

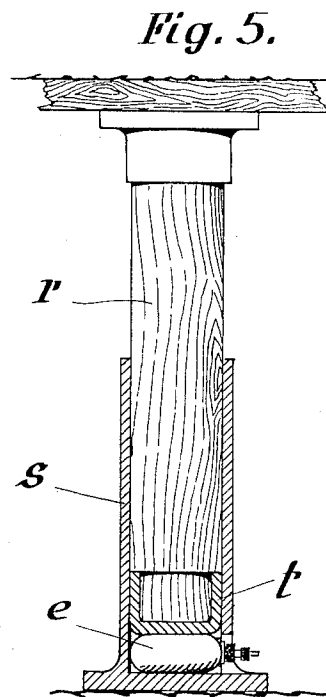
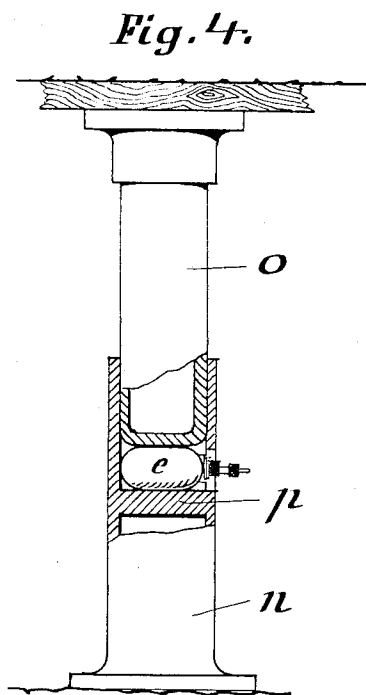
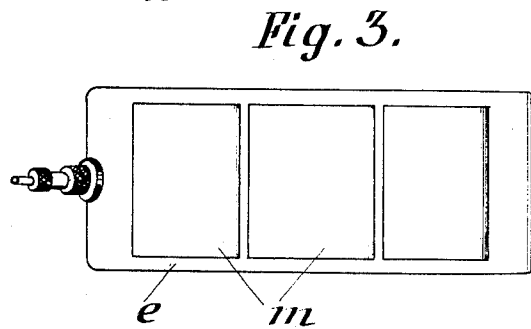
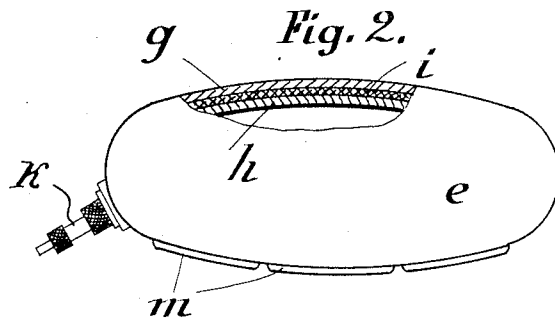
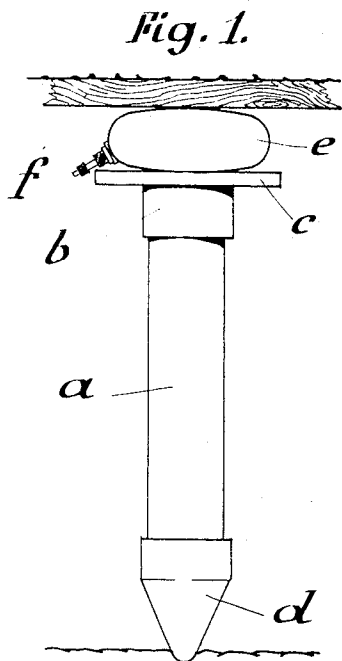
March 25, 1930.

H. MEUTSCH

1,752,101

MINING PROP

Filed Dec. 22, 1926



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MINING PROP

Application filed December 22, 1926. Serial No. 156,303.

