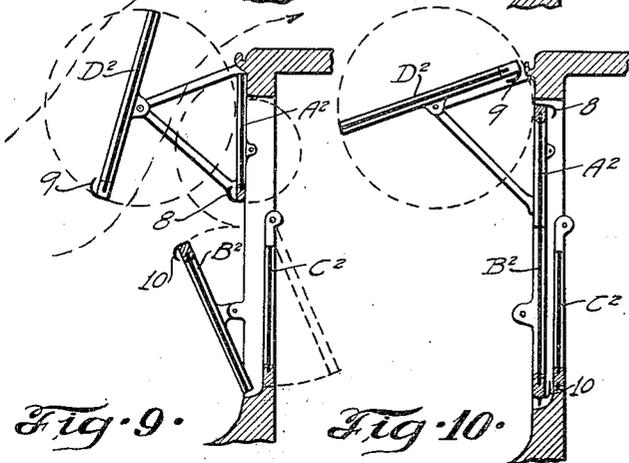
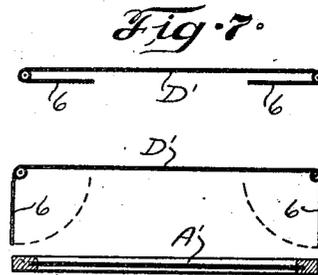
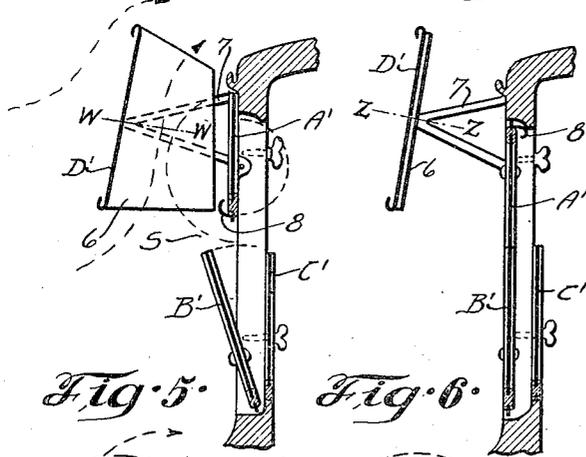
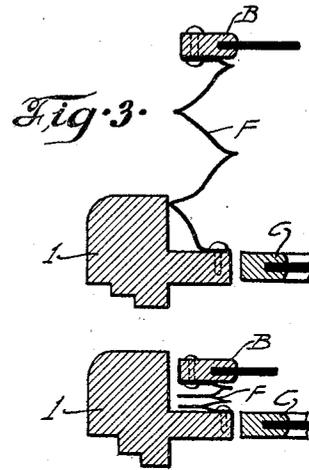
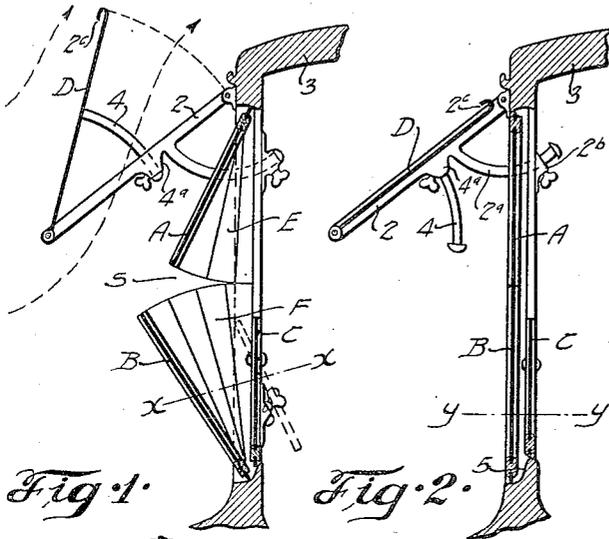


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W. DE F. CROWELL
CLEAR VISION WINDSHIELD
Filed April 19, 1920



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CLEAR-VISION WINDSHIELD.

Application filed April 19, 1920. Serial No. 374,995.

