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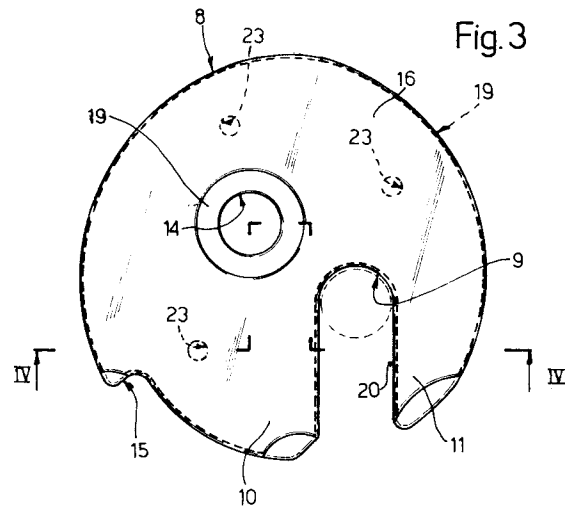
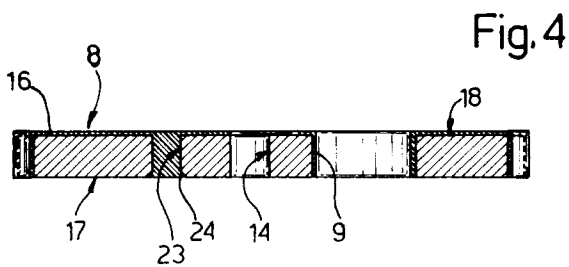
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**Vehicle door lock featuring a perfected fork.**

A vehicle door lock (1) comprising a fork (8) on to which is partially molded a plastic covering (16), and of which is left exposed at least one face (17) positioned, in use, adjacent to the head (6) or shoulder of the striker (3) of the lock (1).



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The present invention relates to a vehicle door lock.

Automotive locks are known substantially comprising a striker fitted to one of the door posts, and a main assembly fitted to the door and cooperating in releasable manner with the striker for keeping the door closed. More specifically, the main assembly normally comprises a rotary fork with a seat for the striker, and movable between a first open position, wherein the seat faces and receives the striker, and a second closed position wherein the fork is rotated and the striker retained inside the seat. The fork is normally maintained in the closed position by a stop member cooperating with the fork by virtue of elastic means.

Passage from the open to the closed position is achieved (or at least initiated, in the case of power-assist locks) by slamming the door, which results in mechanical impact of the striker and fork.

For reducing the noise produced by impact of the striker and fork, higher class vehicles in particular feature forks with a molded plastic covering. Such forks, however, present a serious drawback.

European vehicles traditionally feature mushroom type strikers (with a rod terminating in a flared head) or bridge type strikers (with a rod between two shoulders of a C-shaped supporting element fitted to the door post). In both cases, the portion of the rod engaging the seat on the fork is adjacent to a wall (head or shoulder) perpendicular to the rod itself.

Consequently, any misadjustment in the relative position of the main assembly and the striker may result in impact between the head or shoulder of the striker and the plastic covering on the fork, thus resulting in permanent deformation of the covering and possibly also in impaired operation of the lock and jamming of the fork.

Such misadjustment may occur both during on-line assembly of the vehicle, and in the course of repair work on the lock.

It is an object of the present invention to provide a lock designed to overcome the above drawbacks typically associated with known types.

According to the present invention, there is provided a vehicle door lock comprising:

- a striker designed for fitment to the door post, and having a rod and an end portion substantially perpendicular to said rod; and
- a main assembly designed for fitment to the door, and cooperating in releasable manner with said striker; said main assembly comprising a supporting plate, and a fork hinged to said plate and having a seat for receiving said striker; said fork being movable between a first position, wherein said seat is so oriented as to enable engagement and release of said striker, and a second position wherein

said striker is locked inside said seat; and said fork presenting a covering of plastic material;

characterized by the fact that said covering extends over only part of said fork, of which is left free at least one face facing said end portion of said striker.

