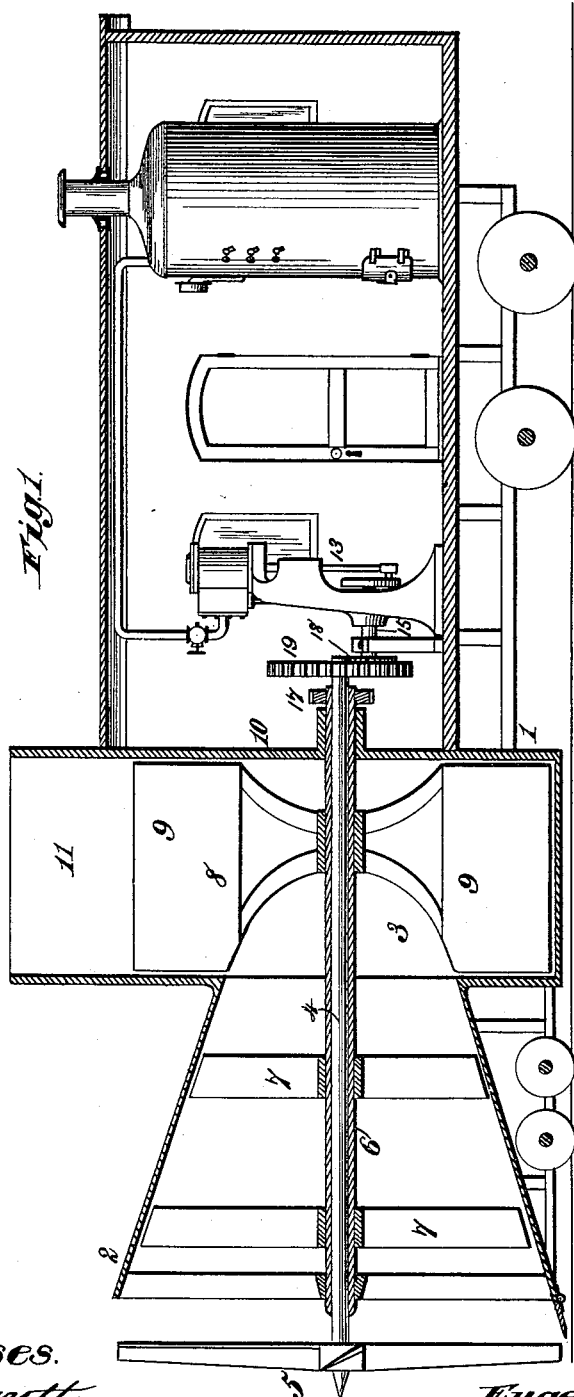


E. BASTIAN.

SNOW PLOW.

No. 344,235.

Patented June 22, 1886.



Witnesses.

