No. 841,766. PATENTED JAN. 22, 1907.

L. H. CAMPBELL.

SCHOOL DESK.

APPLICATION FILED JUNE 11, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

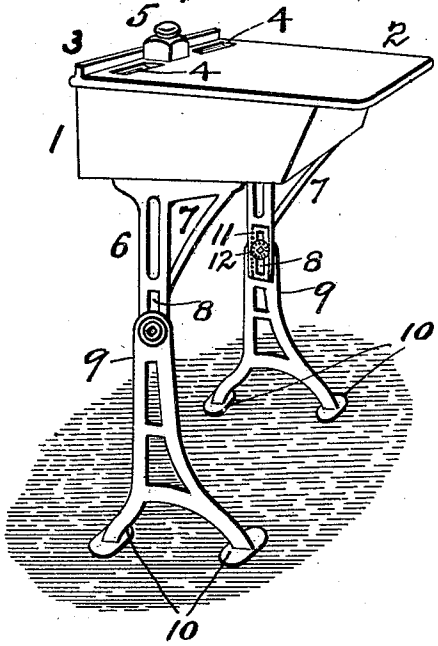


FIG. 2.

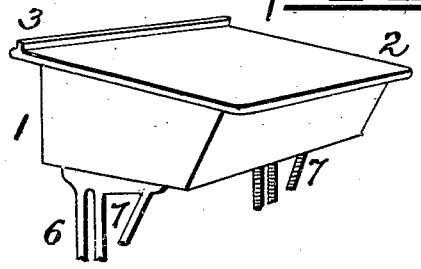
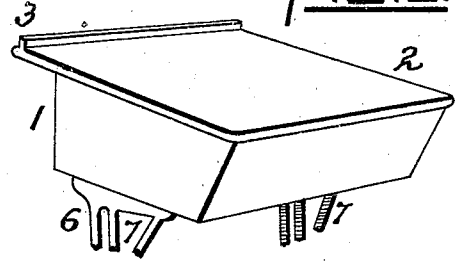


FIG. 3.



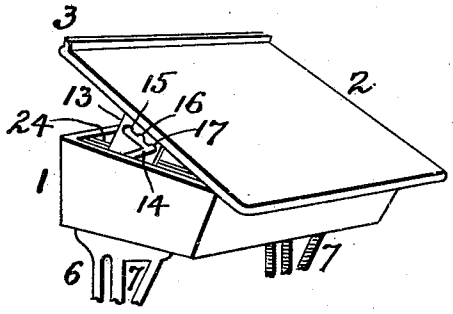
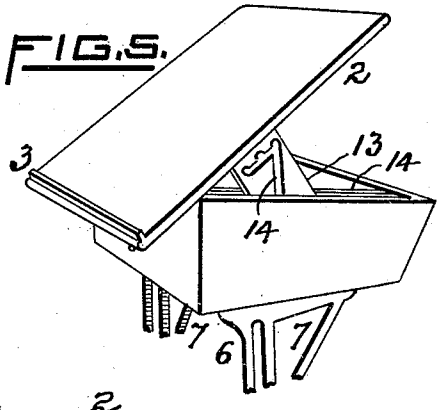


FIG. 4.

FIG. 5.



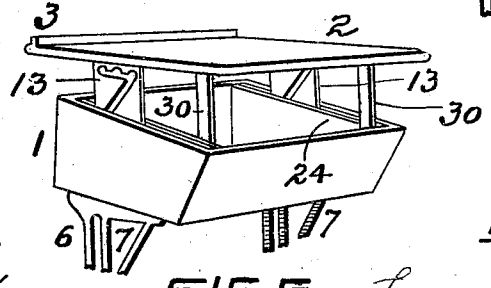


FIG. 6.

WITNESSES.

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No. 841,766. PATENTED JAN. 22, 1907.

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2 SHEETS—SHEET 2.

