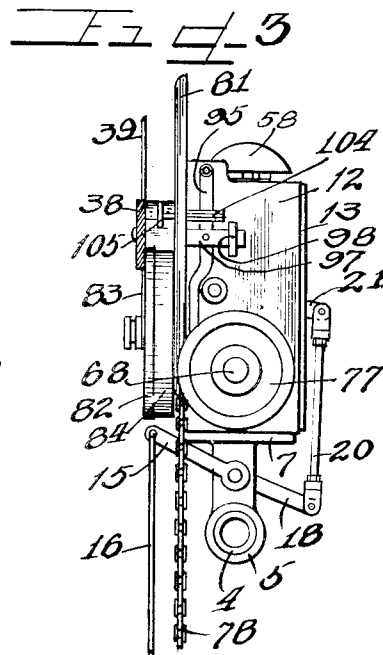
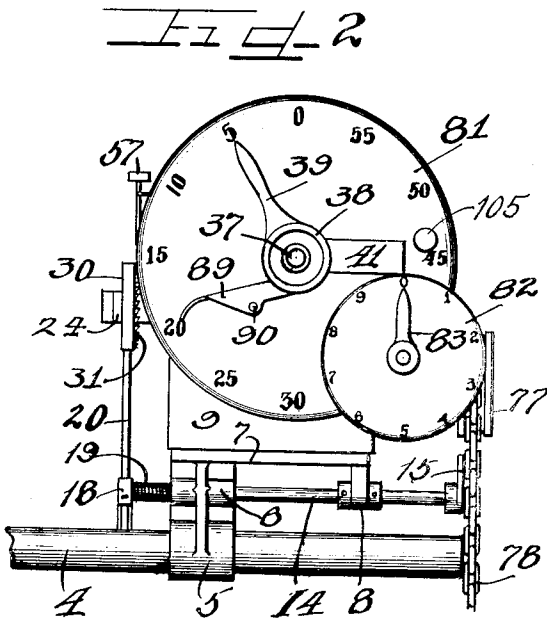
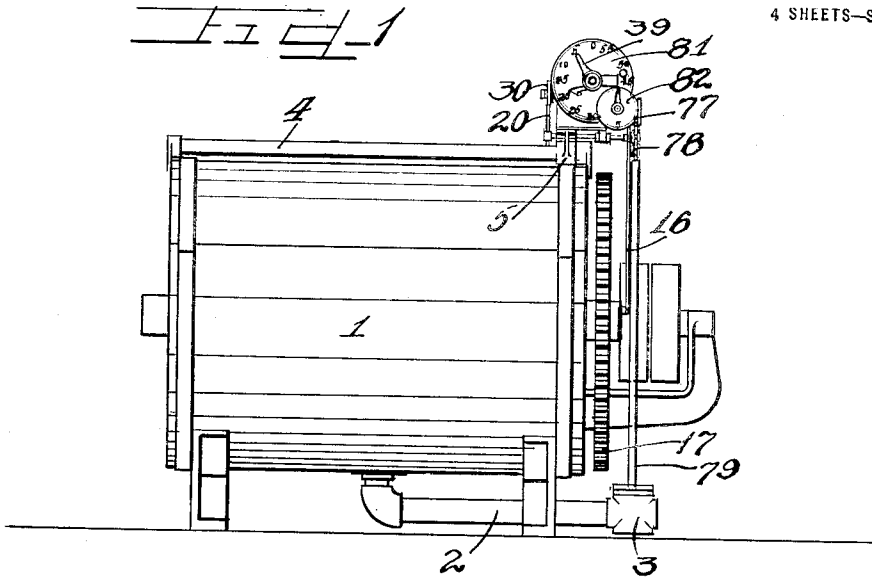


J. HUEBSCH AND R. ROOST,
TIMING AND RECORDING DEVICE FOR DISCHARGE VALVES.
APPLICATION FILED MAY 10, 1919.

1,408,884.

Patented Mar. 7, 1922.

4 SHEETS—SHEET 1.



WITNESSES

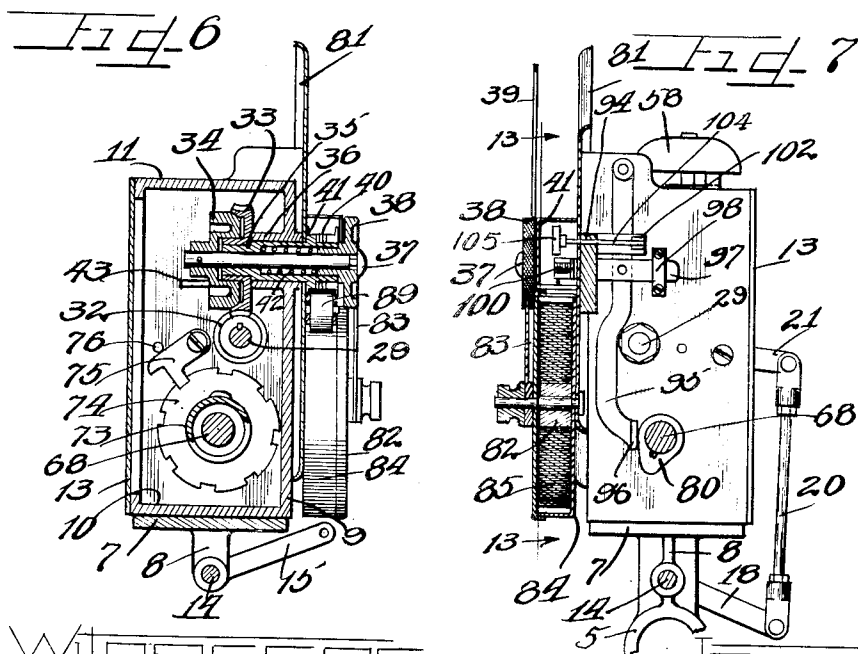
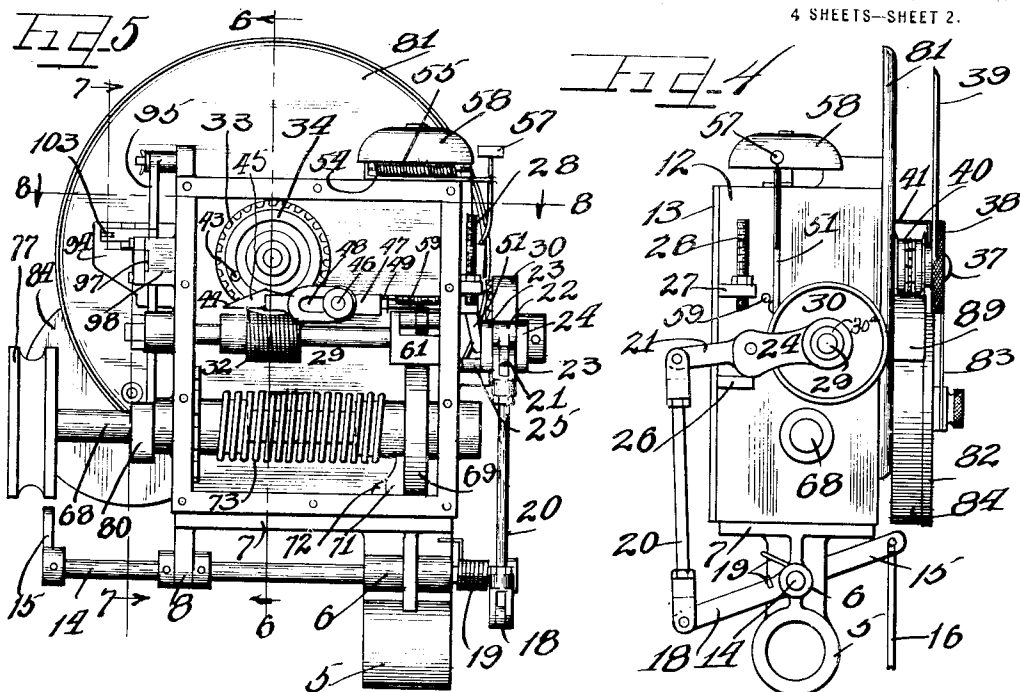
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APPLICATION FILED MAY 10, 1913.

