July 21, 1953 E. C. KRUME 2,646,257

AIR CURRENT DEFLECTOR

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Fig. 1

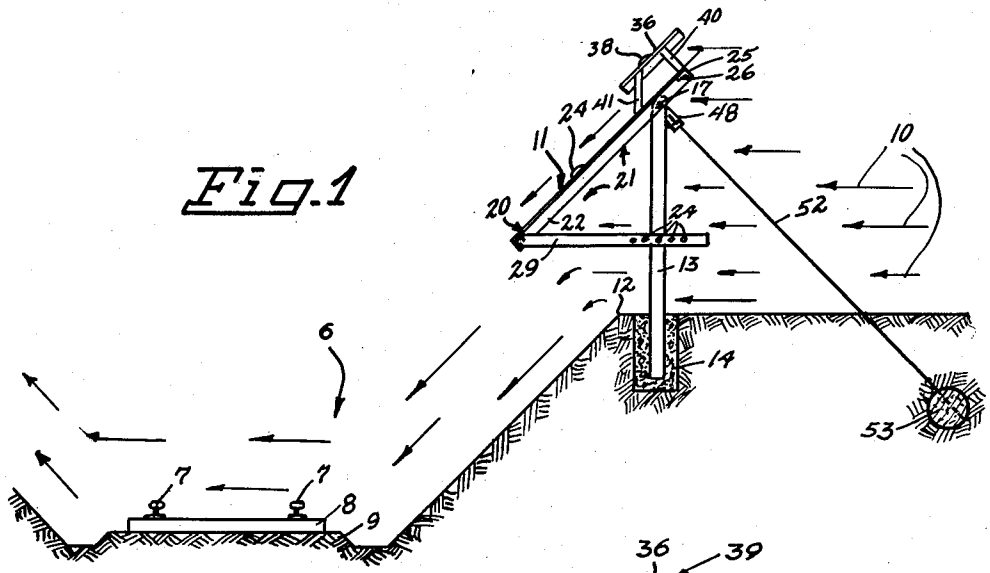
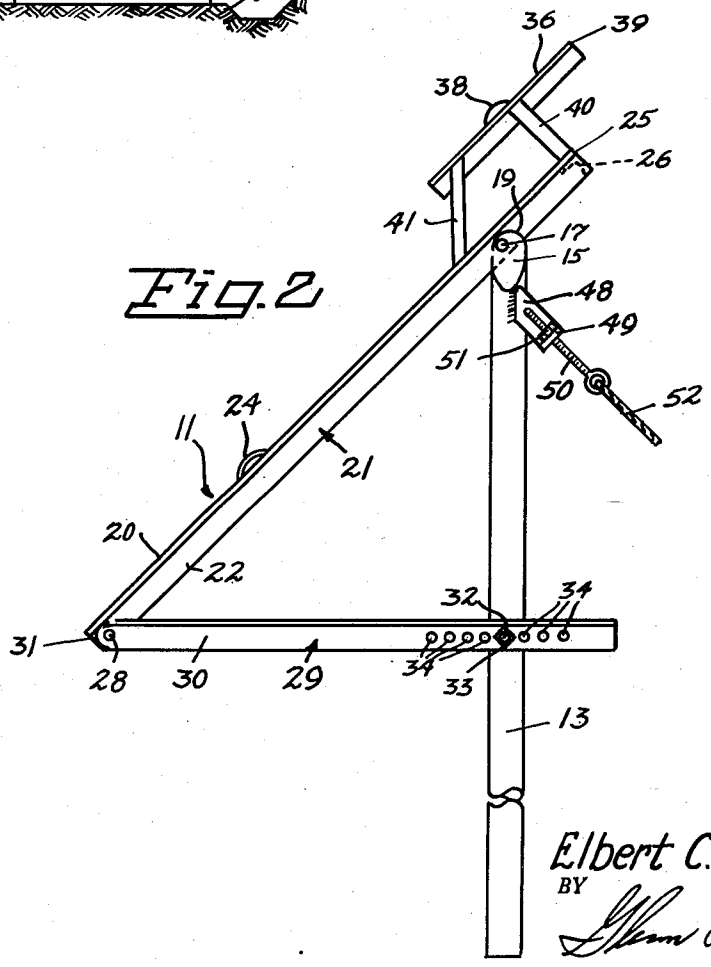


