

1,382,707.

W. G. YOUNG.
FOLDING STAND.
APPLICATION FILED JULY 2, 1920.

Patented June 28, 1921.

3 SHEETS—SHEET 1.

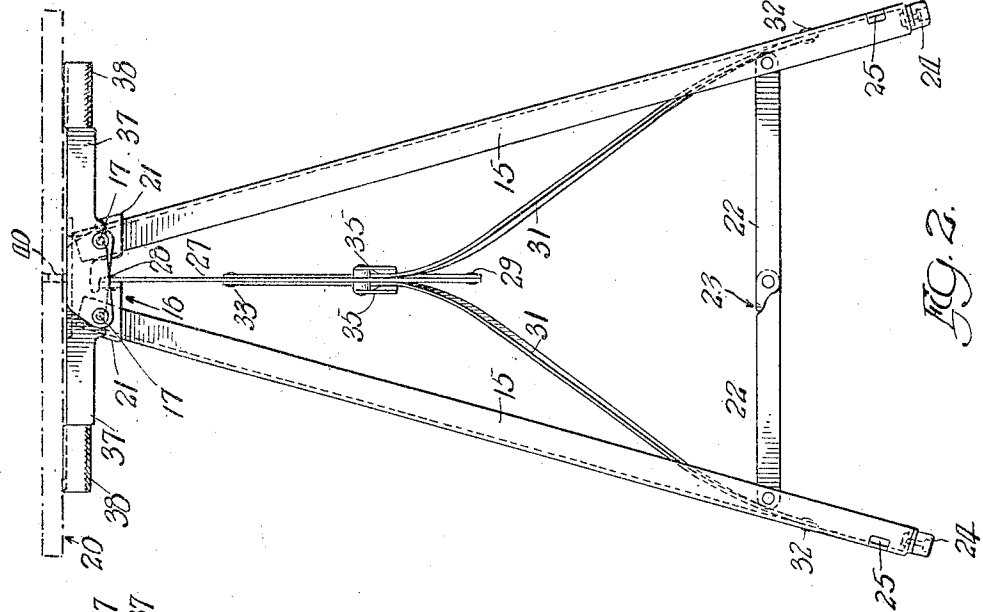


Fig. 2.