*Robert Emmett.*

*Geo. W. Pea.*

Inventor

*Eugene Bastian.*

By

*James L. Norris.*

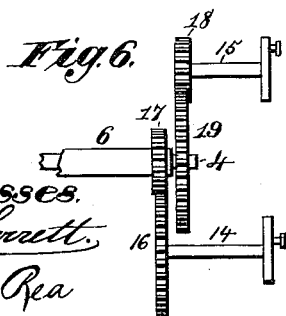
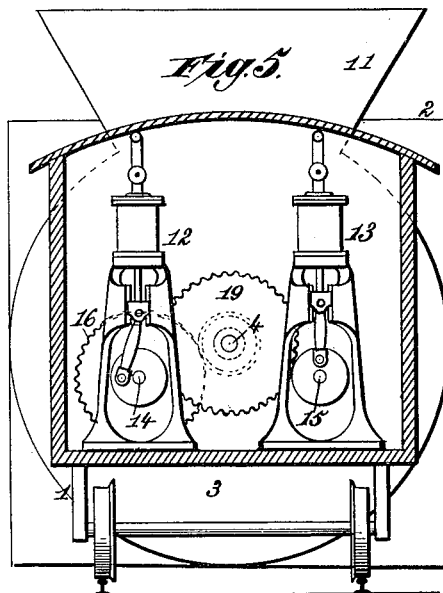
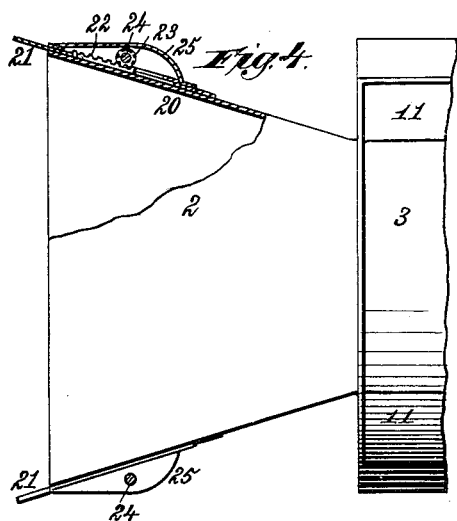
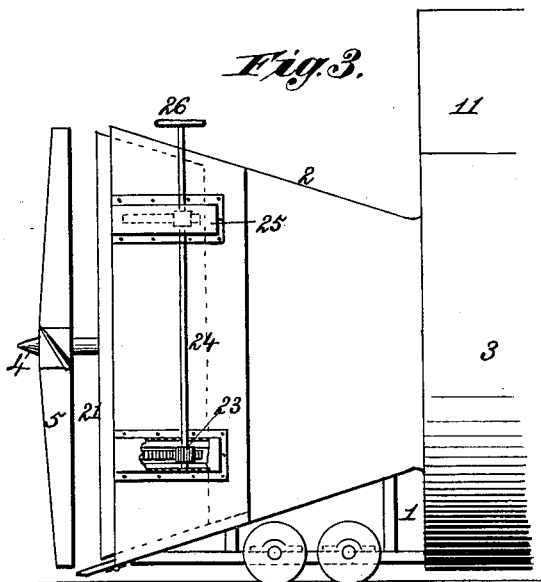
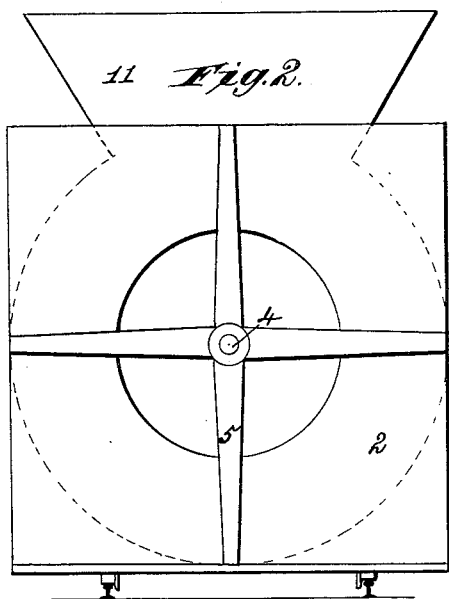
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By James L. Norris.  
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# UNITED STATES PATENT OFFICE.

EUGENE BASTIAN, OF CLAYTON, ASSIGNOR OF ONE-HALF TO CHARLES G. EMERY, OF BROOKLYN, NEW YORK.

## SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 344,235, dated June 22, 1886.

Application filed October 28, 1885. Serial No. 181,173. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE BASTIAN, a citizen of the United States, residing at Clayton, in the county of Jefferson and State of New York, have invented new and useful Improvements in Snow-Plows, of which the following is a specification.

My invention relates to snow-plows of that class in which the snow is received by a hood and conveyed to lateral chutes, by which it is discharged at the sides of the track.

It is the purpose of my invention to provide a plow of this class with mechanism operating in advance of the hood, for the purpose of breaking up the impacted snow before it comes in contact with the hood, said mechanism having also a tendency to carry the snow to the rear and into the hood.

It is a further purpose of my invention to combine with the hood of the plow a central shaft carrying agitating and whipping blades, whereby the snow is beaten, broken up, and agitated to enable it to be drawn through the rear of the hood by an air-current traversing the latter.

It is also the purpose of my invention to combine with the hood of the plow and its interior mechanism a fan having revolution in a plane at right angles to the axis of the shaft carrying the agitating and comminuting blades, and having the same relative speed as the latter, thereby creating an air-current through the hood and through its throat, and at the same time discharging the snow as it is delivered from the hood through one or more lateral chutes adjacent to the fan.

