A. F. VICTOR.

GEARING.

APPLICATION FILED MAR. 18, 1910.

1,009,270. **Patented Nov. 21, 1911.**

3 SHEETS—SHEET 1.

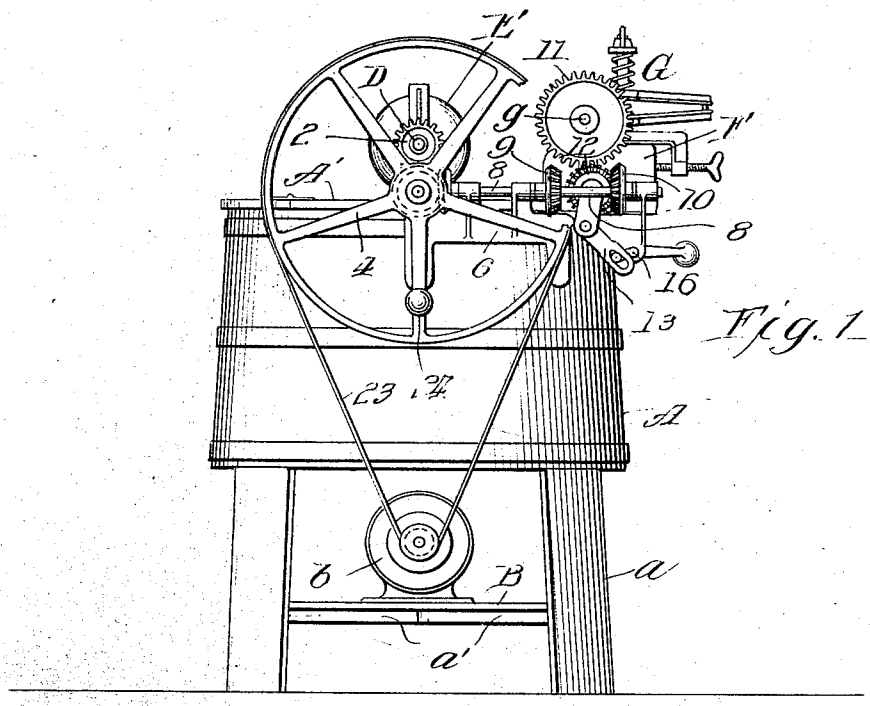
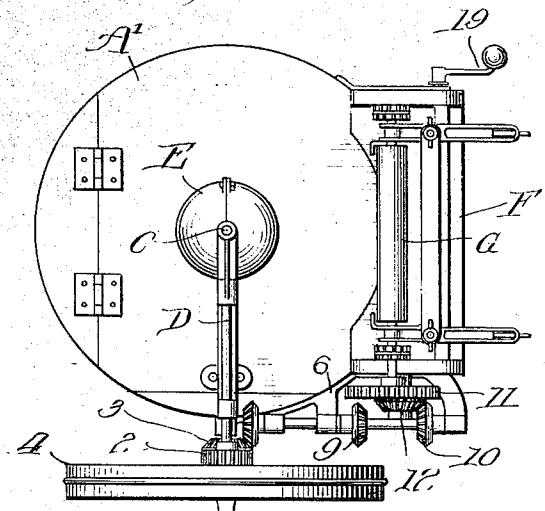


Fig. 1.

Fig. 2.



Witnesses:
Harry S. Gaither
E. R. Lundy.

Inventor:
Alexander Ferdinand Victor
by Frank D. Thomason
atty

A. F. VICTOR.

GEARING.

APPLICATION FILED MAR. 18, 1910.

1,009,270. Patented Nov. 21, 1911.

3 SHEETS—SHEET 2.

Fig. 3.

