May 5, 1942. N. E. WAHLBERG 2,281,643

HEAD LAMP

Filed Feb. 15, 1939 2 Sheets-Sheet 1

Fig 1

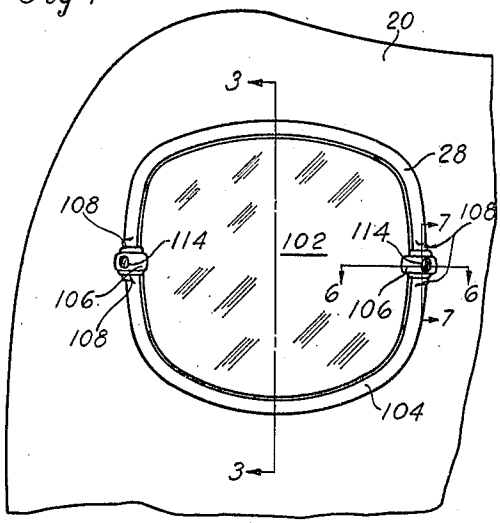


Fig 2

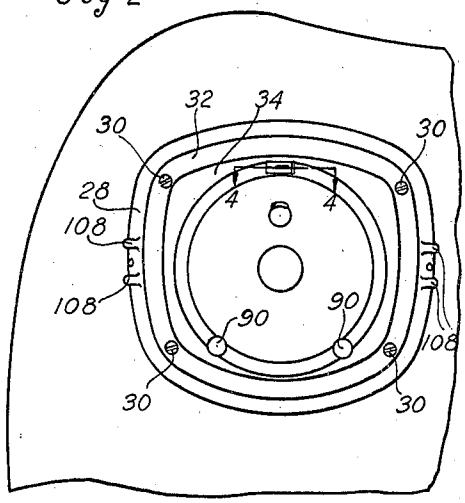


Fig 3

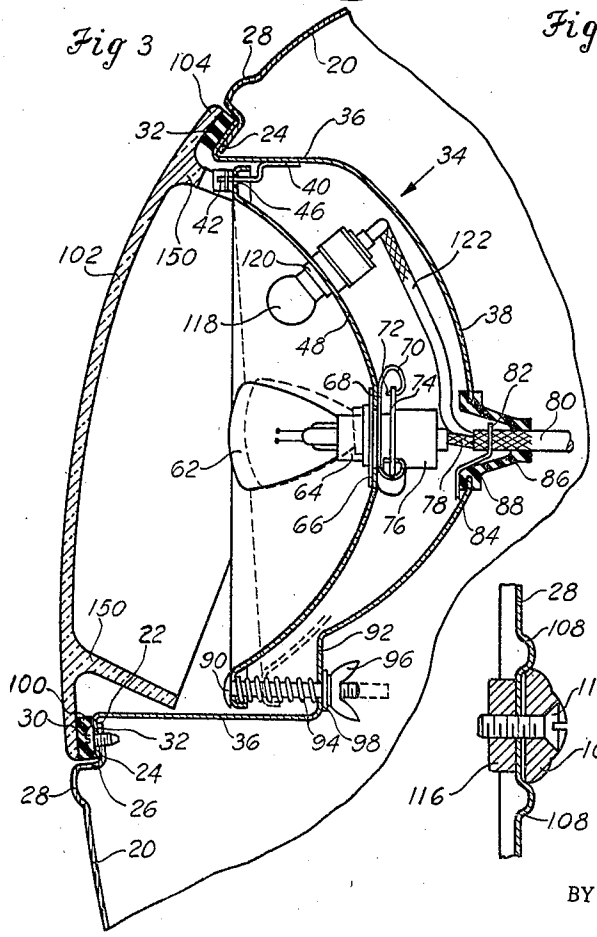


Fig 4

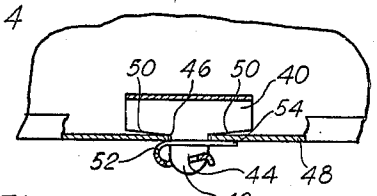
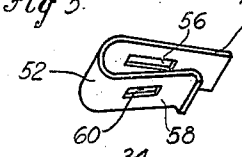


