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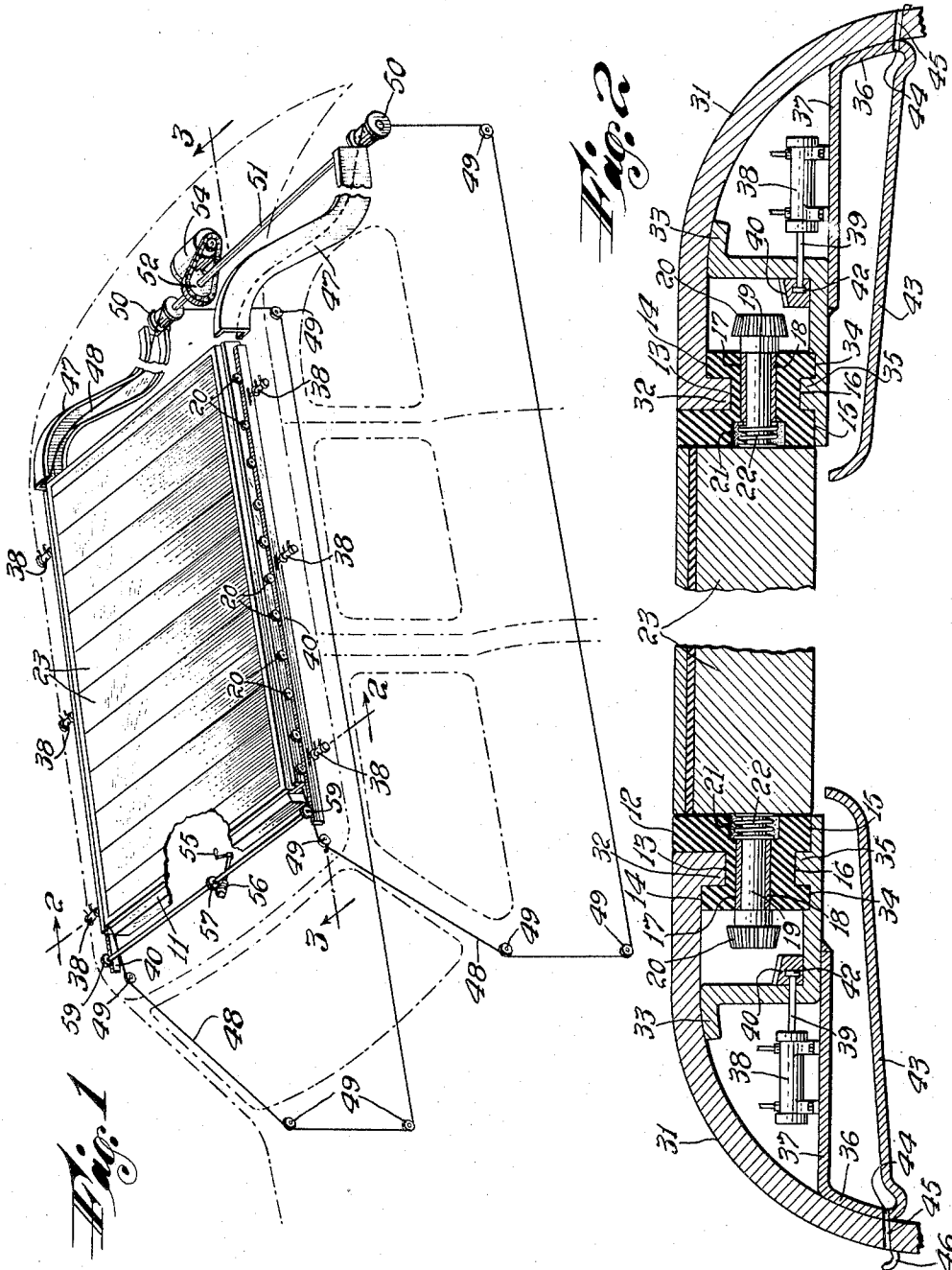
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RETRACTABLE MOTOR VEHICLE TOP

