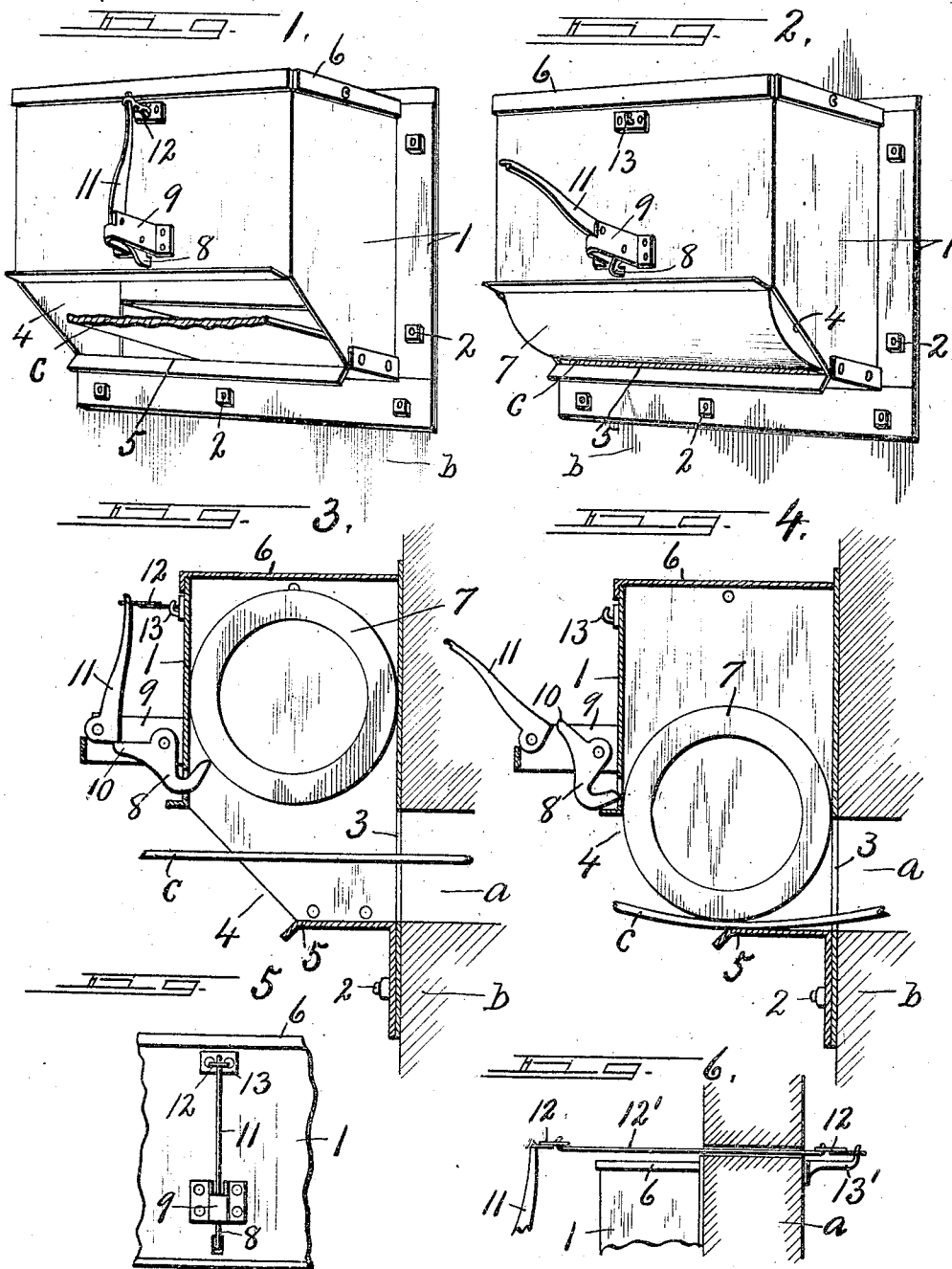


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2 SHEETS—SHEET 1.



