Jan. 3, 1956 J. R. KENNEDY ET AL 2,729,064

MINE STOPPING

Filed April 23, 1953 2 Sheets-Sheet 1

Fig. 1

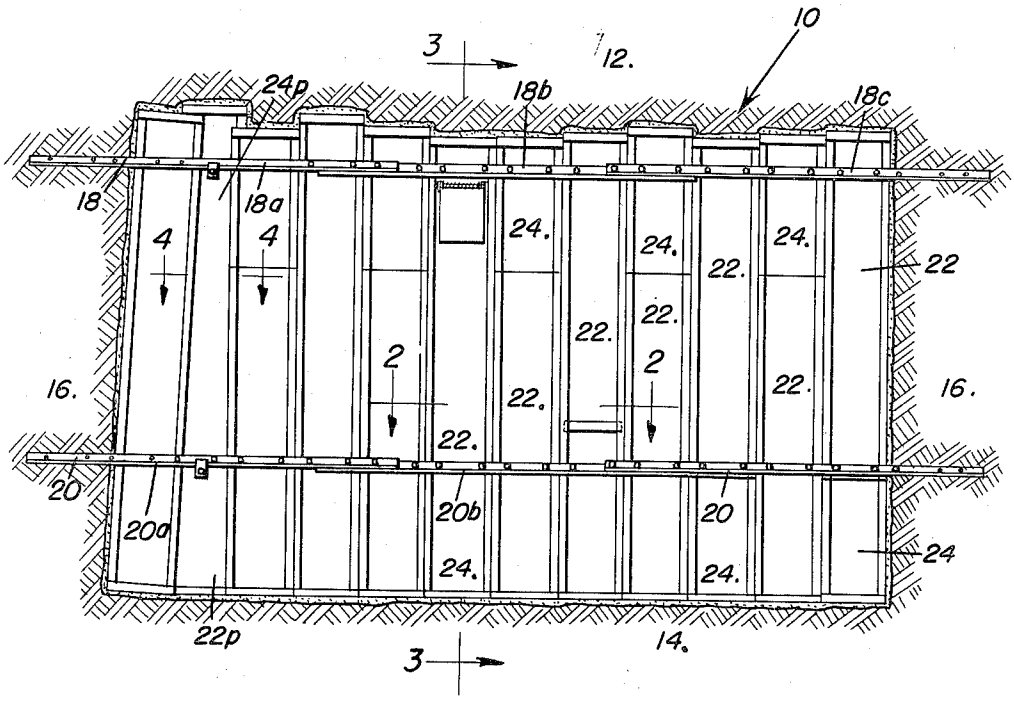


Fig. 9

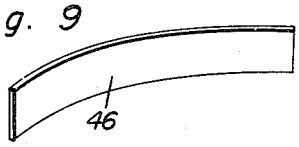


Fig. 2

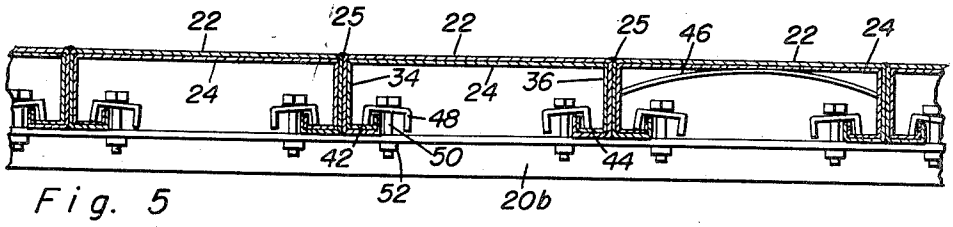
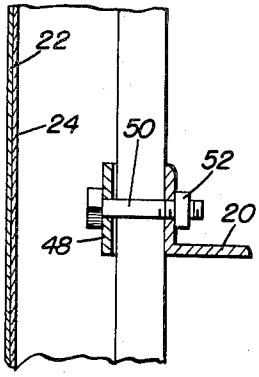