Filed Aug. 23, 1954

2 Sheets-Sheet 1



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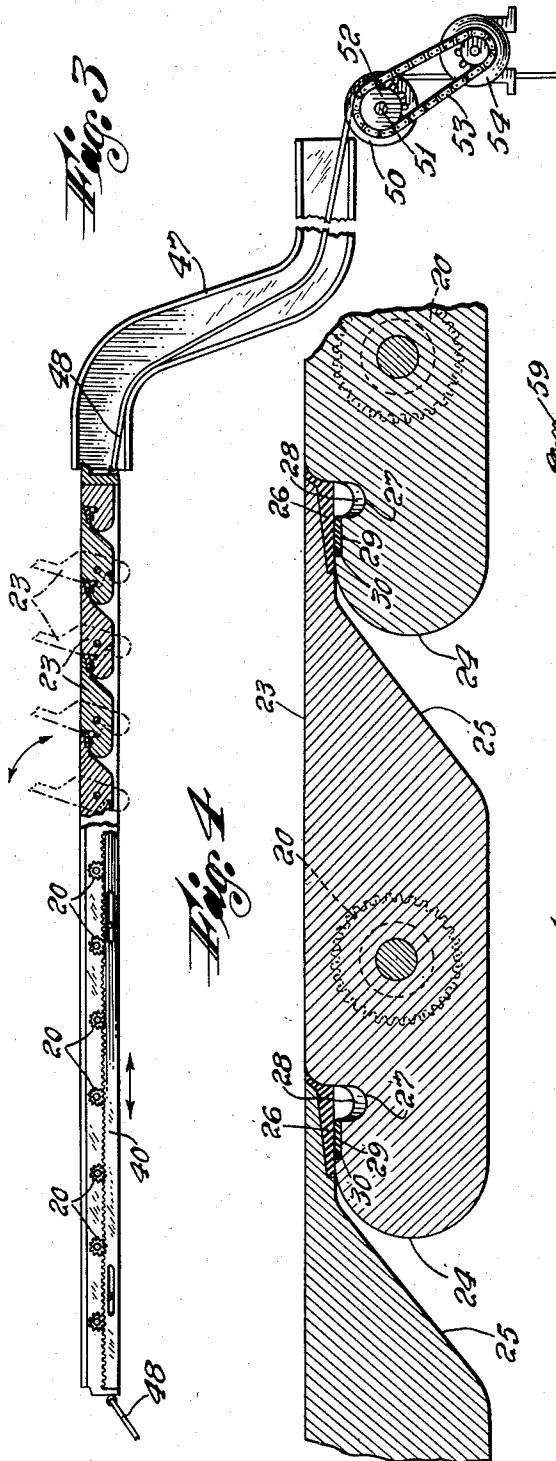
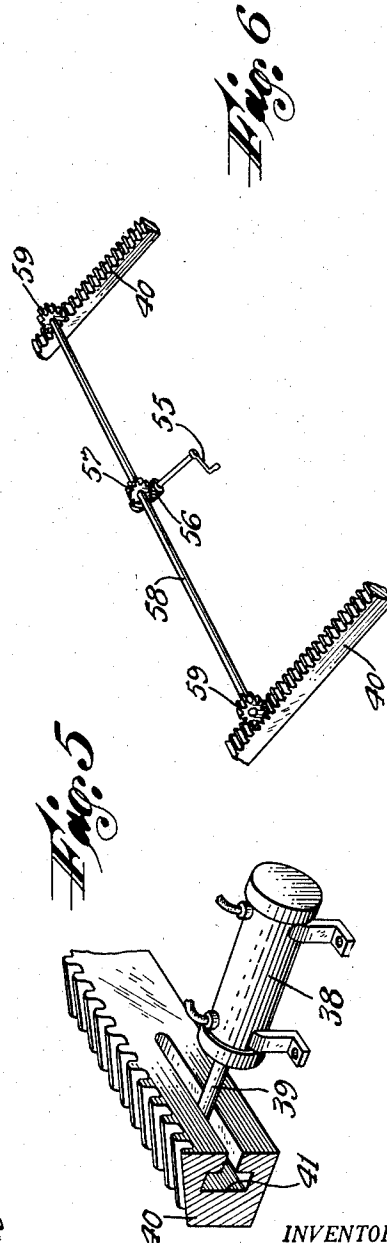
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RETRACTABLE MOTOR VEHICLE TOP

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2 Claims. (Cl. 296—137)

My invention relates generally to retractable motor vehicle tops and specifically, to retractable motor vehicle tops having a slatted construction in which the individual slats may be opened, closed, or entirely withdrawn as a whole to leave the opening in the roof of the motor vehicle entirely free to the access of light and air.