Two preferred, non-limiting embodiments of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Fig.1 shows a side view of a lock in accordance with the teachings of the present invention;

Fig.2 shows a front view of the Fig.1 lock;

Fig.3 shows a larger-scale front view of the fork on the Fig.1 lock;

Fig.4 shows a section along line IV-IV in Fig.3;

Fig.5 shows a front view of a further embodiment of the fork in accordance with the teachings of the present invention;

Fig.6 shows a section along line VI-VI in Fig.5.

Number 1 in Fig.s 1 and 2 indicates a vehicle door lock.

Lock 1 comprises a main assembly 2 designed for fitment to the door (not shown); and a striker 3 (shown by the dotted line) designed for fitment to the door post (not shown). Main assembly 2 cooperates in releasable and known manner with striker 3.

Striker 3 substantially comprises a base 4 for fitment to the door post; a rod 5 projecting from base 4; and an end end 6 larger in diameter than rod 5.

Main assembly 2, the overall design of which is known and therefore not described in detail, comprises a supporting plate 7 to which is hinged a fork 8 cooperating with striker 3. Fork 8 presents a seat 9 (Fig.s 3 and 4) defined by two appendixes 10 and 11, and is movable between an open position (shown by the dot-and-dash line in Fig.2) wherein seat 9 substantially faces striker 3 for receiving it and enabling its release, and a closed rotated position (shown by the continuous line) wherein one of said appendixes (11) cooperates with striker 3 for locking it inside main assembly 2 and so keeping the door closed.

Fig.s 3 and 4 show detailed views of fork 8, which is substantially rounded, and presents an eccentric hole 14 for a pin (not shown) by which it is hinged to plate 7. In addition to appendixes 10 and 11, fork 8 also presents a radial shoulder 15 cooperating, in use, with a stop member (not shown) of lock 1.

According to the present invention, fork 8 presents a covering 16 of plastic material extending over substantially all the lateral surfaces of the fork, with the exception of face 17 positioned, in use, adjacent to head 6 of striker 3 (Fig.s 1 and 3).

More specifically, covering 16 extends over the whole of opposite face 18 of fork 8, with the exception of a small annular portion 19 surrounding hole 14, and over the whole of peripheral surface 19, including lateral surface 20 of seat 9. Covering 16 is conveniently thicker at the ends of appendixes 10 and 11 and on shoulder 15.

Covering 16 is molded on to fork 8, for which purpose, fork 8 presents three through holes 23 having a flared portion 24 terminating at face 17 of the fork, and which, during molding, are filled with the plastic covering material, thus ensuring adhesion of the covering to the fork.

Fig.s 5 and 6 show an alternative embodiment of fork 8, indicated as a whole by 25, and any parts of which similar or equivalent to those described in connection with Fig.s 3 and 4 are indicated using the same numbering system.

Fork 25 differs from fork 8 substantially in that covering 16 is applied solely to lateral surface 20 of seat 9, and terminates on appendix 10 with a solid semicircular portion 26 housed inside a recess 27 on appendix 10, and which in use is subjected to impact by striker 3. At the opposite end, covering 16 is secured to appendix 11 by an integral belt portion 28 formed in the course of molding covering 16, by injecting the plastic material into a groove 29 formed about appendix 11. In this case also, therefore, face 17 of fork 25 facing head 6 of striker 3 in use presents no covering, portion 28 being ineffective in this respect, by virtue of the plastic material being housed inside groove 29 and flush with the surface of face 17.

The advantages of lock 1, and particularly forks 8 and 25, according to the present invention will be clear from the foregoing description.

Eliminating the plastic covering on the fork surface facing the head of the striker in use provides for safeguarding against distortion of the covering, and hence malfunctioning of the lock, in the event of the fork striking the head of the striker as a result of misadjustment. Moreover, eliminating the covering on said fork surface also provides for an additional safety margin, equal to the thickness of the covering, as regards mutual positioning of the striker and the main assembly of the lock in the direction of the striker axis. Finally, restricting the plastic covering to the portions in which it is actually required, with geometric provisions for ensuring adhesion of the covering to the fork, provides for reducing the amount of plastic material employed and, hence, production costs.

To those skilled in the art it will be clear that changes may be made to lock 1 as described and illustrated herein without, however, departing from the scope of the present invention.

