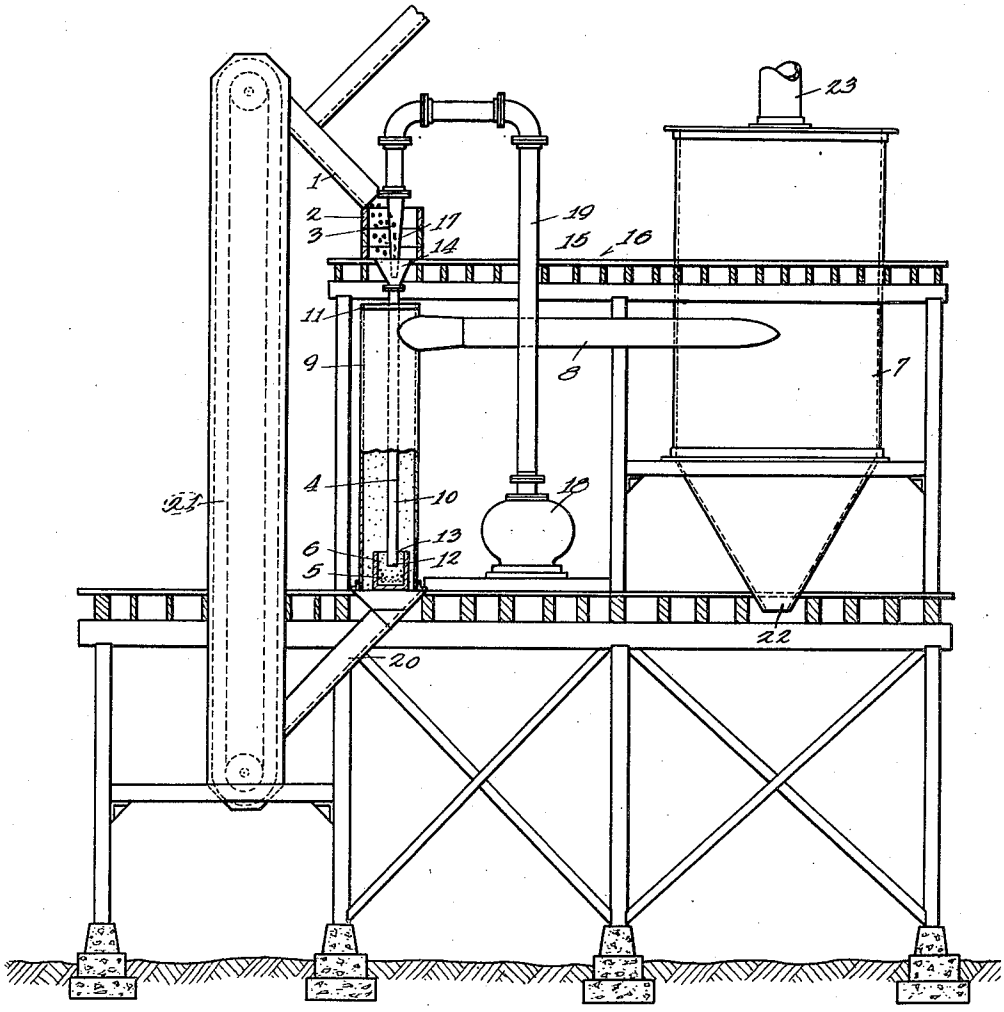
April 19, 1932. A. D. HADSEL 1,854,256

ROCK CRUSHER

Filed May 9, 1930 2 Sheets-Sheet 1




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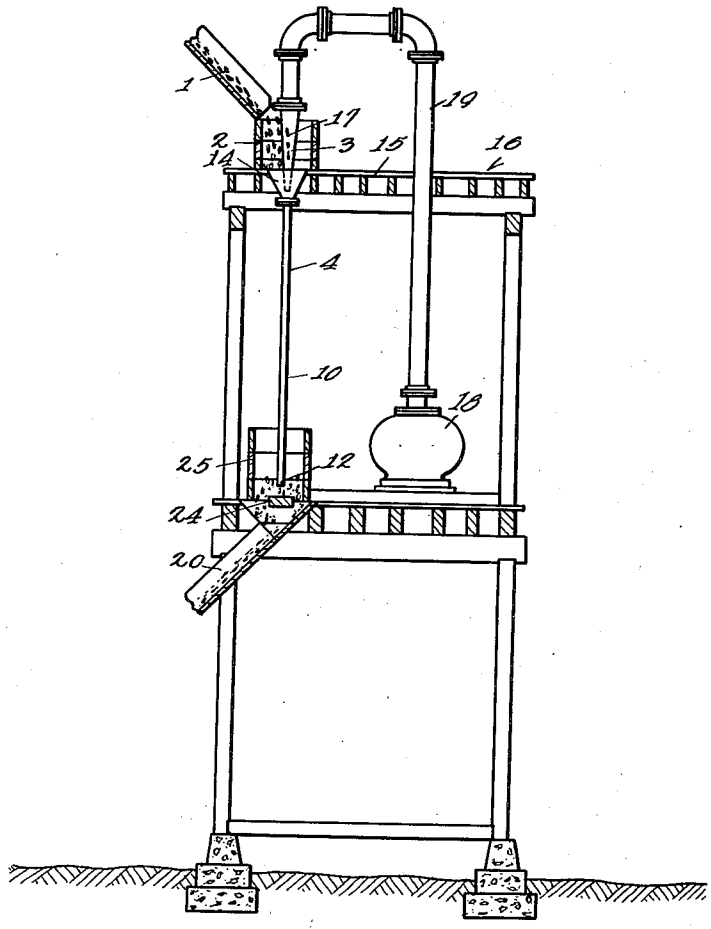



Fig. 2.

