

No. 805,529.

PATENTED NOV. 28, 1905.

A. DAUGHERTY.
STEP LADDER.
APPLICATION FILED OCT. 27, 1904.

Fig. 1.

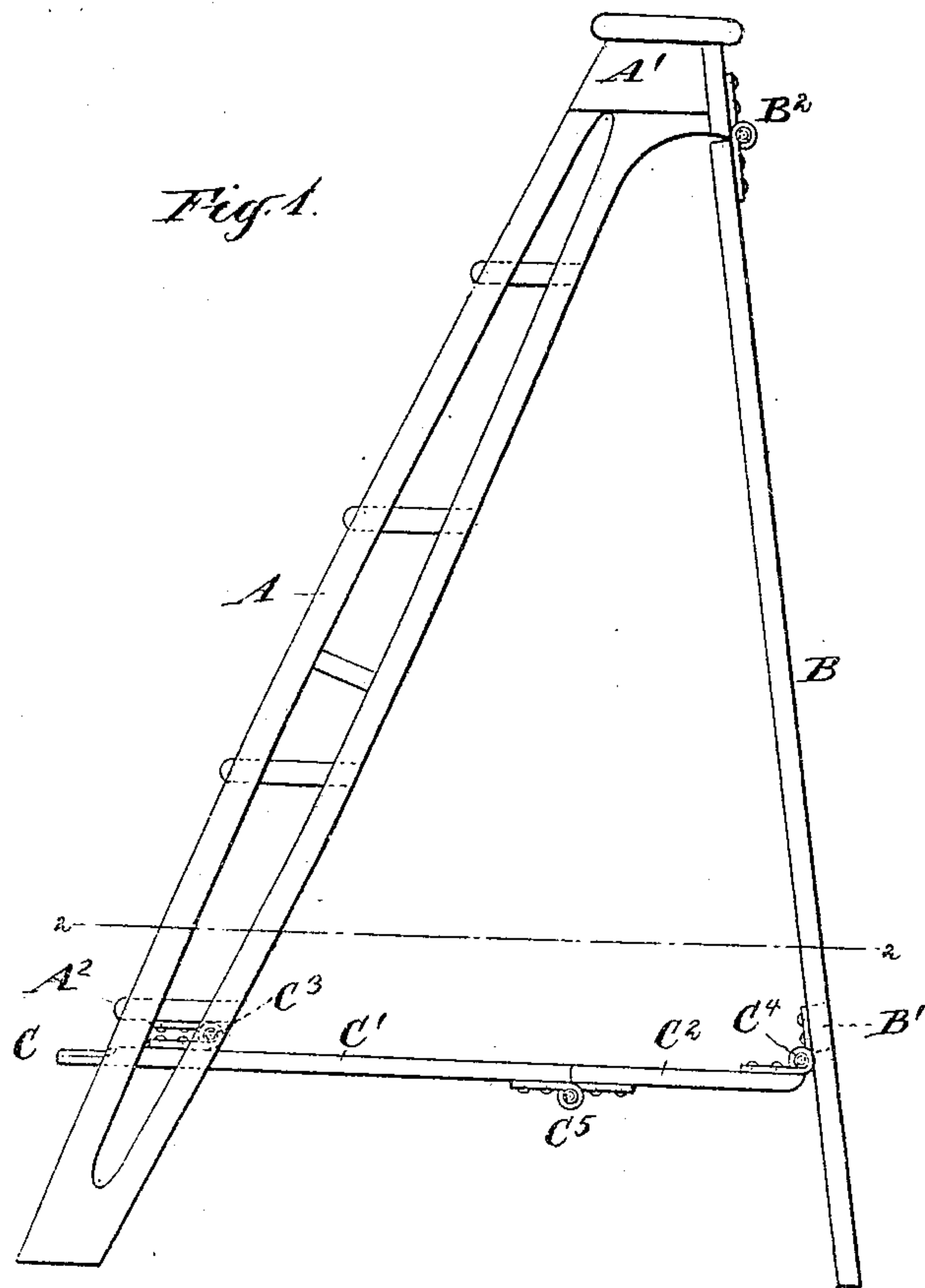


Fig. 3.