Fig. 5



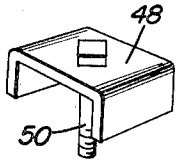


Fig. 8

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MINE STOPPING

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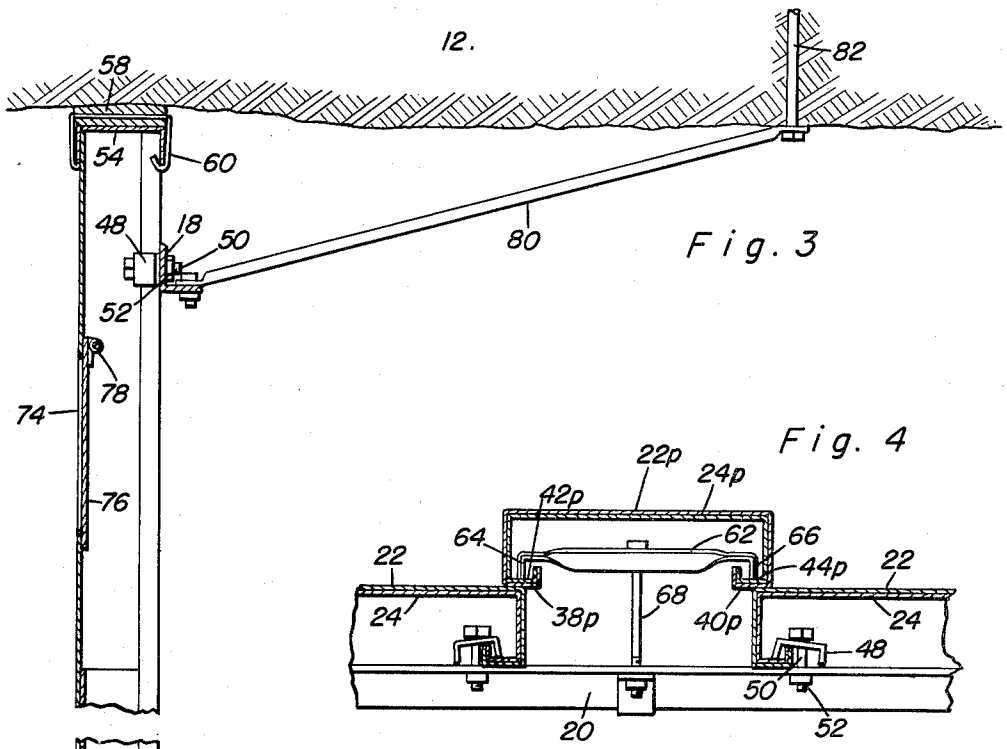


Fig. 3

Fig. 4

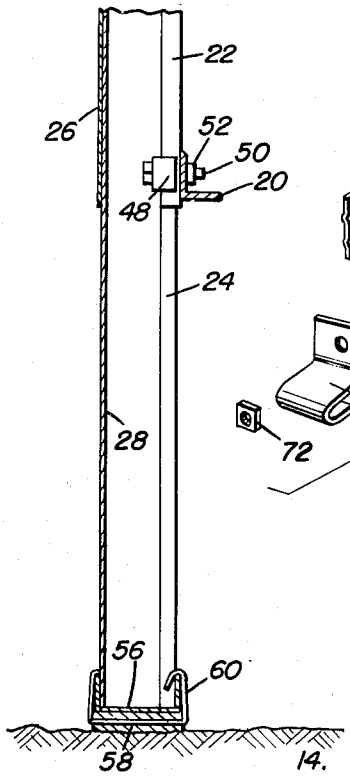
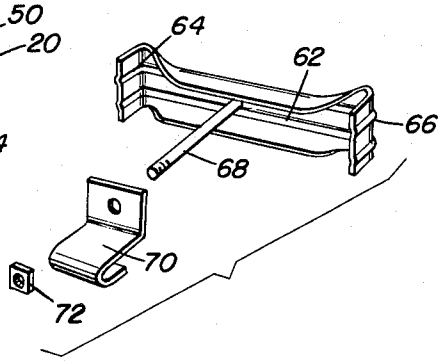


Fig. 6



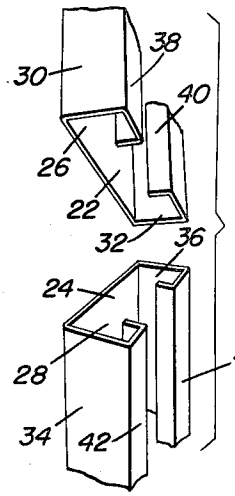


Fig. 7

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MINE STOPPING

Jack R. Kennedy and Samuel F. Kennedy, Taylorville, Ill.

