

- [54] WRAP SPRING SHADE OPERATOR
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- [51] Int. Cl.⁷ **E06B 9/56; F16D 13/08**
- [52] U.S. Cl. **192/223.4; 192/41 S; 192/81 C; 160/298; 160/321**
- [58] Field of Search **192/223.4, 41 S, 192/81 C; 160/298, 321; 188/82.6, 77 W; 267/155**

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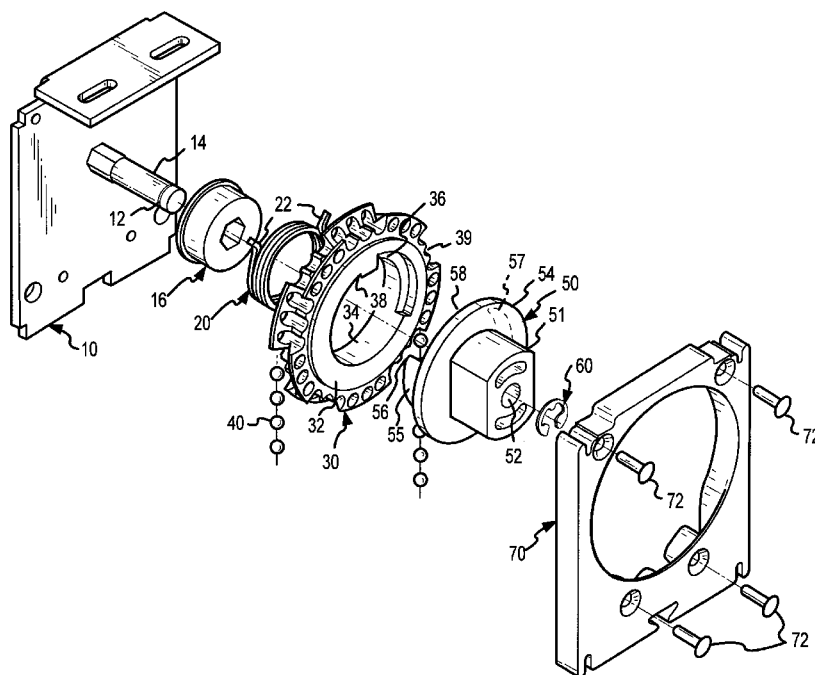
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[57] **ABSTRACT**

A shade positioning system which employs a wrap spring clutch system includes a shade operator, a shade roller, and an idle end bracket for supporting the shade roller when mounted. The shade operator includes a self-lubricating central stud around which a helical coil spring is wrapped, a manually operated pulley mounted on the wrap spring, and a support bushing to ensure positive engagement of the aforementioned elements. The central stud is composed of a plastic or metal, which allows the smooth rotation of the wrap spring around the stud. The tangs of the wrap spring project substantially radially outward from the spring central axis, and are shaped to accommodate for the coefficient of friction between the stud and the spring. A first preferred spring construction allows for decreased spring surface area to contact the stud. A second preferred spring construction allows for an increased spring surface area to contact the stud. Further, the bushing is provided is with a projection which engages the wrap spring due to the weight of the shade. This engagement causes the spring to further grip the stud preventing pulley rotation.

