(No Model.)

G. W. TURNER.

MECHANICAL MUSICAL INSTRUMENT.

No. 262,858. Patented Aug. 15, 1882.

FIG. 1.

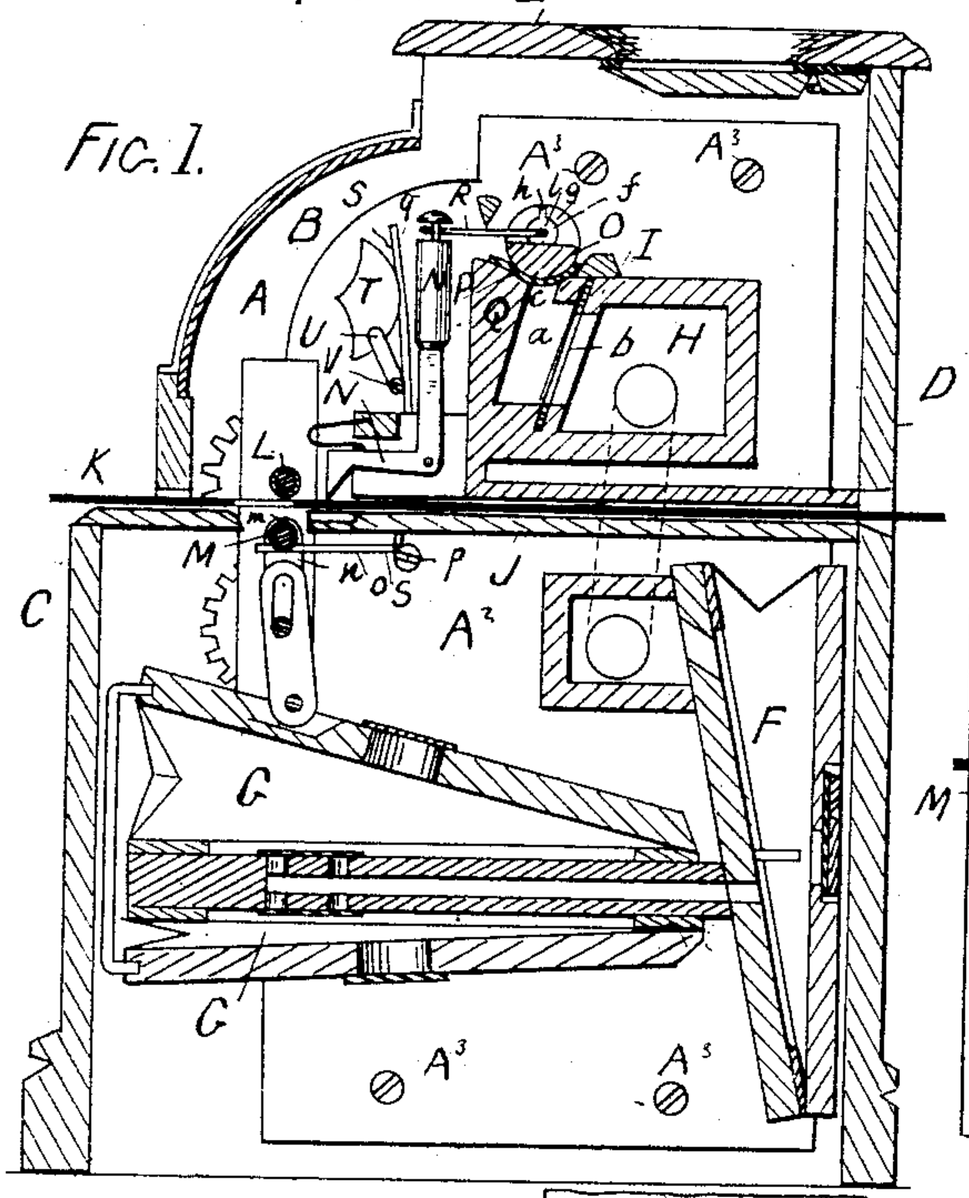

FIG. 2.

