April 29, 1924. 1,491,781

J. L. AXEN

DESK

Filed April 10, 1922 2 Sheets-Sheet 1

Fig. 1.

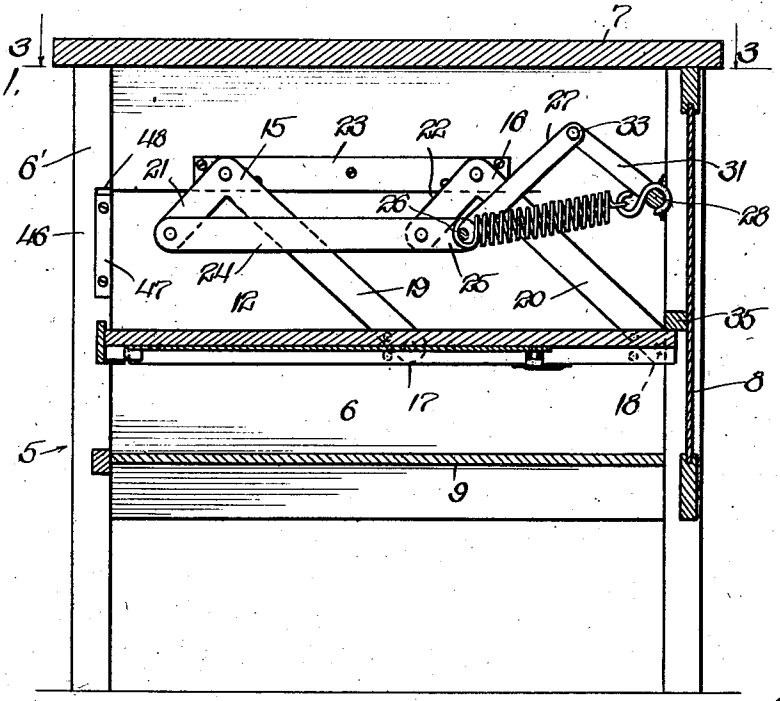
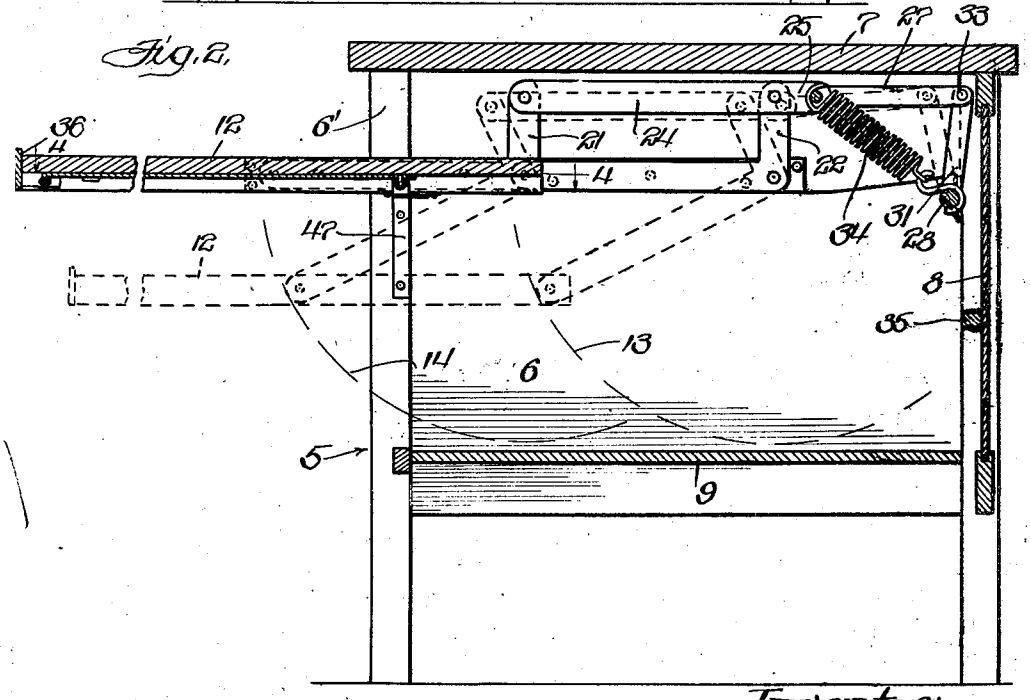


Fig. 2.



