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R. D. EDWARDS

CUTTING WHEEL FOR SNOWPLOWS

Filed Dec. 10, 1923

Fig. 1

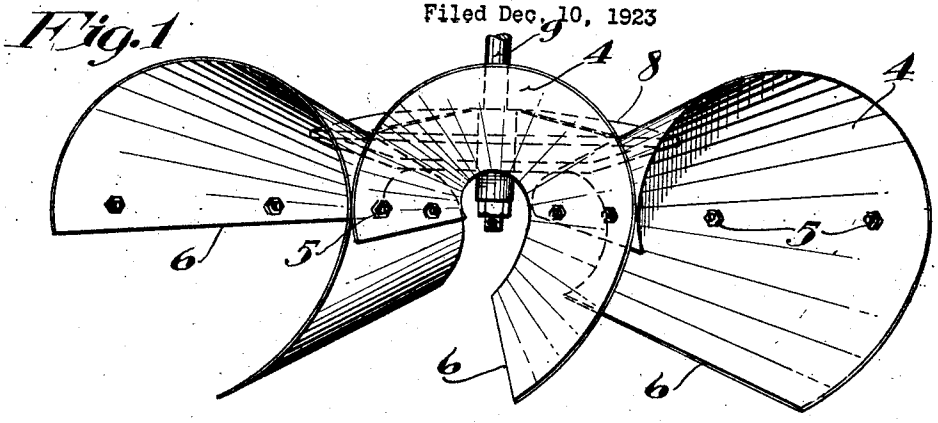



Fig. 3

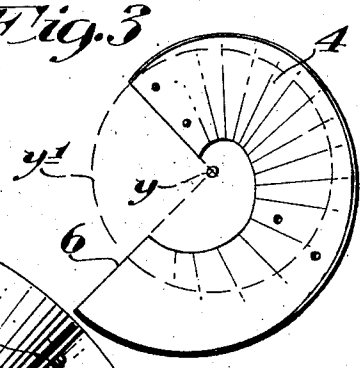
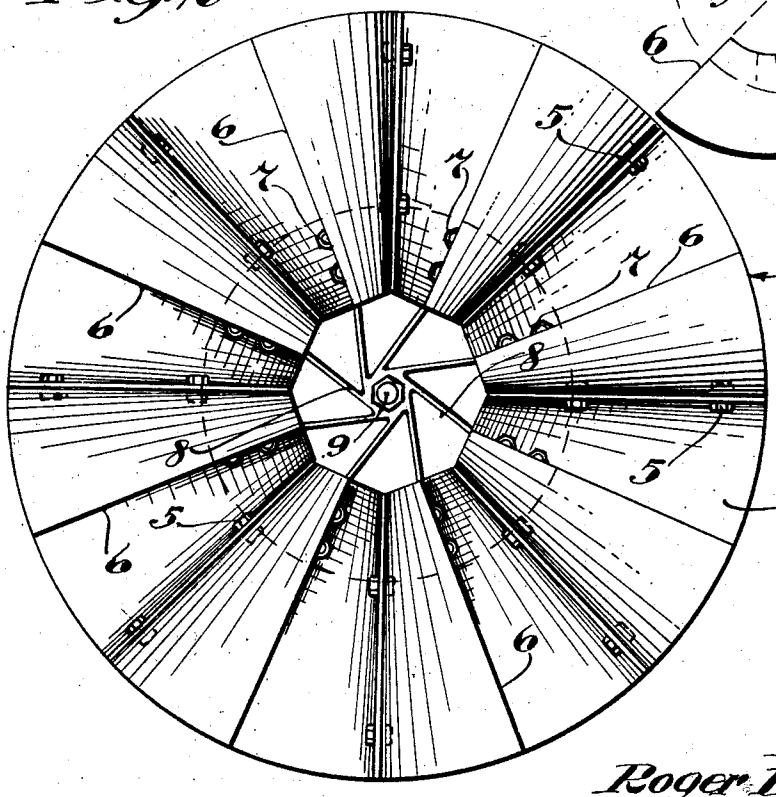



Fig. 2




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# UNITED STATES PATENT OFFICE.

ROGER D. EDWARDS, OF ALBERT LEA, MINNESOTA.

## CUTTING WHEEL FOR SNOWPLOWS.

Application filed December 10, 1923. Serial No. 679,640.

*To all whom it may concern:*

Be it known that I, ROGER D. EDWARDS, a citizen of the United States, residing at Albert Lea, in the county of Freeborn and State of Minnesota, have invented certain new and useful Improvements in Cutting Wheels for Snowplows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention provides an extremely simple and highly efficient cutting wheel for snow plows and, generally stated, the invention consists of the novel construction, arrangement and combinations of parts hereinafter described and defined in the claims.

