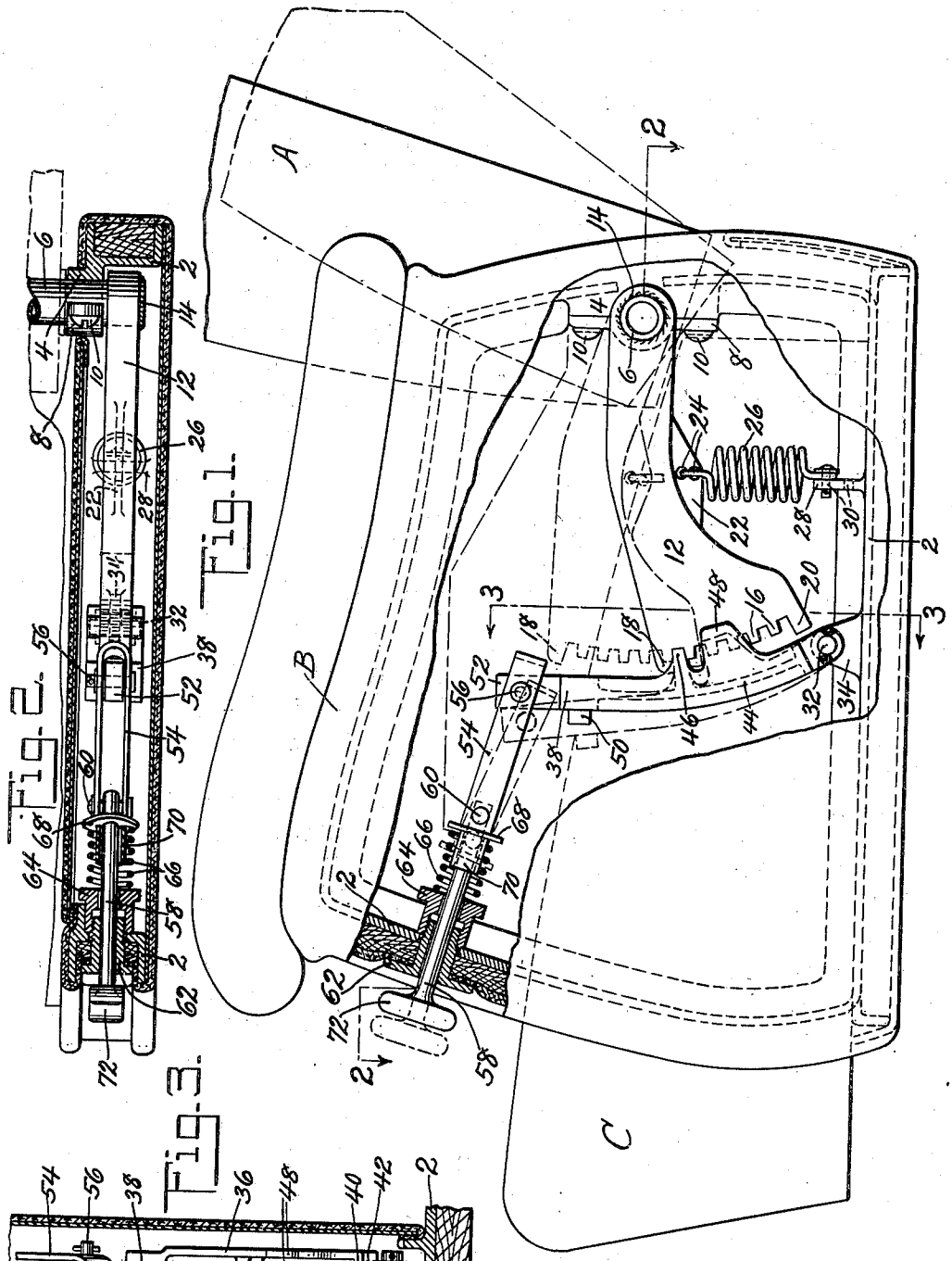
Sept. 20, 1938. V. WILLOUGHBY 2,130,782

RECLINING SEAT

Filed Jan. 16, 1937 2 Sheets-Sheet 1