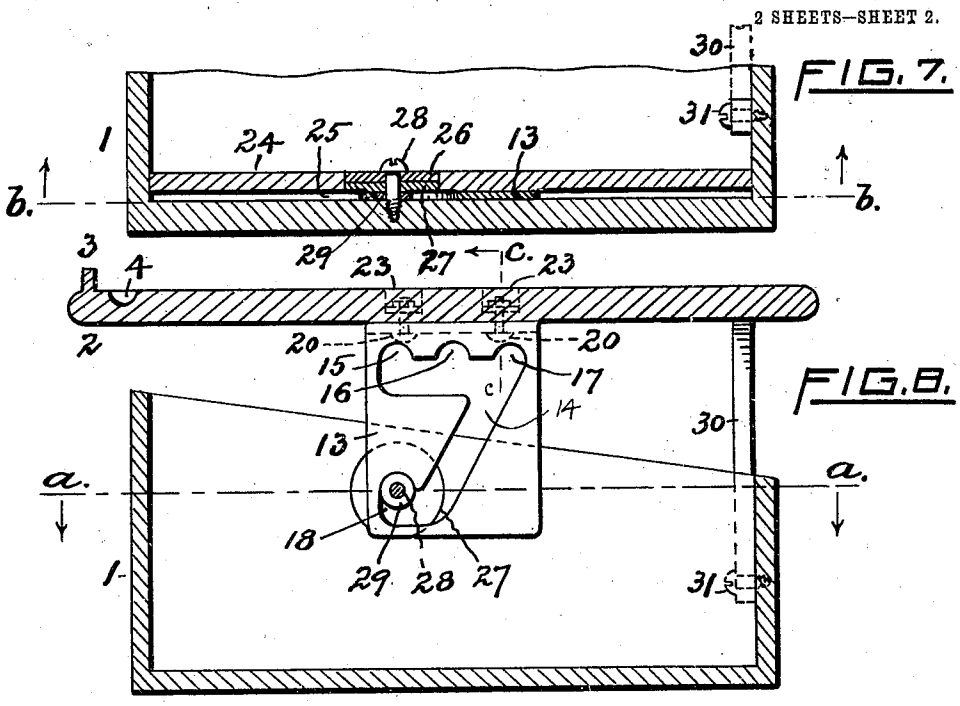

FIG. 7.

FIG. 8.

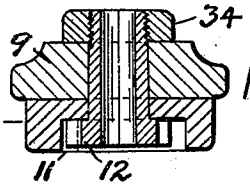

FIG. 11.

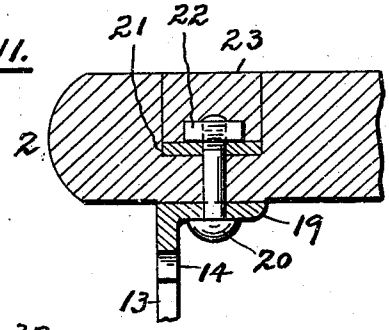

FIG. 9.

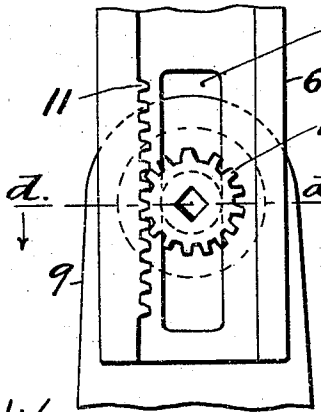

FIG. 10.

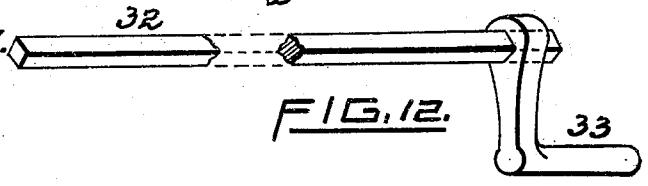

FIG. 12.

WITNESSES.

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UNITED STATES PATENT OFFICE.

LEONARD H. CAMPBELL, OF PROVIDENCE, RHODE ISLAND.

SCHOOL-DESK.

No. 841,766. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed June 11, 1906. Serial No. 321,180.

To all whom it may concern:

Be it known that I, LEONARD H. CAMPBELL, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in School-Desks, of which the following is a specification, reference being had therein to the accompanying drawings.

Like reference-numerals indicate like parts.

Figure 1 is a perspective view of my improved school-desk with its top or cover extended forward toward the pupil. Fig. 2 is a perspective view of the upper portion of said desk with its cover extended partially to the rear. Fig. 3 is a perspective view of the same with the cover moved to its full rearward position. Fig. 4 is a view of the same with the cover raised to an angular position inclined toward the pupil. Fig. 5 is a view of the same with the cover raised to an angular position inclined away from the pupil. Fig. 6 is a view of the same with the cover elevated and supported in a horizontal position. Fig. 7 is a view of a portion of the body of the desk as seen partly in top plan and partly in section on line *a a* of Fig. 8. Fig. 8 is a view of the body of the desk and of its cover shown in the position illustrated in Fig. 6 as seen on line *b b* of Fig. 7. In this figure one of the pivoted braces and also one of the slotted flanges are shown in elevation. Fig. 9 is a detail view seen on line *c c* of Fig. 8 and illustrates the manner of mounting and securing said slotted flange upon the desk-cover. Fig. 10 is a view in elevation of the rack and pinion for varying the height of the desk. Fig. 11 is a sectional view of the same as seen on line *d d* of Fig. 10. Fig. 12 is a perspective view of the crank-rod and handle for operating said rack and pinion.

