(No Model.) 2 Sheets—Sheet 1.

W. E. NICKERSON.

ELECTRICAL SWITCH FOR ELEVATORS.

No. 403,691. Patented May 21 1889.

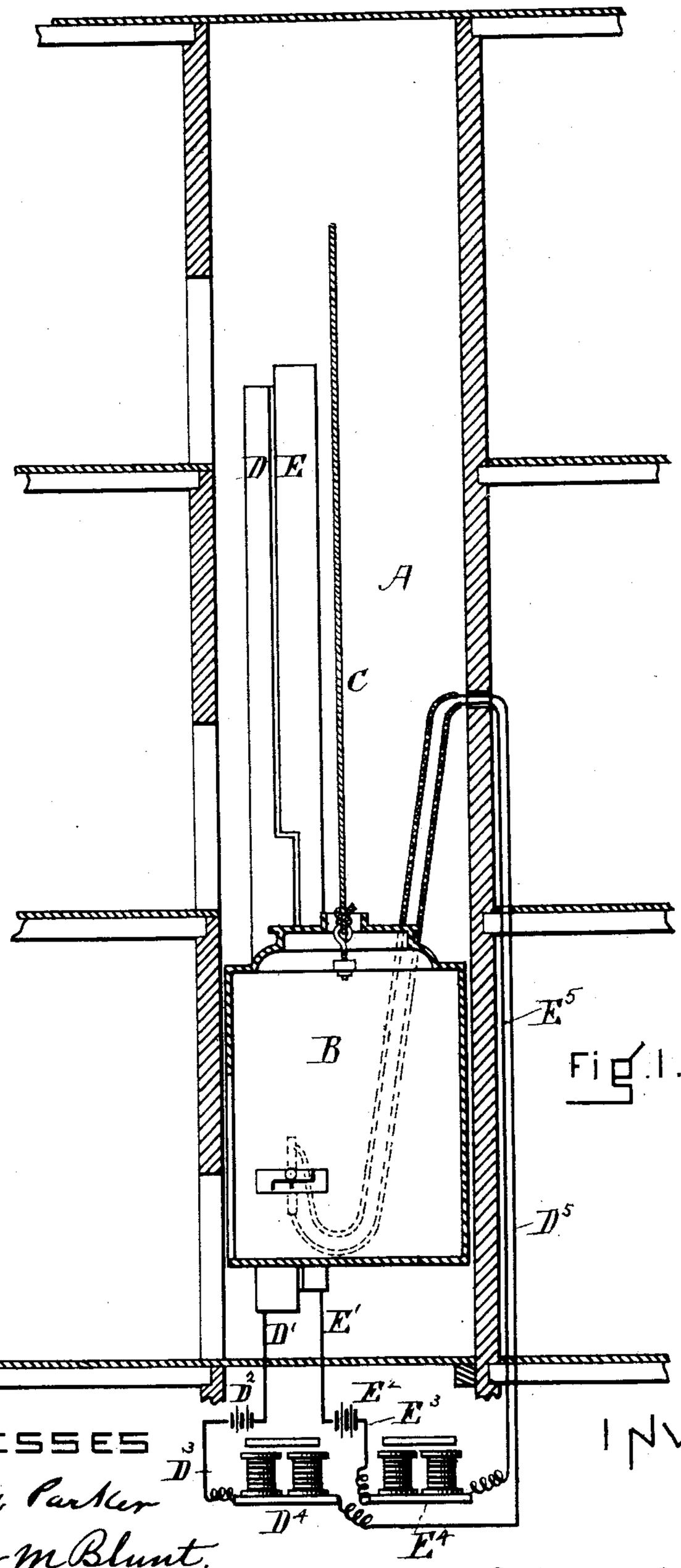

Fig. 1.

WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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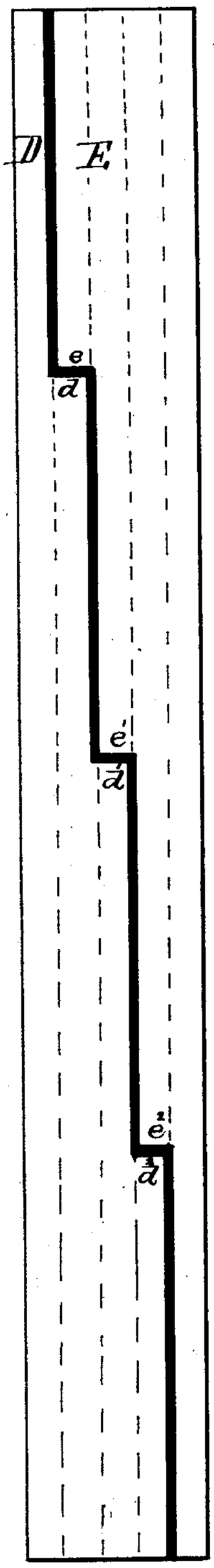

Fig. 2.

