C. F. MARSTON.

SELECTIVE CONTROLLING MECHANISM.

APPLICATION FILED MAY 25, 1918.

1,303,095.

Patented May 6, 1919

4 SHEETS—SHEET 1.

Fig. 1.

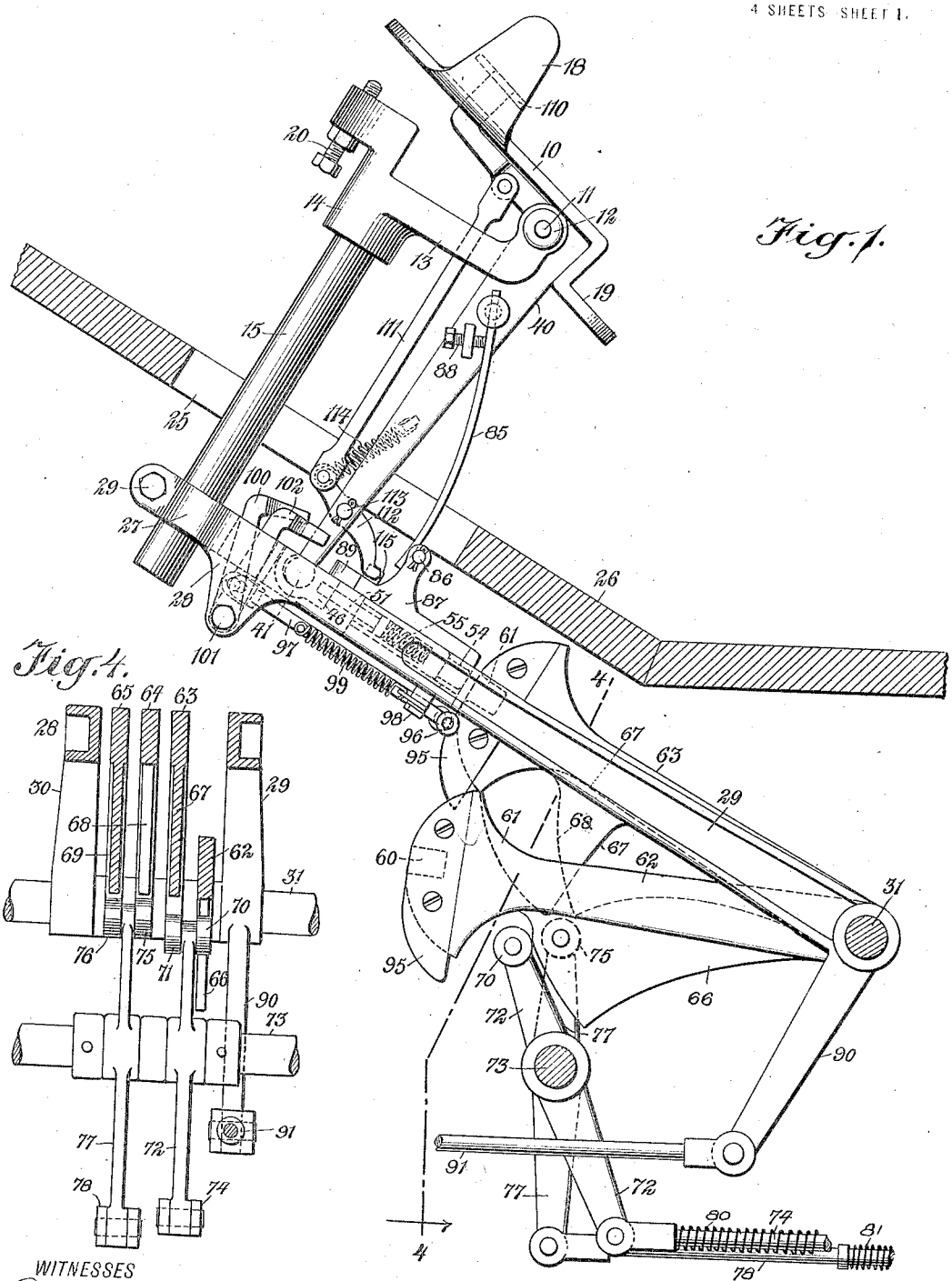


Fig. 4.

WITNESSES

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4 SHEETS—SHEET 2.

Fig. 2.

