

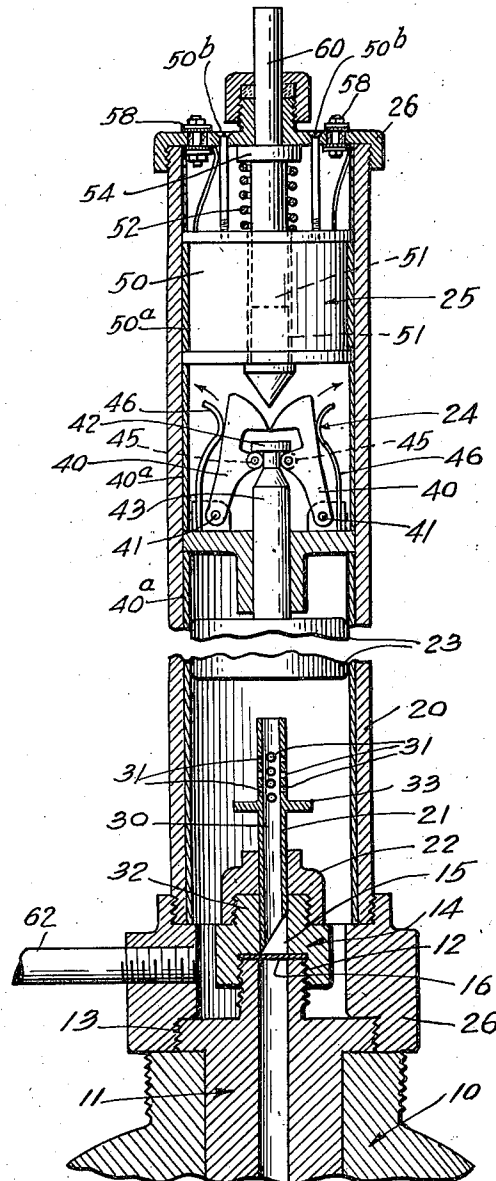
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CONTROL FOR FLUID CONTAINERS

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CONTROL FOR FLUID CONTAINERS.

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This invention relates to a control for fluid containers or the like, and it is particularly useful as applied to gas containers and the like.

5 Gases of various kinds are stored under pressure in containers equipped with means whereby the gas may be allowed to escape as desired. My present invention relates to a control device suitable for gas containers and the like, operable to open the containers to allow the contents to escape therefrom. It is to be understood, however, that the invention is not limited to the control of any particular gas or fluid or to the gas or fluid being used for any particular purpose.

15 The device which is the subject of this application is of the same general character and for the same general purposes as the device which is the subject of my co-pending application entitled Fluid control device, filed December 22, 1925, Serial No. 77,164.

20 It is an object of my invention to provide a control device of the character mentioned which is simple in construction and reliable in operation.

25 It is a further object of my invention to provide a control device of the character mentioned which is simple and compact and which employs a weight as power for effecting the opening of the container.

30 The various objects and features of my invention will be best and more fully understood from the following detailed description of a typical preferred form of the invention in which the figure is a vertical detailed sectional view of the device provided by this invention showing it in operating position on the container.

35 The device provided by my invention is applicable to or suitable for operation in connection with containers of various styles and constructions and containers handling various fluids. I have, for sake of example, shown the device applied to a typical form of gas container 10 which is provided with a neck fitting 11 having threaded part 12 of small diameter and a threaded part 13 of large diameter. The container is provided with a cap 14 which screw threads onto the part 12 of small diameter. The cap 14 is provided in its end with an opening 15 closed by a metal plate 16 adapted to fail upon excessive pressure occurring in the container, or to be broken by a punch or the like inserted through the opening 15.

The control device provided by this invention includes, generally, a body 20 attachable to the container 10, a punch 21, a carrier 22 for the punch holding it in position to operate on the plate 16, a weight 23 for actuating the punch, catch means 24 for releasably holding the weight in a suspended position, and electromagnetic control means 25 for the catch means 24.

60 The body 20 may be in the form of a tube mounted on the container 10 through a suitable fitting 26 and is closed at its upper end by a cap 27.

65 The punch 21 is preferably in the form of a rod round in cross section, having its lower end truncated at an angle so that it is effective in piercing or penetrating the plate 16. The punch is provided with a central longitudinal opening 30 which communicates with lateral ports 31 in the upper end portion of the punch. In using the term "punch" I mean to include any device or means which may be used in the construction provided by my invention for penetrating or fracturing the plate which seals the container, and I do not mean to specifically limit myself to a part or device having specifically a cutting action.

70 The guide 22 for the punch slidably carries the punch, and in the form of the invention shown in the drawings is applied to the cap 14 so that the punch is supported in position to operate on the plate 16. I have shown the guide 22 screw threaded on the projection 32 on the top of the cap. A flange 33 may be provided on the upper end portion of the punch to limit the downward movement of the punch in the guide.

75 The weight 23 is slidably mounted in the body 20 so that it is normally spaced above the upper end of the punch and so that it can be released to drop into engagement with the punch to drive it through the plate 16. The weight may, of course, be varied in size and construction to properly accommodate the other parts of the construction.

