

Sept. 10, 1940.

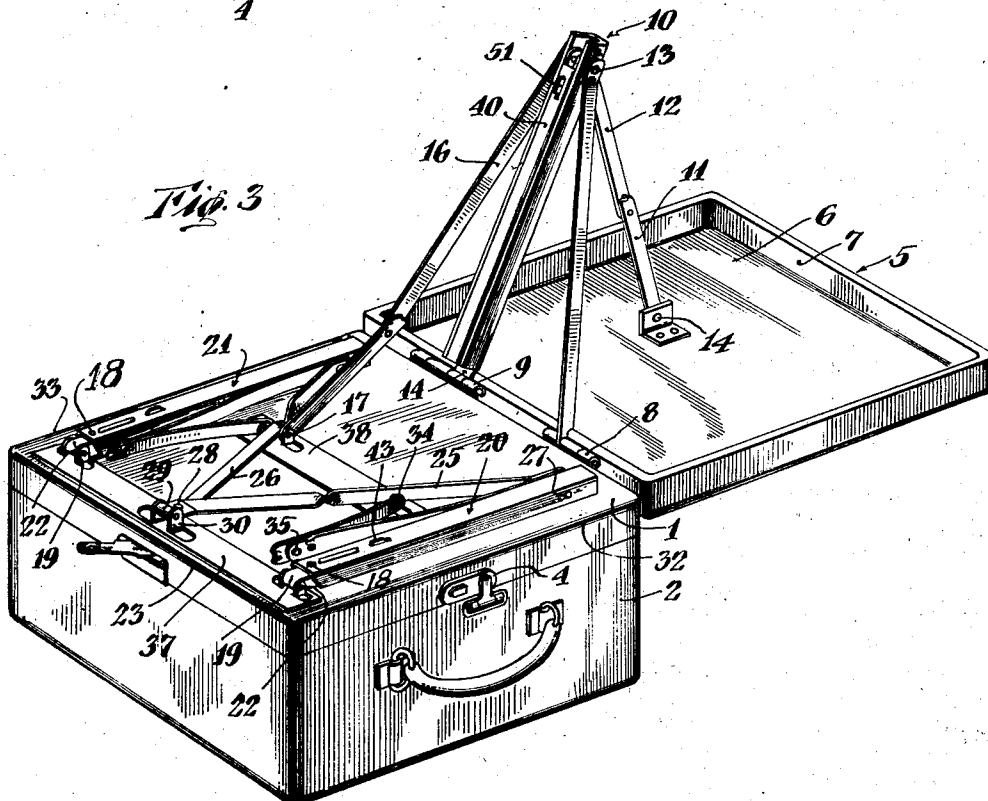
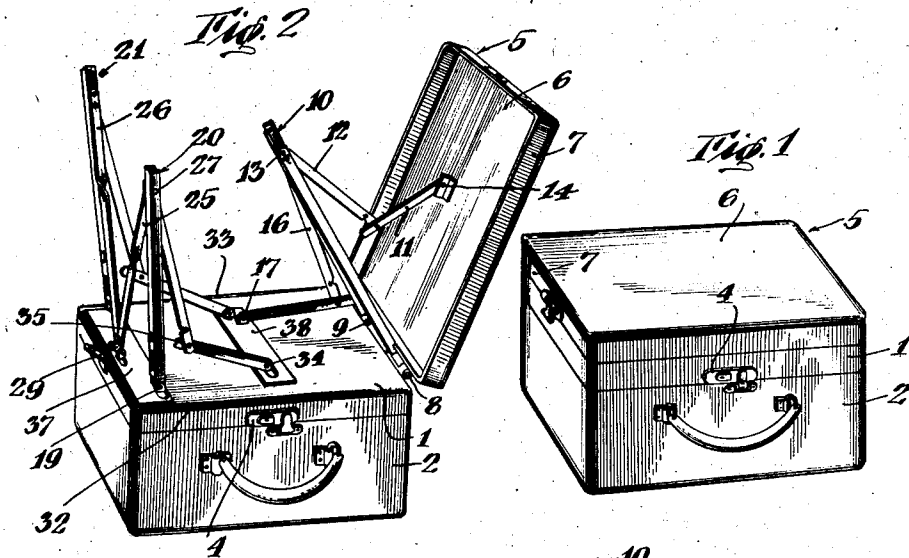
H. HOWE