My invention relates to school-desks; and it consists of the novel and useful combination of the several parts or elements as hereinafter described, and specifically set forth in the claims.

The purpose of my invention is to construct a school-desk in conformity to the principles of school hygiene and so that it shall be not only convenient and comfortable for the pupil, but favorable to his physical development and conducive to his health. To carry these objects into effect my improved desk is made adjustable in several respects. It has means for variation in height. The cover is movable at will in its own plane to each of several positions to enable its edge adjacent to the pupil to be as near to him or as far from him as his girth or the nature of his work requires, and the cover is also made capable of assuming several angular positions and of maintaining the same immovably while in proper adjustment therefor, respectively.

In the drawings, 1 represents the body or box portion of my improved school-desk, and 2 is the top or cover. The cover 2 may have the ledge 3 and the trays 4 for pencils and penholders at or near the rear edge. There may also be provided an ink-well or bottle 5, preferably of a suitable non-spillable sort, which, however, constitutes no part of the present invention.

The body or box portion of the desk is mounted upon two vertical supports 6 6, which have proper brackets 7 7. Each of these vertical supports has a longitudinal opening or slot 8. There are two standards 9 9, each having two legs or feet 10 10, by which they rest upon and may be secured to the floor. Each vertical support 6 has a rack-gear 11, and each standard 9 has a pinion 12, mounted in a tubular hole or bearing thereof, the engagement and method of operation of which rack-gears and pinions will be hereinafter described.

The desk-cover 2 has on each of its two sides, about midway the length thereof from front to rear, a flange or wing 13, made of sheet metal or a metallic casting, but preferably of sheet-steel. This flange or wing is preferably rectangular in outline and has an approximately V-shaped slot 14, the upper portion of which slot is substantially parallel to the upper and lower surfaces of the cover 2. In the upper or horizontal portion of said slot 14 are the semicircular sockets or seats 15, 16, and 17, and in the lower portion of said slot is one semicircular socket or seat 18. (Shown in Fig. 8.) These flanges or wings may be secured to the cover 2 in any manner desired; but I prefer the construction shown in Fig. 9, where the flange 13 is provided with an angle or bend 19, which is perforated for the passage of a headed bolt 20.

A socket, preferably circular, is made in the cover 2 and extends a little more than half-way through it. In the bottom of the socket is a washer 21, of metal or other suitable material. The bolt 20 passes through a hole in the cover made therefor and also

through the washer 21. A nut 22 is screwed upon the end of the bolt 20. A wooden plug 23 is inserted and secured by glue or otherwise in the socket of the cover, the outer edge of which plug is flush with the top surface of the desk-cover, as shown in Fig. 9. There are preferably two of these bolts or fastenings, as seen in Fig. 8.

On each side of the body or box portion of the desk and within the same is a strip 24, parallel with said side and properly secured in place, leaving a vertical opening or passage 25, as shown in Figs. 4, 5, 6, and 7. Instead, however, of making this passage by means of an inserted strip 24 a channel or groove can be formed in the solid wood by a saw or otherwise. The strip 24 has about midway its length a circular hole, in which are placed a metallic washer 26 and a leather washer 27. A screw 28 passes through said washers 26 and 27 and also through a washer 29 into the side of the body of the desk. As seen in Fig. 7, but more plainly in Fig. 8, this screw 28 and its washer 29 extend loosely through the slot 14 of the flange 13, and the washer 29 is of such circumference as to enable it to engage with and be seated in any of the semicircular sockets or seats 15, 16, 17, or 18 of the slot 14 of the flange 13. Braces 30 are mounted on screws or pivots 31, respectively, at opposite sides within the box portion of the desk nearest the pupil.