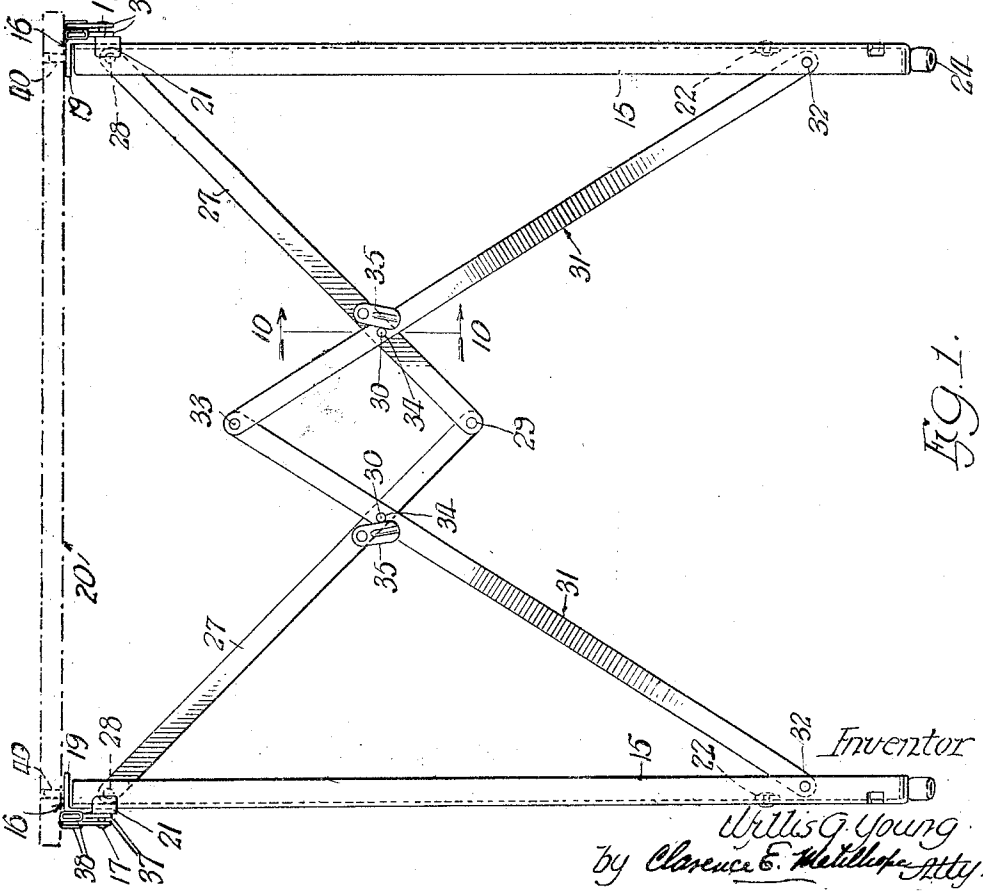


Fig. 1.

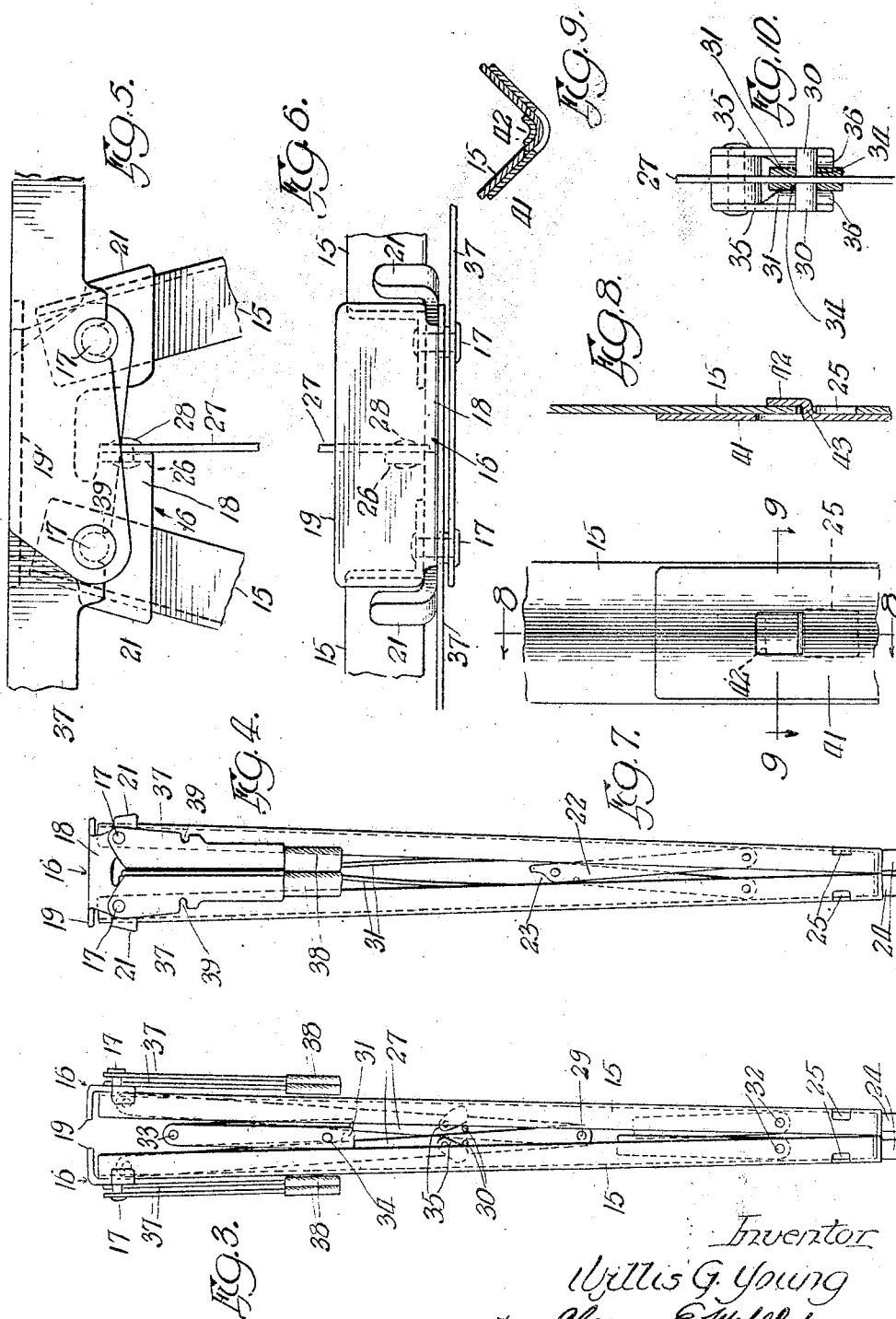
Inventor
Willis G. Young
by Clarence E. Mettler, Atty.

