DITTMAR *v.* RIX AND ANOTHER.

Circuit Court, S. D. New York. March 13, 1880.

PATENT—COMPOUND MADE BY PATENTED PROCESS.—A patent containing two claims, the one for a certain process set forth, and the other for a certain compound made by the process set forth, is not infringed by the manufacture of a similar compound, not made by the patented process.

Motion for preliminary injunction to restrain the infringement of letters patent.

Everett P. Wheeler and *Clarence Lexow,* for plaintiff.

George Gifford and *Causten Browne,* for defendants.

BLATCHFORD, J. This is a motion for a preliminary injunction to restrain the infringement of letters patent granted to the plaintiff, January 18, 1870, for an "improvement in explosive compounds." The specification states that the patentee has invented an explosive agent which he calls "Dualin, and which is to be used instead of other explosive agents, such as powder, gun-cotton, nitro-glycerine, dynamite, etc." It proceeds: "Dualin is a yellowish brown powder, resembling in appearance Virginia smoking tobacco. It will, if lighted in the open air, burn without exploding; but, if confined, it may be made to explode in the same manner as common 343 powder. It is not sensitive to concussion, will not decompose by itself, not cake or pack together, may be readily filled into cartridges, and it matters not whether the place where it is stored be warm or cold, dry or damp. Dualin has from four to ten times the strength of common powder, and is stronger than dynamite, an improvement on nitro-glycerine. Some of the advantages claimed for dualin over other explosive agents are—*First,* it may be stored, transported, manipulated and applied with less risk than common powder; *second,* it may be used

in cold weather without first requiring the warming process, which nitro-glycerine and dynamite require, and which frequently become inexplosive at a low temperature; *third,* its explosion does not develop any noxious gases; *fourth,* absolutely cheaper than either nitro-glycerine or dynamite, dualin is also relatively cheaper than common powder, for, possessing four to ten times the strength of the latter, its use will proportionately reduce the labor and cost of mining and blasting operations; *fifth,* the effect of a dualin explosion is to tear and rend the material exposed to its action, less than to pulverize it, as is the case with nitro-glycerine and dynamite, when applied to mining and blasting operations in coal and rock; *sixth,* dualin does not necessitate the application of a cap containing fulminate, but may be exploded by a fuse, like common powder; *seventh,* its entire want of sensitiveness to concussion renders dualin a suitable material for the blasting charge of shells.

"Description of the process: Dualin consists of cellulose, nitro-cellulose, nitro-starch, nitro-mannite and nitro-glycerine, mixed in different combinations, depending on the degree of strength which it is desired the powder should possess in adapting its use to various purposes. Cellulose is prepared by reducing wood of a soft texture (for instance, pine or poplar) to small grains, resembling sawdust, and treating them with diluted acids, and then boiling them in a solution of soda. After having been thoroughly dried, by a quick drying process, the cellulose is mixed with—No. 1. Nitre and nitro-glycerine. Or No. 2. Being first changed into nitro-cellusose, by being treated with nitric acid (48° B.) and sulphuric acid, (66° B.,) 344 it is then mixed with nitro-glycerine. No. 3. The dried cellulose is mixed with anhydrous glycerine, until the mass becomes of the consistency of thick broth. This is gradually treated to a bath composed of a mixture of sulphuric acid (66° B.) and nitric acid (48° B.) of

