

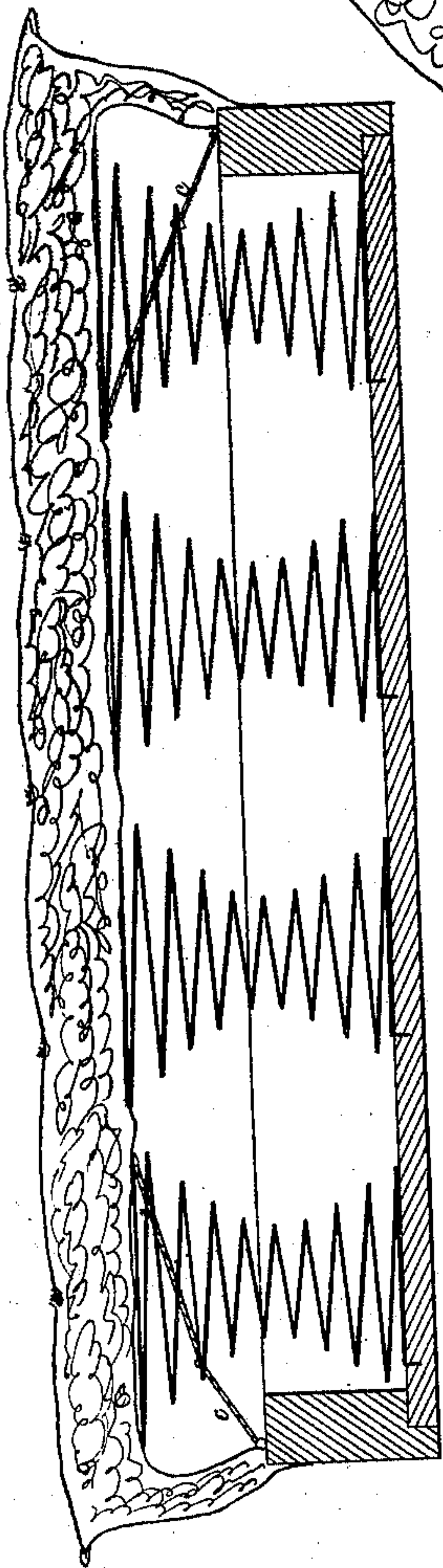
*S. P. Kittle.*

*Folding-Box Spring-Mattress.*

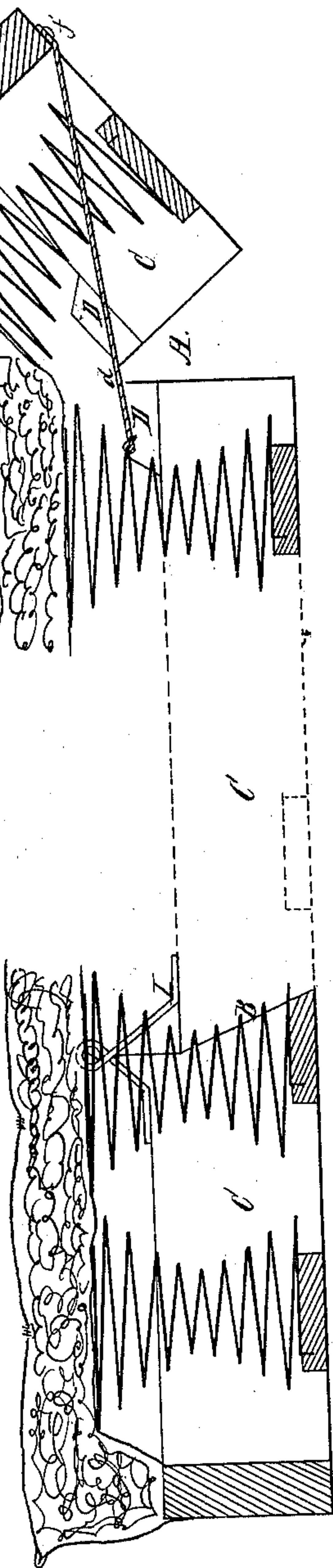
*No 97,522.*

*Patented Dec. 7. 1869.*

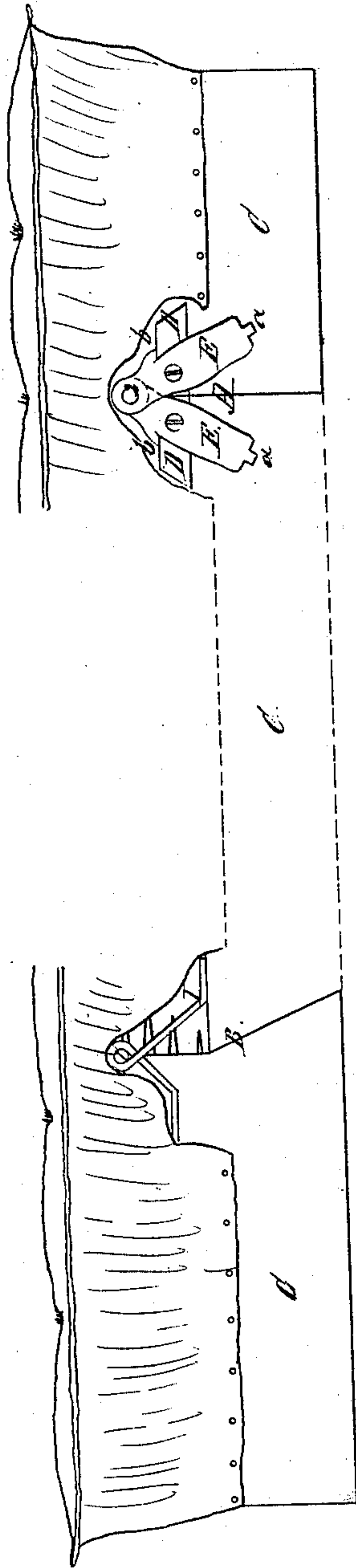
*Fig 3.*



*Fig. 2.*



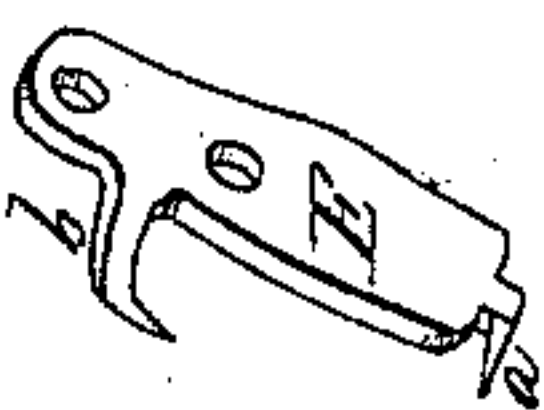
*Fig 1.*



*Fig. 4.*



*Fig. 5.*



*Witnesses.*

*J. D. Lang*  
*& R. P. Smith*

*Inventor*

*S. P. Kittle*



# United States Patent Office.

SAMUEL P. KITTLE, OF BROOKLYN, NEW YORK.

Letters Patent No. 97,522, dated December 7, 1869.

## IMPROVED FOLDING-BOX SPRING-MATTRESS.

The Schedule referred to in these Letters Patent and making part of the same

*To all whom it may concern:*

Be it known that I, SAMUEL P. KITTLE, of the city of Brooklyn, in the county of Kings, and State of New York, have invented certain new and useful Improvements in Folding-Box Spring-Mattresses; and I do hereby declare that the following is a full, clear, and exact description thereof, and of their mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification.

The nature of my invention or improvements consists in so constructing a folding-box spring-mattress that when folded near or toward its ends, the parts so folded will lie substantially parallel with, or close upon the central unfolded part, and also so that the elasticity of the mattress, or the action of the springs in the central part of the mattress, will extend outward and over the fixed part or box to the full edge of the mattress, and also in so securing the springs in the body of the mattress that they will retain and be kept in a vertical position when the head or bolster part of the mattress is raised in any of the known methods.