At or near the upper end of each standard 9 a pinion 12 is rotatably mounted by its hub in a suitable bearing. It has a bore which is rectangular crosswise. The teeth of the pinion 12 are engaged with the teeth of the rack-gear 11. A crank-rod 32 is rectangular in cross-section and fits slidably in the square bore of the pinion 12. This rod 32 is of sufficient length to pass through and engage with both the pinions 12 and to project therefrom at one end, the length of said rod thus exceeding the distance from one standard 9 to the other. The rod 32 has at one end a detachably-mounted crank-handle 33. The hub of the pinion 12 passes through the opening or slot 8 of the support 6, and the end of the hub of said pinion projects beyond the face of the standard 9, as seen in Fig. 11. This hub is screw-threaded at its end. A clamping-nut 34 fits upon the threaded end of the hub.

The use and operation of my improved desk are as follows: To change the vertical adjustment for the purpose of securing a variation in height, the rod 32 is inserted through the square bores of the two pinions 12, the clamping-nuts 34 are then partially unscrewed, and by means of the handle 33 the pinions 12 are rotated together in the same direction, either to raise or lower the desk to the desired height. By the rotation of the pinions 12 the supports 6 6 slide along the standards 9 9, up or down, according to the direction of the rotation of the pinions until the height of the desk above the floor has been adjusted, as desired. When this adjustment has been made, the nuts 34 are then tightened, and thus hold the parts securely in the adjusted position, whereupon the rod 32 is withdrawn from the pinion 12 and is carried away until required for use again. If the rod 32 were left in position, it would be in the way of the pupil when in sitting posture. The cover 2 of the desk is movable in its own plane to any one of the three positions illustrated in Figs. 1, 2, or 3 to bring the edge as near or as far from the pupil as his size or work requires. This depends upon the engagement of the screws 28 and their bushings or washers 29 in the upper sockets of the slots 14 of the flanges 13. When said screws and washers are seated in the sockets 15, the cover 2 is in the position shown in Fig. 1. When they are in the socket 16, the cover is in the position shown in Fig. 2, and when they are in the socket 17 the cover is in the position shown in Fig. 3. To effect these changes in the position of the cover, the cover 2 is seized sidewise and slightly lifted, thus raising the flanges 13 and disengaging the screws 28 and washers 29 from whichever of the sockets 15, 16, or 17 thereof they have previously engaged. By pushing or pulling the cover in the desired direction, as the case may be, said flanges slide along by the straight upper edges of the horizontal portions of the slots 14 upon the washers 29 of the screws 28 until said washers automatically, by the weight of the cover 2, engage with the next sockets of said flanges 13. In opening the desk this cover 2 is always brought to the position shown in Fig. 3, and then the front edge of the cover can be raised, as seen in Fig. 5. When the cover is in the position shown in Fig. 3, the washers 29 are engaged in the sockets 17 of the slots 14 of the flanges 13. By elevating the forward edge of the cover 2 the slotted flanges 13 move, by means of the diagonal portions of their slots 14, along the washers 29 respectively until said washers come into position in the lower ends of said diagonal portions of said slots and there become the pivots on which the cover 2 is swung to the position illustrated in Fig. 5. The pupil now has access to his desk to put his books and papers therein or to remove them, as he may desire. In order to bring the cover into the position shown in Fig. 4, the cover is brought to the position shown in Fig. 3 and is then seized on both sides near the rear and is slightly lifted and brought forward, with the edge toward the pupil depressed. By this movement the washers 29 move up along the diagonal portion of the slots 14. The position illustrated in Fig. 4 is that used for study and drawing. If instead of pushing or pulling the cover 2, as already described, he lifts the cover of the

desk bodily, the cover 2 will assume the horizontal position (shown in Fig. 6) and becomes a flat-topped table, in which case the braces 30 30 are elevated to support the end of the cover nearest the pupil. By reversing these movements respectively the pupil can return the cover to the former respective positions. When the cover is in the position shown in Fig. 6, the pupil stands in using the desk, and if he desires to raise or lower the desk he loosens the clamping-nuts 34 and operates the rod 32, pinions 12, and rack-gears 11, as before; but in this case, as the rod 32 is not in his way because he is standing, it need not be removed, but may be left in place, and when so left in place the nuts 34 need not be screwed up, but instead thereof the crank-handle 33 may be detached from the rod 32 and put on again reversely—that is, with the free end of the handle 33 directed inwardly instead of outwardly, in which latter position said end of the crank-handle, coming into contact with the bracket 7 or some part of the supports 6 6, will bear against them, and so prevent the turning of the pinions 12 and the consequent descent of the rack-gears 11 and desk-body. Pupils can be easily taught the uses of this improved desk and to adjust the same in any of said positions without assistance. The desk by means of these various adjustments is brought into precisely the relations to the pupil which are most convenient and comfortable for him, where he can do his work under most favorable conditions, assume and maintain a bodily posture or position most favorable to health and his proper physical development and be free from temptation or need of assuming unhealthful and unhygienic positions or attitudes. The tilting of the cover for study or drawing, as shown in Fig. 4, tends to diminish eye strain and keeps the proper degree of inclination in drawing, which draftsmen and artists are always careful to maintain to assure accurate work. By this improved construction the usual fixed hinges are entirely dispensed with, together with the fixed flat strip, which hitherto has necessarily constituted the rear portion of the desk-cover. In this manner is secured a broader less broken working surface, although without actual increase of area. The former breaking or division of the surface is wholly avoided and also the objectionable position of the ink-well. Size for size the working surface of this desk-cover as compared with those of the usual construction is increased about twenty per cent.

