United States Patent [19]

Cohlmeyer et al.

[11] **3,860,376**

[45] **Jan. 14, 1975**

[54] **FEED DISTRIBUTOR FOR ROLL BRIQUETTING MACHINE**

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[22] Filed: **Dec. 3, 1973**

[21] Appl. No.: **421,191**

[52] **U.S. Cl.** **425/237,** 425/363, 425/367

[51] **Int. Cl.** **B29c 15/00,** B30b 11/18

[58] **Field of Search** 425/145, 237, 367, 363; 249/123

[56] **References Cited**

UNITED STATES PATENTS

1,879,293	9/1932	Jones	425/237
2,513,541	7/1950	Winegai et al.	425/367
2,675,304	4/1954	Komarek	425/237 X
2,977,631	4/1961	Komarek et al.	425/145 X
2,979,799	4/1961	Decker	425/237 X
3,144,681	8/1964	Krantz et al.	425/367 X
3,550,205	12/1970	Guseman et al.	425/237 X
3,611,486	10/1971	Fox	425/363
3,781,151	12/1973	Harris	425/237 X

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[57] **ABSTRACT**

A device of a particular bilateral truncated cone shape has been found useful in distributing compacted, hot, relatively non-flowing reduced ore particulates into position for compression into briquettes between segmented pocket rolls.

3 Claims, 3 Drawing Figures

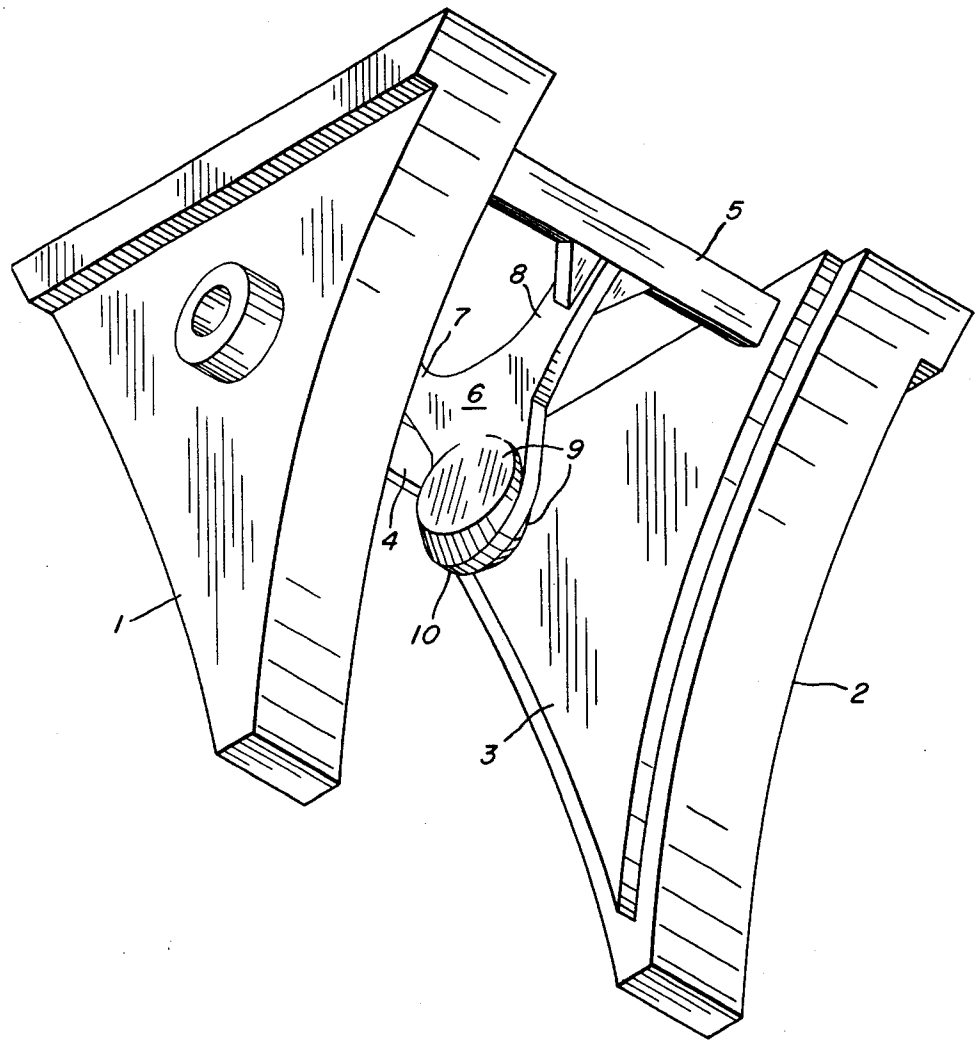


FIG. 1.