Figure 1 is a side view of a mattress, broken away in the middle, so as to show the formation of the central side-piece, the covering being also removed, so as to show the form of the hinges on which it folds.

Figure 2 is a vertical sectional view, lengthwise, broken away in the middle, showing the head elevated, and also the means by which the springs are kept in a vertical position, and also the raised or fixed portion of the box at the foot, and one of the hinges.

Figure 3 is a vertical central sectional view, cross-wise, showing the arrangement of the springs by which elasticity is secured to the extreme edge of the mattress.

Figure 4 is a top view of one of the hinges, a side view of which is shown at 1, figs. 1 and 2.

Figure 5 is a perspective view of one side or leg of the hinge, shown at 2, fig. 1.

My improvements have reference to that kind of folding-box spring-mattresses which are made in three parts, or fold in but two places, and which fold or have their joints near or toward either end.

The folding-joint A, toward the head of the mattress, is placed at such a part or at such a distance from the upper end that when that end of the mattress is elevated, as shown in fig. 2, it will form an easy and comfortable bolster or pillow for the head, and the lower folding-joint B is placed at such a distance from the foot that when the two ends are folded over on top of the central part, they together will be about the length of the central part. Such an arrangement or construction secures in the central part of the mattress, where the greatest weight presses, a single or continuous side-piece, thus giving greater strength, and also avoids any inconvenience from the

position or projection of the hinge, as when the mattress folds in the centre.

Box mattresses have heretofore been constructed in three parts, and arranged so as to fold near each end, but the hinges or turning-points on which they have folded have been so arranged with respect to, or upon the sides of the box, that the ends of the mattress, even when partially stuffed, could not turn or fold entirely over on the central part, but only partially so, thus rendering the mattress less compact and more bulky, and therefore more inconvenient and expensive in transportation.

Box mattresses have also been made to fold near the ends, the box being made in five separate pieces, the parts between each end-section and the middle section being short and of a length just sufficient to cause the end-section to fold closely upon the middle one, but this construction is faulty, because increasing the number of parts of the box.

These difficulties or objections I overcome and remove by elevating the turning or folding-points or hinges above the general level of the upper edges of the side-pieces of the box C, as shown in figs. 1 and 2, and by also reducing the depth of the central side-piece by cutting away the upper edge thereof, as shown by the dotted lines in fig. 1, so that when the ends are turned over upon the central part, such central part can sink lower than it otherwise would, and thus permit the end-pieces to lie more closely upon it, and the whole mattress be more compactly and securely packed or confined for transportation.

With such construction, the mattress, when folded and prepared for transportation, lies in parallel parts, or nearly so, and thereby is rendered more compact, and only the bottom is exposed.

To secure the proper elevation to the turning points or folding centres, additional pieces D, fig. 1, may be secured to the top of the side-pieces C, or such elevations may be made a part of the side-pieces, or the hinges themselves may be extended upward. It will be at once apparent that by so elevating such turning points, the ends will more easily and naturally turn over and lie flat upon the central part. Such turning points may be so elevated as to render unnecessary any reduction of the central side-pieces, as before described, but I prefer to use the two devices in combination, thereby elevating the turning points not quite as much.

The hinge 1 is an ordinary hinge, the legs being so shaped as to fasten to the side-pieces of unequal height, and also at the same time elevate the turning point. The form of the hinge 2 is peculiar, whereby it has greater firmness and stability when fixed to the wood, and only requires a single screw in each leg or leaf to secure it.

The legs or plates E are made of malleable or soft



iron, so that they can be bent without breaking, and are formed with a projecting point or spur, *a*, at the bottom, as shown at fig. 5, turning inward at right angles with the face, and having also, toward the upper end, and projecting from the edge or side, another and a larger projection or arm, *b*.

The spur or point *a* is intended to be driven into the side of the box, as shown in fig. 1, and the side-spur or finger *b* is to be bent over and down upon the inside of the upper edge of the box, as also shown in fig. 1, or may be fastened by a staple driven over it.