Application April 23, 1953, Serial No. 350,557

11 Claims. (Cl. 61—45)

This invention relates to a pre-fabricated, telescoping, and easily installed stopping and has for its particular object the provision of salvageable means for use as an air stop in mines.

The construction of this invention features the use of a plurality of telescoping panels of variable widths and lengths adapted to be resiliently secured to whalers anchored in the rib of coal or material being mined in such manner that when the mine bottom is subject to a squeeze the resulting displacement of various portions of the bottom will not buckle the stopping but the panels will telescope to maintain a satisfactory air stop.

Stopping now used in mines is for the most part constructed of cement blocks permanently secured in place. This is unsatisfactory due to the fact that this installation is very costly and completely unsalvageable even when there is no longer any purpose for the stopping. Furthermore this masonry stopping may crumble when the mine is subject to an upheaval or "squeeze." Accordingly, it is the primary object of the invention to provide a readily salvageable mine stopping capable of being speedily erected at a comparatively low cost.

Still further objects and features of the invention reside in the provision of a mine stopping that is strong and durable, capable of being installed by even semi-skilled labor, constructed from a minimum number of parts, which is easily caulked for complete prevention of flow of air, yet which may be easily disassembled.

These, together with the various ancillary objects which will become apparent as the following description proceeds, are attained by this stopping, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is an elevational view showing the stopping comprising the present invention as installed;

Figure 2 is an enlarged horizontal sectional view as taken along the plane of line 2—2 in Figure 1;

Figure 3 is a vertical sectional view in an enlarged scale as taken along the plane of line 3—3 in Figure 1;

Figure 4 is an enlarged sectional detail view illustrating the use of an overlapping panel used to complete the stopping;

Figure 5 is a sectional view illustrating the construction of the clamping means used to resiliently hold the panels against the horizontal support bars or whalers;

Figure 6 is a perspective view of the clamp used in holding the overlapping panel in position;

Figure 7 is an exploded perspective view illustrating the configuration of the telescoping portions of a panel;

Figure 8 is a perspective view of the clamping means used in holding the panels to the whalers; and

Figure 9 is a perspective view of a spring plate used in holding the panels in abutting engagement with each other.

With continuing reference to each other wherein like reference numerals designate similar parts throughout the various views reference numeral **10** is used to generally indicate the stopping comprising the present invention and adapted to be used in an air stop in a mine having a top

12, a bottom **14** and ribs **16**. The stopping **10** includes angle shaped whalers or support bars **18** and **20** the ends of which are embedded in the rib **16**. The support bars are preferably each formed out of three sections which overlap each other, the sections being designated **18***a*, **18***b* and **18***c*, and **20***a*, **20***b* and **20***c* respectively. The intermediate sections **18***b* and **20***b* overlap the end sections permitting use for various sizes of stopping.

The whalers **18** and **20** are substantially horizontal and are positioned in parallel relationship to each other and are adapted to provide means for supporting the plurality of pairs of telescoping outer and inner panels **22** and **24** respectively. It is to be noted that the pairs of panels are arranged in side by side abutting relationship and alternately the inner panel is the upper and lower panel. This is because this arrangement permits the panels to intermesh to the greatest extent decreasing the air space therebetween thus reducing the amount of caulking **25** necessary. Each of the panels **22** and **24** are substantially channel-shape having front walls **26** and **28**, rearwardly extending portions **30**, **32** and **34**, **36** and inwardly converging L-shaped flanges **38**, **40** and **42**, **44** respectively. As best seen in Figures 2 and 9, there are provided arcuate spring-like plates **46** of somewhat greater length than the width of the front walls **26** and **28** which are adapted to resiliently urge the sheet metal rearwardly extending portions into intimate engagement with each other.