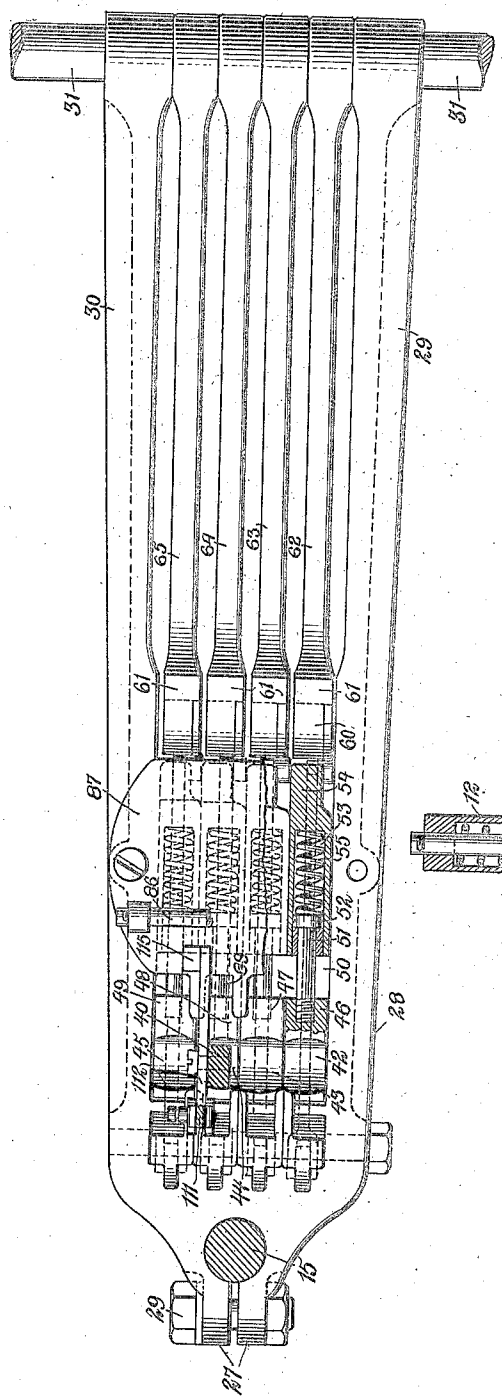
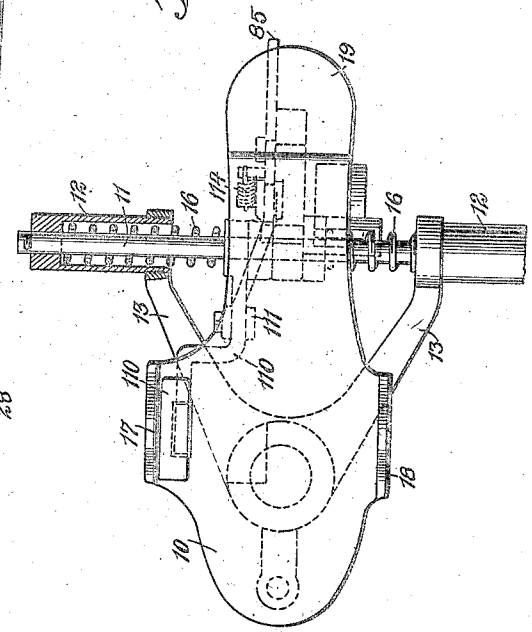


Fig. 3.



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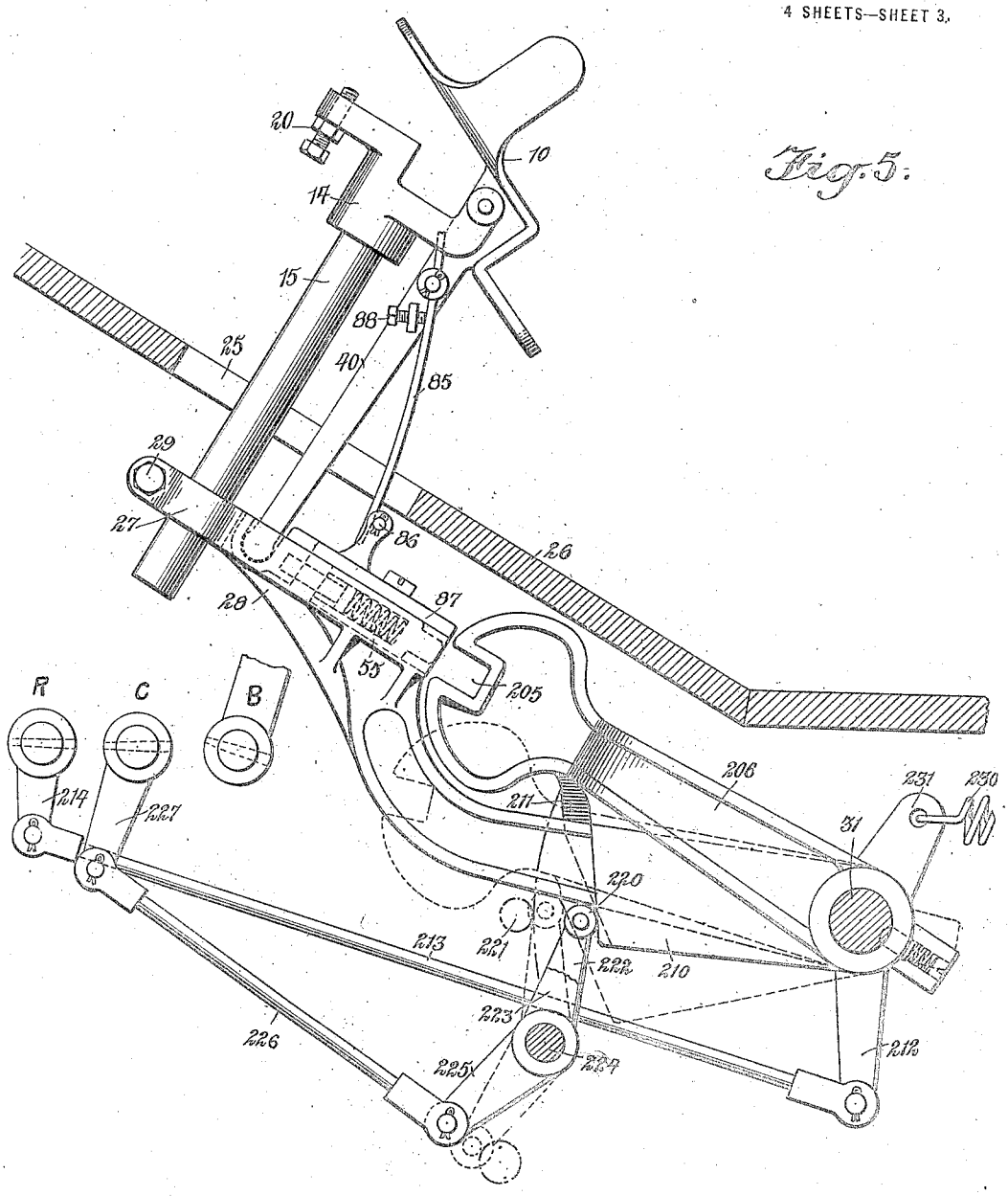
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4 SHEETS—SHEET 3.