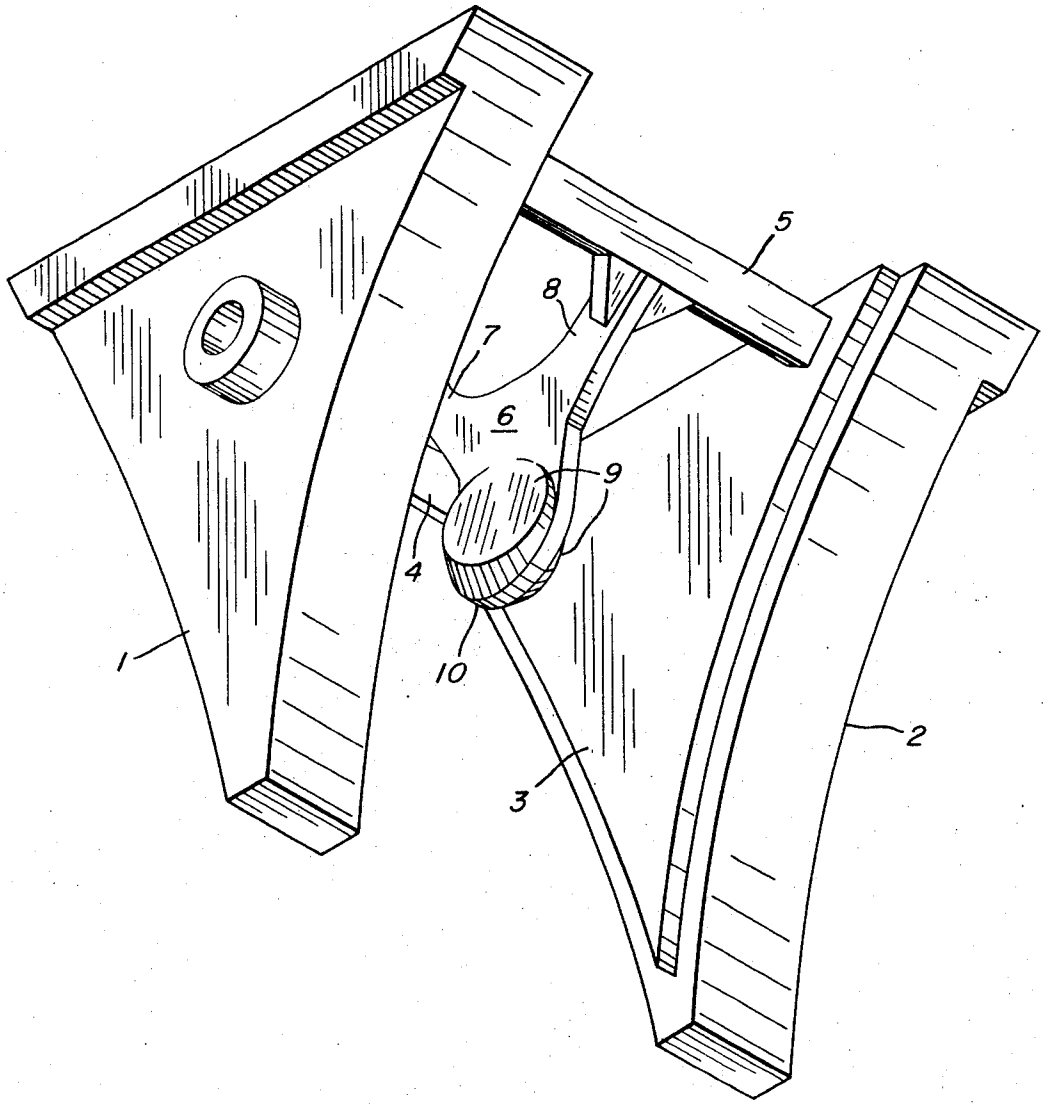


FIG. 4.