4 SHEETS--SHEET 2.



INVENTORS

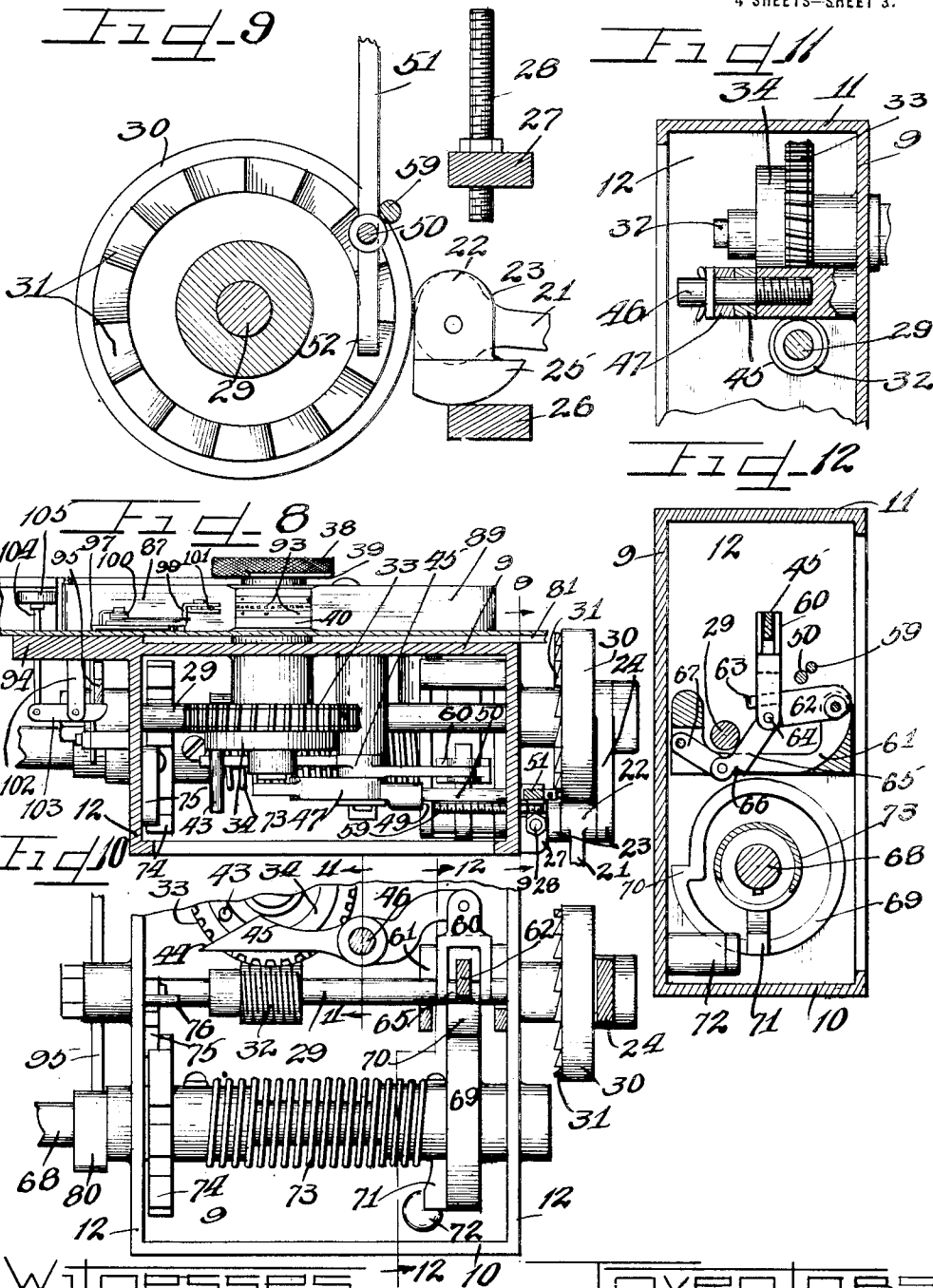
By

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4 SHEETS—SHEET 3.



