

No. 663,804.

Patented Dec. 11, 1900.

R. F. BUDER.
TRIPOD.

(Application filed Nov. 10, 1899.)

(No Model.)

Fig. 1.

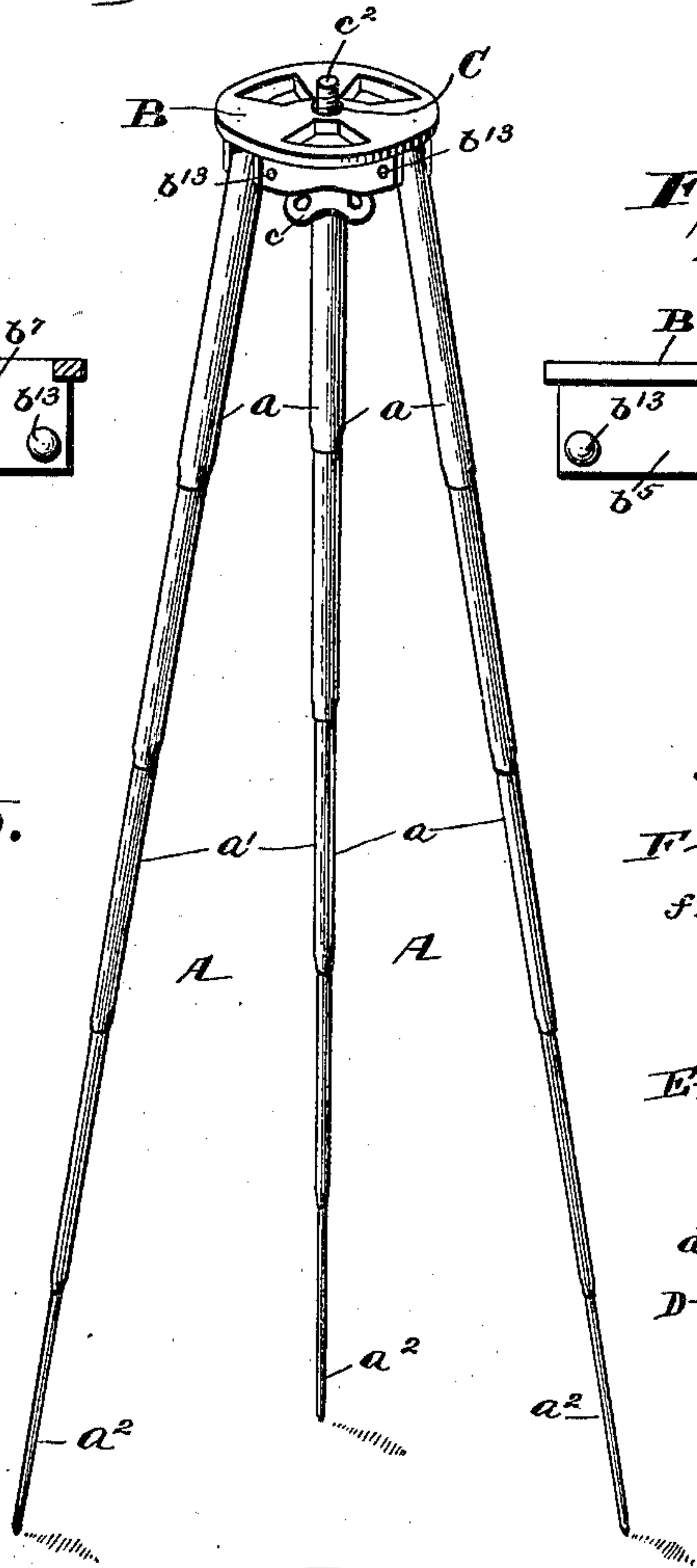


Fig. 3.

