

Sept. 28, 1926.

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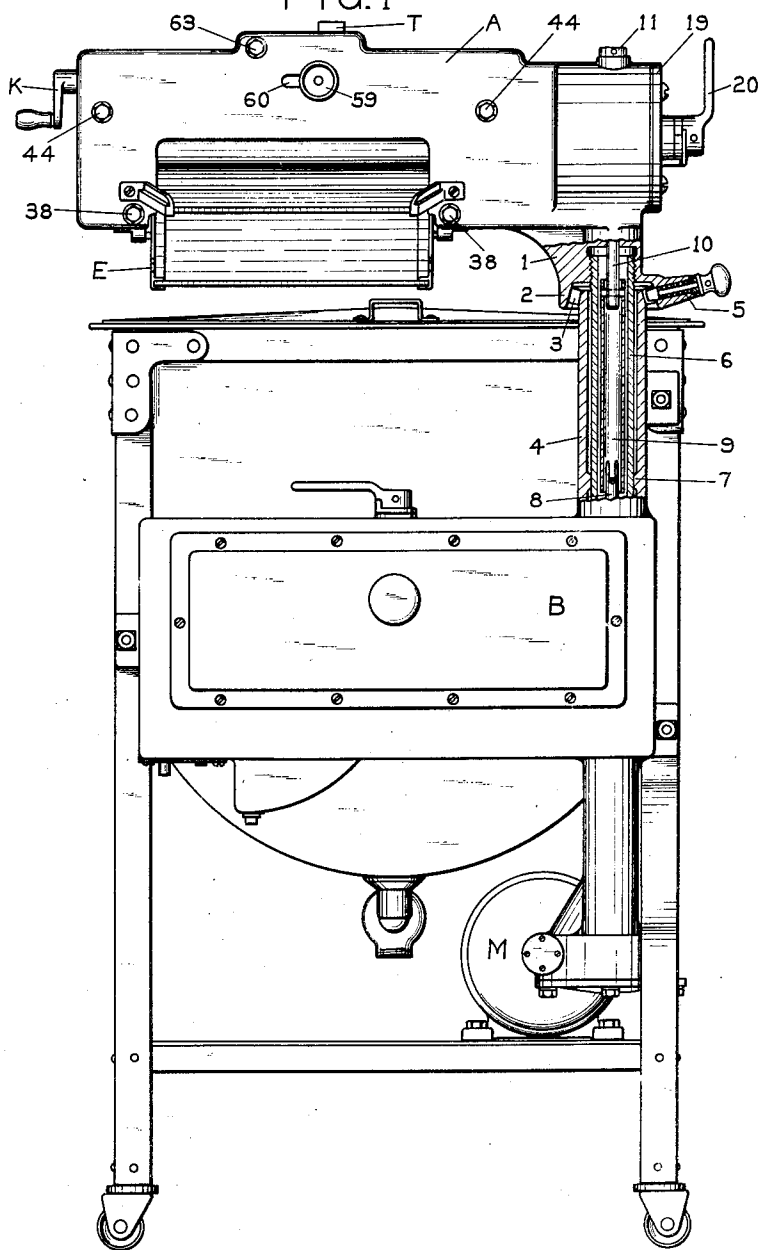
W. K. HOWE

