(No Model.) 2 Sheets—Sheet 1.

S. P. M. TASKER.

WET PULVERIZING MACHINE.

No. 265,714. Patented Oct. 10, 1882.

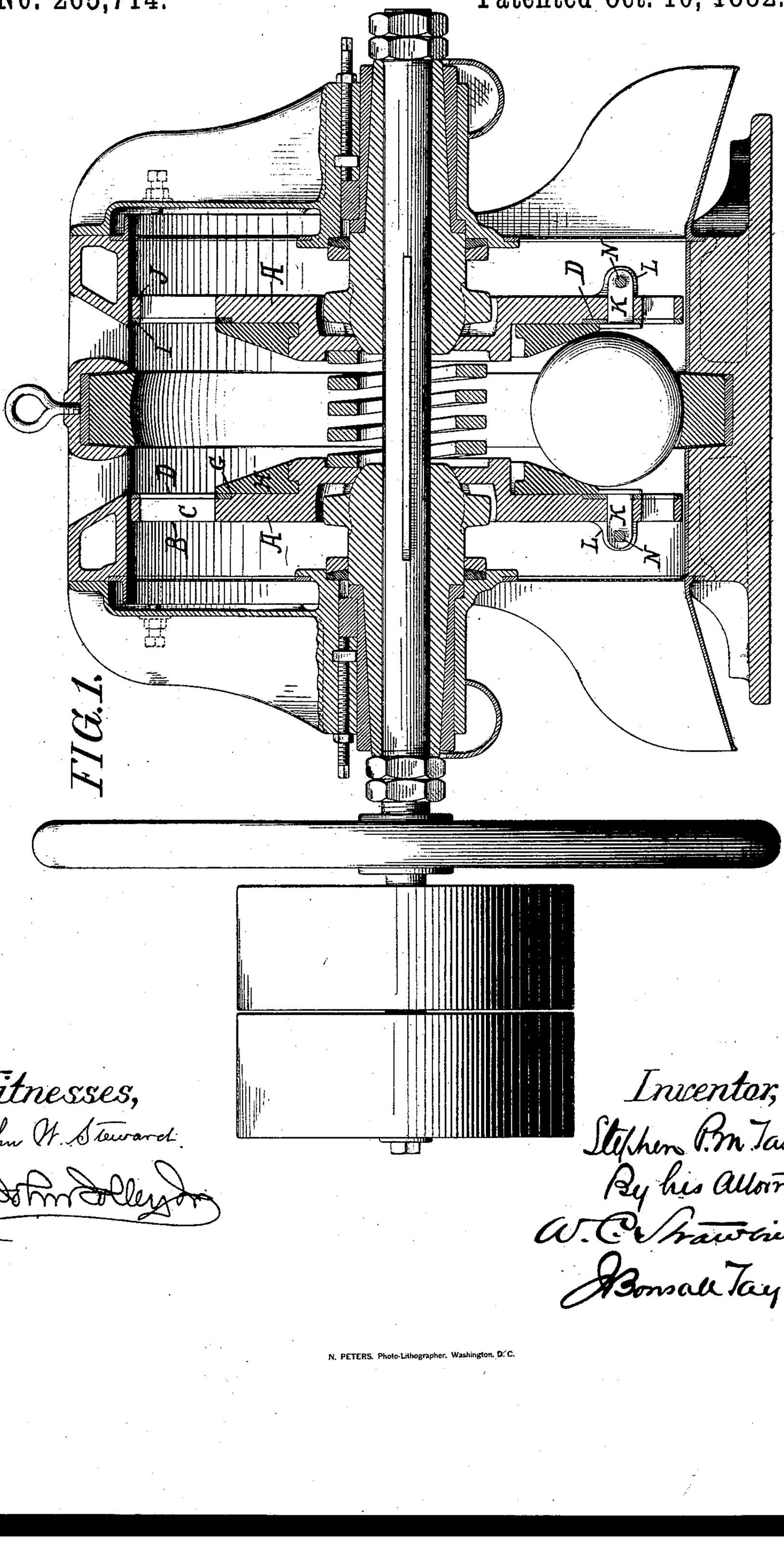

FIG. 1.

Witnesses,
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(No Model.) 2 Sheets—Sheet 2.

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FIG. 2.