eight to ten times its quantity, during which process the greatest care must be taken to stir the heated mixture and cool it. The stirring is continued for at least half an hour, after which the mixture is placed in a water bath of ten times its quantity. The acid water being repeatedly drawn off and replaced by pure water the mixture is now placed in a bath of diluted soda lye. In this it is stirred from one to two hours, again washed in pure water, and then rendered anhydrous by means of hot water heating, and treating it with concentrated sulphuric acid and chloride of calcium. After having been rendered anhydrous, it is mixed with cellulose, prepared by process described under No. 1, 2 or 4, until a dry and not very greasy powder is obtained. The dust is sifted out, and this, if packed into cartridges, is serviceable. The powder remaining possesses the advantages above enumerated. No. 4. The cellulose is charred, finely pulverized, boiled in concentrated nitre lye, and, after soda has been added, is rapidly dried, and mixed with nitro-glycerine or dualin, prepared by process No. 1, 2 or 3. No. 5. The process of preparing nitro-starch, another ingredient of dualin, is also new. It will prevent the formation of lumps after the starch has been subjected to the acids, and also render the dried preparation less sensitive to dampness. *a.* Starch is thoroughly dried until it assumes a yellowish brown color. It is then finely pulverized and mixed with anhydrous glycerine. The mass is slowly placed in a mixture of nitric acid (48° B.) and sulphuric acid (66° B.) of ten times its quantity, during which process the greatest care must again be taken to stir the mixture and cool it. The stirring is continued for half an hour, when the mixture is placed in a water bath. The acid water being repeatedly drawn off and replaced by pure water, the mixture is now placed in a bath of soda lye, then placed in another water bath, and finally rendered anhydrous by means of hot water heating and treating it with

concentrated sulphuric acid and chloride of calcium. It is now pressed through a fine sieve, and mixed with either dried pulverized starch that has been treated with nitre lye, or it is mixed with cellulose prepared as above described, until a dry and not very greasy powder is obtained. *b.* After the starch has been dried it is mixed with pulverized cellulose, or with the dualin dust prepared by process No. 3. This mass is then placed in a mixture of nitric acid (48° B.) and sulphuric acid, (66° B.,) and for the rest, treated as described by process No. 5. No. 6. In an entirely analogous manner, mannite is mixed with anhydrous glycerine and compounded with the other ingredients of dualin. I do not claim nitro-glycerine, nor mixtures of nitro-glycerine with other explosive or non-explosive materials, as such have been made, but they do not possess the properties of my compound."

There are two claims, as follows: "1. The process of manufacture or preparation of a compound which I denominate 'dualin,' of the ingredients, in the proportions and for the purposes set forth. 2. Also the new compound, herein described, called dualin, made by the process herein set forth, or its chemical equivalent."

The powder alleged to infringe the patent is one which, by an analysis shown by the plaintiff, contains, in 100 parts by weight, the following substances, in the following proportions: Nitro-glycerine, 36.78 per cent.; nitre, 47.45 per cent.; cellulose, 13.50 per cent.; volatile matter, moisture, 212° Fahr., 2.27 per cent. It is claimed by the plaintiff that the nitre and the cellulose in such powder are the ingredients specifically mentioned in the plaintiff's patent, under process No. 1 therein, as to be mixed with nitro-glycerine, and that the resulting powder is a powder answering the description of said patent. The powder is one made and sold by the defendants as "Giant Powder No. 2." The defendants admit that they use,

in making it, nitro-glycerine and nitre, the latter in the form of nitrate of potash or nitrate of soda, and a carbon or hydrocarbon, such as soft or hard coal, resin or wood fiber. They allege that the wood fiber is mostly common sawdust, 346 produced by sawing and dried; that they have never treated it with any acid or liquid, and have never boiled it in a solution of soda or any other solution; that, when dried, it is mixed with dry and pulverized nitre; and that that mixture is mixed with nitro-glycerine. It is contended, for the plaintiff, that the defendants' powder infringes his patent, because it is made according to process No. 1 therein. The first claim of the patent is for the process set forth. The second claim is for the compound made by the process set forth. The process is made essential in each claim. The process for preparing the cellulose is to treat the grains of wood or sawdust with diluted acids and then boil them in a solution of soda. They are then dried and mixed with nitre and nitro-glycerine. The defendants do not treat the sawdust with any acid or boil it in any solution. The plaintiff contends that the treatment of the sawdust or wood fiber with the acids and the alkali is designed to rid it of impurities, and leave the carbon, as the explosive force of the mixture depends on the purity of the carbon; and that the advantages of the compound are attained by the defendants, though in an inferior degree. But the difficulty is that the defendants use nothing in the place of the treatment by acids and an alkali, and the plaintiff has made such treatment essential, and does not say that it may be dispensed with. It is an essential part of the process, and is not used, nor is any chemical equivalent for it used. The compound is claimed only when made by the process set forth, and the process is claimed only as set forth.

It is unnecessary to pass on any of the other numerous questions discussed on the motion. The motion is denied because of non-infringement.