Fig. 5.



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4 SHEETS—SHEET 4.

Fig. 7.

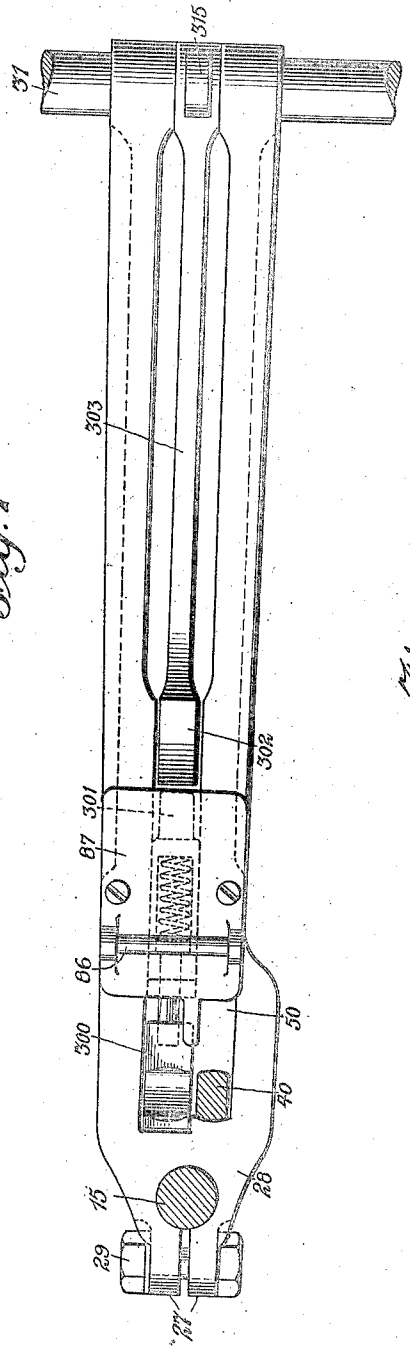


Fig. 8.

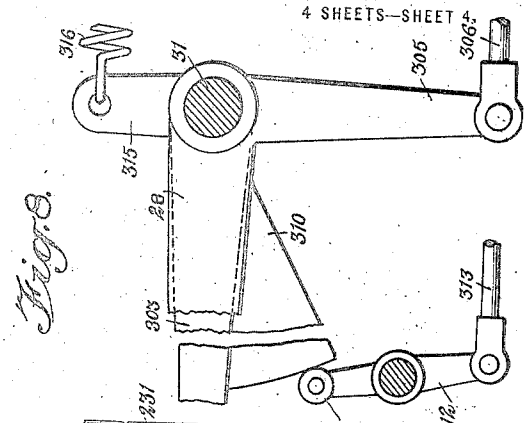
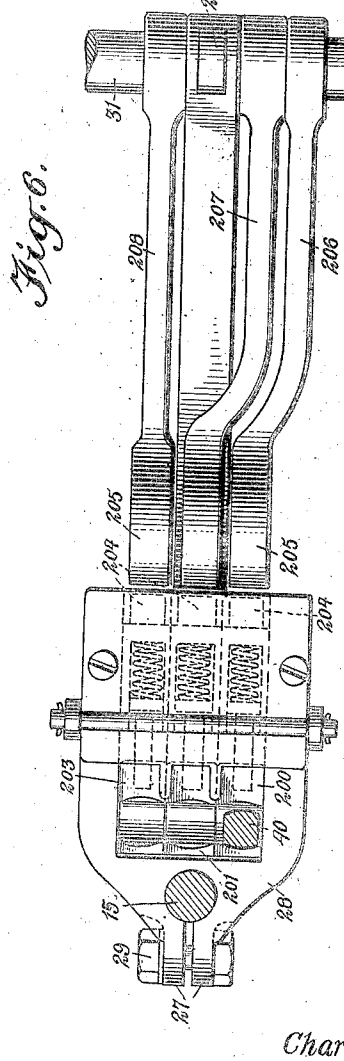


Fig. 6.



