March 6, 1934. F. WILLSON ET AL 1,949,595

AVIATION GOGGLES

Filed June 21, 1930

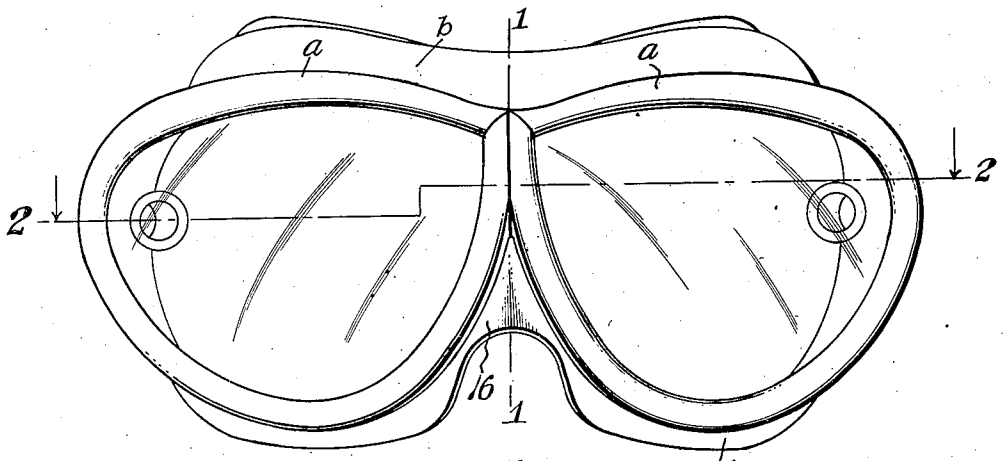


Fig. 1.

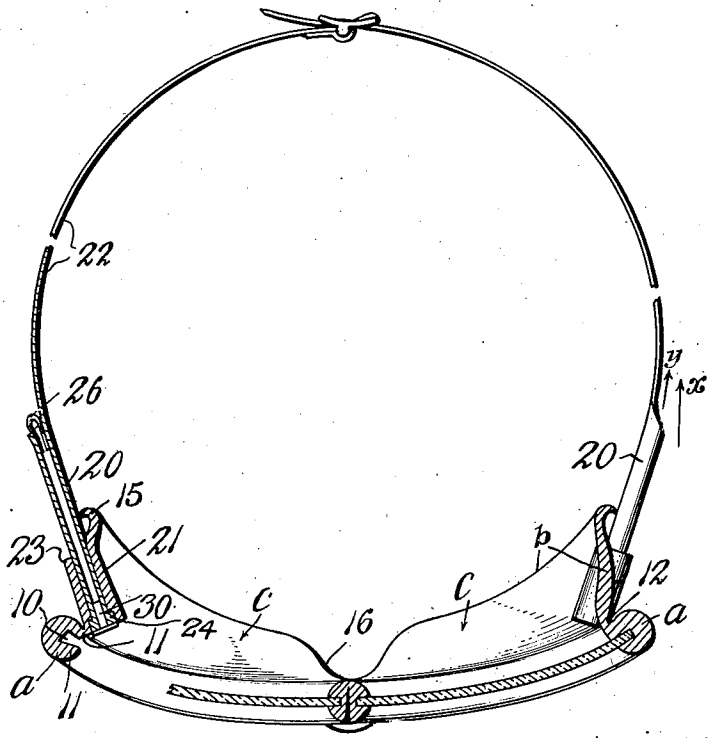


Fig. 2.

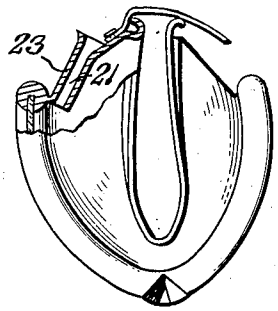


Fig. 3.

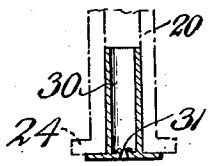


Fig. 4.

