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T. E. MURRAY

APPARATUS FOR OBTAINING PULVERIZED COAL

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Fig. 1.

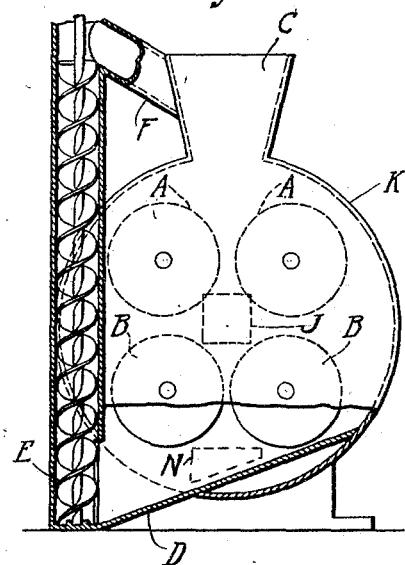


Fig. 2.

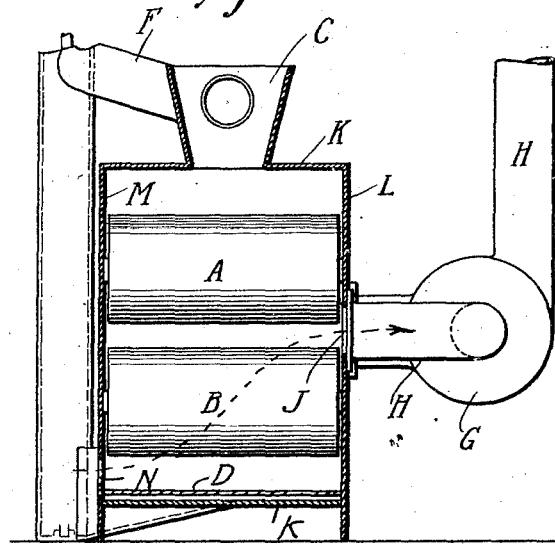
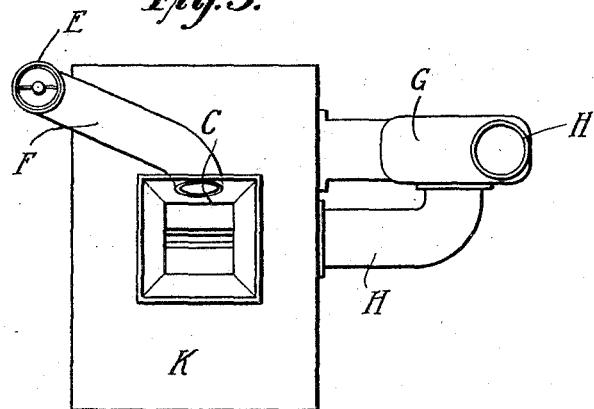


Fig. 3.



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APPARATUS FOR OBTAINING PULVERIZED COAL.

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My invention aims to provide certain improvements by which coal can be produced economically in pulverized or finely ground condition.

5 The accompanying drawings illustrate diagrammatically an embodiment of the invention.

Fig. 1 is a cross-section partly in elevation; Fig. 2 is a central longitudinal section; 10 Fig. 3 is a plan.

Rolls or other common crushing devices are used to crush the material to coarse and fine condition and the finer particles are drawn off in a current of air or other fluid.

15 In the example shown, two pairs of crushing rolls A and B are arranged one above the other. The coal in lumps or similar form from a hopper C passes between the first pair of rolls and is crushed so that part 20 of it emerges in a finely divided state and the balance more coarsely divided. For some coals only one pair of rolls is sufficient, but I prefer to use two or more pairs as shown. The material from the first pair 25 of rolls A passes through a second pair of rolls B, more closely spaced so as to again crush it to coarser and finer particles.

The coarser particles after passing the last rolls drop on to a chute or plate D by which 30 they are conveyed or guided to the lower end of a screw conveyor E by which they are lifted and discharged again through a chute F into the hopper C. The coarser particles are thus circulated through the crushing machine and replenished as required with new 35 material fed into the hopper C to take the place of the pulverized portion withdrawn in the manner hereinafter described. Any usual or suitable gears or other driving 40 means may be used for the rolls, and also any usual or suitable bearings adjustable to vary the space between the rolls and to yield and to permit their separation in case pieces of metal or other large and hard material 45 should enter between the rolls.

As the material falls through the crushing mechanism the finely crushed particles are withdrawn by means of a current of air.

An exhaust fan G has an inlet pipe H communicating with a port J at one side of the casing. The casing is made up of a cylindrical wall K with end walls L and M. The exhaust fan has its inlet through the wall L. There is also an opening N in the end wall M near the bottom of the casing for admission of air. The fan G discharges through a pipe H to any desired receptacle. The air passing through the crushing mechanism carries in suspension the finer particles of material desired. The fan and the several openings or ports described would be varied in proportions so as to carry particles of the desired fineness and to permit the coarser particles to fall to the bottom and to be passed again through the crushing mechanism.

Any type of rolls may be used, that is with plain, serrated or spiked surfaces and proportioned and spaced according to circumstances; or, various other usual or suitable crushing devices may be used. Also various mechanisms may be used for producing the flow of air or other fluid through the material crushed by said mechanism to withdraw the finer particles therefrom.

The invention not being limited to a particular crushing mechanism, or to a particular fan or pump for creating the fluid current desired, it is deemed unnecessary to illustrate these mechanisms in detail; the diagram shown being sufficient to make clear the type of apparatus and the method of obtaining the desired product.

What I claim is:

An apparatus for obtaining pulverized coal comprising in combination a pair of crushing mechanisms and means for admitting air below the second crushing mechanism and withdrawing it between the two crushing mechanisms to recover the fine product from the second crushing mechanism and also from the first.

In witness whereof, I have hereunto signed my name.

THOMAS E. MURRAY.