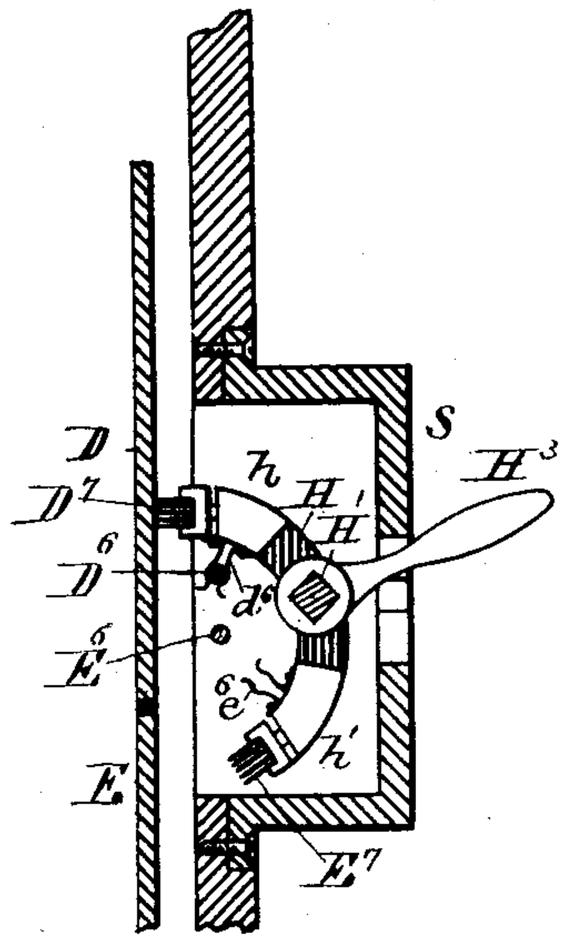

Fig. 3.

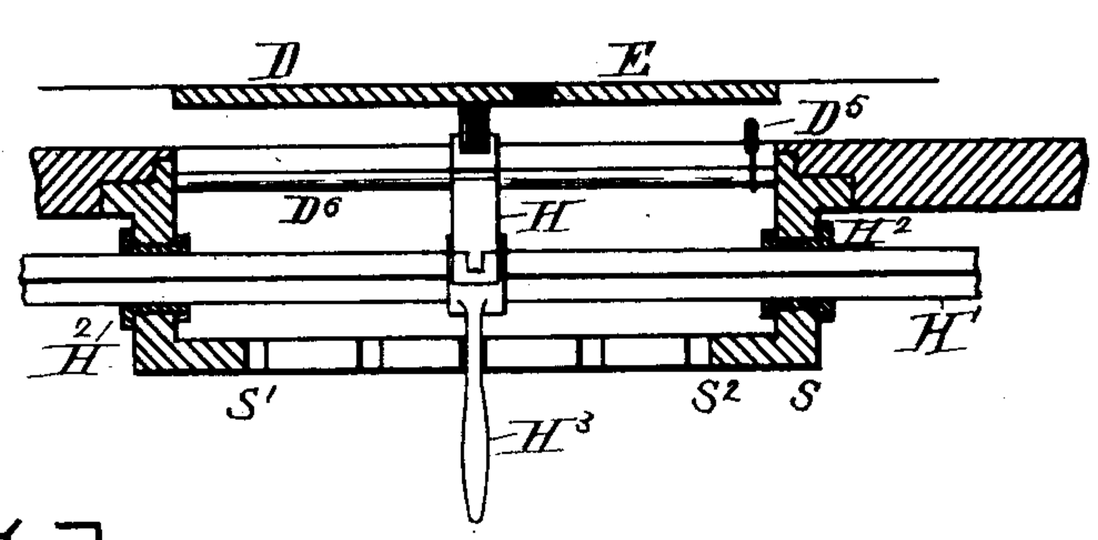

Fig. 4.