To all whom it may concern:

Be it known that I, WILLIAM DE F. CROWELL, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Clear-Vision Windshields, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to clear vision windshields of the type which are so constructed that a current of air will circulate upwardly across the clear vision slot of the shield, and thus prevent rain, dust, light snow and the like from blowing inwardly through said clear vision slot.

One object of my present invention is to provide a wind shield of the general type referred to in which the various members or parts of the shield are mounted in a novel manner that facilitates the adjustment of said members to open or close the clear vision slot in the shield or to convert the flue member of the shield into a sun shade or rain visor.

Another object is to provide a clear vision wind shield that is equipped with a novel means for preventing rain, snow and the like from beating inwardly around the ends of the upper and lower members of the shield that form the main protecting wall of the shield, when said members are adjusted to form a clear vision slot between the adjacent horizontal edges of said members.

Another object is to provide a clear vision wind shield of the updraft type which is equipped with means for preventing rain, snow and the like from beating inwardly around the ends of the flue member that is positioned in front of the upper member that forms part of the main protecting wall of the shield. Other objects and desirable features of my invention will be hereinafter pointed out.

In the accompanying drawings I have illustrated various forms of wind shields embodying my invention, all of which operate on the same general principle but differ slightly from each other in the particular construction of the co-operating elements of

same. I wish it to be understood, however, that certain features of my present invention, such, for example, as the means for preventing rain, snow and the like from beating inwardly around the two main upper and lower members of the shield, or the means for preventing rain, snow and the like from beating inwardly around the flue member are not limited to use with windshields in which the other co-operating parts or elements of the shield of which said means form a part are of the particular construction herein illustrated.

Figure 1 of the drawings is a vertical sectional view of a wind shield embodying my invention and provided with means for preventing rain, snow and the like from beating inwardly around the ends of the main upper and lower members of the shield, illustrating the parts of the shield adjusted to form a clear vision slot and an updraft flue through which air circulates upwardly and escapes over the top of the vehicle on which the wind shield is mounted.

Figure 2 is a vertical sectional view of the wind shield illustrated in Figure 1, showing the flue member adjusted to form a sun shade or a rain visor and the other members of the shield adjusted to close the clear vision slot.

Figure 3 is a horizontal cross-sectional view, taken on the line $x-x$ of Figure 1.

Figure 4 is a horizontal sectional view, taken on the line $y-y$ of Figure 2.

Figure 5 is a vertical sectional view of a wind shield embodying my invention and provided with means for preventing rain and the like from beating inwardly around the ends of the flue member, showing the main upper and lower members of the shield adjusted to form a clear vision slot in the main protecting wall of the shield.

Figure 6 is a vertical sectional view of the wind shield illustrated in Figure 5, showing the parts of same in the position they occupy when the clear vision slot is not in use.

Figure 7 is a horizontal sectional view, taken on the line $z-z$ of Figure 6.

Figure 8 is a horizontal section, taken on the line $w-w$ of Figure 5.

Figure 9 is a vertical sectional view, illus-

trating another form of my invention; and

Figure 10 is a vertical sectional view of the wind shield illustrated in Figure 9, showing the parts of same in the position they occupy when the clear vision slot is not in use.