Witnesses

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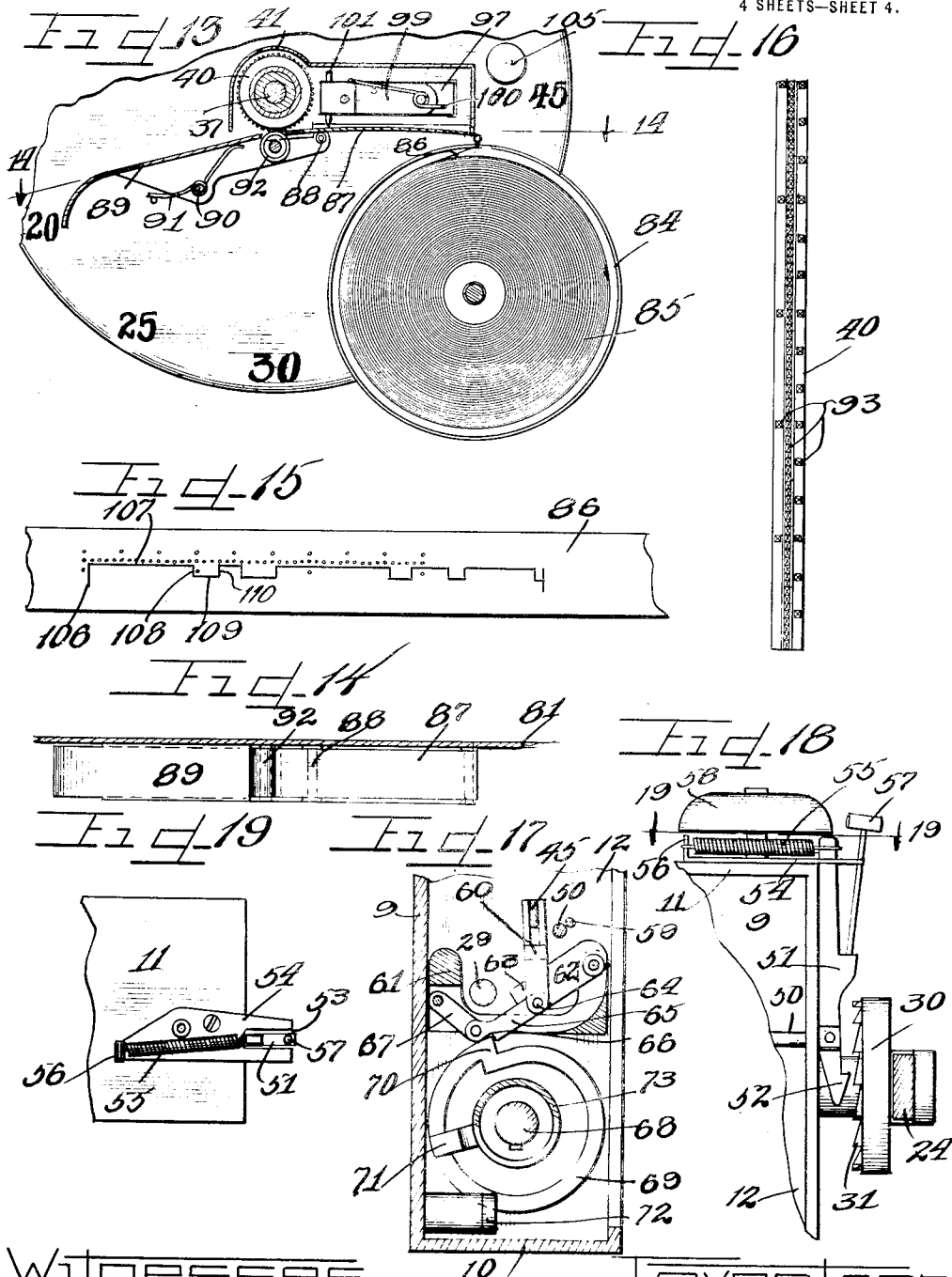
By Charles H. Hilsen ATT

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4 SHEETS—SHEET 4.



Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH HUEBSCH AND RICHARD ROOST, OF MILWAUKEE, WISCONSIN, ASSIGNORS TO HUEBSCH MANUFACTURING COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

TIMING AND RECORDING DEVICE FOR DISCHARGE VALVES.

1,408,884.

Specification of Letters Patent.

Patented Mar. 7, 1922.

Application filed May 10, 1919. Serial No. 296,156.

To all whom it may concern:

Be it known that we, JOSEPH HUEBSCH and RICHARD ROOST, citizens of the United States, and residents of the city of Milwaukee, county of Milwaukee, and State of Wisconsin, have invented certain new and useful Improvements in a Timing and Recording Device for Discharge Valves; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to an automatic timing and recording mechanism for use in connection with laundry machines and other similar devices wherein actuation of fluid controlling valves at a predetermined time is desired, the release or operation of the valves by said mechanism being made known both by an audible and visible signalling means. For instance, in laundry establishments, the clothes which are laundered are subject to a number of washing operations forming the successive steps in the process, and it is essential, in the proper laundering of the clothes, that the same be subjected to the different solutions in the different steps of the process only for certain intervals of time in order that the color and fabric of the clothes may not be damaged and further, in order that efficient operation of the washing machine be assured.

By this invention, a timing mechanism may be adjusted so that the valve or valves mounted on the outlet pipe line communicating into the laundry machine are actuated at the proper interval, and, by adjustment of the mechanism, such actuation may be caused to take place at any desired time whatsoever, whereupon an alarm is sounded, and a visible signal is projected into view, so that an operator is made acquainted with the fact and the mechanisms may be restored to normal and the valves closed for introduction of additional solution into the machine by the usual automatic valve mechanisms or other suitable means provided for the purpose.

It is an object therefore of this invention to construct an automatically operating timing mechanism which may be set for operation at the end of any desired interval of

time, and provided with a timing mechanism operated coincidentally therewith to indicate the number of times which the mechanism has been operated as well as the interval of time between and for each operation.

It is also an object of this invention to construct a timing valve control mechanism which may be set for operation at the end of any predetermined interval of time, serving thereby to sound an audible alarm and project a visible signal into view and capable of being readily returned to initial position for another time interval by actuation of a lever and readjustment of the pointer on the time dial to the number indicating the time required for the next operation.