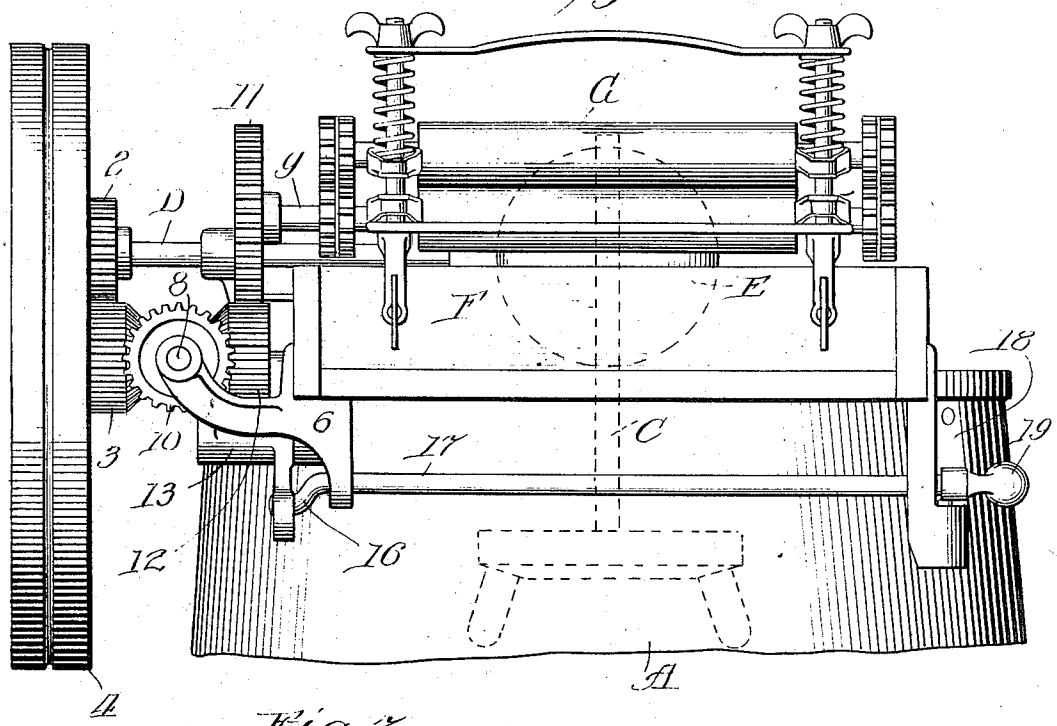


Fig. 7.

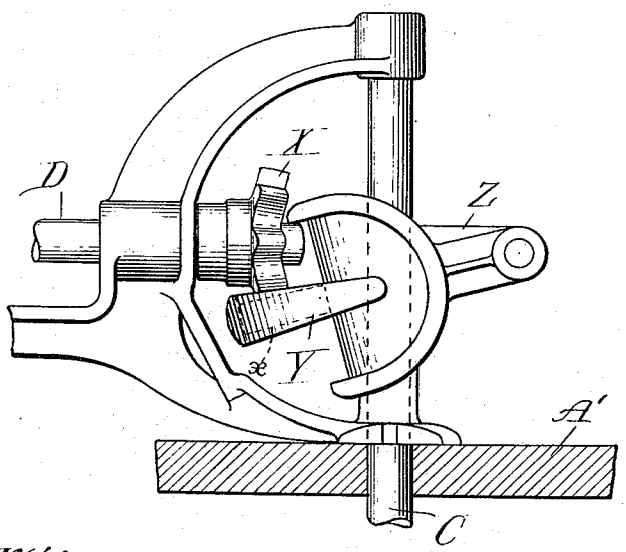
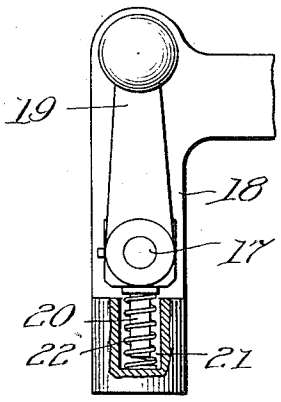


Fig. 6.



Witnesses:
Harry S. Gaither
E. K. Lundy.

Inventor:
Alexander Ferdinand Victor
by Frank D. Thomason
atty

A. F. VICTOR.

GEARING.

APPLICATION FILED MAR. 18, 1910.

1,009,270.

Patented Nov. 21, 1911.

3 SHEETS—SHEET 3.

Fig. 4.

