

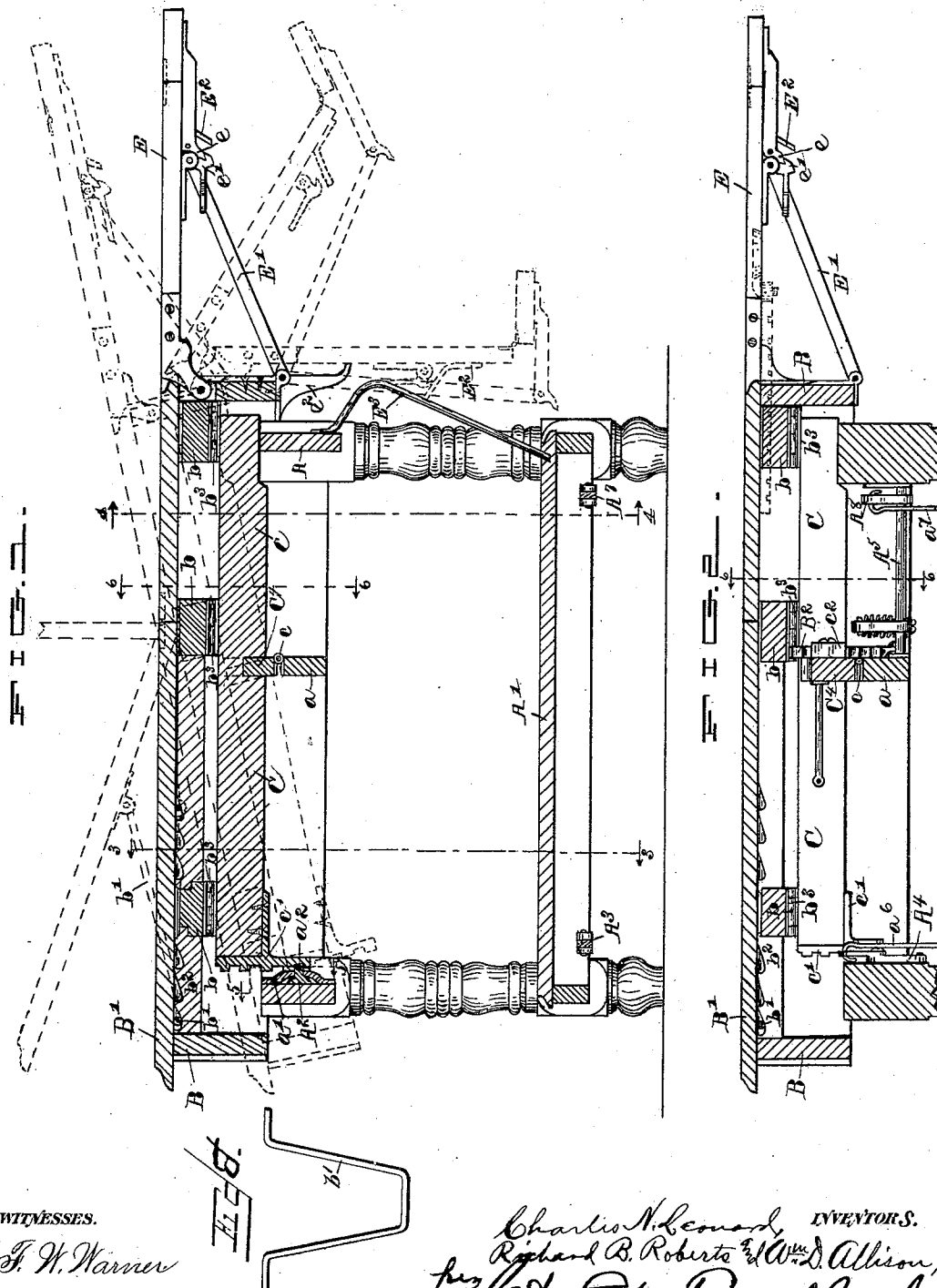
(No Model.)

2 Sheets—Sheet 1.

C. N. LEONARD, R. B. ROBERTS & W. D. ALLISON.
SURGICAL TABLE.

No. 473,122.

