through the same as it moves along, so as to soften and compact the snow or put it into better shape for pressing into blocks and incidentally also to melt some portion of it.

In the drawings which serve to illustrate the invention it is represented as embodied in a vehicle having means for self-propulsion, as in the case of a steam road-roller, and several forms and constructions are illustrated.

Figure 1 is a vertical longitudinal sectional elevation of one form of the apparatus, taken in the plane indicated by line x' in Fig. 2. Fig. 2 is a sectional plan taken in the plane indicated by the line x^2 in Fig. 1, and Fig. 3 is a plan of the mechanism below the platform or body. Fig. 4 is a plan view. Fig. 5 is a vertical longitudinal section, and Fig. 6 is a detached sectional view at line x^6 in Fig. 5. These views illustrate a somewhat-different construction of the compressing-roller and also a gang of slicers used in connection therewith. Fig. 7 is a vertical section similar to Fig. 5, illustrating another form of the compressing-roller; and Fig. 8 is a horizontal section through the axis of the roller seen in Fig. 7.

Figs. 1, 2, and 3 illustrate the general construction of the apparatus. The platform 1 has mounted on it a boiler 2 and an engine 3, which latter drives a shaft 4 through the medium of any suitable gear. The front end of the platform 1 is supported by suitable bearings 5, Fig. 3, on the axle or shaft 6 of a roller 7, the specific construction of which will be hereinafter described. This roller is driven from the shaft 4 by any suitably-constructed connecting-gearing. As herein shown, this comprises miter-wheels 8 on the ends of the shaft 4, gearing, respectively, with similar wheels 9 on two longitudinally-extending shafts 10, which bear at their front ends bevel-wheels 11, which gear, respectively, with bevel-wheels 12 on the ends of the roller 7. This roller serves not only to compress the snow X, Fig. 1, into blocks x, but it also serves as a ground-wheel for the apparatus to carry the same over the ground. At its rear end the platform 1 is carried by a single steering ground-wheel 13, adapted to be turned for steering through the medium of a steering-shaft 14, a steering-wheel 15, and connecting gear-wheels 16, Fig. 2. Where the apparatus has an inclosure 17 on the platform, the shaft 14 may extend out at the top of the same, as seen in Fig. 1, and the operator may be provided with a seat 18.

The roller 7 has molds in its face for molding the snow, said molds being formed by longitudinally-extending ribs 7^a on its face, and the roller is of a hollow construction with openings in its rim between said ribs or at the bottoms of the said molds.

On the platform is constructed a furnace 19, with a down-flue 20, which opens into a species of hood formed on the platform over the roller. The furnace, flue, and hood will be or may be lined in the main with fire-tiles or other refractory material. Directly over the fire-box of the furnace is a chimney 21 for the products of combustion at starting the fire, and in this chimney is a damper 22. A blower 23, Fig. 2, on the platform and driven in any suitable manner from the engine 3 has a conduit 24, which leads down into the top of the flue 20, and a branch 24^a from this conduit to the fire-box below the grate.

The operation is as follows: The fires being established, the apparatus is set in motion over the snow in the street or road. The weighted compressing-roller 7 rolls over and

compresses the snow as it advances, forming blocks *x*, as clearly shown in Fig. 1. The hot flames and gases forced down upon and through the roller 7 has many advantages. By warming the roller itself it effectually prevents the snow from packing into it and clogging it. By its action on the snow itself the heat puts the latter into condition to pack into a small compass, and to some extent, of course, it melts the snow, the resulting water then flowing off to the gutters or sewer.

The blocks *x* of compacted snow may be piled at the side of the road out of the way of traffic or they may be loaded directly into carts and hauled away to the dump.

In the construction of the roller 7 (shown in Figs. 1, 2, and 3) the molds formed by the ribs 7^a are divided by a plurality of circumferentially-extending ribs 7^b, so that the snow is molded into somewhat-square blocks convenient for handling; but the form or shape and dimensions of the molds are not matters that are important or essential to my invention.