It is also an object of this invention to construct a valve operating and signalling means for the discharge line of a laundry machine, wherein the valve control means and signal devices are normally held in inoperative position and are releasable by a pin carried on a friction clutch wheel and dial indicator which may be set or adjusted for different time intervals of operation to effect the release of said valve operating and signal means.

It is furthermore an important object of this invention to construct a timing and recording mechanism wherein toggle means serve to hold a spring controlled cam in locked position until released by a clutch wheel pin which serves to set into operation an audible signal means, a valve operating means as well as a recording mechanism by which the time interval of operation of the mechanisms and the number of said operations thereof, are recorded.

It is an important object of this invention to construct a timing mechanism for use in connection with laundry machines whereby a discharge valve thereof may be opened at the end of a predetermined time interval, dependent in extent, upon the adjustment of the mechanism, and said mechanism operating to record on a tape for the purpose, the interval of operation and the number of operations caused to take place.

Other and further important objects of the invention will be apparent from the disclosures in the specification and drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a side elevation of a laundry machine equipped with a device embodying the principles of our invention, for operation of the discharge valve of the machine.

Figure 2 is a front view of the device.

Figure 3 is an outer end elevation of the device.

Figure 4 is an elevation of the inner end of the device.

Figure 5 is a rear elevation of the device with the back plate removed.

Figure 6 is a detail section taken on line 6—6 of Figure 5.

Figure 7 is a detail sectional view taken on line 7—7 of Figure 5.

Figure 8 is a detail sectional view taken on line 8—8, of Figure 5.

Figure 9 is an enlarged detail section taken on line 9—9 of Figure 8.

Figure 10 is a fragmentary sectional view similar to Figure 5, but with parts omitted.

Figure 11 is a detail section taken on line 11—11 of Figure 10.

Figure 12 is a detail section taken on line 12—12 of Figure 10.

Figure 13 is a detail section taken on line 13—13 of Figure 7.

Figure 14 is a sectional detail view taken on line 14—14, of Figure 13, with parts omitted.

Figure 15 is a plan view of a fragment of the recording tape, with a record marked thereon.

Figure 16 is a developed plan view of the record tape perforating means.

Figure 17 is a detail sectional view similar to that shown in Figure 12, showing the cam in locking position.

Figure 18 is a fragmentary detail elevation of the audible signal mechanism.

Figure 19 is a top plan view thereof taken on line 19—19, of Figure 18, with parts omitted.

As shown on the drawings:

Referring to Figure 1, the reference numeral 1, indicates as a whole a washing machine or tank, within which the clothes or garments to be laundered are placed, and leading outwardly from the lower end thereof is a discharge pipe 2, provided with an outlet or discharge valve 3. Of course, any suitable inlet means for the different solutions may be provided, connected to said machine or tank 1, but since the same form no part of this invention, they are not shown. Automatic timing mechanisms are provided for operating the discharge valve 3, into open position at the expiration of certain time intervals, when it is desired to allow the contents of the machine 1, to drain off.

Mounted longitudinally on the top of the machine 1, is a supporting pipe or rod 4, on one end of which is engaged a supporting bracket 5, having a bearing sleeve 6, forming

a part thereof. Integrally formed on the upper end of the bracket 5, is a base plate or shelf 7, having integrally formed on the bottom near the inner end thereof a downwardly projecting apertured bearing lug or arm 8, aligned with the sleeve 6. Mounted upon the plate 7, is a timing and recording device embodying the principles of this invention and embracing a casing comprising a front wall 9, a bottom 10, a top wall 11, side or end walls 12, and a removable back wall or door plate 13.

Journalled in the bearings 6 and 8, is a horizontal rocking shaft 14, on the outer end of which is secured an arm or lever 15, to the free end of which is attached the upper end of a flexible rod 16, the lower end of which is rotatably connected to the hub of a large driving gear 17, forming a part of the machine 1, as shown in Figure 1. Secured on the inner end of the rocking shaft 14, is an arm or lever 18, which extends in a direction opposite to that of the lever 15. A coiled spring 19, is engaged on the rocking shaft 14, between the bearing sleeve 6, and the lever 18. One end of the spring is attached to the bracket 5, while the other end of the spring is secured to the lever 18, for the purpose of returning the lever 18, to lowered position after the same has been swung upwardly by the operation of the shaft 14, by means of the lever 15, and rod 16.

Pivotally attached to the other or outer end of the lever 18, is the lower bifurcated end of a connecting rod or link 20, the upper bifurcated end of which is pivotally connected to the outer end of an arm 21. The other end of the arm 21, is provided with an integral cam head 22, which is pivotally connected between lugs 23, integrally formed on one end of a lever 24. Connecting the lugs 23, below the arm 21, is a rocker 25, which extends beyond the inner lug 23, and normally rests upon a stop or ledge 26, secured or formed on the outside of the inner casing wall 12, to limit the downward movement of the cam rocker mechanism 22—25. Formed on the outside of the same wall 12, of the casing and directly above the lower ledge 26, is an upper ledge or shelf 27, through which is adjustably threaded an adjusting screw 28, adapted to be set to serve as a stop to limit the upward movement of the cam rocker mechanism.

A shaft 29, is journalled in the side walls 12, and projects through the casing. The inner end of the lever 24, is pivotally mounted on a projecting hub or collar 30, integrally formed on a friction wheel 30. The friction wheel 30, is keyed or otherwise secured on the outer projecting end of the shaft 29, between the casing and the lever 24, and has teeth 31, formed on the inner side surface thereof. The periphery of the toothed wheel 30, is positioned so that the

same is adapted to be frictionally engaged by the cam 22, to cause rotation of the wheel and the shaft 29. Keyed on the shaft 29, within the casing is a worm 32, which is in mesh with a worm gear 33. A friction clutch member 34, has a portion of the periphery thereof positioned to frictionally engage the inner periphery of the worm gear rim, as shown in Figure 6. The worm gear 33, is journaled in a bearing sleeve 35, supported by a cylindrical collar 36, integrally formed on the front wall 9, of the casing. Projecting through the sleeve 35, is a headed shaft or bolt 37, on the inner end of which the clutch 34, is secured. Engaged on the outer end of the shaft 37, is a knurled knob 38, having a finger, indicator or pointer 39, integrally formed radially thereon. A perforating wheel 40, is journaled on the bearing sleeve 35, to the inside of the knob 38, and is enclosed by a covering or hood 41. Disposed within the sleeve 35, is a spiral spring 42, through which the shaft 37, projects. One end of the spring 42, engages against a seat formed in the sleeve 35, while the other end of said spring contacts the hub of the knob 38, to normally force the knob and the pin outwardly for the purpose of holding the clutch member 34, in frictional engagement with the worm gear 33.