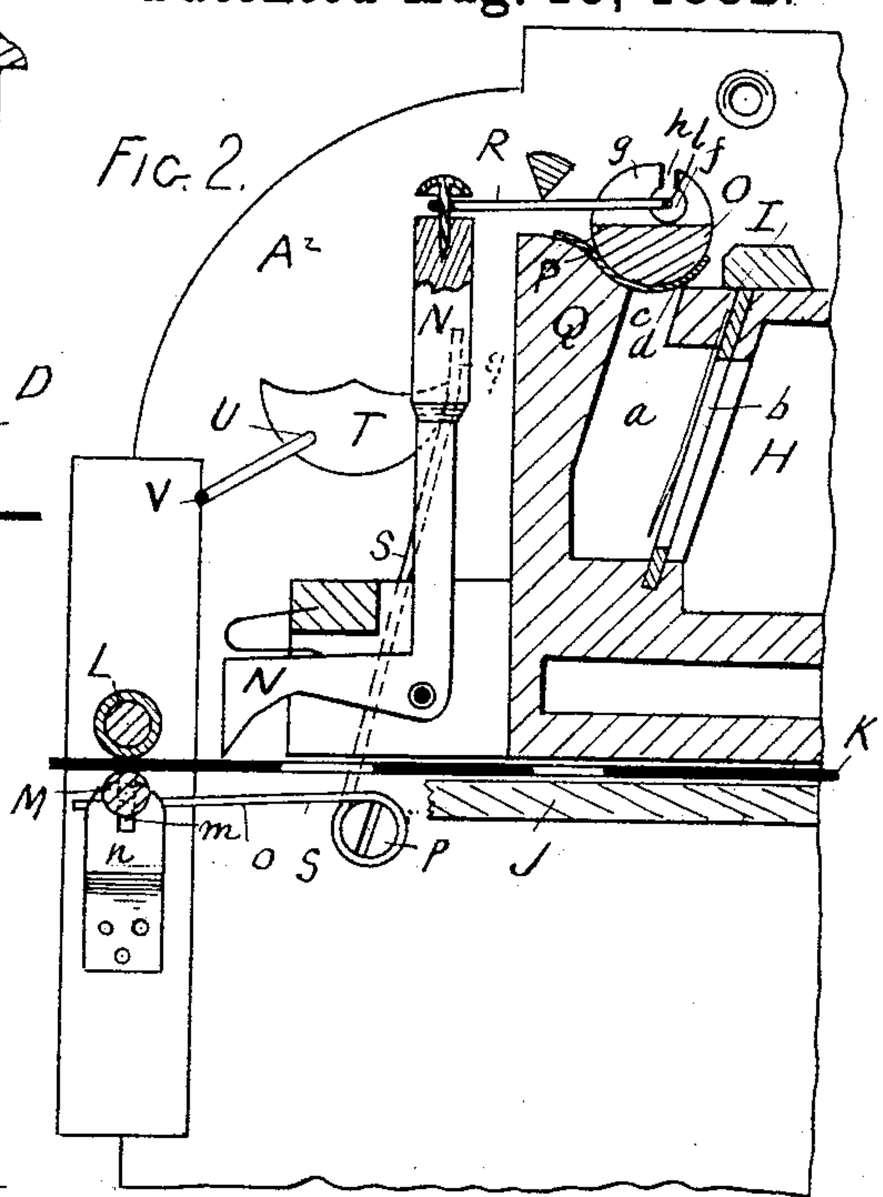

FIG. 3.