Inventor:
John L. Axen
By Foree Bain & Kinkle
Attys

April 29, 1924. 1,491,781

J. L. AXEN

DESK

Filed April 10, 1922 2 Sheets-Sheet 2

Fig. 3.

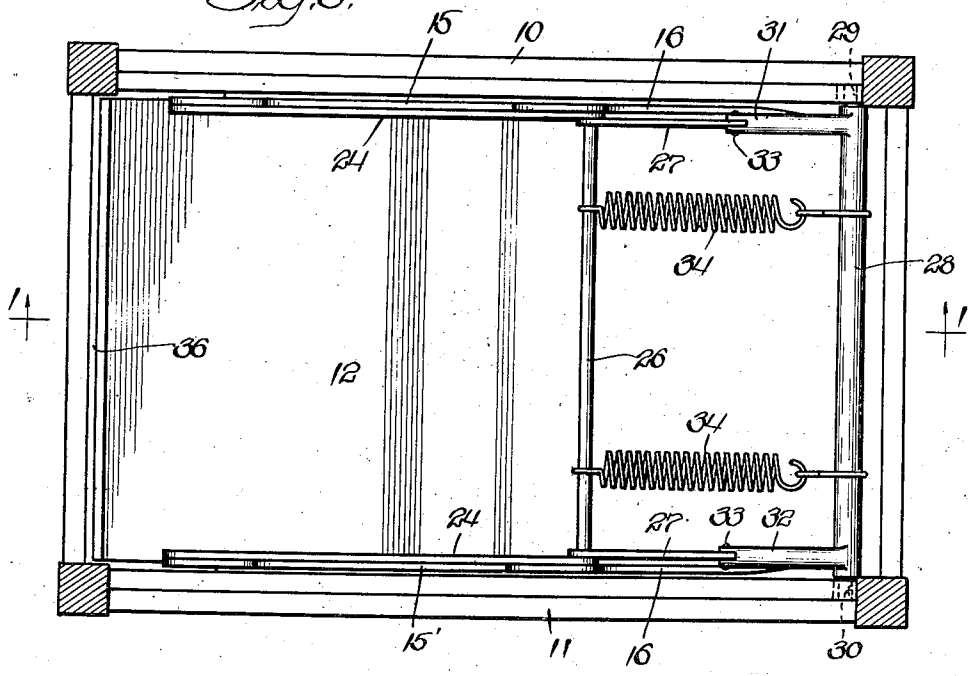
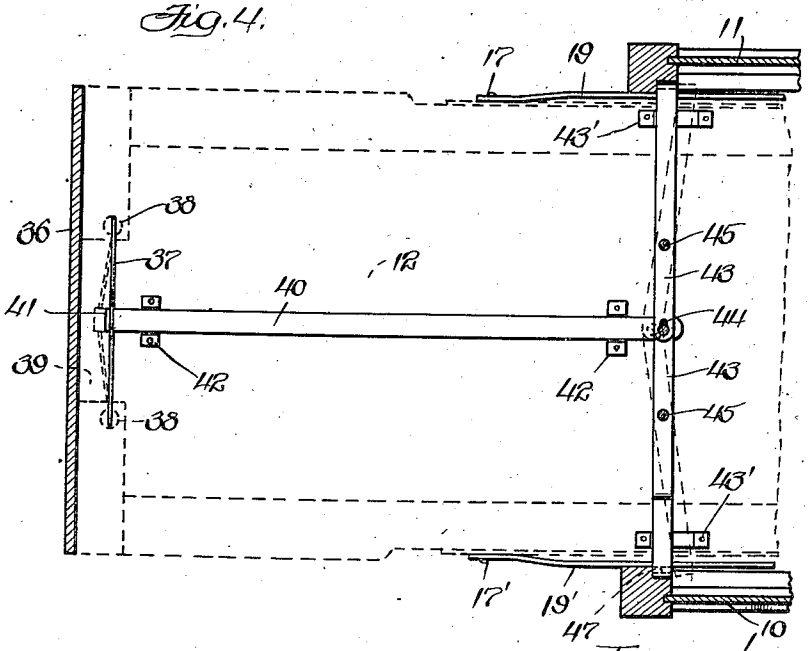


Fig. 4.