2,213,985

FOLDING TABLE

Filed Jan. 18, 1939

3 Sheets-Sheet 1



INVENTOR
Harold Howe
BY
Cooper, Kerr & Dunkham
ATTORNEYS

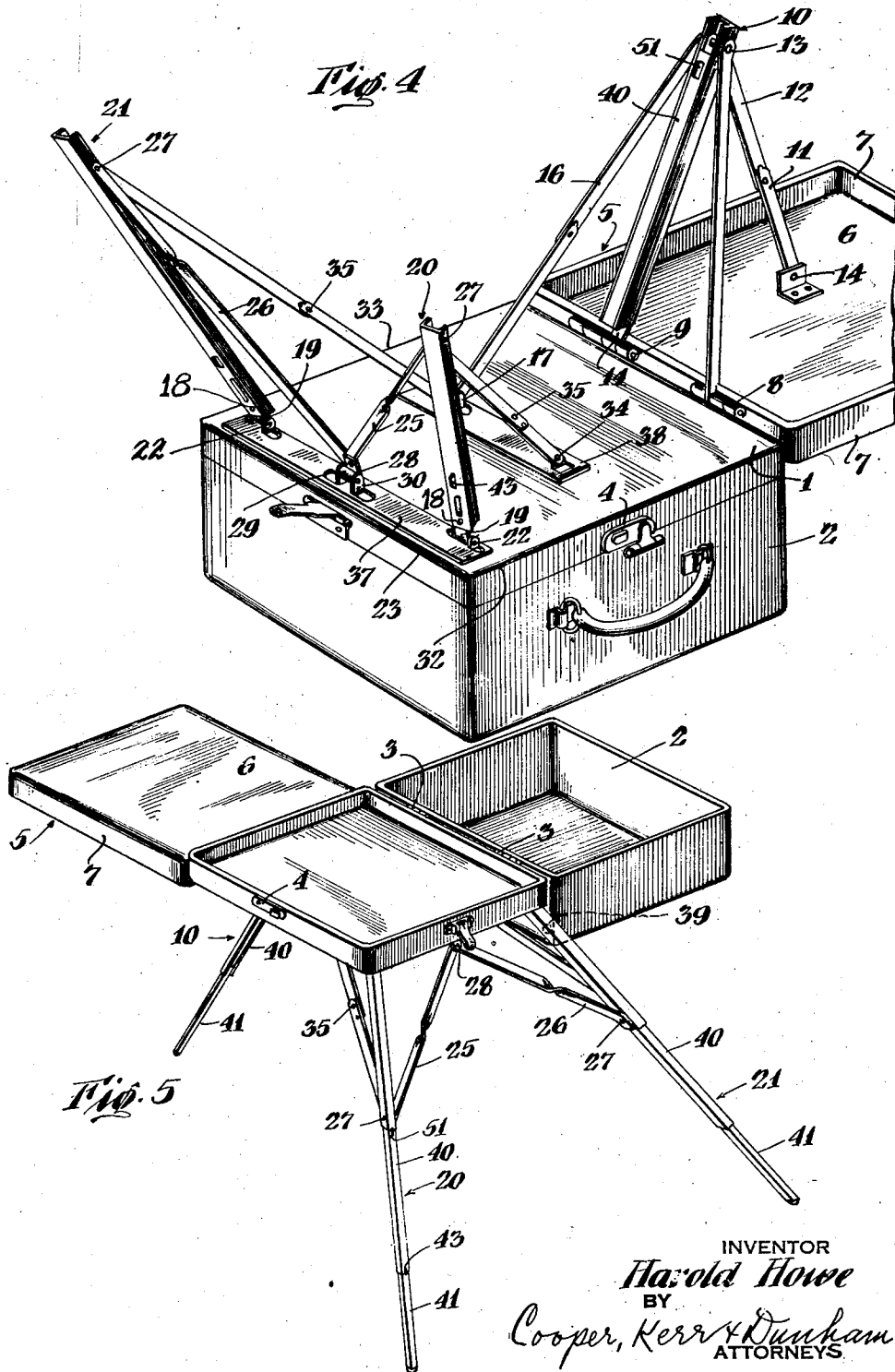
Sept. 10, 1940.