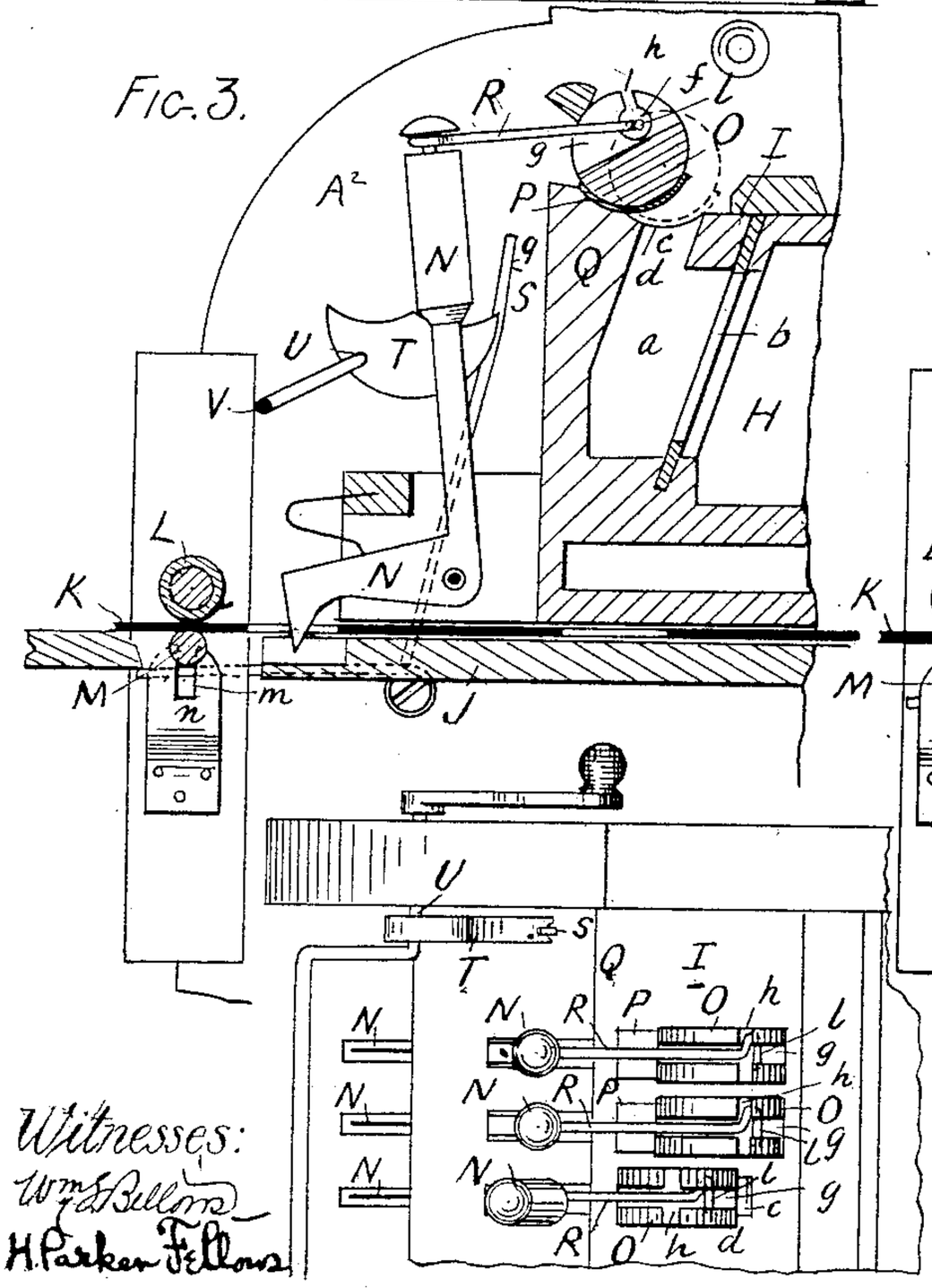

FIG. 4.