The wind shield illustrated in Figures 1 to 4, inclusive, is composed of an upper member A and a lower member B that form the main protecting wall of the shield, a bottom member or rain guard C arranged at the rear of the lower member B and a means, preferably a flue member D arranged in front of the upper member A of the shield in such a manner that it can be adjusted in the position illustrated in Figure 1, wherein it co-operates with the upper member A to form an updraft flue through which a current of air circulates upwardly or in the position illustrated in Figure 2, wherein it forms a sun shade or rain visor. While the main circulation of air is upwardly through the updraft flue and thence rearwardly over the top of the vehicle, it will be understood that when the updraft flue is open at its sides, as shown in Figure 1, some of the air that enters said flue will be drawn laterally out of the sides of same by the air which rushes rearwardly past the ends of the upper member. The members A, B and C are mounted on upright posts 1 at the sides of the vehicle, which posts may be vertically-disposed or sloped. The means that co-operates with the upper portion of the shield to form an updraft flue or a combined sun shade and rain visor may either be stationary or adjustable, and it can be formed in various ways without departing from the spirit of my invention. In the form of my invention herein shown said means consists of a single flue member D that is adjustably mounted on side arms 2 that are adjustably mounted either on the upright side posts 1, or on the top 3, of the vehicle. In the form of my invention illustrated in Figures 1 and 2 the flue member D is pivotally connected at its lower end to the side arms 2, and said side arms are pivotally connected at their upper ends to the supporting structure which carries said arms. One convenient way of adjusting the side arms 2 and the flue member D and holding said parts in adjusted position, is illustrated in Figures 1 and 2, wherein the side arms 2 are provided with rearwardly-projecting curved rods or extensions 2^a that project through guides 2^b on the side posts 1 and the flue member D is provided with rearwardly-projecting, curved arms or rods 4 that pass through guides 4^a on the arms 2. The flue member D is preferably provided at its upper edge with a gutter 2^c, so as to intercept any water that washes up the front side of the member D when said member is used as a rain visor, as shown in Figure 2.

The upper member A of the shield, which preferably consists of a piece of transparent material mounted in a frame, is pivotally connected at its upper end to the side posts 1, and the lower member B of the shield, which also preferably consists of a piece of transparent material mounted in a frame, is pivotally connected at its lower end to the side posts 1. The bottom member or rain guard C that is arranged behind the lower member B of the shield also preferably consists of a piece of transparent material mounted in a frame and pivotally connected at a point intermediate its top and bottom edges to the side posts 1. A gutter 5 is arranged at the lower edge of the shield so as to collect and carry off any water that drains down the inner side of the lower member B when the clear vision slot is in use.

In inclement weather the upper and lower members A and B of the shield are adjusted in the position shown in Figure 1 so as to form a clear vision slot *s* between the adjacent horizontal edges of said members, the flue member D is adjusted in the position shown in Figure 1, so as to co-operate with the upper member A to form an updraft flue through which a current of air circulates upwardly, as indicated by the arrow in Figure 1, and the bottom member or rain guard C of the shield is adjusted in the position shown in full lines in Figure 1, so as to prevent any rain that passes inwardly through the clear vision slot from spattering on the occupants of the vehicle, the upper member A being so mounted that the lower edge of same is spaced slightly to the rear of the upper edge of the lower member B when the clear vision slot is in use. In clear weather, or when it is not raining or snowing, the lower edge of the bottom member or rain guard C of the shield can be swung rearwardly into the position shown in broken lines in Figure 1, so as to ventilate the passenger compartment of the vehicle.

A wind shield of the construction above described affords a clear vision for the operator of the vehicle on which it is used and also adequate protection for the operator and occupants in inclement weather, due to the fact that the upper and lower members A and B of the shield form a protecting wall of sufficient area to act as a closure for the front of the vehicle, and the flue member D co-operates with the upper member A of the shield to form a flue through which a current of air circulates in such a manner as to prevent rain, dust, snow and the like from rushing inwardly through the clear vision slot *s* in the shield with sufficient force to enter the passenger compartment of the vehicle. Any rain that collects on the inner side of the lower member B of the shield drains downwardly to the gutter 5, and the bottom mem-

ber C of the shield prevents drops of rain that strike the inner side of the lower member B from spattering over the occupants of the vehicle. When it is not desired to use the updraft flue of the shield to induce a circulation of air upwardly over the shield, the flue member D can be arranged in the position shown in Figure 2, so as to form a sun shade or rain visor, it being possible to form the flue member D either from transparent material or opaque material, due to the fact that said member is so arranged that the lower edge portion of same will not obstruct the view of the operator through the clear vision slot when the parts are adjusted in the position shown in Figure 1. If it is desired to close the front of the vehicle, the upper and lower members A and B of the shield are swung inwardly into vertical alignment with each other so as to close the clear vision slot of the shield.