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SELECTIVE CONTROLLING MECHANISM.

1,303,095. Specification of Letters Patent. Patented May 6, 1919.

Application filed May 25, 1918. Serial No. 236,536.

To all whom it may concern:

Be it known that I, CHARLES F. MARSTON, a citizen of the United States, and a resident of Bar Harbor, in the county of Hancock and State of Maine, have invented a new and Improved Selective Controlling Mechanism, of which the following is a full, clear, and exact description.

The invention relates to selective controlling devices for automobiles and other motor vehicles and machines, and the object of the invention is to provide a new and improved selective controlling mechanism arranged to enable the operator in charge of the machine to readily actuate the gear shifting mechanism or the brake mechanisms or other devices through the agency of a single pedal, thus leaving the operator's hands free for other work. Another object is to hold the selective controlling mechanism in the selected position on the operator removing the foot from the pedal. Another object is to permit of applying the selective controlling mechanism to devices to be actuated without requiring altering of the construction of such devices.

With these and other objects in view, the invention consists of certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the selective controlling mechanism arranged for actuating the gear set of an automobile, parts being shown in section;

Fig. 2 is a sectional plan view of the same;

Fig. 3 is an enlarged plan view of the pedal with parts shown in section;

Fig. 4 is a cross section of the selective controlling mechanism on the line 4—4 of Fig. 1;

Fig. 5 is a side elevation of the selective controlling mechanism arranged for actuating the gear set of a Ford automobile, parts being shown in section;

Fig. 6 is a sectional plan view of the same;

Fig. 7 is a plan view of the selective controlling mechanism arranged for actuating the service and emergency brakes of an automobile; and

Fig. 8 is a sectional side elevation of a portion of the same.

The main pedal 10 of the selective controlling mechanism shown in Figs. 1, 2 and 3 is mounted to swing up and down and to slide sidewise on a pivot 11 held on the outer ends of cylindrical casings 12 (see Fig. 3) attached to arms 13 on a head 14 secured on the upper end of a stem or a post 15. On the pivot 11 are coiled two springs 16 extending into the casings 12 and pressing opposite sides of the pedal 10 to normally hold the latter in a central position, that is, approximately midway between the casings 12, but to allow of shifting the pedal sidewise either to the right or to the left or to swing the pedal up or down. In order to facilitate the sidewise movement of the pedal 10, the latter is provided near its forward end with side flanges 17 and 18 adapted to be engaged by the sides of the foot of the operator to permit the latter to slide the pedal to the right or to the left. The pedal 10 is also provided at its rear end with a heel rest 19 to permit of conveniently rocking the pedal in an up and down direction. On the head 14 is arranged a set screw 20 to limit the downward rocking movement of the pedal 10.

The stem 15 extends through an opening 25 arranged in the floor 26 of the automobile and the lower end of the stem 15 is adjustably secured in the split end 27 of a swinging support 28 by the use of a clamping screw 29, as plainly indicated in Figs. 1 and 2. The support 28 is provided with two side members 29 and 30 mounted to swing at their free ends on a transverse rod 31 attached to the chassis of the automobile to permit the support 28 to swing up and down thus carrying the main pedal 10 bodily with it. From the foregoing it will be seen that by the arrangement described, the pedal 10 has an up and down swinging movement on the pivot 11, can be shifted sidewise on the pivot to the right or to the left, and moved bodily up and down with the swinging support 28.

From the under side of the pedal 10 depends an integral arm 40 having its lower end 41 rounded off and adapted to engage either one of the bearings 42, 43, 44 or 45 formed on top of selective members 46, 47, 48 and 49, arranged one alongside the other and mounted to slide forward and backward