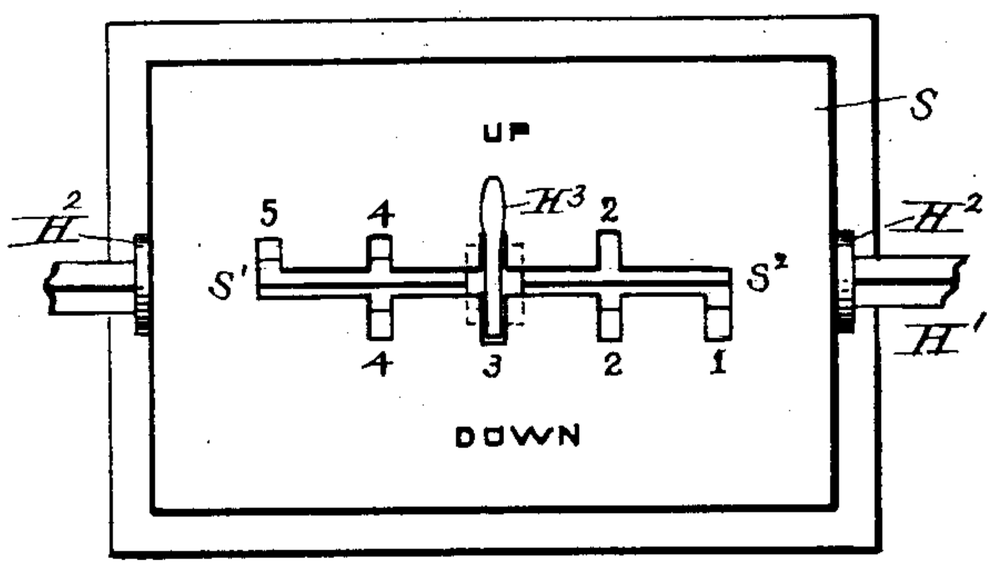

Fig. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM E. NICKERSON, OF CAMBRIDGE, MASSACHUSETTS.

ELECTRICAL SWITCH FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 403,691, dated May 21, 1889.

Application filed February 25, 1889. Serial No. 301,018. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EMERY NICKERSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electrical Switches for Elevators, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to an electric switch device located within an elevator-carriage, by means of which the attendant can cause the circuit in the electrodes to be closed or opened at will, and also to set the switch in such a manner that the carriage will stop automatically at any floor either in going up or down, the object being to insure certainty of action and to facilitate controlling the movements of the elevator-carriage. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is an elevation showing such parts of an elevator as are required for an understanding of my invention. Fig. 2 is an elevation showing (very much enlarged from Fig. 1) the fixed electrodes. Fig. 3 is a vertical section taken through the switch-box. Fig. 4 is a horizontal section taken through the switch-box. Fig. 5 is an elevation of the switch-box.

I have shown in Fig. 1 the leading features of an elevator, its carriage, and its connections, with my device attached, A being the elevator-well, B the carriage, and C the hoisting-rope.

For permanent electrodes I have two metallic strips, D and E. (Shown as an illustration in Fig. 1, but more definitely shown in Fig. 2, in which figure the insulation is indicated by black, the insulation being represented as turning, so as to form a horizontal bar at each floor.) Instead of plates D and E, (shaped as shown,) vertical rods or wires, as indicated by dotted lines in Fig. 2, could be substituted, all of one set being electrically connected to one motor and all of the other set to the other electric device. The electrode D is connected to the battery D^2 by the wire D′ and through the battery D^2 and wire D^3 to the electric device D^4. The electrode E is connected to the battery E^2 by the wire E′ and through the battery E^2 and wire E^3 to the electric device E^4.

The switch device is shown in Figs. 3, 4, and 5, and consists of a box, S, the front face of which, as shown in Figs. 4 and 5, has a longitudinal opening, S′ S^2, and cross-openings 2, 3, and 4, Fig. 5, which extend above and below the longitudinal opening S′ S^2, and also a downward opening, 1, and an upward opening, 5, so that the shank of the handle H^3 may traverse longitudinally in the slot S′ S^2 and swing in a vertical plane in the slots 1, 2, 3, 4, and 5.

H, Figs. 3 and 4, is an arc-shaped block of some insulating material, (hard rubber, for instance,) to the end of which metallic brush-pieces *h h′* are attached. Each of the end pieces, *h h′*, has attached to it a metallic brush and an electric contact device—that is, the piece *h* has a brush, D^7, and the contact device d^6, and the piece H′ has a brush, E^7, and contact device e^6.