With such projections, and so attached to the box, only a single screw is required in each leg or leaf of the hinge. The spur *a* holds the bottom fast, and prevents the hinge lifting, and the upper spur *b* assists the action of the screws, and, in fact, makes the hinge equivalent to a saddle-hinge, extending down upon and fastened to each side of the box.

To secure elasticity at, or extend it to the very edge of the mattress in its central part, and thus render the mattress alike easy and pleasant over its entire central surface, the springs placed along the sides of the mattress, in its central portion, may be made with a broader bearing-surface than base, or may be drawn outward over the edge of the box by cords, as shown at *c*, fig. 2, so that the top of the spring will project over the sides of the box and to the edge of the mattress. Such an arrangement secures an elastic spring to the full edge of the mattress, in its central part, where the greatest width of easy surface is most required.

The particular form described of the central side-pieces of the box, that is, making the central part of such pieces lower than their extreme ends, also materially favors the use of springs having a broader top than base, or such an arrangement of the springs as brings them to the very edge of the box. In ordinary box mattresses, the bearing-surface of the springs does not generally reach within from three to four or five inches of the side of the box.

In box-spring mattresses, folding at or near their ends, or having their upper ends elevated to form a bolster or pillow, it has heretofore been found, when the head is so elevated or turned over, that the top or upper parts of the springs in the body of the mattress are pushed or inclined from their vertical position toward the foot of the bed, thereby diminishing or destroying the elastic force of the springs, and rendering the mattress less easy and pleasant.

This change in the position of the springs is most apparent in stuffed mattresses, but also exists in those containing only springs, when the upper end is elevated. I obviate or overcome this tendency by attaching a cord or brace, *d*, to each spring or coil, immediately below the joint *A*, and at a point about on a level with the turning-point or centre of the folding-joints *2*, the other end of such cord being attached to or near the bottom of the box, as shown at *f*, fig. 2.

When the head of the mattress is elevated, as shown in fig. 2, the cord *d* tends to draw the spring toward the upper end, or rather prevents it from being carried or pushed toward the lower end, and thus keeps it in its proper vertical position, or nearly so.

The cord *d* being fastened to the coil or spring, about on a level with the turning-centre of the mattress, the radius or length of such cord is kept substantially the same, when the head of the mattress is elevated, as when it is horizontal, and the power or tension of such cord is thus continually to prevent the springs being pressed downward and out of their proper vertical position.

Fewer springs are also placed at the lower end of mattresses than in the middle and at the upper end. To preserve due elevation and uniformity of surface at the lower end, where a less number of springs are applied, I make the side-pieces *C* considerably higher, as shown in figs. 1 and 2, than they are in the centre or at the upper end of the mattress. By having the sides of the box thus elevated in the part mentioned, the mattress is better sustained, and better preserves its proper form and level.

As the springs in the body of the mattress, and below the bolster part, are all connected together by the canvas or webbing or by cording, and also by the stuffing over them, it is necessary to secure or brace only the first series, below the turning-joints *A*, to the bottom of the box, by means of the cord or fastening *d*, in order to keep all the springs in their proper vertical position.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in folding-box spring-mattresses made in three sections, of the hinges *E E*, as and for the purposes set forth.

2. In folding-box spring-mattresses, the sides of the box of less height in the middle than at the ends, in combination with so placing the springs in such central section that the tops of such springs will project over or stand close against the sides of the box, for the purposes set forth.

3. In folding-box spring-mattresses, so made to allow of one end being elevated to form a bolster, bracing the upper row or series of springs in the body of the mattress, by extending a cord from the upper part of such spring forward and downward to or near the bottom of the bolster-section of the box, as and for the purposes set forth.

4. In combination with folding-box spring-mattresses, the use of the hinge *E E*, for connecting the different sections of the box, constructed as described.

S. P. KITTLE.

Witnesses:

S. D. LACE,

W. R. RONALDS.