in a recess 50 formed in the top of the support 28. Each of the bearings 42, 43, 44 and 45 is rounded off at the front and back (see Fig. 2) to hold the pedal arm 40 against accidental sidewise shifting liable to be caused by the action of the springs 16 in case either is compressed at the time the pedal is shifted from a central position to either the right or left. Each of the selective members 46, 47, 48, 49 is provided with a rearwardly extending pin 51 having a head 52 slidably engaging a recess 53 formed in a bolt 54, and the head 52 is pressed on by a spring 55 arranged in the recess 53 and bearing against the rear end wall of the said recess to yieldingly hold the bolt 54 on the pin 51. The bolts 54 of the several selective members 46, 47, 48 and 49 are adapted to engage keepers 60 formed in the heads 61 of actuating members 62, 63, 64 and 65 arranged one alongside the other, and between the side arms 29 and 30 of the support 28. The rear ends of the actuating members 62, 63, 64 and 65 are mounted to swing independent one of the other on the rod 31 on which the support 28 is mounted to swing up and down, as previously explained. The actuating members 62, 63, 64 and 65 are provided at the under side with cams 66, 67, 68 and 69, of which the cams 66 and 67 are arranged in opposite directions (see Fig. 1) and are adapted to engage friction rollers 70 and 71 journaled on the upper end of a lever 72 mounted to rock on a rod 73 attached to the chassis of the automobile. The lever 72 is connected with a link 74 connected with the device on which the selective controlling mechanism is used. The cams 68 and 69 are disposed in opposite directions and are adapted to engage friction rollers 75 and 76 journaled on the upper end of a lever 77 mounted to rock on the rod 73 and connected by a link 78 with the device on which the selective controlling mechanism is used and in which a change is to be effected. In case the selective controlling mechanism is used on an automobile, the actuating member 62 controls the high speed gear of the gear set, the actuating member 63 controls the first speed, the actuating member 64 controls the second speed, and the actuating member 65 controls the reversing mechanism. It will be noticed that the cams 66 and 68 are arranged to impart a forward swinging movement to the levers 72 and 77 on swinging the actuating members 62 and 64 downward, and the cams 67 and 69 are so arranged that a rearward swinging movement is given to the levers 72 and 77 on swinging the actuating members 63 and 65 downward. It is understood that the actuating members 62, 63, 64 and 65 together with their cams 66, 67, 68 and 69 form swinging cam arms adapted to actuate the levers 72 and 77, as above explained, with a view to effect a change in the device on which the selective controlling mechanism is applied. The links 74 and 78 are pressed on by springs 80 and 81 to hold the levers 72 and 77 normally in neutral positions.

The arm 40 of the pedal 10 is provided with a spring 85 bearing with its free end on a transversely extending rod 86 held on a cover 87 fastened to the top of the support 28 and extending across the selective members so as to hold the same against upward movement in the recess 50 in which the selective members are mounted to slide, as previously explained. A set screw 88 mounted on the arm 40 engages the spring 85 to permit of adjusting the tension of the said spring. It will be noticed that when the pedal 10 is shifted sidewise, the arm 40 and the spring 85 move with it, and the free end of the spring 85 slides transversely on the rod 86. The spring 85 holds the pedal 10 normally in uppermost position as shown in Fig. 1. The cover 87 is provided at its forward edge with forks or guideways 89 into which the lower end of the arm 40 is adapted to pass on swinging the pedal 10 downward thus holding the arm 40 against accidental sidewise movement as long as the pedal is pressed down.

One of the side arms 29 or 30 of the support 28 is provided at its fulcrum end with an angular arm 90 connected by a link 91 with the throw-out clutch mechanism to throw out the clutch whenever the support 28 is swung downward, as previously explained. Thus the throw-out clutch is actuated immediately prior to a change in the device on which the selective controlling mechanism is used. It will also be noticed that the usual spring of this clutch causes the support 28 to return to normal uppermost position when releasing the downward pressure on the support.

In order to prevent accidental sidewise shifting of the arm 40 and its pedal 10 during the time the support 28 swings down and up, or an actuating member 62, 63, 64 or 65 is down in selective position, the following arrangement is made: Each of the heads 61 of the actuating members 62, 63, 64, 65 is provided with a double cam 95 engaged by a friction roller 96 journaled on a bar 97 mounted to slide in a bearing 98 attached to the under side of the support 28. The bar 97 is pressed rearwardly by a spring 99 to hold the corresponding friction roller 96 in engagement with the corresponding cam 95. Each of the bars 97 is pivotally connected with a locking arm 100 fulcrumed at its lower end at 101 on the support 28, and each locking arm 100 is provided with a rearwardly extending locking fork 102 normally out of the path of the arm 40 but adapted to engage the said arm 40 on swing-

ing the support 28 downward owing to the friction roller 96 traveling down on the lower portion of the double cam 95. It is understood that whenever the support 28 is swung downward, as previously explained, and one of the actuating members 62, 63, 64 or 65 is carried along then the friction rollers 96, in engagement with the cams 95 on the actuating members remaining in uppermost position, travel down the cams 95 and thus allow the springs 99 to push the corresponding bars 97 rearward whereby the locking arms 100 are swung rearwardly and their forks 102 move into the path of the arm 40 thus preventing sidewise shifting of the arm 40 and consequently of the pedal 10. During the return movement of the support and while the selective actuating member remains in lowermost position, the friction roller 96 of this actuating member travels on the upper portion of its cam 95 and hence the corresponding locking member 100 is caused to swing rearward so that its fork engages the arm 40 and locks the same against sidewise movement. It is understood that during the return movement of the support 28 the friction rollers 96 of the non-selective members reëngage their cams and swing the locking members 100 forward out of the path of the arm 40 which latter, however, is held locked by the other fork controlled by the selective member remaining in lowermost position.