Inventor:
John L. Axen
By Foree Bain & Hinkle
Attys

Patented Apr. 29, 1924. 1,491,781

UNITED STATES PATENT OFFICE.

JOHN L. AXEN, OF CHICAGO, ILLINOIS.

DESK.

Application filed April 10, 1922. Serial No. 550,960.

To all whom it may concern:

Be it known that I, JOHN L. AXEN, 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 Desks, of which the following is a specification.

This invention relates to improvements in desks, and especially to the type of desks used for typewriters.

One of the objects of the invention is to provide an improved extensible shelf to support a typewriter, normally located in a suitable cabinet of the desk, sufficiently removed from the top thereof to provide space for the typewriter thereabove, and which is movable outwardly and upwardly thru the arc of a circle, to locate the typewriter outside of the cabinet and sufficiently elevated for convenience of manipulation.

Another object is to provide means to prevent transverse inclination of the shelf, especially during the cycle of its movement.

Another object is to provide springs shiftable and so arranged as to assist in the movement of the shelf in both directions and to hold the shelf against stops at the end of such movements.

A further object is to provide an improved automatic latch to positively hold the shelf in evelated position and accessible means near the front end of the shelf to release the latch.

Other objects and advantages of the invention will readily appear from a consideration of the following description when taken in conjunction with the drawings, wherein:—

Fig. 1 is a section taken on line 1—1 of Fig. 3 showing the shelf located in the cabinet.

Fig. 2 is a similar section showing the shelf in extended and in elevated position and showing, in broken lines, the shelf in an intermediate position.

Fig. 3 is a section taken on line 3—3 of Fig. 1.

Fig. 4 is an inverted plan view of the shelf and a section of the cabinet taken on line 4—4 of Fig. 2.

In all the views the same reference characters are employed to indicate similar parts.

In the drawings 5 is a desk having a cabinet chamber 6 surrounded on three sides by the top 7, the back 8 and the bottom 9, and suitable side walls 10 and 11. The opening 6′ may be closed by a suitable door. The shelf 12 is normally contained in the cabinet 6, as more clearly shown in Fig. 1. It is movable outwardly and upwardly, as more clearly shown in Fig. 2. In moving the shelf from its inward and depressed position to its outward and most elevated position, it is moved in a path defined by the arc of a circle, as shown at 13 and 14, which is more than 90 degrees, and it is always maintained in parallel, horizontal planes.

Two bell cranks 15 and 16 are pivoted to the shelf, the first to a mid-portion, as at 17, and the other, at the rear end as at 18. There are two of these bell cranks, one on each side and opposite each other, indicated at 15—15′ and 16—16′, respectively. The longer arms 19 and 20 of the bell cranks permit the shelf to occupy a position in the lower portion of the cabinet sufficiently below the top 7 to provide room or space above the shelf for the accommodation of the typewriter that is to normally rest on the upper surface of the shelf and near the front end thereof. The shorter arms 21 and 22, at the juncture of the longer arms 19 and 20, of said bell cranks are pivoted to a fixed support 23 in spaced relation equivalent to the distance of separation between the longer arms 19 and 20 at the points where they are pivoted to the shelf 12. The ends of the shorter arms, 21 and 22, on each side of the structure, are pivotally connected to a link 24, the rear ends, 25, of which extend beyond the shorter arms 22 and 22′. These ends are connected together by a transversely extending rod 26, which serves as a means for pivotally connecting a link 27 to each of the ends. A transversely extending rod 28 is pivoted to the side walls 10 and 11, as at 29 and 30, and is provided with arms 31 fixed thereto, to which the links 27 are pivoted, as at 33. The arms 31 and 32 are rigidly secured to the oscillating rod or shaft 28, shown as parts thereof, so that any movement of one arm necessarily causes a corresponding movement of the other arm. These arms are connected to opposite sides of the shelf 12 by links 27, thru the projections 25 and the members 22 of the bell crank levers 16, more clearly shown in Fig. 2; therefore vertical side movement of the shelf is thereby prohibited and the shelf is at all times prevented from tipping.

