(No Model.) 2 Sheets—Sheet 1.

B. F. TAYLOR.

AIR DEFLECTING DEVICE.

No. 509,337. Patented Nov. 21, 1893.

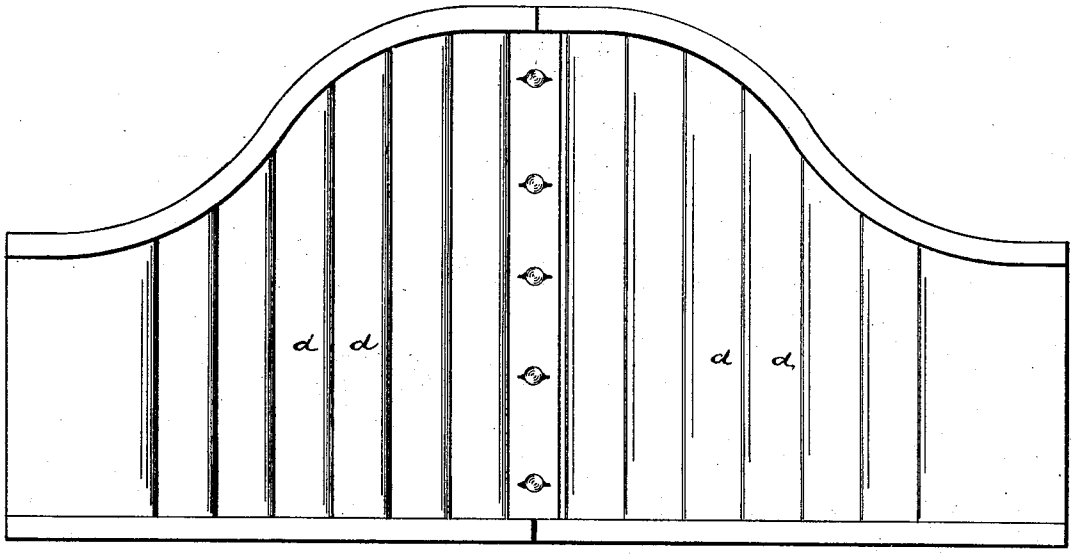

Fig. 1.

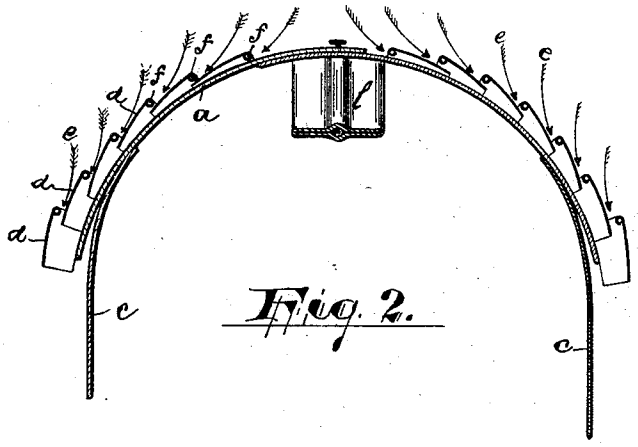

Fig. 2.

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

B. F. TAYLOR.

AIR DEFLECTING DEVICE.