H. HOWE
FOLDING TABLE

2,213,985

Filed Jan. 18, 1939

3 Sheets-Sheet 2



Sept. 10, 1940.

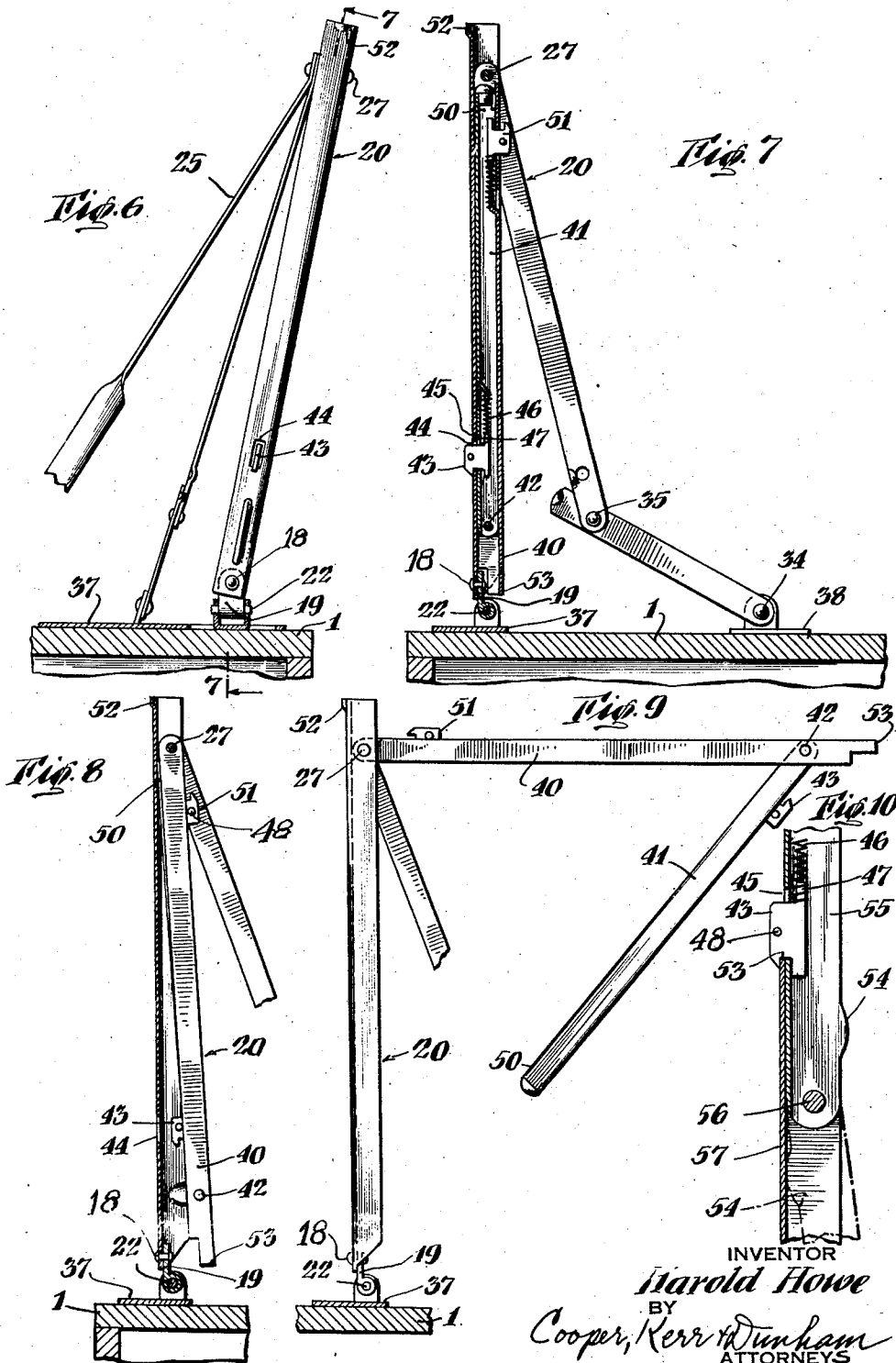
H. HOWE

2,213,985

FOLDING TABLE

Filed Jan. 18, 1939

3 Sheets-Sheet 3



INVENTOR
Harold Howe
BY
Cooper, Kerr & Dunham
ATTORNEYS

UNITED STATES PATENT OFFICE

2,213,985

FOLDING TABLE

Harold Howe, Darien, Conn.

Application January 18, 1939, Serial No. 251,450

12 Claims. (Cl. 45—68.2)

This invention relates to a combined folding table and container for portable typewriters. Its object is to provide a combination stand and container associated with each other in such a way that the stand may be carried with the typewriter and always be readily available for use and with the least manipulation and arrangement on the part of an operator. The construction of the container is such that two compartments are provided, one for the typewriter and one for the legs which constitute the stand upon which the typewriter and typewriter base are mounted. All of the different parts of the container have functional utility when the assembly is closed for carrying purposes, and also when the assembly is prepared for supporting a typewriter and the operator's necessary equipment.

Among the objects of the invention is to provide a convenient construction which can be easily converted from one adapted for carrying the typewriter and stand to a fully equipped table with typewriter ready for use. In keeping with this accomplishment, the invention has for other objects to provide a design of folding leg equipment which is relatively simple and inexpensive to make and assemble; to provide a readily attachable folding leg equipment; to make the legs foldable within the area of a standard base of a typewriter, and at the same time be extendable for supporting the typewriter at the regulation height for typewriter operation; and to provide a stand which offers rigidity of support and a footing extending outside of the area of the base. Each of the legs is made in three sections which are folded into each other when ready for confinement within their enclosing