A pin 43, is rigidly secured to the rear face of the clutch member 34, and is so positioned that when the clutch member is rotated, the pin is adapted to contact an inclined edge 44, of a fulcrumed arm 45, which is pivotally mounted on a stub shaft or pin 46, secured to the inner surface of the front wall 9, of the casing above the shaft 29 and at right angles thereto. Also mounted on the stub shaft 46, to the rear of the fulcrumed beam or arm 45, is a slide member or audible signal control bar 47, provided with a slot 48, through which the shaft 46, projects. The slidable bar 47, has one end thereof positioned adjacent the tapered end of the fulcrumed beam 45, in position to be contacted by the pin 43, after the pin contacts the inclined edge 44, of said fulcrumed beam to tip the same. The other end of the slide bar 47, is of reduced size to form a shoulder 49, and a stem 50. The stem 50, projects through an opening in one of the casing side walls 12, and has pivotally fulcrumed thereon an upright lever 51, the lower shorter arm of which is shaped or notched to afford a hook 52, positioned for engagement with the teeth 31, of the wheel 30, as shown in Figure 18. The upper longer arm of the lever 51, projects through an open guide slot 53, formed in the projecting end of a plate 54, mounted upon the top casing wall 11. A coiled spring 55, is positioned above the plate 54, and has one end thereof attached to a lug 56, integrally formed on said plate. The other end of the spring 55,

is connected to the upper end of the lever 51, to normally hold the upper end of the lever 51, inwardly against the side wall of the casing. Supported on the long upper arm of the lever 51, is a hammer 57, positioned so that the head thereof will strike a gong or bell 58, mounted upon the top of the casing to afford an audible signal. A screw pin 59, is adjustably threaded through one of the casing end walls 12, parallel to the stem 50, and affords a stop limiting the sliding movement of the slide bar 47, the shoulder 49, of which is adapted to contact the inner end of said screw pin.

The valve controlling mechanism is actuated by the fulcrumed beam 45, the end opposite the inclined edge of which is pivotally connected between the upper lugs of a double bifurcated connector or toggle 60. A bracket 61, is mounted on the inner surface of one of the casing end walls 12, as shown in Figures 12 and 17, and pivotally attached to one arm of said bracket is one end of a link or toggle 62, the other end of which projects between the lower lugs of the connector 60, and is provided with an integral projection or tongue 63. The link 62, is pivoted to a pin 64, supported by the lower lugs of the connector 60. Also pivotally connected to the pin 64, between the lower lugs of the connector is one end of a middle link or toggle 65, provided with a stop notch 66, and having the other end pivotally connected with one end of a link or toggle 67. The other end of the link 67, is pivoted to the bracket 61.

A shaft 68, is disposed below and parallel to the shaft 29, and projects through the casing end walls 12. Keyed or otherwise secured on the shaft 68, adjacent the inner surface of one of the casing end walls 12, and below the toggle mechanism is a cam 69, provided with an offset portion or tooth 70. The cam is disposed in the plane of the middle toggle 65, so that the cam tooth will engage in the notch 66, of the toggle 65, when said toggle mechanism is in its lower position as shown in Figure 17. A stop block or rib 71, is integrally formed radially on the inner surface of the cam 69, for the purpose of contacting a horizontal post 72, which is rigidly secured within the casing on the casing front wall 9. Secured to the hub of the cam 69, is one end of a heavy coil power spring 73, which is engaged around the shaft 68, and has the other end thereof secured to the hub of a ratchet wheel 74, rotatably engaged on said shaft, and normally held locked against rotation by means of a pawl 75, pivotally engaged on the inner surface of one of the end walls 12. The pawl is removably engaged in one of the ratchet wheel notches to hold the ratchet wheel locked after the spring 73, has been sufficiently tensioned. A pin 76, is remov-

ably engaged in an aperture provided for the purpose in the casing side wall 12, above the pawl 75. Said pin serves to prevent movement of the pawl out of engagement with the ratchet wheel. The ratchet wheel is adapted to be manually released to permit tensioning of the power spring 73.

A peripherally grooved pulley wheel 77, is engaged on the outer projecting end of the shaft 68, and has one end of a cable or chain 78, attached thereto. The lower end of the chain 78, is attached to the valve stem 79, of the machine outlet valve 3. Keyed upon the shaft 68, between the pulley wheel 77, and the casing, is a small cam 80.

Mounted in front of the casing is a dial plate 81, through which the shaft 37, projects to afford a mounting for the knurled knob 38, and the pointer 39. The front of the dial plate 81, is provided with a plurality of gradations, as shown in Figure 2, beginning with zero and increasing in a counterclockwise direction marked in increments of five, up to fifty-five. Supported on the lower portion and toward one side of the large dial plate 81, is a small dial plate 82, provided with a manually operatable hand or pointer 83. The small dial plate 82, forms the cover of a reel box 84, in which a roll of paper or a tape reel 85, is rotatably mounted. The tape 86, is passed out of the upper portion of the box 84, through an opening or slot, and is conducted over a curved pivotally mounted table or plate 87. The free end of the table 87, rests upon a pin 88, forming a part of a fulcrumed guide plate or tape support 89, which is pivotally supported on the front of the large dial plate 81, by means of a pin 90, around which a spring 91, is engaged to normally hold the tape support 89, swung upwardly to hold the table 87, in substantially a horizontal position as shown in Figure 13. A friction roller 92, is carried by the tape support 89, and projects upwardly through an opening in the top of said support. The tape runs between the friction roller 92, and the perforating wheel 40, and is frictionally fed over the support 89, after being perforated and marked as hereinafter more fully described. The recording tape is perforated by means of three peripheral rows of perforating pins or punches 93, with the pins of the various rows separated at different intervals, as shown in Figure 16, for properly perforating the tape into timing intervals as shown in Figure 15.