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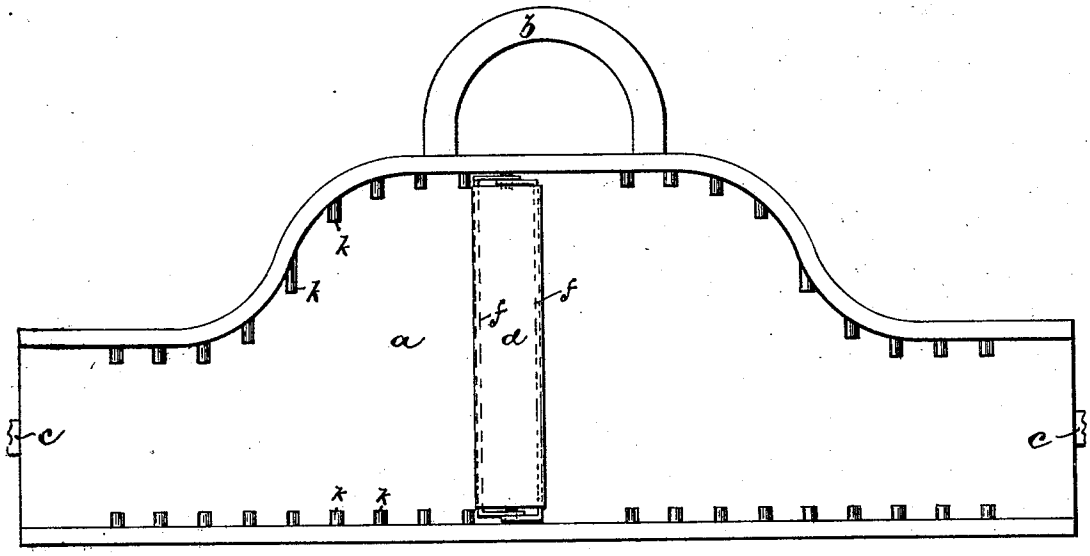

Fig. 3.

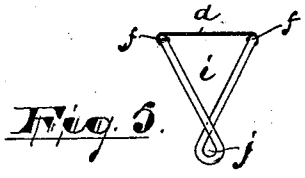

Fig. 5.

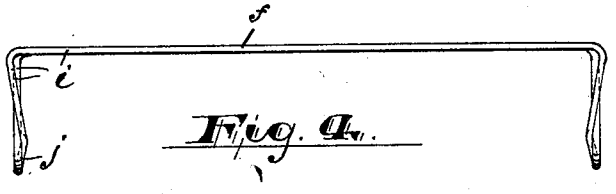

Fig. 4.

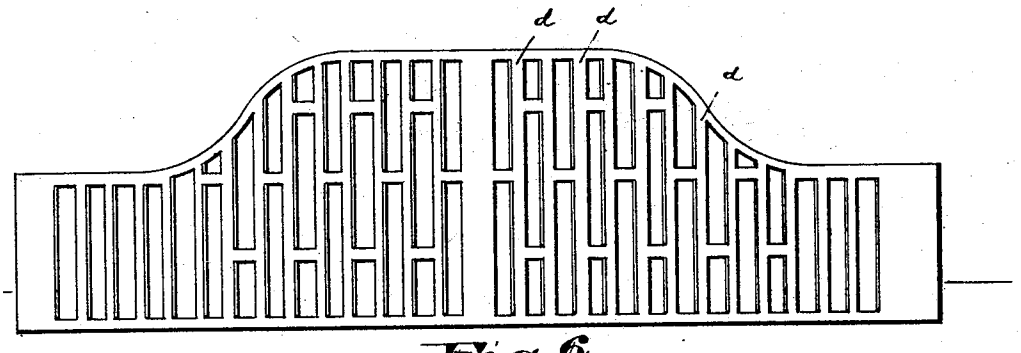

Fig. 6.

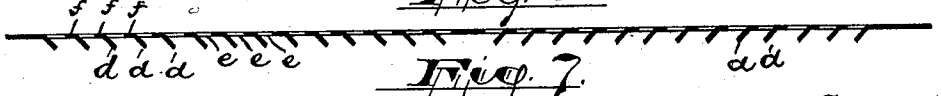

Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

BENJAMIN F. TAYLOR, OF NEWARK, NEW JERSEY.

AIR-DEFLECTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 509,337, dated November 21, 1893.

Application filed December 12, 1892. Serial No. 454,876. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. TAYLOR, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Air-Deflecting and Pressure-Relieving Devices; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to reduce the air pressure at the front of a rapidly moving vehicle or rider, whereby the speed is reduced, or the motion retarded; to protect the rider against the injurious influences of the cold air, and to secure other advantages and results, some of which will be referred to in connection with the description of the working parts.