compartment. The braces supporting one of the legs are so devised that the leg is raised from its folded position upon the opening of the compartment. The other two legs and their braces are so arranged that each leg is thrust outwardly in two directions as it is unfolded from its position of confinement within a compartment. The sections of each leg are so related to each other that when they are released from nested relationship they automatically spring away from the containing section and become immediately accessible to the operator for their further extension.

Further and other objects of the invention will be hereinafter set forth in the accompanying specification and demonstrated by the drawings which show by way of illustration the preferred embodiment and the principle of my invention

and what I now consider to be the best mode in which I have contemplated applying that principle. Other embodiments of the invention embodying the same principle may be used and structural changes made as desired by those skilled in the art within the spirit of the appended claims and without departing from the present invention.

In the drawings Figure 1 is a general view of the closed carrier-box.

Fig. 2 is a view similar to Fig. 1 with the sub-base partially raised and the legs partially unfolded.

Fig. 3 shows the leg compartment fully opened and the first section of one leg fully unfolded.

Fig. 4 is a view similar to Fig. 3 with the first sections of all of the legs fully unfolded.

Fig. 5 illustrates the general appearance of the apparatus as a table ready for use.

Fig. 6 is a detail of one of the double-pivoted legs in partially raised position.

Fig. 7 is a section on line 7—7 of Fig. 6 showing the nested relationship of the three sections constituting a leg.

Fig. 8 illustrates the manner in which the leg sections are designed to spring away from each other when released from nested relationship.

Fig. 9 illustrates all three sections of a leg; and

Fig. 10 shows a detail of another manner of obtaining springiness in a leg to facilitate the unnesting of the sections.

