

Sept. 27, 1932.

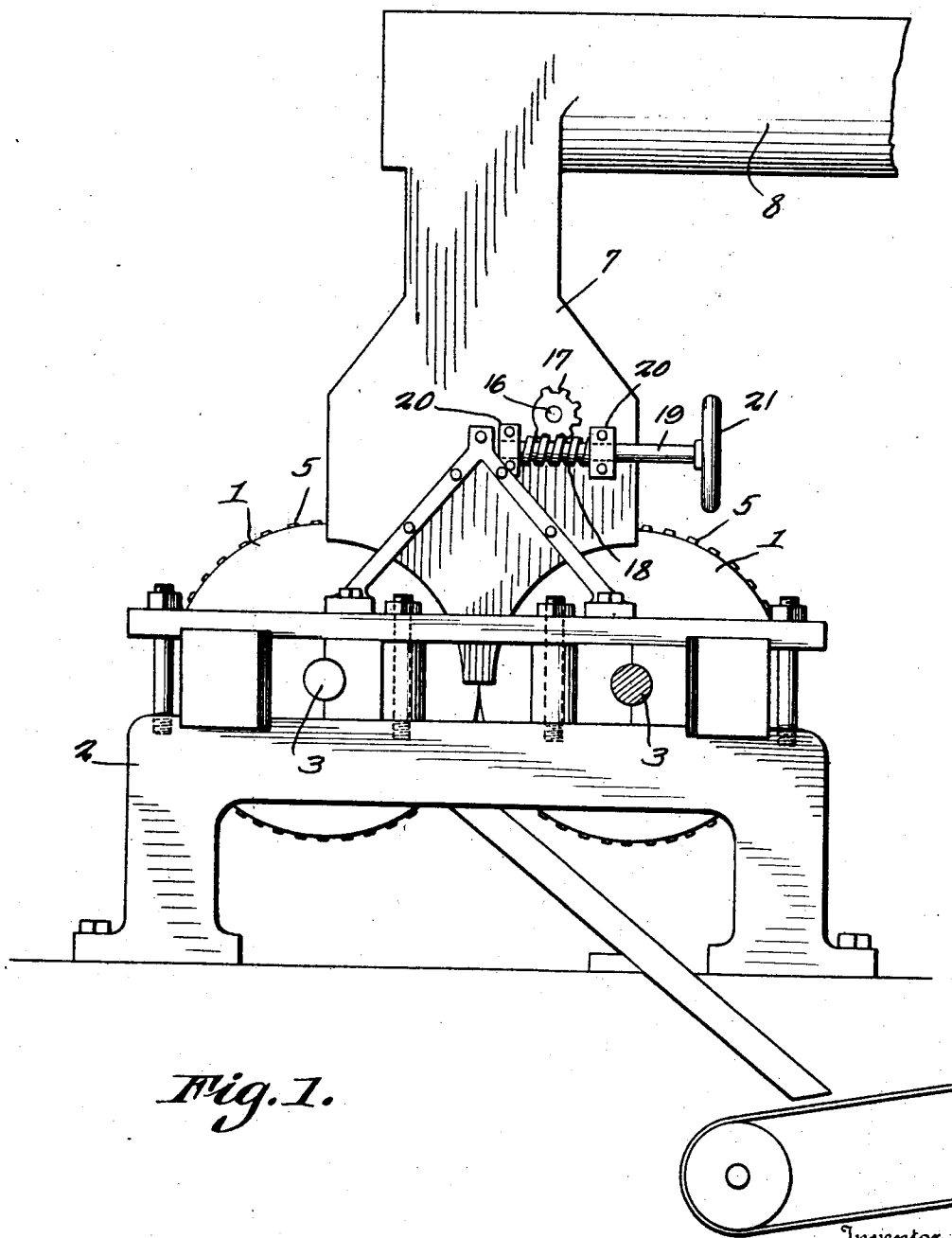
E. E. JONES

1,879,293

BRIQUETTE PRESS

Filed Jan. 12, 1931

3 Sheets-Sheet 1



Emory E. Jones

Chas. E. Jones
Attorneys.