CLOTHES WRINGER FOR WASHING MACHINES

Filed April 9, 1920

3 Sheets-Sheet 1

FIG. 1



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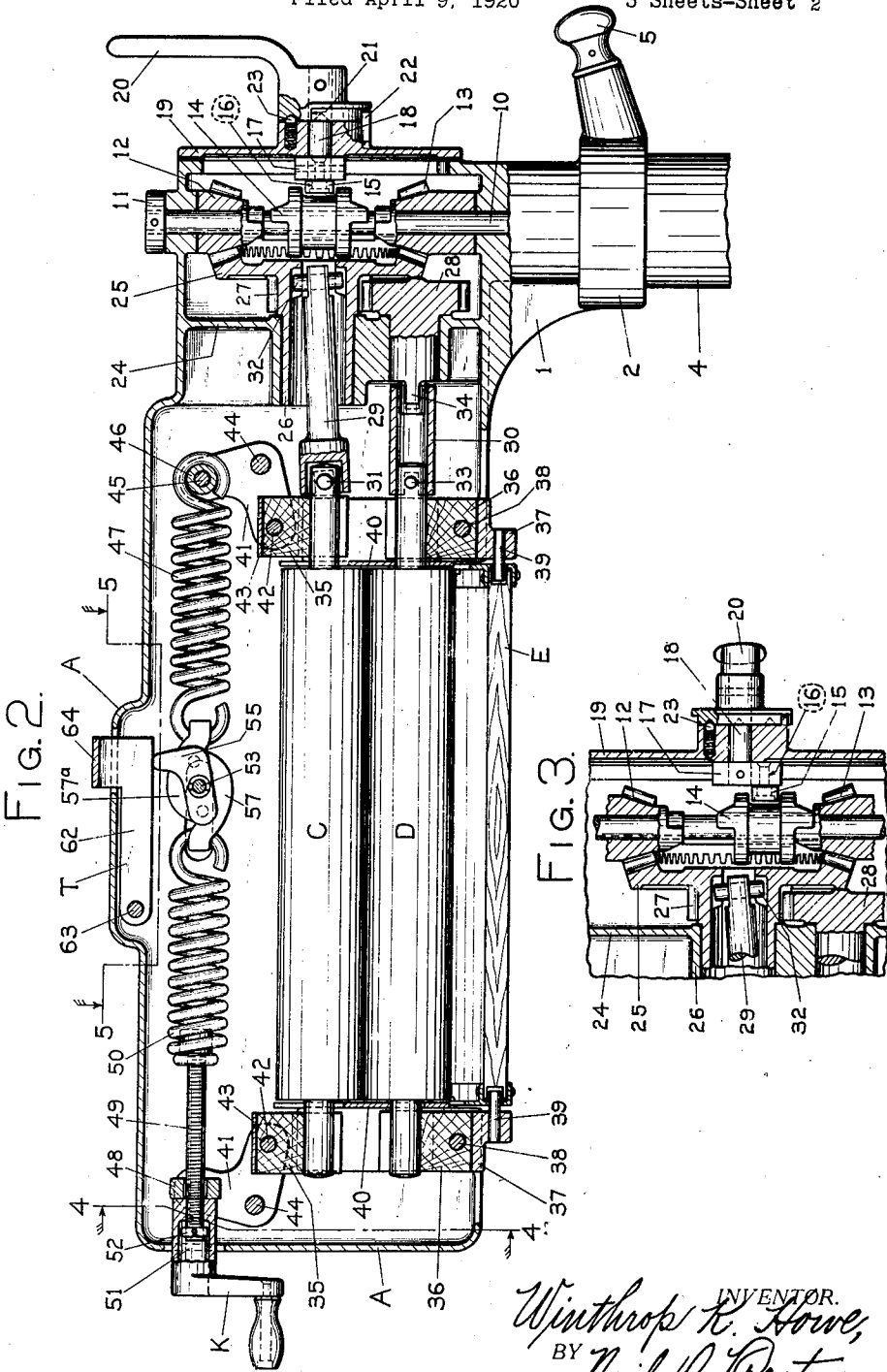
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3 Sheets-Sheet 2



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FIG. 4.

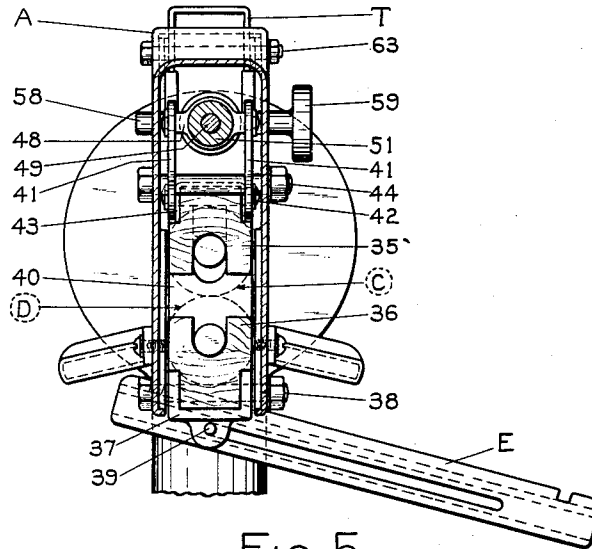


FIG. 5.

