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**United States Patent** [19]  
**Cottrell et al.**

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[45] **Date of Patent:** **May 24, 1994**

- [54] **SAFETY TIE-DOWN ROLLER**
- [75] **Inventors:** **D. Michael Cottrell; Don J. Cottrell,**  
both of Gainesville, Ga.
- [73] **Assignee:** **Cottrell, Inc.,** Gainesville, Ga.
- [21] **Appl. No.:** **874,395**
- [22] **Filed:** **Apr. 27, 1992**
- [51] **Int. Cl.<sup>5</sup>** ..... **B60P 3/079**
- [52] **U.S. Cl.** ..... **410/26; 410/12;**  
410/103
- [58] **Field of Search** ..... **410/11, 12, 26, 100,**  
410/102, 103

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*Assistant Examiner*—Gregory A. Morse  
*Attorney, Agent, or Firm*—James A. Hinkle

[57] **ABSTRACT**

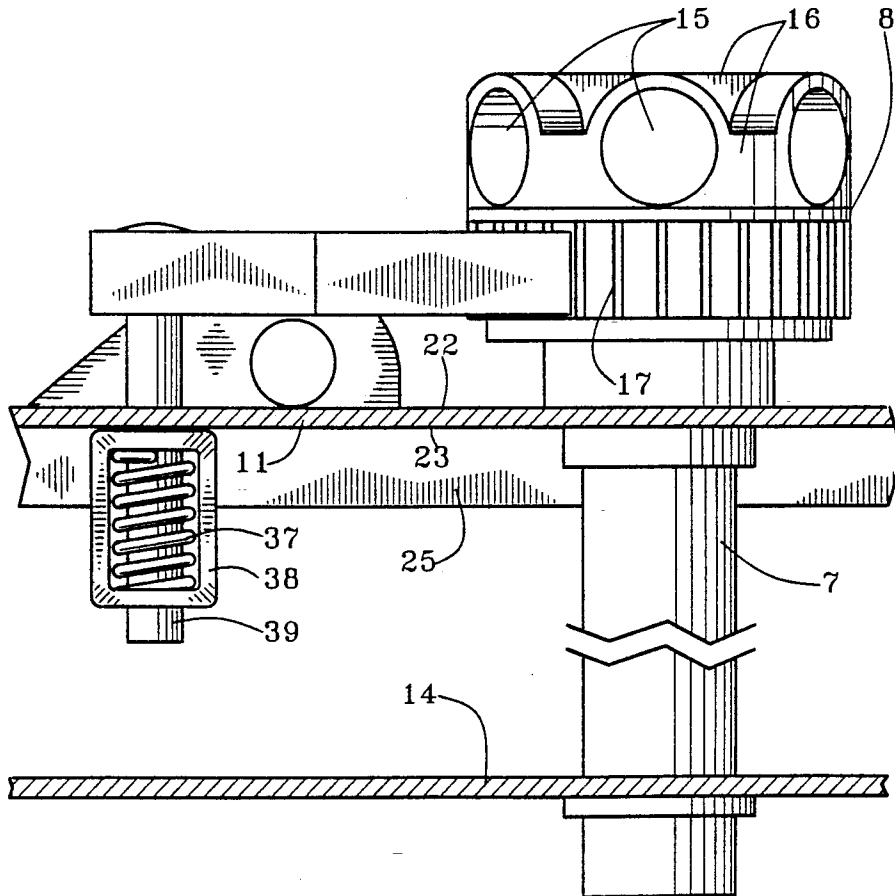
A safety tie-down roller (1) has a spring laden ratchet pawl (9) positioned at an opposite side of structural framework (11) from a ratchet gear (8) and its related working conditions. A handle (33, 34, 35) is provided to release the ratchet pawl (9) against pressure of a spring (20, 37, 40, 42) for unloading cars and for straightening out chain to prevent loosening hazards. A wrench socket (45, 46, 51) is provided in addition to bar wrench apertures (15) for fast ratchet wrench rotation or optionally for motorized wrench rotation of the tie-down ratchet gear (8). Accurate torque control is made possible by the wrench sockets with either a hand torque wrench or a motorized torque wrench. Adapter plates (47, 49) are provided in addition to convenient forms of special hand wrenches (57, 58, 60). A non-lubricated hard bearing (26-29) for a tie-down rod (7) is attachable to car ramp structural members (12) of carrier vehicles (3, 4) without adversely affecting metal temper or causing distortion hard bearing surfaces (26, 27) from welding heat.

