July 9, 1968 F. D. MAHONEY 3,391,620

MOVABLE TRAFFIC BARRIER

Filed Oct. 24, 1965 3 Sheets-Sheet 1

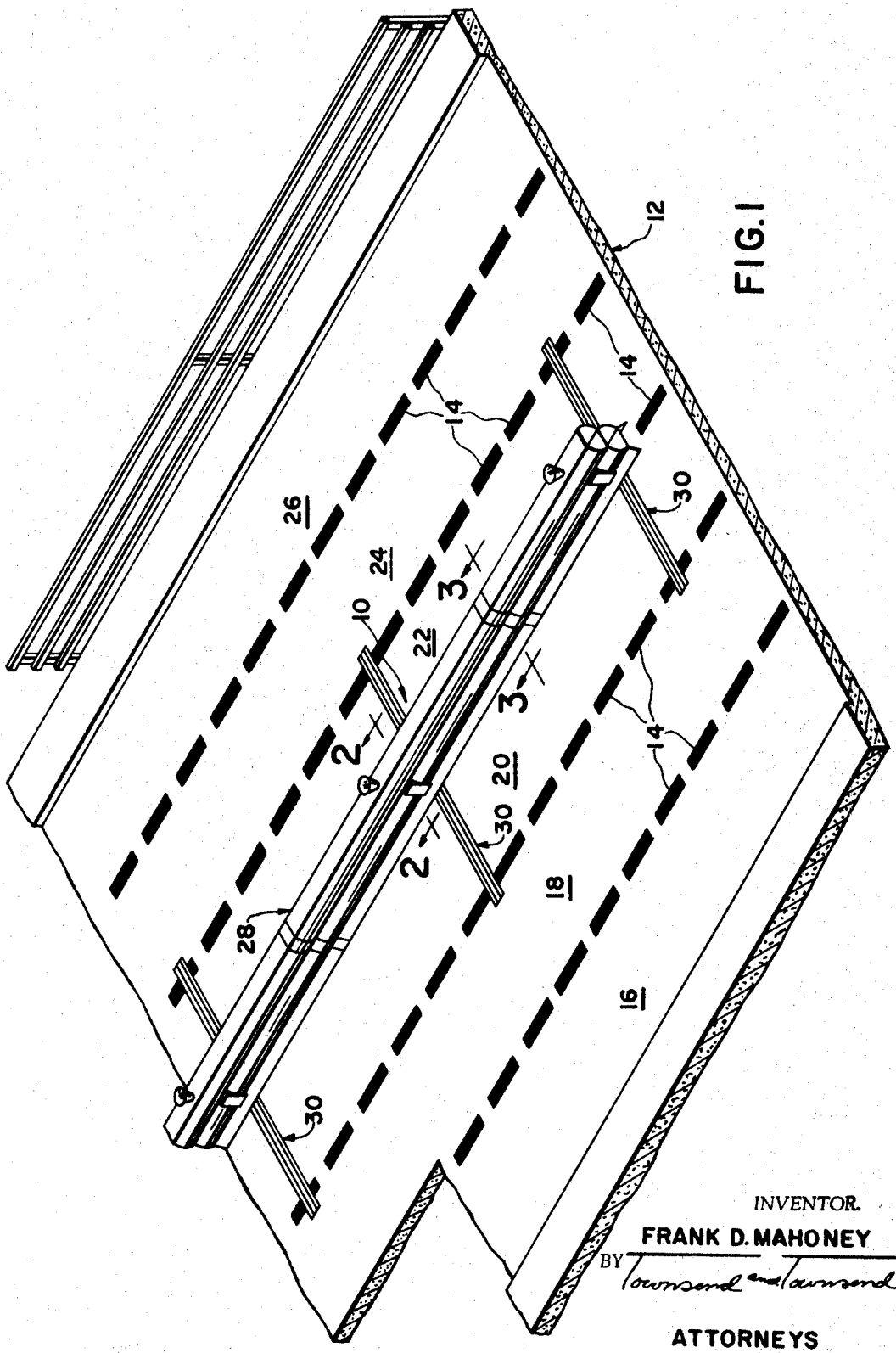


FIG. 1

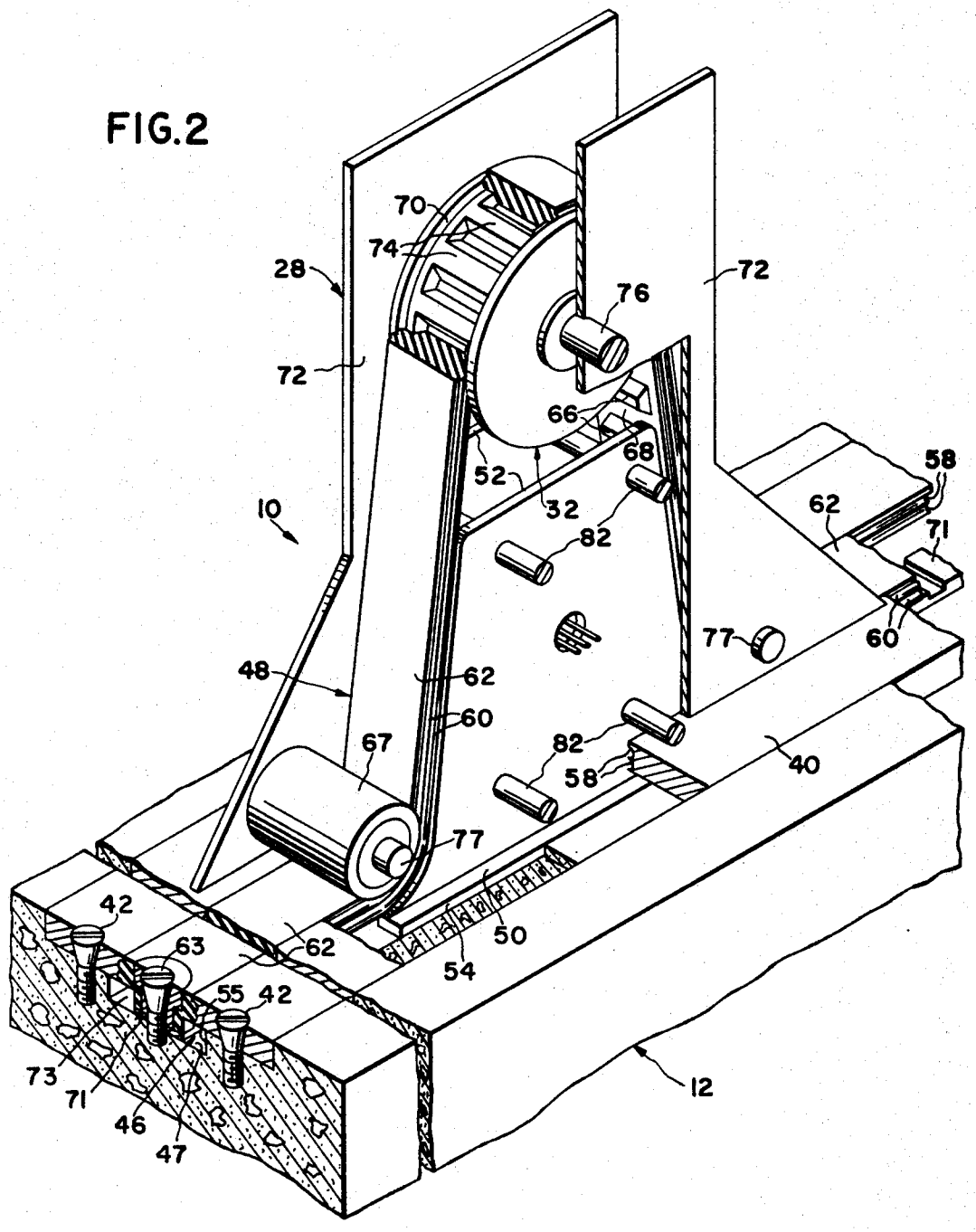
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FIG.2