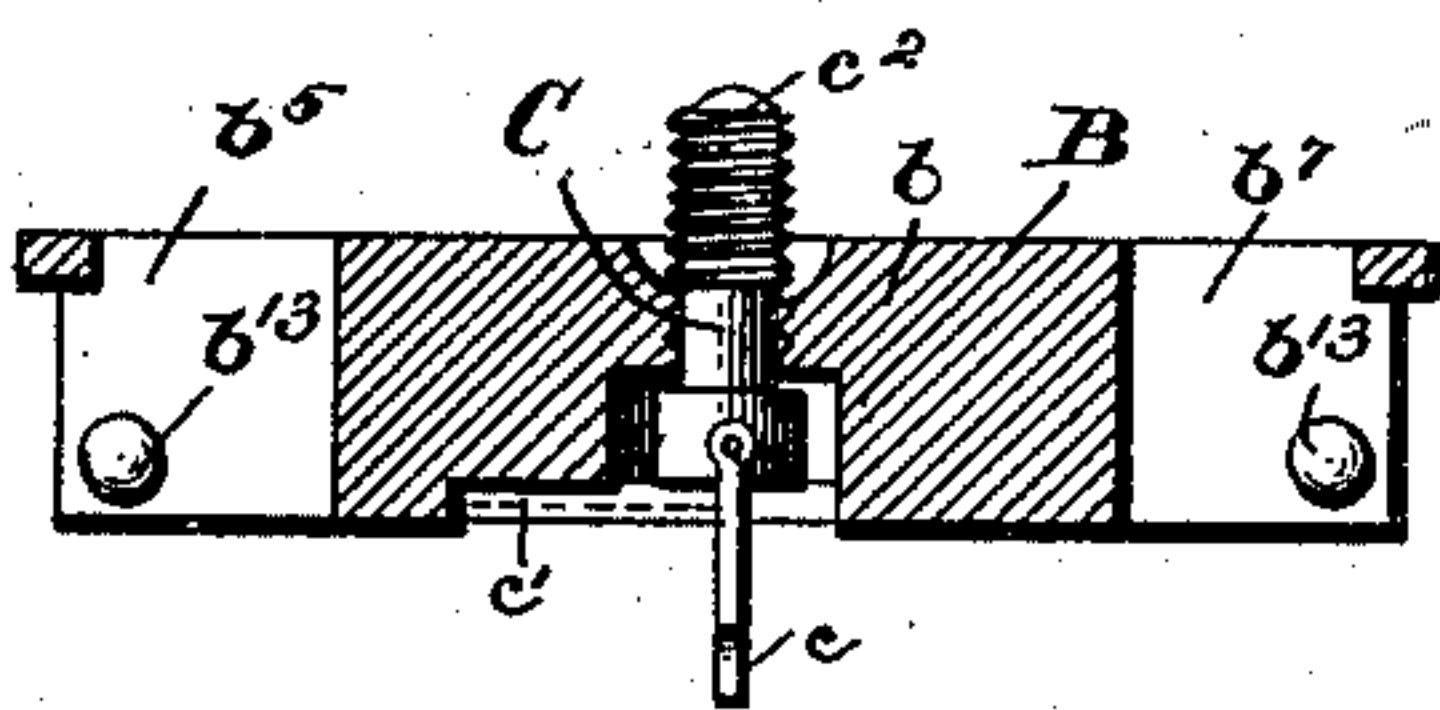


Fig. 4.