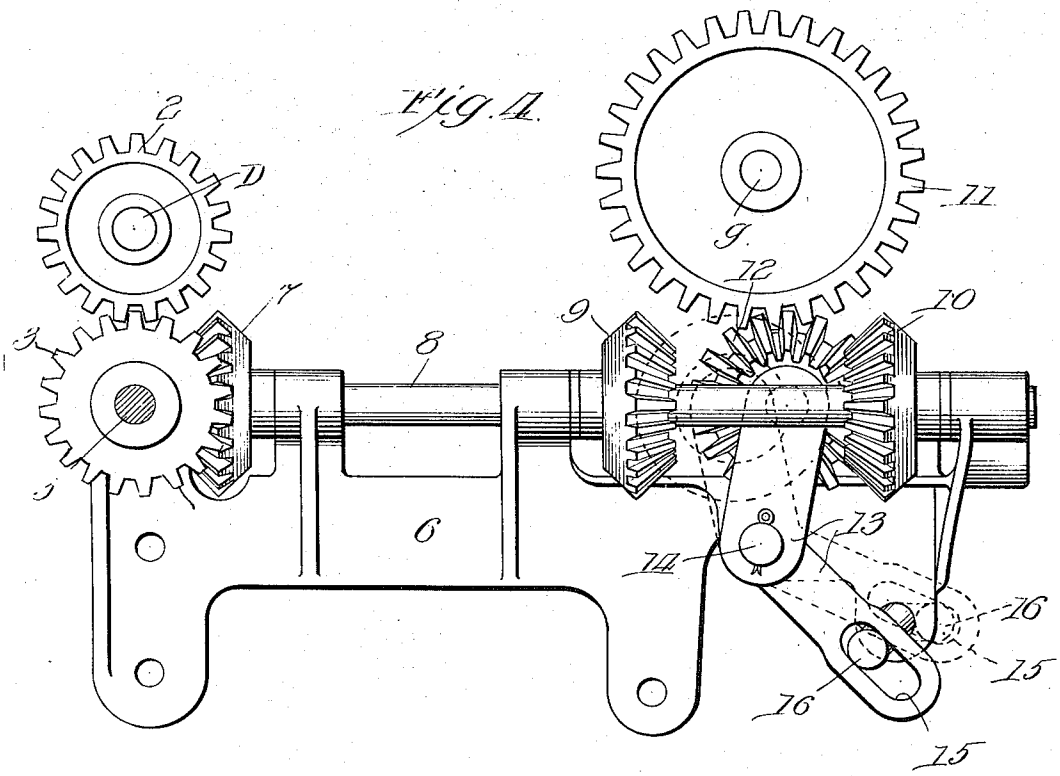
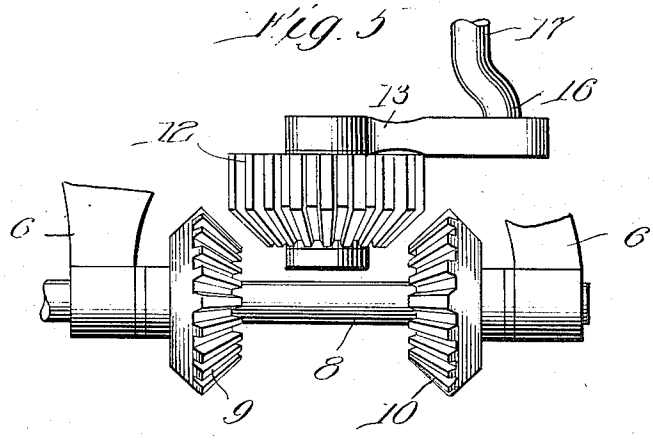


Fig. 5



Witnesses:

Harry L. Gaither

E. K. Lundy.

Inventor:

Alexander Ferdinand Victor

by Frank D. Thomason

atty

UNITED STATES PATENT OFFICE.

ALEXANDER FERDINAND VICTOR, OF TOLEDO, OHIO, ASSIGNOR TO WHITE LILY MANUFACTURING COMPANY, OF DAVENPORT, IOWA, A CORPORATION OF IOWA.

GEARING.

1,009,270. Specification of Letters Patent. Patented Nov. 21, 1911.

Application filed March 18, 1910. Serial No. 550,126.

To all whom it may concern:

Be it known that I, ALEXANDER FERDINAND VICTOR, a subject of the King of Sweden, residing at Toledo, in the county of Lucas and State of Ohio, have invented new and useful Improvements in Gearing, of which the following is a full, clear, and exact description.