[56] **References Cited**

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**15 Claims, 7 Drawing Sheets**



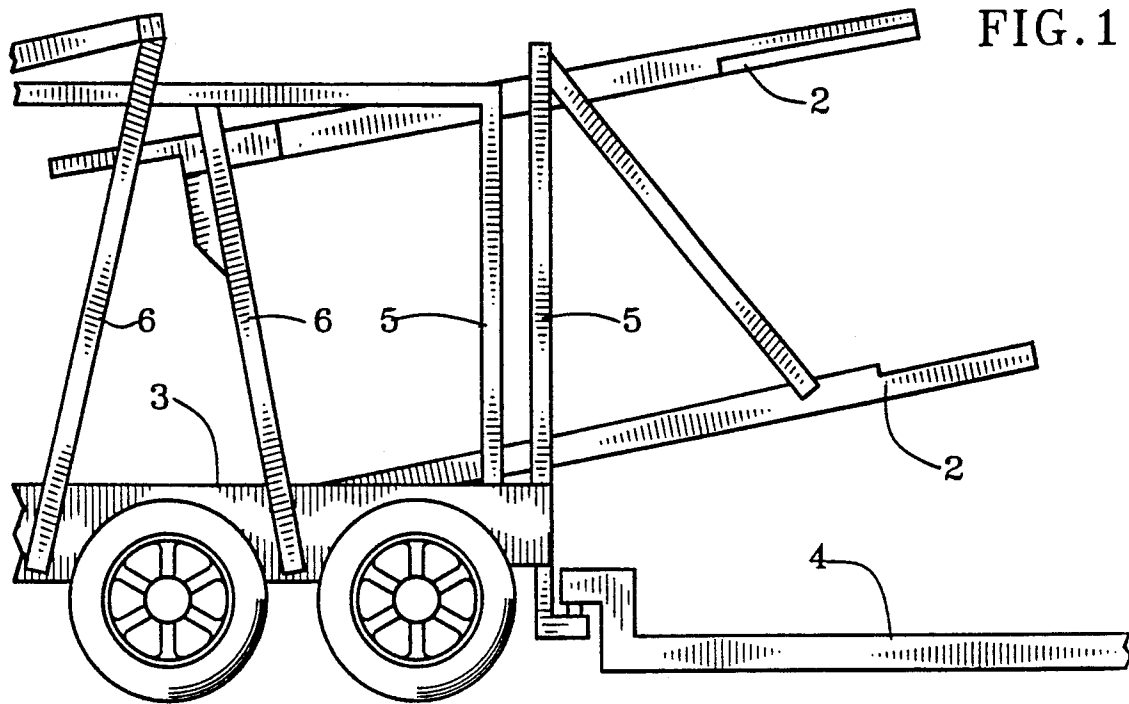


FIG. 1

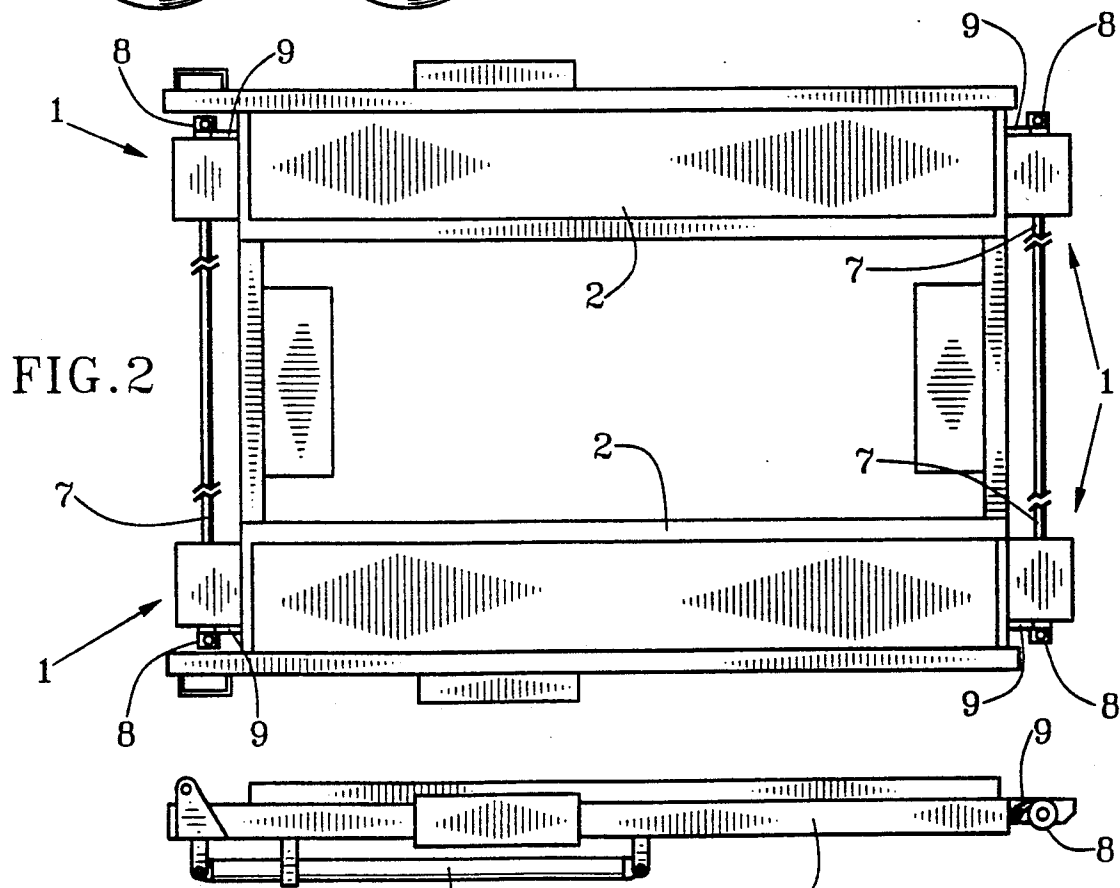


FIG. 2

FIG. 3

