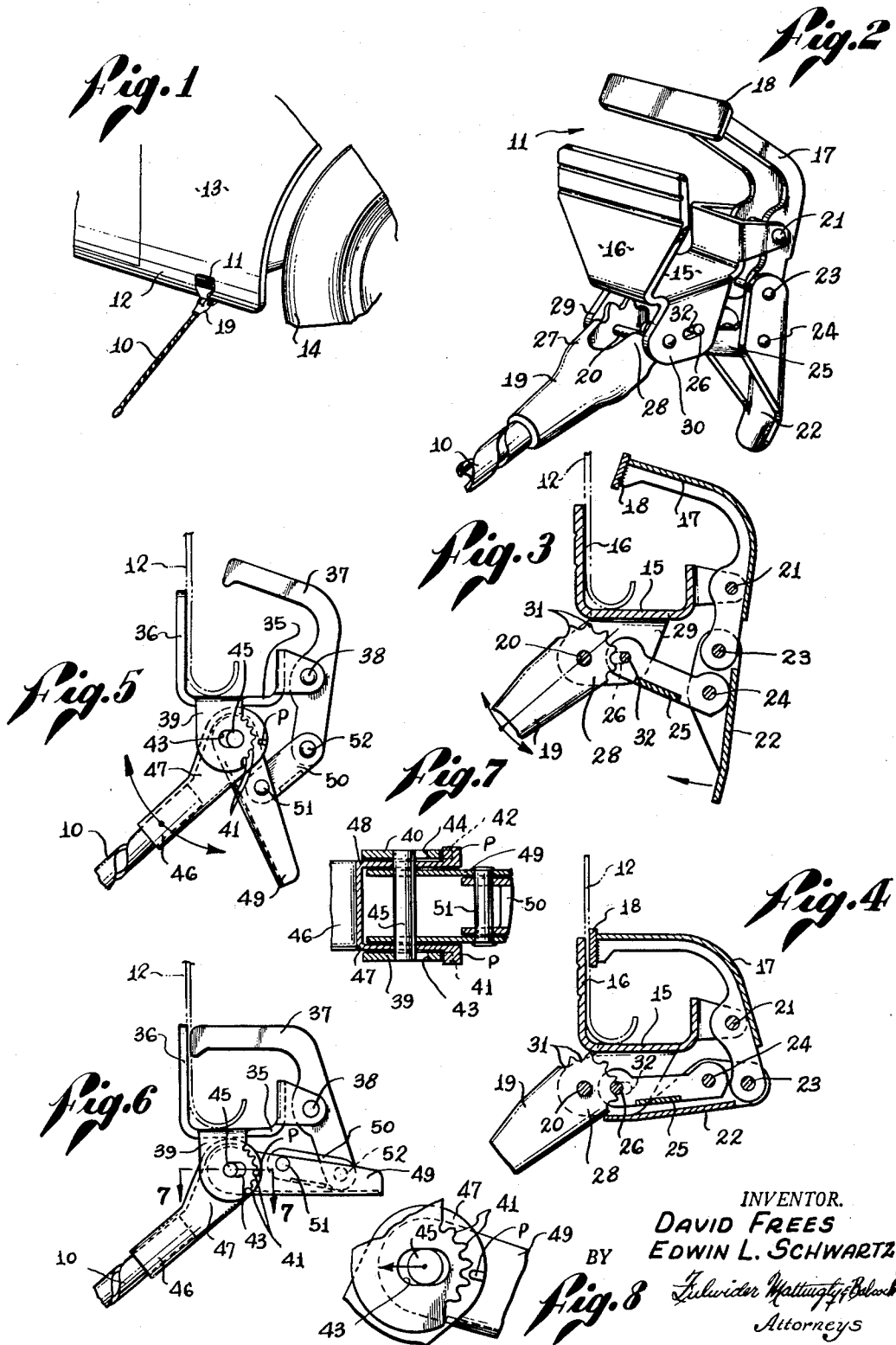


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CURB SIGNALLING DEVICE

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This invention relates to curb signalling devices of the type employing an elongated flexible wire feeler attached to the side of an automobile and adapted to scrape against a curb to signal the driver of his proximity to the curb.