The use of the broad leather washers 27 and the reinforcement thereof by the metallic washers 26 of the same diameter cause strong bearing-surfaces and pressure to prevent lateral movement or side play, thus confining the flanges to an absolutely straight line of movement and preventing any rattling or noise in the operation of the flanges. By means of the screws 28 the degree of this pressure may be adjusted and maintained.

The strips 24 serve to protect the books and papers within the desk from contact with the operative parts of the mechanism.

I claim as a novel and useful invention and desire to secure by Letters Patent—

1. In a school-desk, the combination of a desk-body, two pivots or pins mounted inside the desk-body on opposite sides thereof, a cover for said desk-body, and two flanges on the cover on opposite sides thereof projecting into the desk-body and each having a V-shaped slot whose upper part is parallel to said cover, said flanges being provided with means for engaging the said pivots or pins respectively.

2. In a school-desk, the combination of a desk-body, two pivots or pins mounted inside the desk-body on opposite sides thereof, a cover for said desk-body, and two flanges on the cover on opposite sides thereof projecting into the desk-body and each having a V-shaped slot with locking-seats in said slots, the upper portion of each of said slots being parallel to the top of said cover and said flanges being adapted by their slots and locking-seats to engage said pivots or pins respectively.

3. In a school-desk, the combination of a desk-body having the pivots 28, 28, in the sides thereof projecting inwardly, a cover for the desk-body having the two flanges 13, 13, each of which flanges is provided with an approximately V-shaped slot 14 and with locking-sockets 15, 16, 17 and 18, the upper part of each of said slots being parallel with the top of said cover, and a washer 29 on each pivot, which washers are adapted to be seated in any of the corresponding sockets of said flanges respectively.

4. In a school-desk, the combination of a desk-body, two pivots extending therefrom inwardly, a cover for said desk-body having on each of two opposite sides thereof a circular socket with a central perforation through the bottom thereof, a locking-flange on each side of said cover adapted to engage with said pivots respectively and having an integral bend or angle-piece with a perforation through it, a washer in the bottom of each of said sockets, a headed bolt passing through said perforated bend or angle-piece and cover perforation and washer into each of said sockets, a nut on the end of each of said bolts, and a wooden plug mounted in and filling each of said sockets.

5. In a school-desk, the combination of a desk-body, two pivots extending therefrom inwardly, a cover for the desk-body, two flanges on each of two opposite sides of the cover and adapted to engage with said pivots respectively, in slots thereof, a strip extending along each of two opposite sides of the

desk-body parallel with the adjacent sides thereof to form a passage in which passages said flanges are inserted and movable, each of said strips being provided with a circular opening about midway the length thereof, a metallic washer in each of said openings, a leather washer in each of said openings in contact with said metallic washer, and a washer on each of said pivots and in contact with the adjacent leather washer aforesaid, which pivot-washers are inserted loosely in the slots of said flanges respectively.

6. In a school-desk, the combination of a desk-body, two pivots 28, 28, extending therefrom inwardly on opposite sides, two braces, 30, 30, pivotally mounted on the desk-body within the same, a cover for the desk-body, two flanges 13, 13, extending from the cover on opposite sides thereof, and having V-shaped slots 14, 14, which engage said pivots respectively, locking-sockets 17, 18, on the edges of said slots, and a washer 29 on each of said pivots engageable at will with either the socket 17, or 18.

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

LEONARD H. CAMPBELL.

Witnesses:

WARREN R. PERCE,

ANNIE E. PERCE.