WITNESSES

E. J. Stant,
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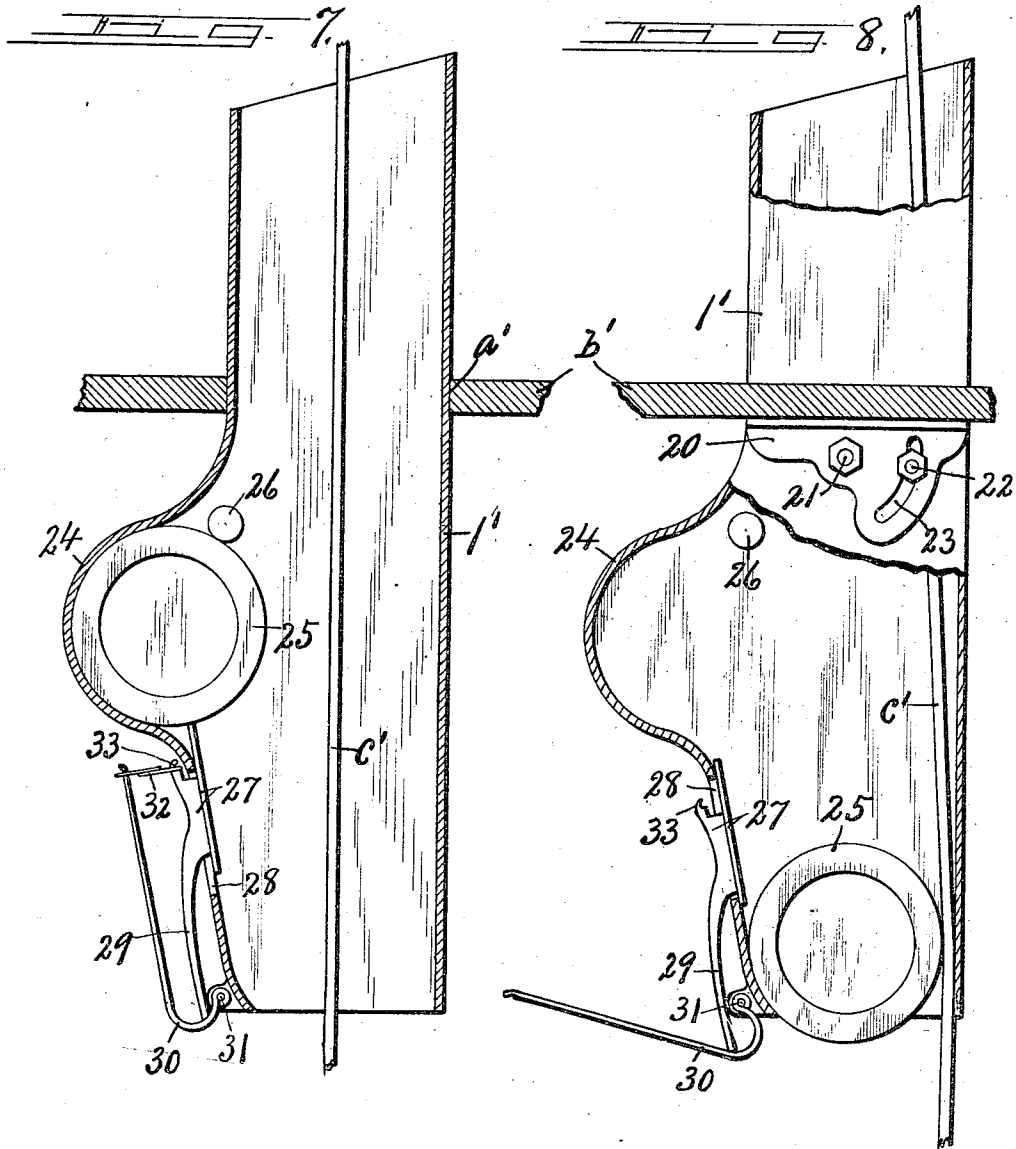
INVENTOR
D. S. Watson
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UNITED STATES PATENT OFFICE.

DAVID S. WATSON, OF CANASTOTA, NEW YORK.

FIRE-SHIELD FOR BELT-OPENINGS.

1,058,283.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed September 15, 1910. Serial No. 582,180.

To all whom it may concern:

Be it known that I, DAVID S. WATSON, of Canastota, in the county of Madison, in the State of New York, have invented new and useful Improvements in Fire-Shields for Belt-Openings, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 This invention relates to certain improvements in fire shields for belt openings in floors, ceilings and side walls of buildings to allow free movement of the belt there-
15 through under normal conditions and to effectively close the opening in case of fire.

