

On Her Majesty's Service

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1793



A.D. 1855 N° 2427.

Manufacture of Gunpowder.

LETTERS PATENT to Henry Edwin Drayson, of Maresfield Powder Mills, Sussex, for the Invention of "AN IMPROVEMENT IN THE MANUFACTURE OF GUNPOWDER."

Sealed the 25th January 1856, and dated the 31st October 1855.

PROVISIONAL SPECIFICATION left by the said Henry Edwin Drayson at the Office of the Commissioners of Patents, with his Petition, on the 31st October 1855.

I, HENRY EDWIN DRAYSON, of Maresfield Powder Mills, Sussex, do hereby
5 declare the nature of the Invention for "AN IMPROVEMENT IN THE MANUFACTURE OF GUNPOWDER" to be as follows:—

This Invention consists of dissolving the saltpetre used in the manufacture of gunpowder, and combining the solution with the charcoal and sulphur, in place of grinding undissolved saltpetre with the other ingredients. For this
10 purpose the saltpetre is dissolved by heat in as little water as may be, and is immediately used for mixing with the other ingredients. The mixed matters are then ground and finished in the ordinary manner.

Drayson's Improvement in the Manufacture of Gunpowder.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Henry Edwin Drayson in the Great Seal Patent Office on the 30th April 1856.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, HENRY EDWIN DRAYSON, of Maresfield Powder Mills, Sussex, send greeting. 5

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirty-first day of October, in the year of our Lord One thousand eight hundred and fifty-five, in the nineteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Henry Edwin Drayson, Her special licence that I, the said Henry Edwin 10 Drayson, my executors, administrators, and assigns, or such others as I, the said Henry Edwin Drayson, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and 15 Ireland, the Channel Islands, and Isle of Man, an Invention for "AN IMPROVEMENT IN THE MANUFACTURE OF GUNPOWDER," upon the condition (amongst others) that I, the said Henry Edwin Drayson, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the 20 said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Henry Edwin Drayson, do hereby declare the nature of my said Invention, and in what manner the same is 25 to be performed, to be particularly described and ascertained in and by the following statement:—

This Invention consists of dissolving the saltpetre used in the manufacture of gunpowder, and combining the solution with the charcoal and sulphur, and then grinding the mixed ingredients under the mill, in place of grinding 30 undissolved saltpetre with the other ingredients. For this purpose the saltpetre having been dissolved by heat in as little water as may be, the charcoal and sulphur in a pulverized state are immediately and intimately mixed therewith. The mixed materials are then ground under the mill until the combination of them has become sufficiently intimate, and the manufacture is then completed 35 in the ordinary manner.

I prefer that the saltpetre used in carrying out my Invention should be

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dissolved in about half its weight of water, and that the temperature of the solution should be raised to the boiling point, but I do not confine myself to this particular temperature or proportion of water. I may state that I prefer to employ saltpetre that has not been melted, but only purified and crystalized.

5 The requisite process of milling may be shortened by first artificially drying off part of the moisture in the mixed materials.

In witness whereof, I, the said Henry Edwin Drayson, have hereunto set my hand and seal, this Thirtieth day of April, in the year of our Lord One thousand eight hundred and fifty-six.

10

HENRY EDWIN DRAYSON. (L.S.)

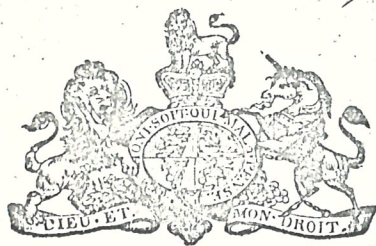
Witness,

S. CARPMAEL.

LONDON:Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1856.

ND

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A.D. 1864, 4th FEBRUARY. N° 292.

Gunpowder.

LETTERS PATENT to Henry Edwin Drayson, of Southampton, in the County of Hampshire, Gunpowder Manufacturer, for the Invention of "AN IMPROVEMENT IN THE MANUFACTURE OF GUNPOWDER."

Scaled the 14th June 1864, and dated the 4th February 1864.

PROVISIONAL SPECIFICATION left by the said Henry Edwin Drayson at the Office of the Commissioners of Patents, with his Petition, on the 4th February 1864.

I, HENRY EDWIN DRAYSON, of Southampton, in the County of Hampshire, Gunpowder Manufacturer, do hereby declare the nature of the said Invention for "AN IMPROVEMENT IN THE MANUFACTURE OF GUNPOWDER," to be as follows:—

At present the composition or charge of gunpowder, which is composed of the proper proportions of saltpetre, sulphur, and charcoal mixed together is placed under the runners of the incorporating mill, there to be manipulated for a period of time, and occasionally moistened with hot or cold water until it is in a fit state to be removed, and is then called mill cake; the mill cake thus made is then pressed under a heavy pressure in thin cakes, called press cake, and afterwards granulated by means of machinery into grain.

Drayson's Improvements in the Manufacture of Gunpowder.

Now my improvement consists in passing steam through the composition or charge for the purpose of bringing it into a state of paste (before it is placed under the runners in the incorporating mill) which process forms the composition or charge into a more adhesive substance and better adapted to produce grains of powder. This paste or composition when removed from the vessel, in which it has been submitted to the action of steam, is immediately placed under the runners of the incorporating mill, where it undergoes the process of manipulation until it is in a fit state to be removed, and is then called mill cake, it is then taken from the incorporating mill and immediately passed through sieves of the required mesh to form grains of powder before the mill cake becomes dry, set, or hard, the grains thus produced after falling into a barrel or tub are removed and spread out to dry, when sufficiently dry they are glazed in the usual way.