Fig. 2



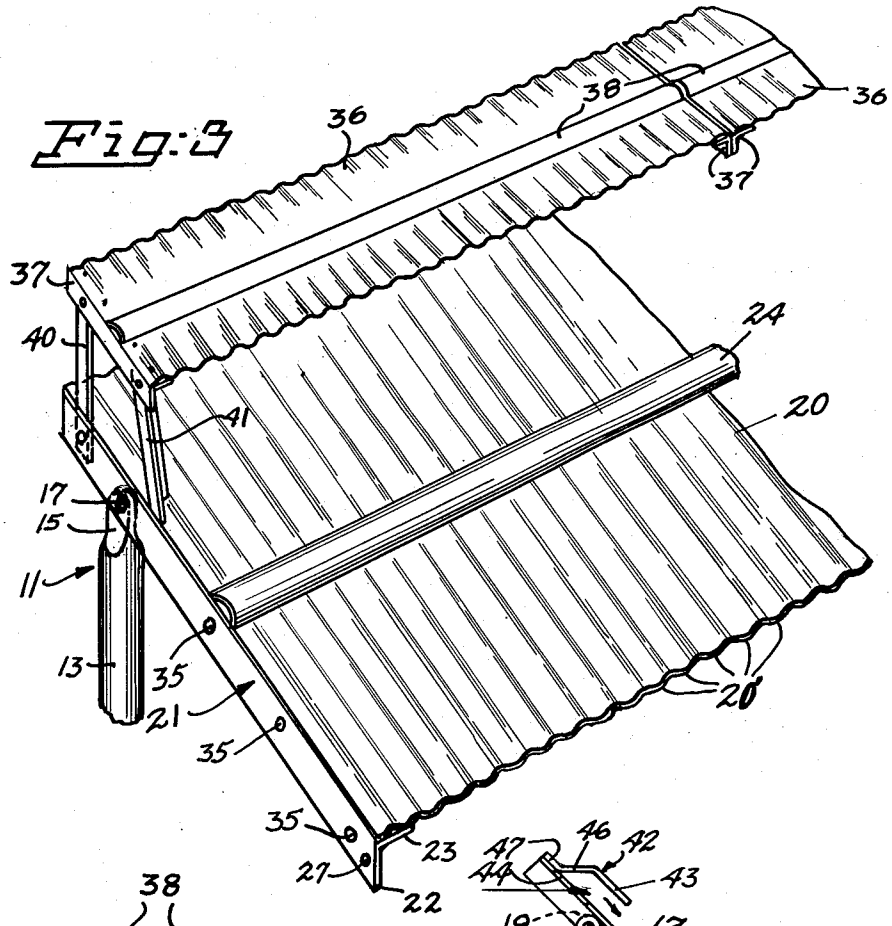
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Fig. 3



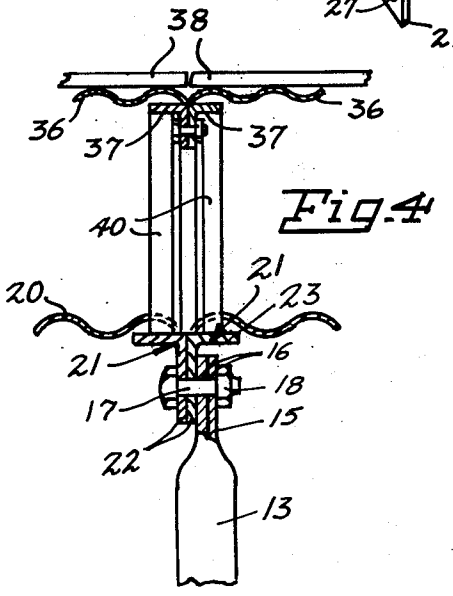


Fig. 4

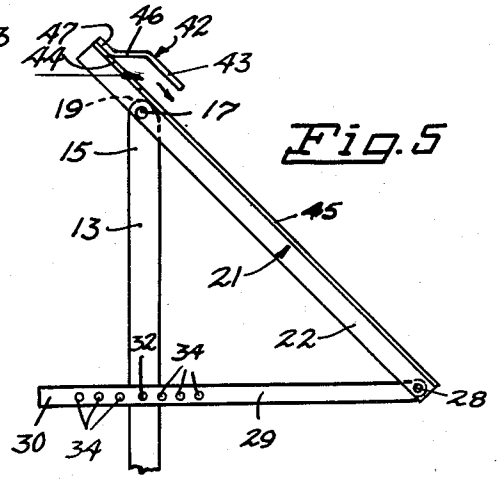


Fig. 5

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Patented July 21, 1953 2,646,257

UNITED STATES PATENT OFFICE

2,646,257

AIR CURRENT DEFLECTOR

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Application September 21, 1951, Serial No. 247,721

3 Claims. (Cl. 256—12.5)

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My present invention is an air current deflector for preventing the deposit of air borne particles where not desired, and it is one object of the invention to provide an air current deflector adapted to be positioned upon the brow of a railroad or highway cut on the side from which the prevailing winds come and which will direct the flow of air into the cut to eliminate the relatively still air current area within the cut which permits the air borne particles to be deposited.