As shown in Fig. 1 the general appearance of the box is that of a carrying case having a base dimension approximating that of a portable typewriter. The lower portion of the box, consisting of a base 1 and a typewriter box cover 2, may be very similar to the usual type of container used for carrying typewriters. The base is provided with the usual means for fastening the typewriter thereto. The base 1 and cover 2 are joined together by hinges 3 (Fig. 3) as is customary. A latch 4 is provided for maintaining the cover closed when the typewriter is not in use.

For convenience I have termed section 5 of the box as being a sub-base. This sub-base constitutes a bottom 6 having rails or walls 7 about its four edges. The sub-base 5 is pivoted to the base 1 by means of hinges 8 and 9 which are at right angles to the hinges 3 between the cover 2 and base 1. Hinges 8 and 9 have leaves by which they are attached to the outer surface of one of the rails 7 and also to the outer side of the base 1 so that the sub-base may be swung from its closed position to the open position illustrated in Fig. 3. As shown in Fig. 5, the up-

per surface of the board 6 becomes a shelf extending to the left of the main base as the operator faces the machine.

The rails 7 which constitute the walls of the sub-base 6, together with the sub-base, constitute a compartment for enclosing the legs when they are not in use. In raising this compartment from its closed position, as shown in Fig. 1, leg 10, which is hinged at the same edge of the base as the sub-base is hinged, is raised from its folded position in the manner illustrated in Fig. 2. This is accomplished by a pull upon the leg by a folding brace 11 which is pivotally connected at 13 to the leg and at 14 to the sub-base. When this brace is fully extended, as shown in Fig. 3, the sub-base 6 is in a position substantially parallel to base 1. It is apparent that the sub-base in this position is well supported for use as a shelf, as illustrated in Fig. 5. Leg 10 is pivotally mounted on hinge 9 which is in alignment with hinge 8 to which brace 12 is connected. Leg 10 opens to such an extent that its lower end (when unfolded) lies outside of the area of the base of the table and under the shelf formed by the sub-base. Folding brace 16, which is pivoted to the leg at 13 and to the bottom of the base at 17, serves to maintain the leg in extended position, when unfolded, as illustrated in Fig. 3.

The two remaining legs 20, 21, of the table are each pivotally secured to hinge tabs 19 by means of pins 18. By virtue of these pins each of the legs 20, 21, is capable of motion away from the other leg as the two legs are raised from the bottom of the base. The manner in which the legs spread apart from each other is apparent from comparing the closed position of the legs illustrated in Fig. 3 and the open position of the legs illustrated in Fig. 4.

Both of the hinge tabs 19 are pivoted upon pins 22 which are in alignment with each other and substantially parallel to the edge 23 of the base or table. By virtue of the freedom of movement permitted by hinge pins 18 and 22, each leg has two degrees of movement.

The legs are provided with braces 25 and 26. One end of each brace is pivoted to each leg at 27 and the other ends are pivotally connected together at 28 to a hinge tab. This hinge tab is pivotally secured to the base by another hinge pin 29 which extends substantially parallel to the edge 23 of the base. This latter hinge pin is elevated by means of a bracket 30 above the base 1 to a greater extent than hinge pins 22 are elevated above the base. Because of this, and also because of the position of hinge pin 28 located nearer the edge 23 than the hinge pins 22 are, the two legs 20 will be forced away from each other and outside of the front and back edges 32 and 33, respectively, as they are raised from their folded positions shown in Fig. 3. In raising these legs from their folded positions, braces 25 and 26 will pivot slightly on pin 28 and force the two legs outwardly, as shown in Figs. 2 and 4.

Braces 25 and 26 are twisted 90 degrees. As may be seen from Fig. 3 one of these braces would be in the path of folding leg 10 were it not for the twist. It is desirable to have the brace lie close to the bottom of the base in order to maintain at a minimum the space necessary for enclosing the legs and braces in a compartment.