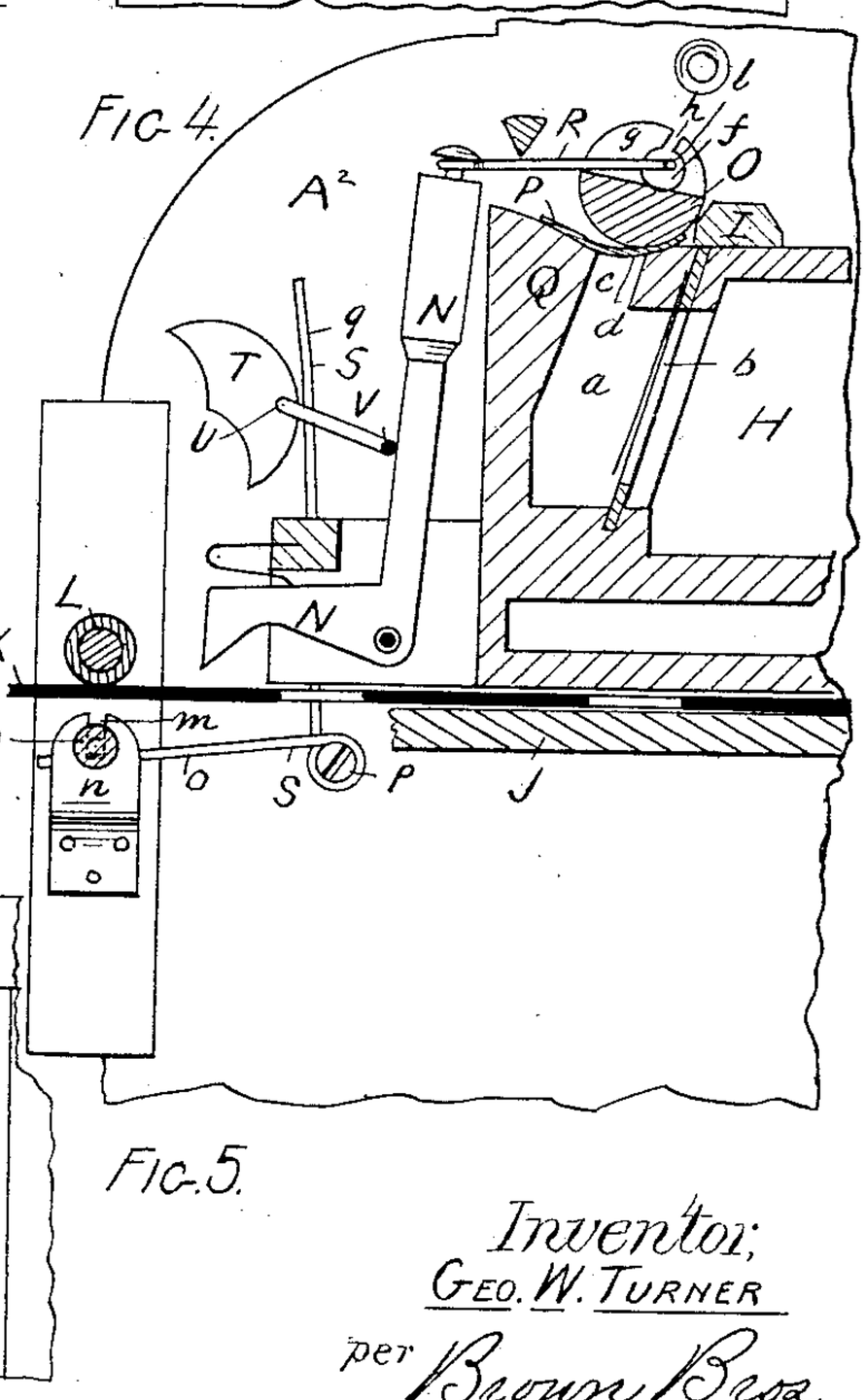

FIG. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE W. TURNER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE AMERICAN AUTOMATIC ORGAN COMPANY, OF SAME PLACE.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 262,858, dated August 15, 1882.

Application filed May 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. TURNER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mechanical Musical Instruments, of which the following is a full, clear, and exact description.