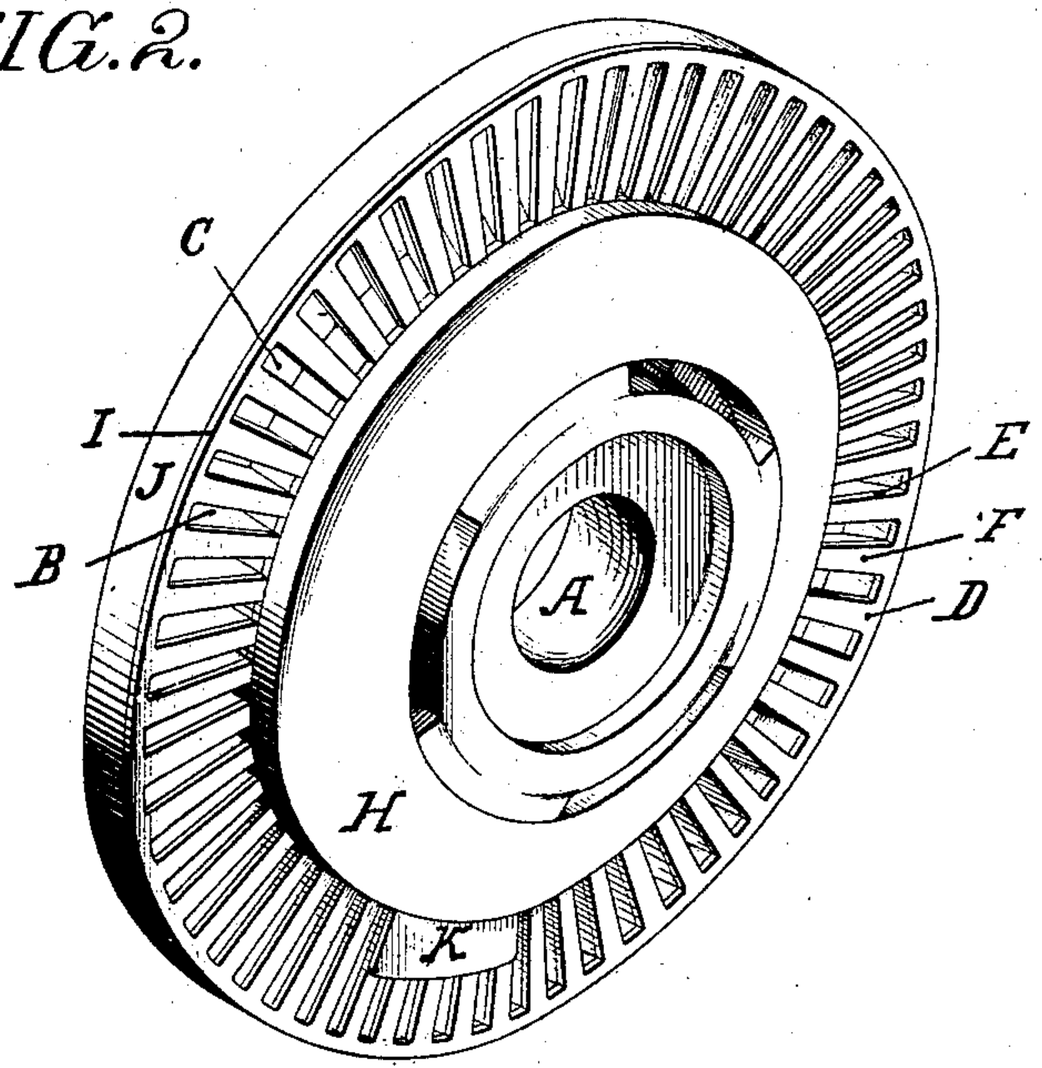


FIG. 3.

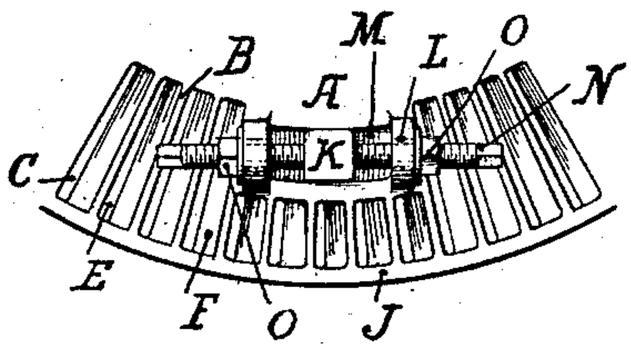
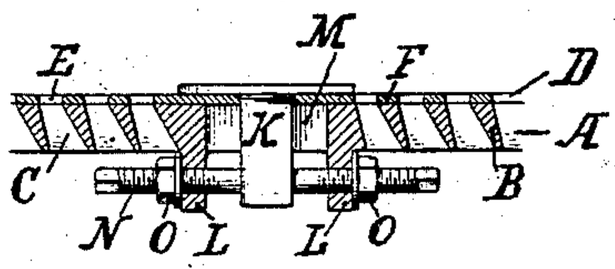


FIG. 4.