The invention consists in the pneumatic deflector for riders of vehicles, and more particularly for bicycle riders, and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth and finally embodied in the clauses of the claim.

Referring to the accompanying drawings in which like letters indicate corresponding parts in each of the several views, Figure 1 is a front elevation of the pneumatic deflector in a form at present preferred. Fig. 2 is a sectional view of the same. Fig. 3 illustrates a preferred construction in which certain deflecting plates or slats are removable in relation to the body of the garment or device. Figs. 4 and 5 are side and end views of said plates or slats, and Figs. 6 and 7 illustrate another modification or variety in which the deflecting surfaces are formed up out of a single plate of material having the necessary stiffness, such as metal, celluloid and the like.

In said drawings, *a* indicates what may be termed a backing, foundation, body support, or carrier for the deflecting plates or slats. This may be in the form of a breast plate or garment adapted to cover the chest or fore part of a person riding on a bicycle or other vehicle the opposite sides of the plate being bent or turned backward from the center as will be understood upon reference to Fig. 2. Said body or breast plate or garment may be provided with a neck strap, *b*, adapted to be placed around the wearer's neck and to support the shield or breast plate, and with back straps, *c*, for securing said device at the back of the rider or wearer. The shield or breast plate is preferably of flexible material but it may be of rigid material, and it serves to protect the body from the air currents which tend to reduce the temperature of the front of the body to a degree injurious to the rider. In front of the said body portion are secured deflectors *d*, *d*, by means of which the air is easily turned aside so as to reduce the resistance occasioned by a dead pressure. Said deflectors are inclined to the line of motion of the rider or moving body and the inclines are on opposite sides of the garment. These deflectors may be formed and arranged in many different ways without departing from the spirit or scope of this invention and I consider the three varieties illustrated in Figs. 1, 3 and 6 sufficient for the purposes of this description of the invention, although I am fully aware that the construction may widely vary therefrom.

In the construction shown in Figs. 1 and 2, the breast plate is shown to be in two overlapping sections buttoned, laced or otherwise joined together at the front and at the sides are arranged the series of deflecting plates or slats *d*, *d*, composed of leather, cloth, oil-cloth or other stiff material of suitable lightness and preferably of sufficient flexibility to enable the same to be rolled up when not in use and to be comparatively easy upon the person. The said plates or slats are carried and held in proper relation by vertical ribs, *f*, of wire, whale bone, or the like, which may be disposed at the longitudinal edge of the plate or slat as shown, or through the center of said plate; the said ribs serving to hold the plates or slats apart at the edges toward the center of the device so as to form longitudinal and vertical slots, *e*, through which air passes. The ribs may be integrally formed on the plates as in Fig. 2 and may in that case form hollow sockets to receive pins, *k*, Fig. 3 at the opposite ends of the deflecting plates, the pins being formed or secured on the backing *a*. The air, striking against the

deflecting plates, is turned laterally and enters through the longitudinal openings between said deflecting plates and forms between said plates or slats and the body portion a lateral current, which accelerates in speed toward the sides because of the repeated additions of force from the successive openings and produces a suction which will tend to draw the air from the dead center at the front of the rider toward the sides and relieve the rider or the moving vehicle of the resistance.

I may make the deflecting plates or slats removable as in Fig. 3 in which case the said deflecting plates or slats may be stretched over a wire frame, *i*, which latter may have loops or eyes, *j*, adapted to be arranged on pins, *k*, on the body. Said plates or slats may however be removably secured to the body in any other suitable manner. The series of deflecting plates or slats may be formed in or of one integral piece, as in Figs. 6 and 7 and this piece may be permanently or removably secured in front of the body portion.

When the deflecting plates or slats are removed from the body of the shield, the latter serves alone as a protector from the air and to prevent the said shield from overheating the body of the rider, the same is held away from the rider by a stay projection *l*, Fig. 2, of any suitable kind or material.