## Claims

1. A vehicle door lock (1) comprising:
  - a striker (3) designed for fitment to the door post, and having a rod (5) and an end portion (6) substantially perpendicular to said rod (5); and
  - a main assembly (2) designed for fitment to the door, and cooperating in releasable manner with said striker (3); said main assembly (2) comprising a supporting plate (7), and a fork (8) hinged to said plate (7) and having a seat (9) for receiving said striker (3); said fork (8) being movable between a first position, wherein said seat (9) is so oriented as to enable engagement and release of said striker (3), and a second position wherein said striker (3) is locked inside said seat (9); and said fork (8) presenting a covering (16) of plastic material; characterized by the fact that said covering (16) extends over only part of said fork (8), of which is left free at least one face (17) facing said end portion (6) of said striker (3).
2. A lock as claimed in Claim 1, characterized by the fact that said covering (16) is molded on to said fork (8).
3. A lock as claimed in Claim 1 or 2, characterized by the fact that said covering (16) extends over the whole of said fork (8) with the exception of said face (17).
4. A lock as claimed in Claim 3, characterized by the fact that said covering (16) is secured to said fork (8) by means of a number of anchorage portions engaging respective through holes (23) in said fork (8).
5. A lock as claimed in Claim 1 or 2, characterized by the fact that said covering (16) is restricted solely to the inner surface (20) of said seat (9).
6. A lock as claimed in Claim 5, characterized by the fact that said covering (16) is secured to said fork (8) by a belt portion (28) housed inside a groove (29) surrounding a portion (11) of the fork (8).