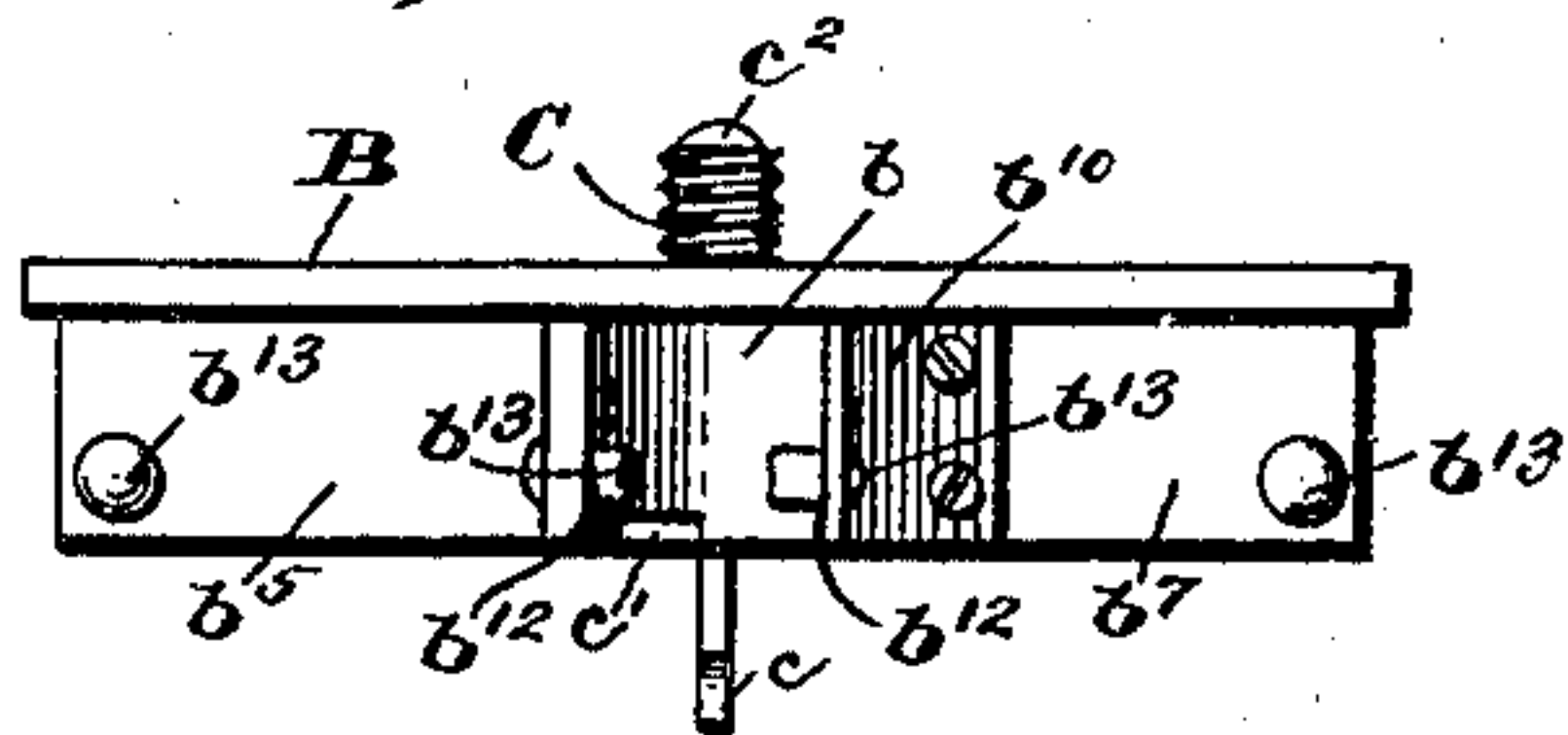


Fig. 5.