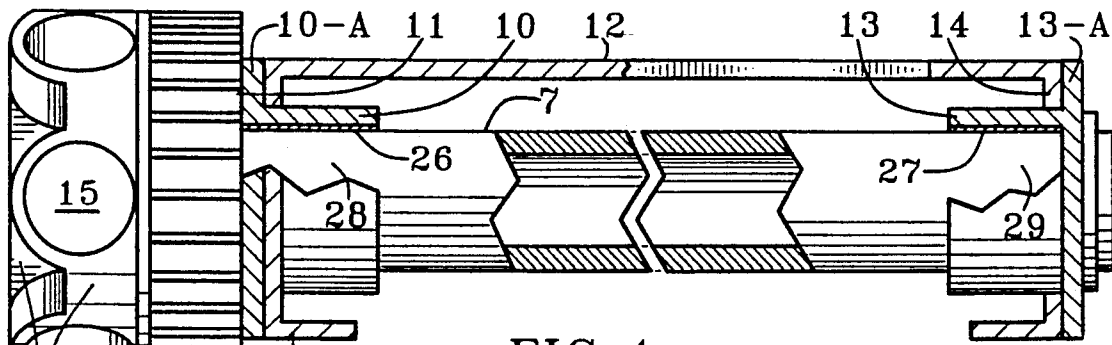


FIG. 4

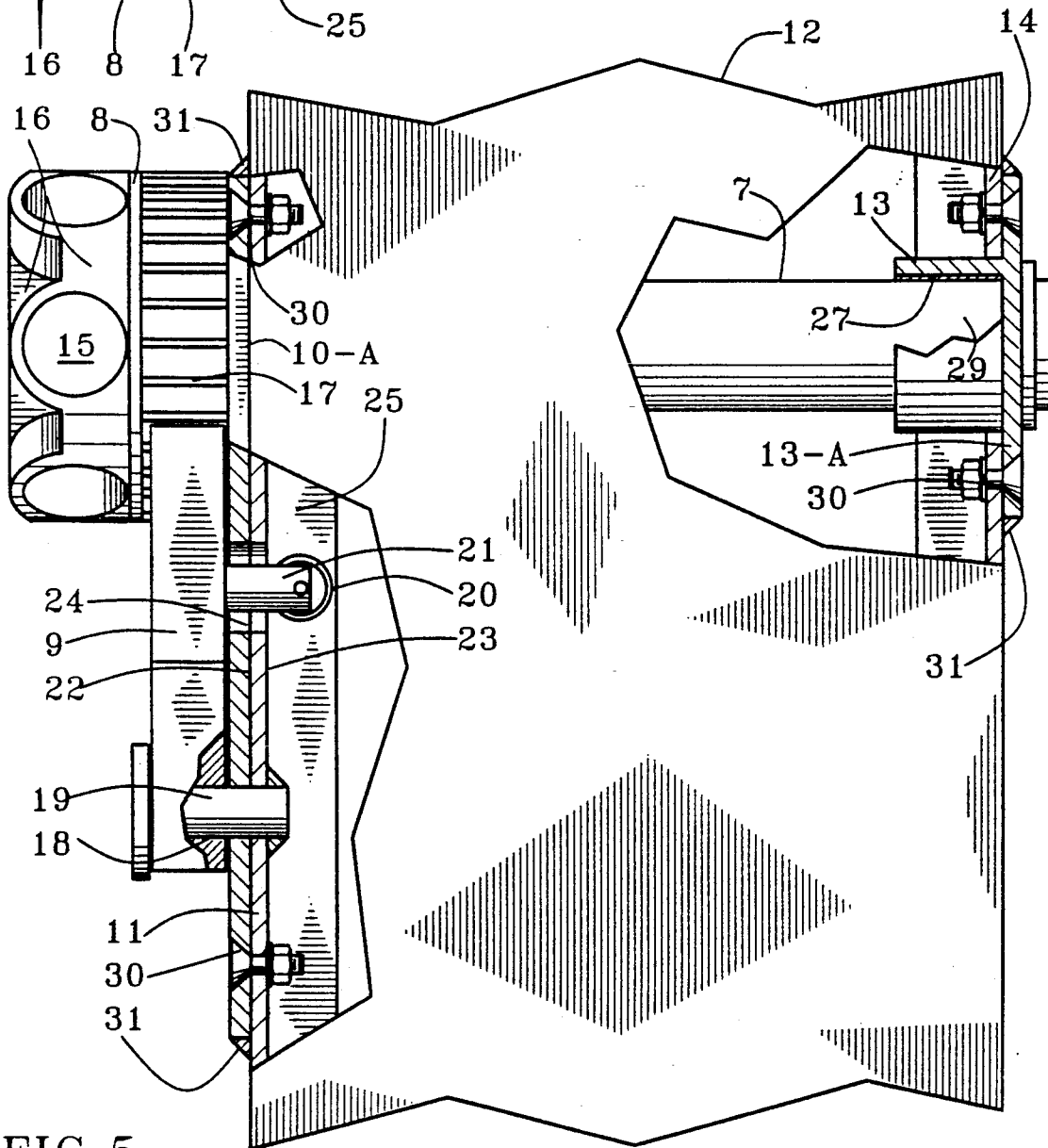


FIG. 5

FIG. 6