This invention relates to that class of mechanical musical instruments wherein valves are operated by means of vibrating fingers actuated from or controlled by a suitably-prepared music-sheet passed in contact with one of their ends; and it consists in a construction and arrangement of the valves and in an arrangement of the presser-roller, all substantially as hereinafter described, reference being had to the accompanying plate of drawings, in which—

Figure 1 is a vertical section from the front to the rear side of a mechanical musical instrument of the class stated and having the present improvements. Figs. 2, 3, and 4 are enlarged sections of parts of the instrument, as will fully appear hereinafter, Fig. 2 showing the valve as closed, and Fig. 3 as opened. Fig. 5 is a plan view, enlarged, of a part of the instrument.

In the drawings, A is the case composed of end pieces, B, and front, rear, and top pieces, C, D, and E, respectively.

A^2 are two end uprights, which support and carry all the parts making the musical instrument, and are secured to the ends B, inside the case A, by screws A^3, or in any other suitable manner.

F is the bellows.

G G are the exhausters.

H is the wind-chest.

a is a series of reed-chambers, each having a reed, *b*, and an air-inlet, *c*, at the upper surface, *d*, of a reed-block, I.

J is the raceway or table for supporting or guiding the perforated music-sheet K as it passes through the instrument.

L is the feed-roller for moving forward the music-sheet, and M is the presser-roller for holding the music-sheet in contact with the feed-roller.

N N are vibrating fingers or levers for operating the valves O, one for each finger, to open and close the air-passages *c* to the reeds *b* from the passage of the perforated music-sheet, all constructed and arranged together, and operating as heretofore in mechanical musical instruments, except as hereinafter particularly described. Each valve O is a cylindrical block, and the several valve-blocks are placed end to end in a row along and so as to rest by their convex sides upon the upper surface, *d*, of the reed-block I, which surface is of a concave shape, corresponding to the convexity of the valves. Each block is of a width to cover and close an air-inlet opening, *c*, of the reed-block, and it is attached by a flexible strip, P, of leather, cloth, &c., to a common rail, Q, and it has a rod, R, which at one end is hinged to it and at the other end connected to the upper end of a vibrating finger or lever, N. Each valve-block, when off or in a position covering its air inlet or opening *c*, rests against the horizontal rail Q, which is common to the series of valve-blocks, and in moving to cover and uncover its air-inlet by the action of its finger or lever N from the passage of the perforated music-sheet, as heretofore, it rolls upon and over the upper concave surface, *d*, of the reed-block. When over its air-inlet *c* it closes the same to the passage of air, and when off said inlet it opens it to the passage of air, and preferably the part of the convex side of each valve-block making a seat upon the upper concave surface of the reed-block is covered with leather or cloth to insure the closing of its air-inlet and to prevent noise in its movement, and this covering may be, as shown, a continuation of the strip P making the flexible connection described.

A concave surface, *d*, of the reed-block is preferable, as it gives a bearing for the convex side of each valve-block along the whole length of the air-inlet which it is to close, and, again, it affords a better surface for the rolling movement of the blocks; but obviously it is not absolutely essential either to the roll of the valve-blocks or to their other operations herein described.

The flexible connection of the valve-block is desirable for obvious reasons, but could be dispensed with.

As described and shown, the valve-blocks

are cylinders; but, plainly, all that is essential is to have a rounding, convex surface in the part of each valve, making the working-surface thereof in the roll of the valve to and fro upon its seat of the reed-block. However, it is preferable for cheapness and ease of manufacture to have them cylindrical.

The hinging of each valve-block to the rod R, which connects it to a finger or lever, N, as to the block, consists of a hole, *f*, which is eccentric to the convex valve-face, and runs from end to end of the block O, and of two peripheral slots, *g h*, both opening into said hole *f*, but at right angles to each other, and the one, *h*, extending from end to end and the other, *g*, in a parallel plane with the ends of the block; and as to the rod R, it consists of a cross-head, *l*, at one end of the rod R, which cross-head has a thickness in one direction suitable for it to be passed freely through the slot *h*, running from end to end of the block, and thus entered into the hole *f* of the block, and a width in the other direction greater than the width of said slot, and of a rod, R, of suitable size to lie within that slot *g* of the block parallel with its ends. This construction of hinge enables a rod, R, to be readily attached to and detached from its valve-block, and, when attached, to be secure against accidental detachment, and to allow a free rolling movement of the valve-block in its operations to open and close its air-inlet. This hinging of the valve-blocks to their connecting-rods R for their respective fingers or levers N obviously is simple and efficient in construction and operation, and for such reasons is desirable; but, as a suitable connection may be made in other ways, it is not intended to limit this invention as to a rolling valve-block to the particular hinge construction and arrangement of the block herein described.