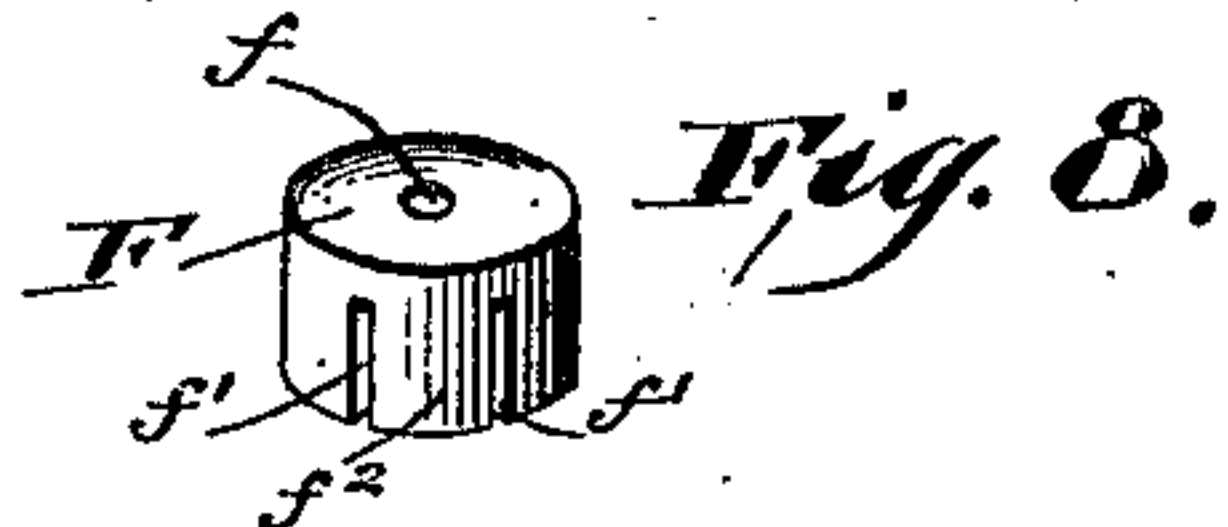
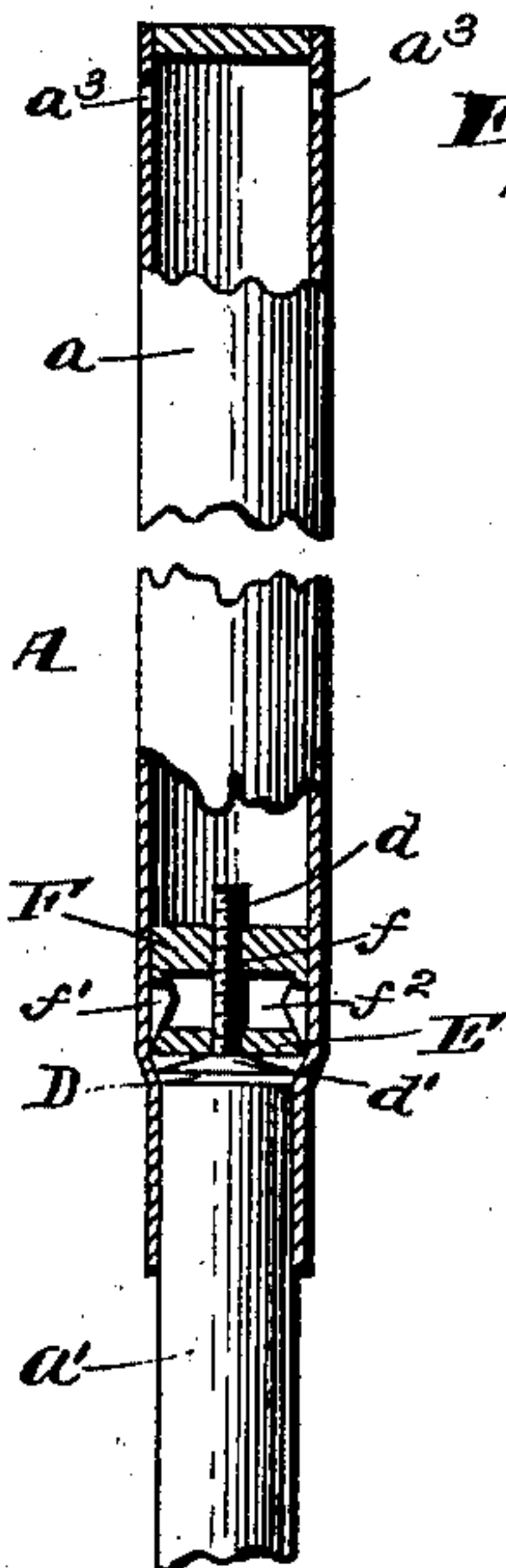


Fig. 8.