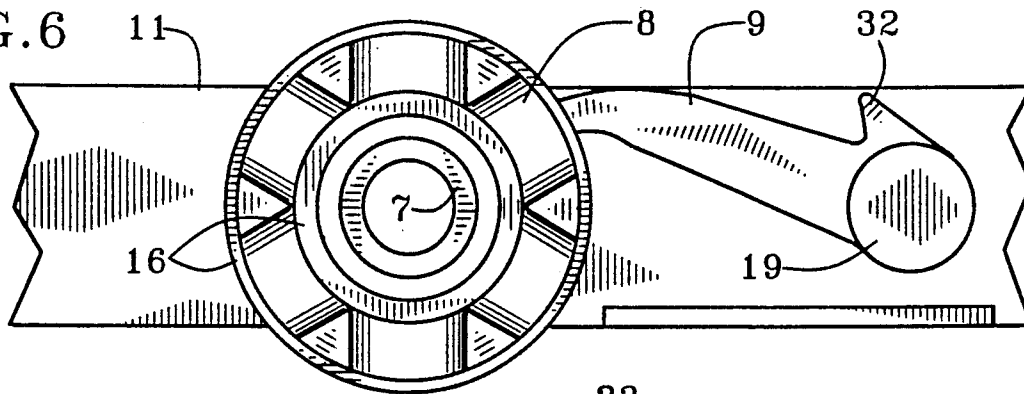


FIG. 7

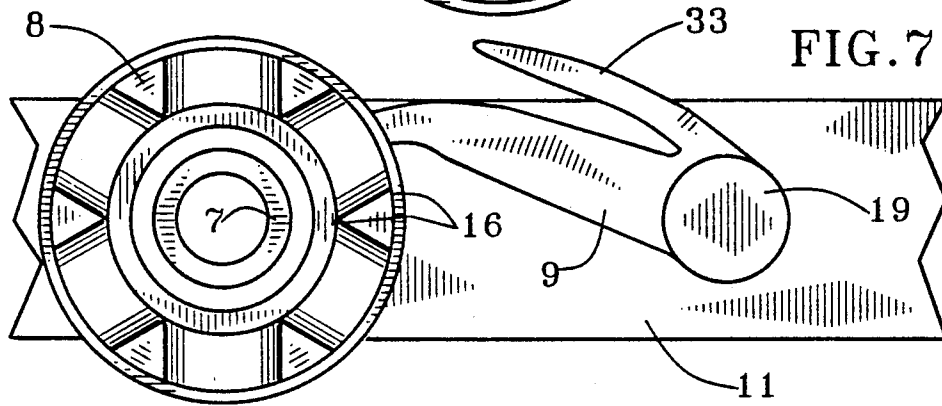


FIG. 8

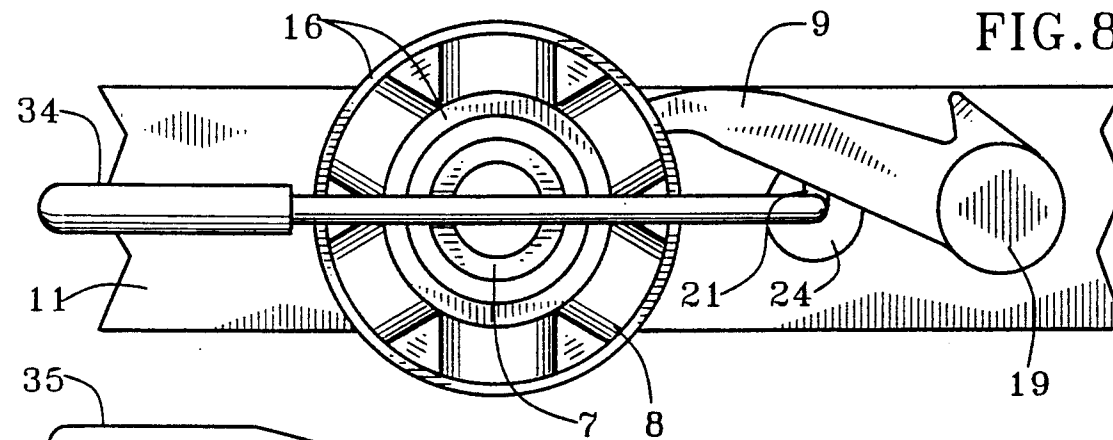