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3 SHEETS—SHEET 2.



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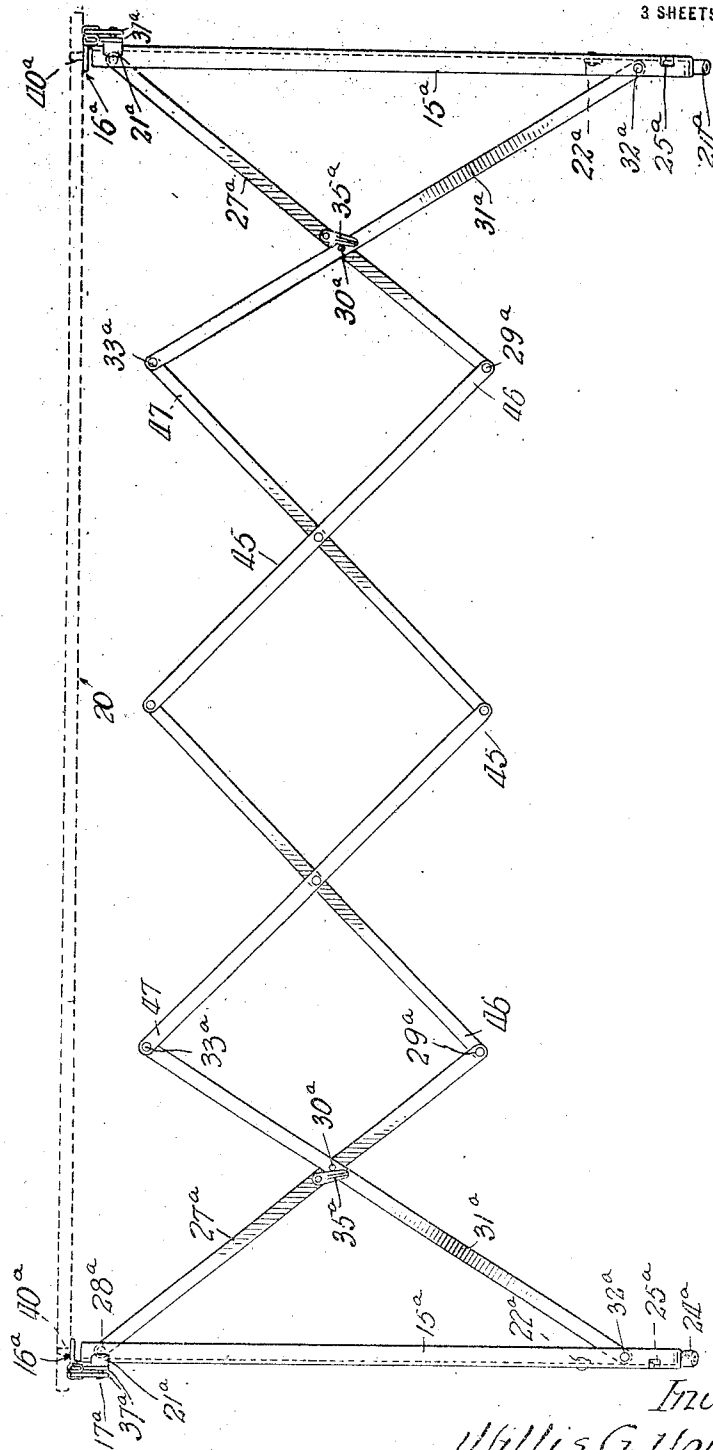
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3 SHEETS—SHEET 3.