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MOVABLE TRAFFIC BARRIER

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FIG. 4

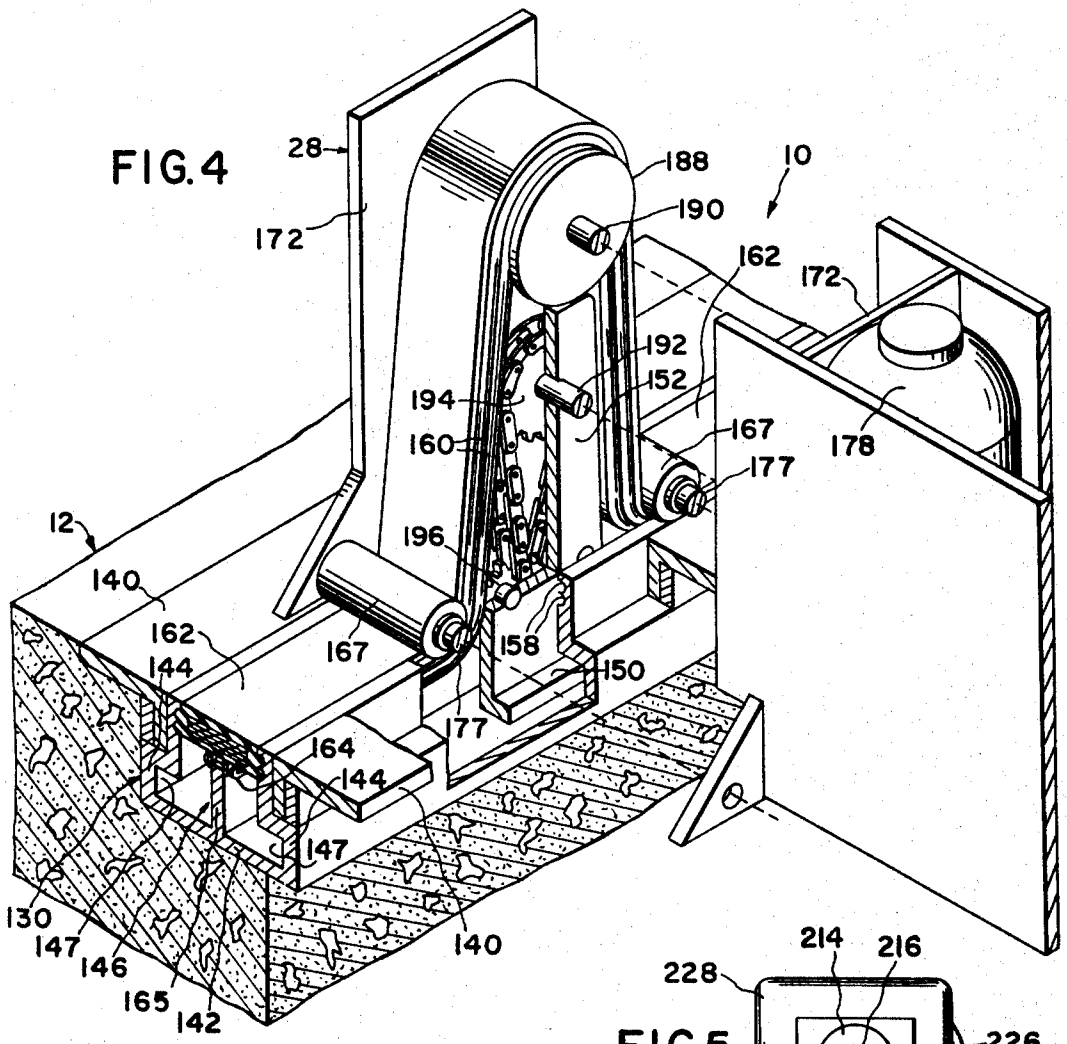


FIG. 5

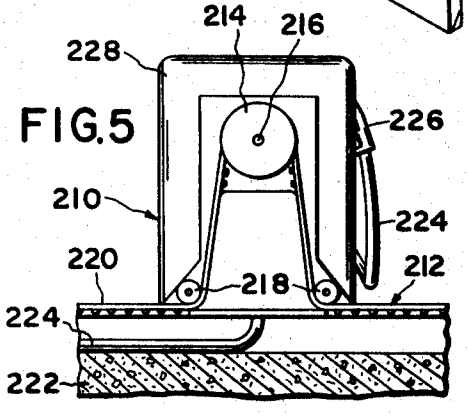
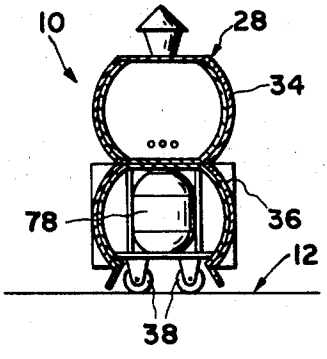


FIG. 3



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3,391,620

MOVABLE TRAFFIC BARRIER

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11 Claims. (Cl. 94—1)

ABSTRACT OF THE DISCLOSURE

A movable barrier suitable for partitioning a multi-lane bidirectional roadway including at least one elongated dividing barrier, a plurality of channel members transverse to the general direction of the roadway and a corresponding number of support members integral with the elongated barrier and adapted to be disposed within respective channel members. The barrier is propelled transverse of the road surface by an elongated control member, each extending along respective channel members and secured to opposite ends thereof. The barrier includes respective power means for engaging the control members to move the barrier to and fro along the elongated channels. The control member is formed so that it is contiguous with the sides and bottom of the respective channel member. In this way, the roadway is provided with a smooth continuous upper surface along the portions of the channel members spaced from the barrier.

This invention relates to improvements in roadway construction and, more particularly, to roadway dividing structure.

Broadly stated, the present invention is directed to a utilitarian device adapted to project outwardly from and be reciprocate with respect to an adjacent surface, the reciprocation of the device being accomplished through the use of an improved drive mechanism employing a flexible control member mounted on the surface and operably coupled to a reversible prime mover carried by the device. Upon actuation of the prime mover, the latter and thereby the device moves relative to the surface in a corresponding direction.

Two forms of the invention will be described in greater detail hereinafter and it is to be understood that these forms are illustrative only inasmuch as the invention may be used in a number of different ways. The first and preferred form resides in a barrier apparatus primarily useful as a roadway lane divider for traffic control and the second form relates to a carrier for fluid dispenser, especially adapted for use with an island or barrier dividing a parking or service area.