In order to prevent rain, snow and the like from beating inwardly around the side edges of the members A and B of the shield when the clear vision slot is in use, I have provided the shield with means that forms closures for the triangular spaces between the side posts 1 and the members A and B when said members A and B are adjusted in the position shown in Figure 1. The means herein illustrated for this purpose consists of pieces of fabric E and F connected to the side posts 1 and to the members A and B, respectively, and preferably provided with accordion pleats, as shown in Figure 3, so as to cause said pieces of fabric to fold up compactly, as shown in Figure 4, when the upper and lower members A and B of the shield are moved into vertical alignment with each other. Various other means could be used, however, to form closures for the spaces between the side posts 1 and the members A and B. Moreover, this feature of my present invention, namely, means for closing the spaces between the main upper and lower members of the shield and the supporting structure that carries the shield is not limited to use with a wind shield of the particular type illustrated in Figures 1 and 2.

The wind shield illustrated in Figures 5 to 8, inclusive, operates on the same general principle as the wind shield shown in Figures 1 to 4, but it is provided with an upper member A' that is revolvably mounted, a lower member B' that is pivotally mounted intermediate its upper and lower edges, instead of at its extreme lower edge, and a bottom member or rain guard C' that is fixed or stationary. The flue member D' of said wind shield is also of slightly different construction and is provided with means for preventing rain, snow and the like from beating inwardly around the ends or side edges of said flue member. The means just referred to consists of vertically-disposed

side walls 6 at the ends of the flue member D that co-operate with said flue member to form a substantially vertically-disposed trough or flue up through which a current of air circulates when the vehicle travels forwardly. The side walls 6 of said updraft flue can either be stationary with respect to the flue member D', or they can be mounted in such a manner that they can be swung inwardly into parallel relation with said flue member D' when the updraft flue is not in use, this feature or characteristic of the shield being clearly shown in Figures 7 and 8. The flue member D' can either be stationarily mounted, or it can be adjustably mounted, so as to enable it to be arranged in an inclined position to form a sun shade or rain visor. In Figures 5 and 6 I have shown the flue member D' carried by brackets 7 that project forwardly from the supporting structure that carries the members of the shield. The upper member A' of the shield is so mounted that when it is revolved from its closed position shown in Figure 6 into its open position shown in Figure 5, the horizontal edge of said member A', which is then in proximity to the lower edge of the member B', will be spaced far enough away from same to form a clear vision slot between said members, it being preferable to arrange a gutter 8 on the member A', so as to collect any water that drains down the front side of said member, thereby preventing water from dripping from the top side or upper edge of the clear vision slot in the shield. Various other means than the side walls 6 can be used to prevent rain, snow and the like from beating inwardly around the ends or side edges of the member D', and moreover, the flue member illustrated in Figures 5 to 8 is not limited to use with a wind shield whose other parts are of the form and arrangement illustrated in said figures.

In the wind shield shown in Figures 9 and 10 the upper and lower members A² and B², respectively, of the shield and the flue member D² are revolvably mounted, and the bottom member C² of the shield is pivotally connected at its upper edge to the supporting structure or side posts 1 of the shield. When it is desired to adjust the members of the shield so as to form a clear vision slot in the protecting wall of the shield, the members A² and B² are revolved from the position shown in Figure 10 into the position shown in Figure 9 and the flue member D² is swung forwardly from the inclined position shown in Figure 10, wherein it serves as a sun shade or rain visor into the substantially upright position shown in Figure 9, wherein it co-operates with the upper member A² of the shield to form an updraft flue. The flue member D² is preferably provided with a gutter 9 arranged so that it will

collect any water that drains down the front side of said flue member when the updraft flue is in use, and the lower member B² is provided with a gutter 10 arranged so that it will prevent water from washing up the front side of the lower member B² and being carried over into the passenger compartment of the vehicle when the clear vision slot is in use. I also prefer to provide the upper member A² with a gutter 8 for collecting any water that drains down the front side of said member when the clear vision slot is in use. When the members A², B² and D² of the shield are arranged in the position shown in Figure 10, the gutters on said members are out of the way, or, in other words, in such a position that they will not obstruct the view of the occupants of the vehicle.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:

1. A wind shield provided with transversely-disposed upper and lower members that can be arranged so as to form a clear vision slot in the main protecting wall of the shield, a rain guard arranged at the rear of the lower member of the shield and projecting upwardly from the bottom edge of same when the clear vision slot is in use, a transversely-disposed flue member in front of the upper member of the shield that is adapted to be arranged either in a position wherein it co-operates with the upper portion of the shield to form an updraft flue that induces a circulation upwardly across the clear vision slot, or in a position to serve as a forwardly-projecting sunshade or rain visor, and means arranged at the ends of the upper and lower members of the shield for preventing rain, snow and the like from beating inwardly around the ends of said members when the clear vision slot is in use.

2. A wind shield provided with upper and lower members that can be arranged so as to form a clear vision slot that extends transversely of the main protecting wall of the shield, a bottom member arranged at the rear of the lower member of the shield, a transversely-disposed flue member in front of the upper member of the shield that is adapted to be arranged either in a position wherein it co-operates with the upper portion of the shield to form an updraft flue that induces a circulation upwardly across the clear vision slot, or in a position to serve as a forwardly-projecting sunshade or rain visor, adjustable side closures arranged at the ends of the upper and lower members of the shield, and means for enabling the bottom member of the shield to be adjusted so as to ventilate the passenger compartment of the vehicle on which the shield is used.

3. A wind shield of the updraft type provided with a combined sunshade and flue

member, an adjustable supporting structure that carries said member and which is adapted to be arranged in different positions so as to change the angle of said member when it is used to form a sunshade, a pivotal connection between said member and supporting structure that permits said member to be moved relatively to said supporting structure into an upright position, wherein it forms one wall of an updraft flue, and means for retaining said member in said upright position.

4. A wind shield, comprising a supporting structure, adjustable side arms projecting forwardly from said supporting structure, and a transversely-disposed member pivotally connected at its lower edge to said side arms and adapted to be arranged at an angle to said side arms so as to serve as a flue member or in parallel relation to said side arms so as to serve as a sunshade or rain visor.

5. A wind shield, comprising a supporting structure, transversely-disposed upper and lower members pivotally mounted on said supporting structure in such a way that they can be spaced apart to form a clear vision slot, a pivotally mounted rain guard at the rear of the lower member of the shield that projects upwardly from the bottom edge of said lower member when the clear vision slot is in use, pivotally mounted side arms on said supporting structure, a combined sunshade and flue member pivotally connected at its lower edge to said side arms, and means for adjustably connecting said member to said arms.

6. A wind shield, comprising a supporting structure, transversely-disposed upper and lower members pivotally mounted on said supporting structure, a pivotally mounted bottom member arranged at the rear of the lower member of the shield, pivotally mounted side arms on said supporting structure, a flue member pivotally connected at its lower edge to said side arms, and side closures formed by pieces of fabric arranged between said supporting structure and the ends of the upper and lower members of the shield.

7. A clear vision wind shield of the updraft type provided with upper and lower members that are revolubly mounted and so arranged that they can be adjusted to form a clear vision slot between said members, a revolubly mounted flue member arranged in front of the upper member of the shield and adapted to be arranged in a position to serve as a sun shade or rain visor, and a pivotally mounted bottom member arranged at the rear of the lower member of the shield.

8. A clear vision wind shield of the updraft type provided with upper and lower members that are revolubly mounted and so arranged that they can be adjusted to form

a clear vision slot between said members, a
revolvably mounted flue member arranged in
front of the upper member of the shield and
adapted to be arranged in a position to serve
5 as a sun shade or rain visor, a pivotally
mounted bottom member arranged at the
rear of the lower member of the shield, and
gutters on the upper and lower members of
the shield and on said flue member arranged
so that they will not obstruct the view 10
through the shield when the clear vision slot
and the updraft flue are not in use.

WILLIAM DE F. CROWELL.