Inventors:
Frederick Willson
Harry F. Shindel

By W. G. F. Stewart
Atty:

Patented Mar. 6, 1934 1,949,595

UNITED STATES PATENT OFFICE

1,949,595

AVIATION GOGGLES

Frederick Willson, near Reading, and Harry F. Shindel, Reading, Pa., assignors to Willson Products, Inc., Reading, Pa., a corporation of Pennsylvania

Application June 21, 1930, Serial No. 462,740

7 Claims. (Cl. 2—14)

This invention relates to goggles especially suitable for use in aviation, and it consists in the improvements hereinafter fully described in connection with the accompanying drawing and clearly defined in the claims.

The purpose of the invention is to provide a simple and improved construction adapted to insure satisfactory facial contact, with proper conditioning of the eye-cup air chambers and with convenient and assured retention of the lenses both in service and in the handling incident to convenient folding up of the goggles and applying of them to the face; and the several novel features of construction which cooperate to these ends are fully described as embodied in the preferred specific form of goggles illustrated.

Fig. 1 is a front elevation of a goggles fully embodying the invention.

Fig. 2 is a sectional plan view, taken on the line 2—2 of Fig. 1.

Fig. 3 is a plan view indicating a permitted folded-together arrangement of the goggles when out of service, and showing a different view of the tubular-and-flat portion of one of the vacuum-producing head-bands employed.

Fig. 4 is a separate view of the aperture regulator employed for determinedly varying the communication with the eye-cup chambers.

The goggles framing shown is preferably formed of suitable rubber of equivalent elastic material, cast integrally in a mold conformed as required; the same comprising, as indicated, the united pair of lens-rings *a a* at the front thereof and the rearwardly-extending circumferential skirt portion forming a close facial mask *b* and enclosed eye-cup chambers *c c* in the applied goggles: Each of the lens-rings *a a* being formed with a lens-gripping inner-wall recess indicated at 10, and said face-contacting mask being united thereto so as to permit of free bending without tending to loosen the rings, and being also adapted for automatically insuring a desired vacuum in the air-cup chambers; all as hereinafter fully set forth.

The pair of lens rings *a a* may be rigidly united with the mask-skirt *b*, in the integral molding, so as to lie in a determined plane, and be subsequently cut-apart on a right-angular line 1—1 down to the connecting mask-skirt leaving only a hinging-connection between the rings; such construction permitting the folding-together of the two lens-ring portions of the goggles while providing an approximately determined horizontal relation when they are normally opened to abutting position of the cut-apart rings.

Each of the rings *a a* is of approximately circular cross-sectional form as indicated, and is provided interiorly with an undercut circumferential lens-grip recess 10, so that the normally closed-together inner portions 11—11 of the ring will be spread apart by the inserting of the circumferential edge portion of a lens, and thus serve to resiliently grip the latter. This construction enables ready insertion and removal of the lens in the ring, with reliable gripping action of the latter thereon; but owing to the inherently yielding character of the material employed, and the required handling of the goggles in practically applying, removing, and folding the same, it is important that provision be made to insure against possible distorting and loosening effect upon the lens-gripping rings. This danger is avoided, as indicated, by reducing the material at 12 so as to provide a circumferential yielding-neck connection between the mask-skirt *b* and the rear portion of the rings *a a*, whereby the transfer of any otherwise distorting strains to the rings due to manipulation in handling, is satisfactorily prevented.

The mask-skirt *b*, extending rearwardly from the connected lens-rings *a a* to form the eye-cup chambers *c*, is formed, as shown, with a midway nose-hood portion 16, but is generally of such transverse-sectional form, indicated in Fig. 2, so to provide a substantial chamber-enclosing wall while at the same time permitting close adjustment to the face of the wearer; any relative movement of the mask being effected without distorting effect upon the lens-engaging rings as above described, and such adjustment to the face being facilitated and improved by providing the mask with a semi-circularly turned facial-contact edge 15, which is specially adapted to conform to the face independently of any required bending of the mask and thereby supplement the latter in forming a satisfactorily closed eye-cup chamber *c*; which latter is required to properly secure a desired vacuum in the chambers as specially provided for.