Specifically, the first form includes a barrier or lane dividing fence coupled to an elongated channel member embedded in the surface of the roadway or area to be controlled, an elongate control member supported in the channel member and having those ends secured adjacent the ends of the channel member to position the fence as desired in different locations so that the roadway or area will be properly divided.

The heavy vehicular traffic into and out of commercial and industrial areas, such as commuter or tourist traffic, has required the use of roadway lane dividing equipment to speed the flow of traffic in both directions. This problem is acute on arterial highways and bridges and especially in areas where it is impossible to widen a roadway or bridge span because of the physical surroundings. It is especially desirable, for instance, during rush hour traffic on a roadway to utilize more lanes of the roadway for traffic movement in one direction than for traffic in the opposite direction. Such rush hour traffic, occurring in the morning and in the evening hours in the city, is not experienced during other times of the day, so lane dividing equipment heretofore utilized during morning and evening hours is not necessarily required during these other times. Various types of lane dividing devices have been proposed and utilized. One example is the use of a series of overhead lights for each of a number of lanes of multi-lane roadways, the lights being green if the lane is open to traffic, and being red if the lane is closed to traffic. This type of apparatus is expensive and oftentimes hazardous, inasmuch as drivers must be especially attentive to the color of the lights and cannot give their full attention to the actual driving conditions of the roadway.

Another example of lane dividing equipment utilizes colored lights embedded in the roadway itself and visible to oncoming drivers. Here again, the installation is quite expensive and impractical because of the large number of lights which are required for effective operation.

Flexible posts mounted uprightly at spaced locations along a roadway have been employed as lane dividers. However, the posts must be manually put in place, and, therefore, are impractical from the standpoint of the number of posts required and of the time required to locate and relocate the posts during morning and evening rush hours.