FIG. 9

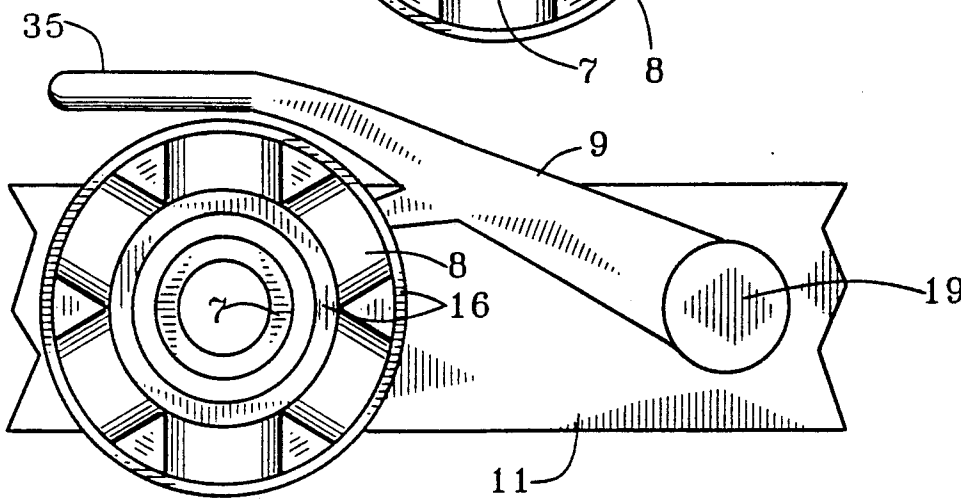


FIG. 10

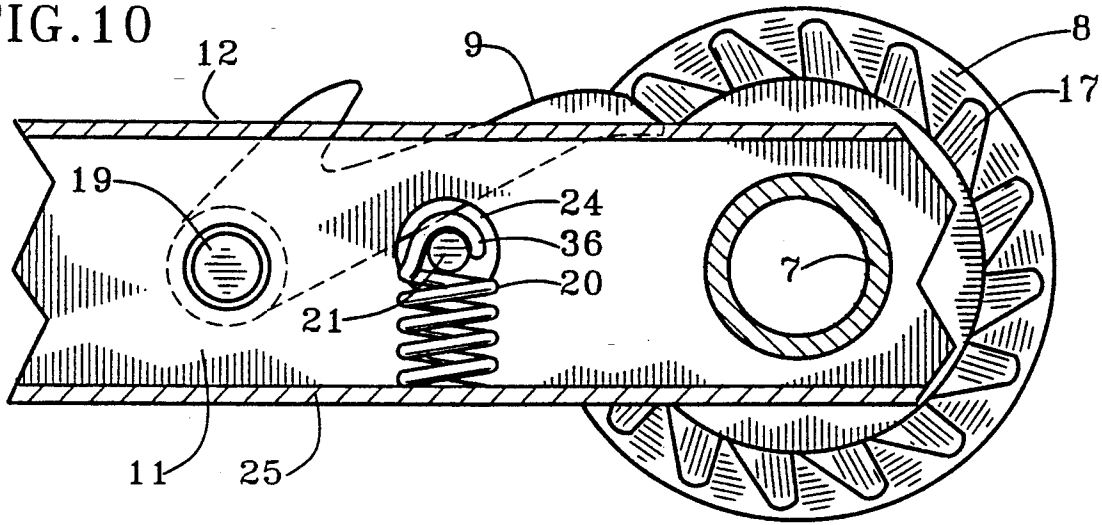