Conventional curb signalling devices generally comprise a flexible feeler element attached to the underedge of an automobile fender or side by any suitable clamp means. It is important in the installation of these devices that the angle at which the feeler extends from the car and the elevation of its tip above the road have certain desired values. For example, if the feeler is too low, it will tend to scrape the highway in an annoying manner when the car is going around curves. On the other hand, if the feeler is too high off the ground, it may not contact the curb, but simply ride over the top.

The angle and disposition of the end of the feeler will depend on the initial structural relationship between the feeler support or securing means and the feeler, the type of car to which the feeler is attached, and the point of attachment. In attaching conventional type devices, screws and bolts are often employed. Once the device has been thoroughly secured to the car, the angle of the feeler is determined, and if it is found this angle places the feeler tip too close to the highway or pavement, or if it is found that the tip is higher than contemplated curb heights, the device must be removed and repositioned. If no suitable position can be found, it is necessary to bend the feeler itself with respect to its support means or clamp in an attempt to realize the desired angle. This latter procedure is not only inconvenient, but may weaken considerably the clamp structure. Further, the tools and labor involved in removing the device or relocating it are inconvenient and time-consuming.

A primary object of the present invention is to provide a greatly improved type of curb signalling device comprising a combination feeler and clamp in which the angle of the feeler with respect to the clamp is manually adjustable to a desired value and in which such adjusted position is automatically maintained once the clamp is installed on the car.

Another object is to provide a curb signalling device of the above type in which the angle of the feeler may be readjusted to a different value manually without having to disassemble any of the clamp structure, and in which the readjusted position is automatically locked when the clamp is secured to the car.

Still another object is to provide a curb feeler clamp in which the angle of the feeler is locked simultaneously with the locking of the clamp to the vehicle, whereby only one manual motion is necessary for attaching the device.

Another object is to provide a curb feeler clamp which does not require the use of bolts or screws and thus eliminates the necessity for tools in installing the clamp.

These and further objects and advantages of the invention are attained by providing a combination feeler and clamp structure employing a series of members pivoted together in such manner that actuation of one of the members operates an overcenter toggle arrangement for

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clamping the device to the car and simultaneously locking the feeler in an adjusted angular position with respect to the clamp.

The above-referred to arrangement for accomplishing this action will be readily understood by reference to the accompanying drawings in which:

Figure 1 is a general perspective view of the side of a motor vehicle illustrating the curb signalling device of the present invention in operative position;

Figure 2 is an enlarged perspective view of the clamping portion of the device shown in Figure 1;

Figure 3 is a cross-section of the device shown in Figure 2 in unclamped position;

Figure 4 is a view similar to Figure 3 showing the device in clamped position;

Figure 5 illustrates in elevation a modified type of curb signalling device in unclamped position;

Figure 6 illustrates the device of Figure 5 in clamped position;

Figure 7 is a cross-section taken in the direction of the arrows 7—7 of Figure 6; and

Figure 8 is an enlarged view of a portion of the locking means of the device shown in Figure 6.

Referring to Figure 1, the curb signalling device is shown as comprising an elongated flexible feeler element 10 secured by a clamp 11 to the underside 12 of a car 13. Preferably, the signalling device is placed relatively close to one of the car wheels, such as the wheel 14, so that the proximity of the wheel to the curb will be indicated by the feeler.

Figure 2 illustrates in enlarged perspective view, the clamping portion 11 of the device shown in Figure 1 as it appears in unclamped position before attachment to the car. As shown, this clamp comprises a central member 15 having a front upwardly extending flange 16. The inner surface of this flange forms a clamping surface for engaging the lower outside portion of the car. Pivoted to the rear portion of the central member 15 is a clamping lever 17 having a clamping surface 18 adapted to cooperate with the front flange 16 to form opposed clamping surfaces. The clamping lever 17 is angulated or bowed to permit it to fit around the lower edge of the automobile side or fender whereby the side or fender 12 is disposed between these opposed clamping surfaces.

Referring to both Figures 2 and 3, the feeler element 10 is secured within a feeler support member 19. Member 19 is in turn pivotally mounted to the front portion of the central member 15 by means of a pivot pin 20. This arrangement permits the feeler and feeler support to assume different angular positions with respect to the central member and associated opposed clamping surfaces, as indicated by the arrows in Figure 3.

