

C. W. SMITH.
FOLDING STAND.

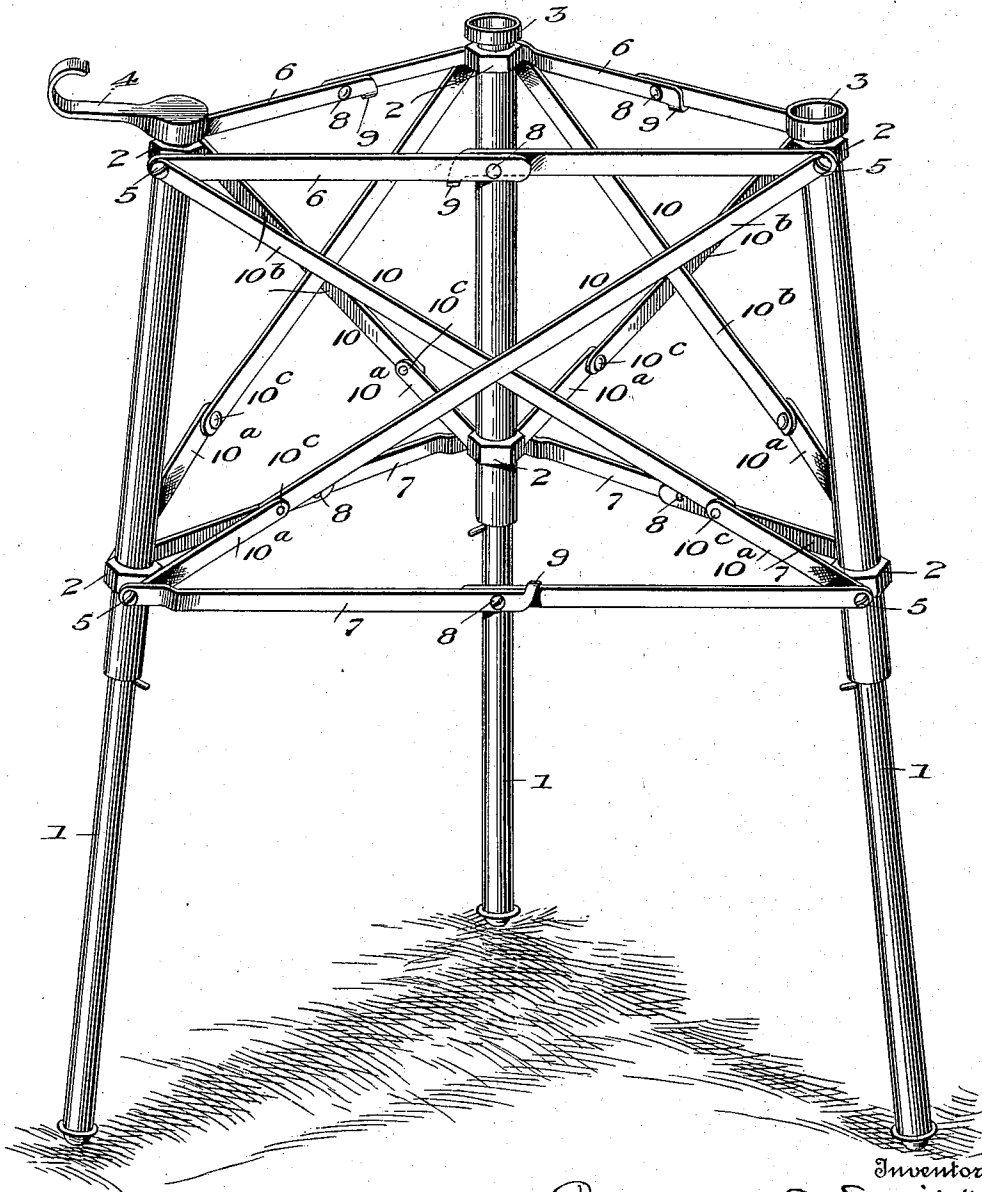
APPLICATION FILED MAR. 23, 1914. RENEWED JULY 31, 1916.

1,215,420.

