To all whom it may concern:

Be it known that I, CLARENCE ARNOLD FELL, of DRONFIELD, ENGLAND, 5 Dronfield, county of Derby, England, consulting engineer, have invented certain new and useful Improvements in Shovels for Stokers' Use and other Purposes, (for which I have obtained Letters Patent in Great Britain, No. 942, filed January 12, 1912,) of which the following is a specification, referring to the accompanying drawings.

This invention relates to an improvement applicable to shovels for the use of stokers, for the more effective spreading of coal in firing, but it may be also used for spreading grain and the like.

The invention consists in the combination of a number of radially arranged longitudinal ribs rising from the face of the blade, or if preferred similarly arranged grooves or hollows may be substituted.

The invention is shown on the annexed sheet of drawings.

Figure 1, represents a front elevation of a stoker's shovel made with ribs according to this invention; Fig. 2, is a side elevation of the same; Fig. 3, is a separately made plate for attachment to a shovel; Fig. 4, edge view of grooves or hollows in place of ribs; Fig. 5, two views of separately made ribs, either by casting, rolling or stamping for repairs and the like.

The object of these radial ribs (or grooves) is to cause the coal to divide or separate during its forward movement in stoking, and to leave the shovel in streams having a tendency to radiate or spread laterally. Thus small coal delivered from a shovel constructed with this invention would be spread over the surface of the fire grate more equally than hitherto, dispensing with the usual subsequent process of raking, (which requires the furnace door to be open and admit cold air) which is objectionable.

Referring to the drawings, A are the ribs arranged radially and either integral therewith and produced by stamping the plate B between top and bottom dies, or made upon a separate plate D Fig. 3, and afterward attached to a shovel plate, or they may be made separately by casting, stamping or rolling in continuous strings or lengths, as Fig. 5. As clearly shown all of the ribs radiate from a common point on the central longitudinal axis of the body portion of the shovel. The dimensions may be varied, but (for example only) it is found that six inches long and three quarters of an inch high give a good result upon an ordinary size of shovel. The front of each rib is inclined backward or toward the rear to enable the shovel to more readily take up the coal and the ribs are inclined downwardly toward the rear of the body portion of the shovel.

Preferably the face of the shovel plate is shaped to incline upward from each side to the center or coffer C, as indicated by the dotted line a—a Fig. 1.

When the ribs are made upon separate plates as Fig. 8, such plates may be used for repairing worn shovels or they may be secured upon new shovels which are made without ribs.

A shovel made according to this invention will spread the coal across the furnace without any twisting action of the stoker's arms.

I am aware that shovel blades have been corrugated and embossed for strengthening and for ornamenting them. Also that a single rib inclined in opposite directions extending from the center across the blade to its sides has been previously proposed, and I make no claim to such, but

What I desire to claim is:

1. A shovel comprising a body portion provided with a plurality of longitudinally extending radially disposed shallow ribs, all of said ribs radiating from a common point on the central longitudinal axis of said body portion.

2. A shovel comprising a body portion provided with a plurality of longitudinally extending radially disposed shallow ribs, all of said ribs radiating from a common point on the central longitudinal axis of said body portion, each of said ribs being spaced from the ribs adjacent thereto throughout its entire length.

3. A shovel comprising a body portion provided with a plurality of longitudinally extending radially disposed shallow ribs, all of said ribs radiating from a common point on the central longitudinal axis of said body portion, each of said ribs being spaced from the ribs adjacent thereto throughout its entire length, the length of said ribs being less than the length of the said body portion.
and each of the ends of each of said ribs being spaced from the ends of said body portion.

4. A shovel comprising a body portion provided with a plurality of longitudinally extending radially disposed shallow ribs, all of said ribs radiating from a common point on the central longitudinal axis of said body portion, said ribs being inclined downwardly toward the rear of said body portion. 10

In witness whereof I have hereunto set my hand in presence of two witnesses.

CLARENCE ARNOLD FELL.
Witnesses:
ROBT. F. DRURY,
ENSOR D. DRURY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."