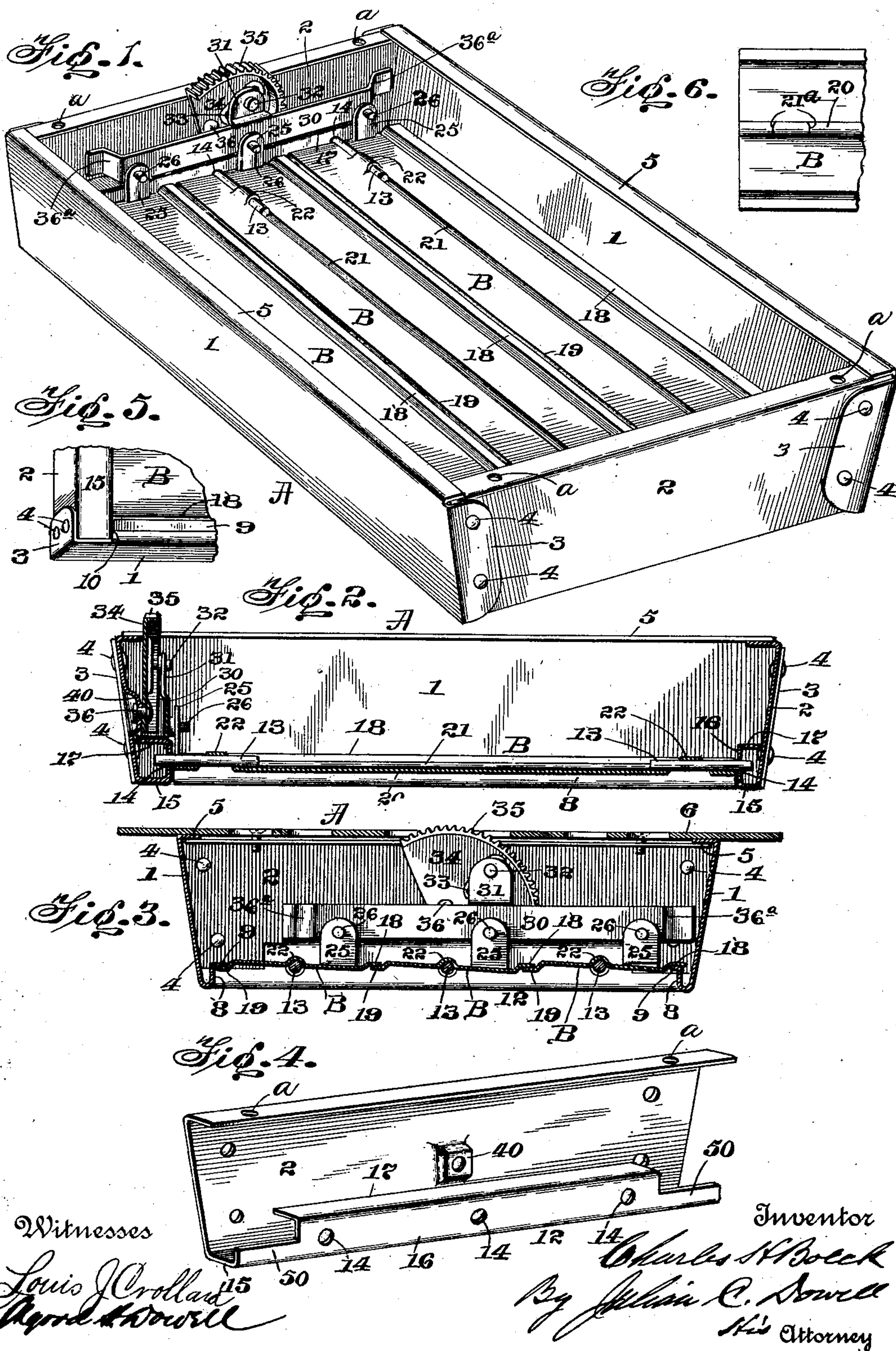


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(No Model.)



UNITED STATES PATENT OFFICE.

CHARLES H. BOECK, OF JACKSON, MICHIGAN, ASSIGNOR TO THE NOVELTY MANUFACTURING COMPANY, OF JACKSON, MICHIGAN, A CORPORATION OF MICHIGAN.

AIR-REGISTER.

