Oct. 7, 1924. 1,510,745

A. B. MONTGOMERY

BRIQUETTE AND METHOD OF MAKING SAME

Filed Nov. 17, 1920

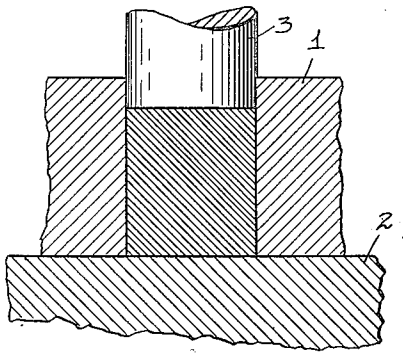


Fig. 1

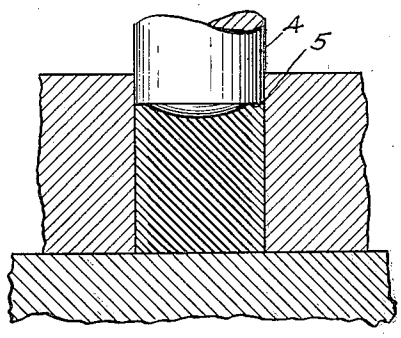


Fig. 2

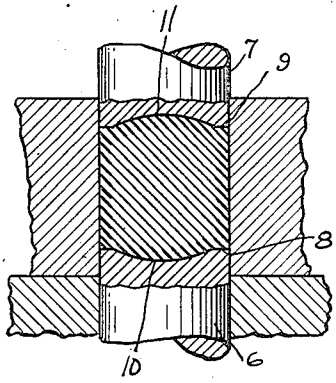


Fig. 3

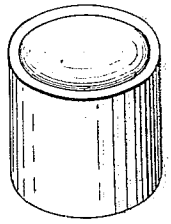


Fig. 4

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UNITED STATES PATENT OFFICE.

ALONZO B. MONTGOMERY, OF LAKEWOOD, OHIO.

BRIQUETTE AND METHOD OF MAKING SAME.

Application filed November 17, 1920. Serial No. 424,578.

To all whom it may concern:

Be it known that I, ALONZO B. MONTGOMERY, a citizen of the United States, and a resident of Lakewood, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Briquettes and Methods of Making Same, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

This invention relates to a special form of briquette and the method of producing the same. More particularly, it comprises the production, by means of a series of compressing operations, of a briquette having an especially compacted interior portion and a more highly compacted exterior area. The finished article is preferably of cylindrical shape and is formed with a shallow dome-like end portion to better withstand impact and abrasion when a large number of briquettes are transported in bulk or handled in the various processes of manufacture for which they are adapted.

Heretofore difficulty has been experienced in forming briquettes of certain material, particularly of cast iron particles, comprising turnings, borings, and the like, which will withstand the usual handling operations without being fractured or disintegrated to some extent.

The object of my invention is, by a series of compressing operations, to give to a briquette an interior structure, as well as an outward configuration, adapted to resist the strains resulting from the handling operations mentioned. While my invention has primarily in view the formation of briquettes of metallic particles, such as turnings, borings, and the like, of brass, copper, steel, cast iron, and similar metals, to be used in various re-melting and re-working processes, it is not intended to limit its application to such materials, as peat, coal, clay, and products of many different classes would likewise be better adapted for handling in transportation and use by being similarly treated. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail one method and one product exemplifying my invention, such disclosed procedure and product constituting however, but one of various applications of the principle of my invention.

In said annexed drawing:—

Fig. 1 is a vertical sectional view illustrating the first step in compressing the material into a mold chamber by means of a flat faced plunger; Fig. 2 is a similar view illustrating the succeeding step wherein a convex faced plunger is used to compact the material centrally; Fig. 3 is a similar view showing upper and lower plungers or dies having concave faces and designed to give the final form and structure to the briquette; and Fig. 4 is a perspective view showing the briquette in its finished form.

As is shown in Fig. 1, the first step in forming the briquette comprises acting upon the material previously fed into a mold chamber 1, supported above a base block 2 by means of a flat faced plunger 3. A plurality of such plungers may be used in order to give the material a fairly high degree of compactness before being subjected to the succeeding steps of the operation. When a number of plungers are thus used, the first plunger may have a greater range of travel than the succeeding plungers, and material may be added to the mold contents before each succeeding plunger is brought into operation. The briquette at this stage of its manufacture is of uniform density throughout.

As a second step in the manufacture of the briquette, I have pressure applied to the upper face of the previously compacted material by means of a die or plunger member 4 having a contact face, the central portion of which is of shallow dome-like cross-sectional contour, the marginal portions 5 thereof being flat. Through the action of this plunger, the material is given a high degree of compactness centrally of the briquette.

The following and final step in the production of the briquette is carried out by means of a pair of co-operating plungers or dies 6, 7, each having flat marginal portions 8, 9, and shallow concave central portions 10, 11. Through this means the briquette is given a very highly compacted superficial area, as well as a shape adapted to resist injury through handling. The finished form of the briquette is illustrated in Fig. 4, which shows a member having a cylindri-

cal shape with end members having shallow dome-like portions centrally and a flat peripheral margin.

Other steps or forms may be employed embodying the features of my invention instead of the one herein explained, change being made in the steps or forms, provided those stated by any of the following claims or the equivalent thereof be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. The method of forming a highly compressed article of normally non-adhering material which comprises subjecting a quantity of said material in a molding chamber to the action of a plunger of long effective stroke, adding material to the original material already compressed, subjecting the same to the action of a plunger of slightly lesser length of working stroke, then subjecting the body so formed to the action of a plunger of greater length of working stroke and having a convex face centrally thereof, and finally subjecting the body to compression between a pair of concave faced plungers to produce extreme superficial compacting of the outer area of said article.

2. A method of forming a highly compressed article of normally non-adhering material which comprises subjecting a quantity of said material to an initial compression affecting its entire area, thereafter subjecting the body so formed to pressure more greatly affecting its degree of density centrally, and finally subjecting the article to a high degree of pressure upon its peripheral and terminal areas.

3. A briquette composed of compressed relatively finely divided material, having a highly compacted central structure, and a more highly compacted outer peripheral portion, the body portion of said briquette being of cylindrical form and each of the ends thereof having a raised central portion of slightly curved cross-sectional outline, and having a plane marginal surface.

4. A briquette of cast iron particles having a cylindrical body portion and raised end portions, the interior of said briquette being of lesser density than the superficial surface thereof.

5. A briquette composed of compressed relatively finely divided material, having a highly compacted central structure, and a more highly compacted outer peripheral portion, the body portion of said briquette being of cylindrical form and each of the ends thereof having a slightly curved cross-sectional outline.

Signed by me, this 12th day of November, 1920.

ALONZO B. MONTGOMERY.