Folding braces are provided for limiting the extent of unfolding of these two legs. The table ends of these braces are pivoted at 34, each to its own bracket extending from the base. The other

end of each brace is pivoted at 27 to a leg. Each brace constitutes two pieces pivoted together at 35. These two folding braces are made from spring steel so that they may flex to the extent necessary, as shown in Fig. 3, when the legs are folded. This is because the upper end of the legs are in positions determined by the braces 25 and 26 and each bracket 34 is displaced from the line of its associated leg. This displacement is to provide a better supporting structure for the leg when it is extended off from the corner of the base. The result is a simple and inexpensive construction which has the desired qualities of rigidity and strength.

The assembly of the leg structure with the base is facilitated by virtue of connection of the legs and braces with strips of metal 37 and 38 which are secured to the underside of the base.

It will be at once apparent from the foregoing that a tripod support provided by the legs in which the legs extend far beyond the edges of the base of the table provides a staunch structure for supporting a typewriter. It is to be noted that the upper leg pivot of leg 10 is rearward of the center of the base so as to provide better stability. The construction of the legs and their braces is such that leg 21 is extended sufficiently beyond the edge 33 of the base of table to support the cover of the typewriter box when it is to be used as a receptacle. As shown in Fig. 5, the cover is in position for receiving work. In this position a contact button 39, which is carried by the box, bears upon the side of leg 21.

Each leg consists of three sections, the lower of which nests into the next upper section when the leg is folded. Figures 6 and 7 show the construction of one of the double-pivoted legs 20, 21, in a partially opened position. Each of these legs is provided with a pair of pivot centers 18 and 22 which are disposed at right angles to each other and thereby enable universal movement of the leg with respect to the base to which it is secured. The upper section, or the one that is pivoted to the base of the table, is the larger of the three sections. It consists of a channel member whose flanges preferably are of a depth corresponding to the depth of the flanges of the middle section 40 which it contains when the leg is folded. The flanges of the lower section 41 are of less depth than the flanges of the middle section 40 so that this lower section may be wholly contained within the middle section.

Middle section 40 is pivoted to the upper section at 27. Hinge pin 27 extends through the flanges of the two sections connected together. This pin also serves as a hinge pin for brace 25 and the spring steel folding brace.

Lower section 41 is pivoted to the middle section at 42. The lower section carries a latch 43 which engages the edge of an opening 44 in the web of the upper section when the middle section is folded into closed position against the upper section. Latch 43 slides in a slot 45 in lower section 41 and is held in place by a spring 46 in cooperation with lug 47, making the latch removable upon removal of the spring. When this is done the lug 47 may be pushed out through slot 45. Pin 48, extending from both sides of the latch, keeps the latch from falling out of its slot toward the inside of the leg.

The nested position of the sections is illustrated in Figs. 6 and 7. When latch 43 is released, middle section 40 will spring away from its nested position, as shown in Fig. 8. This is because of the springiness inherent in the construction and

pivotal connection of lower leg section 41. The lower leg section is pivoted to the middle section at 42 and the position of this pin relative to the depths of the flanges of the middle and lower section is such that the lower section can be nested into the middle section only by deflecting the lower section. This is because the edges of its flanges in the vicinity of the pivot pin 42 strike the web portion of the middle section. As illustrated in Fig. 8, when latch 43 is released, the foot end 50 of the lower section resiliently presses against the web of the upper section and cause the middle section to leave its nested position. This latch causes the foot end of the lower section to leave its nested position within the middle section. This construction facilitates the extraction of both of the nested sections.

The foot end 50 is preferably provided with a ferrule supporting a rubber foot.

The upper end of the middle section carries a latch 51 which is similar in construction to latch 43. The nose of this latch is designed to engage lip 52 at the lower end of the upper section when the middle section is fully extended. This serves to lock the middle and upper section in the extended positions.

Latch 43, in addition to serving the function already described, i. e., keeping the sections nested together, serves the additional purpose of latching the lower and middle sections together when they are extended. When extended, this latch 43 comes into position for engaging lip 53 at the lower end of the middle section.