SPECIFICATION forming part of Letters Patent No. 688,288, dated December 10, 1901.

Application filed November 16, 1900. Serial No. 36,774. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. BOECK, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Air-Registers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to registers for hot-air and ventilating flues; and it consists, substantially, in the improvements hereinafter more particularly described, and pointed out in the claims.

The object of the invention is to provide a register applicable alike to heating and ventilating purposes and one also that is simple in construction and comparatively inexpensive to manufacture.

A further object is to so construct the several parts or elements of the register that they can be struck up from sheet metal and readily united or joined together and whereby also the register is rendered strong and durable, besides being capable of withstanding considerable strain at the joints and not liable to get out of working order.

A still further object is to strengthen the pivotal support of the slats or valves and also to render the register entirely dust-proof, all as will hereinafter be more fully understood when taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a register for heating and ventilating purposes constructed and put together in accordance with my improvements. Fig. 2 is a central longitudinal sectional view of my improved register, and Fig. 3 is a transverse sectional view taken in a plane just in front of the operating devices for the pivotal slats or valves. Fig. 4 is a view in perspective of one of the end pieces of the frame of the register, and Fig. 5 is a plan view in detail of the under side of the register at one of the corners thereof. Fig. 6 is a detail view.

Preliminary to a more detailed description it may be stated that my improved register is preferably constructed of sheet-steel or other sheet metal and comprises two side

pieces and two end pieces, which are joined together in any suitable manner at the corners to form a frame for insertion within an opening in a floor or wall of a house and in which frame the pivotal slats or valves, together with their operating devices, are supported. The side pieces of the frame are flanged at their lower edges, as heretofore, to serve as abutments for the outer edges of the outermost slats or valves when the latter are closed and also to unite with the said slats or valves in preventing the access or passage of dust. The upper edges of said side pieces are also formed with flanges for the support of the usual foraminated top plate, and at the ends each of the side pieces is formed with an extension overlapping the corresponding end of one of the end pieces and secured thereto. Each of the end pieces is peculiarly constructed at its lower edge to receive the pivots of the movable slats or valves which control the passage of air through the register, and said end pieces are also flanged at their upper edges to partially support the top plate. The operating devices are compactly arranged at one end of the register, the ribbed sector thereof being peculiarly mounted or supported on one of the end pieces, so as to insure the perfect working thereof, as well as the parts actuated thereby.

Specific reference being made to the accompanying drawings, A represents the register as an entirety or whole, the same being constructed of two side pieces 1 1 and corresponding end pieces 2 2, the two sets of pieces being united or joined at the ends or corners in any suitable way. Preferably I form each end of the said side pieces 1 1 with an extension 3, which is bent or turned at right angles to overlap the corresponding end or corners of one of the end pieces 2; and suitable headed rivets 4 are inserted in openings therefor previously formed in said extensions and end pieces, and in this way the parts are securely fastened and held together by upsetting the ends of said rivets close against one side or the other of the said parts. Each of the said side pieces of the register is formed on its upper edge with preferably an inturned flange 5 for the support of the usual foraminated top plate 6, through which the air passes either for the

purposes of heating or ventilation. Each of said side pieces is also formed at its lower edge with a flange, which is preferably upturned at 8 to derive increased strength and thence turned inwardly at 9 to form abutments for the outer longitudinal edges of the outermost ones of the pivoted slats or valves B. In this way also stops are provided for limiting the movement of said slats or valves when the latter are operated to be closed, although such movement is also limited in another way, hereinafter described, so that the said side pieces need not be thus flanged for this purpose, but could be otherwise formed without altering the character of the present improvements. It may be stated, however, that such a construction is quite common and is preferred herein on account of the dust-proof character thereof. The said upwardly and inwardly turned flanges 8 9 are each of an equal length with the said slats or valves, but they terminate a little short of the main body of said side pieces at each end, leaving notches 10, which receive the ends of the peculiarly-constructed lower part of the end pieces 2 2 of the register-frame, about to be more specifically referred to. The several parts fit together snugly, so that no dust or soot can find a passage through or even collect in the different joints.