In order to hold the panels **22** and **24** against the whalers **18** and **20** there are provided clamping means comprising substantially U-shaped plates **48** having threaded rods **50** press fitted therein. The rods **50** extend through the whalers **18** and **20** and the U-shaped plates **48** engage the L-shaped flanges in such manner as to resiliently hold the panels **22** and **24** in engagement with the whalers **18** and **20**. The rods **50** have threadedly secured thereon nuts **52** which engage the whalers **18** and **20**. The precise amount of tension on the rods **50** should be such to permit ready telescoping of the inner panels **24** within the outer panels **22** should the mine be subject to a squeeze thus preventing the buckling of the stopping.

The panels **22** and **24** are provided with heads **54** and **56** respectively, which are adapted to engage the layers of insulative material **58** placed at the top **12** and bottom **14** of the mine. This insulative material **58** is held in place by suitable wires **60** or any other type of fastening means. This permits the sealing of the top and bottom of the stopping **10** especially since the panels will telescope to conform to the contours of the top **12** and bottom **14**.

In the process of assembling the stopping **10** the panels are preferably erected starting at one side or rib **16**. The panels are, as heretobefore defined, arranged in abutting relationship. However, due to the irregularities in the dimensions of the mine, the panels can seldom be positioned so as to complete the structure without necessitating the use of overlapping pairs of panels **22***p* and **24***p*. Actually the panel at the other side is placed in position and the penultimate panel **22***p* and **24***p* is then placed in position with the outer surfaces of the flanges **38***p*, **40***p* and **42***p*, **44***p* abutting the two spaced panels as can be best seen in Figure 4. The clamp having central connecting portions **62** interconnecting legs **64** and **66** is positioned with a threaded shaft portion **68** extending through the whalers **18** and **20** and with the legs **64** and **66** engaging the inner surfaces of the L-shaped flanges **38***p*, **40***p* and **42***p*, **44***p*. Clamp fixtures **70** engageable with the whalers **18** and **20** are slidably positioned on the shafts **68** and nuts **72** are threadedly resiliently secured on the shafts **68** to lockingly hold the assembly together.

It is to be noted that a selected panel may be provided with an opening **74** therethrough normally closed by a plate **76** hingedly secured to the panel and resiliently held in position to close the opening **74** by a coil spring **78**.

However, should an explosion occur in the mine, the door formed by the plate 76 will open permitting equalization of pressure.

For further rigidifying the structure, braces 80 are bolted to the whaler 18 at one end thereof. The other end of the braces 80 are secured by expansion fasteners 82 to the top 12, the braces extending angularly upwardly from the whaler 18.

Since from the foregoing, the construction and advantages of this mine stopping is readily apparent, further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiment shown and described, but all suitable modifications and equivalents may be readily resorted to which fall within the scope of the appended claims.

What is claimed as new is as follows:

1. A stopping for mines comprising at least one substantially horizontally extending support bar adapted to be embedded in the rib of a mine, a plurality of pairs of vertically extending telescoping panels, and means resiliently clampingly securing said pairs of panels to said support bar in abutting relationship with the next adjacent pair of panels whereby upon distortion of said mine bottom from a squeeze said pairs of panels will telescope, one panel within another.

2. A stopping for mines comprising a pair of spaced substantially parallel and substantially horizontally extending support bars adapted to be embedded in the rib of a mine, a plurality of pairs of vertically extending telescoping panels, and clamp members having parts thereof extending through said support bars and clampingly securing said pairs of panels to said support bars in abutting relationship with the next adjacent pair of panels whereby upon distortion of said mine bottom from a squeeze said pairs of panels will telescope, one panel within another.

3. A stopping for mines comprising a pair of spaced substantially parallel and substantially horizontally extending support bars adapted to be embedded in the rib of a mine, a plurality of pairs of vertically extending telescoping panels, and clamp members having parts thereof extending through said support bars and clampingly securing said pairs of panels to said support bars in abutting relationship with the next adjacent pair of panels whereby upon distortion of said mine bottom from a squeeze said pairs of panels will telescope, one panel within another, and braces secured to the upper of said support bars, and means securing said braces to the top of said mine.

4. A stopping for mines comprising a plurality of pairs of vertically telescoping panels of channel shape with each of said pairs of panels comprising an inner panel having a pair of rearwardly extending flange portions and an outer panel having a pair of rearwardly extending flange portions, and means resiliently clampingly holding said pairs of panels in abutting relationship, and spring plates within the inner panel of each pair of panels resiliently engaging the pair of flange portions of each of the inner panels urging the flange portions of said inner panels against the flange portions of said outer panels to resiliently hold the flange portions of the outer panels of adjacent pairs of panels in engagement.