12 Claims, 8 Drawing Sheets



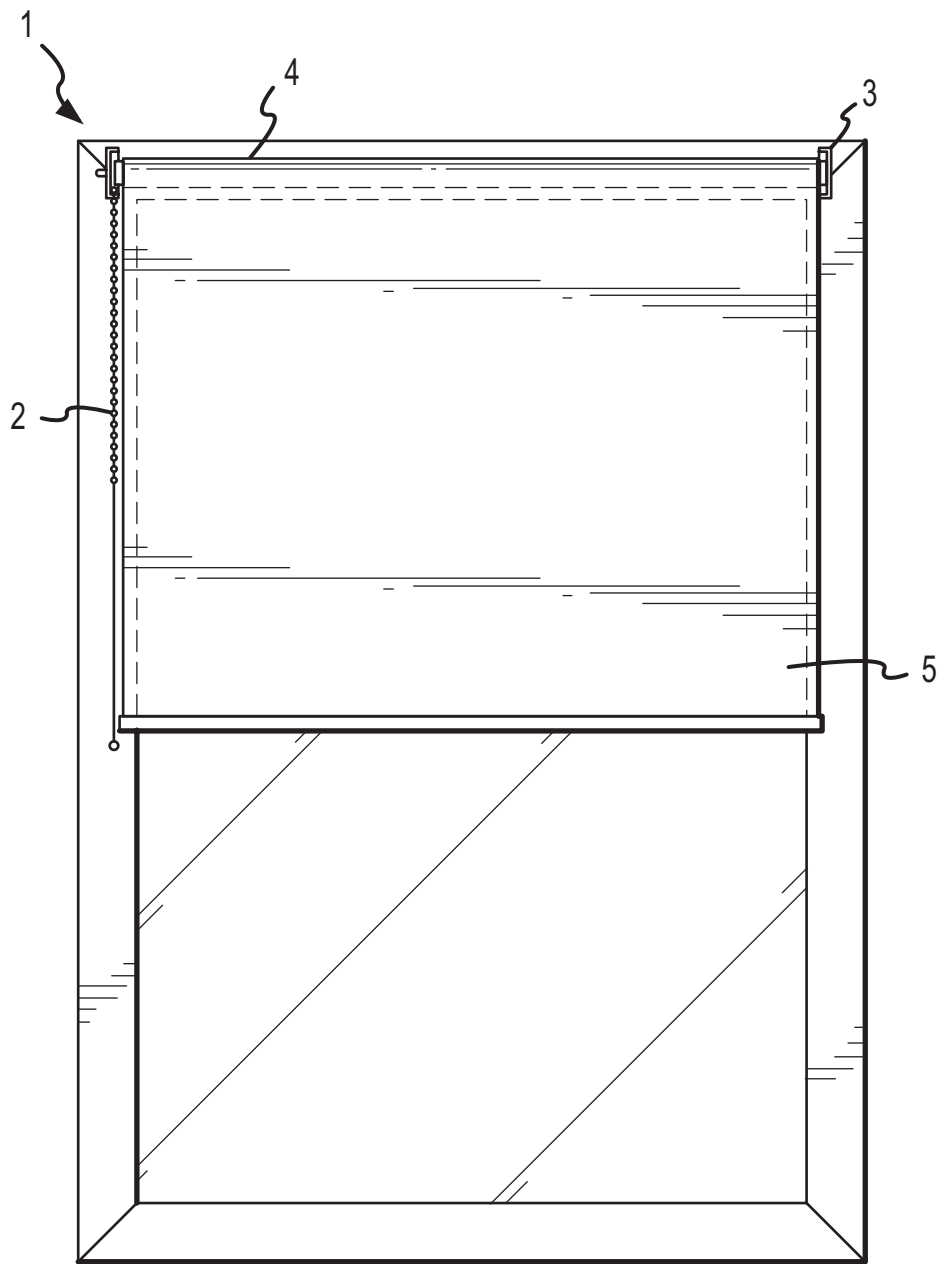


FIG. 1

