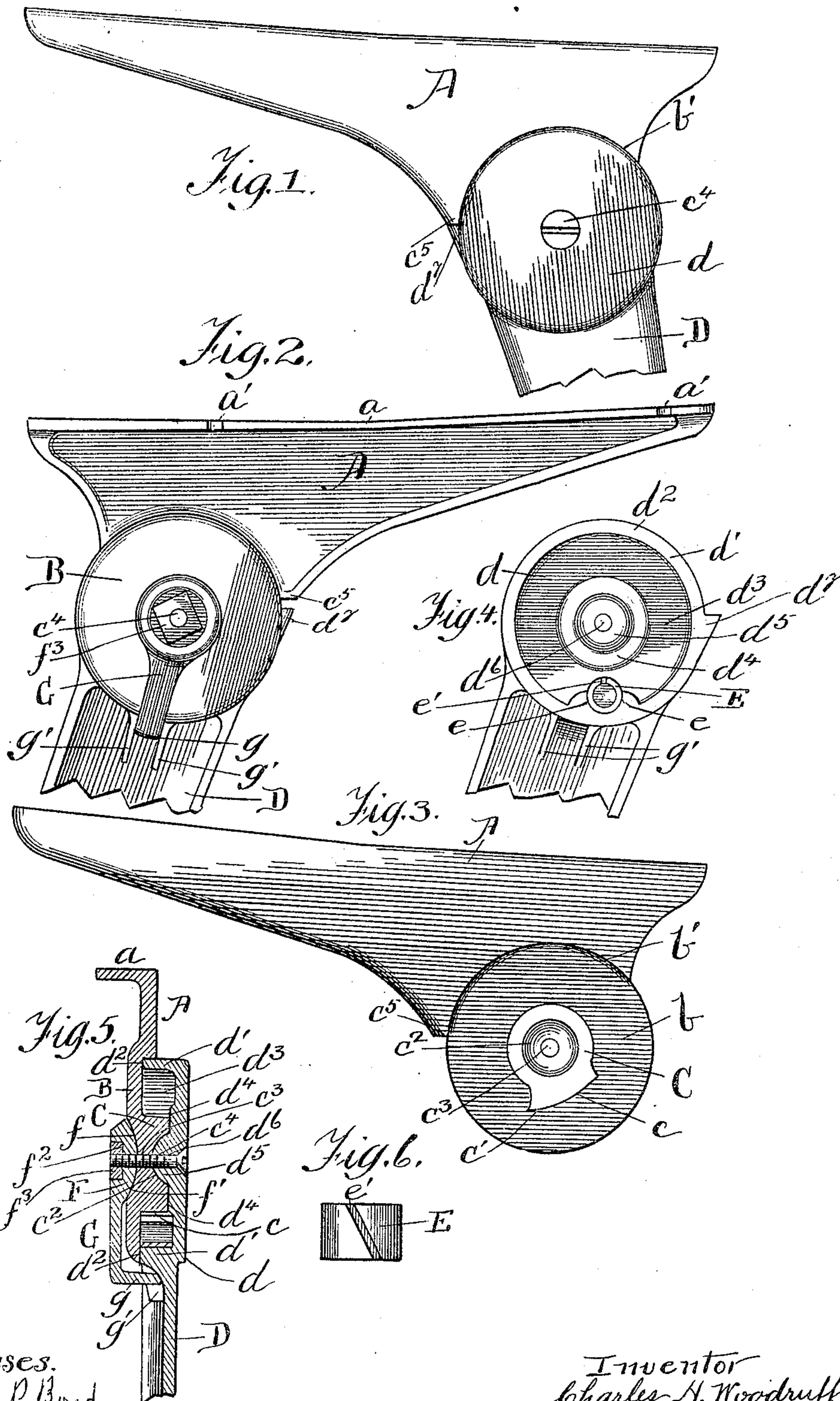


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SEAT HINGE.

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# UNITED STATES PATENT OFFICE.

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## SEAT-HINGE.

No. 803,261.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, CHARLES H. WOODRUFF, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Seat-Hinges, of which the following is a specification.

In the art to which this invention relates great difficulty has hitherto been experienced in providing a pivotal mounting for folding seats as applied to school-desks and opera-chairs by reason of the fact that the lowering of the seat for use produced a harsh and disagreeable noise and at the same time subjected the mounting to great strain and wear; and the present invention is intended to obviate this difficulty and at the same time produce a mounting which is noiseless in operation and of the simplest possible construction and at the same time strong, neat, and durable.

A further object of the invention is to so construct the parts that they may be readily and easily assembled and when assembled will not become disarranged or impaired by long and continued usage. It has been customary hitherto to apply rubber or leather washers or bumpers to minimize the difficulty; but such appliances have proved unsatisfactory, for the reason that they quickly wear out or become displaced after a short time, allowing the metallic portions of the mounting to strike together and produce a sharp rasping noise.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings illustrating the invention, Figure 1 is an exterior face view of the pivotal mounting as applied to a desk-seat; Fig. 2, an interior view of the same; Fig. 3, a view of the movable section, showing its interior arrangement; Fig. 4, a similar view of the fixed section; Fig. 5, a sectional view showing the parts in operative relation, and Fig. 6 a side view of the split ring against which the parts are adapted to contact.