Figs. 7 and 8 show a simple form of the compressing-roller, whereby the blocks *x* of snow are formed of a V shape and no circumferential ribs are employed to cut the blocks across into short lengths.

In Figs 4, 5, and 6 the compressing-roller forms blocks similar to the roller seen in Figs. 7 and 8, and there is a gang of slicers or cross-cutting disks 25. These disks are rotatively mounted on a common axis 26, with the steering ground-wheel 13, and will be a little smaller than that wheel, so as not to touch or bear on the ground, as it is not desired that they shall cut wholly through the long blocks formed by the compression-roller.

Although either of the forms of the invention described will do good work, that which employs the disks or slicers 25 is preferred, as it renders the construction of the compression-roller simpler and cheaper.

The form of roller illustrated in Figs. 7 and 8 may be made by securing between two like circular ends 7^c a plurality of like cast-iron bars 7^d, which form the molds. The ends 7^c may have the gears 12 cast on them, and they may be provided with central bearings to receive journals 6^a, (see Fig. 8,) fixed on the platform. This construction may be employed in lieu of a shaft or axle, as 6, extending entirely through the roller from end to end.

Being the first in this field, so far as I am aware, I do not limit myself to the specific details of construction herein shown. The invention consists in any form of compressing-roller having molds in its face to compact the snow into blocks, together with means for rolling it over the snow and means for warming or heating it as it is being rolled along.

Having thus described my invention, I claim—

1. A snow-compressing apparatus comprising a roller provided with molds in its face, means for rolling said roller over the snow, and means for applying heat exteriorly to the upper part of said roller while it is being rolled over the snow.

2. A snow-compressing apparatus comprising a roller provided with molds in its face, a platform supported on said roller, a motor mounted on said platform and geared to said roller for driving it, and means carried by said platform for applying heat exteriorly to the upper part of said roller.

3. A snow-compressing apparatus, comprising a roller provided with molds in its face formed by longitudinally-extending ribs, and with apertures opening to its interior, a steering-wheel, a platform mounted on said roller and steering-wheel, means carried by said platform for operating said steering-wheel, a motor mounted on said platform and geared to said roller for driving it, and means carried by said platform for applying heat exteriorly to said roller.

4. A snow-compressing apparatus, comprising a platform supported on a roller having molds in its face, and a steering-wheel, the said roller and steering-wheel, a motor carried by said platform and geared to said roller for driving it, means carried by said platform for applying heat to said roller, and means carried by the platform for slicing the blocks of snow molded by said roller.

5. A snow-compressing apparatus comprising a roller having molds in its face, a platform supported on said roller, a motor on said platform geared to the roller for driving it, a furnace mounted on said platform and having a down-flue over said roller, and a blower, geared to the motor for driving it and having a conduit which discharges into said flue.

6. The combination with the platform, of the roller thereunder, said roller having molds in its face adapted for pressing the snow into blocks, and apertures at the bottoms of said molds for the passage of heated gases, and means carried by the platform for driving said roller, of a furnace on the said platform having its flue for hot products of combustion directed down upon said roller.

7. A snow-compressing apparatus having a roller composed of longitudinally-extending ribs with spaces or apertures between them, and end pieces connecting said ribs, and having means for driving and heating said roller.

8. A snow-compressing apparatus having a platform, a steering-wheel under the rear part of said platform, means carried by the platform for operating said wheel, a compressing and molding roller mounted rotatively under the front end of said platform, and means carried by said platform for driving said roller.

9. A snow-compressing apparatus comprising a platform, a compressing and molding roller or drum mounted rotatively under said platform, means for driving said roller, and a furnace on said platform having an outlet

for products of combustion embracing the upper part of said roller.

10. A snow-compressing apparatus comprising a drum to roll over the snow, said drum having means for molding the snow and for slicing it into blocks.

In witness whereof I have hereunto signed my name, this 23d day of October, 1899, in the presence of two subscribing witnesses.

WILLIAM WESTLAKE.

Witnesses:
HENRY CONNETT,
PETER A. ROSS.