It is also the purpose of my invention to provide means whereby the agitating-blades and the fan may have rotation independently of the cutter, which operates in advance of the hood, and whereby the former may have a greater speed of rotation than the latter, as well as a movement in either direction.

It is a further purpose of my invention to combine with the hood of the plow extensible wings or side plates, which may be thrown outward and forward, thereby increasing the width of the channel cut by the plow, and retracted when the plow is withdrawn.

The invention consists in the several novel

features of construction and combinations of parts hereinafter set forth, and fully defined in the claims following this specification.

Referring to the drawings, Figure 1 is a central longitudinal section of the plow with its actuating mechanism. Fig. 2 is a front elevation of the hood. Fig. 3 is a side elevation of the same, part of the housing upon the lateral wall being broken away to show the interior mechanism. Fig. 4 is a top plan view of Fig. 3, partly in section, to show one of the extensible side wings and its operating mechanism; Fig. 5, a vertical sectional view taken immediately in rear of the engines shown in Fig. 1. Fig. 6 is a detail plan view, partly in section, of a portion of the mechanism shown in Fig. 1.

In the said drawings, the reference-numeral 1 designates the frame-work of a plow mounted upon wheels in any suitable manner. Supported upon the forward end of this frame is a hood, 2, rectangular in cross-section, and diminishing in size as it approaches the rear, the dimension of its forward or open end being such as to enable it to take up the snow from the space occupied by the roadway. This hood projects somewhat beyond the forward end of the running-gear, and its lower wall closely approaches the road-bed. The rear end of the hood 2 is open, forming a throat communicating with a fan-chamber, 3, located immediately in rear thereof. Mounted in suitable bearings, and passing centrally through the hood and the fan-chamber, is a longitudinal shaft, 4, projecting somewhat beyond the outer open end of the hood. Upon the projecting end of said shaft is a cutter, 5, consisting of two, three, four, or more arms, which revolve in advance of the hood for the purpose of breaking down and comminuting the impacted and possibly frozen masses of snow. The blades of this cutter may be and preferably are inclined to the axis of rotation in such manner as to impart to the snow a rearward movement, whereby it is directed into the open mouth of the hood 2. Upon the shaft 4 is arranged a sleeve, 6, extending from a point behind the cutter 5 through and to the rear of the fan-chamber 3. Upon this sleeve, and within the hood 2, are mounted radial arms 7, 100

of such length as to revolve freely within the hood. The function of these arms is to break up and continually agitate the snow which enters the hood.

5 Mounted upon the sleeve 6, in rear of the throat of the hood 2, is a fan, 8, rotating within the fan-chamber 3, and having its air-buckets 9 arranged beyond, or substantially beyond, the contracted throat of the hood. It will readily  
10 be seen that the fan-chamber 3, being closed by the rearward wall, 10, the current generated by the rotation of the fan will be through the hood from its forward open end through the throat.

15 Leading from the fan-chamber are one or more delivery-chutes, 11, extending laterally outward and upward, through which the air-current created by the fan passes, through which also the snow drawn by said current  
20 through the throat of the hood into said fan-chamber is discharged. These chutes may be of any desired and suitable form and construction, and may be placed upon one or both sides of the plow, as circumstances may  
25 require.

Immediately in rear of the fan-chamber is the engine-room, containing the engines and boilers. The latter may be of any suitable pattern, and they supply steam to two engines, 12  
30 and 13, arranged in such position as to give rotation to two independent parallel shafts, 14 and 15. Upon the former shaft is a large gear, 16, meshing with a pinion, 17, mounted upon the sleeve 6. Upon the latter shaft is a small  
35 gear, 18, meshing with a pinion, 19, of larger diameter mounted on the rearwardly-projecting end of the shaft 4.

It will be seen from the foregoing that the shaft 4, carrying the cutter 5, revolves at a  
40 speed less than that of the beating and agitating blades 7 and the fan 8, carried by the same sleeve.

Upon each lateral wall 20 of the hood 2 are mounted wings 21, lying upon said walls, and  
45 adjustable thereon. Upon each of these wings are formed or attached rack-bars 22, meshing with gears 23, mounted upon a vertical shaft, 24, said parts lying within a suitable housing, 25, from which the upper end of said shaft  
50 projects above the hood and receives a hand-wheel, 26, by which the gears may be rotated and the wings 21 thrown in and out.