In the description of the pivotal connection between the lower section and the middle section, I have described how I produce sufficient springiness in the lower section to cause the unnesting of the sections automatically. This I have described as being obtained by the position of the pivot pin between the lower and middle sections. In Fig. 10 I illustrate another manner in which this springiness may be obtained. In the latter method I provide a stamped portion 54 in the flanges of the lower section 55 a short distance from the hinge pin 56. This limits the natural folding position of the lower section within the middle section 57 and in order to place it into nested position it is necessary to flex the lower or middle section, or both. The energy stored in doing this is released when the catch is released so that when this occurs the two sections spring out of their nested relationship. This causes unnesting of all of the sections as previously explained.

What is claimed is:

1. In combination, a combined case and table, said case having a base for serving as a table top and a cover hinged to the base, a sub-base having a rail about its edges, hinges pivotally connecting together the base and sub-base whereby the sub-base may be swung into place at the under-side of the base to form a compartment or extended alongside the base to provide a shelf, legs foldable into said compartment, one of said legs being pivotally supported by one of the hinges between the base and sub-base, and the other of said legs being pivotally supported at the under-side of said base adjacent the edge of the base opposite said hinge and first named leg, a folding brace for each of said legs, said braces being hinged to the under-side of the base, and a fourth folding brace connected with said first-named leg and extending to the inner side of said sub-base, said brace serving to pivot and raise the first-named leg from its folded

position against the under-side of the base as the sub-base is moved from its closed position and pivoted about the common pivotal point for the sub-base and leg.

2. In combination, a combined case and table, said case having a base for serving as a table top and a cover hinged to the base, a sub-base having a rail about its edges, hinges pivotally connecting together the base and sub-base whereby the sub-base may be swung into place at the under-side of the base to form a compartment or extended alongside the base to provide a shelf, legs foldable into said compartment, one of said legs being pivotally supported adjacent one edge of the base, and two of said legs being pivotally supported at the under-side of said base adjacent the edge of the base opposite said first-named leg, braces for each of said legs, and a fourth brace connected with said first-named leg and extending to the inner side of said sub-base to support the same when used as a shelf, and a cover hinged to the base and adapted to form a receptacle when the legs are extended, said cover having means to contact with one of said legs for supporting the cover when the legs are extended and supporting the base.

3. In combination, a combined case and table, said case having a base for serving as a table top and a cover hinged to the base, a sub-base having a rail about its edges, hinges pivotally connecting together the base and sub-base whereby the sub-base may be swung into place at the under-side of the base to form a compartment, legs foldable into said compartment, one of said legs being pivotally supported adjacent one edge of the base, and two of said legs being pivotally supported at the under-side of said base adjacent the edge of the base opposite said first-named leg, and braces adapted to maintain the legs in extended position during use, said last-named legs having two of said braces connected together whereby the two legs are caused to pivot together when either is raised from against the bottom of the table.

4. In combination, a combined case and table, said case having a base for serving as a table top and a cover hinged to the base, a sub-base having a rail about its edges, hinges pivotally connecting together the base and sub-base whereby the sub-base may be swung into place at the under-side of the base to form a compartment, three legs foldable into said compartment, one of said legs being pivotally supported adjacent one edge of the base, and the other of said legs constituting a pair of legs pivotally mounted for two degrees of freedom at the under-side of said base adjacent the edge of the base opposite said first-named leg, a pair of braces connected for joint movement, one of said braces being connected to one of the legs of said pair of legs and the other being connected to the other of said pair of legs, said braces being pivotally connected to each other and so related to the pair of legs as to cause said legs to spread from each other as they are unfolded, and a folding brace connecting each leg with the bottom of the table.

5. In combination, a combined case and table, said case having a base for serving as a table top, a plurality of legs pivotally mounted on the under-side of said base, each of said legs comprising three channel-shaped sections having a length less than the width of said base and a combined length sufficient when extended to support the base at table-height from the floor, means pivotally connecting the ends of the intermediate

section with the upper end of the lower section and with the lower end of the upper section, said pivot means between the lower and intermediate section being so related to the two sections as to urge the two sections away from each other when the lower section is folded within the channel of the intermediate section, and latch means to maintain the lower section in folded relation with reference to the intermediate section, which when released permits the lower section to spring out of its folded position within the intermediate section.

