

No. 724,304.

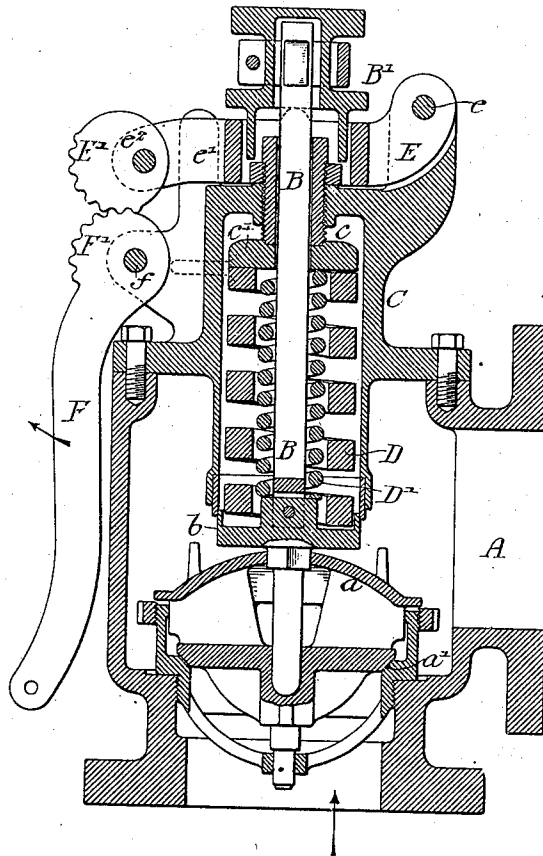
PATENTED MAR. 31, 1903.

J. E. LONERGAN.

LIFTING GEAR FOR SPRING PRESSURE SAFETY VALVES.

APPLICATION FILED JULY 2, 1902.

NO MODEL.



Witnesses:-

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UNITED STATES PATENT OFFICE.

JOHN E. LONERGAN, OF PHILADELPHIA, PENNSYLVANIA.

LIFTING-GEAR FOR SPRING-PRESSURE SAFETY-VALVES.

SPECIFICATION forming part of Letters Patent No. 724,304, dated March 31, 1903.

Application filed July 2, 1902. Serial No. 114,072. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. LONERGAN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Lifting-Gears for Spring-Pressure Safety-Valves, of which the following is a specification.

My invention relates to certain improvements in lifting-gears for spring-pressure
10 safety-valves; and the object of my invention is to provide means whereby the valve can be readily lifted a distance off its seat against the pressure of the spring when there is no pressure on the under side of the valve to
15 help lift it.

In the accompanying drawings, the figure is a vertical sectional view showing one form of spring-pressure safety-valve and illustrating my invention.

20 A is the valve-casing.

a is the valve, adapted to the usual seat a'.

B is a stem connected to the valve and arranged to move in a bearing c, formed in the cap C of the casing. This cap is secured to
25 the casing A in any suitable manner.

In the present instance there are two springs D and D', one rectangular in cross-section and the other circular. The springs rest against a plate c' at their upper ends and
30 against a plate b at their lower ends. This plate has a spindle resting in a socket in the valve a, so that when there is sufficient pressure under the valve in the direction of the arrow then the valve will be lifted off its seat and the springs D D' will be compressed accordingly; but as soon as this pressure is relieved the valve will immediately fall back
35 to its seat.

Ordinarily very heavy springs are used in
40 these spring-pressure safety-valves. Consequently it is a difficult matter to lift the valve off its seat by any mechanical means when there is no pressure on the under side of the valve to help raise the valve.

45 By my invention I am enabled to use a compact mechanical device which will not only lift the valve off its seat, but will lift it entirely clear of its seat.

E is a lever pivoted at e to a projection on
50 the cap C. This lever extends across the valve-casing, spanning the valve-stem B and having an enlarged portion e', which rests

against the under side of the head B', secured to the stem. Pivoted at e² on the end of this lever E is a segmental gear E', which is piv- 55
oted eccentrically to the lever E.

F is an operating-lever pivoted at f to a projection on the casing C, and on this lever is a segmental gear F', which is also arranged eccentrically to the pivot f, so that when the
60 lever F is in the position shown in Fig. 1 the pivots f and e² are close together and the valve is seated, but can raise off its seat when the pressure under the valve becomes greater than the pressure of the springs without in- 65
terfering with the lever mechanism above described; but when the operating-lever F is moved in the direction of its arrow then the eccentric gears F' and E' both turn on their
70 pivots and the lever E is gradually raised, and the pressure exerted is sufficient to cause a compression of the springs D D', and consequently the valve a is lifted off its seat, because both the gears F' and E' are eccentric
75 and the combined action lifts the valve to the desired height.

It will be noticed in referring to the drawings that the pivot of the eccentric E' is offset in respect to the pivot of the lever F, so that when the lever is turned up it will be
80 held in its adjusted position, owing to the fact of being thrown off center.

I have shown my invention applied to a certain form of spring-pressure safety-valve; but it will be understood that my invention may
85 be applied to other types of valves without departing from my invention.

I claim as my invention—

1. In a lifting-gear for spring-pressure safety-valves, the combination of the casing, 90
a valve, a valve-stem, a spring for keeping the valve to its seat, a lever pivoted to the valve-casing and engaging the stem of the valve, a gear pivoted to the said lever, an operating-lever pivoted to the casing and hav- 95
ing a gear, the teeth of which mesh with the teeth of the other gear, said gears being eccentric, so that when motion is imparted to the handle the two gears will turn on their pivots and raise the valve-stem against the
100 pressure of the spring, substantially as described.

2. In a lifting-gear for spring-pressure safety-valves, a spring-pressure valve, its

stem, with a lever acting against the stem, and an operating-lever pivoted to the casing, with eccentric gears between the hand-lever and the valve-lever for lifting the valve off its seat, substantially as described.

3. The combination of a valve-casing having a valve-seat, a valve, a stem, a spring tending to keep the valve to its seat, a head on the valve-stem, a lever pivoted to the casing and resting under the head of the valve-stem, an eccentric segmental gear pivoted to the outer end of the said lever, an operating-lever pivoted to the casing and having formed thereon an eccentric segmental gear which meshes with the other gear so that when the lever is raised the valve will be lifted off its seat against the pressure of the spring, substantially as described.

4. The combination of a valve-casing, a valve, a stem therefor, a lever connected to the stem, means acting on the valve for keeping the same in a predetermined position, an eccentric gear rotatably mounted on the lever and an operating-lever having a portion

formed to mesh with said gear and pivoted to the casing, the relative mountings of the gear and the operating-lever being such that the center of rotation of the gear is at a distance from the line of action of the means acting on the valve different from that of the pivot of the operating-lever, substantially as described.

5. In a lifting-gear for spring-pressure safety-valves, a spring-pressure valve, a stem therefor, a lever acting against the stem and an operating-lever pivoted to the casing with eccentric gears between the latter lever and the valve-lever for lifting the valve off its seat, said gears being so arranged that their centers of rotation are nearest each other when the valve is closed, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN E. LONERGAN.

Witnesses:

WILL. A. BARR,
JOS. H. KLEIN.