Dec. 14, 1965 W. D. MARTIN 3,222,806

SELF-CLOSING GATE

Original Filed Oct. 24, 1963

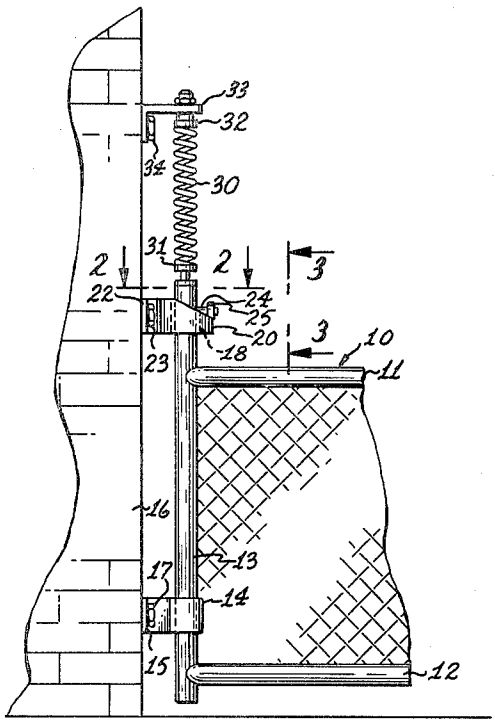


FIG. 1

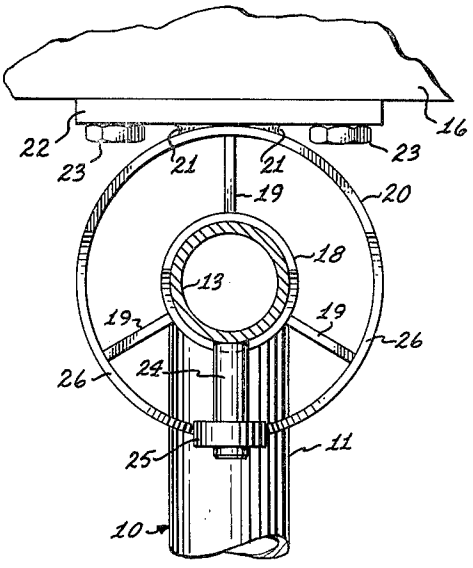


FIG. 2

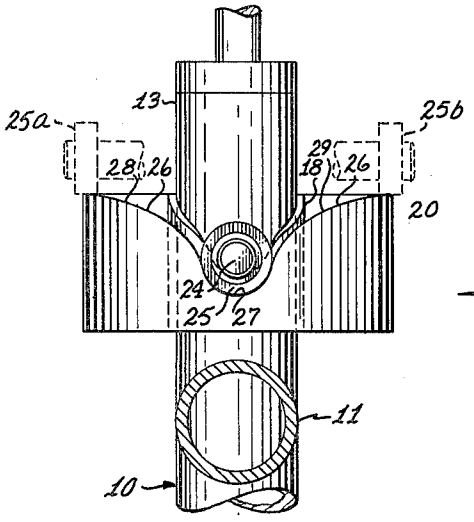


FIG. 3

INVENTOR.
WAYNE O. MARTIN
BY
Willard S. Grant
ATTORNEY

United States Patent Office 3,222,806 Patented Dec. 14, 1965

3,222,806

SELF-CLOSING GATE

Wayne D. Martin, 610 S. Stapley Drive, Mesa, Ariz.

Substituted for abandoned application Ser. No. 318,648, Oct. 24, 1963. This application Mar. 15, 1965, Ser. No. 445,828

2 Claims. (Cl. 39—84)

This invention pertains to self-closing gates and is particularly directed to apparatus for automatically returning and retaining a gate in closed position.

This is a substitute for an abandoned application Serial No. 318,648 filed Oct. 24, 1963.

One of the objects of this invention is to provide a gate closing apparatus that is simple in construction and highly durable and long lasting in operation.

Another object is to provide a centering and closing device for a gate, door or the like which is smooth and quiet in operation and highly dependable in service.

A further object is to provide a gate closing mechanism having a smooth clamping action to prevent excessive and improper swinging of a gate to avoid injury and harm, especially to small children who may use the gate.

Further features and advantages of this invention will appear from a detailed description of the drawings in which:

FIG. 1 is a fragmentary side elevation of a self-closing gate structure incorporating the features of this invention.

FIG. 2 is an enlarged sectional view on the line 2—2 of FIG. 1.

FIG. 3 is a fragmentary enlarged sectional view on the line 3—3 of FIG. 1.

As an example of one embodiment of this invention there is shown a gate **10** comprising the top rail **11**, bottom rail **12** and the hinge member **13**. The hinge member **13** is pivotally and axially slidably supported in the lower support bearing **14** having an integral mounting flange **15** suitably fixed to a wall or post support **16** by suitable bolts **17**.

