

(No Model.)

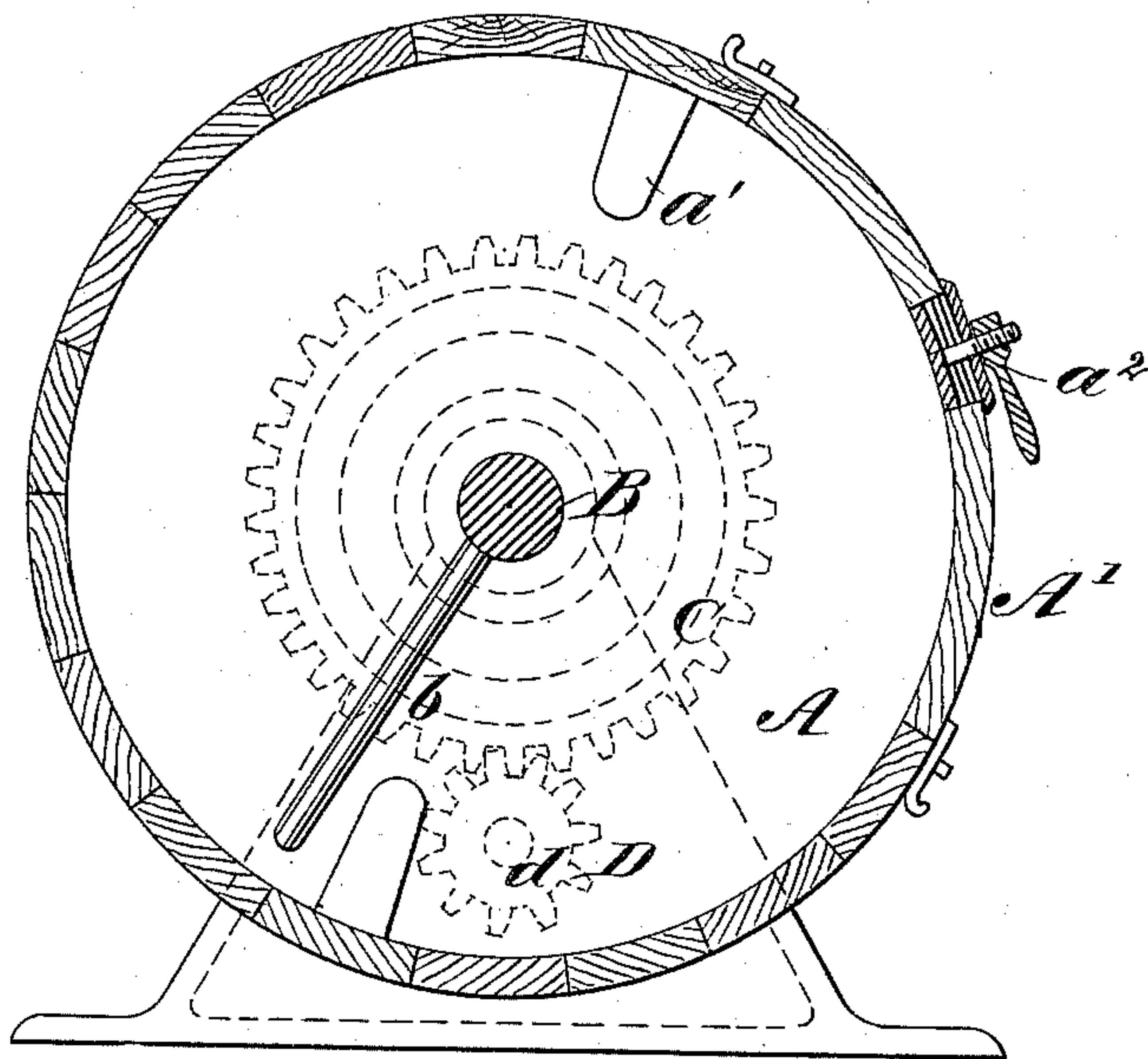
J. W. HYATT.

METHOD OF COMBINING PYROXYLINE AND ITS SOLVENTS IN THE  
MANUFACTURE OF SOLID COMPOUNDS.