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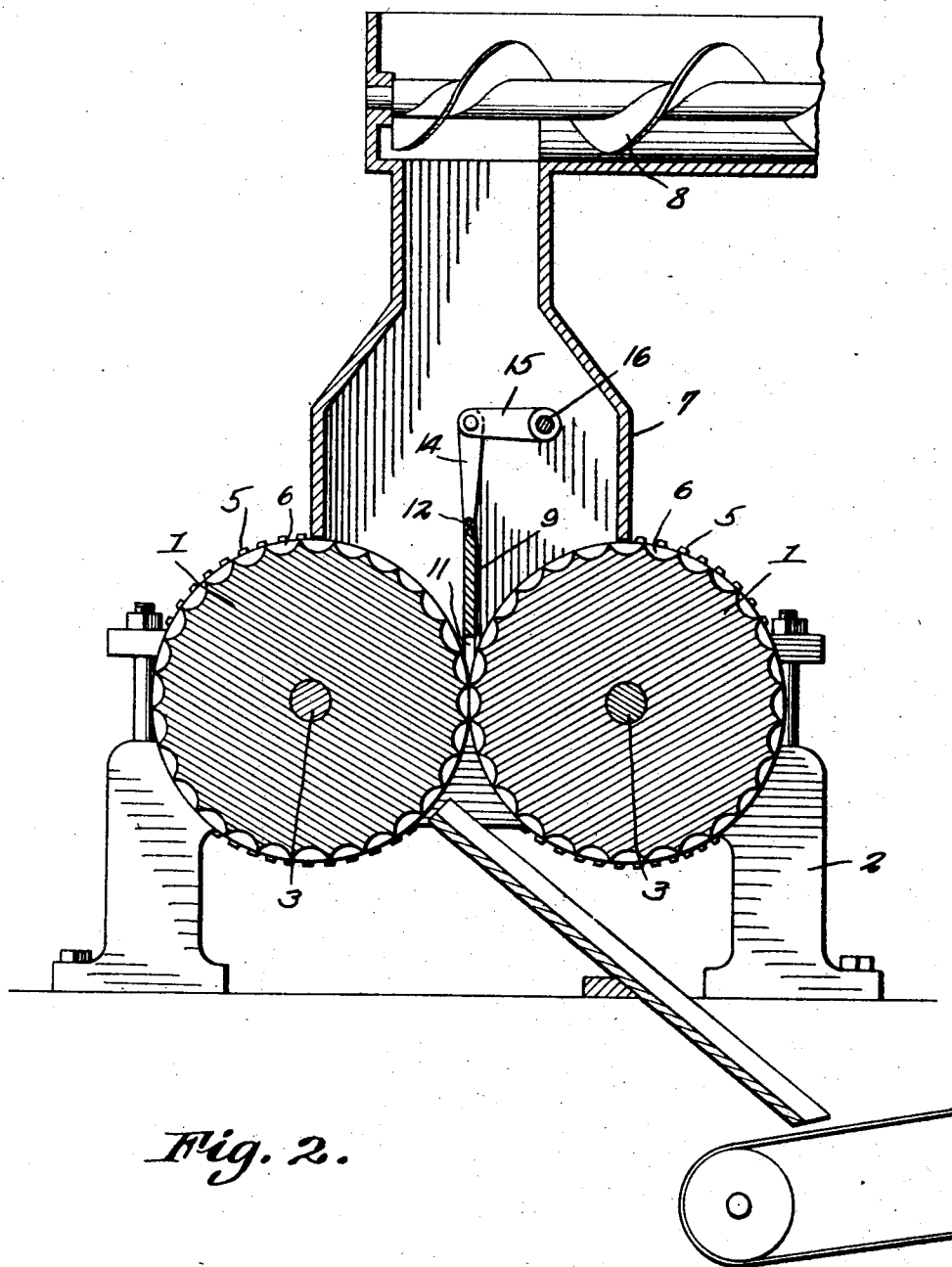


Fig. 2.

Inventor

Emory E. Jones

By *Chas. H. Co.*
Attorneys.

