



QUICK RETURN

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In order to lower the traffic jams caused by the problems that arise from left turns at intersections, it is created this invention called quick return, which can be easily implemented and very economic since it is superficial, without bridges or overpasses or underpasses and which achieve a great fluidity of the traffic, it eases the synchronization of the traffic light, saves time and fuel to the drivers and contribute to a better environment and raises the productivity of the city.

BACKGROUND

The necessity of moving as persons or with the aid of vehicles has been in evolution since the use of earth roads, paved roads....and as the intensity of traffic has increased it has been more complex, and therefore it has been necessary to make roads, regulations, signals, traffic lights, etc.

When designing a road, it is arranged and directed the traffic of vehicles in order to take them to their destination safely and quickly. Said roads take different forms which are grade crossings, traffic circles, clover-leaf intersections, undergrade crossing and nowadays the so called "English Turns".

On an English Turn, to turn at the left (say at the west) on a green-light traffic light, the vehicle has to take the left lane, wait for the left green-light shaft and then crossing to the contrary lane and take the west lane, at the same time that vehicles transit longitudinally from the north to the south. However, to make this turn, it is required enough space, specific signaling, can cause confusion.

In the quick return of the present invention, it is used to turn at the left (say to the west, coming from north-to-south). On the green light traffic light of an intersection, vehicles of both loans circulate continuously from north-south and south-north, then the vehicle which travels form north-to-south and wants to turn at the left (west), cross the intersection, taking a right lane which is exclusive to turn at the left and, on the green light shaft of an on-purpose traffic light, once the vehicle blocks have longitudinally passed, the vehicle can turn at



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the left, takes the right loan of the south-west way, reaches to the intersection and then turns to the right to the west as desired.

This quick return is different to other ways of turns (see US 5807020; US 5520478; US 4986692; UEP 0980932; FR 700823; MX 149836) because it is implemented at the surface level and does not requires bridges nor undergrade crossings.

Thus resulting in benefits and advantages in its implementation, such as requiring a reduced space, it is simple and little complicated, and it is very economic because it is superficial, giving rise to an excellent functionality.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1, shows a traffic circle;

Figure 2, shows a so called clover-leaf intersection road engineering;

Figure 3, shows the English Turn;

Figure 4, shows two quick return systems on an avenue, one at each side of an intersection;

Figure 5, is an aerial view of an avenue with several quick return systems (Nos. 1 and 13) at all-long showing the access to the right side the access to the left side (No. 15) and the turn at the left (No. 17) and a road crossing (No. 18).

Figure 6, shows an approach to the avenue, showing a road crossing (No. 18), a signalizing (No. 19), an important avenue (No. 20) and a single street (No. 21).

Figure 7, shows a quick return with a waiting vehicle (No. 2) within the exclusive loan (No. 3) with a synchronized flow from north-to-south and south-to-north (No. 4), with traffic lights (Nos. 5 and 7), the critic zone (No. 6), vehicles returning (Nos. 9 and 11); pedestrian pass (No. 10) and synchronized east-west west-east roads (No. 12);

Figure 8, shows a typical intersection, with an in turn flow (No. 23), and the other ways stopped (No. 22);

Figure 9, shows and identical view as Figure 8, with a vehicle trying to change its loan (No. 24) because its loan is occupied by the other vehicles which wait to turn at the left;

Figure 10, shows a quick return habilitating the four cardinal points and a left turn, at the four ways of the intersection. Showing the exclusive loan to return (No. 25) of a variable length as required;

Figure 11, shows current possibilities for quick return in avenues of three, fourth and five loans, assigning one of them to return;

Figure 12, shows a time-and-movement diagram of an avenue each three seconds (Nos. 26) with vehicles running at 60 Kpm. running one kilometre in one minute without interruption, with a time of 40 seconds in the red light. quick return (Nos. 1) and intersections (No. 18) showing the synchronized travelling of a vehicle block from south-to-north (No. 28) and the return of vehicles (Nos. 29) taking advantage of the non occupied space (No. 30) of the avenue, in order to return.

DESCRIPTION OF THE INVENTION

The present invention comprises the adequation of the vial infrastructure as shown in Fig. 7, (No. 1) which allows a driver driving from south to north to make a U-turn to the opposite street lanes without obstructing the lanes of the same street by crossing an intersection, taking an exclusive right return lane (No. 3), making the U-turn by crossing the street lanes on the green light shaft of an on-purpose traffic light, which turns on when the synchronized traffic going from south to north and from north to south (No. 4) completely pass, and incorporating to the opposite lane.

The Fig. 5, show several quick returns (Nos. 1) which are located at a distance of no more than 700m from an intersection, thus allowing to implement several Quick returns without obstructing the street.

It is preferred to implement two quick returns at opposite way streets (No. 13) at a distance of between 150 to 300 m from an intersection (No. 18), since said quick returns allow the drivers circulating in the four ways, to make left turn, thus reducing traffic jams at intersections.