It is among the objects of my invention to provide a relatively weather-proof slatted motor vehicle top.

It is among the further objects of my invention to provide a slatted motor vehicle top which may be opened and closed to the desired degree so that the slats may be disposed at the angle of choice.

It is a further object of my invention to provide a slatted motor vehicle top which may have its slats entirely withdrawn from the opening of the motor vehicle leaving it entirely free to the access of light and air.

It is among the further objects of my invention to provide a slatted motor vehicle top which is relatively durable, easy to control and easy to maintain.

These objects and advantages, as well as other objects and advantages, may be achieved by the device illustrated in the drawings in which

Figure 1 is a view in perspective showing the general organization.

Figure 2 is a cross-sectional view taken on the line 2—2 in Figure 1.

Figure 3 is a cross-sectional view taken on the line 3—3 in Figure 1.

Figure 4 is a cross-sectional view of a series of slats.

Figure 5 is a view in perspective of a hydraulic cylinder and a beveled-gear rack.

Figure 6 is a view in perspective of the control for the beveled-gear racks.

Referring now to the drawings in detail, my retractable auto top provides a rectangular frame 11. The frame 11 is formed of flexible resilient material such as rubber so that it may bend if moved along a curved track. The top face 12 of the frame 11 is provided with a channel 13 and an end portion 14 which defines the outer extremity of the channel 13. The bottom 15 of the frame 11 is provided with a channel 16. At suitable intervals in the rectangular frame 11 extending in a horizontal direction from one side to the other, passages 17 are provided each of which accommodates a bushing 18. In each of these passages a shaft 19 is rotatably positioned. Beveled gears 20 are attached to the outer end of the shaft 19. On the inner face of the frame, annular cavities 21 are provided. The shaft 19 carries a spring 22 which is positioned in the cavity 21. Slats 23 are mounted on each shaft and the corresponding opposite shaft 19. They are connected to one end of the spring and the other end of the spring 22 is attached to the bushing 18. The springs 22 normally urge the slats to closed position in engagement with the adjacent slats 23.

The slats 23 are preferably formed of relatively hard material such as aluminum, or a plastic substance. The slats have a rounded front end 24 and a tapered rear lower end 25. This tapered end 25 has a cut-out portion

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to which there is adhesively secured a resilient insert 26 which is conformed to engage the next succeeding slat 23. The front end 24 of each slat is provided with a longitudinal channel 27, having a high point 28 at the center. Immediately in front of this longitudinal channel 27, there is another cut-out portion 29 in which there is seated a resilient insert 30 to engage the opposite resilient insert 26 on the preceding slat 23. It will be seen that when the slats 23 are disposed horizontally in overlapping relationship with each other the inserts 26 and 30 form a tight seal making the top weathertight.

The rectangular frame 11 is intended to be seated in close engagement with the roof of a motor vehicle. To that end the roof 31 is provided at its inner end with a downturned portion 32 which is engaged with the channel 13 of the rectangular frame 11. A bracket 33 is attached to the under portion of the roof 31 and is provided with a channel 34 that receives the bottom of the frame 11. The bracket is also provided with a ridge 35 to engage the channel 16. It will be seen that the rectangular frame 11 is thereby closely but slidably engaged between the roof 31 and the bracket 33. An auxiliary bracket 36 is also attached to the roof and its mid portion. This auxiliary bracket has an upper arm 37 which is attached to the bracket 33. Upon this upper arm is mounted a double-acting hydraulic or air cylinder 38. The piston rod 39 extending from the cylinder 38 passes through the bracket 33 and is attached to a beveled-gear rack 40. The gear rack has a T-shaped channel 41. The piston rod 39 has a head 42 which slides in this channel. When the rack 40 is advanced to engage the beveled gear 20, any forward or backward movement of the rack will cause a rotation of the shafts 19 and a corresponding movement of the slats 23. Upon retraction of the racks 40, so that they are disengaged from the beveled-gears 20, the rectangular frame may be moved independently of the racks.

The auxiliary bracket 36 also has a lower arm 43 which extends inwardly to a point beyond the end of the slats 23. This lower arm 43 serves as a catch basin for any moisture seeping through the slats 23 and conducts the water to the inner end of the bracket where there is a hole 44 communicating with a hole 45 in the roof 31 which, in turn, conducts any rain to the external channel gutter 46.

