

Case No. 624. ATLANTIC GIANT POWDER CO. V. MOWBRAY ET AL.  
[2 Ban. & A. 442;<sup>1</sup> 12 O. G. No. 14, p. iii.]

Circuit Court, D. Massachusetts.

Oct, 1876.

PATENTS FOR INVENTIONS—WHAT CONSTITUTES  
INFRINGEMENT—SUBSTITUTION OF INGREDIENTS—SAME BENEFICIAL  
RESULT.

1. The principal feature in Nobel's invention of dynamite was the absorption of liquid nitroglycerine by means of absorbent material, preferably infusorial earth. thus, among other results. rendering the explosive safer and more readily used: *Held*, that the use of extremely minute scales of mica, which become coated with the liquid, is, in principle and effect, equally absorption, and although an improvement, is yet an infringement.

[Cited in Atlantic Giant Powder Co. v. Rand, Case No. 626.]

2. In a compound material, the substitution of an ingredient somewhat different, even if preferable, is nevertheless an infringement, if the same beneficial results are obtained by substantially the same means.

[Cited in Atlantic Giant Powder Co. v. Rand, Case No. 626.]

[See note at end of case.]

3. Reissued patent No. 5,799, granted to Alfred Nobel, March 17, 1874, for the combination of nitro-glycerine with infusorial earth, or other equivalent absorbent substance, as a new explosive compound, *held*, valid.

[Cited in Atlantic Giant Powder Co. v. Goodyear, Case No. 623; Same v. Rand, Id. 626.]

[In equity. Bill by the Atlantic Giant Powder Company against George W. Mowbray

and others for an injunction, and for an accounting for the Infringement of reissue No. 5,799, of patent No. 78,317, and reissues Nos. 5,798 and 5,800, of patent No. 50,617. Decree for complainant as to the first reissue, (5,799,) but for the defendants as to the others.]

Causten Browne and Jabez S. Holmes, for complainants.

Charles F. Blake, for defendants.

SHEPLET, Circuit Judge. This bill is, founded on three patents, one being reissue No. 5,798, for an improvement in methods of exploding nitroglycerine, the claims in which are for a process or certain described modes of utilizing nitroglycerine. as an explosive by means of fire, heat, electricity, or an initial explosion, communicated to the mass under a condition of confinement, so as to produce an instantaneous explosion of the entire mass, and generally by effecting an impulse of explosion by the detonation of an explosive substance communicated to the mass under such condition as to produce an instantaneous explosion of the whole mass. This may be briefly described as the process patent. The second one is reissue No. 5,800, in which there are seven claims for as many different igniters or exploders for initiating the impulse of explosion in a charge of nitroglycerine. This will be styled, for the sake of brevity, the exploder patent The third patent, reissue No. 5,799, for an improvement in explosive compounds, is for the combination of nitro-glycerine with infusorial earth, or other equivalent absorbent substance, as a new explosive compound. This compound is generally spoken of as dynamite, and therefore this may appropriately be called the dynamite patent. This last-named patent will be first considered. In 1847, Ascanio Sobrero (soon after the discovery by Schonbein, in the same year, of guncotton) invented nitro-glycerine, an explosive substance prepared by treating glycerine with a mixture of nitric and sulphuric acids. For a long time after "the invention of nitro-glycerine by Sobrero in 1847, in fact, until 1863, when Nobel's inventions began, although nitro-glycerine was well known to be a very powerful explosive as compared with gunpowder and guncotton, it was very little used for blasting purposes. This delay in the introduction of nitroglycerine as an explosive to practical use appears to have been attributable, first, to the enormous danger to life and property attending its manipulation, transportation, and use in its fluid state; and secondly, to a practical difficulty, amounting almost to an impossibility, of exploding the whole mass of fluid nitro-glycerine, no instantaneous decomposition of the whole mass following from the application of heat or of a blow, as in case of gunpowder or guncotton when fire is applied. To overcome this last objection was the object of the exploder and the process patents. The object of the dynamite patent was to remedy the first objection of enormous danger to life and property, and to combine the nitroglycerine with some absorbent substance, whereby the condition of the nitro-glycerine is so modified as to render the resulting compound more practically useful and effective as an explosive, and far more safe and convenient for handling, stor-