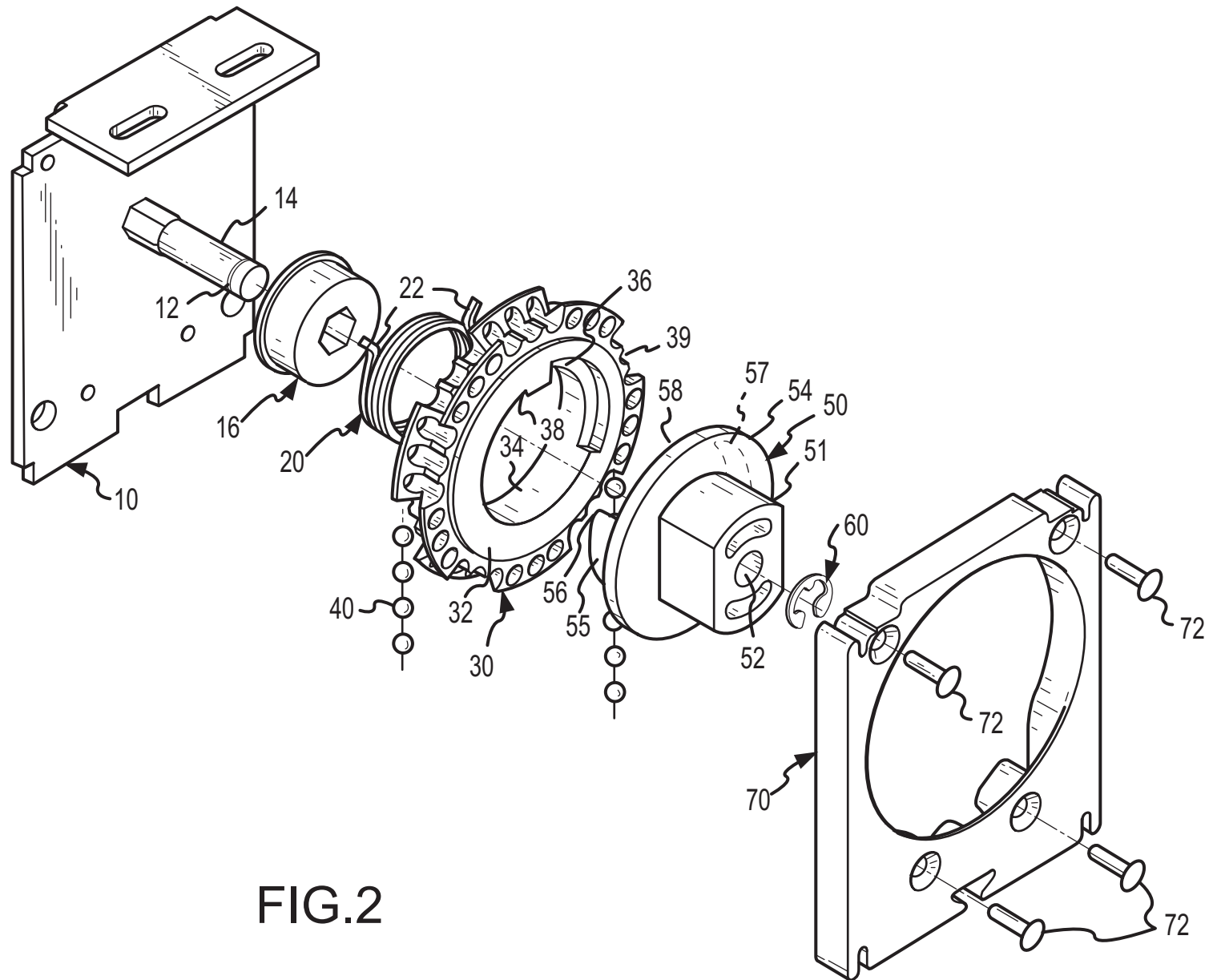


FIG.2

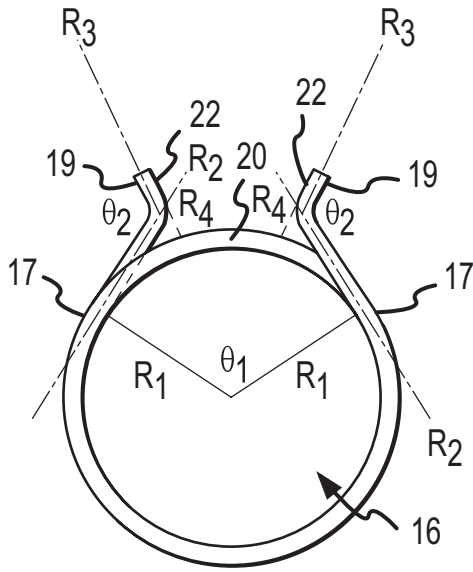