Another object of the invention lies in the provision of an angularly adjustable deflector plate pivotally mounted for vertical tilting movement upon upright posts or supports set in the ground to the windward side and anchored by cables.

Another object of the invention lies in the provision of an auxiliary deflector plate adapted to direct air currents on the top or face of the primary deflector plate to prevent air borne particles from being deposited on the top of the primary deflector plate.

Another object of the invention lies in the provision of an air current deflector which is inexpensive to manufacture and install and which is very effective in performing its function of deflecting air currents which prevent drifting snow or dust from collecting in railroad or highway cuts and the like.

These and other objects of the invention will be apparent during the course of the following description and as more particularly set forth in the appended claims.

In the accompanying drawings, forming a part of this specification and in which like numerals are employed to designate like parts,

Figure 1 is a side elevation of the air current deflector mounted on the brow of a railroad cut, shown in transverse cross section,

Figure 2 is an enlarged side elevation of the deflector taken upon an enlarged scale,

Figure 3 is an enlarged fragmentary perspective view of a portion of a deflector,

Figure 4 is a vertical cross section taken through adjoining ends of the deflector plates and auxiliary deflectors and the pivotal connection to the supporting posts, and,

Figure 5 is a side elevation of a modified deflector.

Referring now more particularly to the drawings, Figure 1 shows a cut 6 on a railroad right-of-way showing a pair of spaced rails 7 supported by a cross tie 8 resting upon the road bed 9. The view indicates the prevailing winds, by arrows 10, as passing from right to left, and the air current deflector, indicated in general by

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the numeral 11, is positioned at the brow 12 of the cut. It will be understood that the invention is applicable to many other locations where drifting snow or dust and the like are undesirable and its use is not to be restricted beyond that required by the appended claims.

Spaced vertical tubular posts 13 are anchored by setting their lower ends in the ground or concrete 14. Ears 48 are welded to the posts adjacent their upper end portions, and each ear has a right angle pressure plate 49 at the free end thereof and the plate is provided with an opening through which the shank of an eye bolt 50 passes. Rotation of nut 51 draws the shank through the opening to tighten cable 52 secured to the eye bolt at one end and anchored in the ground at the other by means of a "dead man" 53. The posts 13 have their upper end portions flattened as at 15, and the end portion is formed with an arcuate 19. Bolt receiving holes 16 are drilled transversely through the flattened end portions 15 of the posts and a journal pin or bolt 17 is passed therethrough. A nut 18 is applied to the pin to prevent its displacement.

The deflector plate 20 is corrugated to form air directing ribs 20' aligned and extending transversely of the deflector plate 20. The material found most applicable for this has been corrugated aluminum sheets, but other materials may be used equally as well. The corrugated sheet is supported along its opposite end edges upon spaced metal angles 21 each disposed with a depending flange 22 and a right angle flange 23 forming a shelf upon which the plate 20 is secured as by welding or riveting. It will be noted that the corrugations of plate 20 extend parallel with the flanges 23 of the angles 21 and transversely of the longitudinal axis of plate 20 to reduce wind resistance to a minimum, and to direct the flow of air therefrom.

Spaced from the upper end of angle 21, depending flange 22 is drilled to receive the bolt or journal pin 17 and each angle is thus secured to the upper portion 15 of its respective post 13 for vertical tilting movement. A stiffener 24 which is arcuate in cross section is secured longitudinally across the upper face of the plate 20 by rivets or welding and reinforces the plate longitudinally.

The upper or leading edge 25 of plate 20 is provided with a longitudinally extending bracing angle 26 secured to the under face of the plate 20 as shown in Figure 2 and extending along its full length and the ends of the angle 26 are secured to the spaced angles 21 at their upper end portions.

The lower or trailing edge is left free to prevent any turbulence of the air currents leaving the deflector plate 20.

Lower ends of angles 21 are each provided with a bore 27 which received a bolt 28 secured by a suitable nut and pivotally secures brace 29. The brace 29 is formed from angle material and has a depending flange 30 drilled to receive the bolt 28 at one end 31 which is provided with an arcuate end face. Adjacent the opposed end of said brace 29, flange 30 is provided with multiple apertures 34 spaced from each other longitudinally of the brace 29 and adapted to receive a projection or stub bolt 32 secured on the side of the respective post 13. The stub bolt is threaded to receive a clamping nut 33. The deflector is thus tiltably mounted on the posts and adjustably secured at selective positions by passing stub bolt 32 through a selected one of the apertures 34 and applying clamping nut 33.

When a deflector of greater length is desired, it is only necessary to add multiple sections to the ends of the single deflector to form a unit of any desired length. To facilitate this, I have provided the depending flange 22 with holes 35 (Figure 3) spaced longitudinally of said flange and aligned with complementary holes in opposed angles 21. Bolts are then passed through the aligned holes to secure the sections together. The pivot bolt or journal pin 17 is passed through holes 16 into adjoining flanges 22. It will thus be seen that only one post 13 and one brace 29 will be needed where the deflector sections meet.