Fig. 11.



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UNITED STATES PATENT OFFICE.

WILLIS G. YOUNG, OF CHICAGO, ILLINOIS.

FOLDING STAND.

1,382,707.

Specification of Letters Patent. Patented June 28, 1921.

Application filed July 2, 1920. Serial No. 393,596.

To all whom it may concern:

Be it known that I, WILLIS G. YOUNG, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Folding Stands; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in folding stands and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

One of the objects of the invention is to provide a light, rigid folding stand, which, when unfolded or extended, may be used to advantage as a support for table tops, sample cases, typewriters and for like purposes, and when folded makes a compact bundle which may be easily carried about.

Another object of the invention is to so construct the stand that it may be unfolded or folded without the use of tools or without the use of extraneous fastening devices, such as thumb screws, butterfly nuts and the like.

These objects of the invention, as well as others, together with the several advantages thereof, will be made more apparent as I proceed with my specification.

In the drawing:

Figure 1 is a view in side elevation of a stand embodying my invention, in its unfolded or extended open position.

Fig. 2 is an end view thereof when in its unfolded or extended open position.

Fig. 3 is a side view of the stand when folded.

Fig. 4 is an end view of the stand when folded.

Fig. 5 is a view in end elevation on an enlarged scale, of the bracket and associated parts shown at the top end of Fig. 2.

Fig. 6 is a top plan view of said bracket and associated parts.

Fig. 7 is a detail view in elevation, on an enlarged scale, of one of the legs of the stand, together with an extension leg therefor.

Fig. 8 is a vertical section through the leg and extension, taken on the line 8—8 of Fig. 7.

Fig. 9 is a horizontal section through Fig. 7 on the line 9—9 thereof.

Fig. 10 is a detail, sectional view, taken on the line 10—10 of Fig. 1, and which will be more specifically referred to later.

Fig. 11 is a view in side elevation of a stand embodying a modified form of my invention when in its unfolded or extended open position.

Referring now in detail to that embodiment of the invention illustrated in Figs. 1 to 10 inclusive, of the accompanying drawings:—15—15 indicate the legs of the stand, arranged in pairs at the ends thereof, and preferably made of angle bar. Each pair of legs is pivotally connected at their top ends to oppositely facing, transversely extending, end brackets 16, by means of longitudinal pins 17 carried upon the upright plate part 18 of each bracket. As shown herein, each bracket has a top horizontal plate part 19, which imparts strength and rigidity to said bracket and also acts as a part of the support for a table top 20 or other like member when the stand is in its open position, as shown in dotted lines in Figs. 1 and 2. The inner ends of the pins 17 are fixed with reference to the upright plate parts 18 of the brackets and extend inwardly through the flanges of the legs 15, which engage the inner surfaces of said upright plate parts. The other ends of said pins project outwardly beyond said plate part 18, for a purpose to appear later.

The legs 15, when in their open spread apart positions, diverge outwardly toward their bottom ends, and are limited in this opening movement by means of inwardly bent ears 21 on the ends of the bracket plate parts 18; which engage those flanges of the legs extending longitudinally of the stand when in its open, unfolded position. To lock each pair of legs in their open, spread apart position, I provide folding brace bars 22 which are pivoted at their outer ends to the transverse flanges of the legs of each pair near their bottom ends, and are pivotally connected together at their inner ends by a knuckle joint 23. Said knuckle joint may be actuated to lock said bars together in their extended, aligned, horizontal position, as shown in Fig. 2, and permits an upward folding movement of the inner ends of said bars to break the knuckle joint, as shown in Fig. 4, whichever is desired.

Each leg carries a foot 24, preferably made of rubber, at its bottom end, and above said foot at the corner of the leg is

provided a rectangular opening 25 for the purpose of the removable attachment of an extension leg, which will be hereinafter described.