Fig 5



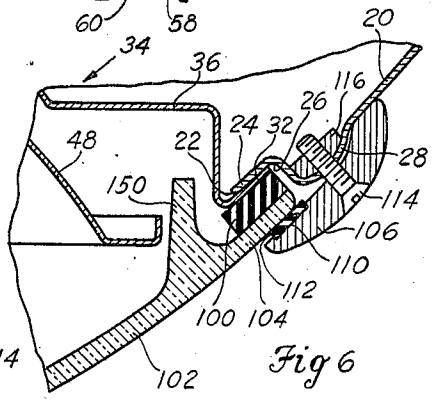


Fig 6

Fig 7

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May 5, 1942. N. E. WAHLBERG 2,281,643

HEAD LAMP

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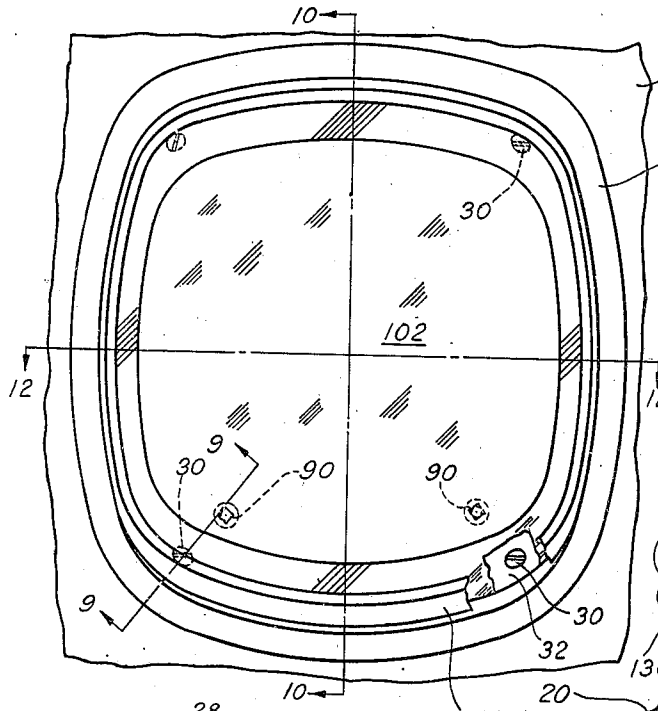