The mounting of the present invention is constructed to have a seat-supporting arm A of suitable length, provided with an inwardly-extending flange *a*, having slots or recesses *a'* therein for the securing of a seat-bottom thereto, and said arm is provided, near its inner extremity, with a downwardly-extending disk-shaped portion B, formed integral therewith

and having an interior contact-face *b*, cut or formed to leave a semicircular ledge or shoulder *b'* at its point of jointure with the seat-supporting arm, and said disk is provided at its center with a boss C, having on its lower side a cam-surface *c*, which cam-surface is eccentric with respect to the curvature of the disk and outwardly and downwardly projects toward its forward end *c'*, as best shown in Fig. 3. The boss is further provided with a circular recess *c''* at its center, and in the center of the recess is a circular opening *c'''* for the passage therethrough of a pivot-screw *c''''*, which unites the parts together. At the forward end of the semicircular ledge or shoulder *b'* is an abutment *c'''''* for limiting the movement of the arm.

The movable section above described coöperates with a fixed section D, which forms a portion of the mounting for the seat and, as shown, is broken off from the remainder of the mounting. The section D is provided with a circular head *d* of a size corresponding to the circular disk hitherto described, and the circular head is adapted to fit within the space below the semicircular shoulder *b'* and is provided with a flange *d'*, having a contact-face *d''*, adapted to abut against the acting face of the circular disk, and said flange surrounds a recess *d'''*, in the center of which is a raised boss *d''''*, which is adapted to abut against and lie in facial contact with the recessed boss *c* of the companion section, and the boss *d''''* is provided at its center with a semispherical elevation *d''''''*, adapted to move within the curved recess *c''*, and through the elevation is a hole *d'''''''* for the passage of a pivotal screw when the parts are assembled. The circular rim or flange *d'* is provided on its edge with an abutment *d'''''''*, adapted to coöperate with the abutment on the movable section to limit the movement of the parts and form a firm and secure contact when the seat is fully depressed, as shown in Fig. 1, by the weight of the body upon the seat.

At the interior lower side of the circular flange is a socket *e*, and within the socket is located a circular spring E, having a diagonally-extending split *e'* in its side, and said spring is composed of steel and is adapted to be slightly compressed when pressure is brought to bear thereon, but has sufficient resiliency to withstand a large amount of pressure, and is adapted to prevent the contact of



the two abutments as the seat is lowered, but allow of such contact when the seat is further compressed by the weight of the occupant. The split spring-ring is of a diameter to project inwardly beyond its socket into the interior of the recess in the fixed section, and the cam on the movable section is so formed that when the arm and seat carried thereby are raised the cam will be out of contact with the split ring, but in close enough proximity thereto to prevent its displacement from its socket, and when the arm is lowered the cam-face will bear against the split ring, and the movement of the arm as the seat is lowered will be prevented after it has reached the position shown in Fig. 2, in which the abutments are out of contact with one another; but when the weight of the occupant is brought to bear upon the seat the arm will be depressed very slightly until it assumes the position shown in Fig. 1, in which the abutments are in contact, thereby gradually compressing the ring and bringing the abutments into easy contact with one another. The final movement of the seat, however, will be so slight and the resistance of the spring so strong that no jarring or rasping noise will be heard, and at the same time the wear upon the parts will be greatly lessened by the freedom from vibration or jarring, which vibration or jarring will be entirely obviated by the presence of the spring-ring and the sliding movement of the cam thereonto.

The circular disk on the movable section is provided on its non-acting face with a circular recess  $f$ , (best shown in Fig. 5,) within which fits a disk F, having a rounded inner face  $f'$ , and the disk, as shown, is provided in its center with a square recess  $f^2$  for the insertion of a nut  $f^3$ , through which passes the screw-pivot  $c^4$ , and the disk is provided with an arm G, outwardly extending and provided on its end with an inwardly-extending finger  $g$ , held between ears or flanges  $g'$  on the fixed section, which arrangement prevents the screw-pivot from turning and the nut from becoming loosened by the movement of the parts when in use.

From the foregoing description it will be seen that the parts are of the simplest possible construction and so arranged that they can be readily assembled and when so assembled are all held in place by a single pivot and that the spring-ring is held within its socket without additional fastening means by the arrangement of the adjoining parts, which are rendered noiseless in their operation by the presence of the spring.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a seat-hinge, the combination of fixed and movable sections pivoted together, the fixed section being provided with a socket, a

split-ring spring fitted into the socket and held therein against travel with respect to the axis of the hinge, a cam on the movable section adapted to contact with the split-ring spring when the movable section is lowered and have its movement arrested by such contact and cooperating abutments on the fixed and movable sections for finally limiting the movement of the movable section after the spring has been compressed by the cam, substantially as described.

2. In a seat-hinge, the combination of a fixed section provided with a recessed circular head, a socket located on the interior of the recessed head, a split-ring spring located within the socket and held therein against travel with respect to the axis of the hinge, and of a size to partially project inwardly therefrom, an abutment on the exterior of the circular head, a movable section adapted to have a seat secured thereto, an abutment on the movable section adapted to contact the abutment on the fixed section when the parts are finally depressed, a disk on the movable section recessed to leave a circular shoulder adapted to encircle the edge of the circular head, a boss on the disk having on one side an outwardly-projecting cam-face adapted to contact the projecting portion of the split-ring spring when the movable section is initially depressed and adapted to compress the split-ring spring when the parts are finally depressed and the abutments brought in contact with one another, and a pivot passing through the two sections for securing them together, substantially as described.

3. In a seat-hinge, the combination of a fixed section provided with a recessed circular head having a circular wall or flange forming a contact-face, a socket on the inner face of the circular wall or flange extending into the recess in the head, a split-ring spring located within the socket and held therein against travel with respect to the axis of the hinge, and of a size to partially project inwardly therefrom, an abutment on the fixed section, a movable section provided with an abutment adapted to contact the abutment on the fixed section when the parts are finally depressed a pivotal mounting for the two sections, and an outwardly-projecting cam on the movable section adapted to contact the projecting portion of the split-ring spring when the movable section is initially depressed and adapted to compress the split-ring spring when the parts are finally depressed to bring the two abutments in contact with one another, substantially as described.

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