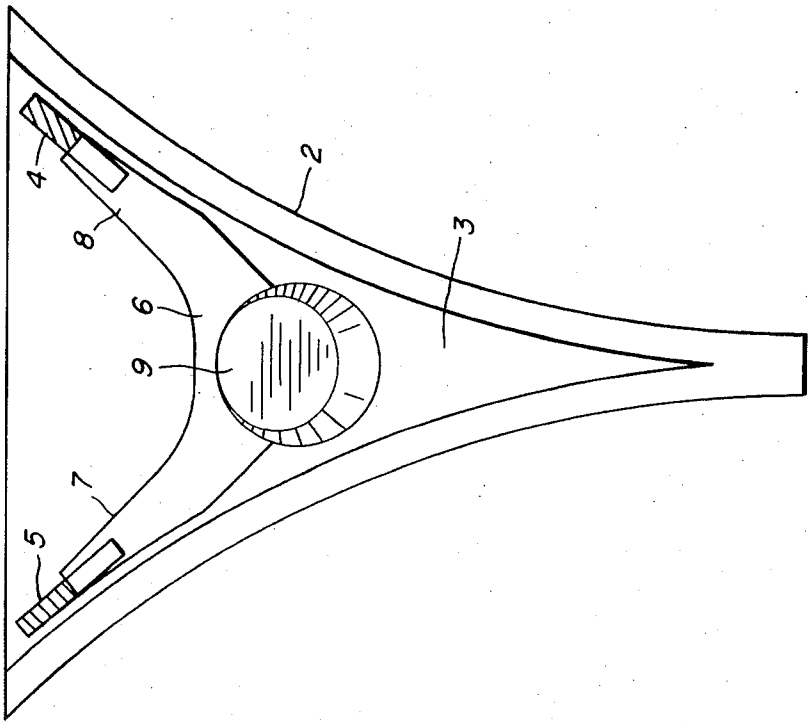
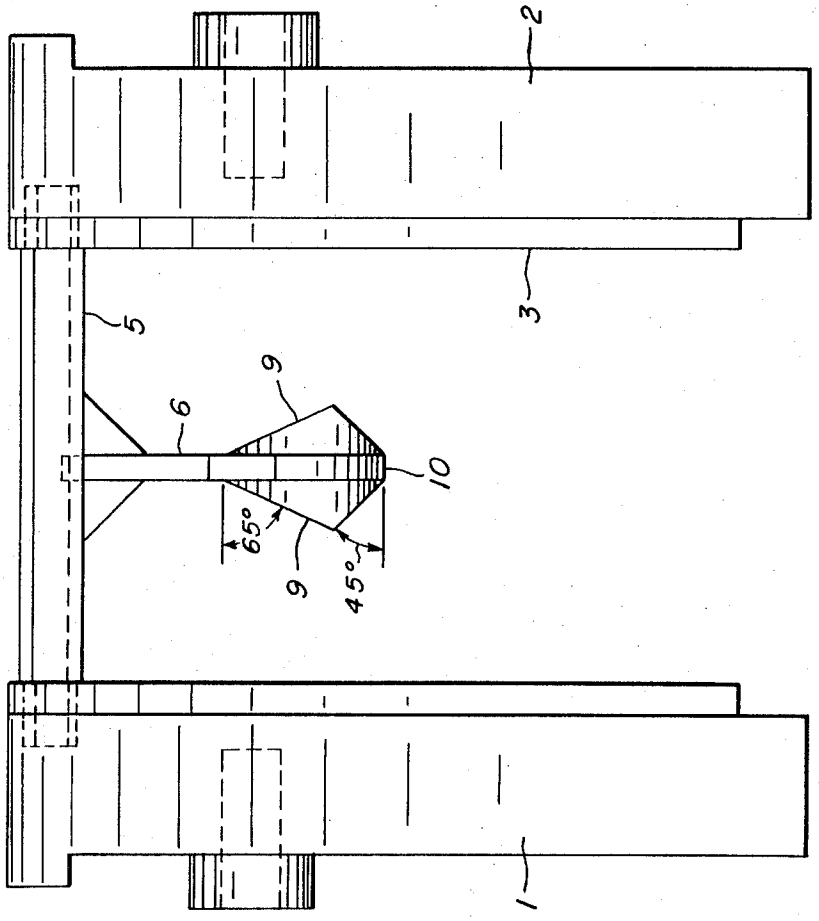


FIG. 2.