Patented Apr. 19, 1892.



WITNESSES.

J. W. Warner
Jawalski.

Charles N. Leonard, INVENTORS.
Richard B. Roberts & W. D. Allison,
per C. E. W. Bradford,
ATTORNEYS.

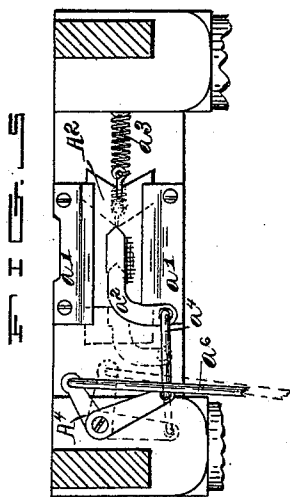
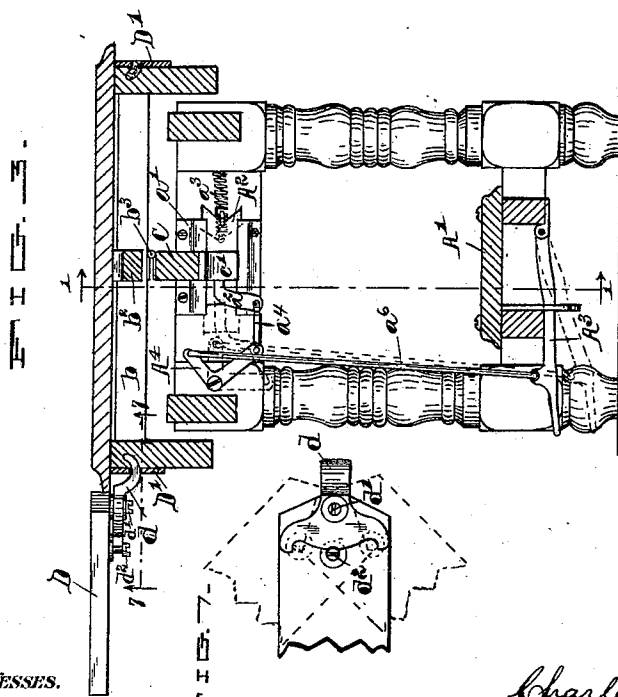
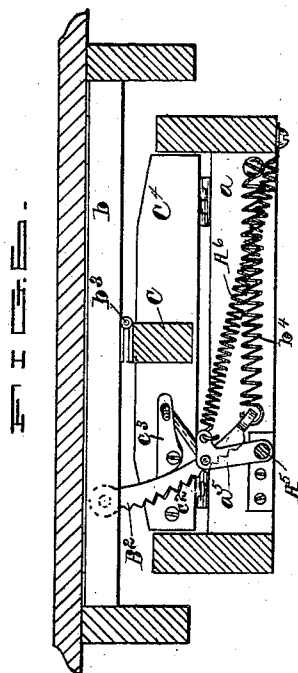
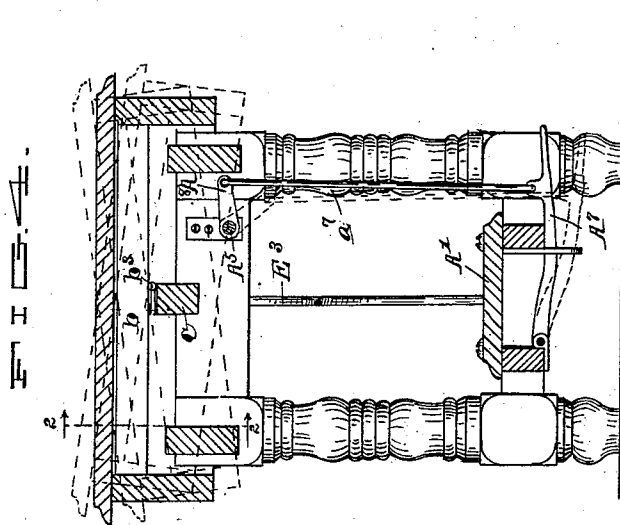
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WITNESSES.

