HIGH-PRESSURE COAL DUST PRESSING MACHINE

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ABSTRACT

The article describes a high-pressure press to make coal dust generated in the natural state of coal mines during mining and transportation in a usable state.

Keywords: bearings, excavation, transportation, coal powder, pressure, press, piston, cylinder, conical rod, shape, briquette, strength.

Today, coal is mined, transported and consumed by consumers’ supply of quality fuels and working with coal fuels industries has become one of the main industries. Coal industry coal mining (in some cases enrichment, briquetting) and delivery to consumers. The most preferred and efficient method of coal mining is open-pit mining. Coal deposits it is located in a pit, it is mined in a closed (mine) method. In the coal industry of Uzbekistan, mainly open methods are used. This method also has its drawbacks. For example, due to the presence of open basins, the moisture content of coal is high and they decompose under the influence of atmospheric heat. This creates fine-grained coal dust in the coal mines. This figure is around 60% [1,2,3,4,5].

The judicious use by consumers of this generated coal dust poses several challenges. For example in loading, transportation and use by consumers [6,7].

To eliminate the existing problems, various methods of pressing are used in the country. Of these, auger, roller and hand pressing devices are used[8,9,10].

The conversion of coal dust to solid fuel is achieved by placing it in a specific vessel under high pressure and adding binders to its composition [11,12,13].

Based on the above students, the department of “Technological machines and equipment” of Fergana Polytechnic Institute conducts research to address these issues [14,15].

The piston press, which presses the coal powder along the horizontal axis, developed by us, was designed and the design was created. This device differs from other presses in that it does not require the addition of additional binders, has high pressure, simple design and has high efficiency [16,17].

This device consists of 3 parts, the first - the driving part, the second - the pressing part, and the third - the forming part of the coal briquette.
Coal powder is brought from coal storage and a fraction of less than 5 mm is sorted. The rest is suitable for consumption, and the rest is crushed. After that, the selected coal powder is dried at a temperature of 80 - 100 °C and sent to the press by conveyor.

The principle of operation of the device: Initially, electromotor 1 transmits rotational motion through coupling 2 to the reducer 3. The gearbox 3 transmits rotational motion in a 10/1 ratio to the drive 6. The drive disc transmits the motion to shaft 8 via the crankshaft mechanism 7. The rod 8 moves the piston 10 forward and backwards. The product is transferred to press hopper 13, and in the first case of the piston 10, the coal powder is filled into cylinder 11. When the piston 10 moves to the second position, the product drop through the bunker 13 piston 10 is closed and the pressing process starts.

The forming part, which is the third part of the device, is then briquetted due to the volume compaction of the coal powder supplied under high pressure between the conical rods mounted on cylinder 12.

The briquette coming out of the forming part comes out to a certain length and is used in special automatic cutters to cut it to the desired size [22].

In conclusion, it can be said that the created device solves the problems of providing consumers with solid fuels with a high level of durability, flammability and a certain porosity.

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