Witnesses,
John M. Steward
John Dalley Jr

Inventor,
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By his Attorneys,
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UNITED STATES PATENT OFFICE.

STEPHEN P. M. TASKER, OF PHILADELPHIA, PENNSYLVANIA.

WET-PULVERIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 265,714, dated October 10, 1882.

Application filed March 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN P. M. TASKER, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain Improvements in Wet-Pulverizing Machines, of which the following is a specification.

My invention, broadly considered, relates to a certain novel pulverizing-machine invented by William Henry Thompson, of Islington, county of Middlesex, Kingdom of Great Britain, and patented to him in and by Letters Patent of the United States No. 249,489, dated November 15, 1881, to which Letters Patent reference is to be made for a more clear comprehension of my improvements.

Broadly stated, Thompson's invention consists in the combination, within a suitable inclosing case embodying in its own structure a vertically-erected hollow circular track, of an independent sphere or ball adapted to revolve around the casing, and of given means for imparting to the ball not only revolution around the casing-track, but also rotation about its own axis. Certain other features of construction enter into the Thompson invention which are dispensed with by me, as the organization of my machine avoids their employment.

In the Thompson machine, as also in mine, material to be pulverized is fed through a hopper into the casing, and is crushed by the combined revolution and rotation of the sphere or ball. The means employed by Thompson for effecting the combined movement of the ball are a pair of vertically-erected disks provided with peripheral beveled bearing-surfaces, and arranged face to face at some distance on either side of the center of a shaft horizontally journaled through the casing, and by which they are revolved. The disks are capable of rocking movements by virtue of being each loosely hung or supported on the shaft between two collars having curved bearing-faces. The collars prevent a lateral movement of the disks at their centers. Exterior to their peripheral bearing-surfaces the disks are provided with a circular series of blades adapted by means of their location, inclination, and proximity to each other to prevent the escape of material under treatment until it has become sufficiently pulverized, but thereafter adapted to permit of its escape into a receptacle exterior to the casing, from which receptacle the sufficiently-pulverized material is by suitable means removed.

The operation of the disks and ball is described by Thompson in the following language, which I regard as of importance to restate here, in order that a more thorough comprehension of my improvements may be had. Thompson says:

"The operation of the disks and ball is substantially as follows: When the disks are revolved their tendency is to assume a position exactly at right angles to the shaft; but as they cannot do this, for the reason that the diameter of the ball at the point of contact exceeds the distance between the adjacent bearing-faces, it follows that they bear or press upon the ball in their effort to assume this position and crowd the latter against the casing with greater or less force, according to the rapidity of the revolution. The disks also, by the friction of the contact, carry the ball with them in their revolution about the casing, and thus communicate to it a centrifugal action. The disks also, by the friction of this contact, communicate to the ball also an axial rotation. The ball, then, it will be understood, is caused to act upon the material to be pulverized with a resultant force, which is obtained from three distinct sources, as follows: first, the direct radial thrust which is received from the efforts of the disks to assume a position at right angles to the shaft, the bearing-faces of the same acting as inclined planes to crowd the ball against the inner surface of the casing; second, the centrifugal action which results from the rapid revolution of the ball around the casing, and, third, the grinding action which results from the rotation of the ball upon its axis. By adapting the disks to rock upon the shaft the ball is permitted to move on radial lines to and from the shaft, according to the amount of material in the casing, without being free at any time from the action of the disks."

My invention also relates to and embodies in its structure certain improvements upon the Thompson machine, which are the invention of Hermann Bernhard Feldmann, of Philadelphia, Pennsylvania, and which are embraced in an application for Letters Patent executed by him February 2, 1882, and filed in the United States Patent Office, March 2, 1882.

My invention also relates to and embodies in its structure certain improvements upon the Thompson machine and upon the Feldmann machine made by me, and which are embraced in an application for Letters Patent executed by me February 8, 1882, and filed by me in the United States Patent Office, March 6, 1882. I do not regard it as important here to specify in detail these last-mentioned improvements of Feldmann and myself, as my present improvement relates only to the disks, which, although preferably constructed after the manner of Feldmann, improving upon Thompson, and after the further manner of my invention above referred to, improving upon Feldmann, may yet be constructed and applied to the shaft after the manner of Thompson's invention, also referred to.