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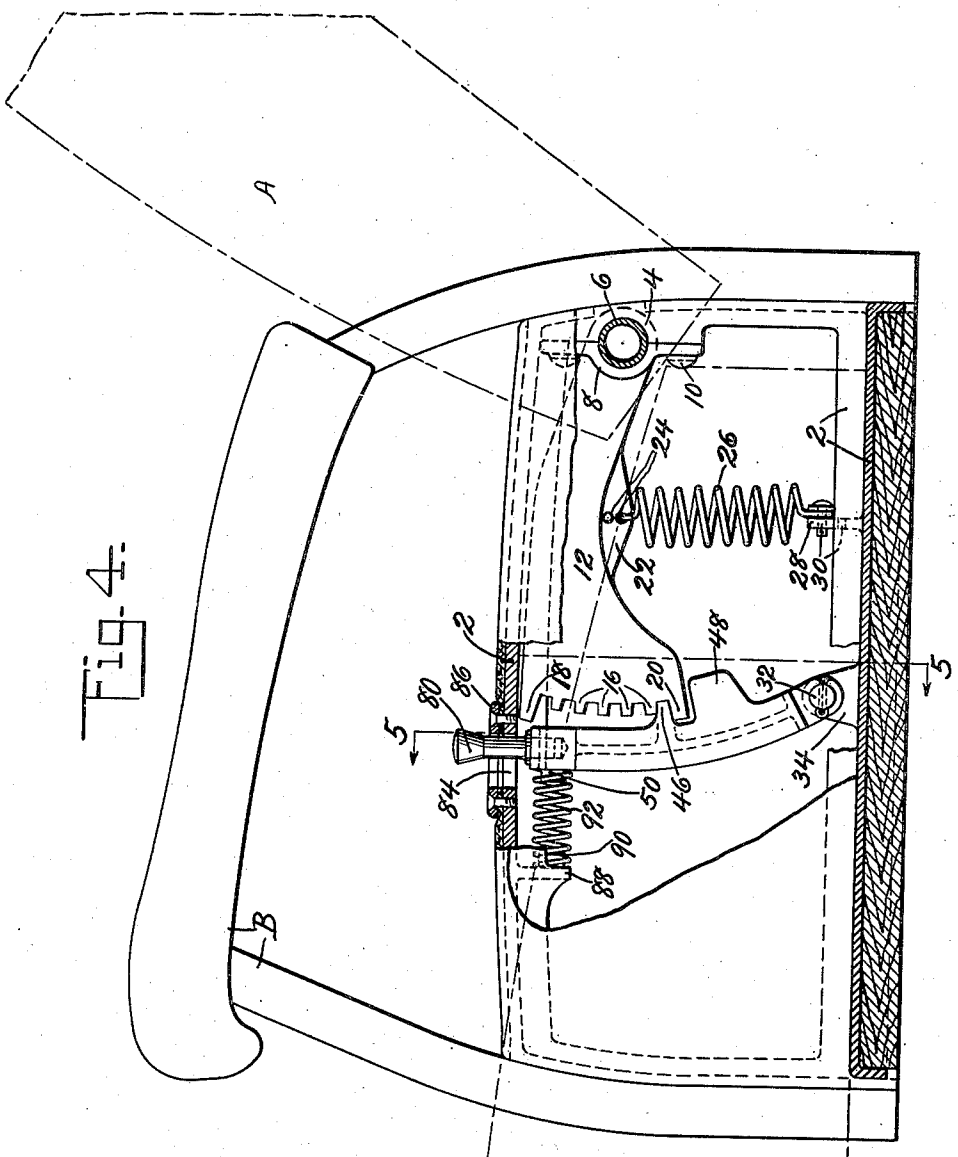

Fig. 4.