J. W. Warner
J. A. Walsh.

Charles N. Leonard, INVENTORS.
per Richard B. Roberts, W. D. Allison,
Attorneys.
C. E. W. Bradford,

UNITED STATES PATENT OFFICE.

CHARLES N. LEONARD, RICHARD B. ROBERTS, AND WILLIAM D. ALLISON, OF INDIANAPOLIS, INDIANA; SAID LEONARD AND ROBERTS ASSIGNORS TO SAID ALLISON.

SURGICAL TABLE.

SPECIFICATION forming part of Letters Patent No. 473,122, dated April 19, 1892.

Application filed July 17, 1891. Serial No. 399,847. (No model.)

To all whom it may concern:

Be it known that we, CHARLES N. LEONARD, RICHARD B. ROBERTS, and WILLIAM D. ALLISON, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Surgical Tables, of which the following is a specification.

Our said invention relates to various improvements in the construction and arrangement of parts of surgeons' operating-tables, whereby a simple, comparatively inexpensive, and yet strong and durable structure is provided, and one which is easily operated to secure the various positions or tilts desired in use, as will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a longitudinal section through a table embodying our said invention, looking in the direction indicated by the arrows from the dotted line 1 1 in Fig. 3; Fig. 2, a similar section looking in the direction indicated by the arrows from the dotted line 2 2 in Fig. 4; Fig. 3, a transverse section looking in the direction indicated by the arrows from the dotted line 3 3 in Fig. 1; Fig. 4, a similar view looking in the direction indicated by the arrows from the dotted line 4 4 in the same figure; Fig. 5, a detail view, on an enlarged scale, as seen when looking in the direction of the arrows from the dotted line 5 5 in Fig. 1, showing the mechanism for adjustably securing the top longitudinally; Fig. 6, a similar view looking in the directions indicated by the arrows from the dotted lines 6 6 in Figs. 1 and 2, showing the mechanism for adjustably securing the top laterally; Fig. 7, a detail under side plan looking in the direction indicated by the arrows from the dotted line 7 7 in Fig. 3; and Fig. 8, a detail view illustrating the form of the brace *b'*, which supports the hinged portion of the table-top when raised up.

In said drawings the portions marked A represent the main supporting-frame; B, the frame of the top; C, an intermediate frame; D, an arm-rest, and E the foot or leg rest.

In the specification the term "forward" will be used to designate that end or portion of the table to which the foot-rest is attached, and the term "rear" will be understood as referring to the opposite end.

The frame A consists of the four legs, as is usual, and longitudinal side and cross rails securely framed together and constituting a rigid frame of sufficient strength for the purpose. A shelf A' is supported upon a frame consisting of cross-pieces extending between the legs near their lower ends, and longitudinal pieces extending between and framed to said cross-pieces. Said shelf may be used for the support of the instrument-case, cabinets, or any other service desired.

The frame B of the top consists of a rectangular structure composed of two longitudinal and two cross rails securely framed together and forming the outside edges of the top structure, a series of cross-bars *b* being secured in the structure between said end rails. The top B' is made in two parts, one of which covers the front of the frame B, or that portion to which the foot-rest is attached, and the other portion of which covers the opposite end of said frame being hinged to the forward portion at a point above the central cross-bar *b*. To the under side of said hinged portion is pivoted a brace *b'*, which preferably consists of a rod bent to form a short transverse portion in its center, with its sides extending forward at an angle to near the sides of said top, where its ends, being bent into a transverse position, are journaled in ears secured thereon. The central portion of said brace-rod is arranged to engage with notches formed in the top edge of a longitudinal bar *b*², which is framed into and extends from the central cross-bar *b* to the rear rail of the top frame. By this arrangement said hinged part of the top may be adjusted to and secured at any angle desired, as plainly indicated by dotted lines in Fig. 1.

