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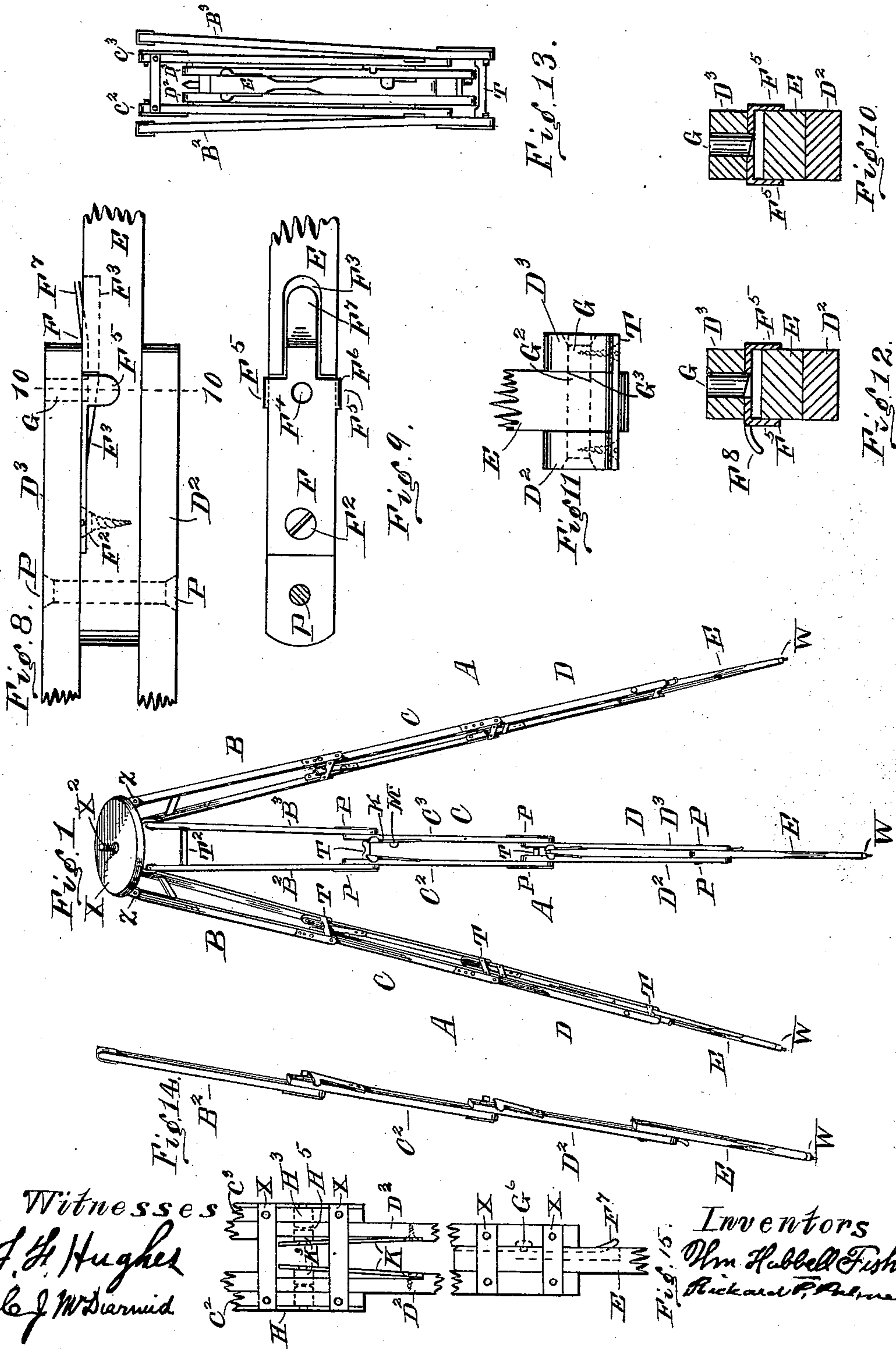
2 Sheets—Sheet 1.