age, and transportation, than nitro-glycerine in its ordinary condition as a liquid. Objection is made to the reissue of the dynamite patent, on the ground that the description of the invention is broader in the reissue than in the original patent; but the description of the invention in the original patent appears to describe in general terms, although without minutely demonstrating all the peculiarities of operation in the new compound, all that is more specifically described in the reissue. The invention is described in general terms to “consist in mixing with nitroglycerine a substance which possesses a very great absorbent capacity, and which at the same time is free from any quality which will decompose, destroy, or injure the nitro-glycerine or its explosiveness.” A certain kind of silicious earth, known under the several names of silicious marl, tripoli, rotten stone, etc., the preferred variety being infusorial earth, is described as the inert matter which he mixes with the nitroglycerine. The described advantages are, that it will, by reason of its great absorbent capacity, take up about three times its own weight of nitro-glycerine, and still retain its powder form, thus leaving the nitroglycerine so compact and concentrated as to have nearly its original explosive power. The patent also points out the result of insensibility of the compound to ordinary concussions without loss of the great explosive power of the liquid nitro-glycerine, where it describes it “as being far more safe and convenient for transportation, storage, and use, than nitro-glycerine.” It is true that the original patent does not undertake to enunciate the law of the explosion of nitroglycerine by concussion, or to explain fully the peculiarities of operation attending the use of the compound. This was not necessary to the validity of the patent any further than might be requisite to instruct others as to the qualities to be inherent in other substances to be used as equivalents for the silicious earth described, and I hardly think essential for that purpose. If, in this respect, there was any need of more specific detailed description in addition to the general words in the patent, it has been corrected, and, as far as I can judge, properly corrected in the reissue. Without giving that extended comparison and collocation of corresponding passages in the original and reissue which would be necessary to

properly answer all the objections raised in the argument, I must content myself with stating that such careful comparison has failed to satisfy me that the reissued dynamite patent is open to objection on the ground of its being for an invention broader than, or different from, the one described in the original. The omission of the word “inexplosive” might seem to indicate, as it perhaps does, a disposition to enlarge the scope of the patent; but, as I think, when a question shall arise on that expression in the patent, the court will look to the specifications in both the original and the reissue, in aid of the true construction of the reissue, as stated in *Forsyth v. Clapp*, [Case No. 4,949.] I do not think the omission of that word renders the reissue defective. The construction which the court would give as to what would be an equivalent for the silicious earth would be the same under the reissue as on the original patent.

The patent to Shaffner for a mode of tamping, and for a combination of sand with nitro-glycerine in the blast-hole, does not anticipate the invention of Nobel. It does not approach any nearer to it than the explosion of nitro-glycerine in the sand and gravel, in front of the stable at Titusville, approaches Mowbray’s perfected invention of mica powder, although it suggested the train of experiments which resulted finally in that invention. The defendants have used mica powder, an invention of the defendant Mowbray, a great improvement in the art of blasting with nitro-glycerine. the valuable properties of which have been signally demonstrated in the use which has been made “of it in blasting operations in the Hoosac Tunnel, attaining the result of the highest efficiency and greatest economy consistent with perfect safety, as compared with all other highly explosive substances. Mica powder, so called, is prepared by pouring tri-nitro-glycerine, at a temperature of about seventy degrees, in the proportions of about fifty-two and one-half pounds of tri-nitro-glycerine to about forty-seven and one-half pounds of mica scales, over mica scales prepared by triturating mica or Muscovy talc into scales of about one-thousandth of an inch in thickness, and exceedingly minute surfaces, and free from the powder or dust of mica, in such a manner that the surfaces of the minute mica scales are painted or coated with the tri-nitro-glycerine, and the mass of forty-seven and one-half pounds of mica scales retains or holds in suspension the fifty-two and one-half pounds of tri-nitroglycerine. To determine whether this, which must be admitted to be a great and patentable improvement upon the dynamite of Nobel, be an independent or a subsidiary invention, we must look carefully into the nature and scope and the limitations of the reissued dynamite patent, treating it, as we have already shown, as a valid patent for the invention described therein and in the original.

The invention is described in the original as consisting “in mixing with nitro-glycerine a substance which possesses a very great absorbent capacity, and which at the same time is free from any quality which will decompose, destroy, or injure the nitro-glycerine or its explosiveness,” thus forming out of the two ingredients “a composition which, without

losing the great explosive power of nitro-glycerine, is very much altered as, to its explosive and other properties, being far more safe and convenient for transportation, storage, and use than nitro-glycerine.” In the original and the reissues there is a statement, in different forms of expression, and with more particularity in the reissues than in the original, of the advantage of the use of this compound, enabling the miner to fill up the bore-hole with the compound, while the cartridge containing the fluid nitro-glycerine must be of less diameter than the bore-hole, thus obtaining as much nitro-glycerine in the same height of bore-hole with this powder as with nitroglycerine in the pure state, increasing the safety of the miner by preventing leakage into the seams of the rock. The claim in the original patent is for the composition of matter made substantially of the ingredients, and in the manner and for the purposes set forth. The reissues claim the combination of nitro-glycerine with infusorial earth or other equivalent absorbent substance as a new explosive compound. It is not perceived that the claim in the reissues is any broader than in the original. The defendants explosive compound is prepared by mixing the nitro-glycerine with the mica scales before described. Are the mica scales an equivalent in the compound for the infusorial earth or other substance which possesses a great absorbent capacity, and which at the the same time is free from any quality which will decompose, destroy, or injure the nitro-glycerine or its explosiveness? I am forced, upon mature reflection, to the conclusion that in this compound the mica scales possess all the properties which render the infusorial earth efficient and useful in the compound, as well as some additional properties of greater elasticity and resiliency, which add to their value. It is true that the infusorial earth is described as a porous substance, and is supposed to hold the nitroglycerine suspended in the pores by capillary attraction, but it must also hold it in suspension by coating and adhering to the exterior surfaces of the particles. The mica scales, on the other hand, are supposed to hold the nitro-glycerine in suspension only as It is painted or coated on the exterior surfaces of the minute scales; but they each in the compound perform the same funtion as an absorbent of the nitro-glycerine. They each take up and hold by cohesive or molecular action, and each without