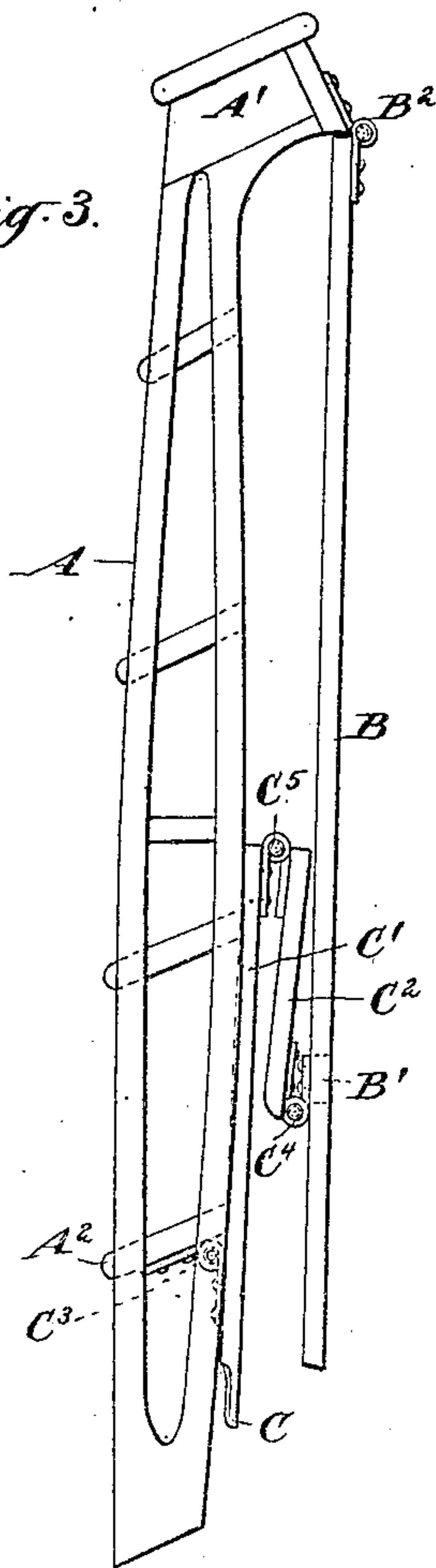


Fig. 2.