The improved cutting wheel comprises what, for lack of a more appropriate name, I have designated as "distorted cones". They are designated as cones because their general form is suggestive of cones, but they are not true cones for two reasons, the first of which is that they are open at their front sides to afford cutting edges, and the second of which is that in cross section they increase their radial distance from the longitudinal axes of the cones progressively from the inner toward the outer or cutting edges of the cones.

The above noted arrangement not only simplifies and cheapens the construction but it very greatly improves the cutting action and reduces to a minimum the impact and reacting force produced in the cutting action, all as will hereinafter more fully appear.

The improved wheel is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a plan view of the improved wheel;

Fig. 2 is a front elevation thereof; and

Fig. 3 is a view looking directly into the end of one of the distorted cones and showing the same segregated or removed from the wheel.

The improved cutting wheel is made up of a plurality of the distorted cones, and as shown, it is made up of eight thereof, each distorted cone being indicated as an entirety by the numeral 4. These distorted cones have such outward flare or angle that they are assembled together in tangential contact and their tangentially engaged portions are rigidly connected by nut-equipped bolts 5 or other suitable means. As shown in Fig. 1, and as still better illustrated in Fig. 3, these distorted cones in all transverse sections in planes perpendicular to the longitudinal axis $y$ of the respective cones, increase their distance from said axis progressively from the inner toward the outer or cutting edges 6 of the respective cones. The progressively increasing distance from the axis $y$ of the distorted cone is made apparent by an imaginary dotted line $y'$, which latter is a true circle struck from the axis $y$ and touching the radially inner edge of the outer portion of the said distorted cone. By reference to Fig. 1, it will be noted that the cutting edges 6 represent the most forwardly projecting portions of the distorted cones, so that they will shear into the snow drift or bank and throw the snow into the distorted cones. The snow sheared and thrown into the distorted cones will, of course, take up a rotary motion which, by the gradually decreasing diameter of the cones, will be gradually contracted or caused to decrease the diameter of its whirl, but, at the same time, centrifugal force and the radially flaring form of the distorted cones will throw the snow outward or in a direction radiating from the axis of the complete wheel. It is also important to note that any of the snow whirling within a distorted cone, that reaches the inner edge of the cone before it has been thrown out of the cone by centrifugal force, will jump from the inner edge of said cone across the open gap in the cone and will strike the approaching side of the cone at points considerably inward from the cutting edge thereof. This prevents any of the snow, once caught in a distorted cone, from escaping through the open sides of the cone and from interfering with the cutting action of the cutting edge itself. In the above respects, the actions of the distorted cones vary greatly from that produced by a cone having a circular cross section or from such a cone provided with a cutting blade having an abrupt angle to the cutting side of the cone.

In practice, the distorted cones connected as above described will be directly and rigidly secured by nut-equipped bolts 7 or other suitable means to a wheel-like head 8, the hub of which will be rigidly secured to a power-driven shaft 9.

The efficiency of the cutting wheel above described has been thoroughly demonstrated in actual use in a high power snow plow.

As clearly shown in Figs. 1 and 2, the cones 6 in cross section extend through approximately 270° or three-fourths of a circle. This arrangement enables the adjacent cones to be directly bolted or secured together on contacting lines and provides a maximum projection of the cutting edge from the vertical plane of such contacting lines.

What I claim is:

1. A cutting wheel for snow plows, comprising a plurality of connected distorted cones which at their front portions are open to afford cutting edges and which in cross section increase their distance from the axes of the respective cones, progressively from the inner toward the outer or cutting edges of said cones.

2. A cutting wheel for snow plows, comprising a plurality of connected distorted cones which at their front portions are open to afford cutting edges and which in cross section increase their distance from the axes of the respective cones, progressively from the inner toward the outer or cutting edges of said cones, the said cones being set in tangential contact and rigidly connected together.

3. A cutting wheel for snow plows comprising a plurality of distorted cones which, at their fronts, are open, said cones being spiral shaped in cross section, the edges of the cones, at their open fronts, having the longest radial distance from the axes of the cones affording cutting edges.

4. The structure defined in claim 3 in which the radial elements of each cone intersect substantially at a given point and the given points of the several cones being substantially at the axis of the cutting wheel and the axes of the several cones being in a plane substantially perpendicular to the axis of the cutting wheel.

5. The structure defined in claim 3 in which the radial elements of each cone intersect substantially at a given point and the given points of the several cones being substantially at the axis of the cutting wheel and the axes of the several cones being in a plane substantially perpendicular to the axis of the cutting wheel, the edges of the cones, at their open fronts, being substantially on radial lines extending from the axis of the cutting wheel.

6. The structure defined in claim 3 in which the cones are set in tangential contact and rigidly connected, the other edges of the cones which have the shortest radial distance from the axes of the cones terminate substantially tangential with connected cones.

In testimony whereof I affix my signature.

ROGER D. EDWARDS.