6. The combination set forth in claim 5 in which the latch also serves to lock the upper section to the intermediate section when the sections are extended.

7. In combination, a combined case and table, said case having a base for serving as a table top having folding legs pivotally connected to the underside thereof, each of said legs having three channel sections with the lower section smaller in cross-section and adapted to fit within the next higher section, pivot pins hinging successive sections to each other, said pivot pins being so placed as to limit the open position of the sections in respect to each other, and the pivot pins hinging the lower and intermediate sections also being so placed as to require flexing of the lower section for its encasement within the channel of the intermediate section whereby there is a continued tendency for the lower section to rise from confinement within the intermediate section, a latch for maintaining the sections of the legs in folded relation, and braces pivotally connected to the table top and to the upper sections of the legs for bracing the legs when they are unfolded and the table is in use.

8. In combination, a combined case and table, said case having a base for serving as a table top for supporting a typewriter and having folding legs pivotally connected to the underside thereof, two of said pivotal connections being adjacent one edge of the table top and the pivotal connection for a third leg being adjacent an edge opposite said first-named edge, each of said legs being made up of a plurality of extensible sections, the length of the longest of which is just within the dimension of the table top extending from the point of pivotal support of the leg to the edge of the table top opposite said point of pivotal support so that the legs may be folded against the bottom of the table top and contained within the area of a standard base of a typewriter while also being extendable for supporting a typewriter at the regulation height for typewriter operation.

9. In combination, a combined case and table, said case having a base for serving as a table top for supporting a typewriter and having folding legs pivotally connected to the underside thereof, each of said legs having three channel sections with the lower sections smaller in cross-section and adapted to fit within the next higher section, pins passing through the flanges of the channel sections for joining the lower intermediate and upper sections in folding relation, the pivotal connection of the upper section of each leg with the table top being adjacent an edge of the table

top, two of said pivotal connections being adjacent one edge and the pivotal connection for a third leg being adjacent an opposite edge, the leg sections of each leg all being of substantially the same length with the longest section of the leg being of a length just fitting within the dimension of the table top extending from the point of pivotal support of the leg to the edge of the table top opposite said point of pivotal support, whereby said legs which are designed to support the table top above the floor at normal elevation for typewriter use may be folded within an area no larger than the combined typewriter base and table top.

10. In combination, a combined case and table, said case having a base for serving as a table top for a portable typewriter, a cover hinged to the base for enclosing the typewriter, a sub-base supportedly attached to the underside of said base by means of hinges adjacent an edge of the base whereby the sub-base may be swung into place at the underside of the base to form a compartment, legs attached to the underside of said base and foldable into said compartment, a pair of said folding legs being pivotally supported at the underside of said base adjacent the edge of the base opposite said first-named edge, braces for maintaining said pair of folding legs in extended position when the base is in use as a table, another of said legs being pivotally supported upon the same hinge line as that of said hinge between the base and sub-base, a foldable brace extending from said leg to the bottom of the base for maintaining said leg in unfolded position when the base is being used as a table, and another folding brace between said leg and sub-base whereby the sub-base may be raised alongside the base to provide a shelf or permitted to hang downwardly, as desired.

11. In combination, a typewriter box having a base to which a typewriter may be attached, said base having walls surrounding the base and rising from the side of the base adapted to support the typewriter, a cover comprising a top coextensive with said base and having side walls which together with the side walls on the base constitutes the side walls of a typewriter compartment, said base and cover being connected by hinges, a combined sub-base and shelf comprising a board coextensive with the area of said base, a rail about the edges of said board, and hinges between said sub-base and base whereby the sub-base may be placed underneath said base with the rail thereof in contact with said base to form a compartment at the under-side of said typewriter box or may be placed in a position to one side of the base so as to form a shelf alongside of said base and with the rail thereof underneath the shelf, as desired.

12. The combination set forth in claim 11 in which folding legs are secured to the under-side of the base, said folding legs being made up of sections of such length as to be accommodated within the compartment formed by the sub-base when the legs are folded.

HAROLD HOWE