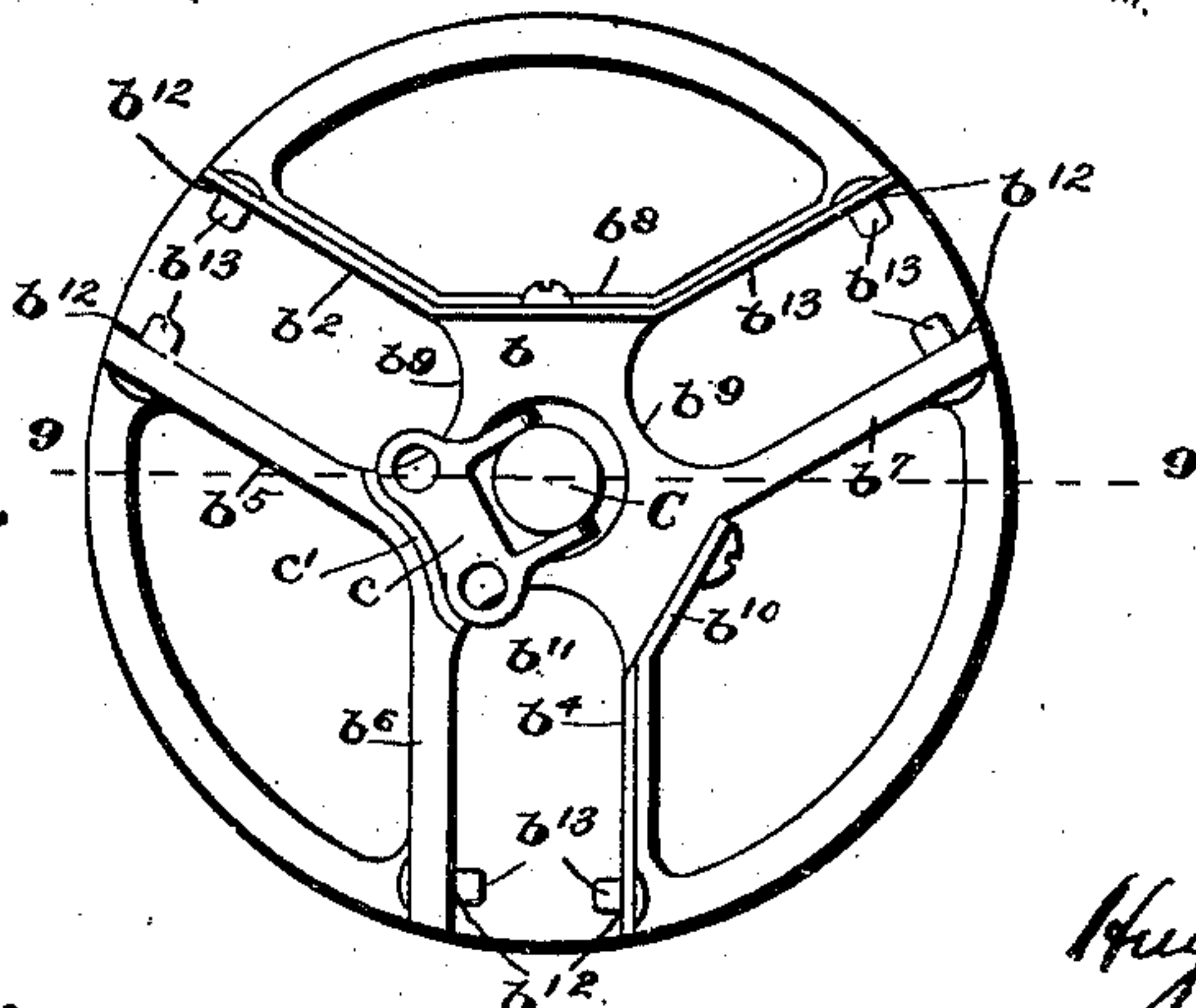


Fig. 7.



Fig. 6.

Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

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TRIPOD.

SPECIFICATION forming part of Letters Patent No. 663,804, dated December 11, 1900.

Application filed November 10, 1899. Serial No. 736,485. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH F. BUDER, a citizen of the United States, residing in the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Tripods, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, wherein like letters of reference denote like parts wherever they occur.

My invention more particularly relates to tripods of the kind used for camera-holders or supports for surveyors' instruments and analogous uses; but it is obvious that features of my invention, to be hereinafter pointed out, are adapted to a diversity of uses.

In the drawings, Figure 1 is a perspective view of the tripod assembled and ready for use. Fig. 2 is a bottom view of the top plate and attached parts. Fig. 3 is a cross-sectional view of the top plate and attached parts on the line 9 9, Fig. 2. Fig. 4 is a side view of the top plate. Fig. 5 is a view, partly in section, of portions of two of the sections of tubing that form the legs of the tripod; and Figs. 6, 7, and 8 are detail views of the several parts of my improved locking device for tubular structures.

The objects of my invention are, first, to provide a tripod adapted to be packed in exceedingly small space when not in use and thus to be easily and conveniently carried; second, in such a device to provide means whereby the same is most easily and conveniently adjustable for use; third, to provide means securing the maximum degree of rigidity in a device of the character described; fourth, to construct a tripod in such manner that it may be as light as possible, and, fifth, to provide a lock for tubular structures adapted not only for use in my improved tripod, but in any analogous construction.