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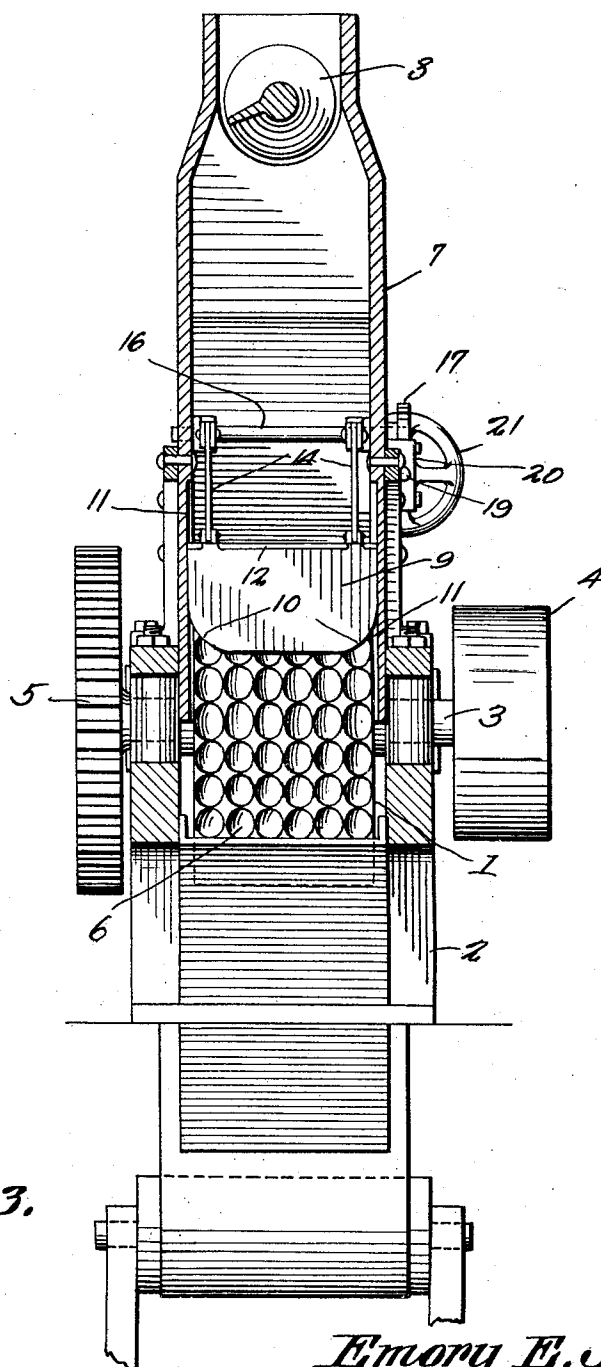


Fig. 3.

Inventor

Emory E. Jones

By *Chas. H. Jones*
Attorneys.

UNITED STATES PATENT OFFICE

EMORY E. JONES, OF BLUEFIELD, WEST VIRGINIA, ASSIGNOR TO WINDING GULF COLLIERIES, OF BLUEFIELD, WEST VIRGINIA

BRIQUETTE PRESS

Application filed January 12, 1931. Serial No. 508,291.

This invention aims to provide a simple means whereby briquettes of uniform consistency and hardness may be manufactured in the well known "Belgian" press, which is used for the making of briquettes, composed, generally, of divided coal and a binder.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings:

Figure 1 shows in side elevation, a device constructed in accordance with the invention;

Figure 2 is a vertical longitudinal section;

Figure 3 is a vertical transverse section.

In the accompanying drawings, there is shown a Belgian type briquette press, comprising two rolls 1, supported for rotation on a housing 2, through the instrumentality of shafts 3, to which the rolls are secured. One of the shafts 3 is driven by any suitable means 4 and the shafts are so connected by gears 5 that, when looking down on the press, each roll 1 rotates towards the other, thus carrying down between the rolls, the material to be briquetted or pressed. Pockets 6 are cut or cast along the face of each roll 1, and the gears 5 are so set that as the pockets pass the median vertical plane of the press, each pocket in one roll is exactly opposite to a pocket in the other roll. Thus, the material is pressed into a firm mass, and the product is termed a briquette.

Referring to Figure 2, for instance, it will be seen that just above the rolls 1 is located

a hopper 7, into which the material to be briquetted is fed by any appropriate means, shown generally and conventionally in the drawings at 8. The material flows between the rolls 1 by gravity, but the flow of the material is assisted, as well, by the action of the rolls, which rotate towards each other. It is clear that the material which is midway between the ends of the rolls 1 will flow much more freely than at the ends of the rolls, or at the sides of the press, this being true, because the friction of the side walls of the hopper 7 retards the flow of the material, downwardly, at the ends of the rolls 1.

When it is understood that the material which is being briquetted flows more freely at a point spaced from the ends of the rolls 1 than at the ends of the rolls, it becomes evident that briquettes which are made at a point spaced from the ends of the rolls will be much firmer than briquettes which are made at the ends of the rolls. The result is that an inferior and variable product is turned out. The briquettes made at a distance from the ends of the rolls 1 are pressed so hard that they split, while the briquettes made at the ends of the rolls, are so soft that they are of low commercial value.

The fact that it has been found difficult, if not actually impossible, to make a uniform briquette on a Belgian press has, of course, led to many methods and mechanisms, whereby a feed could be so arranged that this difficulty would be overcome. These methods and mechanisms for feeding have been made the subject of many patents, and when it is understood that of all presses, the Belgian type is the most simple and of greatest capacity, it is apparent that the matter of feeding the material is something of vital importance, since the press is useless, unless a uniform product can be made by means of it.

Without going into the various means heretofore employed for obtaining a uniform feed-control in a Belgian press; two will be

alluded to, others being practically worthless, and the two which will be discussed being of limited and questionable utility.