The angulated clamping lever 17 is pivoted to the rear portion of the central member 15 at a point intermediate its ends by means of a pivot pin 21. An actuating means in the form of a handle member 22 is pivoted by a pivot pin 23 to the free end of the clamping lever below its pivotal connection to the central member. Handle member 22 is also pivoted by a pivot pin 24 at a point spaced from the pivot pin 23 to one end of a link member 25. The other end of the link 25 is pivoted to the central member 15 by pivot pin 26.

With the arrangement described thus far, it will be seen that pivoting movement of the handle 22 about the pivot pin 24 will actuate the clamping lever 17 to rotate it about the pivot pin 21 and thus move the far end of the clamping surface 18 towards or away from the opposed clamping surface on the flange 16. This arrangement also effects a locking action, for retaining the feeler support 19 in a pre-set angular position, simultaneously with the closing of the clamp. This locking action will now be described.

Referring to the pivotal connection of the feeler sup-

port 19 to the central member 15, it will be noted that the end of the feeler support terminates in a yoke structure comprising yoke arms 27 and 28. These yoke arms are straddled by downwardly depending side flanges 29 and 30 forming part of the central member 15, the pivot pin 20 passing through aligned openings in these flanges and the yoke arms.

The extreme end of each yoke arm is rounded and provided with gear teeth 31 as most clearly shown for the yoke arm 27 in Figure 3. The side flanges 29 and 30 of the central member are provided with elongated aligned slots 32. The pivot pin 26 for the link member 25 is positioned to ride in these slots in such a manner that when disposed at the leftward extreme end of the slots 32, the pin 26 will engage the teeth 31 and lock the support member 19 against rotation about its pivot pin 20. In the extreme rightward end of the slots, the pin 26 will be free of the teeth and permit rotation of the support member. The pivot pin 26 being connected to the link member 25, will be actuated by this link member.

The operation of the clamp and locking means will be evident from the above description. In Figure 3, the clamp is shown in open, unlocked position. In this condition, it will be noted that the pivot pin 26 is free of engagement with the teeth 31. The support member 19 and associated feeler element 10 may thus be angularly adjusted to a desired position by swinging the support about the pivot pin 20. The opposed clamping surfaces on flange 16 and lever clamp 17 are disposed on opposite sides of the automobile fender or lower side edge 12 and manually held in this position while the feeler is adjusted to the desired angle with respect to the ground. After this adjustment, the handle member 22 is swung in a clockwise direction about the pivot pin 24, as indicated by the arrow. This action causes the clamping lever 17 to swing in a counter-clockwise direction about the pivot pin 21 in view of the pivotal coupling of this lever to the handle at 23. This latter swinging action serves to move the surface 18 of the clamping lever 17 towards the opposed surface on flange 16.

Simultaneously, clockwise movement of the handle 22 will urge the link member 25 to the left as viewed in Figure 3 and thereby urge the pivot pin 26 along the slots 32 and into engagement with the teeth 31. In clamped and locked position, the various members assume the position shown in Figure 4.

It is to be noted that the relative positioning of the various pivot pins on the respective members results in an over-center toggle action. Referring specifically to Figure 4, it will be seen that the pivot pin 24 is positioned past the center line between the pivot pin 26 and pivot pin 23 when the clamp is in closed, locked position. In this over center position, it will be appreciated that the clamping force on the clamping lever 17 from its engagement with the car side 12, tends to urge the handle member 22 to the left. The force is transmitted to the link member 25 through the pivot pin 24 and thus urges the link member to the left since this force is directed in a line over or past which the pivot pin 24 is positioned. The pivot pin 26 is thus urged into tight engagement with the teeth 31 on the ends of the yoke arms of the support member 19. Further, this over center arrangement results in any pressure tending to separate the opposed clamping surfaces being communicated through the line 25 to increase further the locking engaging force of the pin 26 against the teeth 31.