My invention more particularly relates to mechanism for operating domestic washing machines and the wringers used in connection therewith, by means of suitable motor, either electric or otherwise.

The principal object of this invention is to provide suitable gearing that may be readily thrown into or out of engagement with the agitating mechanism of the washing machine and run the same without the wringer actuating mechanism, or vice versa, or run both simultaneously.

It is also an object of my invention to provide a mechanism whereby the wringer may be reversed, that is driven in either direction according as desired, or be left idle when the washer is being operated.

A still further object is to arrange the gearing in such manner that the tub cover may be raised without the necessity of lifting the various gearing for the transmission of the motive power to the stirrer shaft and wringer or affecting their operative relationship.

These objects I accomplish in the manner and by the means hereinafter fully described, and as more particularly pointed out in the claims, reference being had to the accompanying drawings, forming a part hereof, wherein,

Figure 1 is a side elevation of a washing machine, having a wringer attachment and showing my improved gearing applied thereto. Fig. 2 is a top plan view thereof. Fig. 3 is a side elevation, drawn to an enlarged scale, of the upper portion of the tub, looking at the same from the front of the wringer. Fig. 4 is a side elevation of the transmission gearing removed from the tub, drawn to an enlarged scale. Fig. 5 is a fragmental top plan view of the "throw-out," and reversing mechanism for connecting and disconnecting the wringer with the gearing. Fig. 6 is a detail side elevation of the operating handle for said "throw-out" and reversing mechanism. Fig. 7 is a detail view of a type of reversing mechanism employed for giving the agitator shaft a rotary reciprocal motion.

In the drawings, A represents a suitable tub or body, having supporting legs *a* that are braced by cross-bars *a'*. These cross-bars form a support for a suitable bracket or plate B on which any kind of a suitable motor *b* is securely clamped. The top of the tub or body is closed by a suitable hinged cover A' on which the reversing mechanism, the rotary reciprocal shaft C, and the continuously revoluble shaft D are mounted. A portion of the cover, however, is cut away in order to provide room for a suitable drip-board, or wringer-box F, to which a wringer G of any suitable or well-known type is adapted to be secured. The reversing mechanism is housed within a suitable casing E and, preferably, comprises means for converting the continuous rotary motion of the horizontally disposed shaft D to the rotary reciprocal motion of the vertically disposed agitator shaft C, and needs no detailed description herein as the same forms the subject-matter of United States Letters Patents #730,961 and #731,277 granted June 16, 1903, to A. Plagman and M. Burton, respectively, for mechanical movements. Shaft D extends outwardly beyond its bearings, and is provided on its outer extended end with a pinion 2, that meshes with the spur teeth of a combined spur and beveled gear 3 integral with the hub of a suitable balance or fly-wheel 4, the axis of which latter is below the axis of said shaft D. The support for the balance-wheel comprises a stud 5, that projects laterally from a bearing-plate 6 secured to the side of the tube near its top and said stud is in such a plane that when cover A' is raised pinion 2 disengages from gear 3. The beveled teeth on the side of gear 3 next the tub, are adapted to engage and mesh with a beveled pinion 7 on the adjacent end of a transmission shaft 8 disposed in a plane substantially at right angles to shaft D. This shaft 8 is continuously rotatable and is mounted in suitable bearings in the bearing-plate or bracket 6 before mentioned. Near its end farthest from the balance-wheel shaft 8 is provided with a pair of facing beveled pinions 9 and 10 that are suitably spaced apart and rigidly secured to the shaft. These gears are so arranged that the longitudinal vertical plane of shaft *g* of the driving roller of the

wringer G, comes midway between them, and the adjacent end of this shaft extends beyond the end of the wringer-box F and is provided with a comparatively large gear 11, that is constantly engaged by a shifting gear 12. Gear 12 is, preferably the same diameter as gears 9 and 10, the distance between which is such that when the shifting gear is moved from one to the other of gears 9 and 10 it will in its intermediate position be out of engagement with both.