Fig 8

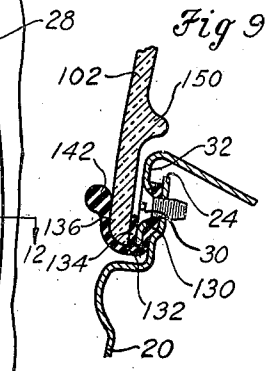

Fig 9

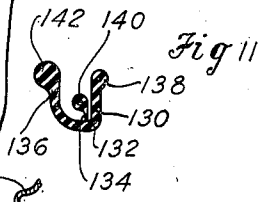

Fig 11

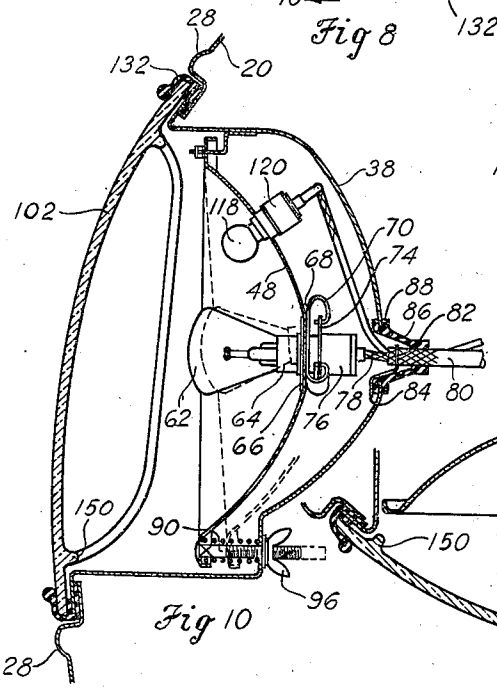

Fig 10

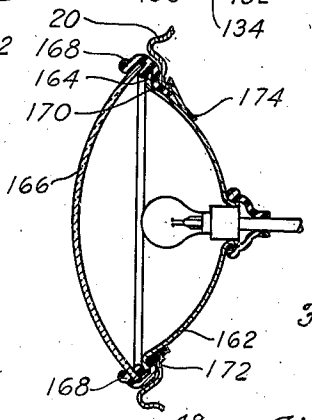

Fig 13

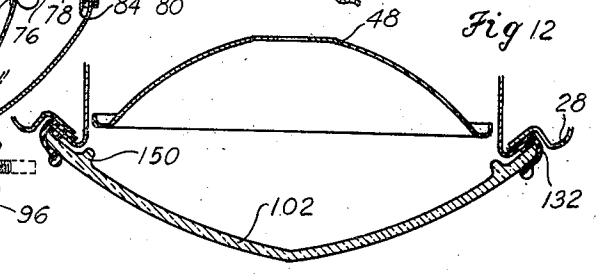

Fig 12

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Patented May 5, 1942 2,281,643

UNITED STATES PATENT OFFICE

2,281,643

HEAD LAMP

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Application February 15, 1939, Serial No. 256,424

4 Claims. (Cl. 240—8.1)

This invention relates to the art of lamps and has particular relation to head lamps for automotive vehicles.

Head lamps in the past have been mounted upon the exterior of automotive vehicles and generally in such a position that the entire exterior of the lamp is exposed. This practice has led to the development of somewhat elaborately shaped lamp exteriors in an effort to reduce the wind resistance which is caused by the same. The reduction of wind resistance by means of stream lining has in turn resulted in peculiar external constructions of such lamps and has led to the use of rather complicated adjusting mechanisms within the lamp for aiming the lamp beam.

Lamp manufacturers in the past have always considered it necessary to employ a frame around the periphery of the lens in order to hold the same in place, and modern construction of head lamps has in general demanded that such frames be secured to the support or lamp exterior by means of concealed fasteners. Head lamp manufacturers have met this problem by securing the lens frame in place by means of spring devices whereby the frame is snapped into and out of operative position. Consequently, it has been difficult to exchange lenses or to exchange burned out bulbs within the lamp as quite frequently the lens frame will snap out of position in an unexpected manner, sometimes resulting in the lens falling upon the floor and being cracked or broken.

It is an object of the invention to simplify the internal construction of a lamp and its adjusting mechanism by placing the same within a casing which has no requirement that its outside surface be streamlined and which accordingly may take any desired shape for the proper reception of simple adjusting mechanism.

An additional object of the invention is to provide means for adjusting the lamp whereby the beam of the lamp may be moved by the medium of two screws to any desired position.

A still further object of the invention is to provide means of a simple and decorative nature for retaining the head lamp lens in place without the use of a frame being required and which may be easily and cheaply constructed, and be very readily applied or disassembled to permit exchange of lamp bulbs.

Additional objects of the invention will appear hereinafter as the description proceeds and will be pointed out more fully in connection with the appended claims.

In the drawings, of which there are two sheets, and which are to be taken as illustrating rather than limiting the invention:

Figure 1 is a front elevational view of a fender of an automotive vehicle showing the head lamp of the present invention in place therein;

Figure 2 is a view similar to Figure 1, but showing the head lamp lens and its retaining means removed;

Figure 3 is a vertical sectional view through the head lamp shown in Figure 1 and taken substantially upon a plane as indicated by the line 3—3 thereof looking in the direction of the arrows;

Figure 4 is a horizontal sectional view through a portion of the reflector support and associated mechanisms taken substantially upon a plane, as indicated by the line 4—4 of Figure 2 and looking in the direction of the arrows;

Figure 5 is a perspective view of the spring clip shown in Figure 4;

Figure 6 is a horizontal sectional view through the lens and its retaining means taken substantially upon a plane, as indicated by the line 6—6 of Figure 1 and looking in the direction of the arrows;

Figure 7 is a sectional view through the parts shown in Figure 6 taken substantially upon a plane, as indicated by the line 7—7 of Figure 1 looking in the direction of the arrows;

Figure 8 is a front elevational view similar to Figure 1 showing a modified form of construction, certain parts being broken away more clearly to illustrate the construction;

Figure 9 is a detail sectional view taken substantially upon a plane, as indicated by the line 9—9 of Figure 8;

Figure 10 is a vertical sectional view taken substantially upon a plane, as indicated by the line 10—10 of Figure 8 and looking in the direction of the arrows;

Figure 11 is a sectional view through a portion of the sealing gasket and lens retaining means shown applied in Figures 8 to 10;

Figure 12 is a horizontal sectional view through a portion of the reflector and lens shown in Figures 8 and 10 and taken substantially upon a plane as indicated by the line 12—12 of Figure 8; and,

Figure 13 is a vertical cross-sectional view through a reflector and lens of a still further modified type showing its mounting within a fender.