Patented Feb. 13, 1917.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor

Carleton W. Smith

Witnesses

[Signature]
G. V. Lockwood

By

[Signature]
his Attorney

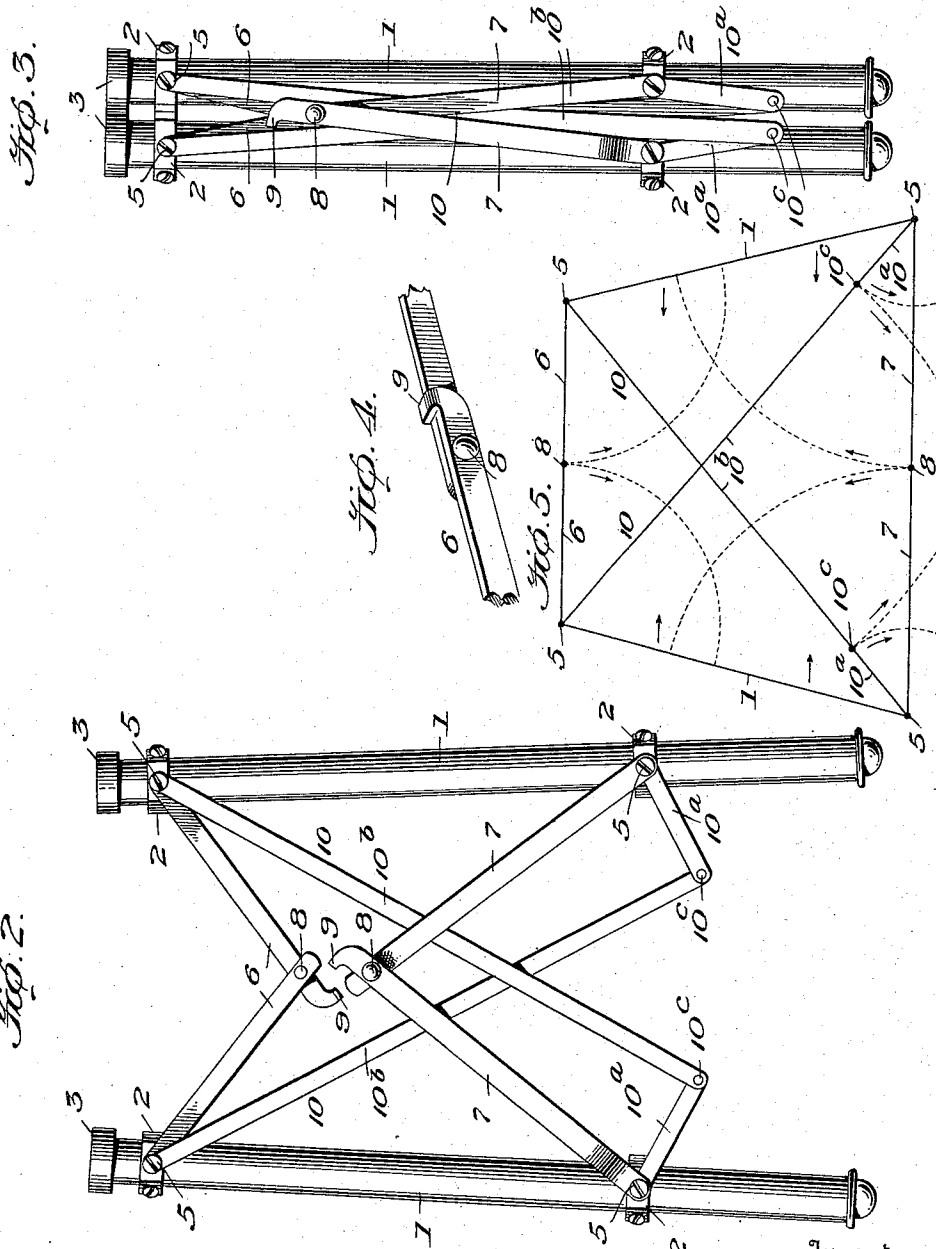
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Witnesses

J. V. Lockwood

Carleton W. Smith
Inventor

Geo. M. Hamlin
his Attorney

UNITED STATES PATENT OFFICE.

CARLETON W. SMITH, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO FOLDING UTILITIES CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FOLDING STAND.

1,215,420.

Specification of Letters Patent:

Patented Feb. 13, 1917.

Application filed March 23, 1914, Serial No. 826,570. Renewed July 31, 1916. Serial No. 112,478.

To all whom it may concern:

Be it known that I, CARLETON W. SMITH, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Folding Stands, of which the following is a specification.

This invention relates to folding stands.

My object is to provide, in a folding stand, particularly those adapted for supporting typewriters, adding machines and the like, first, legs and braces arranged in an improved manner for extension or collapsing which will embody the tetrahedral principle of bracing, whereby very great strength, durability and compactness are obtained with adaptability to fold or collapse into compact condition; second, a folding stand embodying legs and folding braces constructed and combined in an improved manner to obtain lightness, strength, durability and compactness, with simplicity of structure.

In carrying out my invention, I provide bodily movable legs which may or may not be jointed or telescopic, laterally arranged foldable compression braces, and foldable tension linkages or braces combined in an improved manner.

Preferably, the lateral braces are jointed and the tension braces or linkages are formed of two or more jointed parts or links and are of crossed arrangement.

