

But this is by consent, for in the case of *Lyle v. Ducomb*, the judges of the Supreme Court disclaim any such authority.

The court have power to direct an issue to be formed to try disputed facts.

The eighth and last head, is the *duty of the lien creditor* upon the receipt of his debt.

Rule 1. It is the duty of every lien creditor as soon as he has received satisfaction of his demand, to enter satisfaction upon the record of his lien.

This is required by the 2d proviso of the 1st section of the act of 1806.

Rule 2. And if satisfaction is not entered, a suit may be instituted, and any sum not exceeding one half the debt may be recovered.

In the paper by Mr. Bull, on the subject of fuel, that gentleman has described his method of obtaining charcoal, by surrounding the pieces of wood to be charred, with pulverized coal, by which a product is afforded, equal in every respect to that made in cylinders, or retorts of iron, (see p. 277, 278) The editor has seen some of the charcoal made upon this plan, in the large way; its superiority to that produced by the common process, was very striking. The plan proposed can be pursued with facility, and without expense; and the great saving of wood, from the increased quantity of coal obtained, is a circumstance which renders it of national importance.

*Perhaps the surest mode of calling the attention of those more immediately interested, would be for Mr. Bull to obtain a patent for the process.* That for which we are forced to pay, we are most apt to value.

*Observations on an improved mode of Charring Wood, in the large way.* By MARCUS BULL.

From the experiments mentioned, p. 277, 278, it occurred to me, that an important improvement might be made in the common process of making charcoal, by filling the interstices between the sticks of wood with the culm, or fine coal, left on the ground after the large coal has been drawn from the pit; and by covering the wood more perfectly than is usually done. In this way we may more completely prevent the access of air, which is not only destructive, in many cases, to a large portion of the coal, but also renders what remains less valuable.

That my remarks on the subject may not be considered as entirely theoretical, it is proper to state, that an intelligent collier in New Jersey, applied, in a partial manner, the plan proposed. He found the product to be about 10 per cent. more in quantity, *by measure*, than he had ever before obtained from the same kind and quantity of wood: and I also found the coal, when brought to market, nearly 20 per cent. heavier than usual. As an evidence that the coal had been well charred, (a circumstance too often neglected) the hy-

drogen appeared to have been almost entirely expelled, as it lost very little in weight by exposing it to a red heat in powdered charcoal.

The quality of this coal was considered by competent judges to be superior to any other ever offered in this market; it was as cleanly to handle as anthracite coal, and sold readily at an advanced price.

From an examination, made during the last summer, of the common manner of piling and covering wood which is to be converted into charcoal, the practice of piling it two, and sometimes three tiers in height, appeared to be objectionable for two reasons; the first was, that the second and third tiers cannot be so well defended from the air as the first, which rests upon the ground; this being a better barrier against the air, than the ordinary covering can be made to present; and the second that this disposition of the wood is not favourable for producing the ignition of the whole mass at one and the same time; the usual practice being either to commence the ignition in the centre of the upper tier, or, to drop the fire into a hole, or chimney, left in the centre of the pile, which extends to the bottom, or ground; leaving air holes also, at the sides, by which, (to use the language of the colliers,) the fire is said to be drawn to the sides of the pit.

It is very true, that the fire does eventually extend to the sides of the pit; but a much more uniform and speedy process, and one by which less loss would be sustained, would be to place the fire, in the first instance, in a number of holes at the sides, near the bottom, leaving an opening at the top, by which the heat generated at the sides, would be communicated to the wood in the interior, and facilitate the uniform ignition of the whole mass; at the moment this is effected, the holes at the sides should be closed, and that at the top might be lessened, but should not be wholly closed, until the extrication of hydrogen gas has nearly ceased, as this gas, from its prodigious expansion, sometimes bursts the pit; this generally occurs when the wood is well covered, and sometimes produces very injurious effects, by firing the adjacent woods, (the column of flame having been known to extend from twenty to thirty feet,) and has probably led many colliers into the belief, that the proper remedy is to give the wood a slight covering, by which numerous escapes are allowed for the gas; but in effecting this object, as the holes at the sides are left open, a very strong current takes place through the pit, from the slightness of the covering, whilst another evil is produced, that of burning through the sides of the pit.

In those instances where pits have been known to burst, when well covered, the cause may probably be traced to the chimney at the top, having been too soon closed, this being generally done in about fifteen minutes after lighting the fire: and also, to having left those at the sides open too long: as the gas will make its escape in some manner, this should be provided for; this provision is as necessary to a coal pit, as is the safety valve to a steam boiler.

Both the objections which I have made, against piling the wood two or three tiers high, may in part be remedied by changing the manner of igniting the wood, in the way proposed; and if clay and sand can be procured, the former should be used as a covering, and

the latter placed on the top to fill the cracks as the clay dries, these should be preferred in all cases, and the evils may thus be lessened; but undoubtedly, the best manner is, to pile the wood in single lengths, and if the fine coal is used to fill the interstices, and can be made subservient in its combustion to produce the required heat, or any portion of that necessary to char the wood, that portion which can be so used, is as effectual as the combustion, and saves an equal portion of the charcoal. The process being, when conducted in retorts, similar to that of distillation, those portions of the wood, which it is necessary to expel being volatile, no necessity exists that any combustion should take place either in the wood or coal: yet this cannot be entirely prevented, in the common process, unless some means be devised to burn the hydrogen gas which escapes, and make it applicable to produce the heat necessary to char the wood, as is done when the process is conducted in retorts. The hard texture of the coal will be in proportion to the heat given to it, and the perfect exclusion of the air; the advantage therefore of using clay will be obvious, from its being a bad conductor of heat, and a good barrier to exclude the air.

I have been informed by a gentleman well acquainted with the iron works in this state, that in consequence of the growth of the extensive forests belonging to the works, not being sufficiently rapid to furnish a constant supply of charcoal, many of them are obliged to suspend their operations, about three months in each year, by which very great loss is sustained. If an improvement can be made in the manner of producing the charcoal required, by which these works, and all others similarly situated, shall be enabled, from their present forests, to continue their operations, during the whole year, without interruption, such an improvement must be considered as important, not only to individuals, but to the community generally.

It is my intention, so soon as my other avocations will permit, to make some further experiments in the charring process in the large way, and to use the fine coal as suggested; for which purpose a number of cords of wood have been cut for a considerable period of time.

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*Observations on the experiments which have been made to ascertain the law which obtains in the cooling of heated bodies; and on the applicability to that purpose, of the apparatus used in the "Experiments to determine the comparative quantities of heat evolved in the combustion of the principal varieties of wood and coals, &c."\** By MARCUS BULL.

Numerous experiments have been made to determine the law which obtains in the cooling of heated bodies. My apparatus, although it did not admit of making experiments on this subject at high temperatures, yet appeared in one respect better adapted for the purpose than any other which has, to my knowledge, been made use of; because we are enabled by it, to maintain both the heated body, and the re-

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