FIG. 3

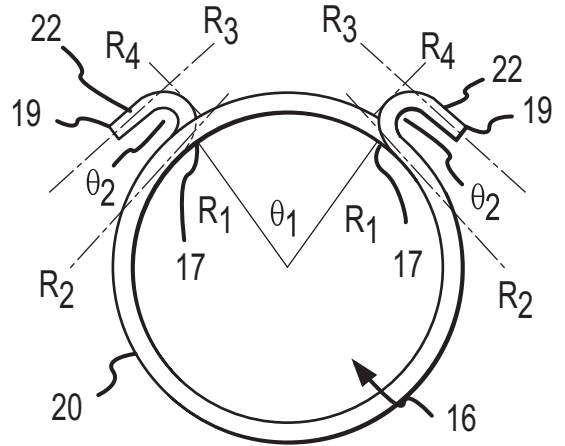


FIG. 4

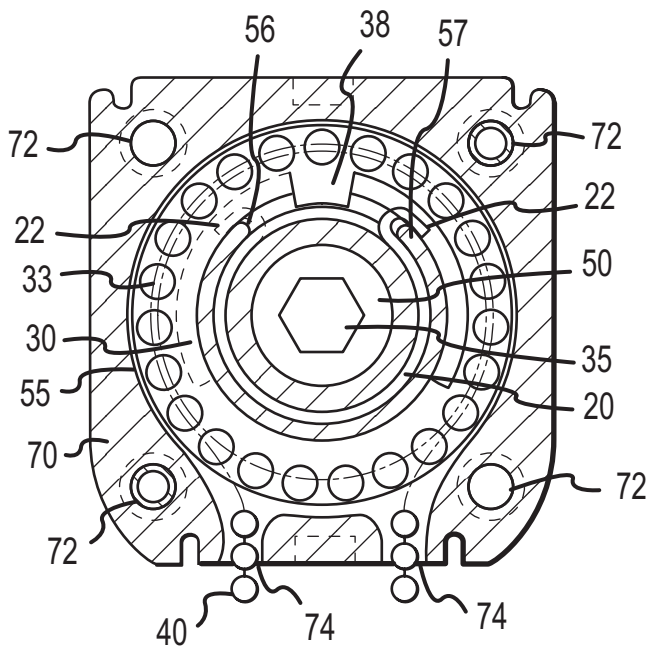


FIG. 9

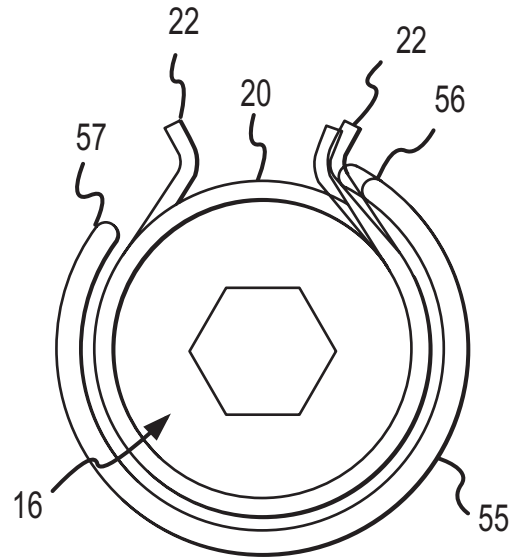


FIG. 10

