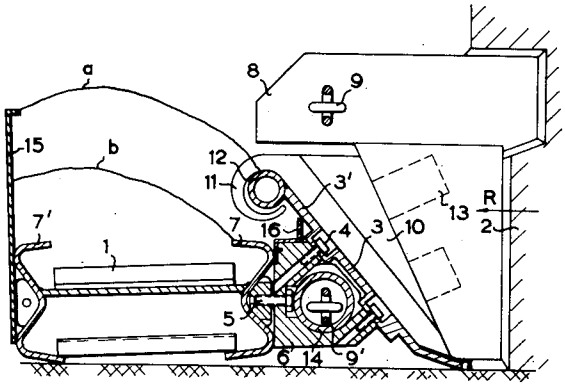
June 16, 1964 F. J. FONTEIN 3,137,484

FACE CONVEYOR HAVING COAL PLOUGH GUIDE MEANS

Filed Aug. 13, 1962



Inventor
Freerk J. Fontein
By Cushman, Darby & Cushman
Attorneys

United States Patent Office 3,137,484 Patented June 16, 1964

3,137,484

FACE CONVEYOR HAVING COAL PLOUGH GUIDE MEANS

Freerk J. Fontein, Heerlen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed Aug. 13, 1962, Ser. No. 216,544
Claims priority, application Netherlands Mar. 21, 1962
4 Claims. (Cl. 262—8)

The present invention relates to mining, and in particular to a face conveyor of the type used in conjunction with a coal mining planer. The manner in which this type of apparatus is utilized in mining is well known, and illustrated and described, for example, in U.S. Patent No. 2,745,651. In accordance with the present invention, the face conveyor side wall nearest the coal face is provided with a sloping wall along which the coal-getting machine, such as a coal plough (also known as a planer), can be guided. At least one of the face conveyor side walls is extended vertically upwardly, to increase the capacity of the conveyor, as is known from the Dutch patent specification No. 73,112.

In the known construction, only the side wall remote from the face is extended upwardly. If the conveyor is fully loaded, this will result in a quantity of coal being spilled from the conveyor over the side wall nearest the coal face after the coal-getting machine has passed. During the next movement of the coal-getting machine, the spilled coal is again loaded onto the conveyor, which naturally involves a waste of energy. Additionally, the coal which rolls back into the space between the conveyor and the coal face after the coal-getting machine has passed, is materially disintegrated and reduced in size, because the conveyor is pressed against the coal face by compressed air cylinders or other devices after the coal-getting machine has passed.

A principal object of the present invention is to provide a face conveyor which avoids the above disadvantages. In accordance with the present invention, this is achieved by providing a sloping guide wall on the conveyor side wall nearest the coal face, which guide wall extends above and reaches a position over the associated conveyor side wall. The extended guide wall permits the conveyor to be loaded to a greater depth, without the additional quantity of coal loaded thereon dropping into the trough after the coal-getting machine has passed.

When in operation, a coal plough is subjected to a force of reaction acting at about half the height of the cutting elements, and opposing the force exerted by the pressure cylinders. In known devices, the moment which this reaction force causes to act on the coal plough with respect to the guide element results, because of the relatively low position of the guiding element, in a tendency of the coal plough to turn or rotate about the guiding element, and hence to "climb" in the seam. In order to prevent this happening, it is known to provide a horizontal part extending from the coal plough under the conveyor, and pressed onto the floor of the seam by the weight of the conveyor and the coal on it. The movement of such a horizontal part is impeded by high frictional resistance, so that the power needed to move the coal plough is considerably increased thereby.

Another object of the present invention is to obviate this drawback also, and materially reduce the power required to operate the coal plough. This is achieved, in accordance with a preferred embodiment of the present invention, by providing a guide for the coal plough along the upper edge of the sloping guide wall. Preferably, the guide is sufficiently high that the moment acting on the coal plough is less than in the previously known constructions, or even negative. As a result, the coal plough is maintained on the floor of the seam without the use of a horizontal part on the floor of the seam, with a considerable saving of power in operating the coal plough.