5 Each upright plate part 18 of the brackets 16, is provided at its bottom edge intermediate the ears 21, with an inwardly extending ear 26 (see Figs. 5 and 6) to which the top or outer ends of folding extension links 27 are pivoted by means of rivets 28, the bottom or inner ends of said links being pivoted together by a rivet 29. Each link 27 carries near its bottom or inner end, laterally projecting studs 30. Associated with these extension links is a second pair of folding extension brace links 31—31 arranged in pairs. The links of each pair 31 are flexible and are pivotally connected at their bottom ends to the longitudinal flanges of the legs 15 by means of rivets 32 just below the point of attachment of the brace bars 22 before mentioned. Each pair of links 31 straddles an associated extension link 27 and the top ends of all of said links 31 are pivoted together by a rivet 33. Each link 31 has a hole 34 near its top end which is adapted to receive the studs 30 on the links 27 when the stand is in its open or unfolded position. Clips 35 are pivoted on each side of the links 27 near the studs 30 and said clips each have an inner cam rib 36 (see Fig. 10) which, when the clips are swung about their pivot, will engage the links 31 and hold them in engagement with the sides of the links 27, so as to be locked upon said studs 30.

It will be noticed that by reason of the fact that the brace links 31 are connected together at their top ends and to the legs at their bottom ends, said links will diverge from their top ends toward each associated leg. Thus when they are pinched or brought together to engage the sides of the links 27, so that the studs 30 extend through the holes 34 and the clips 35 have been swung into a position holding them in engagement with said studs; they become reversely curved or bowed, as shown in Fig. 2 and are thus put under tension. With the legs 15 of each pair held in open, spread apart position by the bars 22 and the pairs of legs spaced longitudinally apart when the stand is in its open position, the tension of the links 31 acts to take up any loose play, and thus the several parts of the stand are locked rigidly together, so that there can be no wobbling of the stand when in this open position.

To assist the horizontal plate parts 19 of the brackets 16 to form a good substantial support for a table top or the like, I provide the following: Pivoted to the outer end of each rivet 17 is an arm 37 which normally depends downward when the stand

is folded, as shown in Fig. 4. The outer, free end of each arm is covered with a rubber or like covering 38, while between its ends and opening through one edge is a notch 39. Said notch is spaced from the pivot pin 17 of the arm, a distance equal to the distance between the pivot pins 17 on each bracket, so that when said arms have been swung upwardly and outwardly in reverse directions about their associated pivot pins, say for about 270° , the notch 39 of one arm will engage the pivot pin 17 of the other arm and vice versa, as shown in Figs. 2 and 5. Thus the arms project laterally beyond the ends of the bracket plates 16 to provide a good substantial support for whatever it is desired to place upon the stand. If desired, upright pins 40, may be provided on the horizontal plate parts 19 of the brackets 16, as shown in dotted lines in Figs. 1 and 2, to prevent displacement of the table top or the like, which of course have holes to receive the same.

Should it be found that the legs 15 are not long enough, the same may be increased in length by means of extension legs also made of angle bar of the same size as said legs and which may be attached and detached therefrom at will, without the use of tools. In such case, each extension leg 41 is provided at its top end with a rectangular lug 42 of a plan area substantially equal to that of the opening 25 in said leg and which is punched and spaced inwardly from the corner or angle thereof, but which is still connected at its bottom end by a web 43 (see Fig. 8). When it is desired to attach an extension leg, the same is placed on the outside of a leg 15, with the lug 42 engaged in the opening 25 of said leg. An upward movement is then imparted to the extension leg when the lug 42 will engage with the inner corner part of the leg above its opening 25, this upward movement being limited by the substantial engagement of the top edge of the opening 25 with the web 43. To remove the extension leg, it is only necessary to pull the extension leg downwardly of the leg 15, when the lug 42 will come out of the opening 25 and the extension leg will then be detached.

To open the stand, when in the folded position, shown in Figs. 3 and 4, the pairs of legs 15 are pulled outwardly and away from one another to the substantially full, open position of the stand, the links 27 and 31 unfolding during this movement. Preferably, but not necessarily so, the legs of each pair are next swung outwardly away from each other about the pivots 17, the brace bars 22 tending to swing into the straight, aligned position. When the legs have thus been opened, a downward pressure on the knuckle joints 23 of the bars 22 will straighten the

same out and force the said legs into the final, full open position. This straightening out of the brace bars, will act to impart a slight bow or tension to them so that they will not fold accidentally upwardly by themselves. Thus said bars together with the ears 21 on the bracket plates, will rigidly hold the legs of each pair of legs in their open spread apart position.