Still a further example is a divider recessed in and forming a part of the roadway until ready for use. As the need arises, this divider is elevated so as to project above the roadway along a line defining a pair of adjacent traffic lanes. The divider thus separates the traffic moving in one direction from the traffic moving in the opposite direction. On multi-lane roadways, two or more such lane dividers are required in order to have high selectivity in controlling the traffic thereon. Moreover, these dividers must be constructed to support the weight of vehicles passing thereover when the dividers are recessed. Heavy duty lifting equipment is required to raise the dividers into their operative locations since the weight of the dividers is considerable to perform its vehicle-supporting function. Such lane dividers must be installed during construction of the roadway as the expense of installing them on existing roadways is prohibitive. Maintenance of these divider structures is considerable since they are easily jammed by foreign matter lodged between the roadway and the dividers. In addition, access to the lifting equipment is oftentimes limited so as to contribute to the overall effort required to effect maintenance.

The first form of the present invention is, therefore, directed to improved lane dividing apparatus which is not only simple in construction and economical to produce and install but also is capable of being readily and permanently installed in a minimum of time on existing roadways as well as on new highway construction. An important aspect of this invention is the fact that only a single elongated lane divider or barrier is required where conventional equipment has required two or more dividers of the type which extends longitudinally of the roadway. Also, this invention obviates the various lights and other lane markers heretofore utilized. Readily accessible drive means is provided for the lane divider to minimize maintenance and to assure the proper positioning of the lane divider at all times.

The second form of the invention utilizes the drive means of the first form but, instead of a barrier, it employs a reciprocable service unit capable of dispensing a product such as gasoline or the like for vehicles parked on opposed sides of an island or divider along which the service unit is capable of moving. If used for this purpose, the unit has a fluid pump adapted to be coupled to a source of fluid remote from the service area and a fluid dispensing hose or conduit coupled with the pump, whereby fluid may be dispensed to vehicles positioned at various locations along the divider. A reel assembly for the hose allows the service unit to traverse the length of the divider.

The primary object of the present invention is, therefore, to provide a utilitarian device adapted to project outwardly from and be reciprocated with respect to a surface adjacent thereto and employing an improved drive mechanism having a prime mover carried by the device itself and coupled to a control member secured to the surface, whereby the device will move in a corresponding direction relative to the surface when the prime mover is actuated.

It is a further object of this invention to provide improvements in roadway lane dividers which overcome the disadvantages of conventional lane dividing equipment and which minimize the overall cost and maintenance of a roadway while permitting relatively wide selectivity in providing lanes for traffic passing over the roadway.

Another object of this invention is to provide a service unit capable of being remotely actuated for movement in opposed directions along a divider defining a pair of adjacent service areas, whereby the service unit, when the same has product dispensing means thereon, may dispense a product into either of the service areas and at any location along the length of the dividers.

Still another object of this invention is the provision of a shiftable, remotely controlled roadway lane divider of the type described which can be installed on an existing roadway as well as in new roadway construction and is constructed and arranged to shift laterally of a roadway so as to vary the number of lanes available to traffic flowing in opposed directions over the roadway. As a result, the lane divider is capable of accomplishing a function which, in the past, has required two or more vertically shiftable dividers or a large number of lights or posts.

A further object of the present invention is to provide a lane divider of the aforesaid character whose moving parts are effectively sealed against the deleterious effects of foreign matter so that jamming of the apparatus by such matter is effectively eliminated and operation thereof will continue unimpaired.

Yet another object of this invention is the provision of a lane divider which will resist any tendency to move laterally except by actuation of the drive means thereof so that, when a force is exerted on the lane divider, such as being struck by a moving vehicle or the like, the divider will remain stationary so as not to disrupt the normal flow of traffic in the opposite lanes of the roadway.

Other objects of this invention will become apparent as the following specification progresses, reference being had to the accompanying drawings wherein:

FIG. 1 is a fragmentary, perspective view of the first form of the invention showing lane dividing apparatus installed on a multi-lane roadway;

FIG. 2 is a cross-sectional view taken along 2—2 of FIG. 1 and illustrating a preferred embodiment of the means for mounting and shifting the divider or barrier of the apparatus;

FIG. 3 is a cross-sectional view taken along 3—3 of FIG. 1;

FIG. 4 is a view similar to FIG. 2 but illustrating a second embodiment of the divider mounting and driving means; and

FIG. 5 is an elevational view, partly in section, of the second form of the invention showing a fluid dispensing service unit mounted on and movable along a divider strip.

While the first form of the invention herein described is useful for providing barrier apparatus in a number of environments, such as pedestrian control in airport, railroad or bus terminals or airplane control along runways, it is primarily adapted for controlling vehicular traffic along roadways such as arterial highways and bridges. Thus, the invention will be described with reference to traffic control for land vehicles.

Lane divider apparatus **10** is illustrated in use with a roadway **12** (FIG. 1), to separate the latter into a group of lanes for traffic moving in one direction and a group of lanes for traffic moving in the opposite direction. For purposes of illustration only, roadway **12** has lane-identifying stripes **14** which define lanes **16**, **18**, **20**, **22**, **24** and **26** therefor. Roadway **12** may, however, have any number of lanes and need not be restricted to its construction illustrated in FIG. 1.

