

9904

X 9901

UNITED STATES PATENT OFFICE.

HERMANN KRUSKOPF, OF DORTMUND, GERMANY.

PROCESS FOR PREVENTING EXPLOSIONS OF COAL-DUST IN COAL-MINES.

995,261.

Specification of Letters Patent. Patented June 13, 1911.

No Drawing.

Application filed March 7, 1910. Serial No. 547,860.

To all whom it may concern:

Be it known that I, HERMANN KRUSKOPF, a subject of the German Emperor, and resident of Dortmund, Germany, have invented
5 a certain new and useful Process for Preventing Explosions of Coal-Dust in Coal-Mines by Sprinkling, of which the following is a specification.

This invention relates to a process for
10 keeping the walls of mine galleries always in a moist state. Experiments have shown the strange phenomenon that coal dust moistened in a direct manner and containing even as much as about 30 per cent. of
15 water could still be caused to explode by 300 grams of dynamite with a length of flame of 12 meters if the wall of the gallery was dry. If on the contrary the wall of the gallery was freshly sprinkled with water
20 the deflagration regularly missed even if in these galleries dry coal dust was raised and was shot up with about 300 grams of dynamite. Otherwise dry flying dust is ignited
25 in galleries with dry walls already by about 10 grams of dynamite.

It has already been proposed to employ
hygroscopic solutions of salts for sprinkling coal dust. Experiments however have not
30 been a success, for the hygroscopic solutions of salts did not adhere to the smooth walls of the galleries nor to the wooden posts; they ran off rapidly without attaining the object of keeping the wall of the gallery moist in a lasting and sufficient manner.

The object of the process according to this invention is to avoid these drawbacks. In some instances I may employ clay and mix with the latter the lye of chlorid of magnesium or the lye of chlorid of calcium so as
40 to form a pappy mass. Or, I may form hygroscopic soaps by means of the lye of chlorid of magnesium and of caustic alkalis. Again, I may cause vegetable glues for instance starch to swell in the lye of chlorid
45 of magnesium. These pappy hygroscopic masses may be spread on cloth and the latter be tacked on the walls of the galleries or the pappy mass may be thrown by means of a trowel on the walls of the galleries according
50 to the circumstances. It is needless to say that the most practical method consists

in giving the said pappy, hygroscopic solutions such a consistency that they may be thrown on the walls of the galleries by means of compressed air sprinkling apparatuses. 55

This process has the following advantages over the well known processes: The hygroscopic pappy mass adheres with absolute certainty to the smoothest and perpendicular walls of the galleries. The pappy mass remains always moist and retains much better the moisture than if the lyes were employed in a pure state. It is obvious that no materials or additions should be employed which would be liable to annihilate the hygroscopic properties of the said forms of pappy masses. The latter are very sticky in opposition to raw lyes and fix newly formed dust. If the pappy masses are moistened later on after coal dust has settled
60 thereon, with pure hygroscopic lyes, the coal dust is mixed with the pappy mass and fresh sticky surfaces are formed on the latter which surfaces are again adapted to receive flying coal dust. However it does not
65 matter, if some flying dust is encountered as the latter is inexplosive as experiments have demonstrated. The coal dust mixed with the said pappy mass is inexplosive, as it is a well known fact that coal dust containing much ash is inexplosive. 80

Having now fully described my said invention what I claim and desire to secure by Letters Patent is:—

1. The herein described process of preventing dust explosions which consists in applying to the walls or surfaces a plastic mass embodying hygroscopic lyes and an adhesive substance. 85

2. The herein described process for preventing dust explosions which consists in applying to the walls or surfaces a plastic mass embodying hygroscopic lyes and an adhesive substance, and subsequently moistening the plastic mass with pure hygroscopic lye. 90 95

In testimony whereof I have hereunto set my hand in presence of two witnesses.

HERMANN KRUSKOPF.

Witnesses:

OTTO KÖNIG,

CHAS. J. WRIGHT.