chemical action or reaction, the nitro-glycerine in the compound. The mixture is a mechanical one, and it is not material to the function of the compound or its properties whether the absorption be effected by that mode of absorption by which a sponge, or the lacteals of the body suck in or draw up a liquid, or that by which some pulverulent substances absorb gases or moisture, whether the liquid is held absorbed or suspended in the inner surfaces of minute capillary tubes, or on the outer surfaces of minute scales. I have seen diatoms, small silicious scales, called animalcules, yet of vegetable origin, so minute that four hundred different forms catalogued and classified are arranged within the space of less than one-fourth of an inch square on the surface of the glass slide of a microscope. These small silicious scales make up the substance of large tracts and mounds of earth. If used as the inert matter with a mixture of nitro-glycerine, it would be difficult to say whether they were more closely the equivalent of the Infusorial earth of Nobel or the mica scales of Mowbray. The kieselgurh or infusorial earth of Nobel is composed of the minute scales of the diatomaceae. Each one of the properties and qualities ascribed by Nobel to the inert matter in his compound pertains to the mica scale in the mica powder, and the functions are the same in each. Nobel uses nitroglycerine manufactured by a process which, with acids of the specific gravity used by him, produces mono or di nitro-glycerine. Mowbray uses nitro-glycerine prepared by processes which yield a substantially pure tri-nitro-glycerine, which is only another more concentrated and more highly nitrated form of nitro-glycerine, in mono-nitro-glycerine one of the hydrogen atoms of glycerine being replaced by nytril (constituting nitric acid,) in di-nitro-glycerine two of the hydrogen atoms being so replaced by nytril, and in tri-nitro-glycerine three being so replaced. For the purposes of the compound the substances are substantially the same in kind, though differing in degree. In strictness, either by the old or the new graphical system of chemical notation, they would be differently described and represented. But notwithstanding this difference in chemical nomenclature, the practical fact remains, that the only difference is in the degree to which the glycerine is nitrated, and the three resulting products, as to the properties which constitute the peculiar character of nitroglycerine as an explosive, and as one of the elements of the patented compound, differ only in degree and not in kind.

As to the other two patents—the exploder and the process patents—without any elaborate statement of reasons, I must content myself for the present with a very brief statement of the conclusions at which I have arrived. Initial exploders—the use of one explosive compound or substance to communicate the impulse or action of explosion to another—are old. These initial exploders have been made of fuses of gunpowder or other ignitable compounds, and different forms of tubes or capsules containing ignitable or explosive compounds, which communicated sufficient heat directly or indirectly by a shock, adequate, when arrested, to produce sufficient heat to explode the mass by detonation or deflagration, or both. These initial exploders have been used to explode gunpowder

and guncotton, both of which can be exploded by detonation. In this state of the art, if there was anything patentable in the initial exploders of Nobel, the claims of the patent must receive so narrow a construction as would not charge the defendants as infringers. Decree for injunction and account as to infringements of reissued patent No. 5,799, for an improvement in explosive compounds, and that no infringement is proved of reissues 5,798 and 5,800.

[NOTE. Reissue No. 5,799, of patent No. 78,317, was granted May 26, 1868, and was construed, held valid, and held to have been infringed in the following cases: Atlantic Giant Powder Co. v. Parker, Case No. 625; Same v. Rand, Id. 626; Same v. California Vigorit Powder Co., 5 Fed. 197; Same v. Dittmar, Powder Co., 1 Fed. 328; Same v. Goodyear Case No. 623; Same v. California Vigorit Powder Works, 98 U.S. 126. Reissue No. 5,798, of patent No. 50,617, was granted March 17, 1874, and was construed in Atlantic Giant Powder Co. v. Hulings, 21 Fed. 519. Reissue No. 5,800, of patent No. 50,617, was granted March 17, 1874, and was construed in Atlantic Giant Powder Co. v. California Vigorit Powder Works, 98 U.S. 126]

<sup>1</sup> [Reported by Hubert A. Banning, Esq., and Henry Arden, Esq., and here reprinted by permission.]