The intermediate frame consists of a central bar C, extending longitudinally of the table, its forward end being adapted, when the table-top is in a horizontal position, to rest on the forward rail of the frame A and its rear end extending back to a point just in

front of the rear rail of said frame, and a transverse bar C^4 , framed thereto about midway between its ends, which is hinged by hinges c to the upper edge of a similar bar a , extending between the side rails of the frame A in a position a little forward of the middle of the structure. The hinges c , by which said frame C is hinged to said cross-bar a , are formed so that there will be a space between the two parts of which they are composed when the table-top is in a horizontal position, thus permitting the frame C and the top which is supported thereon, as will be presently described, to tilt back, as indicated by dotted lines in Fig. 1. To the rear end of the longitudinal bar of the frame C is firmly secured a T-shaped rack-bar c' , the end of said bar C resting in one of the angles of said T, which is thus fastened to two sides thereof, forming a very secure connection. To the front side of the rear rail of the frame A is secured a housing a' , having a sliding plate A^2 mounted therein, with a pawl a^2 formed on its front side, which is adapted to engage with the notches on the rear face of said rack-bar c' . Said sliding plate A^2 is normally held forward, with the pawl a^2 , formed on the front side thereof, in engagement with said rack-bar c' , by means of a spring a^3 , one end of which is connected with the forward end of said plate and the other end with the side of the frame. Said plate is drawn back and the pawl disengaged, when desired, by means of a foot-lever A^3 , hinged at its forward end to one of the longitudinal bars of the frame supporting the shelf A' and connected near its outer end by a connecting-rod a^5 with one end of a bell-crank lever A^4 , which is pivoted at its angle to the inner face of one of the legs and at the other end is connected by a link a^4 to the rear end of the pawl a^2 , formed on the front side of said plate A^2 , said rear end being curved down, as shown. By this arrangement, as will be readily understood, the said frame C and the table-top mounted thereon are enabled to be held either in a horizontal position, as shown in whole lines in Fig. 1, or may be adjusted to and secured in the position indicated by dotted lines or any of the various intermediate positions.

To the top edge of the longitudinal bar C the top frame is secured by means of hinges b^3 , one of said hinges being secured between each of the cross-bars b thereof and the adjacent part of said bar. The hinges b^3 are of a construction similar to the construction of the hinges c , which permit said frame to be rocked in either direction on said hinges, thus permitting the top to be inclined in either direction, as indicated by dotted lines in Fig. 4. Said top is secured in the transverse position desired by means of a curved depending rack-bar B^2 , pivoted at its upper end to the central bar b , with its outer face serrated or notched and adapted to engage with a similarly-formed face of a plate c^2 , rigidly secured to the end of the cross-bar C^4 of the interme-

diate frame. A lever c^3 is pivoted to said cross-bar and formed with a cam-face on one end, adapted to bear against the inner edge of said bar B^2 and force it into engagement with said plate c^2 , thus securing it in position. To the lower end of said bar B^2 is connected one end of a coiled spring b^4 , the other end of which is connected to the frame, said spring thus normally operating to pull said bar out of engagement with the plate c^2 when released. The outer end of the cam-lever c^3 is connected by means of a link to a bell-crank a^5 at its angle, which is secured to and extends up from a short rock-shaft A^5 , which is journaled in suitable bearings, one on the front side of the cross-bar a and the other on the rear side of the front rail of the frame A. To the end of the horizontal arm of said bell-crank is connected a spring A^6 , of greater tension than the spring b^4 , the other end being attached to a fixed point on the frame. Near the forward end of the rock-shaft A^5 is secured an outwardly-projecting arm A^8 , the point of which is connected by a connecting-rod a^7 with a foot-lever A^7 , hinged at its forward end in a suitable bearing secured on a part of the frame supporting the shelf A' near the forward end thereof. By this arrangement the spring A^6 , being of a greater tension than the spring b^4 , operates to normally hold the cam-face of the lever c^3 firmly pressed against the inner edge of the arm B^2 , holding it firmly in engagement with the notches of the plate c^2 , and thus securely locking the top of the table in whatever side inclination it may be adjusted. When it is desired to change the adjustment, the foot-lever A^7 is depressed, which rocks the rock-shaft A^5 outwardly, throwing the bell-crank a^5 in the same direction and through the connecting-link lifting the cam-face of the lever c^3 away from the rack-bar, when the spring b^4 operates to withdraw said bar from engagement with the plate c^2 , permitting the table-top to be tilted to the position desired, when the foot-lever is released and the spring A^6 , by reason of its greater tension, operates to again force the notched bar B^2 into engagement with the notched plate c^2 , thus locking the top in the position. The notches in the plate c^2 and in the bar B^2 being pointed, as shown, the two faces will readily engage in whatever position the top may be adjusted, as will be readily understood.