In order to provide a stable and effective support for the pivoted slats or valves B, I form each of the end pieces 2 at its lower edge with a closed box-bearing 12, which is common to all the pivots 13, at one end of the said slats or valves, the said box-bearings each being formed with corresponding openings 14, properly spaced apart for the reception of the said pivots. The said box-bearings are also each of a depth to allow the ends of the pivots to project into the same considerably beyond the openings and which renders the pivots less liable to slip out of said openings. These box-bearings 12 are formed by bending the lower edges of the end pieces 2 inwardly at 15, thence upwardly at 16 for a suitable distance, and finally outwardly and horizontally at 17, the edges of said horizontal portions 17 abutting the inner surfaces of the end pieces, as shown. The said slats or valves B are each formed at their opposite longitudinal edges with a raised flange 18 and a sunken flange 19, so as to overlap each other when closed (see Fig. 3) and also so that the flanges on the outer edges of the outermost slats or valves will overlap and abut the inturned flanges 9 on the side pieces for the purpose already explained. For the purpose of giving increased strength to the slats or valves they are each formed with a central longitudinal rib 20, struck up therefrom on the under side and which leaves a longitudinal channel or groove 21 on the upper side thereof. To provide a convenient and effective pivotal support for the said slats or valves, I slit the ribs 20 thereof at points 21^a near the ends, (see detail Fig. 6,) and then

I strike up or elevate the metal between each set of slits, so as to form on the upper surface of the valves, near each end, a raised loop 22, which spans the channel or groove 21, as shown. After the side and end pieces of the register-frame are properly joined or united the slats or valves are secured in position by inserting the removable metal pivots 13 into said loops outwardly and then driving them through the same and into the openings 14 of the box-bearings 12 for the desired distance. In this way the slats or valves are not only free to move or turn on their supports, but the said slats are given a further increased strength at the ends, due to the seating of the greater part of the body of the rivets within the grooves 21. The body of the rivets also partially enters and fills up the openings in the slats or valves formed by the upturned portions which constitute the loops, and in this way also the construction is rendered very strong. The thickness or diameter of the rivets is of course such as to tightly fit the said loops, and no other fastening between the two is necessary. In order to remove the slats, the rivets are withdrawn by the use of any suitable implement or appliance for that purpose. Each of the slats or valves is formed at one end to one side of its transverse center with a lug or upturned portion 25, which is perforated to receive the end of a pin 26, projecting from the inner side of an operating-bar 30 for all the slats or valves, and said operating-bar is also provided with an upstanding ear or lug 31, having a pin 32 projecting outwardly therefrom and entering an oblong opening or slot 33 of a sector-plate 34, the upper curved surface of which is serrated or corrugated at 35. The sector-plate is free to oscillate or turn back and forth on a rivet or pin 36, passing through the side of one of the end pieces of the register-frame, and it is evident that all the slats or valves will be opened and closed simultaneously upon imparting proper movement to the said sector-plate. The said operating-bar 30 is located above the box-bearing 12 of this one of the side pieces 2, and in order to provide perfect clearance between said bar and the pivoted slats or valves the said box-bearing is made a little deeper or wider than the one on the opposite end piece. This construction is employed for greater convenience; but it is evident that both of the box-bearings can just as well be formed of equal depth or of the same size, in which case the operating-bar 30 will be brought closer to the inner side of the end piece 2. By the said construction, however, no space is left through which dust or soot might pass while the register is in use. As shown, the ends of the said operating-bar 30 are bent or turned outwardly at 36^a, so as to provide sufficient space between the bar and end piece 2 for the accommodation and working of the movable sector-plate. In both the open and closed positions of the slats or valves this bar rests upon the upper surface

of the box-bearing, beneath the same, and in the absence of other means this construction serves to limit the movements of said slats or valves. Said construction is the preferred one in practice, since in virtue thereof the pins 26 are relieved of the weight of the operating-bar in both positions of the slats or valves, the said box-bearing beneath the operating-bar not only acting as an abutment or stop, but also as a rest or support for the bar. Then again, moreover, the operating-bar is made of such length as to abut the side pieces 11 on the opening and closing of the slats or valves, and this latter construction assists to the same end.