The legs A are composed of the tubular sections a a' a^2 , &c., which telescope one another, the lowest section a^2 being the smallest in diameter, the next above it a little larger, and the top one a the largest of all. The section a^2 is made pointed at its lower end in any desired manner, as by swaging that section of tubing to a point or by securing in the end thereof a pointed plug. These points upon the legs A increase the rigidity of the tripod when it is firmly placed upon the ground.

The top sections a of the legs A fit into sockets in the top plate B in the following manner: The top plate B is formed with a central boss b upon its under side. This boss has three lateral projections b^2 b^3 b^4 . From both sides of the projection b^2 extend ribs b^5 b^6 , formed integral therewith and with said plate, and from one side of the projection b^4 extends another rib b^7 . These three ribs b^5 b^6 b^7 run in different directions from the central boss to the circumference of the top plate. The projection b^3 has secured to it the spring b^8 , which extends, as shown, across the bottom of the top plate from one point on the circumference of said plate to another on the opposite side, forming, in conjunction with the ribs b^5 and b^7 , the slipper-sockets b^9 . A spring b^{10} is attached to the end of the projection b^4 on the side opposite that from which extends the rib b^7 and extending to the circumference of the top plate forms, in conjunction with the rib b^6 , the slipper-socket b^{11} . Through the upper ends of the section a of the legs A run perforations a^3 , and also through the ribs b^5 b^6 b^7 and the springs b^8 b^{10} similar perforations b^{12} are pierced. Through these perforations a^3 b^{12} run the pins or screws b^{13} . These pins are preferably tapered to compensate for wear and to make a tight joint. It is obvious that mere depressions or recesses might be substituted in the section a for the perforations a^3 and that projections on the ribs and springs might be substituted for the pins b^{13} .

When it is desired to use the tripod, the legs A are inserted in the several sockets b^9 b^{11} by pressing aside the outer ends of the springs b^8 b^{10} and allowing the pins b^{13} to fit into the perforations a^3 in the section a , which holds the legs in position, though allowing them to swing. The legs of the tripod can then be adjusted at any desired angle. When the tripod has been assembled and adjusted as just described, the object to be mounted thereon (a camera in the form in which I have illustrated it in the drawings) may be fastened thereto by the thumb-screw C, which I have shown provided with a movable thumb portion c , which can fold over into the recess c' provided for it, as shown by the dotted lines in Fig. 3, thus obviating the projection of the same when the parts are not assembled, but arranged in the most compact man-

ner possible for carriage. The screw c^2 projects above the top plate when in use, but can drop below the surface-line of the top plate when disengaged from the camera or other object. It may also be pulled partly through the top plate in the act of folding over the thumb portion of the thumb-screw, inasmuch as the part of its shank nearest the thumb-screw is not threaded. When the thumb portion c of the thumb-screw is folded over into the recess c' , the screw cannot project above the top surface-line of the top plate, and so obviously no projection will appear on either side of the top plate, thus greatly increasing the compactness with which it can be packed.

As the legs A are tubular and telescope each other in their full length when "knocked down" for transportation, I provide a locking device or clamp which I believe to be new in itself as well as new in its present application.

Heretofore when attempts have been made to construct a tripod having one or more joints in its legs those joints have been fastened simply by pins or thumb-screws running through the outer section into the inner one. This method is defective in that it is not so neat as mine. The thumb-screws easily work loose. They are on the outside and exposed to accidental contact with weeds, grass, and other objects which loosen their hold upon the section they are designed to retain in position, and at best the old means for maintaining such joints fail to produce that rigidity so essential in such a device characteristic of mine. My improved lock for tubular structures—such as fishing-rods, telegraph-poles, easel and tripod legs, this enumeration being merely suggestive and not intended as complete—consists of parts placed inside the tube to be locked. In the form illustrated in the drawings the lower tube a' has secured into it in any desired manner a base portion D for holding rigidly the screw d , which passes upwardly through the tapered plug E , which seats itself upon the beveled top of the base portion d' . The screw d reciprocates in the head of the cap-piece F , which latter is screw-threaded in the passage f . The tapered plug E is not threaded in the passage e , but rides upon the beveled base portion when the latter is turned so as to enter the cap-piece F . The cap-piece F may be provided with slots or saw cuts f' in its downwardly-extending flange f^2 , so as to allow the latter easily to expand when forced apart by the forward push of the tapered plug E impelled by the screw secured to the lower tube, which latter is turned with the hand. The cap-piece F may also be so formed that its flange f increases in thickness from the bottom to the top, or said flange may be provided with an inwardly-extending wedge portion f^3 more readily to cooperate with the tapered plug to expand the flange of the cap-piece. The locking or clamping is the result of the