The arm D is of suitable width, having a plate with a hooked-shaped dog d secured to its under side, which is adapted to be inserted in a similarly-formed socket in the plate D' , secured to the side of the table. Said plate is preferably pivoted to the under side of said arm-rest on a pivot d' and has a wide fan-tail-shaped end, the edge of which is an arc of a circle having the pivot d' for its center. Hooked-shaped corners are formed at each side thereof, as shown, and a stop-pin d^2 is secured centrally in said arm-rest between said corners of the plate, its head be-

ing preferably formed enlarged to engage the edge of said plate and steady it in position. By this arrangement the arm may be adjusted to any angle desired within the limit of the stops thus provided, it being held in position by the weight of the arm bearing down and causing the dog *d* to impinge or bite upon the socket on opposite sides at different points, as will be readily understood.

10 A foot-rest *E* is also hinged to the front side of the table, being supported in a horizontal position by means of a jointed brace-rod *E'*, so arranged that the joint thereof will be above the line of the direction of the strain caused by the weight thereon, the end of the long part of which is hinged to the lower corner of the front rail of the top frame *B* and the end of the short part of which is secured to the forward or hinged part of the foot-rest. By this arrangement as the foot-rest is raised from a vertical to a horizontal position its hinged part is straightened out in line with the main part, and as it is lowered said hinged part is turned to a position at right angles with the main part when down. A lip *e* is formed to project back from the forward portion of the brace, with which a catch *e'*, pivoted on the under side of the main portion of the foot-rest, engages when in the vertical position, thus holding the joint in position to support the parts, guarding against any accidental knocks or jars which might otherwise disturb its position. To the back side of said foot-rest is secured a bearing-plate *E²*, and a curved supporting-brace *E³* is secured to the forward portion of the frame *A*, its curved part extending forward therefrom and serving as a rest against which the plate *E²* may bear. The outward inclination of said supporting-brace is sufficient to still furnish a support against which the plate *E²* may bear when the table-top is tilted back to any position to which it may be adjusted. By this means the weight of the person stepping upon said foot-rest is largely thrown against said supporting-brace instead of entirely upon the hinges of the foot-rest, and said foot-rest is thereby prevented from being broken from its hinges, as is often the case when no additional support is provided. Brackets *e²* are also secured to the front corners of the frame *B*, which are curved forward and serve as further supports against the twisting strain upon the foot-rest when the weight is placed upon one side thereof.

55 A stirrup-iron may also be used in connection with the table, as indicated by dotted lines in Fig. 2, if desired; but such iron, forming no part of our present invention, is not particularly described herein.

The operation of the table will be readily understood from the foregoing description, it being only necessary when a longitudinal tilt is desired to press down upon the foot-lever *A³*, which releases the pawl from the bar *c²* on the rear end of the frame *C* and permits any adjustment desired, and any side adjust-

ment or tilt being secured by pressing down the foot-lever *A³*, as has been fully described. When it is desired to support the subject being operated upon at any degree of elevation, the hinge portion of the top *B'* is lifted up to the angle desired, and there it is held by means of the brace *b'*, it being possible to secure this portion of the top in a vertical position, if desired, thus converting the table into a chair for temporary uses when desired.

Having thus fully described our said invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a surgical table, the combination of the main frame, the intermediate frame hinged to a cross-bar of said main frame on hinges extending transversely thereof, the rear end of which extends to a point in front of the rear rail of the main frame, the rack-bar secured to the rear end of said intermediate frame, the sliding plate having a pawl on its face, mounted to slide in a housing on the front side of the rear rail of said main frame, with its pawl adapted to engage with the notches of said rack-bar, means for operating said sliding plate back and forth, and the top frame hinged by means of longitudinally-arranged hinges to the top of said intermediate frame, and means, substantially as described, for holding said top frame in the desired transverse adjustment.