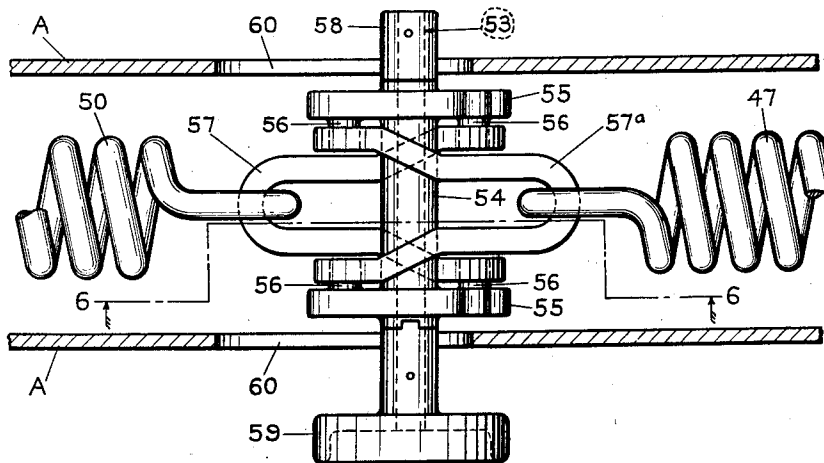
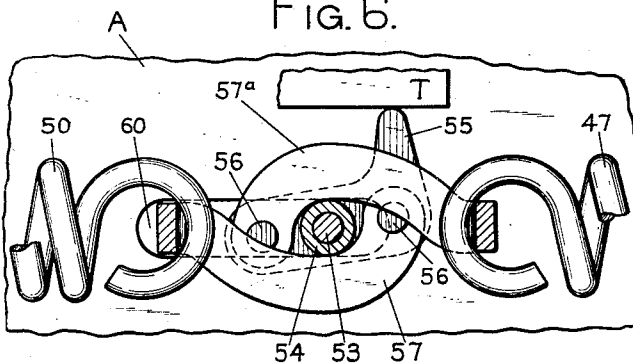


FIG. 6.



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Patented Sept. 28, 1926.

UNITED STATES PATENT OFFICE.

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CLOTHES WRINGER FOR WASHING MACHINES.

Application filed April 9, 1920. Serial No. 372,730.

This invention relates to the construction of power operated wringers for domestic clothes washing machines.

The principal object of the present invention is to improve and simplify the construction of wringers for washing machines, more particularly with the view of obtaining a simple and effective arrangement and construction of parts, adapted to be easily and cheaply manufactured, and in which the moving parts are enclosed, thereby improving the appearance of the device and obviating accidental injury to the operator.

Other detail features and advantages of the invention will be pointed out hereinafter.

In describing the invention in detail reference will be made to the accompanying drawing in which like reference characters refer to corresponding parts in the several views and in which:

Figure 1 shows in elevation one form of a washing-machine with my improved wringer;

Fig. 2 is an enlarged vertical and longitudinal section through the wringer;

Fig. 3 is a fragmentary detail of the reversing gearing and shows the clutch member shifted for one direction of rotation;

Fig. 4 is a vertical transverse section through the wringer and its casing taken on the line 4—4, Fig. 1;

Fig. 5 is an enlarged fragmentary section taken on the line 5—5 in Fig. 2, and

Fig. 6 is a fragmentary enlarged section taken on the line 6—6 in Fig. 5.

Referring to the accompanying drawings, I have illustrated the outline of one type of washing-machine, but have not attempted to show the details of the construction, since these form no part of the present invention. The wringer is arranged so that it may be swung horizontally above the tub of the washing-machine to various positions, and is provided with driving mechanism permitting the wringer rolls to be stopped or reversed. My improved wringer also includes a safety tension release device, and a handle or crank for adjusting the pressure of the rolls.