I claim as my Invention the passing of steam through the composition or charge of powder for the purpose of imparting to it an adhesiveness for the better production of grain, and passing the same through sieves immediately it is removed from the incorporating mill (after being manipulated the proper time) to form grains of powder before the mill cake becomes dry, set, or hard.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Henry Edwin Drayson in the Great Seal Patent Office on the 1st August 1864.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, HENRY EDWIN DRAYSON, of Southampton, in the County of Hampshire, a Gunpowder Manufacturer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fourth day of February, in the year of our Lord One thousand eight hundred and sixty-four, in the twenty-eighth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Henry Edwin Drayson, Her special licence that I, the said Henry Edwin Drayson, my executors, administrators, and assigns, or such others as I, the said Henry Edwin Drayson, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland,

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the Channel Islands, and Isle of Man, an Invention for "AN IMPROVEMENT IN THE MANUFACTURE OF GUNPOWDER," upon the condition (amongst others) that I, the said Henry Edwin Drayson, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, 5 should particularly describe and ascertain the nature of the said Invention, and, in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Henry Edwin Drayson, do hereby declare 10 the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

At present the composition or charge of gunpowder which is composed of the proper proportions of saltpetre, sulphur, and charcoal mixed together is 15 placed under the runners of the incorporating mill in a dry state, or the charge is submitted to a jet of steam for the purpose of dissolving the saltpetre previous to its being placed under the runners (see Hodges' Patent, No. 2227, 1857). Another method is by dissolving the saltpetre by hot water and mixing the sulphur and charcoal with the saltpetre so dissolved before undergoing 20 manipulation in the mill (see Drayson's Patent No. 2427, 1855,) and by a Patent process taken out (see Willett's Patent No. 1313, 1856,) a steam jet is thrown upon the charge during the operation of grinding it in the mill and submitting a blast of air upon the said charge to dry up the moisture which the said jet of steam had previously imparted to it; after the composition or 25 charge has undergone its proper period of time in being ground in the mill, it is then removed, and is then called mill cake; the mill cake thus made is taken to the press house, where it is placed in a large press box in layers, having metal plates placed between each layer for the purpose of pressing the mill cake into thin cakes, called press cake; it is then removed and taken to the 30 corning house, where it is broken down into grain and dust, by means of complicated machinery having many brass, gun metal, or zinc rollers, through which the press cake is passed, in the proportion of about three-fourths grain and one-fourth dust, the dust is again taken back to the incorporating mill, to be reworked into mill cake, repressed and regranulated into grain and 35 dust, or in some cases the mill cake is taken direct to the granulating machine and reduced in the proportion of two-thirds grain to about one-third dust, the dust thus produced is either taken to the mill to be reworked, or is placed in the press to be pressed with mill cake, and again re-granulated, causing the

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same operation to be frequently repeated over a portion of the material for an almost indefinite period of time.

Now according to my process I do not allow a sufficient quantity of steam to pass through the vessel to dissolve the saltpetre and soften the sulphur, as described in the Specification to the Patent granted to Henry Hodges, 5 No. 2227, 1857, for "Improvements in the Manufacture of Gunpowder", before referred to, and in which I hold a right of user and option of sale to the Crown by a deed of assignment bearing date the 24th day of July, 1858, but I only allow sufficient steam to pass through the composition or charge before it is placed under the runners of the incorporating mill, as to make it a more 10 adhesive substance, this better prepares the mill cake to be formed into grain. The steam is first admitted to the box or suitable vessel, which box or vessel may be made of wood or any other material, with or without a lid, the composition is then placed therein, where it remains only a sufficient time for the steam to pass through it, when this is effected it is then placed on the mill bed 15 to be ground, and when sufficiently ground it is removed, and is then called mill cake; immediately on its removal from the mill bed, and before it becomes dry, set, or hard, it is passed through a sieve or sieves of the required mesh to form grains, large and small, of powder, the grain thus produced after passing through the sieve or sieves into a barrel or tub is removed and spread out to 20 dry, the whole of the mill cake being formed into grain there is no dust to be reworked; when the grain is sufficiently dry it is glazed in the usual way. If the grain so formed is very angular, and a more rounded grain is required, a rotatory motion is given for a few seconds to the last sieve in which the grain is placed, it is then removed and spread out to dry and afterwards glazed in 25 the usual way, these operations must be carried on before the mill cake or grain made from the mill cake becomes dry, set, or hard.

Now I wish it to be understood that I do not claim as any part of my Invention the passing of steam into a vessel for the purpose of dissolving the saltpetre and softening the sulphur, nor do I by my process dissolve the 30 saltpetre and soften the sulphur, but I only allow a sufficient quantity of steam to pass into the vessel to add an adhesiveness to the composition, which cannot be otherwise obtained, to prepare it for the runners of the incorporating mill, and ultimately granulation by the process herein-before described, and which is in fact the substance of my Patent, and which I claim to be new. I claim 35 the passing of the mill cake through a sieve or a series of sieves of any required mesh, after it has been removed from the mill bed, for the purpose of forming it into grain, before the mill cake becomes dry, set, or hard, and.

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giving the last sieve in which the said grain is placed a rotatory motion before the said grain becomes dry, set, or hard, reducing the whole of the mill cake into grain and leaving no dust behind.

5 In witness whereof, I, the said Henry Edwin Drayson, have hereunto set my hand and seal, this Twenty-ninth day of July, in the year of our Lord One thousand eight hundred and sixty-four.

HENRY EDWIN DRAYSON. (L.S.)

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1864.