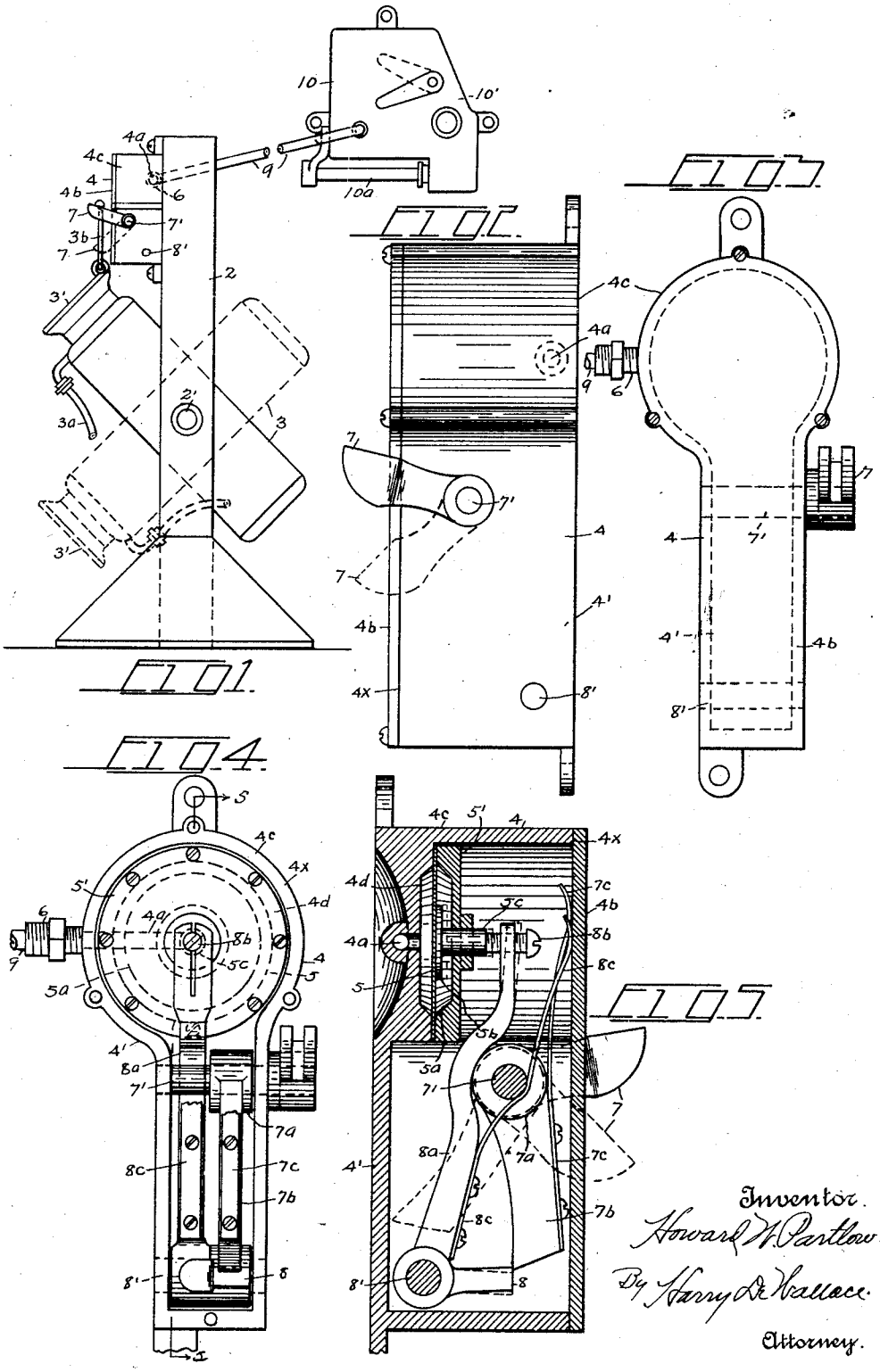
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RELEASE MECHANISM FOR FIRE EXTINGUISHERS

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## RELEASE MECHANISM FOR FIRE EXTINGUISHERS

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This invention relates to a fire extinguishing system, wherein the containers in which the extinguishing fluids are stored, are swingably mounted in frames, which may be located near dipping-tanks, or other fire hazards, and wherein the containers when inoperative are required to be held substantially upright until a fire starts, when the containers are released, and tilt by their own weight for discharging their contents and quenching the fire.

The invention relates particularly to an improvement in the releasing mechanism, shown and described in my pending application, filed December 5, 1927, Serial No. 237,887.