Referring more specifically to the drawings in which similar reference characters are employed

to designate similar parts, the device of the present invention is illustrated as being applied within a recess 22 in the front face of a front fender 20. Adjacent aperture 22 in the fender 20, the fender is provided with an inwardly flanged portion 24 to provide a shouldered portion 26 which is surrounded by bead 28. The flanged portion 24 provides a seat upon which the outwardly extending flange 32 of a lamp casing 34 is received and secured in place by means of screws 36. The lamp casing 34 is made up of a roughly cylindrical portion 36 which extends along the axis of the lamp and has a rearmost rounded portion 33 which is offset with respect to the axis of said cylindrical portion for a purpose hereinafter to be described.

At its upper central portion the casing 34 has attached thereto, as by welding or other suitable means, lug and stop device 40, the forward portion of which is of reduced width. The portion 42 is slotted as at 44 and is adapted to project through a slot 46 formed in the upper edge of a reflector 48. Said reflector 48 is adapted to abut against the shoulders 50 formed by the wider portions of the stop device 40, and is held in place thereagainst by means of a spring clip 52 which has a long leg 54 slotted as at 56 to receive the portion 42 of the stop device 40. The opposite leg 58 of the spring clip 52 is provided with a similar but smaller slot 60. After the slots 56 and 60 have telescoped portion 42, the spring 52 may be compressed and slid sidewise to seat leg 58 within the slot 44 in the projection 42. This type of connection tends to hold the upper edge of the reflector firmly in place and yet permits it to have a limited universal movement with respect to the stop device 40.

The reflector 48 has a parabolic inner surface, and at the center of the parabola there is positioned the usual double filament lamp bulb 62 which has a base 64 equipped with a locating plate 66 having keyhole slots (not shown) adapted to engage with bayonet pins (not shown) secured to the reflector 48 for cooperation with such keyhole slots. Upon the rear face of reflector 48 there is provided a plate 68 which has a series of curved spring fingers 70, the ends 72 of which are engaged in slots of a plate 74 carried as a part of a socket 76 with which the contact elements upon the lamp base 64 are adapted to cooperate in the usual manner to provide an electrical connection. The socket 76 is suitably electrically connected by means of the conductor 78 to the battery of the vehicle through a switch (not shown) for turning the lights on and off. At its point of passage through the wall of the casing, the conductor 78 may be sheathed as at 80, such sheath being provided with a stop member 82 which has a radially extended portion 84 for preventing withdrawal of the sheath 80. Extending around the sheath 80 and tightly in contact therewith is a boot 86 which has a frustoconical shape, the larger diameter of which is provided with a slotted out-turned flange 88. The slotted portion of the flange 88 is received within an aperture formed in the rear wall of the casing 34. Since the boot 86 is in tight engagement with the conductor sheath 80, and the casing 34, it will prevent the entrance of mud, dirt or moisture into the casing 34, this being extremely important due to the location of the lamp adjacent the tire of the vehicle and within the fender 20.

Two bolts 90 pass through apertures located in the lower edge of the reflector, one upon each side of the vertical center line of the reflector, and extend rearwardly from the reflector. Bolts 90 have their heads in engagement with the reflector, their shanks extending through apertures formed in the lower rear portion of the casing 34, a flattened portion 92 being provided thereupon by reason of the offsetting of dome 38 with respect to cylindrical portion 36 of the casing. Encircling the shanks of bolts 90 and engaging the forward surface of the casing 34 and the rear surface of the reflector 48, are coil springs 94 adapted yieldingly to hold the reflector against the heads of the bolts 90. Wing nuts 96 are threaded upon the shanks of the bolts 90 exteriorly of the casing 38 with washers 98 of rubber or any other suitable material between the casing 34 and the nut 96 so as to seal the bolt apertures in the casing 34 against the entrance of moisture, mud or dirt. It will be recognized that since a bolt 90 is positioned upon each side of the vertical axis of the lamp (as shown more clearly in Figure 2), any desired angular adjustment which would be required in practice can be made simply by tightening or loosening one or the other or both of the wing nuts 96. It will also be recognized that this adjustment can be accomplished very simply and without demounting the lamp.