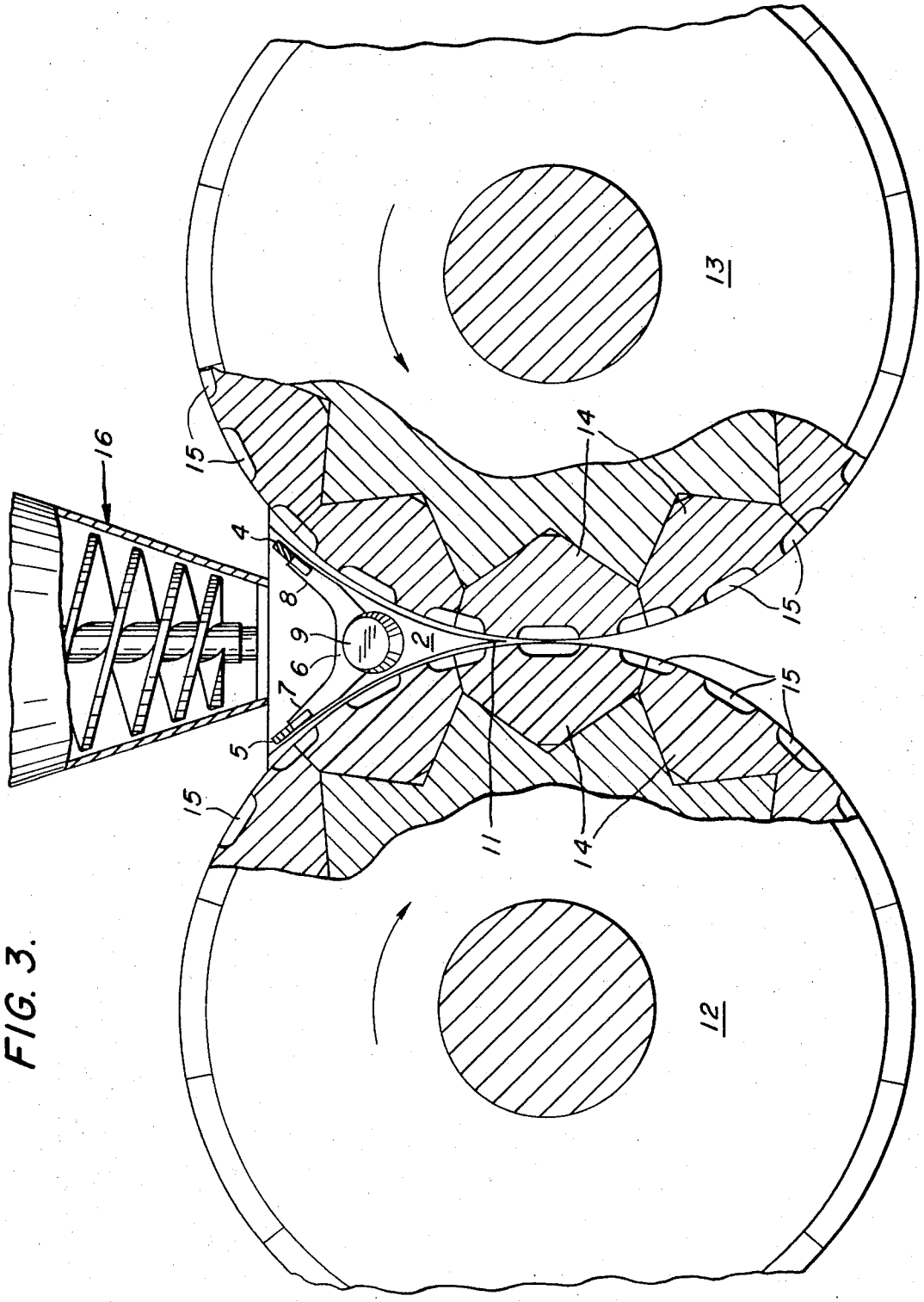


FIG. 3.