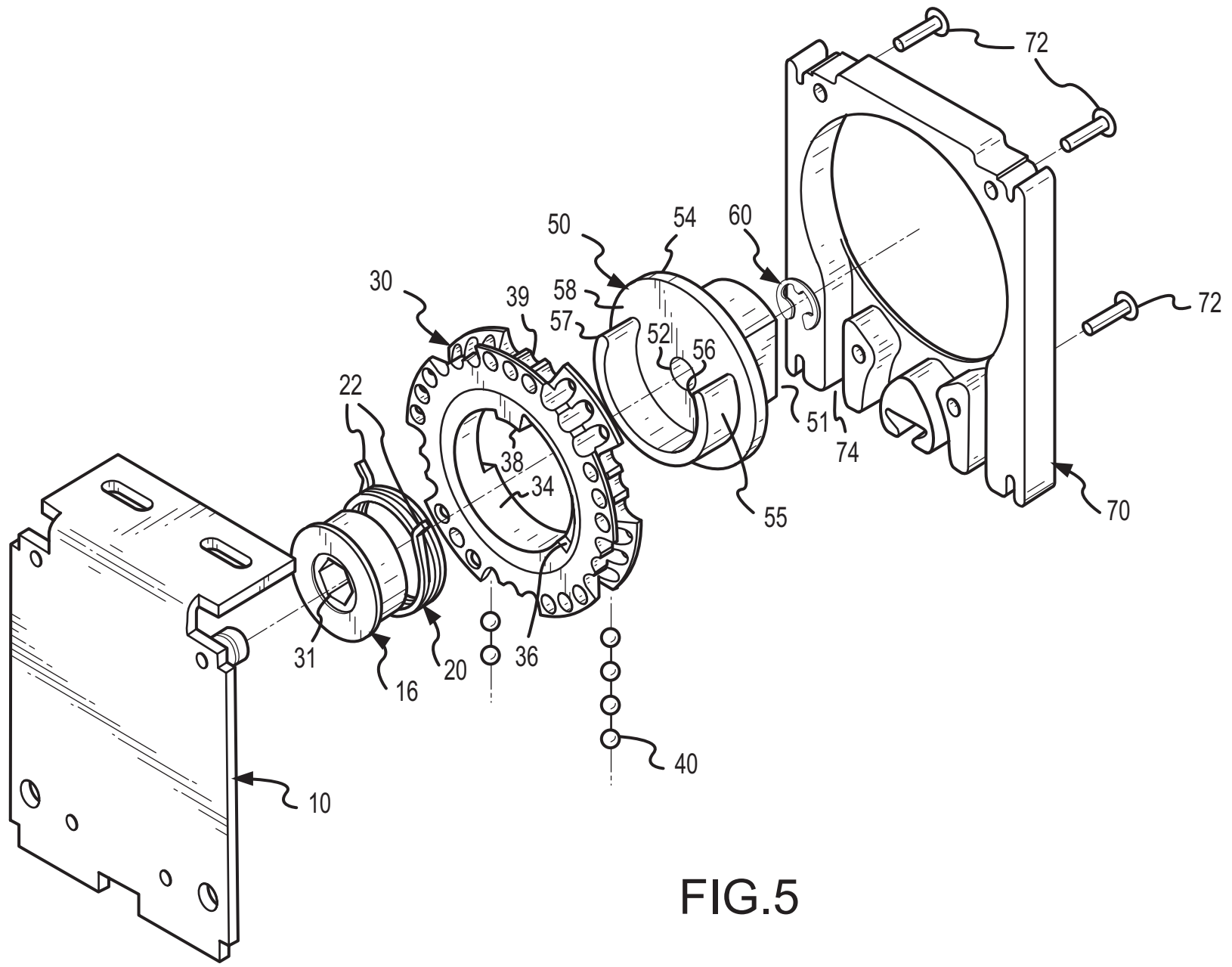


FIG.5

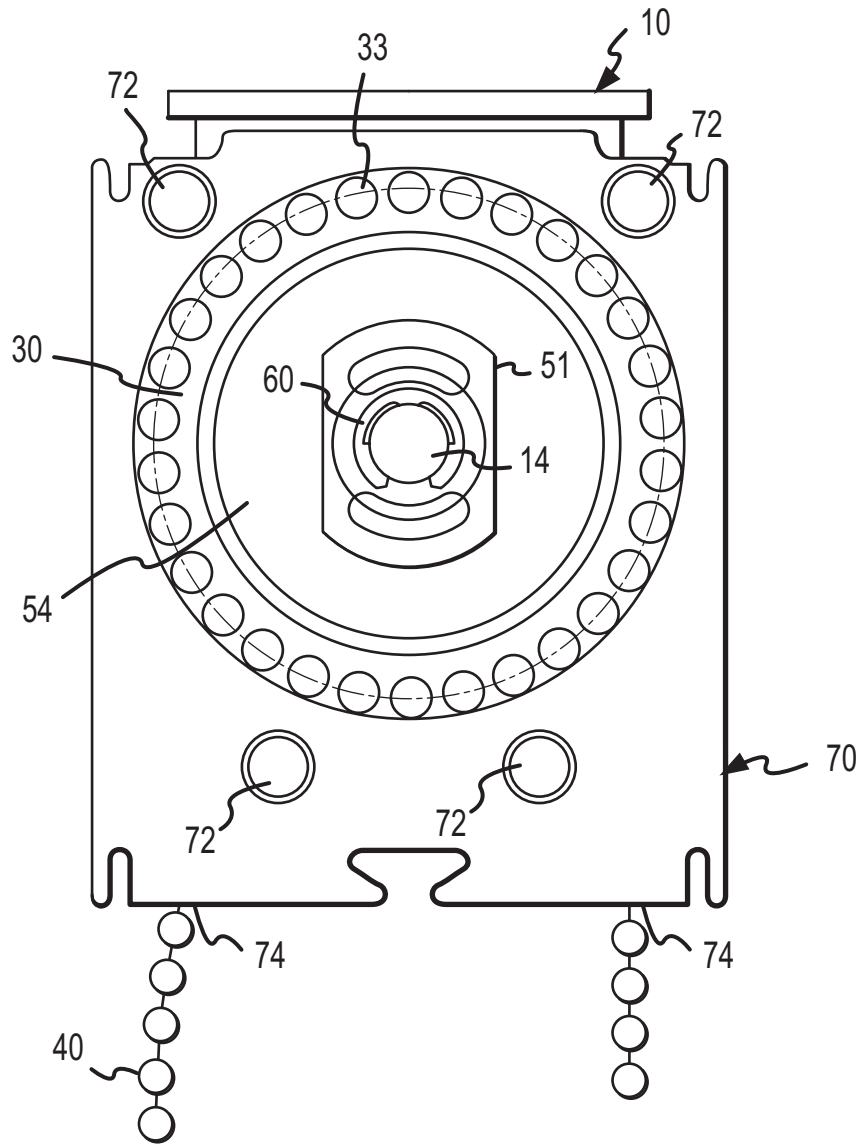