As has been noted, the springs 22 normally maintain the slats 23 in a closed position. At the rearward end of the frame 11, a curved track 47 is provided on the inside of the motor vehicle body, it substantially conforms to the shape of the rear portion of the motor vehicle body. Since the rectangular frame 11 is flexible, the rectangular frame may ride down this track 47 until it is substantially completely positioned inside the rear portion of the motor vehicle body in the trunk. This leaves the top of the motor vehicle completely open. The movement of the frame 11 is accomplished by a cable 48 which is attached to the frame at the front end and runs over a series of pulleys 49 until it reaches a spool 50 around which it is wrapped several times, finally being secured to the rear end of the frame 11 after running through the track 47. The spool 50 is mounted on a shaft 51 which carries a sprocket wheel 52. A chain 53 connected to a reversible motor 54 serves to rotate the shaft 51 whereby the chain may be moved forwardly or rearwardly as may be desired. Obviously, the motor 54 should only be operated when the beveled-gear track 40 is disengaged from the beveled-gears 20.

When the double-acting hydraulic or air cylinders 38 have caused the beveled-gear track to engage the beveled-gears 20, movement of the beveled-gear tracks 40, will cause the rotation of the beveled-gears 20. The degree

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of such movement will cause the slats 23 to open in part or fully to expose the interior of the motor vehicle and permit the circulation of air. The movement of the beveled-gear tracks is controlled by a crank 55 which has a worm gear 56 mounted on the end of its shaft. This worm gear engages a gear 57 mounted on a shaft 58. At each end of this shaft beveled-gears 59 are provided which engage the racks 40 so as to move them backward and forward (as may be required) on the heads 42 of the piston rods 39.

The operation of my retractable motor vehicle top is as follows:

When it is desired to partially ventilate the interior of the motor vehicle and to admit air or light, the cylinders 38 are actuated to advance and engage the gear racks 40 with the beveled-gears 20. The crank 55 is turned, which causes the racks 40 to move and rotate the gears 20. This rotates the shafts 19 upon which the slats 23 are mounted and causes them to open a suitable degree. If the hydraulic cylinder is then actuated to disengage the beveled rack from the beveled-gears 20, the slats 23 then spring to closed position by reason of the action of the springs 22 which normally urges them to that position.

When it is desired to completely open the top of the motor vehicle, the motor 40 is energized. This motor is of reversible type and its rotation causes a turning of the shaft 51 which operates the cable 48 on the pulley 50 to pull the flexible frame 11 which carries the slats 23 down the track 47 into the rear portion of the trunk. Thus, the entire top of the motor vehicle is open without any obstruction from the slats 23. When it is desired to enclose the top of the motor vehicle, the motor 54 action is reversed and the cable pulls the flexible frame along the track 47 and into its final position and resting place in the opening in the top of the motor vehicle. By reason of the resilient inserts 30 and 26, the slats are disposed in touching relation to each other in a relatively weather-proof manner. Any rain, however, intruding between the slats will be carried off through the channels 27 and discharged onto the lower arm 43. Any rain entering the slats at their outer edges will also be deposited in the lower arm 43 which acts as a rain gutter to carry off such intruding moisture.

The foregoing structure is intended merely as illustra-

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tive of an embodiment of my invention. Many changes may be made in the construction, selection and arrangement of the various parts all within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. A retractable motor vehicle top comprising an open, flexible frame, a curved track adaptable to slidably receive the flexible frame, a plurality of slats rotatably attached transversely across the frame said rotatable attachment permitting the slats to move to and from a shuttered position, a spring for each of the slats normally urging it to shuttering position with respect to the opening in the frame, gears attached to each of the slats, a rack engageable and disengageable with the gears, and means for moving the rack, to engage with the gears.

2. A retractable motor vehicle top comprising an open flexible frame with top and bottom channels adapted to be slidably engaged by the top of a motor vehicle, a plurality of shafts in the sides of the frame, a plurality of coacting slats disposed transversely with respect to the frame and mounted on the shafts with edges disposed in overlapping relationship to each other, a curved track having an internal cavity adapted to receive the frame, a cable attached to opposite ends of the frame, a means for pulling the cable in either direction, springs normally disposing the slats in shuttering relation to the frame, gears on the ends of the shafts, racks engageable with the gears, means for moving the racks whereby the slats are caused to open and close.

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