The main object is to produce a commercially practicable article of manufacture capable of being easily and quickly installed around the belt opening and adjacent portion of the belt, and provided with a gravity operated closure controlled by a fusible detent which is destructible by a comparatively low degree of heat for permitting the automatic operation of the closure to effectively prevent the passage of the flame or
25 smoke from one room to another through such opening.

Another object is to associate the elements of the retaining means for the weighted closure in such manner as to relieve the fusible
30 detent from excessive strains, thereby increasing the permanency and reliability of the apparatus for an indefinite period of time.

35 Other objects and uses will be brought out in the following description.

In the drawings Figures —1— and —2— are perspective views of my improved fire shield as applied to an upright wall or
40 partition, the weighted closure being shown in its normal open position in Fig. —1— and in its closed position in Fig. —2—. Figs. —3— and —4— are transverse vertical sectional views through the device as shown
45 in Figs. —1— and —2— respectively. Fig. —5— is front view of a portion of the shield showing particularly the weight controlling levers and fusible detent. Fig. —6— is a side elevation of the upper portion of my
50 improved fire shield showing a modified form of retaining means in which two fusible detents are connected to a link which passes through the wall in which the belt opening is formed. Fig. —7— is a vertical
55 sectional view of a modified form of my in-

vention as used in connection with belt openings in a floor or ceiling, the parts being shown in their normal positions as retaining the weighted closure in its open position. Fig. —8— is a similar side elevation partly
60 in section of the same device, showing one of the supporting brackets, the weighted closure being closed and its controlling parts released.

The device shown in Figs. —1— to —6—
65 inclusive is adapted more particularly for belt openings as —a— of upright walls or partitions —b— and preferably comprises a hollow rectangular shell —1— having one
70 of its upright sides secured by suitable fastening means as bolts —2— to the face of the wall —b— and provided with a belt opening —3— registering with the opening
75 —a— for receiving a belt —c— which extends through a similar opening —4— in the front side of the shell —1—. These
80 openings —a—, —3— and —4— are of ample size to permit the free operation of the belt —c— without friction with the sides thereof although for obvious reasons in
85 practice, the clearance at the opposite flat sides of the belt is greater than at the edges thereof. The opening —4— is preferably
90 formed by cutting away the lower front corner of the shell diagonally so as to partially underlie the superposed portion of the
95 interior of the shell, leaving a limiting stop or forwardly projecting ledge —5— at the bottom of the shell or lower edge of the opening, the upper end of the shell being
100 closed by a suitable cap or hood —6— to exclude dust and other foreign matter therefrom and at the same time form an inclosed compartment except for the openings therein.

A weighted closure —7— preferably consisting of a cylindrical shell of metal or
105 equivalent fire proof material is movable vertically within the shell —1— and is of sufficient surface area to entirely close the opening —4— when in its closed position.
110 In the present instance, the opening —4— is of substantially the same length as the distance between the sides of the shell, while the closure —7— is of substantially the same length as the opening and of a diameter substantially equal to the distance between the front and rear sides of the shell leaving just sufficient clearance to permit the free vertical movement of said closure to and from its closed position. This closure is

normally held in its up or open position by a movable detent or pawl —8— which in this instance is pivoted to a forwardly projecting bracket —9— on the front side of the shell —1— and is provided with a forwardly projecting shoulder —10— normally engaged with the lower end of an upright lever —11—, the latter being also pivoted to the bracket —9— directly in front of the axis of the pawl —8—. The upper end of the lever —11— is connected by a fusible link —12— to a suitable anchorage or hook —13— on the front side of the shell —1—, said link consisting in part at least of a soft solder adapted to be fused or melted under a comparatively low degree of heat. The arm or shoulder —10— of the pawl —8— engages the lower end of the lever —11— between the fulcrum of said pawl and lever and preferably in close proximity to the fulcrum of the lever —11— so as to relieve as far as practicable excessive strains upon the fusible link —12—, thereby increasing the permanency and reliability of the fusible link in its coöperation with the lever and pawl —8— in normally holding the weighted closure —7— in its open position for an indefinite period of time or until the integrity of the link is destroyed by heat in case of fire.