Communicating with the fan-chamber 3, and extending therefrom laterally outward and  
55 upward, are chutes 11, into and from which the snow is driven as it is drawn by the action of the fan 8 from the hood. The fan is powerful enough to drive the snow out of the chutes to some distance beyond the sides of  
60 the roadways.

The operation of the mechanism described is as follows: The plow being placed upon the roadway, it is set in motion by the steam mechanism described, which is connected with the  
65 running-gear in any suitable manner for that purpose. The engines 12 and 13 being set in

motion, rotation is given to both the shaft 4 and the sleeve 6 upon it, thereby revolving the advanced cutter 5 and the beaters 7, together with the fan, the two latter running at a speed 70 which is greater than that of the cutter 5. By the action of the latter the impacted drifts are cut and broken up, so that when the snow is taken up by the hood 2 it is loosened and broken up, whereby the hood is subjected to 75 the minimum of strain. As the loosened snow enters the hood it is continually beaten and agitated by the beater-arms 7, and in this condition it is drawn by the air-current created by the fan 8 through the throat of the hood 80 into the fan-chamber, whence it is ejected with great force by the fan-buckets. By throwing out the side wings, 21, the hood may be made to cut a broader path, when this is found desirable, and by drawing said wings in, the plow 85 may be withdrawn without causing its sides to impinge against the snow-wall upon either side.

It will readily be seen that inasmuch as the advanced cutter has rotation upon the shaft 4 90 and the beaters and fan upon the sleeve 6, which is driven by an independent engine, the rotation of the latter may not only be increased to any desired extent, but may be in a direction opposite to that of the shaft and cutter. 95 This enables me to employ a single chute leading from the fan-chamber, and to shift it from one side to the other, according to the direction of the wind.

What I claim is—

1. In a snow-plow, the combination, with a hood by which the snow is taken up from the roadway, of a cutter revolving in advance of said hood to break up the impacted drifts, and beaters rotating within the hood to agitate and thoroughly break up the snow, substantially as described. 100 105

2. In a snow-plow, the combination, with a hood having an open throat, by which the snow is taken up from the roadway, of a cutter rotating in advance of said hood, beaters rotating within the latter, and a fan located in rear of the open throat of the hood and creating an air-current through the same, substantially as described. 110 115

3. In a snow-plow having a hood by which the snow is taken up, the combination, with a shaft carrying a cutter revolving in advance of said hood, of beaters revolving within the latter and a fan revolving in rear of the open throat of the hood, the beaters and fan having movement independent of and at greater speed than the cutter, substantially as described. 120

4. In a snow-removing device, the combination, with a hood having a contracted throat, of a fan arranged in a chamber in the rear thereof, whose blades extend transversely beyond the said contracted throat, substantially as and for the purposes described. 125

5. In a snow-plow, the combination, with a hood adapted to take up the snow from the roadway, of extensible wings mounted upon 130

the lateral walls of the hood, and means for advancing said wings beyond the open mouth of the latter, substantially as described.

6. In a snow-plow, the combination, with a  
5 hood adapted to take up the snow from the roadway, of extensible wings mounted upon the side walls of said hood, racks attached to said wings, and gears meshing with said racks and extending above the hood, whereby the  
15 wings may be extended and retracted, substantially as described.

7. In a snow-plow, the combination, with a hood adapted to take up the snow from the roadway, of a central longitudinal shaft carrying a cutter having arms which rotate in  
15 advance of the hood and are set at an angle to the plane of rotation, a sleeve mounted upon said shaft carrying beaters which revolve within the hood, and a fan located in  
20 rear of the open throat of the hood and carried by said sleeve, the shaft and sleeve being

driven by independent mechanism and at different speeds, substantially as described.

8. In a snow-plow, the combination, with a hood having a central longitudinal shaft carrying a cutter revolving in advance of the  
25 open mouth of the hood, of a sleeve arranged upon the shaft and carrying beaters revolving in the hood and a fan revolving behind the open throat of the hood, shafts carrying a  
30 large and a small gear meshing, respectively, with a small pinion on the sleeve and a large pinion on the shaft, and means for giving to each of said shafts independent movements,  
substantially as described. 35

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE BASTIAN.

Witnesses:

J. A. RUTHERFORD,  
JOS. L. COOMBS.