cap-piece being pushed firmly and strongly against the inner wall of the tubular section in which it is placed by the tapered plug being forced into the cap-piece by the forward motion of the screw and head of the lower section. When it is desired to lock the tubes for use, it is possible merely to turn the lowest section until the first and second sections are locked and by continuing to turn the smallest tube to cause the clamps in the several sections to lock in succession. To unlock the sections, a section is turned in the opposite direction to the locking motion. This causes the screw d to push the cap-piece F out of contact with the tapered plug E by means of the screw-threads in the passage f , as will readily be understood. This operation allows the flange f^2 of the cap-piece to contract, and the result is the unlocking of the tube.

It is obvious that the fact that the cap-piece F contacts against the inner walls of the upper tube, while the screw d , placed centrally to the lower tube, passes through the central perforation in the head of said cap-piece, insures the joint between the sections being formed on a true center, and also tends to cause the tubes to telescope in like manner.

I am aware that many minor changes in the form of my locking device may be substituted for those herein shown and described without in any way departing from the nature and principle of my said invention.

In order to prevent lateral play between the sections of tubing at the joint, the diameter of the lower end of the upper tube is reduced by swaging the same or by the introduction of a bushing at a^4 therein. The cap-piece F fitting closely the inner walls of the upper tube and the bushing closely encircling the lower one, a tight joint is formed. This arrangement has also the following advantage: It prevents the sections of tubing from becoming separated—pulling apart. Reference to Fig. 5 will show the impossibility of pulling the cap-piece F past the bushing or similar arrangement diminishing the diameter of the upper section.

What I claim is—

1. A clamp for tubular sections comprising a split cap-piece positioned in the larger section and formed with a central threaded perforation, an expanding member comprising a tapered plug having a central perforation, and a screw-threaded stem carried by the smaller section passing through the plug and engaging the threaded opening of the cap-piece, and having at its base a beveled portion upon which the plug loosely rides, substantially as described.

2. In a tripod-top the combination of a central boss, ribs extending therefrom, and springs, coacting with said ribs to form sockets for attachment of the tripod-legs to said top, substantially as described.

3. In a tripod-top the combination of a boss, ribs extending therefrom formed integral therewith, coacting springs, and pins to

hold removable legs in sockets formed by the ribs and springs, substantially as described.

4. In a tripod-top, the combination of ribs and springs forming sockets for the reception of the tripod-legs, said legs being pivoted within said sockets by pins or screws entering the tripod-legs from the rib and by pins or screws entering the tripod-legs from the coacting spring, substantially as described.

5. In a tripod consisting of a top, composed of a plate having ribs extending in different directions, springs suitably attached to said plate and extending in such directions as will form sockets between said ribs and said springs, and pins for retaining the tripod-legs in said sockets; detachable legs composed of tubular sections adapted to telescope each other throughout their entire length; and a lock within said sections adapted adjustably to lock said sections at any desired point in their longitudinal or telescoping movement, substantially as described.

6. In a tripod, the combination of a top plate provided with sockets having a resilient

wall, legs fitting in said sockets and perforated, and pins penetrating said perforations to hold the legs in the sockets, substantially as described.

7. In a tripod, the combination of a top plate, means for pivotally securing legs thereto, adjustable legs consisting of tubular telescoping sections, and inside locks for clamping said sections at any desired point of their length.

8. In a tripod, the combination with the top plate, of adjustable tubular telescopic legs, inside locks for uniting the leg-sections and clamping the same at any desired point of their length, and means for maintaining a true center between said sections while telescoping, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RUDOLPH F. BUDER.

Witnesses:

HUGH K. WAGNER,
JAMES H. BRYSON.