In order that the loading of the coal onto the conveyor may be subjected to the least possible hindrance from the guide provided on the upper edge of the sloping guide wall, the guide is preferably tubular, and is so mounted that the transition between the sloping wall and the tube is smooth. In this connection, it may be noted that a tubular guide for the coal plough is, in itself, known from the German patent specification No. 804,671. However, according to that specification, the guide is fixed to the side wall of the conveyor, and not to the upper edge of a guide wall projecting above the conveyor.

The invention will be further explained with reference to the embodiment illustrated in the single figure of the drawing, wherein the scraper conveyor **1** is provided, at its side nearest the coal face **2**, with a sloping wall **3**, which by means of bolts **4** and **5** and brackets **6** is mounted on the conveyor side wall **7**. The sloping wall **3** has an extension **3'**, projecting above the upper edge of the side wall **7**, which extension is provided at its outer edge with a guide tube **12**.

Along the sloping guide wall a coal plough **8** is reciprocated by means of a chain **9**. The coal plough is provided with the usual carriage **10** adapted to slide along the sloping wall **3**, the carriage **10** beoing provided with lugs **11** which encircle the guide tube **12**. The plough body **8** is pivotally mounted on the carriage **10** by means of the pivot post **13**. The return flight **9'** of the pulling chain passes under the sloping wall **3**, and is there guided in tube sections **14**.

In operation, the coal is pushed by the plough up along the sloping wall **3** and drops onto the conveyor across the guide tube **12**. The guide tube **12** is joined tangentially to the outer surface of the sloping wall, so that a smooth surface of transition therebetween is effected.

The reaction force exerted on the plough acts at about half the height of the plough, and is indicated in the drawing by the arrow R. The line of action of this force, as illustrated, is below the guide tube **12**, so that the plough when in operation is pressed onto the floor of the seam by the couple caused by this force with respect to the guide tube.

The conveyor side wall **7'** remote from the coal face is provided with a wall extension **15**, which extends upwardly from the side wall **7'** and increases the effective height thereof. This permits the conveyor to be loaded to the height indicated by the line *a* in the drawing. Line *b* indicates the height of loading of the conveyor that may be attained in the absence of the extended sloping guide wall **3'**. Under the sloping wall a strip **16** is provided, to close the gap between the sloping wall **3** and the side wall **7**, to prevent coal from getting into the space between these walls.

It will thus be seen that there has been provided by this invention, structure in which the various objects hereinbefore set forth, together with many practical advantages, are successfully achieved. As various possible embodiments may be made of the mechanical features of the above invention, all without departing from the scope thereof, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawing is to be interpreted as illustrative, and not in a limiting sense.

What is claimed is:

1. A mining face conveyor having side walls and a sloping wall adapted to guide a coal plough mounted on the side wall nearest the coal face, said sloping wall extending upwardly and away from the coal face to a position substantially above said associated side wall, and guide means for the coal plough mounted on the upper edge of said sloping wall.

2. A mining face conveyor as defined in claim 1, wherein the other side wall is provided with a wall extension extending upwardly therefrom to increase the effective height thereof.

3. A mining face conveyor as defined in claim 1, wherein said guide means is tubular and is disposed tangentially to the outer surface of the sloping wall, to provide a smooth surface of transition between the sloping wall and the tubular guide.

4. A mining face conveyor as defined in claim 3, wherein the tubular guide means is disposed at least as high as the vertical center of the coal plough.

References Cited in the file of this patent

UNITED STATES PATENTS

2,691,514 Lobbe ---------- Oct. 12, 1954

FOREIGN PATENTS

599,195 Great Britain ---------- Mar. 8, 1948
715,584 Great Britain ---------- Sept. 15, 1954