An extension plate 94, is integrally formed on one side of the casing in the plane of the casing front wall 9. Pivotally mounted at the upper end of the same side of the casing is a hanging arm or lever 95, the lower end of which is bent toward the shaft 68, and forms a head 96, positioned in the plane

of the small cam 80, and adapted to be contacted thereby to swing the hanging lever 95. Pivotally mounted on the outer side of the hanging lever 95, between the ends thereof, is a horizontal slide bar 97, the rear end of which slidably projects through a slot in a guide bracket 98, mounted at right angles on the exterior of the casing side wall 12, on which the hanging lever is mounted. The front end of the slide bar 97, projects outwardly through registering slots in the plate 94, and the dial plate 81, and has the projecting end bent at right angles to afford a mounting for a holder arm 99. The holder arm 99, is pivoted to the outer bent portion of the slide bar 97, for movement in a vertical direction, and is equipped with a spring 100, for holding a tracing point or pencil 101, carried by said holder arm, pressed downwardly upon the recording tape 86, as shown in Figure 13. Secured on the extension plate 94, and projecting rearwardly therefrom is a horizontal post 102, the free or rear end of which is bifurcated or horizontally slotted to permit a lever 103, to be pivotally engaged thereto with one end of said lever free and disposed to the rear of the hanging lever 95. The other end of the lever 103, is pivotally attached to the rear or inner end of a rod or stem 104, which slidably projects outwardly through openings in the extension plate 94 and in the dial plate 81. A button or knob 105, is secured on the outer end of the stem 104.

The operation is as follows:

After the clothes or other articles to be laundered are placed within the machine 1, and it is desired to subject the same to a treatment of a certain solution for a given time, the hand 83, is first manually set at zero on the dial plate 82, to indicate the starting of the first operation. The various numerals on the dial 82, designate the successive number of operations through which the clothes in the machine 1, have been subjected to. The hand 83, is advanced manually by an operator after each operation, and thereby affords a ready means for indicating to an operator the next treatment to which the clothes should be subjected.

The indicator 39, is next swung manually in a counter-clock-wise direction to an adjusted position, that is to an indicating numeral on the dial 81, indicating the number of minutes which it is desired to allow the articles in the machine to remain in a certain solution before opening of the discharge valve 3. The rotational movement of the indicator 39, serves to rotate the shaft 37, and the clutch 34, whereby the pin 43, is set.

Before admitting the solution in the machine 1, the discharge valve 3, is manually closed by pulling downwardly on the chain 78, thereby causing rotation of the pulley wheel 77, and the shaft 68. Rotation of the

shaft 68, acts to rotate the cam 69, into locking position as shown in Figure 17, with the projection or tooth 70, engaged in the notch 66, of the middle link or toggle 65, when the toggle mechanism is in its lowered normal position as also shown in Figure 17. Rotation of the cam 69, serves to tension or wind up the power spring 73. In case the spring 73, becomes weak and cannot be sufficiently tensioned when the cam is rotated by pulling on the chain 78, the ratchet wheel 74, may be rotated for tightening the spring, after removal of the pin 76, which permits the pawl 75, to be disengaged from locking relation with said ratchet wheel.

The valve controlling or operating means is set in locked position as described, and the slide bar 47, is normally in release position as shown in Figure 5, with the audible signal control stem 50, drawn inwardly so that the hook 52, is free from engagement with the toothed wheel 30, see Figure 18. The recording mechanism, shown in Figure 13, is arranged with the tape 86, conducted up over the curved table 87 and the pivoted support 89, between the roller 92, and the perforating wheel 40, with the free end thereof positioned to permit the tape to be fed outwardly as a record is being recorded thereon.

When the machine 1, is started the button 105, is manually pushed inwardly to the full extent, thereby causing the hanging lever 95, to swing outwardly to push the recording pencil 101, outwardly or transversely across the tape 86, to make the starting mark 106. Upon release of the button 105, the hanging lever returns to normal position by its own weight thereby causing the pencil to retrace the mark 106, which indicates the starting of the operation of the machine.

The machine is rotated at a speed of a selected number of revolutions per minute, and with each revolution of the large driving gear 17, the rod 16, is alternately moved upwardly and downwardly thereby transmitting a reciprocating motion to the lever 15, which in turn rotatably rocks the shaft 14. The shaft 14, reciprocates the lever 18, and the connecting rod 20, to impart a motion to the arm 21, and the lever 24. The swinging movement of the lever 24, is limited by the stop 26, and the adjustable screw 28, clearly shown in Figure 4. The reciprocating motion of the arm 21, causes the cam head 22, to frictionally engage the periphery of the toothed wheel 30, to rotate the same. The motion imparted to the wheel 30, serves to rotate the shaft 29, thus actuating the worm 32, which in turn is in mesh with the worm wheel 33, and causes the same to slowly rotate, to gradually rotate the clutch wheel 34, with which it is in frictional engagement. Movement

of the clutch wheel 34, gradually carries the pin 43, toward the fulcrumed arm 45, so that when the machine has run the length of time designated by the indicator 39, on the dial 81, the pin is brought into contact with the inclined edge 44, of the fulcrumed arm 45, and causes depression of the contacted end thereof and elevation of the opposite end. This operation acts to elevate the toggle connector 60, to break or elevate the toggle mechanism 62, 65 and 67. Elevation of the middle toggle 65, releases the tooth 70, of the large cam 69, to permit the stressed power spring 73, to rotate said cam 69, in a clockwise direction, looking at Figure 17, until the rib 71, thereon contacts the stop post 72. Rotation of the cam 69, by the spring 73, also rotates the shaft 68, and the pulley wheel 77, to wind up the chain 78, and thereby open the discharge valve 3, so that the fluid contents of the machine 1, is drained therefrom.