In order to move the arm 40 into engagement with the selective member 49 for the reverse actuating member 65, it is necessary for the operator to actuate an auxiliary or supplemental pedal 110 arranged alongside the flange 17 of the main pedal 10. The auxiliary pedal 110 is mounted to swing loosely on the rod 11 as the fulcrum, and is pivotally connected by a link 111 with a lever 112 fulcrumed at 113 near the lower end of the pedal arm 40. A spring 114 connects the arm 40 with the lever 112 to normally hold the free end of this lever 112 in engagement with one side of a lug 115 arranged on the top of the plate 87 intermediate the selective members 48 and 49. As the lever 112 is mounted on the pedal arm 40 it is evident that the latter cannot be shifted sidewise into engagement with the selective member 49 until the lever 112 is swung upward out of engagement with the lug 115 on pressing the auxiliary pedal 110. From the foregoing it will be seen that by the arrangement described the pedal arm 40 cannot be moved into engagement with the selective member 49 for the reversing mechanism unless the auxiliary pedal 110 is first pressed prior to shifting the main pedal 10 sidewise from the left to the right.

The operation is as follows:

When the several parts are in the position shown in Fig. 1 then the automobile is running at high speed owing to the actuating member 62 being in lowermost position, and the other members 63, 64 and 65 as well as the support 28 being in uppermost position. Now when it is desired to change to, say, second speed then the operator swings the pedal down and bears down on it to impart a downward swinging movement to the support 28 whereby the arm 90 and the link 91 release the clutch. On swinging the pedal 10 downward, as above mentioned, the selective member 46 is caused to slide rearward by the action of the pedal arm 40 and hence the bolt 54 of the selective member 46 is shot out and the bolt snaps into the keeper 60 of the actuating member 62 on the support 28 reaching a lowermost position. The operator releases the downward pressure on the support but keeps the pedal 10 pressed to allow the support 28 to return to uppermost position and carrying along the actuating member 62 to uppermost position. It is understood that the tension of the spring for returning the support 28 is greater than that of the spring 85. During this return movement of the actuating member 62, its cam 66 acts on the friction roller 70 and thus allows the lever 72 to return to normal neutral position thereby throwing out the high speed gear and leaving the gear set in neutral position. The pedal 10 is now released to permit it to return to normal uppermost position by the action of its spring 85 thus unlocking the actuating member 62 by withdrawing the bolt 54 of the selective member 46 from the keeper 60 of the actuating member 62. The pedal 10 is now shifted sidewise until the arm 40 engages the selective member 48, and then the operator swings the pedal downward to engage the bolt 54 of the selective member 48 with the keeper 60 of the actuating member 64. Then the operator bears down on the pedal to swing the support 28 downward, and in doing so the selective actuating member 64 is carried along, whereby its cam 68 acts on the friction roller 75 and the lever 77 to throw the second speed gear of the gear set into action. The operator next allows the pedal 10 to swing upward to disengage the bolt 54 of the selective member 48 from the keeper 60 of the actnating member 64, and then the operator allows the support 28 to return to uppermost position with the actuating member 64, however, left in lowermost position. When it is desired now to change from second speed to reverse then the pedal 10 is swung downward and pressed to swing the support 28 downward whereby the shot-out bolt 54 of the selective member 48 snaps into the keeper of the actuating member 64 to return the latter to uppermost position on returning the support 28 and the pedal 10 to their uppermost positions. The pedal 10 is now released thus unlocking the actuating

member 64 by withdrawing the bolt 54 of the selective member 48 from the keeper 60 of the actuating member 64. On returning the actuating member 64, its cam 68 acts on the friction roller 77, thus imparting a return swinging movement to the lever 77 whereby the second speed is thrown out of action and the gear set is returned to neutral position. The operator now presses on the auxiliary pedal 110 to swing the lever 112 out of engagement with the lug 115 and then the operator shifts the pedal 10 farther to the right until the arm 40 engages the selective member 49. The above described operation is then repeated, that is, the pedal 10 is swung downward to move the selective member 49 rearward to engage the bolt 54 thereof with the keeper 60 of the actuating member 65, and the support 28 is now swung downward and with it the actuating member 65 which by its cam 69 acting on the friction roller 76 actuates the lever 77 thus throwing the reversing gear of the gear set into action.

When the selective controlling mechanism is used on the gear set of a Ford automobile (see Figs. 5 and 6) then the arm 40 of the pedal 10 is adapted to engage three selective members 200, 201, 203 having spring-pressed bolts 204 adapted to engage keepers 205 on the free ends of actuating member 206, 207 and 208 mounted to swing on the rod 31 on which the support 28 is mounted to swing up and down. The actuating member 206 controls the high gear of the gear set, the actuating member 208 controls the low speed and the actuating member 207 controls the reversing mechanism. The actuating members 206 and 208 are provided with cams 210 and 211, while the actuating member 207 is provided at its fulcrum end with an angular arm 212 connected by a link 213 with the reversing mechanism 214 to actuate the same. The cams 210 and 211 engage friction rollers 220 and 221 journaled on arms 222 and 223 secured to the high speed clutch shaft 224 connected by an arm 225 and link 226 with the low speed clutch 227. The support 28 is normally held in uppermost position by a spring 230 connected with an angular arm 231 on the fulcrum end of the support 28.