5. A stopping for mines comprising a pair of spaced substantially parallel and substantially horizontally extending support bars, a plurality of pairs of vertically extending telescoping panels of channel shape with each of said pairs of panels comprising an inner panel having a pair of rearwardly extending flange portions and an outer panel having a pair of rearwardly extending flange portions, means resiliently clampingly securing said pairs of panels to said support bars in abutting relationship with the next adjacent panel, and spring plates within the inner panel of each pair of panels resiliently engaging the pair of flange portions of each of the inner panels urging the flange portions of said inner panels against the flange portions of said outer panels to resiliently hold the flange portions of the outer panels of adjacent pairs of panels in engagement.

6. A stopping for mines comprising at least one substantially horizontally extending support bar, a plurality of pairs of vertically extending telescoping panels, and means resiliently clampingly securing said pairs of panels to said support bar in abutting relationship with the next adjacent pair of panels, said panels being substantially channel-shaped, said means comprising clamps having substantially U-shaped plates engaging said channel-shaped panels.

7. A stopping for mines comprising a pair of spaced substantially parallel and substantially horizontally extending support bars, a plurality of pairs of vertically extending telescoping panels, and means resiliently clampingly securing said pairs of panels to said support bars in abutting relationship with the next adjacent pair of panels, said panels being substantially channel-shaped, said means comprising clamps having substantially U-shaped plates engaging said channel-shaped panels, said clamps including threaded rods extending through said support bars, and clamp elements threadedly secured on said rods engaging said support bars, and spring plates within said panels resiliently holding said panels in engagement with the next adjacent panel.

8. A stopping for mines comprising a pair of spaced substantially parallel and substantially horizontally extending support bars, a plurality of pairs of vertically extending telescoping panels, and means resiliently clampingly securing said pairs of panels to said support bars in abutting relationship with the next adjacent pair of panels, said panels being substantially channel-shaped, said means comprising clamps having substantially U-shaped plates engaging said channel-shaped panels, said clamps including threaded rods extending through said support bars, and clamp elements secured on said rods engaging said support bars, the penultimate pair of panels overlapping the space between the end pair of panels at said side of said stopping and said plurality of pairs of panels, and clamp members of substantially U-shape engaging said penultimate pair of panels, said clamp members having threaded shafts extending through said support bars, and clamp fixtures engaging said threaded shafts and said support bars resiliently holding said penultimate pair of panels in its overlapping position, and braces secured to the upper of said support bars, and means securing said braces to the top of said mine.

9. A mine stopping comprising a plurality of vertically extending extensible panels mounted in abutting side-by-side relation with respect to each other and extending from one rib to the other in a passageway in a mine and from the bottom to the top thereof, a plurality of horizontal cross beams extending along said panels and having said panels detachably secured thereto, said cross beams overlapping at their adjacent ends for extension with respect to each other and being anchored at their outer ends in the ribs of the entry, and detachable securing means detachably holding said panels to said cross beams.

10. A mine stopping comprising a plurality of cross beams lapping at their adjacent ends for extension with respect to each other and adapted to be anchored at their outer ends in opposite ribs of a cross-cut, a plurality of panels extensible from a mine bottom to top and extending along said cross beams in side-by-side relation with respect to each other, a plurality of clips secured to said cross beams and engaging said panels and detachably clipping said panels thereto, a filler panel for filling a gap between adjacent panels of a lesser width than the width of a panel, and clamping members engaging said filler panel and supported on said cross beams to bring said filler panel into tight engagement with the insides of adjacent panels.

11. A stopping for mines comprising a pair of spaced

substantially parallel and substantially horizontally extending support bars, a plurality of pairs of vertically extending telescoping panels, and means clampingly securing said panels to said support bars in abutting relationship with the next adjacent panel, said panels being substantially channel-shaped, said means comprising clamps of substantially U-shaped cross section engaging said channel-shaped panels, said clamps including threaded rods extending through said support bars, and clamp elements threadedly secured on said rods engaging said support bars.

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