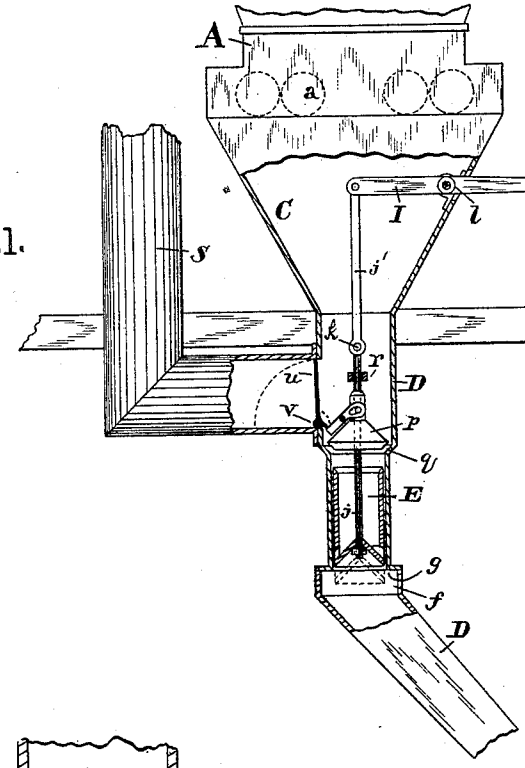
(No Model.)

L. WAGNER.

SAFETY DEVICE FOR GRAIN MILLS.

No. 419,162. Patented Jan. 7, 1890.

Fig. 1.



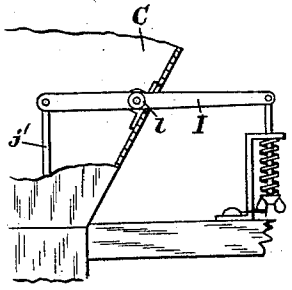
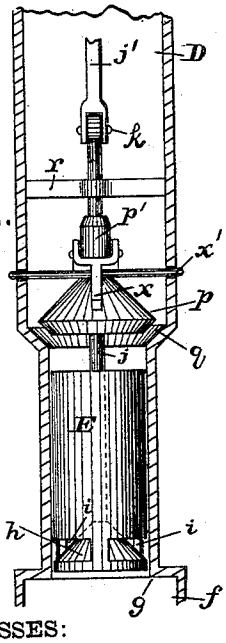


Fig. 4.

Fig. 2.



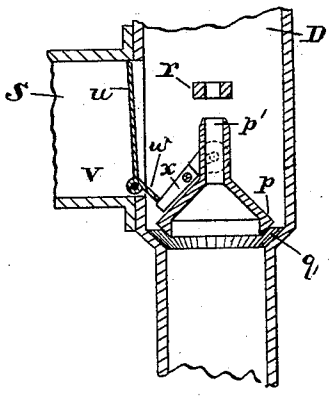


Fig. 3.

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UNITED STATES PATENT OFFICE.

LOUIS WAGNER, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO JOHN MARR, OF SAME PLACE.

SAFETY DEVICE FOR GRAIN-MILLS.

SPECIFICATION forming part of Letters Patent No. 419,162, dated January 7, 1890.

Application filed October 24, 1889. Serial No. 328,002. (No model.)

To all whom it may concern:

Be it known that I, LOUIS WAGNER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Safety Devices for Grain-Mills, of which the following is a specification.

My invention relates to an automatic safety device for mills.

The invention has for its object to provide mechanism for avoiding the damage that follows an explosion, and also to prevent fires that usually follow such explosions.

Referring to the accompanying drawings, Figure 1 is an elevation of the improved safety device, in which a portion is shown in section. Figs. 2 and 3 are vertical sections of the conduit-pipe, one section being in a transverse direction with respect to the other. Fig. 4 shows how a spring may be used on the beam instead of a counterpoise-weight.

The letter A designates a malt-mill, of which the rollers *a* are indicated by broken lines. A hopper or funnel C is below the rollers, and a conduit-pipe D leading from the funnel serves to conduct the ground grain to an elevator or a receptacle.

It is deemed unnecessary for the purposes of this description to show any other part of the mill.