The operation is as follows:

Normally the high speed gear is in action (see Fig. 5) and when it is desired to change to neutral position, it is only necessary to press the pedal 10 downward to actuate the selective member 200 and to engage the bolt 204 thereof with the keeper 205 of the high gear actuating member 206. On bearing down on the pedal 10 a downward swinging movement is given to the support 28 thus carrying the high speed actuating member 206 along to shift the gear set to neutral position. The operator now releases the pedal 10 to disengage the bolt 204 of the selective member 200 from the keeper 205 of the actuating member 206 to leave the latter in lowermost position and to allow the support 28 to return to uppermost position. When it is desired to throw in the low gear, the pedal 10 is shifted sidewise to engage the arm 40 with the selective member 203 and then the pedal is swung downward to cause the selective member 203 to be shifted rearwardly to engage its bolt 204 with the keeper 205 of the actuating lever 208. The operator then bears down on the pedal 10 to swing the support 28 downward thus carrying the actuating member 208 along and thereby moving the gear set into low speed position. The operator now releases the pedal 10 to withdraw the bolt 204 of the selective member 203 from the actuating member 208 to leave the latter in lowermost position while allowing the support 28 to return to uppermost position.

When the gear set is in high gear position and it is desired to go to low speed position, then it is only necessary for the operator to shift the pedal 10 sidewise to engage the arm 40 with the selective member 203 and then the operator swings the pedal 10 downward to lock the selective member 203 to the actuating member 208, and then the support 28 is swung downward into lowermost position with the actuating member 208 and the latter is left there on releasing the pedal 10 and disengaging the selective member 203 from the actuating member 208. When running in low gear and desiring to change to high gear, it is only necessary to press down the pedal 10 to pick up the actuating member 208 and to return it to uppermost position thus going automatically into high gear.

When using the selective controlling mechanism for controlling the service brake and the emergency brake of an automobile, for instance, then the arrangement is made as shown in Figs. 7 and 8. In this case the arm 40 normally engages with its lower end the recess 50 of the support 28, and the arm 40 is adapted to be shifted sidewise into engagement with a selective member 300 having a bolt 301 adapted to engage a keeper 302 in the actuating member 303 mounted to swing on the rod 31 on which the support 28 is fulcrumed. The support 28 is provided with an angular arm 305 connected by a link 306 with the service brake so that when the support 28 is swung downward by the operator bearing on the pedal 10 then the service brake is applied. When the pressure on the pedal is released, the support 28 remains normally in uppermost position thus releasing the service brake.

The actuating member 303 is provided at its under side with a cam 310 adapted to engage a friction roller 311 journaled on a lever 312 connected by a link 313 with the emergency

brake to actuate the latter on swinging the actuating member 303 downward at the time the arm 40 of the pedal 10 is in engagement with the selective member 300 and has actuated the latter and moved the support 28 in a downward direction and with it the actuating member 303. The actuating member 303 is provided with an upwardly extending arm 315 pressed on by a spring 316 to return the actuating member 303 to normal position after being unlocked on withdrawing of the bolt 301 of the selective member 300.

When it is desired to make a service application, it is only necessary for the operator to swing the support 28 downward at the time the arm 40 is in the position shown in Fig. 7, and the brake is held applied as long as the support 28 is kept in depressed condition. When it is desired to make an emergency application then the pedal 10 is shifted sidewise to engage the arm 40 with the selective member 300, and then the pedal is pressed downward to carry both the support 28 and the emergency actuating member 303 downward thereby applying both the service and emergency brakes. If it is desired to keep the emergency brake applied, it is only necessary for the operator to release the pedal 10 to disengage the bolt 301 from the keeper 302 of the actuating member 303 thus leaving the latter unlocked in lowermost position with the emergency brake applied while the support 28 returns to normal uppermost position.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a selective controlling mechanism, a support mounted to swing, a main pedal mounted to swing and to slide sidewise on the said support, selective members movable on the support and controlled by the said main pedal, and actuating members adapted to be engaged by corresponding selective members and controlling the devices to be actuated.

2. In a selective controlling mechanism, a pedal mounted to swing, to be moved bodily up and down and to be shifted sidewise.

3. In a selective controlling mechanism, swinging cam arms each operable to effect a change in the device on which the selective controlling mechanism is used, selective members adapted to engage corresponding cam arms, and a pedal adapted to be shifted sidewise and having means adapted to engage a corresponding selective member to actuate the latter.

4. In a selective controlling mechanism, swinging cam arms each operable to effect a change in the device on which the selective controlling mechanism is used, selective members adapted to engage corresponding cam arms, a pedal adapted to be shifted sidewise and having means adapted to engage a corresponding selective member to actuate the latter, and a movable support on which the said pedal is mounted to rock and the said selective members are mounted to slide.