Shifting gear 12 is an integral combined spur and beveled gear, and the spur gear thereof meshes with gear 11, while the beveled teeth of the same are adapted to engage either gears 9 or 10. This shifting-gear is journaled on a stud connecting the double arms constituting the upper end of an obtuse angle-shaped bell-crank 13, which is pivoted on a suitable stud 14 projecting from the adjacent end of the bearing-plate or bracket 6. The lower arm of this bell-crank 13 is preferably provided with an elongated slot 15 in which the crank-shaped end 16 of a rock-shaft 17 that extends parallel to and under the wringer box, has play. Suitable bearings are provided in an extension of bracket 6 for one end of rock-shaft 17 while the opposite end thereof is journaled in bearings in the bracket 18 that is secured to the tub and supports the opposite end of the wringer-box when the adjacent extremity of the rock-shaft is provided with an operating handle 19. By turning this handle into either of its horizontal positions, shaft 17 is rocked, and, through the medium of the slotted arm of the bell-crank shifts gear 12 so that it meshes with one or the other of the bevel pinions 9 and 10 as the case may be. By moving the handle into a vertical position, the shifting gear will disengage from both of these pinions as shown in detail in Fig. 5 of the drawings and while in this position will not transmit the motion of shaft 8 to the wringer. In order to insure the retaining of the rock-shaft in the position desired, the boss of the handle 19 is preferably flattened and is engaged by the flat head of a plunger 20, placed in a socket 21, made in the bearing-bracket 18 and kept normally pressed up against said boss by a coil expansion spring 22, substantially as shown in Fig. 6 of the drawings.

From the above it will be seen that when the balance-wheel is rotated, the gearing for reversing the agitator-shaft is actuated, and the shifting gear is in a position intermediate the bevel pinions 9 and 10, thus leaving the wringer inert. When, however, this shifting gear is thrown into engagement with one or the other of the pinions 9 and 10, the wringer is caused to operate, either in one direction or the other, according as desired.

The outer circumference of the balance-wheel 4 is, preferably, provided with a circumferential groove in which a belt, 23, runs, that connects the same with the motor *b*, but if desired, the device may be operated by the handle 24 on the balance-wheel.

The reversing mechanism shown in Fig. 7 for the agitator shaft C preferably comprises a pinion X on the end of rotatable shaft D that engages and meshes with the teeth *x* on a segmental rack Y. The end of the rack Y opposite the pinion X is pivotally secured to an arm Z projecting from a boss secured to the agitator shaft C so that the said rack has a rotary reciprocal motion with the agitator shaft C, but has a certain amount of vertical play independent thereof.

What I claim as new is:—

1. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, and a gear continuously engaged by said floating gear.

2. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, or be disengaged from both, and a gear continuously engaged by said floating gear.

3. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, and a larger gear continuously engaged by said floating gear.

4. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, a bell-crank one arm of which carries said floating gear, and a gear continuously engaged by said floating gear.

5. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, a bell-crank one arm of which carries said floating-gear, a rock-shaft

having a crank on one end that engages said bell-crank, and a gear continuously engaged by said floating gear.

6. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, a bell-crank one arm of which carries said floating gear, a rock-shaft having a crank at one end that engages said bell-crank, means for retaining said rock-shaft at the limits of its movement and at an intermediate point, and a gear continuously engaged by said floating gear.

7. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, a bell-crank one arm of which carries said floating gear, means for operating said bell-crank, a gear continuously engaged by said floating gear.

8. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, a rock-shaft having a crank on one end adapted to shift said floating-gear, and a handle on its opposite end which has flattened surfaces, a spring-actuated plunger adapted to engage said flattened surfaces, and a gear continuously engaged by said floating gear.

9. A device as specified comprising a driving beveled pinion, a shaft extending at right angles to the axis of said pinion, a bevel-gear mounted on the end of said shaft and engaging said pinion, facing gears on the opposite end of said shaft, a floating gear adapted to engage one or the other of said facing gears, a bell-crank one arm of which carries said floating gear, a rock-shaft having a crank at one end adapted to engage said bell-crank and a handle on its opposite end which is provided with flattened surfaces, a spring actuated plunger adapted to engage said flattened surfaces and temporarily retain said rock-shaft, and a gear continuously engaged by said floating gear.