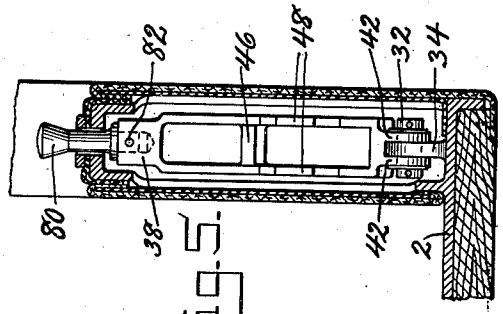

Fig. 5.

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Patented Sept. 20, 1938 2,130,782

UNITED STATES PATENT OFFICE

2,130,782

RECLINING SEAT

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Application January 16, 1937, Serial No. 120,981

2 Claims. (Cl. 155—160)

This invention relates to reclining seats in general and in particular to reclining seats for use in vehicles adapted to travel either on road or rail.

Reclining seats used in all types of vehicle service are subjected to a considerable amount of vibration and it, therefore, becomes necessary to construct these seats in an entirely different manner from the seats used for stationary service, such as in the home or office. It is an object, therefore, of the invention to provide a reclining seat having simple and rigid control mechanism.

Another object of the invention is to provide reclining mechanism for vehicle seats of simple construction wherein the parts are wedged together preventing rattling of the back.

A further object of the invention is the provision of simple reclining mechanism which may be used on various types of seats with a minimum amount of modification in order that the number of shop dies and patterns may be reduced.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which

Figure 1 is an end view of the seat with portions broken away to disclose the mechanism;

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 1 but showing an open type of seat with the mechanism applied thereto with the necessary slight changes, and

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4.

Referring now to the drawings in detail, it is seen that the mechanism is shown as applied to a seat having reclining back A, end B and suitable seat cushion C. The seat end is formed with a cast substantially rectangular frame member 2 having cast integral therewith bearing portion 4 adapted to receive and rotatably support tube 6 rigidly secured to the seat back in any preferred manner. This tube is retained in position in the seat frame by means of bearing cap 8 suitably held in place by machine screws or other means 10. The ends of the back supporting tube extend beyond the bearing and have mounted thereon the operating or back controlling lever 12 which is preferably welded to the rod or tube as at 14. This control arm is formed at its outer end with gear teeth 16 and upper and lower stops 18 and 20 respectively. These teeth are arranged on a circumference of a circle having its center substantially at the center of the back supporting tube and, therefore, the control arm may be considered as a segment of a gear with certain terminal teeth extended to form stops. Intermediate the teeth and supporting tube the arm is provided with projecting rib 22 having a plurality of holes 24 therein adapted to receive the upper end of tension spring 26. The lower end of the tension spring is secured to lug 28 cast integral with the seat frame and provided with a plurality of holes 30. This spring is connected to the proper openings 24 and 30 so that sufficient tension will be exerted by the spring to return the seat back from any inclined position to the normal upright position.

In order to lock the seat back in any desired position and control its movement at will a locking member is provided which has its lower end pivoted on pin 32 carried by bracket 34 cast integral with the seat frame. The locking member is preferably formed as a casting having spaced side wall portions 36 joined at the upper end by block 38 and at the lower end by web 40 from which spaced ears 42 extend to pivotally mount the member as previously mentioned. The side portions are also joined by intermediate web 44 and by central tooth engaging rib or pawl 46. This tooth engaging rib extends outwardly from the side portions of the locking member and is tapered slightly in order to have wedging engagement with the teeth on the control arm. The locking member is also provided at its lower side portion with forwardly projecting portions 48 adapted to strengthen the member and form a guide and shroud for the teeth on the control arm and is also formed at its upper portion with a rearwardly projecting lug 50, the purpose of which will be explained later.