The continued movement of the clutch wheel 34, moves the pin 43, to next contact the end of the slide bar 47, and slide the same outwardly, thus moving the stem 50, outwardly to move the lower hooked or tapered end 52, of the lever 51, into position to be contacted by the teeth 31, of the rotating wheel 30. The teeth 31, frictionally slide over the tapered head 52, and act to swing the lower end of the lever 51, and thereby stress the spring 55, which in turn draws the upper end of the lever 51, inwardly again, which operation actuates the hammer 57, to repeatedly strike the bell 5, to notify the operator of the completion of an operation of the machine. The operator then admits a new solution into the machine, after the valve 3, has first been closed by manually pulling downwardly on the chain 78, which operation again sets the valve control mechanism as hereinbefore described.

The number of operations of the timing mechanism and the time or extent of each of the operations is suitably recorded upon the record tape 86, which is advanced by the perforating wheel 40 and the roller 92. The perforating wheel 40, is rotated by the shaft 37, and the perforating teeth 93, thereon, puncture said tape to show time intervals thereon to permit easy reading of the record on the tape. Thus, from the moment the machine is started and the starting mark 106 has been made on the tape, the tape is slowly driven along beneath the tracing pencil 101, and said pencil marks the longitudinal line 107, on the tape as shown in Figure 15. The pencil 101, continues to trace the line 107, until the indicator 39, which is now moving in a clockwise direction, reaches the zero position on the dial 81. At this time, the pin 43, rotates the fulcrumed arm 45, and then

the slide bar 47, to cause automatic operation of the valve opening mechanism and the audible signal mechanism respectively, as already described. Simultaneously with the operation of the valve opening mechanism, the shaft 68, is rotated and causes the small cam 80, thereon, to swing the hanging lever 95, outwardly, thereby moving the pencil 101, transversely on the tape 86, marking a line 108, thereon. As the machine continues to operate the indicator 39, continues its clockwise movement to the right of the zero position on the dial 81, and the pencil 101, traces the line 109, longitudinally on the tape. The length of the line 107, denotes the number of minutes adjustment of the indicator 39, to the left of the zero mark on the dial 81, and the length of the line 109, indicates the number of minutes elapsing after the discharge valve 3, has been opened to permit drainage of the machine and before the operator has taken notice of the audible signal or the markings on the tape to supply an additional quantity of solution to the operating machine for further treatment of the clothes. When the valve 3, has again been closed by the operator and a new solution has been admitted into the operating machine as described, the button 105, is depressed to cause the pencil 101, to make the mark 110, on the record tape to indicate the starting of the second operation with the new solution in the machine. The indicator 39, is again set manually to the left of the zero mark on the dial 81, to cover the length of time the clothes in the machine are to be subjected to the second solution, before the discharge valve is again opened. The machine operates continuously during the changing and draining of the different solutions and the complete record of operations is recorded on the tape 86. When the clothes in the machine have been properly washed, the machine is stopped to permit removal of the clothes. Stopping of the machine also stops the advance of the record tap 86. After the complete washing of each load of clothes in the machine, the lot marker or hand 83, is manually advanced one division on the small dial 82, to afford a means for keeping a record of the number of different lots of clothes which have been washed.

We are aware that numerous details of construction may be varied through a wide range without departing from the principles of our invention, and we therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

We claim as our invention:

1. A timing mechanism of the class described, comprising worm gears, a clutch frictionally interfitting one of said gears,

a signalling mechanism, a valve operating mechanism, and mechanical means co-operating with both of said mechanisms and said clutch.

2. A timing device of the class described comprising friction controlled means, mechanism for adjusting the same whereby movement thereof takes place for a predetermined time, fulcrumed and slidable mechanisms actuated by said friction controlled means, and signalling devices and valve operating means released by said mechanisms at the elapse of time interval for which said timing means is adjusted.

3. A timing mechanism for connection with operating means of a machine, said timing mechanism comprising controlling means adapted to operate automatically for a predetermined time after adjustment, friction clutch means operated thereby, a slidable member adapted to be actuated by said friction clutch means, a signalling device releasable by said slidable member upon the expiration of the time limit for which the controlling means is set, and a recording device to record the number of settings of said mechanisms, the drain periods, and the extent of time of operation of each of the settings and drain periods for the operating means of the machine.

4. A timing mechanism for connection with operating means of a machine comprising means adapted to operate automatically for a predetermined time after adjustment, a slidable member and a fulcrumed member operated thereby, a signalling device releasable by said slidable member upon the expiration of the time limit for which the means is set, and a recording device released by said fulcrumed member to record the number of settings of said means and the extent of time of operation of each thereof for the operating means of the machine.

5. The combination with a laundry machine, of a timing device connected therewith comprising a worm wheel mechanism, a worm meshing therewith adapted to be actuated by the machine, clutch means frictionally engaged with the worm wheel and adapted to be set to permit movement thereof to take place for a predetermined time, a valve control mechanism, and means associated therewith adapted to be operated by said clutch means at the expiration of the time for which the clutch means is set.

6. The combination with a laundry machine, of a timing device mounted thereon and comprising a worm wheel mechanism operatable by the machine, means frictionally engaged therewith adapted to be set to permit movement thereof for a predetermined time, a valve control mechanism, locking means for holding the same locked in position, and fulcrumed means connected therewith adapted to be actuated by said

friction means at the expiration of the predetermined time to operate said locking means to release the valve control mechanism for opening the discharge valve of the laundry machine.

7. The combination with a laundry machine, of a timing device mounted thereon embracing a driving mechanism operatable by the machine, a friction clutch driven thereby, indicator means connected therewith adapted to be set to permit movement thereof for a predetermined time, a pin on said friction clutch rotatable therewith, a valve control mechanism, toggle means for holding the same locked in position, and fulcrumed means connected with said toggle means adapted to be contacted by said pin at the expiration of the predetermined time to operate the toggle means and thereby release the valve control mechanism for opening the discharge valve of the laundry machine.