In practice it has been found that oftentimes the air-borne particles will deposit on the upper inclined face of the deflector plate 20 and therefore it was found necessary to provide means of preventing this deposit. I have shown two methods of precluding the deposit, each using the same principles as the primary deflector. Even though the air current deflector may be made strong enough to support the additional weight of the deposit and its presence would not greatly interfere with the operation thereof, it does lessen its effect to some extent, and further, for economic reasons, one should use a material as light as practicable commensurate with known conditions to form an inexpensive unit which is not liable to break down or become inoperative.

To prevent the deposit from forming on the upper face of the plate 20 I have provided (in Figures 1, 2 and 3) a second deflector plate 36 supported at each end by an angle 37 and having a longitudinally extending stiffener 38. This secondary deflector plate is of the same length as the primary deflector plate 20, but is of much less width, and is positioned in upwardly spaced relation and fixed parallel with said primary plate.

The leading edge 39 of secondary deflector plate 36 extends beyond the leading edge 25 of the deflector 20, and the function of plate 36 is to deflect the air currents down upon the top face of plate 20 and the current will then prevent any air-borne particles from being deposited. Braces 40 and 41 are secured to the angles 21 and 37 to support the plate 36 from the primary deflector.

In Figure 5, I have shown a modified deflector 42 comprising a lip 43 disposed in upwardly spaced relation to an aperture 44 formed in the primary deflector plate 45. The lip 43 directs the air current onto the top of the primary deflector plate 45 as in the other form, and is supported from the plate 45 by an angularly disposed continuation 46 of the lip 43 and which has a securing strip 47 welded or otherwise secured to the upper face of the deflector plate 45.

Having thus described my invention, I claim:

1. An air current deflector comprising spaced supporting posts flattened at their upper end portions and adapted to be anchored with their lower ends positioned in the ground at the brow of a cut, said upper ends being drilled and journal pins carried thereby, angle bars having depending flanges pivotally secured on said journal pins for tilting movement of said angles, an elongated deflector plate having its marginal side edge portions secured upon said angles, said plate extending at a downward incline from an upper leading edge to a lower trailing edge and having corrugations forming ribs extending transversely thereof from its upper leading edge to its lower trailing edge, a stiffener bar secured longitudinally of said plate on its upper face, a brace consisting of a strip secured to the bottom face of said plate along its leading edge and extending longitudinally the full length thereof with its ends secured to said angles, angle adjusting braces pivotally secured to lower ends of the depending flanges of the angle bars adjacent the trailing edge of said deflector plate, multiple apertures in said second named braces and spaced longitudinally thereof, stub bolts carried by said posts and provided with clamping nuts, said stub bolts passing through selected ones of said apertures whereby the deflector plate may be tilted to selected angularly adjusted positions, and an auxiliary deflector carried by said deflector plate in upwardly spaced relation thereto for directing air currents downwardly against the upper face of said deflector plate.

2. An air current deflector comprising spaced supporting posts adapted to be anchored with their lower ends in the ground at the brow of a cut, a journal pin carried by each post adjacent its upper end, a main deflector plate journaled on said journal pins for tilting movement thereon, said deflector plate having corrugations extending transversely of said plate from its leading edge to its trailing edge, stiffening means on said deflector plate, angle adjusting braces pivotally secured to said deflector plate adjacent its trailing edge whereby said deflector plate is angularly adjustable to selected positions, an auxiliary deflector plate disposed over the leading edge portion of the main deflector plate the full length thereof and being of much less width and having its leading edge portion projecting beyond the leading edge of the main deflector plate, and supporting bars extending downwardly from ends of the auxiliary deflector plate in spaced relation to each other transversely thereof and secured at lower ends to ends of the main deflector plate, said bars supporting the auxiliary plate in upwardly spaced relation to the main deflector plate in position adapting it to direct air currents onto the upper face of said deflector.

3. An air current deflector comprising supporting posts, a main deflector plate journaled on said supporting posts for transverse tilting movement, braces pivotally secured to said deflector plate and releasably secured to the supporting posts adjacent the opposed ends of said braces for adjustably securing said deflector plate in an angularly disposed position relative to said posts, an auxiliary deflector of the same length and lesser width than the main deflector plate disposed above said main mentioned deflector plate and projecting beyond the leading edge

thereof, and supporting bars extending downwardly from ends of the auxiliary deflector plate and mounted at ends of the main deflector plate, said supporting bars supporting the auxiliary deflector plate above the main deflector in parallel relation thereto and adapted to direct air currents downwardly upon the top face of said deflector plate.

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