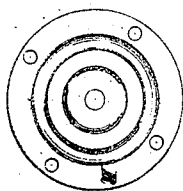


*Jarvis B. Edson's Imp<sup>d</sup> Attachment for Safety Valves.*

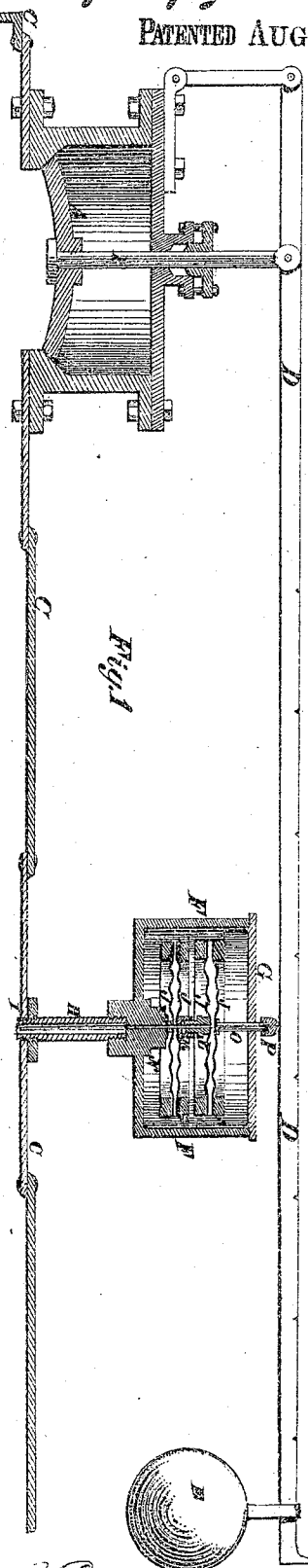
PATENTED AUG 8 1871

117872



*Fig. 2*

*Fig. 3*



*Fig. 1*

*Witnesses*  
*Fred. Haynes*  
*Herb. French*

*Jarvis B. Edson.*

# UNITED STATES PATENT OFFICE.

JARVIS B. EDSON, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN SAFETY-VALVES.

Specification forming part of Letters Patent No. 117,872, dated August 8, 1871.

### *To all whom it may concern:*

Be it known that I, JARVIS B. EDSON, of Brooklyn, in the county of Kings and State of New York, have invented new and useful improvements in the construction of attachments for safety-valves as used on steam-boilers or other reservoirs of pressure; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification.

The object of my improvement is twofold, first, to enable the steam to exert additional power in promptly raising the safety-valve as ordinarily constructed, particularly when such valve shall have become "stuck," jammed, or overloaded, without requiring any overpressure than that to which said valve is supposed to be loaded and operative; and second, to prevent the waste of steam which now occurs when boilers are worked nearly up to the pressure to which the safety-valve is loaded, or, as in steamers, to prevent the raising and leaking of the valve produced by the rolling of a vessel in a seaway. My invention consists in the application, combination, and attachment of one or more specially corrugated diaphragm steel springs to any reservoir of pressure in such manner that the contained pressure shall, by distending the spring or springs, cause them to impinge upon and raise the safety-valve lever.

In the accompanying drawing similar letters of reference indicate corresponding parts.

Figure 1 shows a common safety-valve attached to the shell of a boiler with the diaphragm automatic opener inclosed in the case F, and where J J J, &c., represent corrugated diaphragm springs arranged in pairs, and having their outer edges confined tightly by binding-rings K K, &c., and screws. When more than one of these pairs of combined springs are used for this purpose they are coupled together by any hollow connections, as L M. These springs, thus connected and combined, are placed in a suitable casing, F, usually made of iron, with a hole in the bottom N for connection with the boiler, and a pin or adjustable stud, O and P, projecting through the top G

to impinge against the valve-lever D, upon which it is desired to act. It being desirable that these springs J J J, &c., should open out rapidly and promptly when a pressure is reached at which the safety-valve is loaded and expected to act, causes me, when more than one diaphragm is used, to construct and confine them in a new and novel manner, which I will proceed to describe. When the pressure comes between the two springs R R, Fig. 2, constructed flat, they begin to open or separate immediately, and continue opening until their elasticity is exhausted; but when I corrugate these diaphragms J J J, &c., convexly, as at S S, Fig. 3, and confine them with their convex surfaces together, making them nearly flat, a certain pressure is required between them before they will begin to open; and it is my method to make this certain pressure alluded to that pressure at which the valve is supposed to open. Therefore I confine together a sufficient number of convexly-corrugated diaphragm springs in pairs, with connections between each, and communicate the interior space of all with the boiler pressure, so that, by being placed in contact with a safety-valve lever, the boiler pressure, after it has reached a certain point, shall cause the opening out of said springs, and consequent opening of the valve and relief to the boiler or reservoir of pressure.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The construction and combination of pairs of corrugated diaphragm springs, in which the springs have their convex surfaces turned inward, as S S, Fig. 3.

2. The adaptation and combination of corrugated diaphragm steel springs, constructed as described, so as to impinge against a safety-valve lever at any certain pressure, and by which action the steam or other fluid under pressure will blow off.

JARVIS B. EDSON.

Witnesses:

FRED. HAYNES,  
FERD. TUSCH.