8. The combination with a laundry machine and the discharge valve thereof, of a timing device mounted thereon embracing a driving mechanism actuated by the machine, a friction clutch driven thereby, indicator means connected therewith adapted to be set to permit movement thereof for a predetermined time, means carried by said friction clutch, a valve control mechanism connected with the machine discharge valve, a spring controlled cam forming a part thereof, toggle means for holding the valve control mechanism locked in an operative position and fulcrumed means connected with said toggle means adapted to be actuated at the expiration of the predetermined time by the means carried on the friction clutch to break the toggle means to release the valve control mechanism which acts to open the machine discharge valve.

9. A timing device of the class described comprising a driving mechanism, friction means actuated thereby, indicator means connected therewith adapted to be set to permit movement thereof for a predetermined time, a member carried by said friction means, pivoted means, a link mechanism connected therewith, a cam adapted to be held in locked position thereby, adjustable spring means for actuating said cam when released from locking position, and pulley means adapted to be operated to set said cam in position to be locked by said link mechanism, said member at the expiration of the predetermined time adapted to actuate the pivoted means to elevate the link mechanism out of engagement with said cam to release the same and cause operation of the pulley means in a reverse direction.

10. A timing device of the class described comprising a driving mechanism, friction means actuated thereby, indicator means connected therewith adapted to be set to permit movement thereof for a predeter-

mined time, pivoted means, slidable means adjacent thereto, audible signal means connected with said slidable means, toothed means associated therewith and rotatable by said driving mechanism, a spring controlled cam, toggle means connected with said pivoted means, and pulley means adapted to actuate said cam to move the same into locked position with said toggle means, said friction means at the expiration of the predetermined time adapted to depress the pivoted means to cause elevation of the toggle means and release of the cam to permit rotation of the pulley means for opening a valve mechanism associated with the timing device, said friction means further adapted to slide the slidable means outwardly to cause ringing of the audible signal means by said toothed means when said valve mechanism is open.

11. The combination with a valve mechanism, of a timing device comprising means adapted to be set to operate for a predetermined time, a cam mechanism connected with said valve mechanism, a spring controlling the same, toggle means locking said cam mechanism against operation by said spring, an audible signal means, a visible recording mechanism associated with said toggle means and members at the expiration of the predetermined time adapted to be actuated by said means to cause operation of the toggle means to release the cam mechanism to open the valve mechanism, and also cause operation of the audible signal means and the visible recording mechanism.

12. A timing device comprising a controlling mechanism, means for setting the same to operate for a certain length of time, a pin on said controlling mechanism, and a slidable member, and a signal mechanism adapted to be operated by the slidable member as the same is actuated by said pin at the expiration of the time set.

13. A timing device comprising a controlling mechanism, means for setting the same to permit operation thereof for a given period of time, a pin, a member fulcrumed thereon, a slotted bar slidable upon said pin, and a plurality of mechanisms adapted to be operated by said fulcrumed member and by said slidable bar as the controlling mechanism at the expiration of the given period of time engages and actuates said member and bar.

14. A timing device comprising a dial, recording means thereon, an indicator for the dial adapted to be manually set, a clutch mechanism adapted to be governed by the setting of said indicator, and valve operating means adapted to be actuated with said recording means by the clutch mechanism at the expiration of a certain length of time for which the indicator has been set.

15. A timing device comprising a dial,

recording means thereon, an indicator for the dial, control means connected therewith and adapted to be set by said indicator to permit operation of the control means for a certain time, a spring actuated cam mechanism, an audible signal, said control means at the expiration of the given time adapted to actuate said cam mechanisms and said signal, and a cam on said cam mechanism associated with said recording means for operating the same to record a record when said cam mechanism is actuated by the control means.

16. The combination with a washing machine and the discharge valve thereof, of a valve operating mechanism, a fulcrumed member tapered at one end and having the other end connected with said valve operating mechanism, means adapted to be set to operate for a predetermined time, and a member carried thereby adapted at the expiration of said time to engage the tapered end of said fulcrumed member to pivot the same to cause the valve operating mechanism to open the discharge valve.

17. The combination with a washing machine and the discharge valve thereof, of means for automatically opening said valve after a predetermined lapse of time to permit drainage of the machine, and a recording mechanism connected with the machine adapted to record the length of time before said means is released and also the length of time during which drainage of the machine takes place.

18. The combination with a washing machine and the discharge valve thereof, of cam controlled means connected therewith for recording the length of time said valve is closed and open.

19. The combination with a washing machine and the discharge valve thereof, of a recording tape, and means operable with the machine for perforating and marking said tape to record time intervals and the length of time said valve is closed and open.

20. The combination with a washing machine and the discharge valve thereof, of a valve operating mechanism, a recording mechanism, a cam mechanism connected with the valve operating mechanism and with said recording mechanism, and means

adapted to be set to operate for a predetermined time, said means at the expiration of said time adapted to cause said cam mechanism to simultaneously actuate the valve operating mechanism and operate the recording mechanism.

21. A washing machine timing device embracing a dial, a recording mechanism mounted thereon, an indicator on said dial adapted to be set to operate for a predetermined time, and a cam mechanism connected therewith adapted to automatically operate said recording mechanism at the expiration of the set time.

22. In a device of the class described, a valve operating mechanism, a signal operating mechanism, a revolving member, and pivoted means and a slidable means co-acting with said revolving member for successively operating said valve operating mechanism and said signal operating mechanism.

23. In a washing machine, a driving shaft, a timing mechanism driven thereby, a recording mechanism operated by said timing mechanism, a valve mechanism operated by said timing mechanism, and means for shifting a part of said recording mechanism simultaneously with the operation of said valve mechanism for marking the time said valve was opened.

24. The combination with a washing machine and the discharge valve thereof, of timing mechanism for opening said valve at a predetermined time interval, and a recording mechanism operated by said timing mechanism to mark the time said valve was opened.

25. The combination with a washing machine and the discharge valve thereof, of timing mechanism for opening said valve at a predetermined time, a recording mechanism comprising a marker, and means for automatically and laterally shifting said marker when said valve is opened.

In testimony whereof, we have hereunto subscribed our names in the presence of a subscribing witness.

JOSEPH HUEBSCH,
RICHARD ROOST.

Witness:
FRED E. PAESLER.