The upper end of the hinge member **13** is pivotally and axially slidable in the upper support bearing **18**, FIG. 2, which is integrally connected to a plurality of outwardly radially extending brackets **19** to the outer ends of which is fixed the cam ring **20** in turn rigidly fixed at **21** to a mounting plate **22** secured to the wall **16** by suitable bolts **23**. Fixed to and extending radially outwardly from the hinge member **13** above the upper support bearing **18** is the cam roller arm **24** on the outer end of which is journaled the cam roller **25** which is adapted to roll on the top edge cam surface **26** of the cam ring **20** to limit the downward axial position of the hinge member **13** and the gate **10**. The cam surface **26** has a depressed centering portion **27** to receive and position the cam roller **25** for closed position of the gate **10**, and upwardly sloping cam surface **28** and **29** for lifting the gate when swung open as the roller is raised to either position **25***a* or **25***b*, FIG. 3. The tendency under influence of gravity acting on the gate is for the roller to roll down to the depressed centering portion **27** to normally close the gate.

To increase the smooth operation of the gate and assure its prompt return to normally closed position there is provided a control spring **30** having its lower end fixed at **31** to the top end of the hinge member **13** and having its top end fixed at **32** to an angle bracket **33** fixed to the wall **16** by suitable bolts **34**. The spring **30** is mounted between the top of the hinge member **13** and the bracket **33** so that the spring is at all times compressed axially for any swung position of the gate but

with increased axial downward pressure as the gate is swung to either open position so as to cause the cam roller to be forced down the sloping cam surfaces to aid in swinging the gate to closed position. Further, when the gate is in closed position with the cam roller **25** in the depressed centering portion **27** of the cam ring **20**, the spring **30** is in neutral position so far as any twisting torque is concerned. However, whenever the gate **10** is swung to either open position the spring **30** is wound up in one direction or the other so that the torque thus developed in the spring assists the axial pressure of the spring and the sloping cam surfaces **28** and **29** in closing the gate. It is important to note that the twisting torque is substantially nil as the gate is first swung immediately each side of the normally closed position which makes for easy starting in initially swinging the gate from closed position to start the cam roller **25** up a slope **28** or **29**.

While the apparatus herein disclosed and described constitutes a preferred form of the invention, it is also to be understood that the apparatus is capable of mechanical alteration without departing from the spirit of the invention and that such mechanical arrangement and commercial adaptions as fall within the scope of the appendant claims are intended to be included herein.

Having thus fully set forth and described this invention what is claim and desired to be obtained by United States Letters Patent is:

1. A self closing gate comprising in combination:
   - A. a support,
   - B. a hinge member pivotally and vertically axially slidable on said support,
   - C. a cam ring fixed on said support surrounding said hinge member having,
   - D. a depressed centering portion upwardly facing cam roller receiving surface,
   - E. upwardly sloping cam surfaces extending along each side of said depressed centering surface,
   - F. a cam roller journaled on said hinge member adapted to be received in said depressed centering portion and roll on said upwardly sloping surfaces so as to raise said hinge member and gate when said gate is swung to either side of closed position and to cause said gate to normally return by gravity to closed position when released,
   - G. and further means to return said gate to closed position comprising a combined torsion and compression spring having one end fixed to said support and its other end fixed to said hinge member in neutral torisonal condition when said cam roller is in said depressed centering portion for yieldingly normally torsionally swinging said gate to closed position while axially yieldingly forcing said cam roller against said cam surface on said cam ring and in said depressed centering portion to hold said gate in closed position.

2. A self closing gate comprising in combination:
   - A. a support,
   - B. a hinge member pivotally and vertically axially slidable on said support,
   - C. a cam ring fixed on said support surrounding said hinge member having,
   - D. a depressed centering portion upwardly facing cam roller receiving surface,
   - E. upwardly sloping cam surfaces extending along each side of said depressed centering surface,
   - F. a cam roller journaled on said hinge member adapted to be received in said depressed centering portion and roll on said upwardly sloping surfaces so as to raise said hinge member and gate when said gate is swung either side of closed position and to cause said gate to normally return by gravity to closed position when released,

G. and further means to return said gate to closed position comprising a combined torsion and compression spring having one end fixed to said support and the other end fixed to said hinge member in neutral torsional condition when said cam roller is in said depressed centering portion to normally torsionally swing to and hold said gate in closed position.

References Cited by the Examiner

UNITED STATES PATENTS

1,583,084	5/1926	Malmberg	16—154
1,628,651	5/1927	Burress	39—87
1,655,043	1/1928	Blackwell	16—154 X
1,996,196	4/1935	Ferris	16—154 X
2,086,061	7/1937	Barr	39—84
2,604,653	7/1952	Anderson et al.	16—154
2,628,441	2/1953	Enghauser	16—154 X
2,958,090	11/1960	Slopa et al.	16—154

FOREIGN PATENTS

13,264	6/1934	Australia.
1,117,545	4/1956	France.

HARRISON R. MOSELEY, *Primary Examiner.*

D. L. TAYLOR, *Assistant Examiner.*