D^6 is a fixed rod, (see Figs. 3 and 4,) which forms a terminal for the electrode D^5, (see Fig. 1,) and E^6, Fig. 3, is a fixed rod similar to D^6, but acting as a terminal for the electrode E^5, Fig. 1. The electrodes D^5 and E^5 are attached electrically to the electric devices D^4 and E^4, respectively.

The arc-piece H and its connected parts may be moved by the handle H^3 longitudinally by sliding it and its rod H′. The rod H′ passes through thimbles H^2, inserted in each end of the switch-box S, and, being round, are free to rotate, and thus allow the arc or brush piece H to turn sufficiently to admit either brush D^7 or E^7 to be made to come in contact with the fixed electrodes D or E.

It will be seen by examination of Figs. 3 and 4 that if the handle H^3 be turned upward, as indicated in Fig. 3, the brush D^7 will be in contact with one of the fixed electrodes D or E—in this case D—and that in case the handle H^3 is turned down the brush D^7 will be out of contact with either electrodes D or E and that the brush E^7 will be in contact with one of the said electrodes. When the brush D^7 is in contact with the electrode D, the contact device d^6 will be in electrical connection with the terminal rod D^6, so that a circuit is established through the electrodes D and D^5 and battery and electric device D^2 and D^4, and the electric device actuates the controlling mechanism for raising the elevator-car-

riage. When the brush E^7 is in contact with the electrode E, the contact device e^6 will be in electrical connection with the terminal rod E^6, so that a circuit is established through the electrodes E and E^5 and the battery and electric device E^2 and E^4, and the electric device actuates the controlling mechanism for lowering the elevator-carriage.

To cause the elevator-carriage to ascend to the top without stopping, the brush-holding arc-piece H is moved over to the extreme left of the opening S′ S^2 and the handle H^3 is turned up into slot 5. This brings the brush D^7 onto the left edge of the electrode D, so that the brush D^7 will not leave the electrode and the circuit through the electric device D^4 will be maintained until the carriage has reached the top floor; but if the brush-holding arc H is in a middle position, as shown in Figs. 3 and 4, and the handle H^3 turned up, as shown, then the brush D^7 will only rest on the electrode D between the bottom d^2 and d', (see Figs. 2 and 4,) running off from the electrode D at d', and thus breaking the circuit and stopping the elevator. The offsets d d' d^2 in the electrode D and the offsets e e' e^2 in the electrode E correspond to the floors of the building in which the elevator is placed.

If it is desired to lower the elevator-carriage from the top to the bottom, then the brush-holding arc H is moved to the extreme right of the switch-block S and the handle H^3 turned down into the cross-opening 1. Then the brush E^7 will occupy a place on the extreme right of the electrode E, and it can traverse down the entire length without leaving the electrode, and consequently without breaking the circuit of the electric device E; but if the brush-holding arc should be moved over to the cross-opening 2 and the brush E^7 turned down onto the electrode E, then the brush E^7 would leave the electrode E at e^2 d^2 and the circuit with the electric device E^4 would be broken and the elevator-carriage stopped in its descent.

From the above it may be seen that by moving the brush-holding arc H the elevator-carriage may be controlled in its movements and its stops, and that the place of stopping can be fixed by the attendant when he starts the carriage either for going up or for coming down.

I claim—

1. In an electric switch device for elevator-carriages, the combination of the fixed electrodes D and E, arranged in offsets, with movable switch-brushes in the elevator-carriage adapted to be laterally adjusted for contact with said electrodes, substantially as and for the purpose set forth.

2. In an electric switch device for elevator-carriages, the combination of the electrodes D and E, arranged in offsets, with the brush-holding arc H upon the elevator-carriage having brushes and contact devices adapted to move laterally, and also in and out of contact with the electrodes D and E, substantially as and for the purpose set forth.

3. In an electric switch device for elevator-carriages, the combination of the electric brush-holding arc H, having brushes and contact devices, with the switch-box S, having a lateral opening, S′ S^2, and cross-openings 1 2 3 4 5, substantially as and for the purpose set forth.

4. In an electrical switch device for elevator-carriages, the combination of the fixed electrodes D and E, arranged in offsets, with one or more switch-brushes in the elevator-carriage adapted to make and break with said electrodes, substantially as and for the purpose set forth.

WILLIAM E. NICKERSON.

Witnesses:

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MATTHEW M. BLUNT.