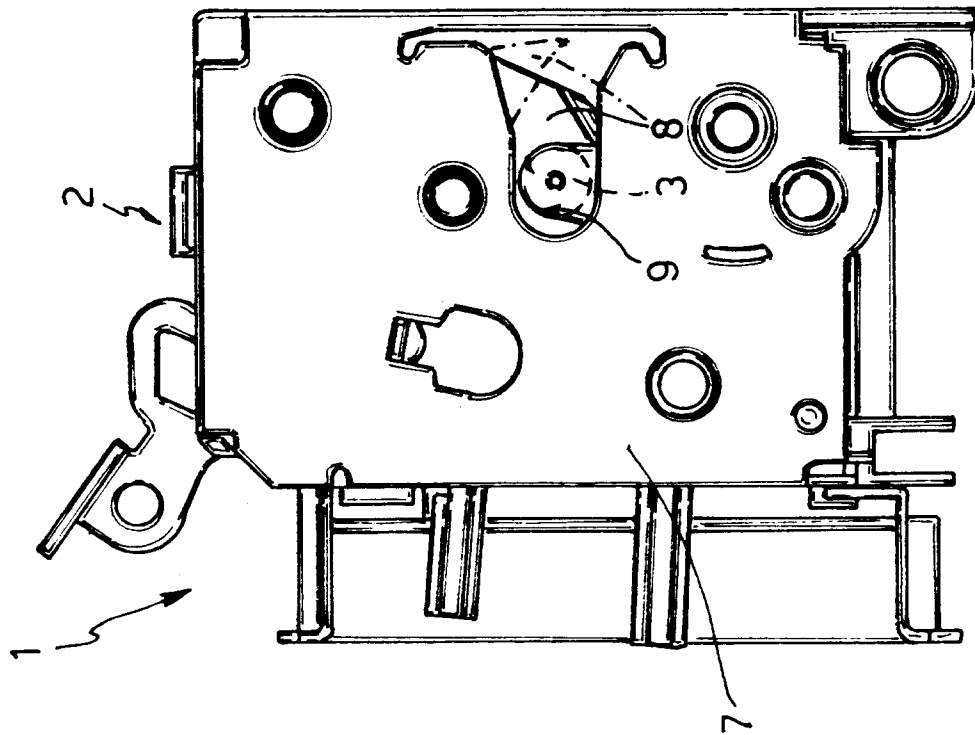


Fig. 2

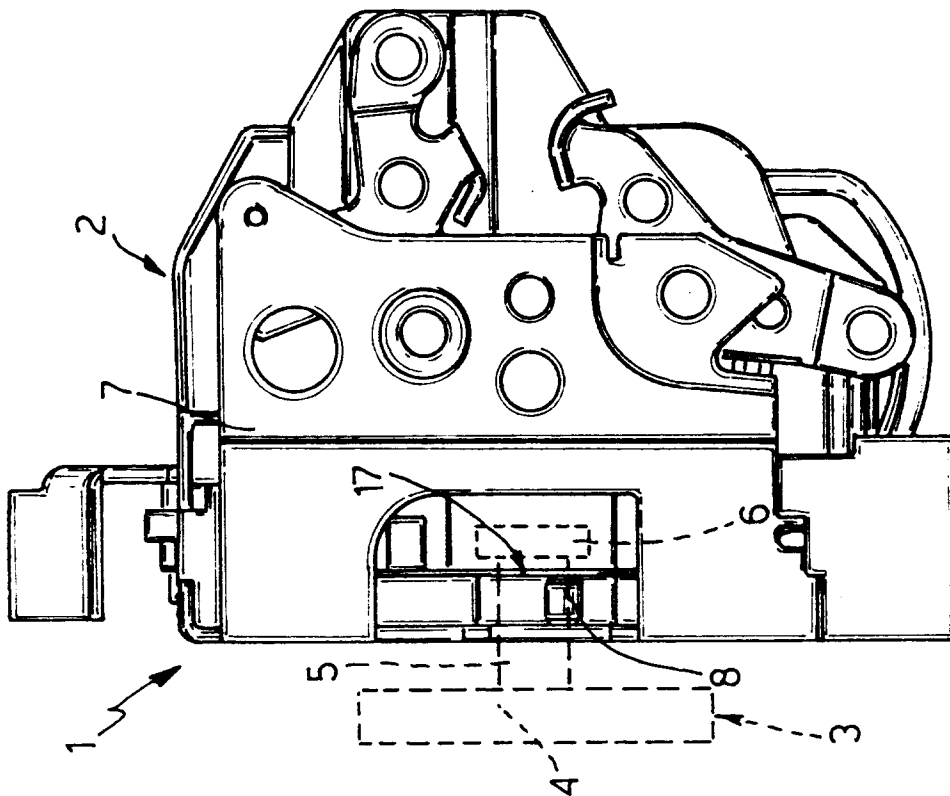


Fig. 1

Fig. 4

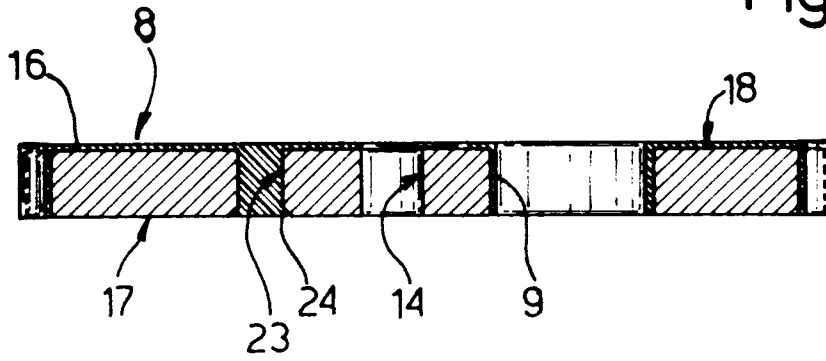


Fig. 3

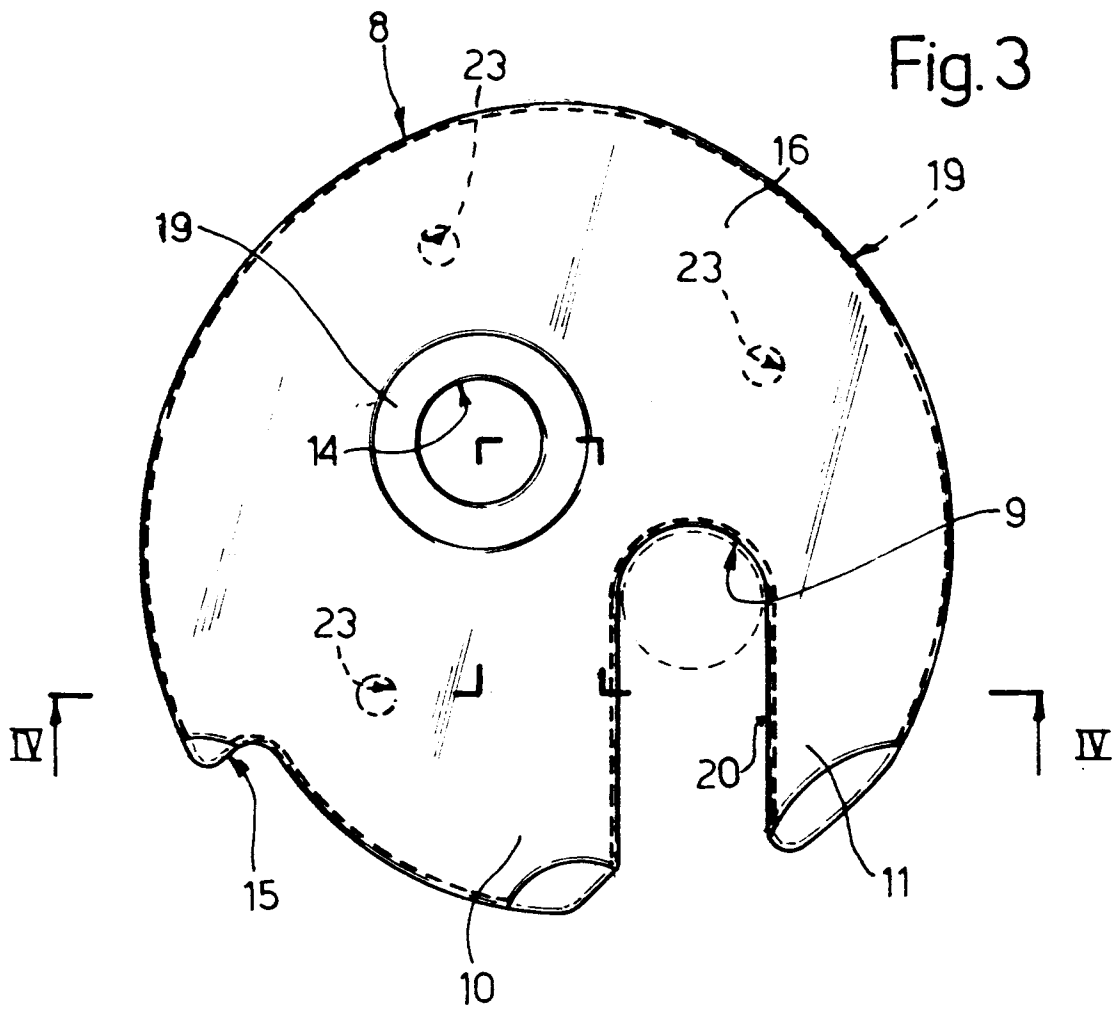


Fig. 6

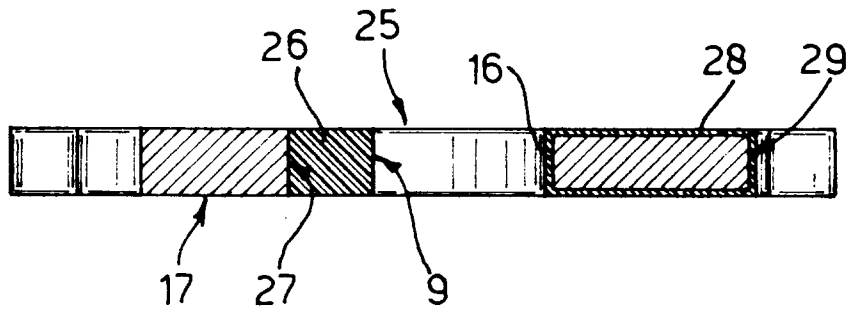
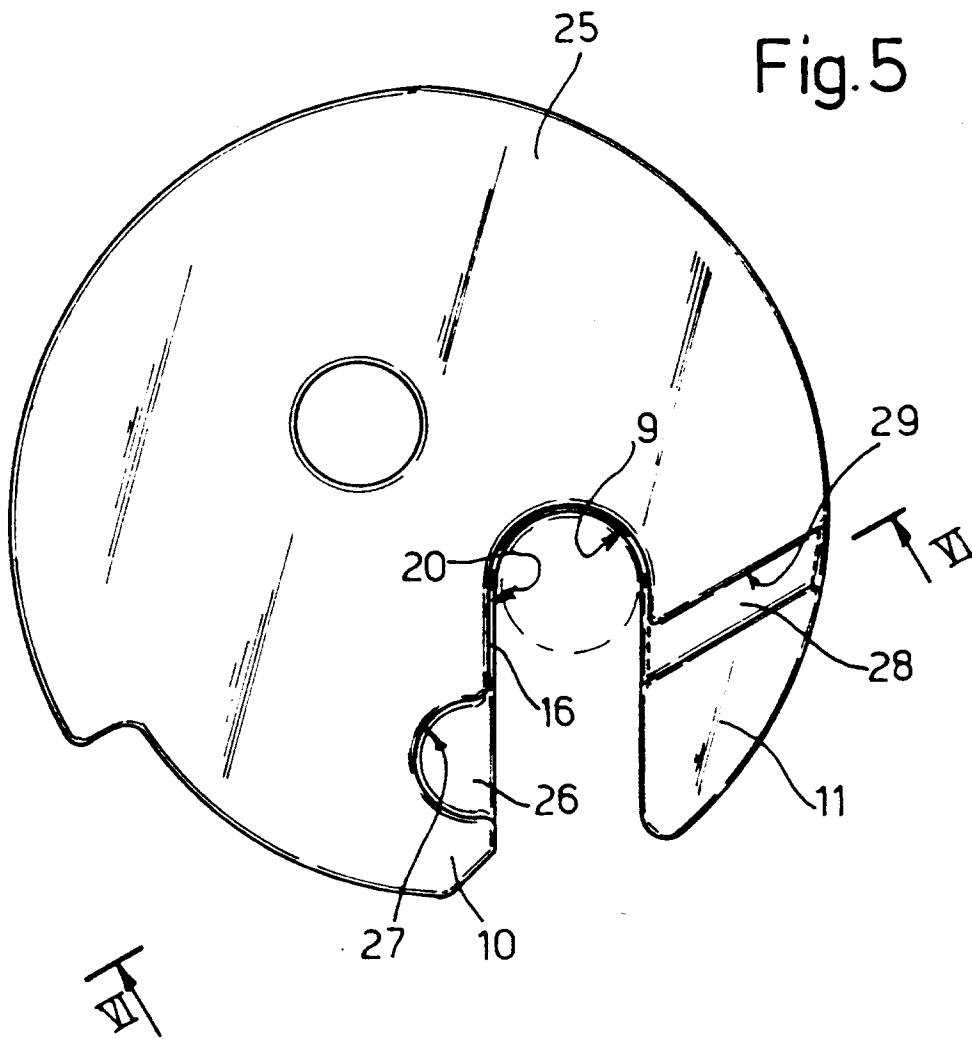


Fig. 5





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EUROPEAN SEARCH REPORT

Application Number  
EP 93 11 5208

| DOCUMENTS CONSIDERED TO BE RELEVANT  |  |  |
|--|--|--|
| Category   | Citation of document with indication, where appropriate, of relevant passages                                    | Relevant to claim  |
| X  | GB-A-2 048 365 (MITSUI)<br>* page 1, line 5 - line 7 *<br>* page 1, line 97 - page 2, line 129;<br>figures *     | 1  |
| A  | ---  | 3,4,6  |
| X  | DE-A-23 20 351 (ARN. KIEKERT SÖHNE)<br>* page 2, line 16 - line 27 *<br>* page 6, line 1 - line 23; figures *    | 1  |
| A  | ---  | 2-6  |
| A  | EP-A-0 336 034 (MAGNA INTERNATIONAL)<br>* abstract *<br>* column 8, line 8 - column 9, line 28;<br>figures 4-7 * | 1,2,5  |
|  |  | ----   |
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| TECHNICAL FIELDS SEARCHED (Int.Cl.5)   |  |  |
| E05B   |  |  |
| The present search report has been drawn up for all claims                       |  |  |
| Place of search  | Date of completion of the search   | Examiner   |
| THE HAGUE  | 23 November 1993   | ZIDI, K  |
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