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# UNITED STATES PATENT OFFICE

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## ROCK CRUSHER

REISSUED

Application filed May 9, 1930. Serial No. 451,110.

The present invention relates to improvements in rock crushers, and it consists in the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide a rock crusher in which an air blast is associated with a rock feeding means for forcing the rocks entering thereinto against breaker blocks or against a bed of temporarily retained rocks.

A further object of my invention resides in the provision of suction means which is active on the smaller particles of rocks of a predetermined size for segregating the same from the larger rocks.

A still further object is to provide means for returning the oversized rocks to the rock feeding means and to be thrust against the breaker blocks until they have been reduced to the desired size.

A still further object is to produce a rock crusher that is simple in construction, durable and efficient for the purpose intended.

Other objects and advantages will appear as the specification proceeds, and the novel features will be particularly pointed out in the annexed claims.

My invention is illustrated in the accompanying drawings forming a part of this specification, in which:

Figure 1 represents vertical section through a rock crusher constructed in accordance with my invention, parts thereof being shown in elevation, and

Figure 2 is a vertical section through a modified form.

The preferred form of my invention is illustrated in Figure 1 and comprises means indicated at 1 for feeding or delivering rocks into a receiving compartment 2, the latter having an air blast conduit 3 projecting thereinto for forcing the rocks through a tubular member 4 and against a bed of rocks 5 which are temporarily held in a retainer 6. As the new rocks are thrust against the bed of rocks 5, they are reduced in size and at the same time the rocks comprising the bed are also broken up. The retainer 6 may be considered a breaker block with upwardly-extending side flanges. The finer particles of rocks are conveyed to a cyclone 7 by means hereinafter described through a conduit 8 which communicates at one end with the cyclone and at its opposite end with a housing 9 which encircles the tubular member 4 in substantially concentric relation.

The tubular member 4 comprises a tube portion 10 which extends through the closed top 11 of the housing 9 and has its open end 12 disposed in the retainer 6, the latter being opened at 13 for the purpose hereinafter set forth. The uppermost end of the tube 10 has a conical-shaped member 14 secured thereto and supported in the receiving compartment 2 by means of the floor 15 of the superstructure 16. As the rocks enter the compartment 2 from the feeding means 1, they drop by gravity into the conical member 14 and are accelerated by the blast of air emitting from a nozzle 17. The air blast may be created by any suitable means, and in the present illustration I have shown a blower 18 which is connected to the nozzle 17 by a pipe 19.

The rocks discharging from the end 12 of the tubular member 4 rebound to some extent when they strike the bed of rocks 5 and some of them leave the retainer 6 through the open end 13, the lighter ones being conveyed through the conduit 8 as later described, while the heavier ones drop into a chute 20 and are again returned to the feeding means 1 by a bucket conveyer 21.

The rocks are thus circulated through the tubular member 4 until they are reduced to substantially #200 mesh when used as a filler for asphalt. The column of air rising from the open end of the tube 10 will carry therewith these finer parts of rocks through the conduit 8 and into the cyclone 7. The particles will then gradually settle by gravity. The bottom of the cyclone is preferably open at 22 for allowing the rock particles to be discharged into sacks or the like (not shown).

A low vacuum exhauster 23 may be associated with the cyclone in order to draw rocks of a larger size than the ones which are lifted by the air rising from the tube 10.

The exact construction of the superstructure 16 is immaterial as long as the several

elements are supported in proper relation with respect to each other.

From the description of the various parts of the rock crusher, the operation thereof may be readily understood. Rocks entering through the delivering means 1 are forced against the bed of rocks 5 by means of the air blast discharging from the nozzle 17. The finer particles of rocks are carried by the rising column of air or else drawn by the low vacuum exhauster 23 into the cyclone 7.

The modification shown in Figure 2 is substantially the same as the preferred form with the conveyor 21, the housing 9, and the cyclone 7 omitted. The rocks discharging from the end 12 of the tube 10 are thrust against a breaker block 24 which is suitably supported in a compartment 25. The force of impact of the rocks against the breaker block 24 causes the rocks to be reduced in size, and they are subsequently carried away in the chute 20 by gravity.

While I have shown and described only the preferred forms of my invention, I wish to have it understood that I reserve the right to make changes or modifications within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. A rock crusher comprising a tubular member, means for feeding rocks into the tubular member, a retainer for holding a bed of rocks at the opposite end thereof and adapted to receive the thrust of the rocks passing through the tubular member.

2. A rock crusher comprising a tubular member, means for feeding rocks into the tubular member, a retainer for holding a bed of rocks at the opposite end thereof and adapted to receive the thrust of the rocks passing through the tubular member, and means for segregating the finer particles of rocks from the larger ones.

3. A rock crusher comprising a tubular member, means for feeding rocks into the tubular member, a retainer for holding a bed of rocks at the opposite end thereof and adapted to receive the thrust of the rocks passing through the tubular member, means for segregating the finer particles of rocks from the larger ones, and means for returning the larger particles to the rock feeding means.

4. A rock crusher comprising a tubular member, means for feeding rocks into the tubular member, a retainer for holding a bed of rocks at the opposite end thereof, and means for violently thrusting the rocks entering the tubular member against the bed of retained rocks.

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