The parts of the wringer are all supported and enclosed by a boxlike casing or housing A, which has the lower edges of its two side

walls cut away to give access to the wringer rolls. This wringer casing A is provided at one corner with a bracket or neck 1 terminating in a collar 2 which rests upon a peripheral flange 3 integral with the upper end of a tubular upright or standard 4 forming part of the main frame or casing B of the washing-machine. The flange 3 is provided with a number of notches, corresponding to the number of positions of the wringer desired, which are shaped to receive the squared head of a spring pressed locking plunger 5 supported in an integral projection of the collar 2. A pipe 6 is screwed at its upper end into the neck 1 of the wringer casing, extends downward inside of the tubular standard 4, and is guided at its lower end between pads or projections 7 formed on the inside of said standard. The construction described enables the whole wringer casing A to be swung about one corner to different positions and locked in these positions.

The wringer is driven by a shaft 8 which is operatively connected to the motor M by suitable reduction gearing enclosed within the casing B and not shown. The upper end of the shaft 8 is bifurcated and straddles a transverse pin in the lower end of a tube 9. A similar universal connection is made between the upper end of the tube 9 and a vertical shaft 10 which is supported in upper and lower bearings in the wringer casing A, said shaft 10 having a collar 11 pinned thereto at its upper end.

Referring to Fig. 2, the reversible gearing for driving the wringer rolls comprises two beveled pinions 12 and 13 loosely mounted on the shaft 10 and having their hubs formed with clutch teeth. Connected to the shaft 10 by a key or spline is a clutch member 14 provided with clutch teeth at its ends adapted to engage those of the bevel pinions 12 and 13. This clutch member 14 has a circumferential groove in which fits a rectangular follower block 15 which is pivoted on an eccentric pin 16 in another block 17 pinned to one end of a shaft 18. The shaft 18 is supported in a boss on a separable end cap 19 attached to the wringer casing A. A handle 20, pinned to the outer end of the shaft 18, enables the block 17 to be oscil-

lated and thereby shift the clutch member 14 back and forth. Shoulders 21 (only one being shown) on the handle 20 cooperating with a stationary projection 22, limit the movement of said handle in its extreme positions. The spring pressed ball 23, coacting with recesses in the handle 20, yieldingly hold it in its different operative positions. It will be evident that the shaft 10 may be coupled to either the upper or lower bevel pinions 12—13, or disconnected from both, by moving the handle 20 to the proper position. Integral with the walls of the wringer casing A, near one end thereof, is a transverse wall or web 24. A bevel gear 25, having an elongated hollow hub 26 journaled in a bearing in the web 24, meshes with the bevel pinions 12 and 13. Fastened to, or integral with, the hub 26 is a gear 27 which meshes with a gear 28 having its hub journaled in the web 24. The chamber or compartment between the web 24 and the end cap 19 is preferably filled with grease or similar lubricant.

The bevel gear 25 and the gear 28 driven thereby are respectively connected by short shafts 29 and 30, having universal connections at their ends, to the wringer rolls C and D. In the particular construction shown, a fixed transverse pin 31 in the shaft of the upper wringer roll, C fits loosely in the notches or slots at one end of the short shaft 29, and this short shaft has a fixed pin 32 at its other end loosely fitting between pairs of lugs formed on the inside of the hub 26. The other short shaft 30, which is tubular, is provided with a similar pin and slot connection 33 to the lower wringer roll D, and the hub of the gear 28 has a reduced portion projecting into the shaft 30, said reduced portion having projecting lugs 34 engaging in slots formed in said shaft. Obviously, other types of universal connections may be used.

The wringer rolls C and D of the usual construction are supported and pressed together at their ends in a similar way, and a description of the construction at one end of the rolls will suffice for both. The shafts of the wringer rolls C and D fit in U-shaped grooves in upper and lower bearing blocks 35 and 36, preferably made of wood impregnated with paraffin. The lower bearing block 36 fits in a U-shaped filler member 37 (see Fig. 4) and is held stationary by a bolt 38 passing through said bearing block and filler member. The member 37 is provided with a pin 39 which supports the usual reversible drain-board E. A guard plate 40 is interposed between the ends of the wringer rolls and the bearing blocks 35—36, the opening through this plate for the upper shaft being a slot to permit the necessary separation of the rolls.