After this has been done, the holes 34 in the flexible link braces 31 are brought into register with the studs 30 and are then pinched or otherwise brought toward each other so as to engage with the sides of the links 27, so that said pins will extend through the said holes, after which the clips 35 are swung about their pivots until they embrace the links 31, and securely hold them in engagement with said pins. The arms 37 are next swung about their pivot pins 17 in opposite directions until the notches 39 of one arm engage the pin of the other arm when the stand is in its full open position, as shown in Figs. 1 and 2. A table top or any other object desired to be supported, may now be placed upon the stand, resting of course, upon the arms 37 and the horizontal plate part of the brackets.

To fold the stand, the arms 37 are swung into their normal depending position, as shown in Fig. 4. The clips 35 are next swung about their pivots to release the links 31, which being under tension will spring or yield away and be released from the pins 30. An upward lift on the knuckle joints 23 will break the same so that the legs of each pair may be swung toward each other when both pairs of legs are moved toward each other, the links 27 and 31 folding up until all parts are in the position shown in Figs. 3 and 4.

It will be noted that the stand may be set up or folded without the use of tools, and when set up, provides a rigid stand capable of sustaining any reasonable weight without sagging or wobbling. When folded up, it forms a neat bundle which may be readily carried about in the usual grip or satchel, or in a canvas bag made to receive the same. As no parts have to be removed and replaced in the unfolding or folding of the stand, no parts can become lost. It is of especial use to salesmen, peddlers and the like, for holding their sample cases for the display of samples of goods sold. It is of advantage in the home, as it may be used to support a table top for playing at cards or for holding an ironing board. As it folds up compactly, it takes up but little space when not in actual use in the home.

In Fig. 11, I have shown a modified form of the invention, wherein there is provided an addition of means to permit a greater extension of the stand. This means is the familiar lazy tong extension links which are

interposed between the extension links and the brace links.

In said Fig. 11 the like parts bear reference numerals the same as before, but with the addition of the superfix "a."

45 indicates the familiar lazy tong extension links, which are pivotally connected at their ends 46 and 47 respectively, to the ends of the extension links 27^a and the brace links 31^a, said extension and brace links of each pair of legs being connected by the lazy tong links instead of being connected directly together as shown in Figs. 1 to 10 inclusive.

While in describing my invention, I have referred to certain details of mechanical construction and arrangement of parts, as well as to the manner of folding and unfolding and to the uses to which the same may be put, I do not wish to be limited thereto except as may be pointed out in the appended claims.

I claim as my invention:

1. A folding stand comprising, legs arranged in pairs, end brackets, one for each pair of legs, said legs being pivoted to the associated bracket so as to swing in the plane thereof, said brackets having stop shoulders to limit the outward opening movement of said legs, folding brace bars connecting the bottom ends of each pair of legs together, upper extension links pivoted to each other at one end and to said brackets at their other ends, lower brace links arranged in pairs and pivotally connected together at their top ends, there being a pair of such links associated with each pair of legs, the links of each pair of brace links being connected to each of the associated legs and straddling and crossing one of said extension links, and means providing an interlocking connection between said extension links and said brace links.

2. A folding stand comprising, legs arranged in pairs, end brackets, one for each pair of legs, said legs being pivoted to the associated bracket so as to swing in the plane thereof, said brackets having stop shoulders to limit the outward opening movement of said legs, folding brace bars connecting the bottom ends of each pair of legs together, upper extension links pivoted to each other at one end and to said brackets at their other ends, lower brace links arranged in pairs and pivotally connected together at their top ends, there being a pair of such links associated with each pair of legs, the links of each pair of brace links being connected to each of the associated legs and straddling and crossing one of said extension links, studs on said extension links adapted to extend through associated holes in said brace links, where they cross said extension links, and means for holding said brace links in engagement with said studs.