To release the clamp and locking means, it is only necessary to pry downwardly on the handle member 22 to pivot the same about the pivot pin 23 in a counter-clockwise direction. This initial downward movement will increase the clamping pressure between the clamp lever 17 and the side 12 of the car momentarily as the pivot pin 24 rides over the center line between pivot pin 26 and pivot pin 23. From then on, the link 25 will be drawn back to retract the pivot pin 26 in slots 32 and free the yoke arms

27 and 28. Simultaneously, the clamping lever 17 will swing in a clockwise direction about the pivot pin 21 to separate the clamping surface 18 from the side 12 of the car and the device will then assume the position shown in Figure 3. The angular adjustment of the tubular support 14 may then be adjusted to a different angle if desired, and the device clamped as before.

Figures 5 through 8 show a modified type of clamping means and feeler support employing a slightly different construction for effecting the same result. Referring to Figure 5, there is shown a central member 35 having an upwardly turned front flange 36 providing a clamping surface for one side 12 of an automobile. A clamping lever 37, similar to the lever 17 of Figures 2 to 4 is pivoted intermediate its ends to the rear end of the central member 35 as at 38, to form with the inner surface of flange 36 opposed clamping surfaces.

In the embodiment of Figure 5, the remaining portion of the central member 35 is of different construction from the central member 15 of Figures 2 to 4. In the instant case, the central member includes downwardly depending side flanges 39 and 40 having rounded peripheral ends defining teeth 41 and 42 (Figure 7) extending in a generally rearward direction. These flanges also include central elongated aligned slots 43 and 44, respectively, through which a pivot pin 45 passes. A feeler support member 46 terminates in yoke arms 47 and 48 provided with aligned openings for receiving pivot pin 45 as shown in Figure 7. With this arrangement, it will be seen that the feeler support 46 may pivot as well as slide over a range limited by the slot length, with respect to the central member 35 and associated side flanges 39 and 40. Extending laterally and in opposite directions from each yoke arm are small projections P. As shown in Figure 7, these projections will engage teeth 41 and 42 when the feeler support pivot pin 45 is moved to the extreme leftward position in the slots 43 and 44. This engagement serves to lock the angular position of the feeler support with respect to the central clamp member 35 as will become clearer as the description proceeds.

As shown best in Figure 5, one end of a handle member 49 is secured to the pivot pin 45, the other end of the handle extending away from the central member 35. At a point intermediate the ends of the handle member there is pivoted a link member 50 by means of a pivot pin 51. The other end of the link 50 is pivoted to the lower end of the clamping lever 37 by a pivot pin 52.

As noted above, the device of Figure 5 is shown in unclamped, unlocked position, while Figure 6 shows the device in clamped, locked position. In operation, the feeler support is angularly adjusted with respect to the ground to a desired position. Rotation of the feeler support 46 about pivot pin 45 may be effected, since in the open position of the clamp, the pivot pin 45 is at the extreme rightward position in the slot 43 and thus the projections P on the yoke arms of the feeler support are free of the teeth 41.

With the proper angle of the feeler set, the handle member 49 is pushed upwardly to rotate about the pivot pin 45 in a counter-clockwise direction. This action urges the link member 50 upwardly and to the right causing the clamping lever 37 to pivot in a counter-clockwise direction about the pivot pin 38, and close the opposed clamping surfaces.

Simultaneously, the upper end portion of the handle 49 has a tendency to move to the left due to reaction forces by the link member 50. This action urges the pivot pin 45 to the left along the slots 43 and 44 and thus moves the yoke arms 47 and 48 in the same direction (Figure 8). The laterally extending projections P will thus engage the gear teeth 41 and lock the angular setting of the feeler support 46 with respect to the central member.

It is to be noted that when the device is in clamped locked position as shown in Figure 6, the pivot pin 51 is past the center line connecting pivot pins 45 and 52.

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Therefore, the clamping pressure against the car side 12 is communicated through the clamping lever 37, link 50, and the end portion of the handle 49 secured to the pivot pin 45 to urge the yoke arm projections P into tight engagement with the gear teeth.

To release the clamp of Figure 5, the handle 49 is pried downwardly in a clockwise direction thereby rotating the link about pivot pin 52 to move downwardly past the center line. Further movement of the handle will then result in clockwise rotation of the clamping lever 37 about the pivot pin 38 to separate the clamping surfaces. Simultaneously, the pivot pin 45 and yoke arms secured thereto, will be free to move to the right and thus free the projections P from the teeth 41.