5. In a selective controlling mechanism, a swinging support, a main pedal mounted to swing on the said support and to slide sidewise thereon, the pedal having an arm fixed thereon, selective members mounted to slide on the said support and either of which is adapted to be engaged by said pedal arm, and actuating members mounted to swing and adapted to be engaged by the said selective members, the common axis of the said actuating members coinciding with the axis of the said support and the said actuating members having means adapted to control the devices to be controlled by the controlling mechanism.

6. In a selective controlling mechanism, a swinging support, a main pedal mounted to swing on the said support and to slide sidewise thereon, the pedal having an arm fixed thereon, selective members mounted to slide on the said support and either of which is adapted to be engaged by said pedal arm, actuating members mounted to swing and provided with keepers and cams, of which the keepers are adapted to be engaged by the said selective members and devices to be controlled and having levers adapted to be engaged by the said cams.

7. In a selective controlling mechanism, a swinging support, a main pedal mounted to swing on the said support and to slide sidewise thereon, the pedal having an arm fixed thereon, selective members mounted to slide on the said support and either of which is adapted to be engaged by the said pedal arm, actuating members mounted to swing and adapted to be engaged by the said selective members, the common axis of the said actuating members coinciding with the axis of the said support and the said actuating members having means adapted to control the devices to be controlled by the controlling mechanism, and means on the said swinging support connected with another device to be controlled.

8. In a selective controlling mechanism, a swinging support, a main pedal mounted to swing on the said support and to slide sidewise thereon, the pedal having an arm fixed thereon, selective members mounted to slide on the said support and either of which is adapted to be engaged by said pedal arm, actuating members mounted to swing and provided with keepers and cams, of which the keepers are adapted to be engaged by the said selective members and devices to be controlled and having levers adapted to be engaged by the said cams, and locking devices mounted on the said support and controlled by the said cams and adapted to

move into the path of the said pedal arm to prevent sidewise shifting of the pedal during the up or down swinging movement of the said support.

9. In a selective controlling mechanism, a swinging support, a main pedal mounted to swing on the said support and to slide sidewise thereon, the pedal having an arm fixed thereon, selective members mounted to slide on the said support and either of which is adapted to be engaged by said pedal arm, actuating members mounted to swing and adapted to be engaged by the said selective members, the common axis of the said actuating members coinciding with the axis of the said support, and the said actuating members having means adapted to control the devices to be controlled by the controlling mechanism, a spring held on the said pedal arm, and a rod held on the said support and slidingly engaged by the free end of the said spring.

10. In a selective controlling mechanism, a swinging support, a main pedal mounted to swing on the said support and to slide sidewise thereon, the pedal having an arm fixed thereon, selective members mounted to slide on the said support and either of which is adapted to be engaged by said pedal arm, actuating members mounted to swing and adapted to be engaged by the said selective members, the common axis of the said actuating members coinciding with the axis of the said support, and the said actuating members having means adapted to control the devices to be controlled by the controlling mechanism, an auxiliary pedal on the said main pedal, a locking device controlled by the said auxiliary pedal, and a keeper on the said support and adapted to be engaged by the said locking device, the said keeper being arranged between adjacent selective members.

11. In a selective controlling mechanism, a pedal mounted to slide sidewise and provided with an arm having a rounded off end, a series of selective members arranged one alongside the other and mounted to slide, the selective members having normally registering bearings either of which is adapted to be engaged by the said arm end on shifting the pedal sidewise, to impart a sliding motion to such engaged selective member on imparting a swinging motion to the pedal.

12. In a selective controlling mechanism, a pedal mounted to slide sidewise and provided with an arm having a rounded off end, a series of selective members arranged one alongside the other and mounted to slide, the selective members having normally registering bearings either of which is adapted to be engaged by the said arm end on shifting the pedal sidewise, to impart a sliding motion to such engaged selected members on imparting a swinging motion to the pedal, each bearing having curved front and back walls.

13. In a selective controlling mechanism, a support mounted to swing and provided with a pivot, a pedal mounted to swing on the said pivot and to slide sidewise thereon, and springs coiled on the said pivot and engaging opposite sides of the pedal to normally hold the pedal in a central position.

14. In a selective controlling mechanism, a support mounted to swing and provided with a pivot, a pedal mounted to swing on the said pivot and to slide sidewise thereon, an arm depending from the said pedal, selective members mounted to slide on the said support and either of which is adapted to be engaged by the said pedal arm, each selective member having a spring slidable locking member, actuating cam arms mounted to swing on the axis of the said support and each provided with a cam and a cam head having a keeper adapted to be engaged by a corresponding selective member, lever mechanisms controlled by the said cams and connected with the devices to be controlled, locking levers mounted to swing on the said support and normally out of the path of the said pedal arm, and spring-pressed links connected with the said locking levers and provided with friction rollers engaging the said cam heads on the actuating cam arms.

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