The upper bearing block 35 is disposed between a pair of angle levers 41 and is connected thereto by a pin 42, a U-shaped wear plate 43 being interposed between said bearing block and said angle levers. The angle levers 41 are pivotally supported on a bolt 44 passing through the wringer casing A. The angle levers 41 at the right hand end of the wringer rolls, as viewed in Fig. 2, are connected by a pin or rivet 45 having a spacing sleeve 46 thereon. A tension spring 47 has one end hooked over the sleeve 46. The other pair of angle levers 41 are connected by an apertured spacer 48 (see Figs. 2 and 4); and through the hole in this spacer extends a screwthreaded rod 49 which is anchored to the end of another tension spring 50. The rod 49 is threaded into a hollow hub or shank 51 of a tension adjusting crank K, a collar 52 being pinned to said rod 49 so as to prevent the crank K being accidentally turned off of the rod. The adjacent ends of the springs 47 and 50 are connected by a toggle link trip device, so that the tension of the springs may be released in case of emergency. The safety trip device, shown to the best advantage in Figs. 5 and 6, comprises a shaft 53 on which is mounted a collar 54 having integral end members 55, shaped somewhat like a bell crank, and integral with each of said end members 55 are two bearing pins 56 located at diametrically opposite points with respect to the shaft 53. The ends of the springs 50 and 47 are hooked over counterpart links 57—57^a, of a general U-shape, which have their ends pivotally connected to the opposing pins 56 on the opposite end members 55. These links 57—57^a are curved lengthwise, as shown in Fig. 6; so that the parts may be moved to the position shown in Fig. 6, where the pivotal points of said links are respectively above and below the axis of the shaft 53. If the collar 54 and its end members 55 are turned in a clockwise direction from the position shown in Fig. 6, the pivotal connections of the links 57—57^a are brought respectively above and below the center of the shaft 53, and it will be evident that the ends of the springs 47—50 may then pull apart, thereby relaxing the tension of these springs and the pressure upon the wringer rolls. The collar 54 is held in place on the shaft 53 by a short sleeve 58 and a restoring knob 59 pinned to the ends of said shaft. The side walls of the wringer casing A are formed with slots 60 to guide the shaft 53 and the parts thereon, while at the same time permitting their bodily movement lengthwise of the wringer casing as the tension of the springs is changed. This restoring knob 59 has a driving connection with the collar 54, as shown in Fig. 5.

The trip device T for releasing the toggle arrangement above described comprises

two parallel arms 62 (see Figs. 2 and 4) pivotally connected at one end to a bolt 63 secured to the wringer casing A. The free ends of the arm 62 extend upward through slots in the top of the wringer casing A and are connected by a cross plate 64. The arms 62 lie in the plane of the end members 55, so that by pressing down on the plate 64, the collar 54 may be turned to release tension of the springs 47 and 50 in a manner described.

The tension of the springs 47—50 is adjusted by turning the crank K. The tension may be instantly released by downward pressure on the plate 64, or by a sharp blow. When the safety tension release device has been operated, it may be restored by turning the knob 59, it being expedient in most instances to first relieve some of the spring tension by turning the crank K.

In my improved construction, the parts are enclosed within a casing or housing which is shaped and proportioned so as to harmonize with the outline of the washing-machine to which it is attached, so that the appearance of the combined washing-machine and wringer is much improved. The wringer rolls being pressed together by relatively long tension springs, there is substantially the same pressure exerted by the rolls, with a given adjustment of the spring tension, as the rolls separate more or less to accommodate different thickness of clothes. The pressure of these rolls may be easily and quickly adjusted from the outside. Also, the arrangement is such that the same spring pressure is exerted upon both ends of the upper roll, so that no special care is required in setting up the spring tension. The wringer rolls may be stopped, or driven in either direction, by manipulation of the handle 20; and the gearing for accomplishing this is enclosed in a separate compartment which may be filled with a lubricant without danger of this lubricant working out on to the rolls. The wringer rolls are driven separately by universal connections from two gears journaled in stationary bearings and always meshing on their pitch lines, so that there is an efficient and quiet gearing connection between the wringer rolls which operates in the same way regardless of the separation of the rolls. The safety tension release device is constructed so that it may be easily operated and positively relax the tension of the springs; and since all of the moving parts of this device are enclosed, the operator cannot be injured, as sometimes happens with the exposed tension trip device now commonly used.