My present invention consists in the combination, with the blades, which are peripherally disposed around the disks, so as to form radially-disposed openings in the same, of a circular adjusting-plate of diameter corresponding to that of the disks, and having radially-disposed slots through it corresponding to the openings between the blades of the disks, and of means for so relatively adjusting the plate with respect to the blades as to cause the slots in the plate either to correspond in position with the openings between the blades—not to correspond therewith, but to be so oppositely placed that the webs between the slots in the plate close the openings between the blades in the disk—or to assume intermediate positions, whereby the openings between the blades are made of any predetermined size.

In the accompanying drawings, Figure 1 represents in vertical central sectional elevation a pulverizer embodying my improvements. Fig. 2 represents in perspective the front face of a disk equipped with my adjusting-plate. Fig. 3 is an elevational detail of a portion of the rear face of the plate, representing a convenient means of setting the adjusting-plate; and Fig. 4 is a detailed view, in top sectional plan, of the same, the section being supposed in a horizontal plane through the adjusting-bolt represented in Fig. 3.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the disks of the Thompson machine, embodying the improvements thereupon of Feldmann and myself. B are the radial blades of said disks, and C the radial openings formed between the blades.

D is my circular adjusting-plate; E, the radial slots in the same, and F the webs between the slots. The adjusting-plate is seated in a circular recess, G, formed between the body of the disk and the removable beveled bearing-faces H, invented by me and comprised in my application for patent referred to. It will be readily understood that when the circular adjusting-plate has been applied within its circular recess and the removable beveled bearing-plate has been applied the adjusting-plate is secured to the disk and cannot be removed therefrom, although it is capable of a motion of revolution with respect thereto.

I is the circular peripheral rim of the adjusting-plate, which incloses the slots therein and registers with the circular peripheral rim J, which incloses the radial blades of the disk. Such being a convenient construction of an adjusting-plate, I desire to state that it may be made of any applicable form and applied to its disk in any preferred manner, provided, however, that the slots in the plate correspond to the radial openings between the blades of the disk. Any mechanic will understand that many methods of adjusting the set of the slotted plate with respect to the disks and the openings therein may be resorted to. I have devised, as a convenient means of obtaining the setting of the plate or its adjustment, the following contrivance: The plate is applied to the front face of the disks in the manner which I have above described. A stud, K, is riveted or otherwise secured to the plate, so as to project backwardly therefrom, as shown in Figs. 1 and 4. Two lugs are formed upon or in connection with neighboring blades in the disk, and between them an arc-shaped opening, M, is formed, through which the stud on the adjusting-plate projects beyond the rear face of the disk. A bolt, N, (or two bolts, if desired,) is threaded through both the lugs and the stud, and nuts O are applied thereto, preferably exterior to the lugs, as shown in Figs. 3 and 4 of the drawings. By means of the nuts and bolt the stud can be caused to assume different positions with respect to the lugs—to the right hand or to the left—and after it has assumed any given position can be locked in such position by the nuts. In the movement of the stud the circular adjusting-plate is also moved, and, as will be readily understood, its slots caused either to register with the openings between the blades, as shown in Fig. 4, so as to leave the openings completely unclosed or of natural size and free for the passage of material, or caused to assume a position in which the webs partially close the openings between the blades, as represented in Fig. 3. As heretofore stated, many means of effecting this locking movement of the adjusting-plate may be resorted to. I do not restrict myself to that represented, as the gist of my invention resides in the application of the adjusting-plate itself to the disks of a pulverizing-machine of the class invented by Thompson, in order to enable the adjustment of the openings between the blades of said disks to varying sizes.

I am aware that revolving disk-registers, as such, are old in various arts, and to such devices, broadly considered, I lay no claim, as the gist of my invention resides in such an improved construction of Thompson's bladed pulverizer-disks as adapts his machine for the pulverization of material to predetermined degrees of fineness.

Having thus described my invention, I claim—

1. In a pulverizing-machine of the class here-

in referred to, in combination with a disk provided with openings around the periphery thereof, an adjusting-plate provided with openings corresponding in peripheral alignment with the openings in the disk, substantially as and for the purpose set forth.

2. In a pulverizing-machine of the class herein referred to, in combination with a disk provided with openings around the periphery thereof, an adjusting-plate provided with openings corresponding in peripheral alignment with the openings in the disk, and means for adjusting the plate with respect to the disk, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name this 10th day of February, A. D. 1882.

STEPHEN P. M. TASKER.

In presence of—

J. BONSALL TAYLOR,

W. C. STRAWBRIDGE.