3. A folding stand comprising, legs ar-

ranged in pairs, end brackets, one for each pair of legs, said legs being pivoted to the associated bracket so as to swing in the plane thereof, said brackets having stop shoulders to limit the outward opening movement of said legs, folding brace bars connecting the bottom ends of each pair of legs together, upper extension links pivoted to each other at one end and to said brackets at their other ends, lower brace links arranged in pairs and pivotally connected together at their top ends, there being a pair of such links associated with each pair of legs, the links of each pair of brace links being connected to each of the associated legs and straddling and crossing one of said extension links, studs on said extension links adapted to extend through associated holes in said brace links where they cross said extension links, and cam clips pivoted on said extension links in the vicinity of said studs, adapted to be actuated to pinch said brace links together to hold said links in engagement with the studs.

4. A folding stand comprising, legs arranged in pairs, end brackets, one for each pair of legs, each bracket including an upright plate part which extends transversely of the stand when the same is in its unfolded, open position, pivot pins connecting the top ends of a pair of legs to said upright plate parts of each bracket so that said legs may be swung in the plane of said plate part, folding brace bars connecting the bottom ends of each pair of legs together, said plate part including end stop shoulders to limit the opening movement of said legs, an intermediate ear arranged at a right angle to said plate, upper extension links pivoted to each other at one end and to said intermediate ears of said brackets at their other ends, lower brace links pivotally connected together at their top ends and connected at their bottom ends to a leg of each pair of legs, and means providing an interlocking connection between said extension links and brace links.

5. A folding stand comprising, legs arranged in pairs, end brackets, one for each pair of legs, each bracket including an upright plate part which extends transversely of the stand when the same is in its unfolded open position, pivot pins connecting the top ends of a pair of legs to said upright plate parts of each bracket so that said legs may be swung in the plane of said plate part, folding brace bars connecting the bottom ends of each pair of legs together, said plate parts including end stop shoulders to limit the opening movement of said legs, folding links connecting one pair of legs with the other pair of legs, said links being adapted to be locked together to hold the stand in its unfolded open position, and

normally depending arms arranged in pairs, one mounted on each pivot pin and capable of being swung about the associated pivot pin as an axis into a horizontal position, the arm on one pivot pin being adapted to engage and bear between its ends, upon the pivot pin of the associated arm, when in the horizontal position adapted to receive a table top or like support.

6. A folding stand comprising, legs arranged in pairs, end brackets one for each pair of legs, each bracket including an upright plate part which extends transversely of the stand when the same is in its unfolded open position, pivot pins connecting the top ends of a pair of legs to said upright plate parts of each bracket so that said legs may be swung in the plane of said plate part, folding brace bars connecting the bottom ends of each pair of legs together, said plate part including end stop shoulders to limit the opening movement of said legs, folding links connecting one pair of legs with the other pair of legs, said links being adapted to be locked together to hold the stand in its unfolded, open position, and normally depending arms arranged in pairs, mounted one on each of the pivot pins, so as to be swung about the associated pivot pins as an axis into a horizontal position extending across the other pivot pin, each arm having a notch in one edge, said notches when said arms are in their horizontal position forming a support for a table top or the like, being engaged upon the pivot pins of the associated arms.

7. A bracket for a folding stand having legs comprising, an angle plate consisting of upright and horizontal plate parts, said upright plate part being apertured to receive pivot studs for the legs of said stand and having end extensions bent at an angle extending substantially parallel with said horizontal plate and also having an apertured ear at its middle, which extends at a right angle to the plane of said upright plate and inwardly beneath said horizontal plate part.

8. A folding stand comprising, legs arranged in pairs, end brackets, one for each pair of legs, said legs being pivoted to the associated bracket so as to swing in the plane thereof, said brackets having stop shoulders to limit the outward opening movement of said legs, folding brace bars connecting the bottom ends of each pair of legs together, extension links pivoted at their top ends to said brackets, brace links arranged in pairs and pivotally connected at their bottom ends to said legs, there being one pair of brace links associated with each pair of legs and straddling and crossing one of said extension links, means connecting the extension links of one pair of legs to the

like links of the other pair of legs, and means providing an interlocking connection between said extension and brace links where said brace links cross said extension
5 links.

In testimony that I claim the foregoing as my invention, I affix my signature in the

presence of two witnesses, this 29th day of June A. D. 1920.

WILLIS G. YOUNG.

Witnesses:

T. H. ALFREDS,
EDITH A. BREEZE.