

UNITED STATES PATENT OFFICE.

JOHN H. LYON, OF BALTIMORE, MARYLAND.

MACHINE FOR SPLITTING COAL.

Specification of Letters Patent No. 19,429, dated February 23, 1858.

To all whom it may concern:

Be it known that I, JOHN H. LYON, of Baltimore, in the State of Maryland, have invented an Improved Machine for Splitting Coal; and I do hereby declare the following to be a correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1, is a perspective view of my machine; Fig. 2, is a side elevation of the same; and Fig. 3, is a detail view of the endless belt, with its spikes and guards.

The same part is indicated by the same letter of reference in all the figures.

The nature of my invention consists in a new arrangement of mechanical means for reducing coal, as it comes from the mine, to the sizes required for use.

Various plans have heretofore been adopted for this purpose; but most, if not all, of them have employed a pressing or crushing force, which was attended with great loss of coal, in consequence of large quantities of it being reduced to dust or powder. In my machine, I employ the force of percussion, which is the best adapted to the rapid reduction of the material, without unnecessary waste.

In the drawings, A marks the frame of the machine; B, the main shaft; C, the bevel wheel on the end of the main shaft; D, D', D'', loose cams moving respectively on rods F, F', F'', as axles; E, E', E'', fast cams, attached firmly to rods F, F', F''; G, G', G'', stocks or frames of picks; H, H', picks; H'', spikes in endless belt; I, guards forming rim of endless belt; K, endless belt; L, frame or platform on which belt, K, is supported and moves; M, end rollers, over which belt K moves; N, hammers driving picks H'; O, hammer-stock attached to rod F''; P, ratchet attached to end of rollers M; Q, side plates to prevent coal that may fall off the belt from clogging the machine; R, S, T, U, arms working the ratchet P, by means of the pawl as shown. The pick stock, G, is attached to rod F; the stock G' to rod F', and the hammer-stock O, to rod F''. The pick stock G'' is adjusted in height by rods V, or in any convenient manner. The picks H', are driven by the hammers N, and retracted by spiral springs as shown.

The operation of the machine is as follows: Power is applied in any convenient way to the shaft B, and communicated to the operative parts by means of the bevel

wheel C, which meshes into bevel gearing on cam D. This cam is loose on rod F, and revolves upon it. As it revolves, it forces cam E to rise, until the two attain the relative positions shown in Fig. 1, when cam, E, falls, and with it rod F, and pick stock G, giving the required blow. On the outer edge of cam wheel D, are cogs which gear into similar cogs on the edges of cam wheel D', which, in their turn, gear into similar cogs on D''. Thus all the cams are worked simultaneously, and in the same manner.

I have shown in the drawings, at O, an arrangement for driving the picks by hammers. Instead of the pick stock, I here use a hammer stock, having loose hammers, N, suspended in it. This stock is attached to rod F'', and worked in the same way as the pick stocks. The picks driven by the hammers, are placed in the adjustable stock G'', and are retracted or elevated by means of spiral springs. This method, I have shown merely as a variation which I have contemplated in the mode of applying the percussive force.

The coal to be broken is fed on to the endless belt K, and supported above its surface by the spikes H''. The belt is driven by the ratchet wheel, worked by a pawl in the usual way. As the coal passes under the picks, it is broken into sizes, regulated by the distances at which the picks are placed from each other. The fine coal and dust falls upon the belt between the spikes H'', while the larger lumps are supported upon the ends of those spikes, and may be delivered into a separate chute. The guards, I, which, when the belt is horizontal, form a continuous rim along its edge, keep the finer coal from falling off at the sides, and clogging the machine.

Having thus fully described my invention what I claim therein as new and desire to secure by Letters Patent is

The arrangement for joint operation, in the manner and for the purposes described, of the spiked endless belt K, and the picks H, H', driven by percussion substantially as specified.

The above specification signed and witnessed this fifteenth day of January A. D. 1858.

JOHN H. LYON.

Witnesses:

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