It will be observed that the shell —1— including the bottom portion or ledge —5— projects some distance from the face of the wall —b— around the opening —a—, the purpose of which is to prevent as far as possible the passage of fire or smoke which may originate in the room in which the shield is located from communicating through the opening —a— to the other parts of the building and at the same time deflecting the heat of such fire toward the fusible detent —12— to more quickly destroy the same and thereby release the lever —11— and pawl —8— from their holding positions to allow the weighted closure —7— to gravitate across and effectively close the opening —4— before the fire has gained any great head-way. As soon as the weighted closure —7— is released, it immediately drops by gravity against the belt and impinges the latter against the ledge —5—, as shown in Figs. —2— and —4—. In some instances a fire may occur and the weighted closure —7— released while the belt is in action and in order to prevent any damage to the shield under such conditions, the weighted closure —7— is made in the form of a roller having a free rotary action in the shell —1— so as to roll under frictional contact with the belt while it is pressed against the ledge —5—, the front edge of said ledge being deflective away from the belt so as to permit said belt to ride across the same without liability of abrasion or cutting.

It will be seen upon reference to Fig. —3— that the inner end of the pawl —8— engages the periphery of the cylindrical closure —7— some distance below its horizontal diameter so that the direct distance between the points of contact of said periphery with the pawl —8— and back of the shell —1— is less than such diameter which causes the pawl to effectively retain the closure in its normal up or open position. As the pawl —8— is released by the fusing of the detent —12—, the weight of the closure —7— presses the inner end of the pawl downward, thereby rocking its outer end forward and similarly rocking the lever —11— outward, thus permitting the weighted member —7— to force the inner end of the pawl out of its path of movement.

The fusible link —12— may be of any suitable construction capable of destruction under a low degree of heat and as shown more particularly in Fig. —3—, this link consists of separate metal sections soldered together by the fusible solder intermediate their connections with the hook —13— and lever —11— so that they will readily separate when the solder is melted.

In Fig. —6— is shown a slightly modified form of fusible detent for the lever —11— consisting of a link —12'— passing through the opening in the wall —a—, having one end connected by a fusible link —12— to the upper end of the lever —11— and its opposite end connected by a similar fusible link —12— to a hook or anchorage —13'— on the adjacent side of the wall, thereby locating fusible links for the same shield in adjacent rooms at opposite sides of the partition or wall —a— so that a fire occurring in either room will release the closure —7— and allow it to drop to its closed position to effectively cut off communication between the two rooms through the passage —a—.

In Figs. —7— and —8— is shown a modified form of shield adapted to be used in connection with belt openings in floors as —b— and consists of an upright shell —1'— extending through the belt opening as —a'— some distance above and below said floor and secured to the under side thereof by suitable supporting brackets —20—. I have only shown one of these brackets in Fig. —8— although it is evident that another one may be secured to the floor at the opposite side of the shell —1'—. In order that the belt as —c'— may be passed through the opening —a'— at different angles, the shell —1'— is adjustably mounted upon a bracket —20— to conform to such angle and for this purpose is connected to said bracket by a pivotal bolt —21— and additional clamp bolt —22— which is movable in a slot —23— in the bracket at one side of and concentric with the axis of the pivot —21—. It is now clear that when the clamping bolt —22— is loos-