The links 27 and 33 tend at all times to hold and maintain the shelf level and prevent its transverse inclination. Secured between the rods 26 and 28 are a pair of springs 34. These springs hold the rear end of the shelf 12 in contact with a fixed stop 35 to prevent the rear end thereof from rising above the point at which it is held by the stop due to the weight of the typewriter on the front end of the shelf. The arrangement of the springs is such that they assist in lifting the shelf upwardly after it has passed a certain point in its excursion and when shifted they also tend to bring the shelf downwardly and to hold it against the stop 35. In its upward movement it is yieldingly held by the springs against the effect of the latch, which provides the upper stop and which will now be more fully explained.

Near the front edge 36, of the shelf 12, and parallel therewith is a blade spring 37, secured at its ends, as at 38, and extending across an opening 39. It is also secured to a longitudinally extending and shiftable bar 40, which has a downturned angular end 41 to which the spring blade is connected. Cleats 42 hold the bar to the underside of the shelf 12 and permit its axial movement. Connected to the inner end of the bar 40 are a pair of links 43, each slotted, as at 44, and pivoted, as at 45. The spring blade 37 normally holds the links in coaxial relation, as more clearly shown in Fig. 4. On the face of each of the posts 46, bounding the front opening of the cabinet 6, are striking plates 47. When the shelf 12 is raised one edge of the links 43 will bear against the inner edge of the striking plate 47 and against the tension of the spring blade 37, as more clearly shown in Fig. 4, and they will snap into the opening above the striking plates.

The outer ends of the links 43 are supported by elongated clips 43′ to permit some lateral motion of the links. The latch provides a positive stop for the upper position of the shelf 12. The dotted lines in Fig. 4 show positions of the parts just prior to the time when the links 43 will automatically snap into the opening above the striking plates 47. When it is desired to open the latch, so that the shelf 12 may be depressed, the finger of the operator engages the blade 37 and moves it toward the edge 36, thereby moving the links 43 into dotted line position, so that they will become free of the striking plates, whereupon slight pressure to the shelf will start it on its downward movement to the position shown in Fig. 1.

While I have herein shown a single embodiment for the purpose of clear disclosure, it will be manifest to persons skilled in the art, that many changes may be made in the general arrangement and configuration of the parts within the scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In combination a desk providing an open end cabinet; a shelf for swinging movement outwardly and inwardly of the cabinet; two pairs of like, spaced, bell-crank levers, each lever having a relatively long arm and a short arm, with its vertex pivoted to the side walls of the cabinet and the long arms pivoted to the respective sides of the shelf, said long arms adapted and arranged to swing the shelf from its extreme inner position to its extreme outer, elevated position; a pair of links, one on each side of the shelf, pivotally connected to the short arms of the respective levers and extending rearwardly beyond the inner short arms; a pair of rigidly connected together spaced arms pivotally supported by the cabinet; a bar rigidly connecting said arms together a pair of links pivotally connected to said arms, respectively, at one of their ends, their other ends pivotally connected to the aforesaid link extensions and a bar rigidly connecting said links together, its ends affording pivotal support for said link extensions, and a counter-balancing spring connected to said bars.

2. In combination, a desk providing an open cabinet; a shelf having a swinging movement inwardly and outwardly of the cabinet; a latch for holding the shelf in its outward uppermost position comprising a pair of plates secured one to each side of the cabinet near the front upper portion thereof; a pair of normally aligning links, each pivoted near its mid-portion to the bottom surface of the shelf having laterally movable projecting ends to overlie said respective plates to support the shelf; a bar pivoted to proximate ends of said links extending toward the front of the shelf movable axially to move said extended link ends laterally from above said plates and a spring to yieldingly hold said links in substantial alignment.

In testimony whereof I hereunto subscribed my name.

JOHN L. AXEN.