Apparatus **10** is comprised of a divider or barrier **28** which extends longitudinally of roadway **12** and projects upwardly therefrom. A number of spaced, transversely disposed channel members **30** (FIG. 1) also form parts of apparatus **10** and are coupled with barrier **28** whereby the latter is mounted for transverse movement on roadway **12**. Power means **32** interconnects barrier **28** and each channel member **30** respectively so that barrier **28** may be shifted laterally of roadway **12** to thereby vary the lane configuration thereof.

Barrier **28** may be of any design and height but, for purposes of illustration, it includes a pair of interconnected hollow shells **34** and **36** (FIG. 3) and extends only a relatively short distance above roadway **12**. Shells **34** and **36** may be integral with each other if desired and, preferably, are formed from a material which is reasonably strong so as to be resistant to impact forces, such as those applied by moving vehicles. In addition, shells **34** and **36** are preferably made in sections so that the sections themselves, rather than the entire barrier **28**, can be replaced if such is found to be desirable or necessary.

Roller means **38** is provided for barrier **28** to support the weight thereof and to facilitate its lateral movements with respect to roadway **12**. Roller means **38** may be coupled with shell **36** in any suitable manner, preferably in a manner to permit replacement of the shell sections while the remaining part of barrier **28** continues to be supported on roadway **12**.

Although barrier **28** may be of any length, it generally will span the distance between a number of channel members **30**. Thus, roller means **38** will be necessary at each of a plurality of longitudinally spaced stations along barrier **28** and oriented to move along a path substantially parallel to channel members **30**.

Each channel member **30** is embedded in roadway **12** and is disposed transversely of at least a pair of adjacent lanes thereof. For purposes of illustrating the invention, channel members **30** traverse lanes **20** and **22**, with the ends of each channel member **30** disposed adjacent to the stripes **14** defining the outermost, longitudinal extremities of respective lanes. At each of its maximum limits, therefore, barrier **28** can define four lanes on one side of roadway **12** and two lanes on the other side. As shown in FIG. 1, barrier **28** is positioned to provide three lanes on each of its sides.

Each channel member **30** includes a pair of horizontal spaced plates **40** recessed in roadway **12** and secured thereto by fasteners **42**. Plates **40** partially overlie a recess or slot **46** formed in roadway **12** and adapted for receiving a control member **48** forming one section of power means **32**. The inner margins of plates **40** overlying recess **46** provide spaces **47** disposed inwardly respective to vertical surfaces **55** which define the side boundaries of the lower part of recess **46**.

Barrier **28** includes a pair of outer, spaced, upright plates **72** which are movable relative to roadway **12** and longitudinal of plates **40**. A pair of spaced rollers **67** are journalled on respective shafts **77** carrier by, and spanning a distance between, plates **72**, rollers **67** being in relative close proximity to the upper surfaces of plates **40** for movement along the latter. A sprocket **70** secured to a shaft **76** is disposed between plates **72** in spaced relationship above roller **67**, shaft **76** being journalled in, and spanning a distance between, plates **72** so that sprocket **70** is rotatably mounted on plates **72**.

By means of bolt means **82**, a pair of spaced, upright plates **52** are connected to plates **72** and are disposed between the latter. Each plate has a lateral flange **50** at its lower extremity, flange **50** being shiftably disposed within respective spaces **47** whereby plates **52** and thereby plates

72 are mounted with respect to channel member 30 for movement relative thereof transversely of roadway 12.

With each flange within the corresponding space 47, barrier 28 is locked against upward movement relative to channel member 30. The end face 54 of each flange 50 (FIG. 2) is in relatively close proximity to the adjacent surface 55 so that flange 50 will resist any tendency of barrier 28 to pivot about a vertical or inclined axis, such as when barrier 28 is struck at a location thereon, longitudinally spaced from plates 52, by a vehicle moving in either direction along roadway 12.

Each plate 40 is provided with a pair of longitudinally extending, transversely arcuate indentations 58 on the inner surface thereof above recess 46. Indentations 58 removably and complementally receive a pair of ribs 60 on the proximal end face of an elongated sealing member or belt 62 forming a part of control member 48. Member 62 spans the distance between plates 40 and closes the open top of recess 46. To accomplish this latter function, member 62 is formed from a suitable sealing material, such as rubber, reinforced fabric or the like, and its ends (only one of which is shown in FIG. 2) are secured in any suitable manner adjacent to the ends of channel member 30 by fasteners 63 embedded in roadway 12. Member 62 has a length greater than the length of channel member 30 so that it can pass beneath roller 67 and then extend upwardly therefrom and loop about sprocket 70.

Belt 62 also functions as a drive member. As more clearly illustrated in FIG. 2, control member 48 can define both a sealing member and a drive member. However, for purposes of illustration and to accommodate control member 48 with respect to the relatively shallow slot 46, the sealing and driving functions are combined into belt 62. Belt 62 further includes ribs 66, transverse to the length thereof for engaging sprocket 70. As belt 62 passes upwardly from channel member 30, ribs 60 extend upwardly from and out of respective indentations 58. The yieldability of belt 62 permits this movement of ribs 60 with respect to indentations without substantial wear of the belt. The ribs 66 of belt 62 define depressions 68 therebetween, the latter being disposed to receive the teeth 74 of sprocket 70.