The side and end pieces of the register could be perfectly straight or perpendicular; but, as shown, I prefer to make the same slightly flaring or inclined, and in order to bring the operating sector-plate to a truly-vertical position, by which to better insure the proper working thereof, I indent the end piece 2, on which it is mounted, so as to form an inwardly-projecting offset 40, the inner surface of which is straight or perpendicular with reference to the main body of the said end piece. It is through this offset that the pin or rivet 36 passes, and it will be seen that the said sector-plate is brought to a corresponding position. By this simple construction I avoid having to build up a bearing for the sector-plate, which otherwise would be necessary to do, and the said sector is brought to the desired position without the use of washers or the like and is free to move back and forth without binding and without wobbling, all of which assists in the easy working or operation of the slats or valves and their operating-bar.

The foraminated top plate 6 is secured in position by means of screws passing through the same and through openings *aa* in the upper flanges of the end pieces, as shown, and in Fig. 5 it will be seen that the ends of the lower flanged horizontal portions 15 of the box-bearings 12 enter and fill up the notches 10, formed at the ends of the lower flanges on the side pieces. This fitting of the parts together serves to very materially strengthen the joint or connection between the end and side pieces at the corners of the register.

As shown at Fig. 4, suitable portions are cut off or eliminated at the ends of the box-bearings for the purpose of lightness and saving of material and to facilitate the riveting of the frame-pieces. Enough of the material thereof, however, is turned upwardly at 50, so as to insure the closing of the space between said box-bearing and the adjacent ends of the slats or valves on the under side. Of course, as already stated, these bearings are preferably closed throughout and extend practically the full length of the said end pieces. The said box-bearings retain their shape without any other fastening uniting them to the end pieces from which they are formed, and the entire register has been found to be very strong and admirably adapted for its intended purposes.

Of course I am not limited to the precise details of construction and arrangement shown and described, since immaterial changes could be made therein without departing from the scope intended to be embraced.

The sector-plate 34 is struck up from sheet metal, the body thereof being formed at the same time with the slot therein. The upper curved surface of said plate is turned to one side at a suitable angle and is corrugated, as shown, so as to enable the sector to be operated more readily by the foot or hand. This construction renders the said sector exceedingly light and strong and is, besides, easily and cheaply made.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a hot-air or ventilating register, a frame comprising side and end pieces joined together at the ends, and each having an intumed flange at the upper edge thereof, said side pieces each being formed at its lower edge with an intumed flange terminating short of the ends thereof to form notches, and said end pieces each being turned up at its lower edge and forming a closed box-bearing extending practically the full length of the piece, the ends of said bearings fitting in opposite notches of the side pieces, pivoted slats or valves supported in the box-bearings, and means located above one of the latter for operating said slats or valves, substantially as described.

2. In a hot-air or ventilating register, a frame comprising side and end pieces joined together at the ends, and each having an intumed flange at the upper edge thereof, said side pieces each being formed at its lower edge with an intumed flange terminating short of the ends thereof to form notches, and said end pieces each being turned up at its lower edge and forming a closed box-bearing extending practically the full length of the piece, the ends of said bearings fitting in opposite notches of the side pieces, pivoted slats or valves each having a loop struck up therefrom near each end, and provided with removable pivots inserted through said loops and extending into the box-bearings, and means located above one of the latter for operating said slats or valves, substantially as described.

3. In a hot-air or ventilating register, a frame comprising side and end pieces joined together at the ends, and each having an intumed flange at the upper edge thereof, said side pieces each being formed at its lower edge with an intumed flange terminating short of the ends thereof to form notches, and said end pieces each being turned up at its lower edge and forming a closed box-bearing extending practically the full length of the piece, the ends of said bearings fitting in opposite notches of the side pieces, pivoted slats or valves supported in said bearings, a movable bar connected to all the valves and

located above one of the box-bearings, and a pivoted slotted sector for operating said bar also located above said bearing, substantially as described.

- 5 4. In an air-register, a frame comprising side and end pieces joined together at the ends, and each having an inturned flange at the upper edge thereof, said side pieces each being formed at its lower edge with an in-
o turned flange terminating short of the ends thereof to form notches, and said end pieces each being turned up at its lower edge to form a bearing the ends of which fit corresponding notches, slats or valves each hav-

ing a central longitudinal groove with loops 15 struck up from the bottom thereof and elevated above the surface of the valve, and removable pivots inserted through the loops of each valve and extending into said bearings, the bodies of said pivots being partially 20 received in said groove, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. BOECK.

Witnesses:

D. R. TARBELL,
N. P. BEEBE.