The series of plates *d*, *d*, *d*, integrally connected or otherwise as above described and arranged at an inclination to the direction of movement of the vehicle, are preferably in two series, extending oppositely from a forward center and thus forming a >-shaped deflector, adapted to force the wind or air toward the opposite sides of the vehicle and relieve the vehicle of a dead pressure as will be well understood.

In operating the device in connection with a bicycle rider, the shield or protector is strapped on or suspended from the body, the deflecting plates or slats lying at the front and being inclined oppositely from the center of the garment, so that the air is directed through the slots, *c*, with considerable force and forms a current under said plates or slats, the force of which tends to produce a vacuum at the center and draw the dead air from said center, relieving the rider of the pressure or resistance thereof, all as will be understood.

I am aware that slats have been employed in connection with windows of steam-boats and like vessels, at the bow thereof, and I do not claim anything of that kind broadly, but so far as I am aware, these windows have had the slats disposed horizontally and the longitudinal extension has been in the direction of movement of the boat, and again these slats have been employed for other purposes than those herein referred to, and have not been arranged in front of a solid or imperforate surface with outlets to allow passage to the deflected air, but have been arranged before open windows or closed windows in such a way as to produce no draft suction, or vacuum such as may be utilized for useful purposes. In the present case, the series of slats arranged in connection with the rear plate, *a*, of the moving object, produces a draft behind the slats of considerable force, which, moving in a direction away from the center or point of greatest resistance tends to produce a vacuum. As a result, the dead resisting air, which tends to impede movement, is drawn to one side relieving the object of retarding pressure. The air currents flowing between the inclined plates or slats, and the plate, *a*, when the pressure relieving device is used in connection with other than bicycle riding, may be used for any purpose desired, the velocity of the current rendering it valuable for many purposes.

Having thus described the invention, what I claim as new is—

1. The air deflector which consists of a rear plate, *a*, and a series of deflecting plates secured at a distance from said rear plate and at an angle thereto and having a series of inlet openings between said deflecting plates and a passage for the air between said series of deflecting plates and the rear plate and an outlet for the air from said passage, substantially as and for the purposes set forth.

2. The air deflector herein described which consists of a rear plate and series of deflecting plates inclined oppositely on opposite sides of the center of the deflector and having series of openings between said deflecting plates and passages between the series of deflecting plates and the rear plate, and outlets for the air from said passages, all substantially as set forth.

3. The improved deflecting garment or shield comprising a rear plate turned backwardly at opposite ends to conform more or less closely to the body of the user, and oppositely inclined deflecting plates disposed in front of the said rear plate and a little away therefrom to form a passage between said deflecting plates and the rear plate, the said deflecting garment or shield being removable from said body and being provided with means for holding said deflecting plates together and upon the rear plate and for holding the deflecting garment or shield upon the body of the user, substantially as set forth.

4. The improved deflector combining therein, with the rear plate, a series of deflecting plates held away from said rear plate and having openings between them and having longitudinal ribs for holding the said plates in position at an inclination to the direction of motion of the deflector, substantially as set forth.

5. The improved deflector for bicycle riders, combining therein with the sectional rear plate, the sections of which are adapted to be united when on the rider, a series of deflecting plates disposed apart from one another and from the rear plate and suitably held in place thereon, substantially as set forth.

6. In combination with the rear plate and means for holding the same in position upon a body, means for holding said rear plate away from said body to admit of a flow of air between, series of deflecting plates arranged in front of and away from said rear plate in inclined positions and at the ends bound to said rear plate by suitable binding, substantially as set forth.

7. The improved air deflecting and pressure relieving device for riders, vehicles and similar moving objects, in which is combined with a rear plate, series of front plates arranged apart or away from said rear plate and connected thereto, one series being at an angle to the other series to form a >-shaped deflector, the said deflector plates having openings between leading into the chamber formed between said front and rear plates and being inclined to the direction of movement, to direct the air away from the center of said chamber toward the sides of the moving object, and means allowing the escape of air from said chamber, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of December, 1892.

BENJAMIN F. TAYLOR.

Witnesses:
CHARLES H. PELL,
OSCAR A. MICHEL.