2. In a surgical table, the combination of the main frame, the intermediate frame hinged to a cross-bar of said main frame on hinges arranged transversely thereof, a rack-bar secured to the rear end of said intermediate frame, the plate *A³*, mounted to slide in a housing on the front side of the rear rail of the main frame and formed with a pawl *a²* on its front face, adapted to engage with said rack-bar, the spring *a³* for holding said plate forward with the pawl in engagement with said rack-bar, the elbow-lever *A⁴*, pivoted on the frame, with one end connected to said sliding plate and the other end connected to a foot-lever, whereby said plate is drawn back to disengage said pawl when desired, and the top frame and table-top mounted on said intermediate frame, all substantially as set forth.

3. The combination, in a surgical table, of the main frame, the intermediate frame hinged to tilt longitudinally, means for supporting said intermediate frame in a fixed position, the top frame hinged to said intermediate frame on hinges secured longitudinally thereof, the serrated bar *B²*, depending from said top frame, a serrated plate secured rigidly to a portion of the intermediate frame and arranged to engage said depending bar, the spring *b⁴*, connected at one end with the lower end of said depending bar and at the other end with the frame, the cam-lever *c³*, arranged as described and connected with the arm *a⁵* on the rock-shaft *A⁵*, the spring *A⁶*, connected at one end with said arm *a⁵* and at the other end with the frame, and the arm *A⁸*, also formed on said rock-shaft and connected by a rod

with the foot-lever A^7 , said foot-lever suitably hinged to the lower portion of the frame, said spring A^6 being of a greater tension than the spring b^4 , all substantially as described, and for the purposes specified.

4. In a surgical table, the combination of the main frame, the intermediate frame hinged to a cross-bar of said main frame to tilt longitudinally thereof, the rack-bar secured to the rear end of said intermediate frame, the sliding pawl mounted on the main frame and adapted to engage with said rack-bar, means for operating said pawl, the top frame hinged to said intermediate frame to tilt transversely thereof, the depending rack-bar B^2 , hinged to one side of said top frame and adapted to engage with a fixed notched plate on the intermediate frame, and means for withdrawing said bar from and forcing it into engagement with said plate, as desired, all substantially as set forth.

5. The combination, in a surgical table, with the top frame thereof, of the arm-rest D , having a plate with a curved dog d pivoted thereto, said plate being formed with a curved or recessed edge with shoulders at or near each side, and a pin inserted in the under side of said arm-rest against said edge and between said shoulders, whereby said arm-rest is permitted a limited motion, said dog being inserted in a correspondingly-formed socket secured in the side of said top frame, all substantially as set forth.

6. The combination, in a surgical table, of the foot-rest hinged to its front side, the bearing-plate E^2 , secured on the rear side thereof, and a curved supporting-brace E^3 , secured to and extending out from the front side of said

frame and arranged to support said foot-rest when in a closed-down position through said bearing-plate E^2 , substantially as set forth.

7. The combination, in a surgical table, of a foot-rest hinged to its front edge and a jointed brace for supporting said foot-rest, said foot-rest being composed of two parts hinged together and said supporting-brace being formed of a long and short part, the short portion of which is fixedly connected with the front portion of the foot-rest and the long portion of which is hinged to the frame of the table, a lip e being formed to extend back from said short portion, and a catch e' being pivoted to the under side of the main portion of the foot-rest and arranged to engage therewith when said foot-rest is raised to a horizontal position, whereby it is held against accidental displacement, substantially as set forth.

8. The combination, in a surgical table, of a foot-rest hinged to its front edge and formed in two parts hinged together and the brace E' , hinged to the top frame at one end and secured to the forward portion of said foot-rest at its other end, said brace being formed with a joint at a point which when turned up will be above the line of the direction of the strain thereon.

In witness whereof we have hereunto set our hands and seals, at Indianapolis, Indiana, this 26th day of May, A. D. 1891.

CHAS. N. LEONARD.
RICHARD B. ROBERTS.
WM. D. ALLISON.

[L. S.]
[L. S.]
[L. S.]

Witnesses:

E. W. BRADFORD,
FRANK W. WOOD.