FIG.6

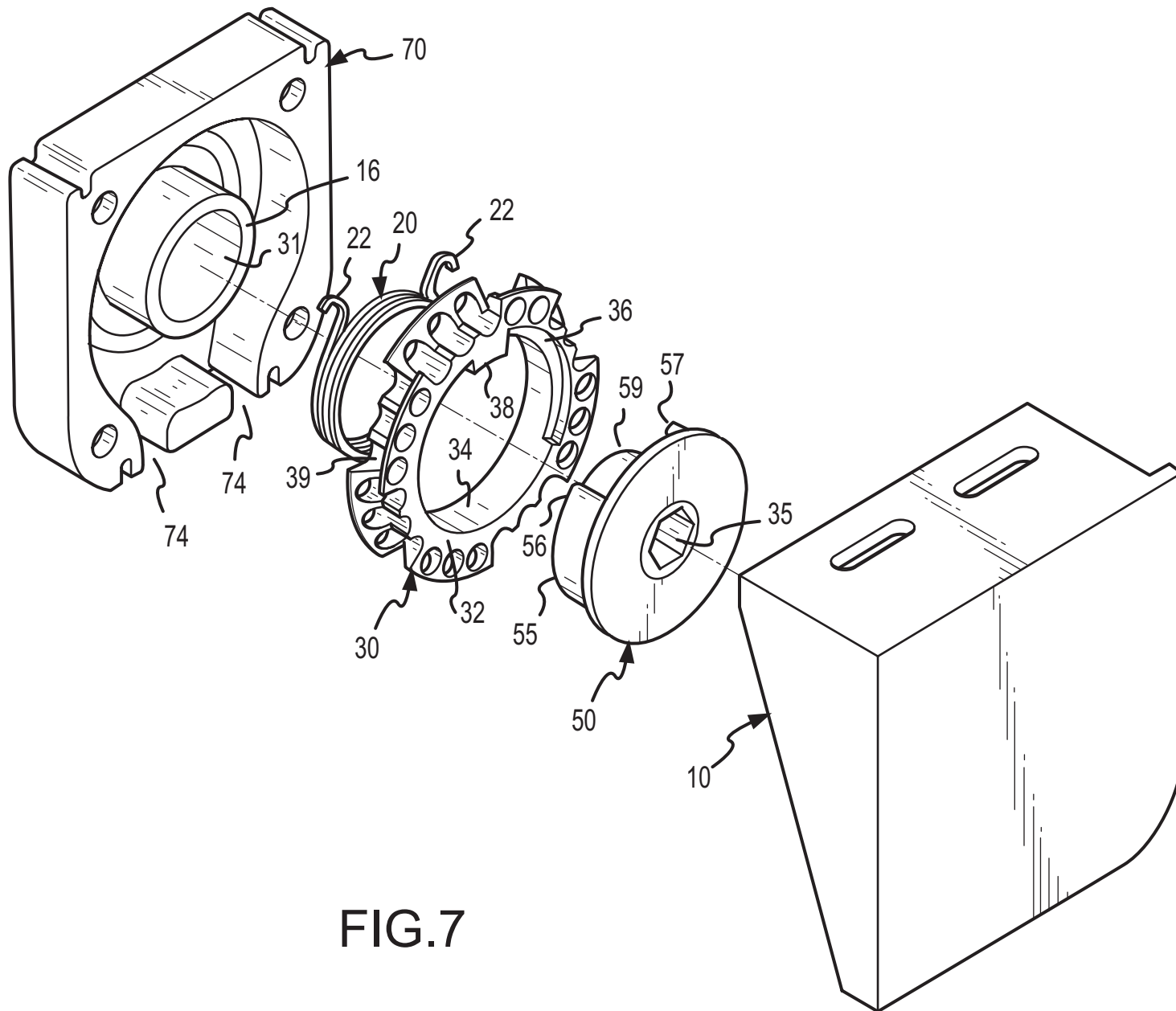


FIG. 7