The vacuum-producing means comprises essentially a pair of air-discharging tubes 20, 20 extending rearwardly from the respective side walls of the mask and arranged in communication with the eye-cup chambers *c* through wall apertures 21; the openings of the tubular air-ways being preferably located, as shown, rearward of the ears of the wearer, and extending head-bands 22 conveniently serving to hold them against the head of the wearer. To enable astisfactory connection of such separately

formed tubular head-band parts 20—22, each side wall of the mask is integrally formed with a rearwardly extending tubular connection 23, in which a flanged end 24 of the tube 20 is engaged, with the seated flange located in the ample space provided in the eye-cup chamber *c*. The tubes 20 extending to the rear portion of the head, are conveniently so held by the flat buckle-connected head-bands 22. The open ends of the tubular portions 20 may be provided with distending means 26 adapted to maintain the required tubular form when in service; and the mask-connected ends of each tube 20 is preferably provided with an aperture-regulator 30, the opening 31 of which into eye-cup chamber *c* is made of any determined size to properly control the degree of vacuum secured in the chambers.

It will be seen that the very simply constructed goggles provided by our invention, insures at all times tight engagement of the easily inserted lenses in the engaging rings, and comfortable close contact with the face of the wearer, so that the improved means provided for insuring desired air conditions in the eye-cup chambers may be most satisfactorily operative; that these means enable satisfactory utilization of the rapidly passing air when the goggles are in service as indicated by arrow *x* Fig. 2, for automatically producing desired vacuum in the chambers, by suctional effect exerted thereby through the air-discharging tube 20 as indicated by arrow *y*, to insure proper retaining of the goggles and clearness of the lenses; and that this is accomplished without danger of interference with such functioning by adverse weather conditions, because of the location and direction of the air-discharging tubes, and with capacity for free folding and any required handling when not in service. The preferred construction specifically set forth may be readily modified within the scope of the invention as defined in the claims.

What we claim is:

1. An integrally-formed goggles of elastic material comprising lens-engaging rings, and a connecting mask forming enclosed eye-cup chambers; the side walls of said mask having yielding face-contact portions and being formed with chamber-communicating tubes arranged to normally extend rearward from the respective chambers along opposite sides of the head of the wearer to produce vacuum in said chambers.

2. An integrally-formed goggles comprising lens-engaging rings, and a connecting mask forming enclosed eye-cup chambers; the side-wall portions of the latter being apertured and provided with rearwardly-opening vacuum-producing tubings adapted to normally extend rearwardly beyond the ears of the wearer.

3. Aviation goggles comprising lens-engaging rings with a connecting mask forming eye-cup chambers, chamber-communicating vacuum-producing tubes arranged at opposite sides to normally extend rearward from said chambers alongside the wearer's head, and a head-band to which the said rearwardly extending tubes are secured.

4. Aviation goggles comprising lens-engaging rings and a connecting mask forming enclosed eye-cup chambers, the side-wall portions of said chamber having vacuum-producing tube connections adapted to normally extend rearward therefrom in substantially parallel relation, and head-bands directly connected to said vacuum-tubes.

5. In combination with aviation goggles comprising lens-engaging rings and a connecting mask forming enclosed eye-cup chambers each provided with a side-wall aperture, a head band having rearwardly opening, vacuum-producing tubular end portions secured to the respective apertured walls.

6. Goggles comprising lens engaging rings; a flexible connecting mask integral therewith and forming enclosed eye cup chambers with face-contacting edge portions adapted to substantially seal said chambers, and goggle head bands provided with tubings communicating at one end with the respective chambers and extending along opposite sides of the head of a wearer with their open ends disposed rearwardly to cause production of a vacuum in said chambers.

7. Goggles comprising, lens engaging rings; a flexible connecting mask integral therewith and forming enclosed eye cup chambers having side-wall portions provided with tubular portions communicating with said chambers, a portion of said mask conformingly contacting the face of a wearer to substantially seal said chambers; and goggle head bands provided with tubings engaged at one end in said tubular portions and extending along opposite sides of a wearer's head to cause production of vacuum in said chambers by air passing the open ends of said tubings.

FREDERICK WILLSON.
HARRY F. SHINDEL.