The presser-roller M at each end has a bearing in a vertical slot, *m*, of the stationary brackets *n*, and it rests and is supported upon the upper side of the lower part, *o*, of angular arms S, one at each end, which arms each turn upon a fulcrum at *p*, and are arranged at their upper parts, *q*, to be operated upon by cams T, one to each arm S, but both attached to a common horizontal operating-shaft, U, and all in such manner that by turning said shaft and said cams said arms are swung, as the case may be, either in a direction to place the presser-roller M in contact with the feed-roller L or to leave said presser-roller free to drop in the vertical slotted bearings *m* from the feed-roller, and thus from the music-sheet. The cams are also shaped and hung to hold the presser-roller M in its working position when turned sufficiently to bear on arms S therefor, and their common operating-shaft U, bent to form crank-arms V, is arranged in a position that when turned in one direction it will be brought against the series of valve fingers or levers N and place or lift them out of the plane of movement of the music-sheet through the instrument, while at the same time the presser-roller is freed from contact with the feed-roller, and when turned in the other direction it will release said valve-fingers or levers and allow them to come into position for operation from the travel of the music-sheet, and at the same time place the presser-roller against the feed-roller, or, in other words, in its operating position upon the music-sheet, and there hold it.

The valve O can be used in connection with air-passages leading to pipes or other sounding devices, as is obvious.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a musical instrument provided with a wind-chest, reeds, and reed-chambers having air-passages to the reeds, all substantially as shown and described, a valve adapted to be operated and constructed and arranged to roll over upon its seat in its movement to open and close the air-passage to the reed belonging to it, all substantially as described.

2. In a mechanical musical instrument provided with a wind-chest, reeds, and reed-chambers having air-passages to the reeds, all substantially as shown and described, a series of valve-actuating fingers controlled by the music-sheet, in combination with valves hinged one to each of said fingers, and each constructed and arranged to roll over upon its seat in its movement to open and close the air-passage to the reed belonging to it, all substantially as described.

3. In a mechanical musical instrument provided with a wind-chest, reeds, and reed-chambers having air-passages to the reeds, all substantially as shown and described, a series of valve-actuating fingers controlled by the music-sheet, in combination with valves hinged one to each of said fingers, and flexibly connected to a stationary support, and each constructed and arranged to roll over upon its seat in its movement to open and close the air-passage to the reed belonging to it, all substantially as described.

4. In a mechanical musical instrument, the combination, with an air-passage, *c*, opening to a reed-chamber, *a*, and an actuating finger or lever, N, of a valve, O, having slot and hole *f*, and of a rod, R, connecting said valve to said finger, and having cross-head *l*, all substantially as described, and for the purposes specified.

5. In a mechanical musical instrument, the combination, with an air-passage, *c*, opening to a reed-chamber, *a*, and an actuating finger or lever, N, of a valve, O, which is hinged to said finger, and is constructed and arranged to roll over upon a concave seat in its movement to open and close its said air-passage, substantially as described.

6. In a mechanical musical instrument, the combination, with a feed-roller, L, and presser-roller M, of slotted brackets *n* and angular levers S, both supporting the presser-roller, and

arranged and combined therewith to operate upon and allow the presser-roller to move, all substantially as described, for the purposes specified.

7. In a mechanical musical instrument, the combination, with a feed-roller, L, and presser-roller M, of slotted brackets *n* and angular levers S, both supporting the presser-roller, and of cams T, attached to an operating-shaft, U, all substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE W. TURNER.

Witnesses:

EDWIN W. BROWN,

WM. S. BELLOWS.