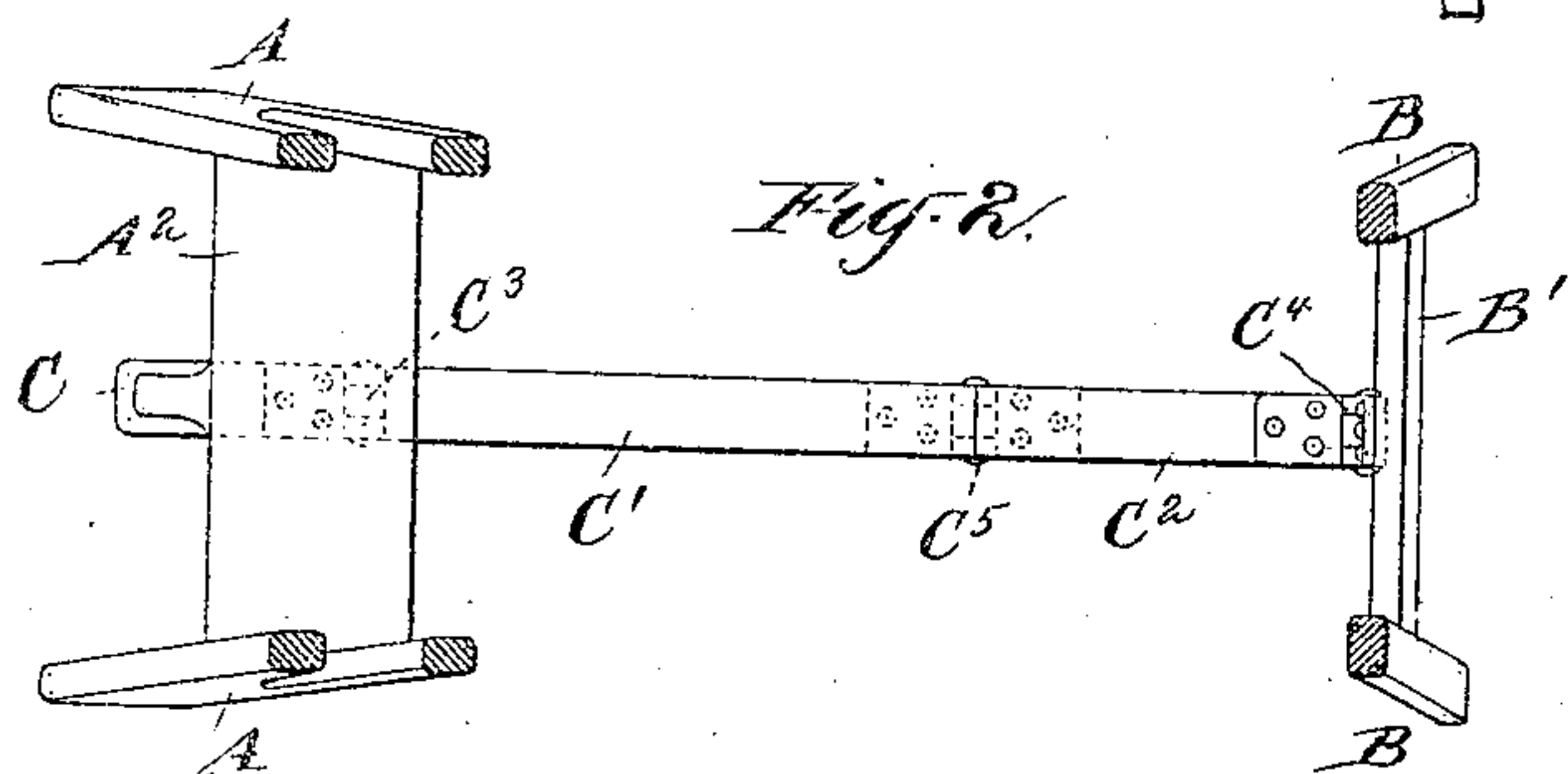
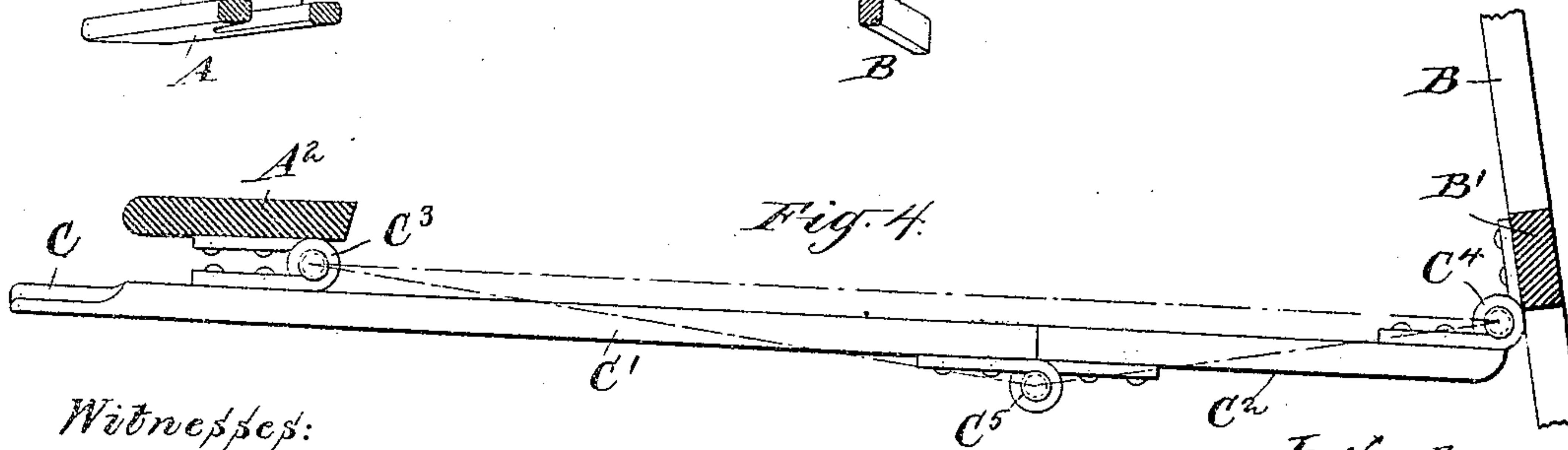


Fig. 4.



Witnesses:

B. F. Kapp.
J. E. Beards.

Inventor:

Albert Daugherty,
by his attorney
Charles R. Searle.

UNITED STATES PATENT OFFICE.

ALBERT DAUGHERTY, OF ATLANTIC CITY, NEW JERSEY.

STEP-LADDER.

No. 805,529.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed October 27, 1904. Serial No. 230,160.

To all whom it may concern:

Be it known that I, ALBERT DAUGHERTY, a citizen of the United States, residing in Atlantic City, in the county of Atlantic and State of New Jersey, have invented a certain new and useful Improvement in Step-Ladders, of which the following is a specification.