The invention relates to a mining prop and more particularly to props adapted to be used in mine rooms which have to be filled with rubbish shortly after excavation and where the props therefore have to be withdrawn after a short time. Props designed for this purpose must be of a construction which permits an easy and quick removal. The ordinary wooden props, when erected in the room the roof of which is to be propped and on the top of which a short supporting plank is inserted to take up the pressure of the roof, do not fulfil this condition of easy and quick removal, as the head of the prop penetrates in the supporting plank due to the pressure exerted by the roof. It is, therefore, very difficult to remove both the supporting plank and the prop. It has already been proposed to provide an elastic means between the roof and the prop or between two telescoping prop halves, such as springs, cork or a fluid, so that the prop may be shortened by compressing said springs or by emptying the fluid, and withdrawn in this shortened condition. These constructions, however, suffer from the drawback that they are too complicated for the rough mine service and that the springs become relaxed or the chamber containing the fluid is difficult to be kept tight.

Now the invention has for its object to obviate these drawbacks and to create a prop which is of a simple and reliable construction and may be easily and quickly set and removed.

According to the invention an independent elastic inflatable body is inserted in the structure forming the prop, and this either with a prop formed by one piece or with a prop which is composed of two telescoping halves.

In order to allow of the invention to be more easily understood, some preferred embodiments of same are illustrated by way of example in the drawing which accompanies and forms part of this specification. In this drawing:

Fig. 1 is an elevation of a simple embodiment of the invention,

Fig. 2 is a view, partly in section, of the independent inflatable body,

Fig. 3 is a view from below of this body.

Fig. 4 shows another embodiment of the invention, and

Fig. 5 shows a third embodiment of same.

Referring now to Fig. 1, *a* denotes the prop which may be of wood or formed by a metal tube and has mounted on the top a head *b* carrying a supporting plate *c*, and a lower point *d*. The plate *c* is adapted to carry an elastic body or cushion *e* which may be inflated and exerts when in inflated condition a pressure upon the prop *a* which holds the latter in position between the floor and the roof-supporting plank *f*.

The elastic inflatable body *e*, see Figs. 2 and 3, is made of vulcanized strong rubber and is preferably composed of two or more rubber layers *g* and *h* between which a reinforcing metallic fabric *i* is arranged. An ordinary air valve *k* permits the inflation of the body with compressed air or water under pressure, fluids at disposal in every modern mine. If necessary, the body *e* may be fitted with protecting metal plates *m*.

When the prop *a* is erected and the elastic body *e* is mounted thereon and inflated, the prop *a* stands not only fast between floor and roof, but is also directly capable of taking up a pressure from the roof and transmitting it to the prop which may be equal to the buckling resistance of the latter.

When the valve *k* is unscrewed and the compressed air or water escapes, the body *e* collapses, so that the prop *a* and the plank *f* may be removed without any difficulty.

In the embodiment illustrated in Fig. 4 the prop is composed of a lower cylindrical portion *n* and an upper piston-like portion *o* fitting therein. The lower portion *n* has an intermediate bottom *p* on which rests the inflatable body *e*. The latter is of a size so as to closely fit in the cylindrical chamber formed by the portion *n*. The closed end of the upper portion *o* rests on the body *e*. When this prop is erected and body *e* is inflated, then the pressure exerted upon body *e* from the roof compresses the body *e* and causes its volume to decrease, since the body is incapable of undergoing a deformation in lateral direction due to the cylindrical wall

of part *n* surrounding it. The consequence of this decrease is, that the thickness of the wall of body *e* increases with increasing pressure. The body *e* thus becomes very strong so that it is able to transmit an extraordinarily high pressure to the prop *o, n*. The supporting effect is therefore very sure and reliable.

The embodiment illustrated in Fig. 5 differs from that hereinbefore described only by constructional details, whilst the function of body *e* is the same. The upper prop part *r* is constituted by a wooden pile, whilst the inflatable body *e* immediately rests on the bottom plate of the lower cylindrical part *s* of the prop. A metallic cover *t* is inserted between the body *e* and pile *r*.

If required, the body *e* may be enveloped by a lubricating means of a nature so as to not attack the rubber, such as French chalk or the like.

What I claim and desire to secure by Letters Patent is:—

A mining prop, comprising a tubular member closed at one end, an inflatable member supported in said tubular member, and a piston-like member mounted for sliding movement in the tubular member, the inner end of said sliding member contacting with said inflatable member whereby the sliding member is caused to move outwardly from the tubular member when the inflatable member is inflated.

In testimony whereof I have signed my name to this specification.

HEINRICH MEUTSCH.

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