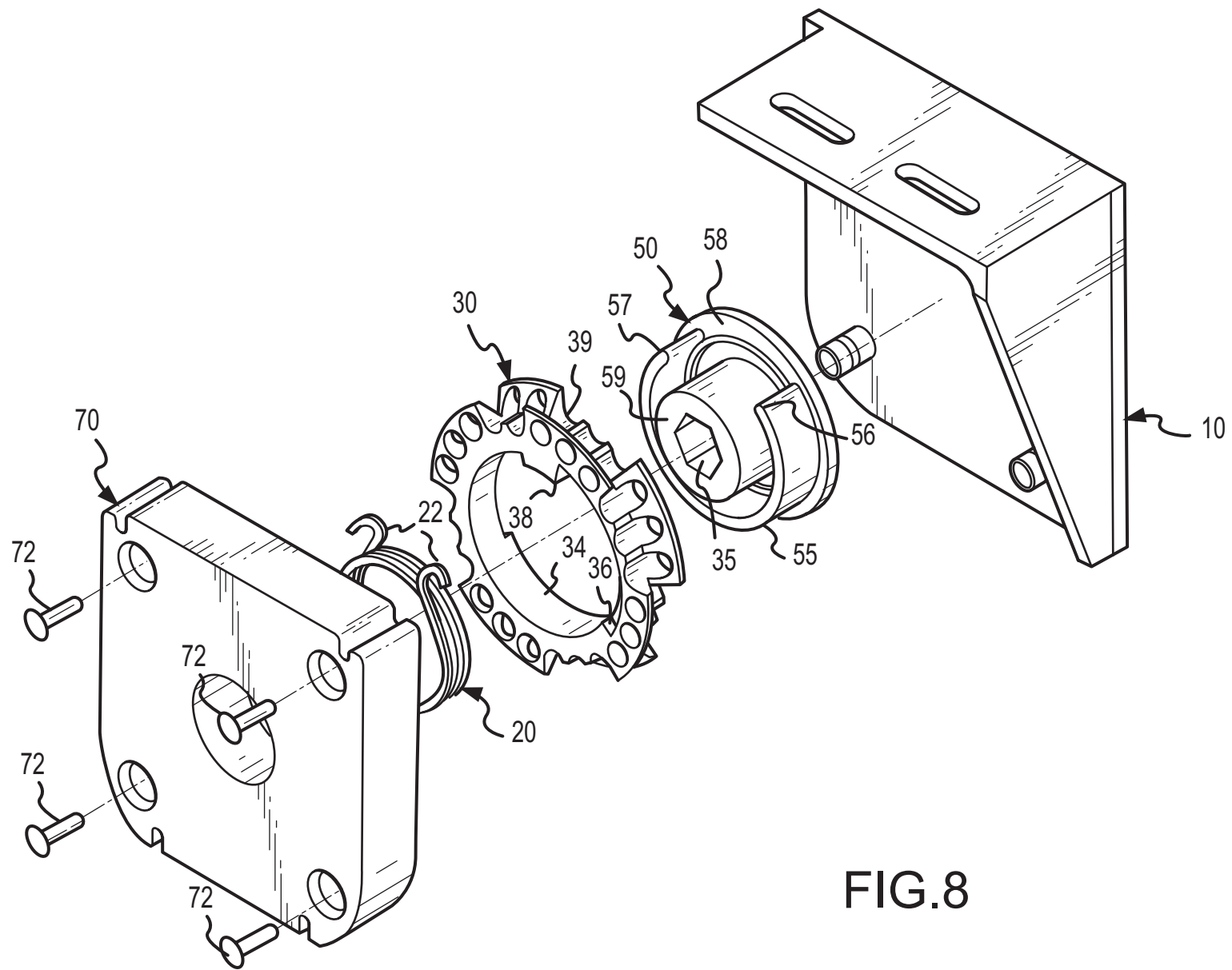


FIG.8

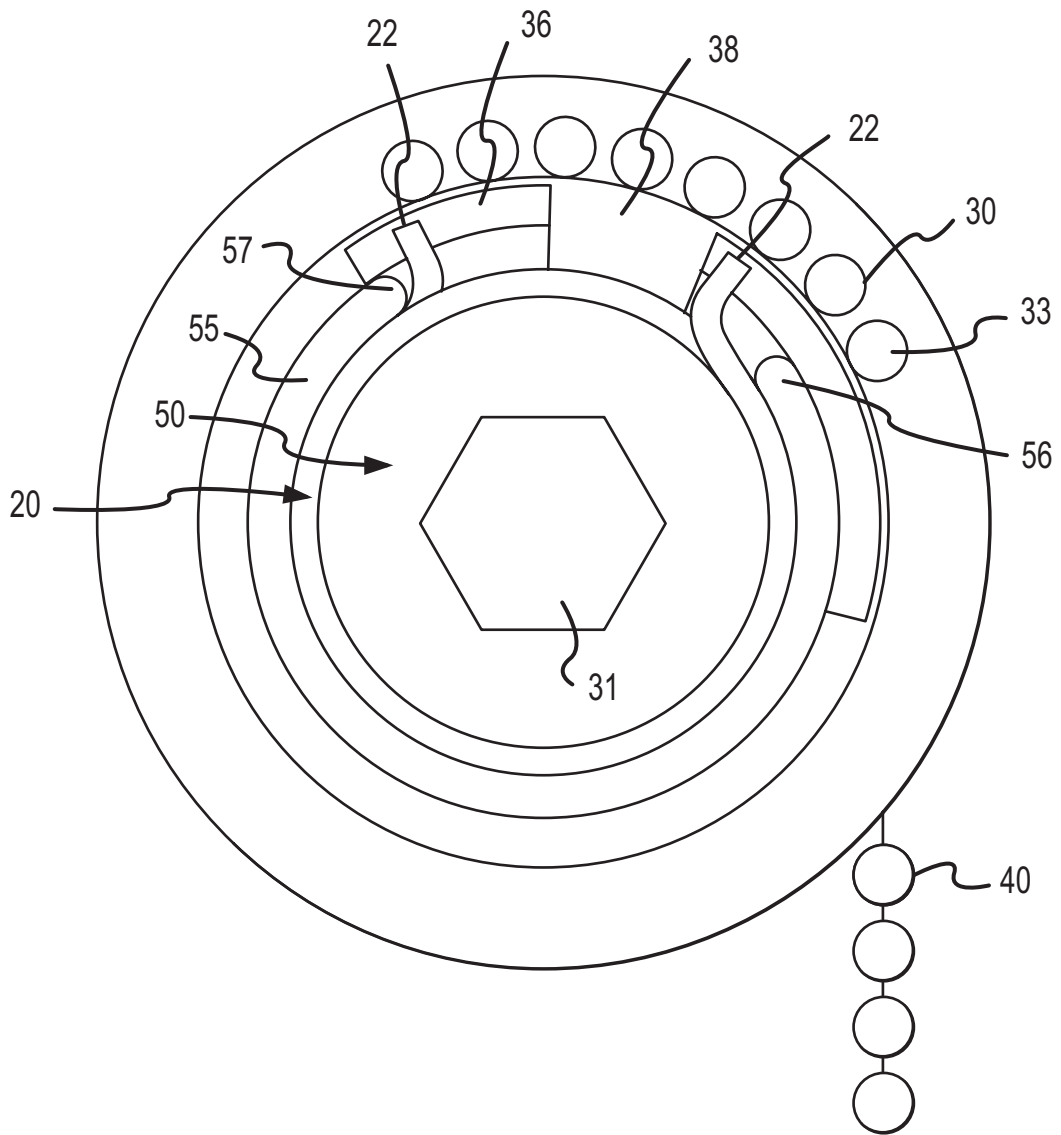


FIG.11