One of the mechanisms for the alleged purpose of securing a uniform feed in a Belgian press comprises a bar which is circular in cross section, the bar being located above the point of contact of the two rolls, the bar being vertically adjustable, in order that more or less material can be fed into the press. This adjustment of the bar, up and down, and the regulation of the amount of the material allowed to flow to the rolls, comprises the entire and complete function of the so called "round" pressure bar. The "round" pressure bar has the defect that there is no compensating action for the friction of the side walls of the hopper on the material, and, even though the aforesaid "round" bar is used, inferior briquettes are turned out in the Belgian press, the briquettes made at the ends of the rolls being too soft, and the briquettes made in spaced relation to the ends of the rolls being too hard. As a whole, and on the average, the product is commercially worthless.

Another mechanism proposed, in an effort to secure uniform feeding, comprises a hopper and a stirring mechanism within the hopper. The serious defect in such a structure is that there is no compensation for the friction of the material upon the walls of the hopper, and, notwithstanding the fact that a reasonably perfect stirring mechanism is provided, the aforesaid friction persists, and a uniform product does not result.

So far as I am advised as to the state of the art, although the mechanisms above referred to, and many others, have been tried out in actual practice, the fact still remains that it is extremely difficult, and commercially impossible to make briquettes of uniform hardness in a Belgian press, especially due to the fact that the side walls of the hopper put an added friction on the material which is being fed to the rolls.

In putting the present invention into practice, and in order to obviate the undesirable results above referred to, a thin flat, parallel-sided plate 9 is located in the hopper 7, immediately above the line where the rolls 1 cooperate, the plate 9 preferably being made of metal and being of unequal transverse dimensions, the vertical dimension of the plate being much greater than the horizontal dimension of the plate. It has been found, as a matter of practice, that the material will not adhere to a plate such as the plate 9, whereas it will adhere to a bar which is circular in cross section, or of an analogous cross section. As a further and specific improvement, the lower corners of the plate 9 are cut away, as shown at 10 in Figure 3, thus allowing an extra pressure against the rolls 1 at the ends thereof. This extra pressure compensates for the friction

of the side walls of the hoppers 7 on the material, and a uniform product results.

Any suitable means may be supplied for mounting the plate 9 for vertical movement, and for adjusting it vertically. In the drawings, the ends of the plate 9 are shown as being received slidably in vertical guides 11 formed in the side walls of the hopper 7, the upper portion of the plate 9 being brought to an edge, as shown at 12, is desired, in order to effect a proper division of the material, as it moves downwardly to the rolls 1. For the raising and lowering of the plate 9, it is suggested that links 14 may be pivoted at their lower ends of the upper edge of the plate 9, the upper ends of the links being pivoted to arms 15 on a shaft 16 mounted for rocking movement in the hopper 7. The shaft 16 preferably has a worm wheel 17 on one end, the worm wheel meshing with a worm 18 on a shaft 19 journaled in bearings 20 on the hopper 7, the shaft 19 being supplied with a hand wheel 21, or other means whereby rotation may be imparted to the shaft, at the will of an operator.

It is claimed, and has been demonstrated in actual practice, in the manufacture of fuel briquettes on a commercial scale, that a flat plate, like the plate 9, with corners cut away in the general manner shown at 10, and vertically adjustable, will so regulate the feed, and so compensate for side wall friction in the hopper, that briquettes of uniform hardness will be turned out.

Having thus described the invention, what is claimed is:

1. A briquette press embodying a housing, approximately parallel rolls, journaled in the housing and having cooperating, briquette-forming pockets, a hopper above and discharging upon the rolls, a single thin flat plate, of fixed thickness and of unequal transverse dimensions, the vertical transverse dimension of the plate being appreciably greater than the horizontal transverse dimension of the plate, the plate being located in the hopper above the line where the rolls cooperate in making briquettes, and means under the control of an operator for adjusting the plate toward and away from said line in a direction substantially at right angles to a plane passing through the axes of rotation of both rolls.

2. A briquette press embodying a housing, approximately parallel rolls, journaled in the housing and having cooperating briquette-forming pockets, a hopper above and discharging upon the rolls, a thin, flat plate, of unequal transverse dimensions, the vertical transverse dimension of the plate being appreciably greater than the horizontal transverse dimension of the plate, and the plate being located in the hopper above the line where the rolls cooperate in making briquettes, the lower, inner corners of the plate

being cut away to permit the material to have added pressure on the rolls and overcome the friction of the walls of the hopper at the ends of the rolls.

5 3. In a briquette machine, the combination with co-operating pocket press rolls and a hopper for delivering the briquette material thereto, of a pressure gate in the form of a blade mounted in the plane that is substantially tangential to the contacting surface of the said press rolls.

10 In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

EMORY E. JONES.

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