ened, the shell —1'— may be tilted to different angles and retightened in its adjusted position by said clamping bolt. This shell is provided with a belt opening therethrough of sufficient size to afford ample clearance for the belt without friction and is also provided with a lateral offset —24— for normally receiving the weighted closure —25—, similar to the closure —7—. The offset —24— is preferably curved to conform to the circular periphery of the closure —25— and is of sufficient lateral depth to permit the closure to clear the belt when in its up or open position. The lower side of the offset —24— is inclined downwardly and forwardly to permit the closure to readily gravitate or roll to its closed position when released. The lower open end of the shell —1'— is somewhat contracted in width from front to rear to a width somewhat less than the diameter of the closure —25— so as to prevent displacement of said closure of the shell by gravity when in its closed position. The means for retaining the closure in its open position or within the offset —24— consists of one or more lugs —26— and a slidable pawl or detent —27— normally engaging the periphery of said closure at opposite sides and just inside of its axis so that the distance between the points of contact is somewhat less than the diameter of the closure. As shown in the drawings, the lug —26— projects inwardly from and is rigidly secured to one side of the shell —1'— above the axis of the cylindrical closure —25— while the pawl or detent —27— engages the lower side of the periphery and normally supports at least a portion of the weight of said closure. This pawl —27— is movable vertically in a guide slot —28— in the adjacent side of the shell —1'— and is provided with a downwardly extending arm —29— which rests upon a lever —30—. The lever —30— is pivoted at —31— to a suitable lug on the adjacent side of the shell —1'— and is provided with a forwardly extending arm which is connected by a fusible detent —32— to a hook shaped extremity —33— on the pawl —27—. The extension —29— of this pawl normally rests upon the intermediate portion of the lever —30—, preferably in close proximity of the pivot —31— so as to relieve as far as possible normal strains upon the fusible detent —32— for the purpose of increasing the permanency and reliability of the latter in holding the closure in its open position for an indefinite period of time or until released by the destruction of the fusible detent by heat. Under such conditions it is evident that the weight of the closure —25— upon the pawl —27— and intermediate portions of the lever —30— will force the pawl downwardly sufficiently to release the closure —25— which will then gravitate into the lower end

of the shell —1— and impinge the belt against the opposite side of the lower end of the shell, thereby effectively closing the belt opening through said shell. The cylindrical form of the closure —25— permits it to roll with the belt in case such belt should be in action when the closure is forced to its closed position.

The operation of my invention will now be readily understood upon reference to the foregoing description taken in connection with the accompanying drawings and although I have shown the closure as cylindrical it is evident that other forms of closures may be employed with efficiency and that the detailed construction of the retaining means for said closure may be modified without departing from the spirit of my invention.

What I claim is:

1. A fire shield for belt openings in floors and walls comprising a shell surrounding the opening and provided with a passage for the belt, a gravity operated roller for closing said passage, and heat-controlled means for normally holding the roller in its open position, said means including a detent movable into and out of the path of movement of the roller.
2. A fire shield for belt openings comprising a shell surrounding said opening and having a corresponding passage for a belt, a gravity operated member movable bodily within the shell across the passage, and heat-controlled means for holding said member in its open position.
3. A fire shield for belt openings comprising a shell having a passage for a belt, a normally open self closing member movable bodily within the shell across the passage, and means for holding said member in its normal position, said means having a portion thereof destructible by heat under a comparatively low temperature.
4. A fire shield for wall and floor openings comprising a shell having a passage way registering with said opening, a normally open self closing member for said passage movable bodily within the shell, and mechanism holding said member in its normal position and having one of its parts destructible by heat under a comparatively low temperature, said mechanism also including a detent movable into and out of the path of movement of said member.
5. A fire shield for the purpose described comprising a shell having a passage therethrough, a roller movable across the passage, a detent projecting into the path of the roller for holding it at one side of the passage, and means including a heat-destructible member for holding the detent in its operative position.
6. A fire shield comprising a shell having a passage-way for a belt, a gravity operated roller for closing the passage-way, and heat

controlled means for normally holding the roller in its inoperative position.

7. A fire shield comprising a shell having a passage-way for a belt, a roller movable
5 in the shell and operating under its own gravity to close the passage-way and to force such belt against one side thereof, a pawl normally holding the roller at one side of the passage, pivoted means for engaging
10 and detaining the pawl in its holding position and heat controlled means for holding the pivoted means in engagement with the pawl.

8. A device for preventing access of fire
15 to parts of a building comprising a shell having a passageway for a flexible web, a gravity operated roller for closing the passageway, and heat controlled means for nor-

mally holding the roller in its inoperative position.

9. A device for preventing access of fire to parts of a building comprising a shell having a passageway for a flexible web, a gravity operated roller normally held in inoperative position above said passageway,
25 thermally controlled means for releasing said roller, and an inclined path beneath said roller for guiding said roller into co-operative relation to said web to close said passageway.
30

In witness whereof I have hereunto set my hand on this 9th day of September 1910.
DAVID S. WATSON.

Witnesses:

H. E. CHASE,
E. F. SPEARING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."