DETAILED DESCRIPTION OF THE INVENTION

Now, the details and comparative characteristics of the quick return between other surface road types such as a typical intersection and English turns will be described:

1. When there are traffic jams at intersections, and there is a free space ahead, it only means that the flow must be arranged, facilitating the cross of vehicles and take advantage of the critic area (Fig. 7 No. 6), achieving fluidity, that is the object achieved by the quick return in a very economic way.

2. Its suited for two way, non confined avenues, having two to five lanes (Fig. 11) having traffic lights at a moderated velocity of 60 KPH, since in freeways having velocities greater than 70KPH there are used overbridges.

3. By eliminating interruptions it is increased the velocity of the vehicles, making the velocity very competitive compared with freeways.

4. The first basic typical use of the Quick Return is to return to the origin point (Fig. 5 No. 16) and/or accessing to the left side of the avenue (No. 15).

5. A second and more important use of the quick return comprises that if appropriately implemented, it facilitate left turns at an intersection. The above referred characteristics achieve the fluidity and synchrony of the avenues, longitudinally (fig. 7, No. 4) and transversally.

6. The traffic light synchronization is not further complicated (Fig. 7, No. 5), instead, the problem origin is modified, eliminating the need of traffic lights that control the time to make a left turn, leaving the avenue with only two traffic lights controlling two times: "go" and "stop", facilitating and allowing and it is an obligated condition the synchrony of the traffic lights along the avenue.

7. By allowing a better average velocity of avenues, there are avoided the traffic jams.

8. It is recommended that the quick return be used along the avenue in order to synchronize the traffic lights longitudinally as well as transversally, allowing the access to the left side without interfering the synchronized longitudinal flow of both ways, allowing that the non used space be used without obstructing the vehicular transit, if used in an isolated way it would be an simple "U" turn.

9. For the quick return it may be one or two lanes (Fig. 11) having a variable length (Fig. 10, No. 25) depending on the characteristics and particularly needs of each way at the intersection.

10. In some cases, nowadays, it is not required more space than the used space, since the may be used three lanes from the five lanes for direct circulation and two (Fig. 11) for returning.

11. It has a micro-impact, by solving the left turn at a crossing and a macro-impact by making the avenue non-stop all along.

12. It is a global solution along the avenue and economic since it is superficial, since it does not require overpasses.

13. At a "go" signal, there is a continuous flow, without longitudinal north-south interruptions (Fig. 7, No. 4), at a "stop" signal, the continuous flow is transversal (No. 12), West-east: therefore it is achieved a synchronized and continuous transit both longitudinally and transversally.

14. It takes advantage of the cut of flow at a return (Fig. 7, No. 11) in order to allow to the opposite way to return (No. 9) also, and it can be used for pedestrian crossing (No. 10), since no vehicle interfere.

15. The adequate location of the quick returns is only determined by the velocity that we would like the vehicles to have, there would be no middle separation interruptions at crossings between important avenue (80% of vehicle flow)(Fig. 6 No. 20) and simple street (20% of vehicle flow)(No. 21).

16. There would only be intersections when the avenues are equally important.

17. It is achieved a maximum use of the critical area of the intersection (Fig. 7, No. 6)(vehicles per minute), since there are always two ways circulating North south, South-north and East-west, West-east, (Fig. 7 No. 4 and 12) compared with a typical crossing that uses only one quarter of the area (Fig. 8, Fig. 9) because it only circulate one way at a time.

18. The synchronization of the traffic lights at typical crossings is very complicated given the different cycles of each intersection.

19. At a typical left turn (say to the west)(Fig. 8, Fig 9 Nos. 23), we take the left lane, obstructing the lane for the vehicles that could be circulating to the north, we wait for our light and when the traffic light allows us, we advance; while this happens all the ways going to the south, east, and west are stopped (Nos. 22).

20. The traffic light at the quick return only requires two cycles: "go" and "stop" vs one "go" to the north and three "stop" to the south, east, and west that are used at a typical crossing.

21. Said quick returns one at each side of the crossing are enough for habilitating the four cardinal points (Fig. 10) to any car, and allow a left turn to the four ways, it is the above referred important second use.

22. Taking the extreme right lanes for a left turn, there are liberated left lanes for the continuous flow.

23. Systematically using the quick return, there will be no obstructions at left lanes.

24. The English turn solves the traffic at a crossing by 500 mts around since along the avenue there are typical crossings. The quick return solve the problem along 5, 10...km longitudinally as well as 5, 10...km transversally.

25. An underpass costs 20 times more than an English turn, and a quick return less than half the cost of an English turn.

Therefore, in accordance with the above mentioned, it is asserted that the economic and operative advantages achieved with the quick return, make it a very acceptable option among the other options to the existent situation.

CLAIMS

Having described said invention, I consider it as a novelty and therefore I claim as my exclusive mater, the following:

1. The adequation of the quick return superficial vial infrastructure, which allow the traffic to return, characterized by the fact that it is done in an orderly way, without interrupting traffic, taking the left lanes, giving free pass to the left lanes without obstructing them, waiting the traffic light for returning, allowing and forcing to synchronize the four ways of the intersection: two longitudinal ways and two transversal ways.

2. Being the quick return characterized by being used at a point along the avenue for making a "U" turn, such as a point near an intersection, which allows to make a left turn to the four ways of the crossing.