Upon the flanged surface 32 of the casing 38 and extending entirely thereabout in contact therewith is a sealing gasket 100 of soft rubber or any other suitable sealing material. A lens 102 having edge portions 104 for mating with the rubber gasket 100, is retained in position by die cast elements 106, one of which is positioned on each side of the lens 102. At each side of the lamp there is provided in the fender bead 28 raised portions 108 which serve to center and prevent rotation of the die cast elements 106. The underside of each die cast retainer element 106 is provided with a recess 110 in which there is suitably secured a deformable pressure member 112 for distributing the clamping pressure of the element 106 uniformly over a large area of the edge 104 of lens 102 so as to prevent cracking or breaking of the lens. The elements 106 are retained in position by means of screws 114, the heads of which are countersunk into the exposed surface of elements 106 and the fingers of which are threadedly received in tapped member 116 secured to the underside of the fender 20. It has been found that two clamping elements, these being employed upon opposite points at the edge of the lens 102, will insure adequate pressure between the lens edge 104 and the sealing gasket 100 to prevent the entrance of any foreign matter into the lamp casing. Furthermore, there are no spring devices to contend with, and the repairman is able to tell at a glance the degree of tightness or looseness of the lens by inspection of the clamping elements 106, thus aiding him materially in preventing undue breakage of lenses in changing bulbs.

It will be understood that the lamp bulb 62 has two filaments located one above the other to provide a double beam, the lower filament projecting the light a longer distance forwardly for country driving and the upper filament being useful for city driving. In addition to these two filaments the reflector 48 is also apertured at its upper portion and has small candle-power, parking lamp 118 secured in a socket 120 clamped in the aperture. The socket 120 may be electrically connected to the light switch by means of a

conductor 122 which extends through the sheath 80.

In the modified form of the invention shown in Figures 8 to 12 the casing and the parts carried thereby are identical with those shown in Figures 1 to 7, the only change being in the means for attachment of the casing 38 to the fender 20 and in the means for securing the lens in place. The casing 38 is provided with the outwardly extending flange 32 described in Figures 1 to 7. The flange 32 is secured to the flanged portion 24 of the fender 20 by means of screws 30 in the same manner as shown in Figures 2 and 3 except that a rib 130 of a rubber gasket 132 is secured between the flanges 24 and 32, the screw 30 passing through an aperture in the rib 130.

The gasket 132, which is shown in detail cross section in Figure 11 may comprise an extruded rubber member having three ribs 130, 134 and 136 having enlarged ends 138, 140 and 142. As the screw 30 is tightened, the rib 130 is compressed and deformed, particularly the enlarged end 138 thereon, so as to provide an effective seal between the parts 24 and 32. It will be understood that the rib 134 remains upon the outer surface of the flange 32 and is free after the parts 32 and 24 have been secured together.

In order to secure the lens 102 to the lamp assembly, it is only necessary to introduce the lens along one edge between the rib 134 and rib 136 and then progressively to stretch the rib 136 and snap it into place along the outer surface of the lens. This will result in the rib 134 and particularly its enlarged portion 140 being compressed and deformed to provide a seal, and will also result in the rib 136 and the enlarged portion 142 being stretched so as to press against the outer surface of the lens and in a direction to seal the lens upon both sides to the rubber member 132.

In each modification the lens is provided with an internal rib 150 for strengthening purposes and to assist service station operators in centering the lens with respect to the casing 38.

It will be recognized that there has been provided a headlamp for automotive vehicles in which the reflector and the light beam given out by the same may readily be adjusted from the exterior of the lamp casing. In both modifications the lens may easily and simply be assembled with the lamp, the retaining means therefor being simple and easily operated upon without the need for special tools such as are usually met with in most modern lens mountings. It will be noted that the construction of the lamp is extremely inexpensive and that a reflector is provided which is parabolic in shape and which may easily be polished.