The object of the invention is to provide novel construction of the mechanism that directly controls the release of the containers, whereby the number of working parts are greatly reduced, and the whole rendered more positive, reliable and quick-acting, than the release of my former application.

The invention will be understood from the detailed description which follows, and by reference to the accompanying drawing, in which—

Figure 1 is a diagrammatic view of a fire extinguishing system, showing a gravitative container supported in its inoperative position by the releasing mechanism, also showing a thermally-controlled actuator that operates the releasing mechanism. Fig. 2 is an enlarged side elevation of the releasing unit. Fig. 3 is a front face view of the enclosed device. Fig. 4 is a front view of the releasing mechanism, with the cover of the box removed. And Fig. 5 is a vertical longitudinal section, taken on line 5—5 of Fig. 4, showing the releasing mechanism holding the container inoperative, also showing the fluid-pressure controlled parts that trip the release by the operation of the actuator.

In the drawing, referring to Fig. 1, 2 represents an upright frame in which is shown pivotally mounted a tank 3, that contains the fire extinguishing fluid, the pivot 2′ being located slightly below the middle of the tank so as to enable the head 3′ to gravitate to discharge the contents, as through a hose $3^a$. The head 3′ is fitted with a flexible cord or chain $3^b$, by which the container may be held elevated or inoperative, by the local releasing mechanism, as 4.

The releasing unit 4 comprises a metallic box 4′ one side thereof, as $4^x$, being open and may be closed by a cover $4^b$. The top portion $4^c$ of the box is preferably cylindrical, and its rear inner wall is formed with a cavity or chamber $4^d$, over which is disposed a diaphragm 5, the latter being held in place by a disc 5′, in which is formed a corresponding oppositely facing cavity, as $5^a$. The chamber $4^d$ communicates with a rearwardly extending port $4^a$, to which a nipple, as 6, may be applied. The flexible part $3^b$ of the container engages an external forked lever 7 carried by the release mechanism said lever being mounted rigidly on a projecting end of a shaft 7′ that passes transversely through the walls of the box, which are suitably perforated for the purpose. Within the box 4′ a collar $7^a$ is mounted rigidly on the shaft 7′, and is formed with an integral depending arm $7^b$, which is movable with the lever 7. The free end of arm $7^b$ is arranged to overlap the short arm 8 of a bell-crank, for holding the container in the elevated position, shown in Fig. 1. The bell-crank is pivotally mounted in the box 4, by means of a shaft 8′ that also passes transversely through the walls and parallel to shaft 7′. The longer arm $8^a$ of the bell-crank extends upwardly beneath shaft 7′, and its top end is fitted with an adjusting screw $8^b$, that alines axially with the diaphragm 5, said screw being resiliently held, by a spring $8^c$, in contact with the exposed end of a plunger or stem $5^c$ that reciprocates in an opening in the disc 5′. The inner end of the plunger $5^c$ is formed with a disc-shaped head $5^b$ that engages the diaphragm 5. The diaphragm is designed to be flexed by a blast of air delivered to the chamber $4^d$ for rocking the plunger $5^c$ in the direction for disengaging the tooth 8 and the arm $7^b$ and allowing the lever 7 to gravitate for releasing the container 3, as may be understood by consulting Figs. 1 and 7. Following the release of the container 3, a spring $7^c$ whose free end engages the underside of the

cover 2′, tends to lift the arm 7ᵇ and cause it to snap into engagement with tooth 8, as shown in Fig. 5, for restoring the lever 7 to the inoperative position, ready to support the container after the same has been recharged or replaced. The compressed air, or fluid-pressure, by which the container 3 is released, is preferably communicated to the chamber 4, by a pipe 9 which connects the releasing mechanism with an actuator as 10 (see Fig. 1), which is preferably thermally controlled and may be located at any suitable distance from the releasing device. A number of these actuators may be distributed around the interior of a building, providing each actuator is arranged to communicate with the releasing mechanism by an individual conduit 9. Since the actuator only plays an incidental part in the working of the releasing mechanism, its details are not shown in the drawing of the present case. But it may be explained that the said device comprises in a general way, a box-like body 10′, in which is disposed an air compressing mechanism of any suitable design, which is controlled and operated by a thermostat 10ᵃ, the latter being located below and outside of the box 10′, as shown in Fig. 1. The thermostat 10 is preferably exceedingly sensitive to temperature changes and at the flashing of the contents of a dipping-tank, or a quick rise of temperature due to the starting of a fire in close proximity to the actuator, the thermostat expands and sets in motion the compressing mechanism which delivers a single blast of air through the pipe 9, for tripping the container releasing means as explained.