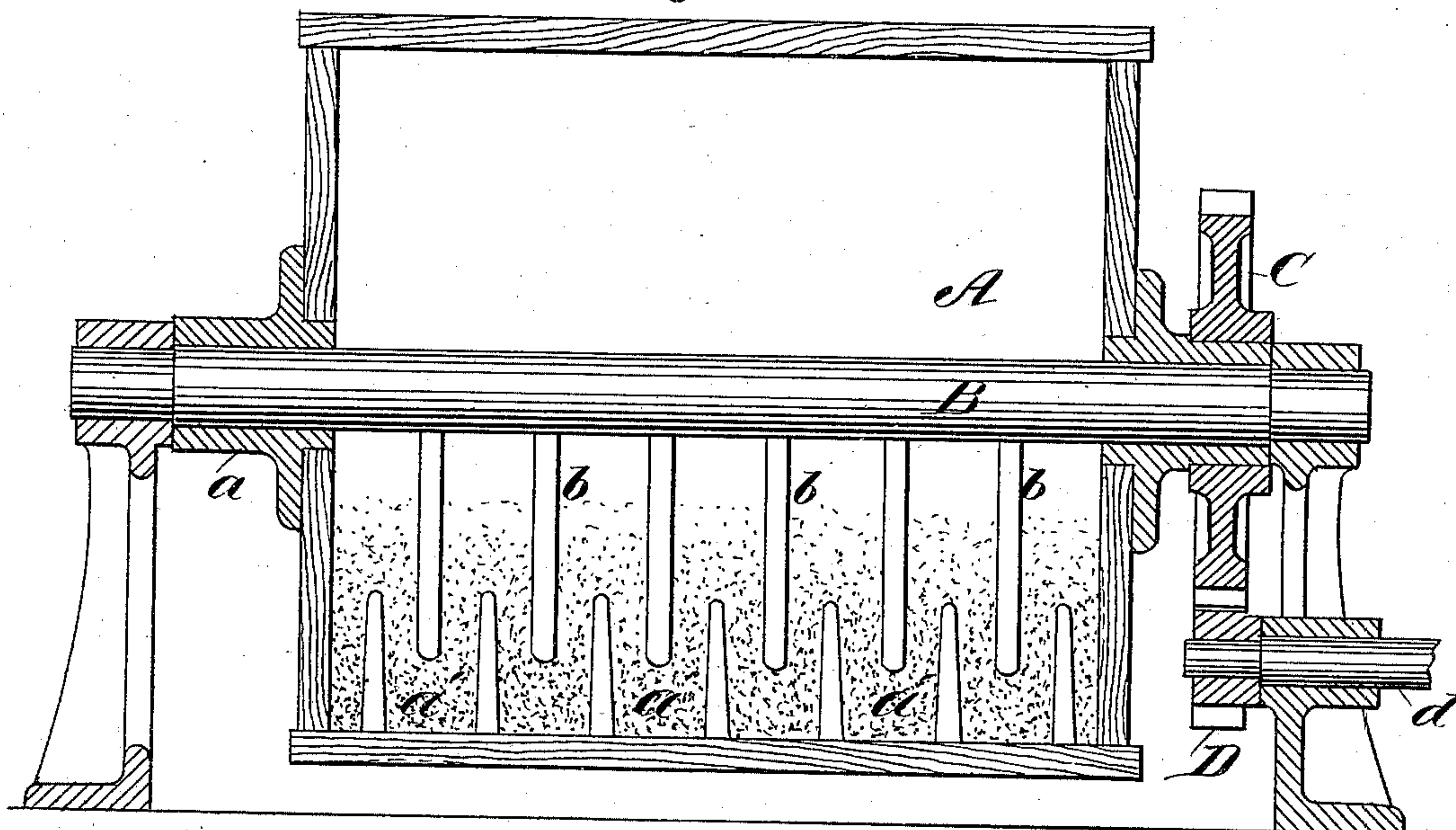
No. 331,241.

Patented Nov. 24, 1885.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*

Chas. F. Grebe Jr.  
Harry E. Leibold

*Inventor.*

John W. Hyatt  
J. Hindmeyer  
att.



# UNITED STATES PATENT OFFICE.

JOHN W. HYATT, OF NEWARK, NEW JERSEY.

METHOD OF COMBINING PYROXYLINE AND ITS SOLVENTS IN THE MANUFACTURE OF SOLID COMPOUNDS.

SPECIFICATION forming part of Letters Patent No. 331,241, dated November 24, 1885.

Application filed May 14, 1885. Serial No. 165,478. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. HYATT, of the city of Newark, county of Essex, State of New Jersey, have invented certain Improve-  
5 ments in the Method for Combining Pyroxyline with its Solvents in the Manufacture of Solid Compounds, and is a modification upon the processes described in the patents to John W. Hyatt and Isaiah Hyatt, of July 5, 1870, No.  
10 105,338, and of October 7, 1874, No. 156,353, of which the following is a full, clear, and exact description.

Those acquainted with this art recognize the difficulty of combining active solvents with  
15 pyroxyline, and especially where only small proportions of solvent are used.

