

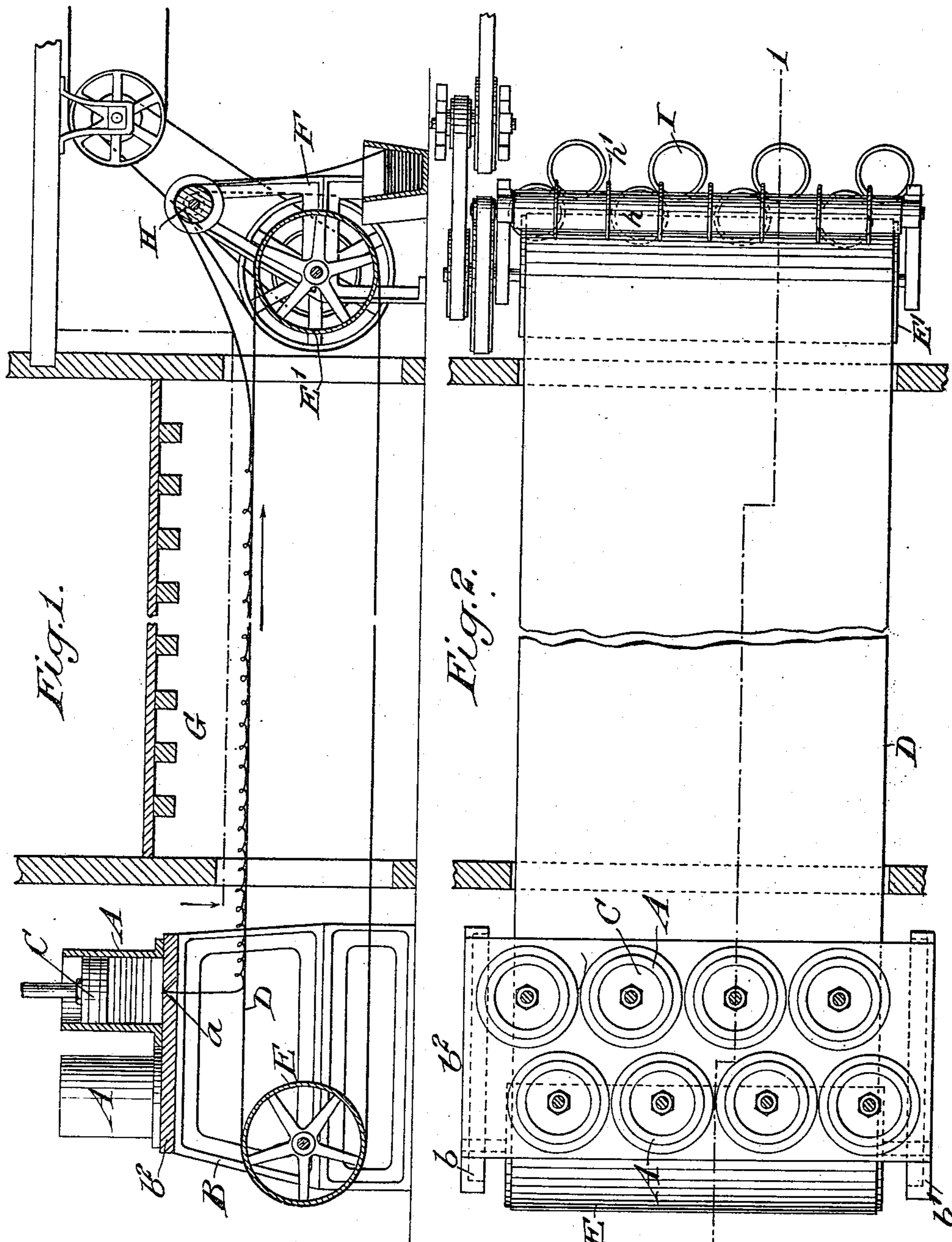
No. 666,485.

Patented Jan. 22, 1901.

J. H. BROWN & G. N. WHISTLER.  
APPARATUS FOR TREATING GUNPOWDER.

(No Model.)

(Application filed Jan. 28, 1897.)



Witnesses:  
Edward Viesel.  
George Barry Jr.

Inventors:  
John H. Brown,  
Garland N. Whistler,  
By Brown & Devereux  
their Attorneys

# UNITED STATES PATENT OFFICE.

JOHN H. BROWN, OF NEW YORK, N. Y., AND GARLAND N. WHISTLER, OF POMPTON, NEW JERSEY.

## APPARATUS FOR TREATING GUNPOWDER.

SPECIFICATION forming part of Letters Patent No. 666,485, dated January 22, 1901.

Application filed January 28, 1897. Serial No. 621,006. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN H. BROWN, of the city, county, and State of New York, and GARLAND N. WHISTLER, of Pompton, in the  
5 county of Passaic and State of New Jersey, have invented a new and useful Improvement in Apparatus for Treating Gunpowder, of which the following is a specification.

Our invention relates to improvements in  
10 apparatus for treating gunpowder, and relates more particularly to the treatment of smokeless powder, in which the powder is formed in continuous strings ready to be granulated or cut into the desired lengths, the strings of  
15 powder being formed of the required size in cross-section to suit the different purposes for which the powder is to be used.

One object of our invention, broadly considered, is to provide means for drying the  
20 powder after it has been formed into strings for the purpose of removing its stickiness, so that as the strings are fed into suitable receptacles they will not adhere.

A further object is to provide an apparatus  
25 which consists of means for forming the powder in continuous strings, means for receiving the strings of powder as they come from their presses and convey them at the desired speed through the heating or drying chamber, and means for straightening the strings  
30 and depositing them in suitable receptacles.