The conduit is provided on its interior with a vertically-movable cut-off cylinder E, by means of which a certain accumulation of ground grain may be maintained in the conduit, sufficient, at least, to act as a barrier and to prevent fire from passing down the conduit. The entire conduit is stationary, and just below that part where the cut-off cylinder moves up and down has an enlargement *f*, which forms an inverted shoulder *g*. The cut-off cylinder E is upright in the conduit, and at its lower end has a conical bottom *h*. The point of the cone stands up in the cylinder, and the cylinder-walls close to the base of the cone have discharge-ports *i*. A hanger-rod *j* is attached in a suitable way to the cut-off cylinder and projects upward. Its upper end, in view of other parts which are here shown, has a jointed section *j'*, the joint-connection being shown at *k*. The hanger-rod connects with a pivoted beam I, whose pivot *l* is on the side of the funnel C. This end of the beam is within the funnel and the other end on the outside. This latter end has a collar *o*, which is loose or adjustable along the beam, and a weight *n* hangs from said collar. This counterpoise-weight *n* will normally sustain the cut-off cylinder E and keep it elevated in the conduit high enough to bring its discharge-ports *i* above the inverted shoulder *g* of the conduit enlargement. When these ports *i* are thus above, no ground grain can pass below; but the ground grain will accumulate within the cut-off cylinder E until the weight of such accumulated grain overbalances the counterpoise-weight *n*, when the cut-off cylinder will descend in the conduit far enough to expose the ports *i* below the shoulder *g*, whereupon the accumulation of ground grain will discharge and pass down. It will be seen, therefore, the counterpoise-weight *n* must not only elevate and sustain the movable cut-off cylinder E, but must also sustain the weight of a predetermined amount of ground grain that will accumulate therein. In addition to this a plug-valve *p* is provided in the conduit about the cut-off cylinder to entirely close the conduit. The conduit is enlarged just above that part where the cut-off cylinder moves up and down, and has a seat *q* for the plug-valve *p*, which latter has a vertically-sliding movement. The plug-valve has a tubular neck *p'*, and the hanger-rod *j* passes loosely through this neck and also through a stationary guide-bar *r*, extending crosswise of the conduit. Thus the hanger-rod *j* may move up or down without affecting the plug-valve; or, on the other hand, the plug-valve may move up or down without affecting the hanger-rod.

A vent-flue *s* connects with the conduit above the plug-valve and leads outside of the building and provides an outlet for the harmless escape of fire or the sudden expansion due to an explosion. This flue where it joins the conduit has a flap-valve *u*, pivoted at *v* at its lower edge. When this valve is closed, it stands upright, as shown, and when open it falls to a horizontal position within the vent-

flue *s*. This flap-valve has at its lower edge an arm *w*, which projects toward the plug-valve *p* and serves the purpose hereinafter described. Attached to the neck *p'* of the plug-valve is one end of a lever *x*, which is pivoted on a rod *x'*, extending across the conduit. When the flap-valve is open, its arm *w* comes on top of the free end of the plug-valve lever *x*, as shown in Figs. 1 and 3, and its frictional contact therewith keeps said free end down, and thereby keeps the plug-valve *p* elevated or in the open position, and the frictional contact also keeps the vent-valve *u* up or in the closed position. When an explosion ensues, the vent-valve *u* will open, and in so doing its arm *w* will set free the lever *x* and allow the conduit-valve to close.

The action of the device is entirely automatic or self-operating.

Having described my invention, I claim—

1. The combination of a grain-mill funnel, a conduit leading from the funnel and having an enlargement and an inverted shoulder *g*, and a balanced cut-off cylinder movable up and down in said conduit above the enlargement and having at one end a bottom and side discharge ports *i* in the walls close to the bottom.

2. The combination of a grain-mill grain conduit having a valve-seat *q*, a plug-valve having a vertical movement, a pivoted supporting-lever *x*, having one end attached to said plug-valve, a vent-flue connected with the conduit, and a flap-valve to close said flue and provided with an arm *w* to come in frictional contact with the free end of the said supporting-lever.

3. The combination of a grain-mill funnel, a conduit leading from the funnel, a cut-off cylinder movable up and down in said conduit, a beam I, pivoted to the side of the funnel and having one end within and the other end outside of the funnel, a hanger-rod connecting the cut-off cylinder with the inner end of the beam, a vertically-movable valve provided with a tubular neck, through which the said hanger-rod passes loosely, a pivoted supporting-lever having one end attached to said valve, and an arm *w*, substantially as described, to come in frictional contact with the free end of the said supporting-lever.

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

LOUIS WAGNER.

Witnesses:
JOHN E. MORRIS,
JNO. T. MADDOX.