Referring now to Figs. 1 to 3 in particular, it is seen that block 38 of the locking member is extended to provide a lug 52 upon which U-shaped clevis 54 is pivotally mounted as by pin 56. The outer or open end of this clevis straddles pull rod 58 and to which it is pivotally connected by pin or other means 60, thus permitting angular movement between the locking member and the pull rod. The pull rod is slidably mounted in the seat frame by means of an outer bushing 62 clamped in position by lock nut 64, the bushing and nut obviously forming a journal for the slide rod as well as a seat for the compression spring 66 which surrounds the pull rod and has the opposite end bearing against washer 68 which is in abutting engagement with the clevis ends. A short length

of tube 70 is loosely mounted on the slide rod within the spring and forms a stop preventing any excessive movement of the slide rod. The pull rod is formed at its outer end with suitably shaped control knob or handle 72 which is normally carried in an out-of-the-way position beneath the arm rest.

The operation of the mechanism just described is as follows and assuming the seat back to be in its normal upright position in which position stop 18 is in engagement with tooth wedge 46 carried by the locking member: A pull exerted on the operating knob of the slide rod will cause the locking member to rotate outwardly about its pivot pin 32 disengaging the wedge 46 from the teeth 16, thus freeing the control arm and permitting the back to be moved to any inclined position desired. After the back has been moved to the desired position release of the operating knob will permit the locking member to be forced by compression spring 66 against the teeth of the control arm.

In Figs. 4 and 5 the mechanism is shown as applied to an open end type of seat and since the major portion of the mechanism and its mounting are identical with that previously described, like reference numerals have been used to designate like parts. In this form the lug 52 is removed either by machining, by modification of the mold or otherwise and the block 38 drilled in order to receive the lower end of operating handle 80 held in place by pin or other means 82. This operating handle extends upwardly through slot 84 formed in the seat frame and through slotted finishing plate 86 which also clamps the upholstery in position. The seat frame is provided at the upper portion with projecting rib 88 having formed thereon centrally positioned lug 90 adapted to receive and position one end of compression spring 92, the opposite end of which engages the locking arm and is held in position by lug 50 previously mentioned. The operation of the mechanism just described is identical with that described in connection with Figs. 1 to 3 inclusive with the exception that the locking member is operated directly by a substantially horizontal application of pressure to the operating handle 80.

In both of these forms it is seen that the control arms are identical and that the same pattern may be used for the locking member since the only change in the locking members is the manner in which the operator is attached thereto. In the mechanism described it is obvious that the tapered member 46 is constantly urged into engagement with the teeth of the control arm by means of a compression spring, thus maintaining the contact tight and free from relative movement. With the teeth positively held without any chance of movement, the only location at which freedom of movement permitting vibration of the back may occur is at the pivot 32, such movement may be easily overcome by careful workmanship at this point.

While the mechanism has been described in more or less detail, it is obvious that various changes may be made and such changes and modifications are contemplated as fall within the scope of the following claims.

What is claimed is:

1. In a car seat including end frames, a seat back pivotally supported by the end frames, and means for securing the seat back in adjusted position comprising a control arm rigidly secured to and projecting forwardly from the seat back, a plurality of teeth carried on the forward end of the control arm, a locking member for the control arm pivoted at its lower end to said frame and having teeth engaging means formed intermediate its ends, spring means constantly urging said locking member into engagement with the teeth on said control member, guide means carried by said locking member below said teeth engaging means and extending rearwardly for confining portions of said control arm, and operating means connected to the upper end of said locking means.

2. In a car seat including end frames, a seat back pivotally supported by the end frames, and means for securing the seat back in adjusted position comprising a control arm rigidly secured to and projecting forwardly from the seat back, a plurality of teeth carried on the forward end of the control arm, a locking member for the control arm pivoted at its lower end to said frame and having teeth engaging means formed intermediate its ends, guide means carried by said locking member below said teeth engaging means and extending rearwardly for confining portions of said control arm, and operating means for said locking means including a clevis member and pull rod, said clevis member being pivotally connected at its closed end to the upper end of said locking member and pivotally engaging said pull rod at its open end, a stop member on said pull rod seated against the extremities of said clevis, and a spring on said pull rod between said end frame and stop member normally urging said locking member into engagement with said control member.

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