The invention belongs in that class of step-ladders in which the struts are hinged to the frame, and relates more particularly to the folding brace by which the frame and struts are connected below the hinges.

The object of the invention is to provide a folding brace which may be operated by pressure of the foot in opening the ladder for service or in collapsing it for transportation or storage and which will hold the frame and struts reliably separated when the ladder is in the open condition.

The invention consists in certain details of construction and arrangements of parts by which the above objects are attained, to be hereinafter described.

The accompanying drawings form a part of this specification and show an approved form of the invention.

Figure 1 is a side elevation of a step-ladder equipped with my improved brace in the open condition. Fig. 2 is a corresponding section on the line 2 2 in Fig. 1, showing the brace and adjacent portions of the ladder and struts in plan view; and Fig. 3 is a side view corresponding to Fig. 1, showing the ladder in the closed or folded condition. Fig. 4 is a side elevation of the brace, on a larger scale, showing certain immediately-connected parts in vertical section.

Similar letters of reference indicate the same parts in all the figures.

A A are side pieces, which, with the top A', form the frame of the ladder, equipped with steps, and having the supporting-struts B B, connected by the transverse bar B', hinged to the top portion of the frame at B'. All these parts may be of any suitable material and of any approved construction. The frame and struts are connected at their lower ends by a folding brace, serving the usual functions of resisting strains tending to cause either the approach or the further separation of these parts when the ladder is in the open condition and to fold upon itself to permit their approach when the ladder is to be closed. The brace is in two portions C' C², arranged in line in the mid-width of the ladder and having their abutting ends hinged together on the

lower face at C⁵. The portion C' is hinged at C³ on its upper face to the under face of the lowermost step A² at the rear edge of the latter and has a portion or end C projecting forward of the front edge of the step adapted to receive the application of pressure through the foot of the user or otherwise. The portion C² of the brace is hinged at C⁴, at the end of its upper face, to the inner face of the cross-bar B', joining the lower ends of the struts.

The relative positions of the hinge-centers when the ladder is in the open condition are shown in Fig. 4, in which it will be observed the hinge C⁵ at the abutting ends of the portions C' C² lies outside of and below the line joining the centers of the hinges C³ C⁴ and that consequently any strain tending to the approach of the frame and struts is successfully resisted by the abutting ends and strains in the opposite direction by the tensile strength of the connections. In order to allow the ladder to fold or collapse, the hinge C⁵ must be raised above the line passing through the centers of the hinges C³ C⁴. This is easily effected by applying the foot upon the projecting end C and exerting sufficient pressure to throw the hinge C⁵ to a point high enough to allow the approach of the struts to the frame. The end C will also serve in opening the ladder by lifting pressure of the toe beneath it, thus aiding gravity in causing the hinge C⁵ to descend until the ends of the portions C' C² are in firm abutment.

My improved form of brace adds practically nothing to the expense of manufacture and serves as a convenient aid in operating the ladder, especially when the hands of the user are occupied, as is frequently the case in cleaning and other operations in which the ladder is used.

Modifications may be made in the forms and proportions and in the points of attachment of the brace to the frame and struts.

As before stated, the construction and style of the ladder is immaterial and if the position of the lower step be such as to preclude the attachment of the brace thereto a bar may be introduced to which the brace may be hinged, or an additional bar may be introduced between the struts at the proper height.

The brace as shown is of wood; but it will be understood that metal or other material having the required qualities may be employed.

I claim—

The folding step-ladder described, compris-

ing a frame of side pieces and a top connect-
ing the upper ends thereof, steps between said
side pieces, a strut hinged to said top, and a
folding brace connecting said strut and frame,
5 said brace consisting of two abutting por-
tions of different lengths disposed at the mid-
width of the ladder, a hinge connecting the
upper face of one end of one of said portions
with said strut, a hinge connecting the up-
10 per face of the opposite end of the other
portion with the under face of the lowermost
step and adapted to fold thereunder, and a
hinge secured to the under faces of the abut-
ting ends of said portions, the last-named hinge
15 lying outside of and below the line joining

the centers of the hinges at the outer ends of
said portions, the forward end of the longer
of said portions extending but slightly beyond
the front edge of the lowermost step, where-
by the said extension may be operated by the 20
foot to fold the ladder while the ladder is sup-
ported by the hands, all substantially as and
for the purpose specified.

In testimony that I claim the invention above
set forth I affix my signature in presence of 25
two witnesses.

ALBERT DAUGHERTY.

Witnesses:

C. F. COLE,

FRANK SMOTHERS.