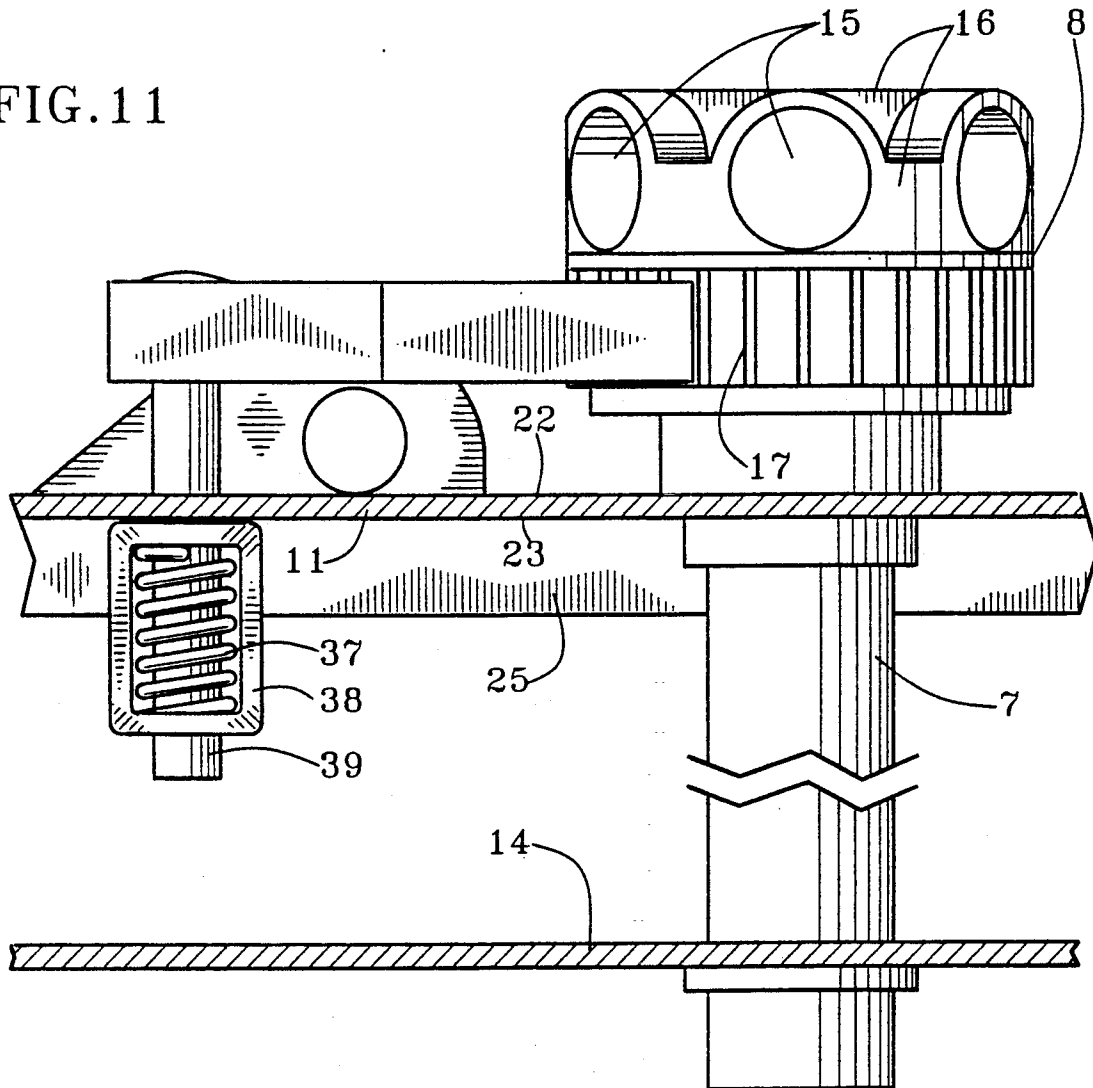


FIG. 11



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