10. A device as specified comprising a suitable support, a drive-shaft extending in a plane transverse to the edge of said support and journaled in bearings mounted on the side of said support, a beveled pinion mounted on said drive-shaft adjacent the edge of said support, a driven shaft extending at right angles to said drive-shaft and a gear thereon that engages said pinion, a segmental supporting plate having bearings in which said driven shaft is journaled, beveled facing pinions on said driven shaft, a floating gear adapted to engage one or the other of said facing pinions, and a gear continuously engaged by said floating gear.

11. A device as specified comprising a suitable support, a drive-shaft extending in a plane transverse to the edge of said support and journaled in bearings mounted on the side of said support, a beveled pinion mounted on said drive-shaft adjacent the edge of said support, a driven shaft extending at right angles to said drive-shaft, and a gear thereon that engages said pinion, a segmental supporting plate having bearings in which said driven shaft is journaled, beveled facing pinions on said driven-shaft a floating gear adapted to engage one or the other of said facing pinions, a bell-crank the upper arm of which carries said floating gear, and a gear continuously engaged by said floating gear.

12. A device as specified comprising a suitable support, a drive-shaft extending in a plane transverse to the edge of said support, a beveled pinion mounted on said drive-shaft adjacent the edge of said support, a driven-shaft extending at right angles to said drive-shaft and a gear thereon that engages said pinion, a segmental supporting plate having bearings in which said driven shaft is journaled, beveled facing pinions on said driven shaft, a floating gear adapted to engage one or the other of said facing pinions, a bell-crank the upper arm of which carries said floating-gear, a rock-shaft having a crank at one end engaging said bell-crank, and a gear continuously engaged by said floating-gear.

13. A device as specified comprising a suitable support, a drive-shaft extending in a plane transverse to the edge of said support and journaled in bearings mounted on the side of said support, a beveled pinion mounted on said drive-shaft adjacent the edge of said support, a driven-shaft extending at right angles to said drive-shaft and a gear thereon that engages said pinion, a segmental supporting plate having bearings in which said driven shaft is journaled, beveled facing pinions on said driven-shaft, a floating gear adapted to engage one or the other of said facing pinions, a bell-crank one arm of which carries said floating gear, a rock-shaft having a crank on one end that engages said bell-crank, means for retaining said rock-shaft at the limits of its movement and at a point intermediate the same, and a gear continuously engaged by said floating gear.

14. A device as specified comprising a

suitable support, a drive-shaft extending in a plane transverse to the edge of said support, and journaled in bearings mounted on the side of said support, a beveled pinion mounted on said drive-shaft adjacent the edge of said support, a driven shaft extending at right angles to said drive shaft and a gear thereon that engages said pinion, a segmental supporting plate having bearings in which said driven shaft is journaled, beveled facing pinions on said driven shaft, a floating gear adapted to engage one or the other of said facing pinions, a bell-crank one arm of which carries said floating gear, a rock-shaft having a crank at one end that engages said bell-crank and an operating handle on its opposite end, the boss of which is flattened on three sides, a spring actuated plunger adapted to engage said flattened sides, and a gear continuously engaged by said floating gear.

15. A device as specified comprising a suitable support, a drive-shaft extending in a plane transverse to the edge of said support and journaled in bearings mounted on the side of said support, a beveled pinion mounted on said drive-shaft adjacent the edge of said support, a driven shaft extending at right angles to said drive-shaft and a gear thereon that engages said pinion, a segmental supporting plate having bearings in which said driven shaft is journaled, beveled facing pinions on said driven shaft, a floating gear adapted to engage one or the other of said facing pinions, a bell-crank mounted on a stud projecting from said supporting plate and one arm of which carries said floating gear, a rock shaft having a crank at one end, means for retaining said rock shaft at the limits of its movement and at a point intermediate the same.

16. The combination, with a support having a hinged portion, a device to be operated comprising a shaft rotatably mounted in the hinged portion of said support, a driving member, and a connection between said driving member and said shaft, said connection being controlled by the movement of said hinged portion of said support to cause the same to be rendered inoperative when said hinged portion is moved into one of its positions, of a second device to be operated, a connection between said driving member and said second device, and means to render the last-mentioned connection inoperative without affecting the operation of said driving member or the other of said connections.

In witness whereof I have hereunto set my hand this 15th day of March 1910.

ALEXANDER FERDINAND VICTOR.

Witnesses:
E. K. LUNDY,
H. F. EMME.