80 The catch means 24 provided for releasably holding the weight 23 in a suspended position may include one or more levers 40 carried on pivot pins 41 to releasably support a head 42 on a stem 43 that extends upwardly from the weight. In the construction shown in the drawings the levers 40 carry rollers 45 that engage under the head 42. The levers extend upwardly above the head

42 to present parts to be engaged by the electromagnetic control means hereinafter described. Suitable springs 46 may be provided to normally yieldingly hold the levers in position where the rollers 45 engage under the head 42 to hold it.

The electromagnetic control means may include a solenoid device comprising a winding 50 stationary in the body 20, and a core 51 movable to engage the upper end portions of the levers 40 to operate the levers as indicated by the arrows in the drawings so that the rollers are released from the head 42. The winding 50 is carried in a housing 50^a and is supported from the cap 27 through means 50^b. The core 51 is normally held in an up or unactuated position by a spring 52 interposed between the housing 50^a and a head 54 on the stem at a point above the winding. The spring 52 is a comparatively light spring, only sufficiently strong to hold the core in an unactuated position. Suitable electrical connections may be made with the winding 50 from the exterior of the body through winding posts 58 in the cap 27. A rod 60 may extend upwardly from the upper end of the core 51 through the cap 27 to present a part at the exterior of the body whereby the core can be manually operated to release the catch means 24.

The body 20 may be provided with openings to allow fluid from the container to escape freely into the atmosphere upon the plate 16 being broken, or it may be provided at a suitable point, for instance at a point near its lower end, with an outlet opening 62 through which the fluid may be passed to a suitable conduit. In the construction shown in the drawings the levers 40 are mounted on a partition held between sleeves 40^a which are held between the housing 50^a and fitting 26.

In operation the device is normally applied to a container 10 with the parts in an unactuated condition as shown in the drawing. The winding of the solenoid is connected in a suitable actuating circuit controlled in any suitable manner, for instance through suitable remote control. Upon energizing the winding 50 in the proper manner, the core 51 is moved downwardly to engage and release the levers 40, allowing the weight 23 to drop and drive the punch 21 through the plate 16. This allows the fluid to escape from the container into the body to escape therefrom or to be conducted through the opening 62. To operate the device independent of the electromagnetic control, the rod 60 may be depressed forcing the core 51 downwardly to release the levers 40 and thus cause operation of the device as just described.

Having described only a typical preferred form of my invention I do not wish to limit

myself to the specific details set forth, but wish to reserve to myself any changes or variations that may appear to those skilled in the art or fall within the scope of the following claims:

Having described my invention I claim:

1. The combination of a container for fluid under pressure comprising a body having a discharge member projecting upward therefrom, a casing supported on the container and forming a chamber, provided with a fluid outlet, about said discharge member, a closure for the discharge member including a sealing disk extending across the bore thereof, a punch within the casing having its lower end adjacent said sealing disk, the punch having a bore extending through its lower end and provided with a lateral opening within the casing above the outer end of the discharge member of the container, a weight within the casing above the punch, means for normally sustaining the weight in an elevated position above the punch, and means for disengaging the weight from the sustaining means and permitting it to fall upon the punch and cause the latter to penetrate the sealing disk.

2. The combination of a container for fluid under pressure comprising a body having a discharge member projecting upward therefrom, a casing supported on the container and forming a chamber, provided with a fluid outlet, about said discharge member, a closure for the discharge member including a sealing disk extending across the bore thereof, a punch within the casing having its lower end adjacent said sealing disk, the punch having a bore extending through its lower end and provided with a lateral opening within the casing above the outer end of the discharge member of the container, a stop on the punch adapted to cooperate with means on the discharge member to limit downward movement of the punch, a weight within the casing above the punch, means for normally sustaining the weight in an elevated position above the punch, and means for disengaging the weight from the sustaining means and permitting it to fall upon the punch and cause the latter to penetrate the sealing disk.

3. The combination of a container for fluid under pressure comprising a body having a discharge member projecting upward therefrom, a casing supported on the container and forming a chamber, provided with a fluid outlet, about said discharge member, a closure for the discharge member including a sealing disk extending across the bore thereof, a punch within the casing having its lower end adjacent said sealing disk, the punch having a bore extending through its lower end and provided with a lateral projection adapted to cooperate with means on the container discharge member to

limit downward movement of the punch, and having beyond said projection a lateral opening into the casing, a weight within the casing above the punch, means for normally sustaining the weight in an elevated position above the punch, and means for disengaging the weight from the sustaining means and permitting it to fall upon the punch and cause the latter to penetrate the sealing disk.

4. The combination of a container for fluid under pressure comprising a body having a discharge member projecting upward therefrom, a casing supported on the container and forming a chamber, provided with a fluid outlet, about said discharge member, a closure for the discharge member including a sealing disk extending across the bore thereof, a punch within the casing having its lower end adjacent said sealing disk, the punch having a bore extending through its lower end and provided with a lateral opening within the casing above the outer end of the discharge member of the container, a weight within the casing above the punch, means for normally sustaining the weight in an elevated position above the punch, and electro-magnetic means within the casing for disengaging the weight from the sustaining means and permitting it to fall upon the punch and cause the latter to penetrate the sealing disk.

In witness that I claim the foregoing I have hereunto subscribed my name this 8th day of Jan., 1926.

CHARLES S. JOHANN.