In the accompanying drawings, Figure 1 represents the apparatus for carrying out our invention in vertical longitudinal section, the  
35 said section being taken on the line 1 1 of Fig. 2; and Fig. 2 is a top plan view of the apparatus, the drying-chamber being shown in section.

We have shown the accompanying apparatus  
40 as adapted for drying eight separate strings of powder at the same time; but it is to be understood that the number of strings being treated may be varied to suit the purposes in hand.

45 The cylinders for containing the powder in its plastic state are denoted by A, and they are noted on a suitable framework B. The framework B in the present instance consists of two side frames  $b$  and  $b'$  and a bed-plate  
50  $b^2$ , the said bed-plate serving as bottoms for the several cylinders A. The cylinders A are

shown in the accompanying drawings as arranged in two rows in staggered order, and each of the cylinders is provided with an opening through its bottom, in the present instance the bed-plate  $b^2$ , through which the  
55 strings of powder are forced by suitable pressure—such, for example, as pistons C, fitted to slide within the cylinders A. The openings through the bottom of the cylinders A are  
60 denoted by  $a$  and are of the required size to form the strings of the proper size in cross-section for the use to which the powder is to be put. It may be seen that the openings  $a$   
65 are for the different cylinders A and may vary in size, so that strings of varying diameters may be formed at the same time.

The means for receiving the strings of powder consists of an endless belt or carrier D, passing around a pair of pulleys or drums E  
70 and E', the drum E being mounted in suitable bearings of the framework B and the axle-drum E' being mounted in suitable bearings in a framework F, located at some distance from the framework B. The belt D  
75 consists of any suitable material, (that which we have found most convenient being wire-cloth,) and the said belt is driven by the drum E' so that the top of the belt will advance from beneath the cylinders A in the direction  
80 indicated by the arrow in Fig. 1 toward the framework F. The drum E is driven by any suitable mechanism. The belt D passes through a heating or drying chamber G, which chamber has a considerable length, extending  
85 from the partition-wall of the press-room to the partition-wall of the room in which the drum E' is located. This heating or drying chamber G is kept at the desired temperature by any suitable means, which means are not  
90 shown herein.

The means for straightening the strings of powder consist of a suitable friction-roller H, mounted to rotate in suitable bearings in the frame F. This roll H is driven in the same  
95 direction as the drum E' and at a considerable greater speed by any suitable driving mechanism. The roll H is mounted a short distance above the plane of the top of the belt D and the strings of powder are passed  
100 over the top of the said roll H, so that as the roll is rotated it tends to straighten out any

coils which may have been formed in the strings. This straightening of the strings is accomplished by reason of the rapidity with which the roll H is driven, and because of its frictional engagement with the said strings it will allow them to slip more or less, so as to accommodate itself to the several strings that are passing over it. This will do away with any liability on the part of the strings to be stretched to less than their desired diameter or to break. The exterior of the roll H is roughened for enabling it to get a better hold upon the strings of powder. The roughened surface may be formed, if so desired, by attaching emery-paper or sandpaper *h* to the exterior of the roll. The strings of powder are kept separate and directed into their respective receptacles by means of suitable partition-disks *h'*, which are spaced apart along the said roller H.

A number of receptacles I may be placed along beneath the roll H for receiving the powder after it has been dried and straightened.

Proceeding to describe the operation of our invention, the carrier-belt D is driven at the desired speed and the pistons or plungers within the cylinders A are caused to force the plastic powder through the openings *a* by suitable means. (Not shown herein.) The strings thus formed are fed at the desired speed onto the belt D, and as the belt is driven it will carry the strings along through the heating or drying chamber G. The temperature of the said chamber G is preferably kept at 150° Fahrenheit. After the strings have been advanced a sufficient distance along and with the belt D the ends of the strings are passed over the top of the friction-roll H. This roll H is driven sufficiently faster than the belt D to enable it to straighten out the strings which have become more or less coiled along the plate. As the strings leave the roll H they are directed into the receptacles I, where they are coiled within the said receptacles.

The different speeds that the belt D is driven relatively to the speed with which the strings are fed onto the plate will cause the strings of powder to become more or less coiled and also to cause the powder to be subjected to the drying process in the chamber G a longer or shorter period, as may be desired. This drying of the powder before it is placed within the receptacles does away with all liability

of the strings sticking to each other and the straightening of the strings will enable them to be regularly coiled or laid within the receptacles without any kinks.

What we claim is—

1. In combination, means for forming the powder into strings, means for drying the strings and means for subsequently straightening them, substantially as set forth.

2. In combination, means for forming the powder into strings, means for drying the strings, and a friction-roll engaging the strings for straightening them, substantially as set forth.

3. In combination, means for forming the powder into strings, a drying-chamber, an endless belt for passing the strings of powder along within the drying-chamber, means for driving the belt, a roll frictionally engaging the strings for straightening them and means for driving the roll at a higher speed than that at which the belt is driven, substantially as set forth.

4. In combination, means for forming the powder into strings, a drying-chamber, an endless belt in position to convey the strings along within the chamber, means for driving the belt, a friction-roller partially around which the strings are caused to pass, and means for driving the roll at the required speed to straighten the strings after they have been dried, substantially as set forth.

5. In combination, means for forming the powder into strings, means for conveying the strings away from the forming mechanism, a friction-roller provided with a roughened surface for engaging the strings to straighten the strings, and means for actuating the roller, substantially as set forth.

6. In combination, means for forming the powder into strings, means for conveying the strings away from the said forming mechanism, a friction-roller engaging the said strings for straightening them, circumferential partitions on the roller for keeping the several strings separated and directing them into their respective receptacles and means for actuating the said roller, substantially as set forth.

JOHN H. BROWN.

GARLAND N. WHISTLER.

Witnesses:

FREDK. HAYNES,

EDWARD VIESER.