Having thus described my invention what I claim, is—

1. In a release for tiltable containers of automatic fire extinguishers, a box, a shaft passing transversely through the box and supporting an external trip arm to which the head of the container may be detachably connected, a pendant lever supported by said shaft within the box, a diaphragm above the pendant lever, a rockable member pivoted below said shaft having a tooth movable into the path of and adapted to engage the pendant lever for holding the container head elevated, said member having a long arm that overlies the diaphragm, and means to rock said member by the flexing of the diaphragm to break the engagement of said tooth with said pendant lever for effecting the release and tilting of the container.

2. A release mechanism for tiltable fire extinguishing containers, comprising a box, a trip-arm, for holding the container head elevated mounted outside of the box, a pendant lever disposed in the box and movable with the trip-arm, a diaphragm located in the box, a rockable member pivoted below the pendant lever comprising a long arm that overlies the diaphragm and a short arm adapted to be disposed in the path of the pendant lever when the diaphragm is unflexed for holding the trip-arm rigid, and means actuated by flexing of the diaphragm to release the pendant lever for enabling the container to tilt by its own weight.

3. A release mechanism for tiltable fire extinguisher containers and the actuator thereof comprising a box, a trip-arm mounted on the outer wall of the box to hold the head of the container elevated, a pendant lever disposed in the box and movable with the trip-arm, a diaphragm located in the box, a rocking member pivoted below the pendant lever comprising a long arm that overlies the diaphragm and a short arm adapted to engage the pendant lever when the diaphragm is unflexed for holding the container head elevated, means to transmit pressure from the actuator to flex the diaphragm for breaking the engagement of said rocking member with said pendant lever for releasing the container from the trip-arm.

4. A release mechanism for tiltable fire extinguisher containers, comprising a box, a forked arm disposed outside the box to directly support the charged container, a shaft journaled in the wall of the box to support the forked arm, a lever rigid to the shaft inside the box and movable with the forked arm, a bell-crank pivoted below said shaft, one arm thereof adapted to engage said lever to prevent accidental tilting of the container, the other arm of the bell-crank extending above said shaft, a diaphragm operatively connected with the latter arm, and an air pipe communicating with one chamber of the diaphragm, said diaphragm adapted when flexed by a blast of air delivered by said pipe to rock the bell-crank for breaking its connection with said lever to effect the release and tilting of the container.

5. A release mechanism for tiltable fire extinguisher containers having an actuator adapted to deliver sudden blasts of air located at a distance therefrom, including a box, a swingable member located outside the box to support the head of the container when elevated, a shaft passing through the box, a protruding end thereof supporting said member, a collar rigid on said shaft having a depending arm, tension means to normally hold the swingable member in the supporting position, a bell-crank pivoted below said shaft, one arm of the bell-crank adapted to engage the free end of said depending arm for preventing the release of the container, the other arm of the bell-crank extending above said shaft and being fitted with adjusting means, a diaphragm supported by the rear inner wall of the box, and means interposed between the diaphragm and said adjusting means to rock the bell-crank, when the diaphragm is flexed by a blast of air delivered by the actuator to enable the head of

the container to gravitate and discharge its contents.

6. A release mechanism for fire extinguishers including a casing, a diaphragm in the casing, a bell-crank lever having a long arm disposed substantially parallel and connected at one end to the diaphragm, a transverse shaft carried by the casing for connection to the extinguisher and located below the diaphragm, a depending member on the shaft formed to engage and latch the other arm of the bell-crank, and a leaf spring carried by the long arm of the bell-crank and by the depending member and engaging the adjacent wall of the casing.

7. A release mechanism for fire extinguishers including a casing, a diaphragm in the casing, a bell-crank lever having a long arm disposed substantially parallel and connected at one end to the diaphragm, a transverse shaft carried by the casing for connection to the extinguisher and located below the diaphragm, a depending member on the shaft formed to engage and latch the other arm of the bell-crank, and means to tension the bell-crank lever and the depending member.

8. A release mechanism for fire extinguishers including a casing, a diaphragm in the casing, a lever pivoted at its lower end below the diaphragm and extending substantially parallel thereto and connected at its upper end to the diaphragm, a transverse shaft carried by the casing for connection to the extinguisher and located between the ends of the lever, a depending member carried by the shaft, and a tooth on the lower end of the lever for engagement with the lower end of the depending member.

In testimony whereof I affix my signature.

HOWARD W. PARTLOW.