A rack-like support 71 rests on the lower surface 73 of recess 46 and meshes with ribs 66 in belt 62 to support the latter. Thus, the upper surface of belt 62, except for the portion between rollers 67, will remain substantially flush with, and form a continuation of, roadway 12. Thus, belt 62 will support vehicular traffic. Also, support 71 will prevent any substantial stretching of belt 62 if a longitudinal force is applied thereto. Without support 71, belt 62 could possibly be stretched if a lateral force were applied to barrier 28 in a direction aligned with the longitudinal axis of belt 62. Ribs 60 on opposed sides of belt 62 engage plates 72 and thereby seal the space below sprocket 70 and between rollers 67.

Sprocket 70 may be rotated in any suitable manner such as by coupling shaft 76 to a prime mover 78. For illustrative purposes, prime mover 78 comprises a reversible electric motor positioned in the space defined by shell 36 (FIG. 3). The motor is connected by structure (not shown) to shaft 76 and thereby sprocket 70 for rotating the same in opposite directions. Electrical leads (not shown) are provided to couple the motor to a control station remote from apparatus 10, whereby it may be selectively and remotely actuated. Bolt means 82 extending through plates 52 interconnects the plates 72 and maintains the spacing between plates 52 also.

Sprocket 70 is spaced above channel member 30 so that belt 62 defines a continuation of roadway 12 extending laterally from opposed sides of barrier 28. Not only does belt 62 assist in driving barrier 28, but also it performs the important function of sealing recess 46 to prevent dirt, dust or the like from entering the same. When received within indentations 58, ribs 60 support the sides of belt 62 and prevent foreign material from lodging between the latter and plates 40.

Rollers 67 engage the upper surfaces of plates 40 and belt 62 as barrier 28 is shifted laterally. The increased length of belt 62 relative to that of channel member 30 permits the belt to pass upwardly and over sprocket 70. Thus, by rotation of sprocket 70 under the influence of prime mover 78, barrier 28 is moved laterally in the corresponding direction and through a distance corresponding to the length of the arc through which sprocket 70 moves.

A second embodiment of the mounting and driving means for barrier 28 is illustrated in FIG. 4 and includes a channel member 130 provided with a pair of sides 144 integral with and extending upwardly from a base 142. Sides 144 define with base 142 a recess 146 into the upper portion of which a sealing member 162 is disposed. Member 162 is similar in all respects to belt 62 except that member 162 is not integral with a drive member. Instead, a chain 164 is disposed beneath member 162 and is supported by a web 165 integral with and extending upwardly from base 142. The upper edge of web 165 is spaced below the upper extremities of sides 144 to accommodate member 162 and chain 164. Member 162 normally rests on chain 162 and has an upper surface substantially flush with roadway 12 and the upper end faces of sides 144.

Recess 146 is transversely L-shaped and has an outwardly extending portion defining a space 147 on each side of web 165 to shiftably receive a laterally extending flange 150 on the lowermost margin of each of a pair of spaced, upright plates 152. Flanges 150 are in sliding engagement with the upper surface of base 142, whereby plates 152 and thereby barrier 28 are mounted for lateral movement on channel member 130.

Like belt 62, member 162 has its ends secured in any suitable manner to the ends of channel member 130. Also, ends of chain 164 are secured at these same locations. Member 162 is provided with ribs 160 which are complementally received within indentations 158 in sides 144 to support the side margins of member 162 while chain 164 and web 165 support the central portion thereof. Ribs 160 are movable into and out of corresponding indentations 158 and, for the reason advanced above with respect to belt 62, the length of member 162 is greater than the corresponding length of channel member 130.

Member 162 spans the distance between sides 144 and effectively seals recess 146 against the entrance of foreign matter thereinto. Member 162 also passes beneath a pair of spaced rollers 167 carried on shafts 177 and passes over a central roller 188 mounted on a shaft 190 journalled on and spanning the distance between a pair of plates 172 forming parts of barrier 28.

A second shaft 192 rotatably carried on plates 172 mounts a sprocket 194 spaced above channel 130 and below roller 188. Sprocket 194 is disposed in meshing relationship to chain 164, the latter being greater in length than channel member 130 for this purpose. A pair of idler sprockets 196 journalled on plates 152 guide chain 164 from recess 146 to sprocket 194.

Shafts 190 and 192 are operably coupled in any suitable manner to a prime mover 178 so that roller 188 and sprocket 194 are rotated simultaneously. Gear means (not shown) is provided on the drive shaft of prime mover 178 to rotate shafts 190 and 192 at the requisite speeds. Prime mover 178 may be on any construction but, for purposes of illustration, it comprises a reversible electric motor which can be operated remotely from apparatus 10.

In the operation of apparatus 10 where the structural embodiment of FIG. 2 is utilized, prime movers 78 corresponding to the various channel members 30 are coupled together so as to be simultaneously actuated. This will cause the entire length of barrier 28 to move substan-

tially uniformly relative to channel members 30. Prime movers 78 are actuated from a central control station remote from roadway 12 and provision may be made to assure that one portion of barrier 28 does not advance beyond or lag behind the remaining portions thereof during actuation of prime movers 78. This will prevent the build-up of damaging stresses on barrier 28 between the various sections thereof due to longitudinal misalignment.

Since flanges 50 at each station are in sliding engagement with surface 73 of recess 46, plates 52 and thereby barrier 28 at that station will move in one direction when the corresponding sprocket 70 is rotated under the influence of its prime mover 78. Actuation of prime mover 78 will continue until barrier 28 has moved through a distance sufficient to locate it at the desired position on roadway 12.