While I have described one preferred embodiment of my invention, it should be understood that this specific construction is susceptible of modification without departing from the invention; and I desire to have

it understood, therefore, that the specific arrangement and construction of parts shown and described is merely illustrative and does not exhaust the various embodiments of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a clothes wringer, the combination of a unitary casing provided with an opening in the bottom thereof, a rib near one end in the casing to form a gear compartment, gears in said compartment, a bracket extending from said compartment for pivotally supporting said wringer, a driving shaft extending through said bracket into said compartment, means including bearing blocks and a wringer roll adapted to be passed through said opening and supported in said casing, and means for operatively connecting said roll and gears.

2. In a wringer having rolls, a casing, two tension springs disposed horizontally within the casing above the rolls, pivoted levers connected to the outer ends of said springs for applying pressure from said springs to said rolls, an adjustable connection between one of said springs and one of said levers whereby the tension of said springs may be adjusted, expansible means connecting the adjacent end of said springs, means for controlling said expansible means to permit the ends of the springs to spread apart, and means for driving said rolls.

3. A wringer for power operated washing machines comprising, a unitary one-piece casing provided with an opening in the bottom thereof, wringer rolls having shafts carried in bearing blocks said shafts and bearing blocks being supported in said casing over said opening and within the limits thereof, means for retaining said rolls and said blocks in said casing, and a pressure regulating release device within said casing for pressing said rolls together, whereby the rolls and bearing blocks may be placed in position in said unitary casing by passing them through said opening.

4. In a wringer for power operated washing machines, a casing, wringer rolls and two coil springs in said casing, means for applying pressure from said springs to one of said rolls, curved links connected to the adjacent ends of said springs, a shaft passing through said casing, a member fixedly carried by said shaft within said casing, said links being pivotally connected to said member, an upwardly projecting extension on said member, a manually operable means extending through an opening in said casing for engaging said extension and turning said member and said shaft in one direction when operated and a handle on said shaft outside of said casing for turning said member and said shaft in the other direction.

5. In a wringer structure for power operated washing machines including two coil springs means connected to said springs for applying pressure to the wringer rolls, curved links connected to the adjacent ends of said springs, a shaft, a member fixed to said shaft, said links being connected to said member in overlapped relation, a driving shaft, and means for operating the shaft.
6. In a wringer, wringer rolls, two horizontal coil springs mounted above said rolls and connected at their outer ends to angle levers, means disposed between said angle levers and one of said rolls for applying the tension from said springs to press said rolls together, expansible trip means connecting the inner ends of said springs together, a single means for adjusting the tension of both of said springs, and means for releasing said expansible trip means.
7. In a wringer having wringer rolls, bearing blocks for one of said rolls carried by pivotally supported angle levers, two tension springs disposed horizontally above said rolls and engaging said levers, said springs being coupled at their adjacent ends by an expansible safety tension release device, a casing enclosing said structure and means operable from the outside of said casing for controlling said release device.
8. In a wringer having an upper and a lower roll, means for applying and controlling pressure on the upper roll comprising, angle levers pivotally mounted adjacent the ends of said upper roll and having portions extending inwardly towards said roll from the pivot point, bearing blocks pivotally connected to said inwardly extending portions and engaging said upper roll; and tension spring means comprising two horizontally disposed coil springs engaging upwardly extending portions of said angle levers, quick releasable expansible trip means for connecting the adjacent ends of said coil springs and a single means for adjusting the tension of both of said springs.
9. In a wringer, a casing, a lower roll carried by bearing blocks secured in said casing, an upper roll, means for securing said upper roll adjacent said lower roll comprising upper bearing blocks engaging said upper roll, and pivotally mounted substantially L-shaped angle levers supporting said upper bearing blocks; and means for releasably biasing said upper roll toward said lower roll comprising two coil tension springs engaging upwardly extending portions of said angle levers, curved links connected to the adjacent ends of said springs, a shaft, a member fixed to said shaft, said links being pivotally connected to said member to constitute a toggle link trip device, and means for releasing said trip device extending through said casing.

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