The construction shown in Figure 13 constitutes a still further simplification of the same order as shown in Figures 8 to 12. In this form of the invention the lens and reflector are circular in outline and it is therefore necessary to mount the assembly at a lower point in the fender; that is, where the front face of the fender presents a vertical or nearly vertical face. It may be necessary in applying this device to new cars to build fenders with a flat forward area for the purpose of receiving this lamp assembly. For this reason this construction is not quite so advantageous as the other disclosed forms although it has additional advantages in increased simplicity and reduced number of parts.

As shown in Figure 13, the lamp is mounted in an aperture in the fender 20 which is provided with a rabbeted portion surrounding the aperture. The reflector 162, which may be a parabolic metal stamping having a polished inside surface, is provided around its edge with a flared flange 164 to which the edge of the lens 166 is adapted to be secured by means of a three-ribbed gasket 168 similar to the gasket 132 of Figures 8 to 12. The gasket 168, however, has its rearmost rib 170 extended so as to hug the outer surface of the reflector rearwardly of the joint between the lens and reflector. This extended rear rib 170 provides a resilient seat for receiving the edge flange 172 of the fender 20 adjacent the aperture therein.

Th method of assembling the lens 166 and reflector 162 is similar to the method described in connection with Figures 8 to 12, the reflector flange 164 being first introduced between the central rib of the gasket 168 and the rearmost leg 170. A portion of the lens edge may then be inserted between the central and forward ribs of the gasket 168 and the forward rib progressively stretched and snapped into place.

The lens and reflector assembly is then in condition for mounting in the fender aperture and this is accomplished by inserting the same rearwardly into the aperture in the fender. Movement of the assembly forwardly out of position may be prevented by any desired means such as screws or clips as disclosed in Figures 1 to 7 or any other well known securing device. For purposes of illustration, the assembly is shown as held in position by means of spring clips 174 secured to the reflector 162 by welding or soldering and which snap outwardly into engaging relation with the flange 172 as the assembly is pressed rearwardly. The lamp assembly may readily be removed from the fender by depressing spring clips 172 and moving the assembly forwardly.

The assembly of Figure 13 may also be retained in place in the fender by means of retaining elements such as the members 106 of Figures 1 to 7.

Although the invention has been described in considerable detail, this description is not to be taken as limiting but merely as illustrating the best known method of practicing the invention. All equivalents falling within the scope of the attached claims are reserved.

I claim:

1. Lamp construction comprising a fender having a flange defining an aperture in its forward portion, a casing having an open forward end provided with a flange for mating with said fender flange, a lens closing the open end of said casing, a gasket interposed between and sealing the joint between said casing and said lens, the abutting portions of said casing flange, fender flange, gasket and lens edge lying in parallelism to one another entirely around the periphery of said lamp, and clamps secured to said fender and arranged to hold said lens against said casing.

2. Headlight construction comprising a casing, a fender, an aperture in the front face of said fender for receiving said casing and flanged to provide a seat for a flange formed upon said casing about the open forward portion thereof, a lens, a sealing gasket overlying said casing flange, and means clamping said lens, casing flange, and gasket together and securing said casing flange to the flange about the fender aper-

ture, the abutting surface of said casing flange, fender aperture flange, lens edge and gasket all lying in parallelism around the periphery of the lamp, said clamping means being attached to said fender.

3. Headlight construction of the type in which a reflector is pivoted within a casing for universal adjustment, said pivot comprising a lug upon the casing extending through an enlarged aperture in the reflector, a spring clip apertured to receive said lug, said clip being formed of two portions connected by a bight, one portion of said clip bearing against said reflector to force the same against a stop on said lug and the other portion of the clip being received in stressed condition within a slot formed in said lug.

4. Headlight construction comprising a casing, a fender, an aperture in the front face of said fender for receiving said casing, said casing having a flange extending about its forward portion which is secured to said fender around said aperture, a sealing gasket overlying said flange, and a lens clamped against said gasket, said gasket, lens, and casing flange having similar peripheries, said lens being retained in position by means of clamping members secured to said fender and bearing upon said lens at spaced points around its periphery.

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