Preferably, limit switches (not shown) are provided at predetermined locations in the path of one of the plates 52 for de-actuating prime mover 78 and thereby stopping the movement of barrier 28. In its operative position shown in FIG. 1, barrier 28 is disposed to provide three lanes for each side of roadway 12. By energizing the prime movers 78 in one sense, barrier 28 may be shifted laterally so that only lanes 16 and 18 will be on one side thereof. By energizing prime movers 78 in the opposite sense, barrier 28 may be shifted to a position such that only lanes 24 and 26 will be on its opposite side. Hence, for early morning traffic, lanes 16, 18, 20 and 22 may be made available while lanes 24 and 26 will remain open to traffic flowing in the opposite direction. Conversely, for evening traffic, barrier 28 may be shifted so that lanes 20, 22, 24 and 26 will be available to handle the increased traffic volume while lanes 16 and 18 remain open for opposite moving traffic.

It is to be emphasized that it is sprocket 70 which moves with respect to belt 62. Belt 62 is substantially stationary except for the fact that it may move upwardly or downwardly as sprocket 70 approaches or moves away therefrom. Hence, sprocket 70 moves along the length of drive belt 62 in either direction depending upon the operative condition of its prime mover 78. Recess 46 continues to be sealed by belt 62, and rollers 67 substantially seal the open portion of channel member 30 therebetween inasmuch as the surfaces of the rollers are substantially flush with the mounting structures thereof and ribs 60 are in sliding engagement with plates 72. Rollers 67 cause ribs 60 to snap back into corresponding depressions 58 as the adjacent portion of belt 65 returns to its horizontal disposition as barrier 28 is shifted.

In the embodiment of FIG. 4, flanges 150 at each station slide along the upper surface of base 142 as its prime mover 178 is energized and as its sprocket 194 moves along the length of chain 164 to in turn shift barrier 28 laterally. Member 162 not only forms a continuation of roadway 12, but also seals recess 146. Rollers 184 seal the space therebetween for the reasons advanced hereinabove. By rotating roller 188 along with the sprocket 194, the lateral movement of barrier 128 is facilitated since there is a minimum of binding between member 162 and roller 188.

The embodiment of FIG. 2 is to be preferred in roadways which do not permit channel members to be embedded to any appreciable extent. For instance, on bridges, such as the Golden Gate Bridge, a relatively thin layer of surfacing material, such as macadam or concrete covers the structural steel members. It is only in this relatively thin layer that apparatus 10 may be utilized, if at all, since it would be prohibitive to attempt to groove the structural steel members to receive the channel members. This can be accomplished by making plates 40 relatively thin and by keeping the overall thickness of belt 62 to a minimum. Good test results have been attained where the depth of recess 46 from the surface of roadway 12 is approximately 1.25 to 1.375 inches. In this case, flanges 50 are preferably in sliding engagement with the upper surface of the structural steel members.

On the other hand, where dimensional limitations such as the foregoing are not a factor, and where greater strength is required, the embodiment of FIG. 4 is preferably employed. In this case, tolerances are greater and installation time is minimized.

Other means of shifting barrier 28 may be provided if desired, but belt 62 and the combination of chain 164 and member 162 form continuations of roadway 12 and additional structure for this purpose is not required.

The second form of the invention is illustrated in FIG. 5 and relates specifically to a product disperser for use in servicing a number of different objects in a service area, such as vehicles in a parking lot. To this end, the apparatus comprises a service unit 210 which is disposed on and extends upwardly from a channel member 212, the latter dividing a service area into two sections. For purposes of illustration, channel member 212 is adapted to form a part of an island or divided in a parking lot and to define an abutment or barrier against which vehicles may be disposed when the same are parked.

Service unit 210 corresponds to barrier 28 in FIGS. 2 and 4 and moves longitudinally of channel member 212 for servicing the various vehicles parked alongside the same. To this end, drive means similar to that described above is provided to move service unit 210, such drive means including a toothed sprocket member 214 mounted on a shaft 216, the latter in turn being operably coupled to a prime mover, such as a remotely actuated, reversible electric motor. Shaft 216 is located above a pair of spaced side rollers 218 carried by service unit 210 and providing guides below which a toothed control member 220 is disposed. Control member 220, similar in all respects to control member 48 (FIG. 2), is in meshin relationship with sprocket 214 and covers the open top of channel member 212, the ends of control member 220 being secured adjacent to the ends of channel member 212. Thus, actuation of the prime mover connected to shaft 216 will cause service unit 210 to be moved longitudinally of channel member 212 and thereby along the island or divider 222 in which channel member 212 is embedded.

To perform its product dispensing function, service unit 210 is provided with a product dispenser. For purposes of illustration, this dispenser takes the form of a flexible hose or conduit 224 having a nozzle or valve 226 at the outer end thereof whereby gasoline, air under pressure or the like may be delivered to the vehicles. Conduit 224 extends into the interior of the shell 228 forming the housing of service unit 210, then downwardly into channel member 212 and finally along the latter to one of its ends where it is operably coupled to a reel assembly to allow service unit 210 to shift a considerable distance in either direction. Conduit 224 is adapted to be coupled to a source of the product to be dispensed. If desired, or necessary, a fluid pump may be provided in shell 228 and coupled to conduit 224, such as when gasoline is to be dispensed.