In my former patent, No. 156,353, to which I have referred, I described a process in which the pyroxyline is first ground to a pulp, and  
20 powdered camphor mixed with it before the alcohol is added. This permits a perfect diffusion of the solvents, and none of the difficulties are experienced which result from an ordinary mixing of pyroxyline and spirits of  
25 camphor.

In my present invention I first grind the pyroxyline by means of an ordinary paper-pulping machine. I next carefully dry the pulp by exposing it to the air in thin layers,  
30 preferring (on account of the extremely inflammable nature of the pyroxyline when in this condition) to perform the drying in separate buildings at some distance from the place where the principal operations of manufac-  
35 ture are carried on. I next add from thirty to fifty parts of vinous alcohol or equivalent latent liquid solvent to each one hundred parts of dry powdered pyroxyline, and mix the two thoroughly together in an apparatus construct-  
40 ed as shown in the accompanying drawings.

Referring to the drawings, Figure 1 is a vertical transverse section, and Fig. 2 a vertical longitudinal section, through the mixing-machine.

45 A is an ordinary tumbling-barrel of a capacity to hold from three to four times the amount of pyroxyline pulp required for a batch. It is mounted and slowly revolved upon a stationary shaft, B, in the bearings *a a*  
50 by means of a spur-wheel, C, and pinion D. The pinion D is secured upon a shaft, *d*, which receives motion from any convenient prime

mover by belt and pulleys or other suitable means. Two sets of agitator-arms, *a' a'*, project from the inner periphery of the barrel A, 55 and the stationary shaft B is provided with a corresponding number of fixed arms, *b*, so as to cover the spaces between the revolving agitator-arms *a' a'*. The barrel A is also provided with a door, *A'*, to permit the removal of the mass when mixed, and facilitate the cleaning of the barrel. The small opening *a a* in the cover is for the purpose of introducing the different materials which constitute the mixture, and is provided with a stopper. After 63 mixing the alcohol and pulp I allow them to rest in the barrel from two to five hours, to insure a perfect combination of the materials by absorption. Without removing the pulp and alcohol from the apparatus I next mix with 70 them from forty to fifty parts of powdered camphor, preferring to add the camphor gradually in successive portions, and thoroughly combining each portion with the pulp before adding more. After the materials have been 75 mixed together I remove them from the apparatus and keep them in an air-tight box from one to two days, after which I subject them to a thorough treatment in masticating-rolls, and I complete the transformation into 80 a solid compound by heat and pressure.

I am aware that a process has been described in which pyroxyline has been mixed with various active liquid solvents; but, so far as I know, no one has used both the pyroxyline 85 and camphor in a finely-divided condition, and added the alcohol to the pyroxyline first and the camphor afterward, which is an essential feature of this process. When the pyroxyline is made from fiber—such as cotton, hemp, 90 or flax—it will be found necessary to cut it up very fine; but when a soluble paper is used, although I prefer to grind it into a fine pulp, still, if desired, it can be mixed with the alcohol and camphor when in the shape of small 95 shreds, such as are formed when soluble paper is made by the process described in my patent of December 10, 1878, No. 210,611. Suitable coloring-matters can be introduced by being first ground with the pulp while damp, or they 100 can be added at any stage of the mixing, according to the judgment of the operator, as is well understood.

The machine for mixing the materials can



be modified in a variety of ways, the main object of the apparatus being to mix the materials thoroughly, and at the same time keep the mass in a loose condition, as any pressure or friction would seriously hinder the mixing operation.

What I claim is—

1. The process of forming pyroxyline compounds, consisting of the following steps: first, reducing the pyroxyline to a finely-divided dry condition; second, moistening the same with alcohol or equivalent latent liquid solvent; third, adding powdered camphor, and subjecting the mixture to masticating-rolls, or to heat and pressure, substantially as described.

2. The manufacture of a solid pyroxyline compound by introducing the solvent by first mixing the alcohol or its equivalent with the pyroxyline in a finely-divided condition, and

then adding powdered camphor to the mass, substantially as described.

3. The process of treating soluble paper in shreds by (1) combining the same with vinous alcohol or its equivalent, (2) and then adding powdered camphor, (3) and converting the mixture into a solid compound in masticating-rolls, or by the use of heat and pressure, substantially as described.

4. The manufacture of a solid compound by first mixing vinous alcohol or its equivalent with soluble paper in the form of shreds, and then adding powdered camphor, substantially as described.

JOHN W. HYATT.

Witnesses:

ABRAHAM MANNERS,  
NEIL CAMPBELL.