It is thus seen that in both embodiments of the invention, there is provided a greatly improved curve signalling device. The clamp may be easily attached to the side of a car without the use of special tools. Further, the clamping action simultaneously serves to lock the feeler support and thus the feeler is maintained in any pre-set angular position. To change the angle of the feeler, it is only necessary to unclamp the device and, without completely removing it from the car, simply rotate the feeler support member to the desired inclination. The device may then be clamped to the car. The clamping to the car and the locking of the feeler support in its set angular position is accomplished in each embodiment of the invention by a single, simple manual movement of the handle member.

Various modifications falling within the scope and spirit of the above-described structure will occur to those skilled in the art. The invention is therefore not to be thought of as limited to the specific embodiments disclosed for illustrative purposes.

We claim:

1. In a curb signalling device, the combination of: clamp means; a feeler support member pivoted to said clamp means; locking means connected to said clamp means, adapted to engage and retain said feeler support in a set pivoted position with respect to said clamp means; and manually operable means connected to said clamp means and said locking means for simultaneously actuating said locking means and said clamp means.

2. In a curb signalling device, the combination of: a clamp; a feeler support member pivotally secured to said clamp; and means connected to said clamp means and operated thereby to engage said feeler support member and retain said member in a set pivoted position when said clamp is closed and to free said member for pivoting movement when said clamp is open.

3. In a curb signalling device, the combination of: a clamping mechanism adapted to support a feeler element at different extending angles; actuating means for actuating said clamp to a closed position; and means connected to said actuating means and operated thereby for locking said feeler element at any one of said different extending angles.

4. In a curb signalling device, the combination of: a central member; a feeler support pivoted to said member; a clamping lever pivoted at a given point intermediate its ends to said central member; means on said central member and on one end portion of said clamping lever forming opposed clamping surfaces respectively; actuating means pivoted to the other end of said lever; and locking means pivoted to said actuating means adapted to engage

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said feeler support, whereby upon actuation of said actuating means, said clamping surfaces and locking means are operated simultaneously.

5. A curb signalling device according to claim 4, in which said actuating means comprises a handle, said locking means includes a link pivoted at one end to said handle, and said central member includes slot means adjacent the pivot connection of said feeler support; and having a pivot pin adapted to ride in said slot means, said pin being connected to the other end of said link, a portion of said feeler support defining gear teeth adapted to be engaged by said pivot pin, said link being in an over-center position, disposed past a center line drawn between said given point and said pivot pin, when said clamping surfaces are in closed position.

6. A curb signalling device as defined in claim 4, further characterized by: said actuating means comprising a link pivotally connected to said lever; said locking means including a handle pivotally connected to said link; said central member having a toothed arcuate portion with a slotted opening centrally located with respect to the center of said arcuate portion; a pivot pin received in said slotted opening and connected to said feeler support and to said handle; and a projection on said feeler support, engaging said toothed portion of said central member when said pivot pin is moved to one end of said slotted opening, and clearing said toothed portion when said pivot pin is moved to the other end of said slotted opening, said actuating means and said locking means cooperating to form an over-center lock to retain said clamping surfaces in closed position.

7. In a curb signalling device, the combination of a feeler support and clamping means comprising: a central member; first pivot pin means connecting said feeler support to one end of said central member; a clamping lever; second pivot pin means connecting said clamping lever intermediate its ends to the other end of said central member; an actuating means; third pivot pin means connecting said actuating means to said clamping lever; locking means for locking said feeler support at a given pivoted position with respect to said central member; and fourth pivot pin means connecting said locking means to said actuating means, operation of said actuating means simultaneously moving said clamping lever into closed position and actuating said locking means.

8. A curb signalling device according to claim 7 in which said fourth pivot pin means is positioned past a center line drawn between said first and third pivot pin means after operation of said actuating means.

9. A curb signalling device which includes: a clamp member adapted to engage a supporting member; a feeler pivotally connected to said clamp member and having motion restraining means connected thereto; and locking means connected to said clamp member, operable to cause said clamp to firmly engage said supporting member, and simultaneously acting to engage said motion restraining means and prevent pivotal movement of said feeler when said clamp is closed.

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