

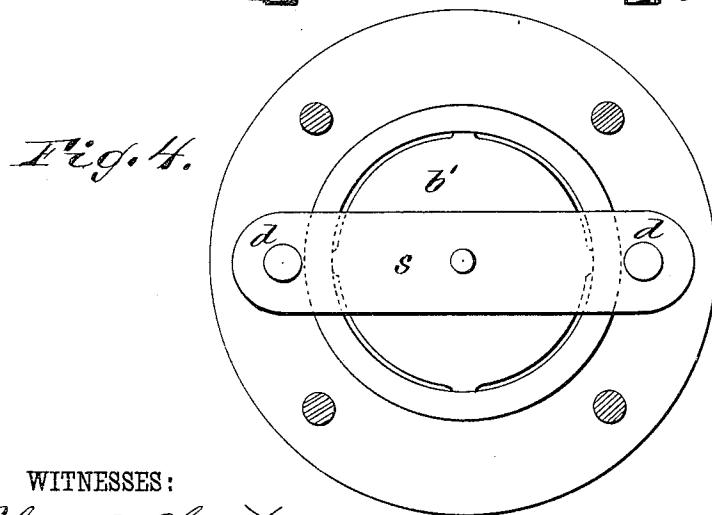
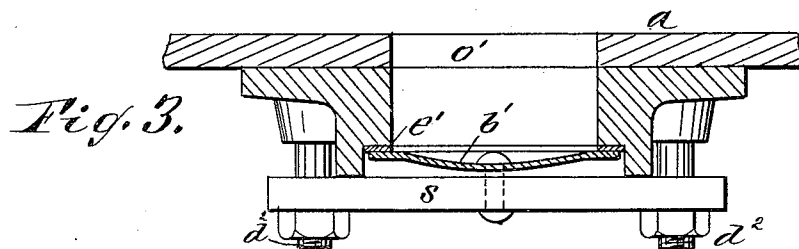
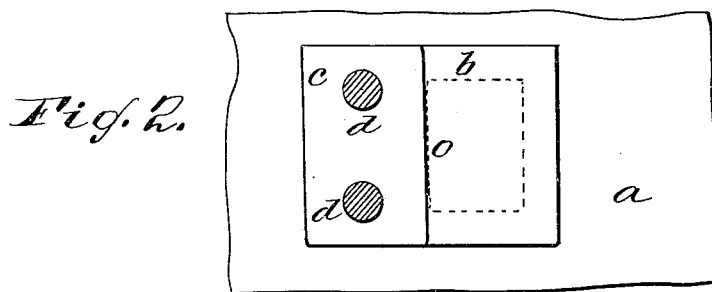
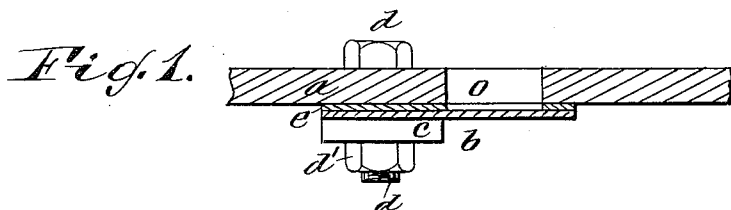
(No Model.)

B. MEYER.

DEVICE FOR PREVENTING THE EXPLOSION OF STEAM BOILERS.

No. 351,121.

Patented Oct. 19, 1886.



WITNESSES:

Geo. G. Hoster
C. Sedgwick

INVENTOR:

B. Meyer
BY *Munn & Co*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

BENDIX MEYER, OF GLEIWITZ, PRUSSIA, GERMANY.

DEVICE FOR PREVENTING THE EXPLOSION OF STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 351,121, dated October 19, 1886.

Application filed August 13, 1885. Serial No. 174,281. (No model.) Patented in England July 24, 1885, No. 8,956; in France July 24, 1885, No. 170,294; in Belgium July 24, 1885, No. 69,697; in Germany July 25, 1885, No. 34,768, and in Austria-Hungary October 24, 1885, No. 27,738, and No. 53,159.

To all whom it may concern:

Be it known that I, BENDIX MEYER, of Gleiwitz, Prussia, Germany, have invented a new and Improved Device for Preventing the Explosions of Steam-Boilers, (for which Letters Patent have been granted in the following countries—viz.: Great Britain July 24, 1885, No. 8,956; Belgium July 24, 1885, No. 69,697; Germany July 25, 1885, No. 34,768; France July 24, 1885, No. 170,294, and in Austria-Hungary October 24, 1885, No. 27,738, and No. 53,159,) of which the following is a full, clear, and exact description.

Heretofore various devices have been provided for preventing explosions of steam-boilers—for instance, such as low-water alarms, fusible plugs, safety-valves, &c.—but none of them are quite perfect, as some of them are very apt to get out of order and fail to operate and others rust and bind in place.

The object of my invention is to provide a safety device for boilers, which is entirely devoid of the above-mentioned defects.

The invention consists in a plate of suitable yielding material applied to an opening in the boiler and adapted to be bent or flexed outward at a certain steam-pressure and permit the steam to escape before the bursting-pressure has been reached.

The invention also embodies the use of a rubber or other elastic packing held between the plate and the boiler-shell, so that when a plate of elastic material is used and its spring tension would tend to return the plate to its place after the flexing pressure has been reduced, the displacement of the packing by the escaping steam would leave the opening still uncovered for the entire escape of the steam, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional view of part of a boiler, showing my improvement; Fig. 2, a face view, parts being in section. Fig. 3 is a sectional view of another construction. Fig. 4 is a face view, parts being in section.

In the construction shown in Figs. 1 and 2 the opening *o* in the boiler-shell *a* is closed by a plate, *b*, between which and the boiler-shell the packing-plate *c* is placed. Two screw-bolts, *d*, are passed through apertures in the

shell and through the plate *b*, and nuts *d'* are screwed on the bolts, a washer-plate, *e*, being interposed between the nuts and the plate *b*. It is evident that the spring-tension on the plate *b* must be sufficient to press the free end of the plate *b* against the shell of the boiler with a pressure less than the pressure of the steam in the boiler necessary to produce an explosion. The closing plate must be applied in such a manner that in case of an explosion none of the attendants are apt to be scalded.

In the device shown in Figs. 3 and 4 the principle is the same. A circular plate, *b'*, is used, which is held in place by means of a cross-bar, *s*, held by screws *d''* in a neck on the boiler around the opening *o'*. The plate *b'* thus exerts a certain pressure on the packing *e'* on the boiler-shell at the edge of the opening. The resistance of the plate *b'* is such that before the pressure in the boiler is such as to rupture the boiler the plate is bent outward by the pressure in the boiler or the packing is forced out on the plate or the packing is ruptured, thus permitting the steam and water to escape. It must be understood that the shape of the plate is entirely independent of the working of the device, and it is also immaterial at what part of the boiler the device is applied, but at all times it must be arranged at such places where very little scale forms.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a steam-boiler, of the plate held fixedly over and covering an opening in the boiler, which plate is free to yield or flex at the edge or margin as it is subjected to a certain steam-pressure and remain flexed or bent thereat, substantially as and for the purpose set forth.

2. The combination, with a steam-boiler having an opening around which is disposed a neck, of the flexible plate, operating as described, held within said neck and around the edges of the opening, and connected at its center to a cross-bar bolted to the boiler, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

BENDIX MEYER.

Witnesses:

F. SCHNACKENBURG,
HENRY DITHMAR.