A number of vehicles parked along island 222 may be successively serviced by service unit 210 without driving the vehicles individually to a service area. It is only necessary to actuate the prime mover coupled to shaft 216 to effect this operation. Limit switches may be employed at spaced locations along channel member 212 so that service unit 210 will automatically stop at the various locations.

Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be practiced within the spirit of the invention as limited only by the scope of the appended claims.

What is claimed is:

1. Divider apparatus comprising, in combination:

means defining an elongated divider member for indicating the boundary between two adjacent surface areas of a region and means for moving the divider member including: an open-topped channel member disposed within said region and supported transversely of the divider member; a control member supported within said channel member and including a sealing member for closing the open top thereof; and means for engaging said control member to move said divider member along the length of said channel member for effectively moving said divider member transversely of said areas.

2. The apparatus of claim **1** wherein the control member also includes a chain secured at its ends to the ends of the channel member, said divider member being movably connected to said chaim.

3. The apparatus of claim **2** wherein said moving means includes a prime mover carried by said divider member and a sprocket operably coupled with and rotated by said prime mover, said sprocket being in mesh with said chain and movable along the length thereof in response to the actuation of said prime mover.

4. The apparatus of claim **1** wherein said control member is a toothed belt; said moving means including a sprocket in meshing relationship to said belt.

5. Apparatus for dividing a roadway surface into a pair of lanes comprising: an elongated divider member adapted to extend longitudinally of said roadway to define said lanes; a channel member having an elongated opening and adapted to be embedded in and disposed transversely of the roadway, the top of said channel member being substantially coplanar with said roadway surface; a control member supported within said channel member and having ends rigidly secured at about the ends of said channel member, said control member being of a cross section adapted to bridge the elongated opening in said channel member; means engaging said control member to move said divider member along the length of said channel member transversely of said roadway; power means on said divider member above said roadway surface adapted for frictional engagement with said control member to move the divider member in opposed directions along a path defined by said channel member; and means coupled with said divider member for maintaining said control member in substantially coplanar relation with the top of said channel member adjacent the location of said divider member whereby said control member provides sealing means in coplanar relation with the top of said channel member to define a continuation of said roadway surface.

6. Roadway dividing apparatus as set forth in claim **5**, and further provided with means for locking said divider member to said channel member.

7. Roadway dividing apparatus as set forth in claim **5**, wherein said channel member has a pair of spaced sides defining a slot disposed transversely of said divider member, said control member also including a sealing strip spanning the distance between and being coupled to said sides of said channel member for closing the slot.

8. Roadway dividing apparatus as set forth in claim **7**, wherein said control member further includes a flexible drive member below said strip, said drive member defining a series of depressions along the length thereof, there being a toothed member on said divider member and disposed to mesh successively with the depressions of said drive member.

9. Roadway dividing apparatus as set forth in claim **8**, wherein said drive member is integral with said strip.

10. Roadway dividing apparatus comprising: an elongated divider adapted to extend longitudinally of a roadway to define a pair of lanes therefor; a channel member having a base and a pair of spaced sides extending upwardly from the base, said channel member adapted to be embedded in a roadway and having means thereon for forming a continuation of the roadway; means mounting said divider for movement in opposed directions longitudinally of said channel member; a flexible strip of sealing material having a length greater than said channel member and being disposed in spanning relationship to the upper extremities of said sides to effectively seal the channel member against the entrance of foreign material thereinto, the ends of said strip being disposed adjacent to respective ends of said channel member, said strip having spaced teeth on the bottom surface thereof; a pair of side rollers carried by said divider for movement therewith relative to said channel member, said strip being disposed below said side rollers and extending upwardly therefrom in the region therebetween; a toothed member rotatably mounted on said divider above said side rollers, the teeth of said strip defining a series of spaced depressions, said toothed member being in meshing relationship to said depressions, whereby said divider is moved as said toothed member is rotated with respect thereto; and reversible power means carried by said divider and coupled with said toothed member for rotating the same, whereby said divider may be moved in either of said directions to permit variation in the widths of said lanes.

11. Roadway dividing apparatus comprising: an elongated divider adapted to extend longitudinally of a roadway to define a pair of lanes therefor; a channel member having a base and a pair of spaced sides extending upwardly from the base, said channel member adapted to be embedded in a roadway and having means thereon for forming a continuation of the roadway; means mounting said divider for movement in opposed directions longitudinally of said channel member; a flexible strip of sealing material having a length greater than said channel member and being disposed in spanning relationship to the upper extremities of said sides to effectively seal the channel member against the entrance of foreign material thereinto, the ends of said strip being disposed adjacent to respective ends of said channel member; a central roller and a pair of side rollers carried by said divider for movement therewith relative to said channel member, said central roller being spaced above said side rollers, said strip being disposed below said side rollers, extending upwardly therefrom, and being disposed over said central roller, whereby the excess portion of said strip projects upwardly from said channel member for all positions of said divider relative thereto; a toothed member rotatably mounted on said divider below said central roller; an elongated drive member having a series of depressions along the length thereof and secured at the ends thereof adjacent to said respective ends of said channel member, said drive member being disposed above said toothed member with the latter being in meshing relationship to the depressions of said drive member, whereby said divider is moved as said toothed member is rotated with respect thereto; and reversible power means carried by said divider and coupled with said toothed member for rotating the same, whereby said divider may be moved in either of said directions to permit variation in the widths of said lanes.

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