This invention relates to an improved briquette-parting apparatus.

When highly reduced iron ore fines are briquetted at high temperatures in a roll-type press, press areas between pockets in the rolls compact some of the fines into webs which join the briquettes to one another. Hence the briquettes discharge as long strings, rather than individually like briquettes of most materials. Before the briquettes are used, it is desirable to break the strings apart into individual briquettes. The briquettes later may be charged to a blast furnace, and a blast furnace operates most efficiently when charged with agglomerates of uniform size and shape, no larger than about one inch in diameter. Another difficulty is that strings of 5 or 10 or more briquettes are awkward to handle and transport. The webs are quite strong and resist breaking, particularly after the briquettes cool.

An object of our invention is to provide an improved parting apparatus which operates in conjunction with a roll-type press to break a string of briquettes into individual briquettes.

A further object is to provide an improved parting apparatus which is capable of breaking curved or interrupted strings at high temperatures, yet is not likely to jam.

In the drawings:

FIGURE 1 is a side elevational view with parts broken away of a roll-type briquetting press equipped with our improved parting apparatus; and

FIGURE 2 is a vertical sectional view on a larger scale of our parting apparatus.

FIGURE 1 shows a conventional roll-type briquetting press which includes a housing and a pair of power driven briquetting rolls 12 and 13 mounted in said housing. The rolls have a series of mating briquette-forming pockets around their circumferences, and lands between pockets. Highly reduced iron ore fines P are fed between the rolls at a temperature of at least 1300 F. The rolls compact the fines to form a string which consists of briquettes B and webs W joining the briquettes to one another. We mount a parting apparatus 16 constructed in accordance with our invention in the lower portion of housing 10 immediately beneath the Briquetting rolls.

As FIGURE 2 shows, our parting apparatus 16 includes a housing 17 and a guide funnel 18 extending upwardly from the housing to the proximity of the roll surfaces. We mount a guide plate 19 and breaker plate 20 in spaced relation in the upper portion of housing 17. The guide plate 19 may be fixed, but preferably the breaker plate 20 is pivoted near its upper end to the housing and bears against an adjustable set screw 21, whereby its angle can be adjusted. The set screw is threadedly engaged with a bar 22 fixed across the housing. The apparatus also includes a toothed guide wheel 23 in housing 17 beneath the guide plate 19, a toothed breaker wheel 24 beneath the breaker plate 20, and a drive shaft 25 beneath the guide wheel, each journaled in suitable bearings outside the housing and rotateable on horizontal axes. We connect the drive shaft to any suitable drive means, not shown.

The drive shaft drives both the guide and breaker wheels in a counterclockwise direction through gears 26. The bearings and gears are located outside the housing 17 to protect them from the heat (FIGURE 1). The wheels and drive shaft have axial bores 27 for circulating coolant, which can be admitted and discharged through conventional rotary unions, not shown.

In operation, a string of hot briquettes B from the briquetting rolls 12 and 13 enters our parting apparatus 16 through the funnel 18. If the leading end of the string is curved, the end engages the guide plate 19 or breaker plate 20, which guides it into engagement with teeth of the rotating guide wheel 23. Otherwise the string engages the teeth of this wheel directly. The guide wheel 23 pushes the leading briquette into one of the spaces between teeth on the breaker wheel 24. We adjust the parts so that the web W between the leading briquette and the next following briquette engages the lower edge of the breaker plate 20. The linear speed of wheels 23 and 24 at their circumference is about 5 percent greater than that of the string. Rotation of the breaker wheel thus snaps this web against the breaker plate and parts the leading briquette from the string. The same operation repeats for each following briquette. The severed briquettes drop into any suitable receiver.

From the foregoing description it is seen that our invention affords a simple effective apparatus for parting briquettes from a string. The apparatus operates with the briquettes at high temperatures and is not likely to jam despite irregularities in the string.

While we have shown and described only a single embodiment of our invention, it is apparent that modifications may arise. Therefore, we do not wish to be limited to the disclosure set forth but only by the scope of the appended claims.

We claim:

1. A briquette-parting apparatus comprising a housing for receiving a string of briquettes, a breaker plate mounted in said housing, a toothed breaker wheel mounted in said housing beneath said plate, drive means operatively connected with said wheel, and means in said housing for guiding the leading briquette of a string between the teeth of said wheel, whereby said wheel breaks the web joining the leading briquette against said plate.

2. An apparatus as defined in claim 1 in which said guide means includes a guide plate mounted in said housing and spaced from said breaker plate, and a toothed guide wheel mounted in said housing beneath said guide plate, said drive means also being operatively connected with said guide wheel.

3. A briquette-parting apparatus comprising a housing, a guide plate and a breaker plate mounted in the upper portion of said housing in spaced relation, a toothed guide wheel mounted in said housing beneath said guide plate, a toothed breaker wheel mounted in said housing beneath said breaker plate, drive means for said wheels, and a guide funnel extending upwardly from the top of said housing, said funnel being adapted to receive a string of briquettes joined to one another by webs and to guide the string into said housing, said guide plate and guide wheel being adapted to guide the leading briquette of the string into a space between teeth of said breaker wheel, said breaker wheel being adapted to break the web joining the leading briquette against said breaker plate.

4. An apparatus as defined in claim 3 in which said drive means includes a drive shaft extending across said housing and gears connecting said shaft and wheels to drive the wheels in the same direction, said gears being located outside said housing.

5. An apparatus as defined in claim 3 in which said breaker plate is pivoted near its upper end to said housing, and including a set screw adjustably mounted in
said housing and bearing against said breaker plate to ad-
just the angle thereof.

6. The combination, with a roll-type briquetting press
adapted to compact fine material into strings of briquettes
joined by webs, of a parting apparatus comprising a hous-
ing beneath said press for receiving a string of briquettes
therefrom, a breaker plate mounted in said housing, a
toothed breaker wheel mounted in said housing beneath
said plate, drive means operatively connected with said wheel,
and means in said housing for guiding the leading
briquette of a string between teeth of said wheel, where-
by said wheel breaks the web joining the leading briquette
against said plate.

7. A combination as defined in claim 6 in which said
guide means includes a guide plate mounted in said hous-
ing and spaced from said breaker plate, and a toothed
guide wheel mounted in said housing beneath said guide
plate, said drive means also being operatively connected
with said guide wheel.

8. A combination as defined in claim 7 in which the
connections between said drive means and said wheels
are located outside said housing, and said wheels have
axial bores for circulating coolant.

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