FEED DISTRIBUTOR FOR ROLL BRIQUETTING MACHINE

BACKGROUND OF THE INVENTION

This invention relates to briquetting machines, particularly as used for manufacturing briquettes of hot reduced iron ore. It is particularly useful in briquetting machines employing mold inserts on the briquetting roll as disclosed in U.S. Pat. No. 3,077,634 and employing a feed mechanism similar to that disclosed in U.S. Pat. No. 2,977,631. Other patents of interest include U.S. Pat. No. 3,143,769.

It has been found very difficult to feed hot reduced ore into the space between two rolls of pocket molds where the reduced ore is compressed and forced into the pockets. The rolls may have, say, from 48 to 72 segments having a width of 2 or 3 pockets each, traveling at a rate of 15–20 revolutions per minute. The reduced ore must be distributed relatively evenly across the face of the segment so that energy is not unnecessarily consumed in compressing a particular area of the briquette while another area may achieve only a minimal density.

A relatively evenly distributed briquette density extends the life of many of the parts operating under extremes of temperature, pressure and abrasion, and reduces the quantity of fines released to the atmosphere and otherwise lost during subsequent handling.

SUMMARY OF THE INVENTION

We have found that a shape known as a modified dumbbell shape, or a truncated bilaterally symmetrical cone, inserted and held in a fixed position about six inches to two feet above the nip of the rolls will ensure that overcompression of the ore in the center of the nip is avoided.

Our invention will be further described and explained with reference to the accompanying drawings, in which

FIG. **1** is a perspective view of the device in place between two cheek plates;

FIG. **2** is a side elevational view of the same embodiment; and

FIG. **3** shows the device installed in a briquetting machine.

In FIG. **1**, cheek plates **1** and **2** are shown having inner surface **3** and connecting bars **4** and **5**. The material splitter **6** is suspended from connecting bars **4** and **5** by legs **7** and **8**. The material splitter **6** is seen to assume the shape of two cones whose bases are butted together at **10** and whose pinnacles are truncated **9** at an angle diverging downwardly.

In FIGS. **2**, the preferred truncation angle from the vertical is seen to be about 65° **22** for hot reduced iron ore, while the angle blow, which is not critical, is preferably about 45°.

FIG. **3** illustrates the position of the material splitter **6**, the cheek plate **2**, and the material feeder **16** with respect to the nip **11** of the rolls **12** and **13**. Rolls **12** and **13** contain on their perimeter mold segments **14** having pockets **15** into which the material is forced and compacted.

The material splitter ensures that the material to be briquetted is distributed to the extremes of the pockets as well as the center under approximately even pressure, resulting in a relatively even density throughout the briquette.

The invention is applicable to roll type briquetting machines having more than one pocket across the width of the roll. It is particularly useful for handling materials which do not flow readily, have a tendency to cause abrasion, and must be forced into position. Particularly where production rates are relatively high, i.e., 20 to 60 tons per hour, the material splitter is useful to reduce wear of feed devices, cheek plates, and roll segments.

The angle of truncation of the cone shapes may vary from about 55° to about 80° from the vertical, but 65° is preferred. The material splitter should be made of an abrasion resistant metal. The angle below is not critical and in fact may be perpendicular to the vertical, in which case the basic shape is not that of two base-abutting cones but a cylinder, truncated from above at the desired angle of 55° to 80°.

Our invention is not limited to the above specifically discussed embodiments, but may be otherwise variously practiced within the scope of the following claims.

We claim:

1. Device for distributing material forced into the nip of a roll briquetting machine comprising a solid metal diverter in the shape of a cylinder or two base-abutted cones truncated at angles of from about 55° to about 80° from the vertical, and means for supporting the diverter above the nip of the rolls.

2. Device of claim **1** in which the angle of truncation is about 65°.

3. Apparatus for briquetting material of non-fluid characteristics comprising two tandem rolls having peripheral briquette pockets, two cheek plates for retaining material between the rolls, feed means for forcing material between the rolls and a diverter suspended below said feed means and above the nip of the rolls, comprising a solid steel element in the shape of a cylinder or two base-abutted cones truncated at angles of from about 55° to about 80° from the vertical.

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