To permit a very compact collapsing or folding of the parts, the tension braces or linkages are composed of sections of which one is relatively shorter than the other if made in two sections only. I am aware that in so far as the construction of the linkages or tension braces is concerned, the shorter section of each brace may form either the upper or the lower part thereof; further, that the linkages or tension braces may be composed of three or more sections. I do not, therefore, limit myself, except where so expressed in the claims, to the exact construction disclosed in the drawings. I am also aware that the invention may be embodied in a foldable or collapsible stand having more than three supporting legs, and while a three-legged construction is preferred on account of its adaptability to adjust itself to any surface on which it stands, I do not limit myself, except where so ex-

pressed in the claims, to a three-legged or tripod construction.

I am aware that the tetrahedral principle of bracing has been applied to rigid structures in engineering operations, but so far as it is within my knowledge, the present invention is the first to embody this principle of bracing in a foldable or collapsible structure, particularly a stand.

Various modifications of construction may be resorted to as hereinbefore set forth and which will occur to those skilled in the art when carrying out the invention; therefore, I lay claim to all modifications falling within the spirit and scope of the invention.

In the accompanying drawings:

Figure 1 is a perspective view of the invention when applied to a three-legged or tripod stand, the parts being in extended condition;

Fig. 2, a side elevation showing but one panel and two legs, of the table or stand of Fig. 1, the parts being shown in partially folded condition;

Fig. 3, a view of the parts of Fig. 2, entirely folded;

Fig. 4, a detail of one of the locking joints of a lateral brace; and

Fig. 5, a diagram illustrating the movements of the braces.

Referring to Figs. 2 and 3, it will be understood that the remaining leg and braces of the stand and the clamp or hook for securing the typewriter, adding machine, or the like, are omitted for the sake of clearness. When the stand is completely folded, it assumes the compact condition appearing from Fig. 3.

The legs 1 may be in one piece, collapsible or telescopic, the latter construction being shown. The upper sections of the legs are provided with heads 2 having flat faces. Two of the legs have cups 3 adapted to receive the rear legs of a typewriter, adding machine or other object to be supported. The remaining leg is preferably provided with a hook 4 to engage the front of the frame of the typewriter, adding machine or other object supported by the stand. The hook 4 may swing up and down or horizontally or be adjustable in any desired manner and braced, if desired, in any preferred manner.

Jointed at 5 to the heads 2 are upper and

lower jointed lateral braces 6 and 7, respectively. These braces are provided with pivots 8, and one section of each brace has a lip or flange 9 (Fig. 4) overlapping the other section of the brace. Other stop means than the lips or lugs 9 could be employed for this purpose. The object of the lips or lugs 9 is to prevent the braces from "breaking" except in one direction, which is inwardly, as shown in Fig. 2.

Crossed tension braces or linkages 10 are provided for each panel of the stand. These are each composed of two or more sections 10^a, 10^b, jointed together at 10^c. The short links 10^a are shown in the drawings as being the lowermost parts of the braces 10, but they may be the uppermost parts thereof, or, the braces may be formed of more than two sections, all jointed or articulated. I do not limit myself to two sections in these linkages or tension braces 10, nor to the relative location of the sections constituting said linkages. The sections 10^a, 10^b, are, respectively, pivoted to the pivots 5 of the lower and upper parts of the legs 1 so that they swing on the same centers as do the sections of the lateral compression braces 6, 7.

Reference being had to Figs. 2 and 5, it will be understood that the proportion of the links or sections 10^a, 10^b, between the pivots or joints thereof, is such that the stand may be collapsed or folded completely, without protruding parts or interference of pivots or braces with each other, as shown in Fig. 3, enabling the parts to be arranged in the most compact condition possible.

The principle embodied in my stand is that of a plurality of collapsible tetrahedral structures. The great strength and rigidity of the tetrahedral principle of bracing is well known, but so far as I am aware, I am the first to apply it to a collapsible or foldable structure, such, for instance, as a fold-

able stand. The braces 6 take up, as members subject to compression, the weight of the object supported by the legs 1. The linkages or crossed braces 10 take up the weight on the legs 1 as tension members. The combination of compression members and tension members affords great strength and rigidity against lateral twisting or vibration of the stand when in use.

I am aware that the stresses in the members can be reversed and still serve to obtain rigidity.

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

1. A foldable or collapsible stand having relatively bodily movable legs, lateral foldable compression braces composed of jointed sections pivotally connected to the legs and constituting a direct connection therebetween, and tension braces each composed of jointed sections or links, each brace being pivoted to two of said legs and constituting a direct connection therebetween.

2. A foldable or collapsible stand having relatively bodily movable legs, a plurality of bracing panels for said legs, each panel comprising upper and lower lateral foldable braces composed of jointed sections pivoted to the legs, and braces each composed of jointed sections, the braces of said panels being arranged and foldable in substantially a single plane, the legs and braces being arranged and combined to define, when extended, a plurality of tetrahedral structures, and said legs being adapted to fold together in substantial parallelism.

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

CARLETON W. SMITH.

Witnesses:

HANS P. FREECE,
HARRY A. STONE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."