W. H. FISHER & R. P. PALMER.

STAND FOR SUPPORTING CAMERAS, &c.

No. 540,611.

Patented June 4, 1895.



Witnesses
J. H. Hughes
C. J. W. Darnid

Inventors
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(No Model.)

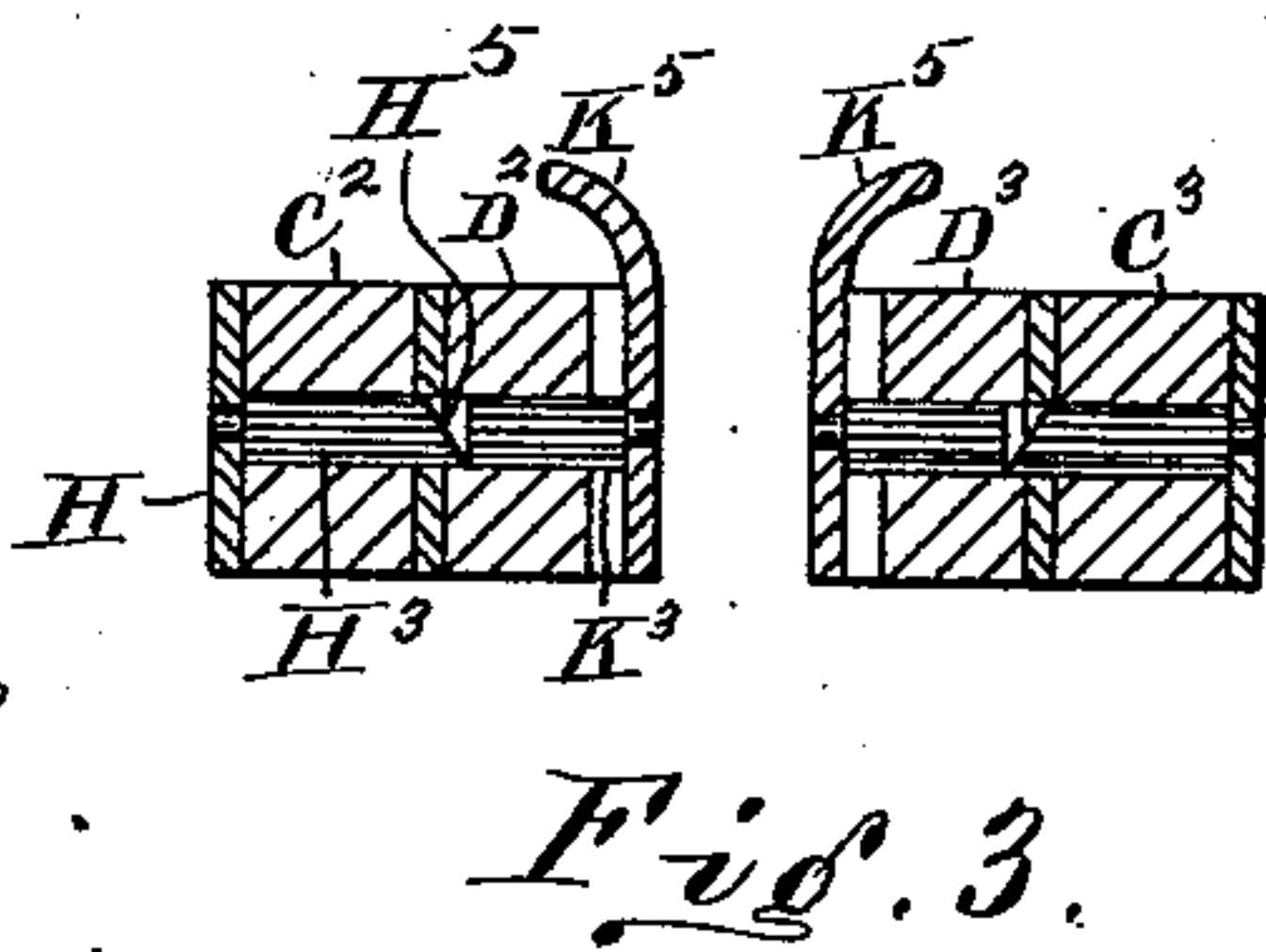
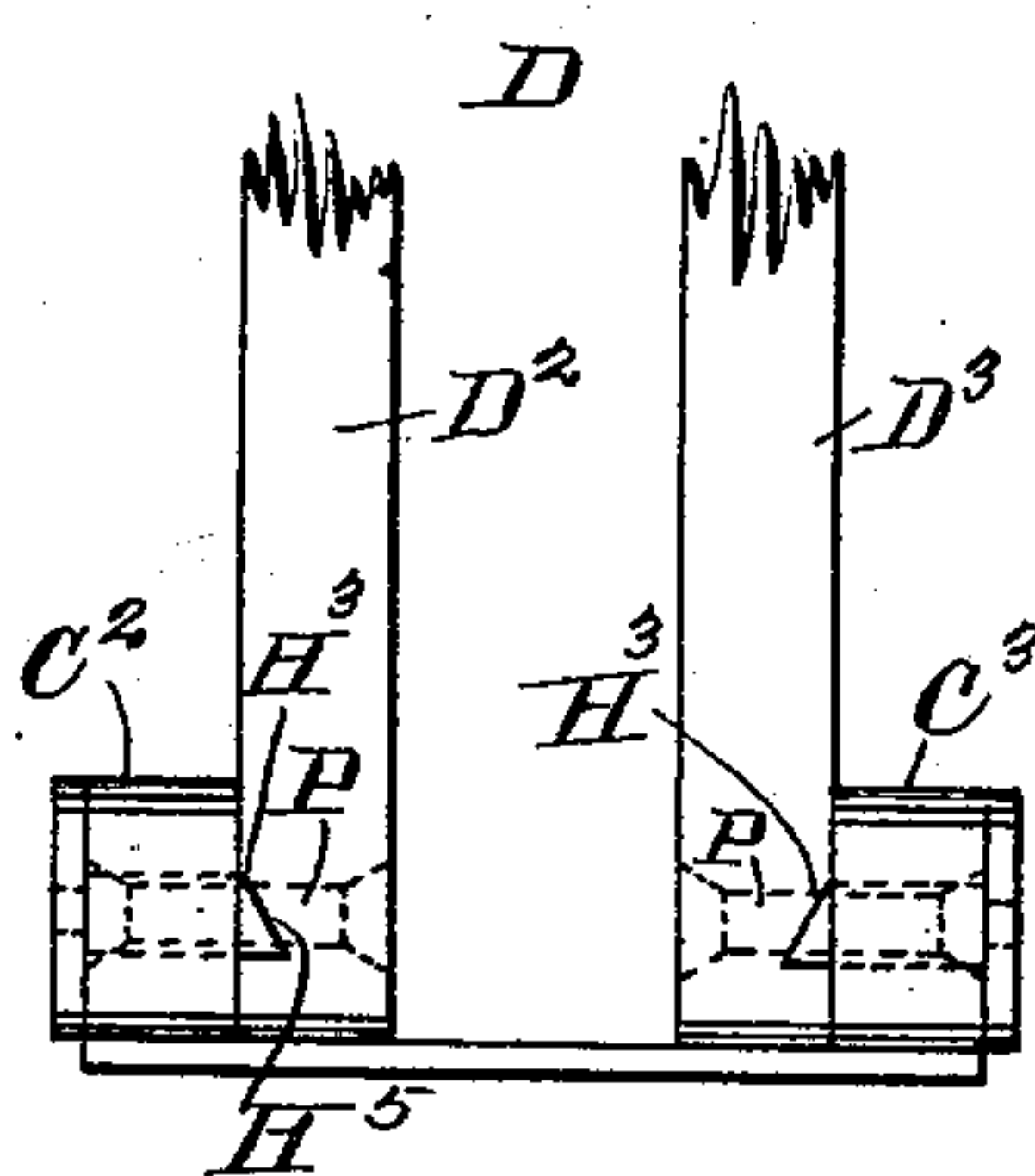
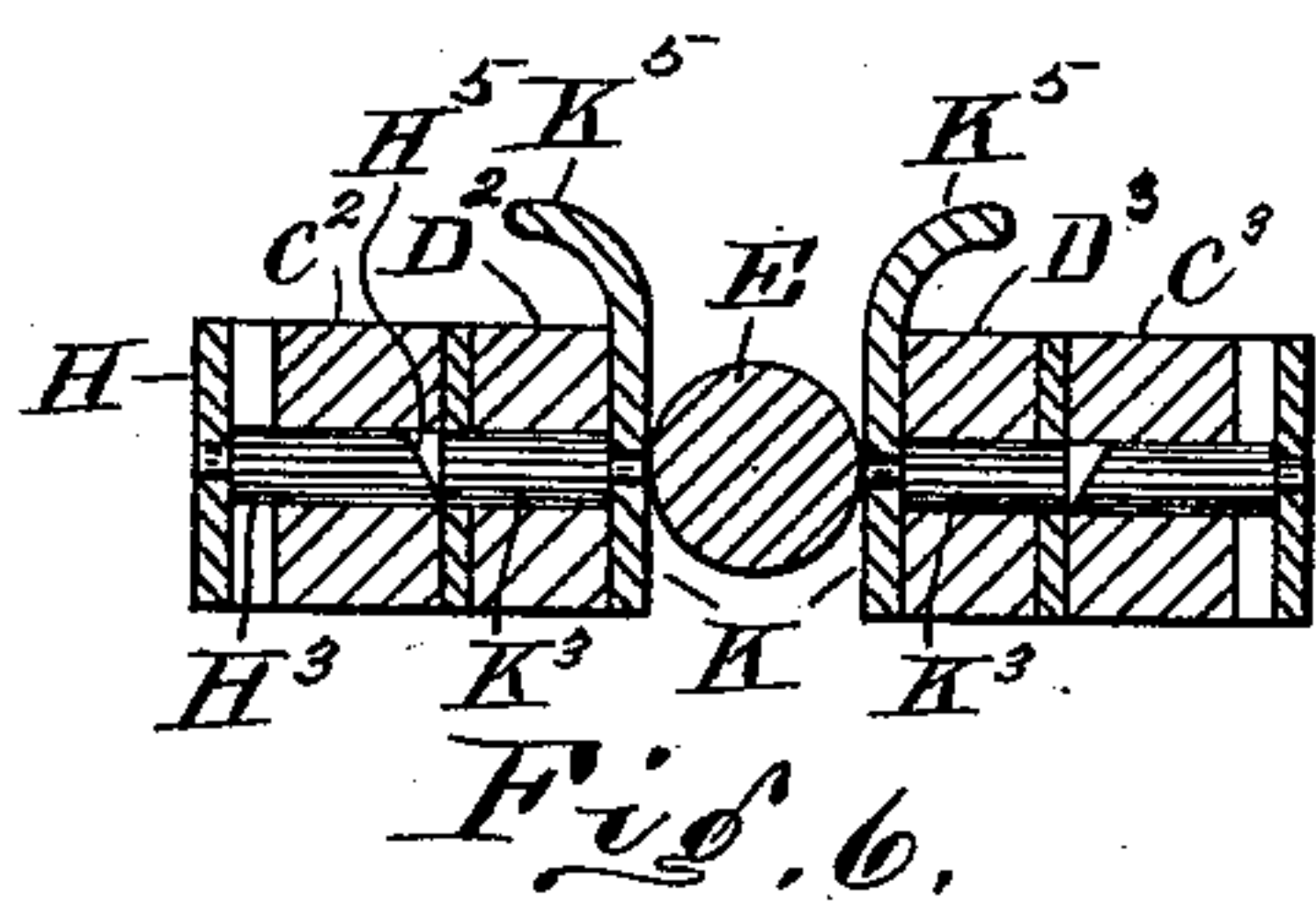
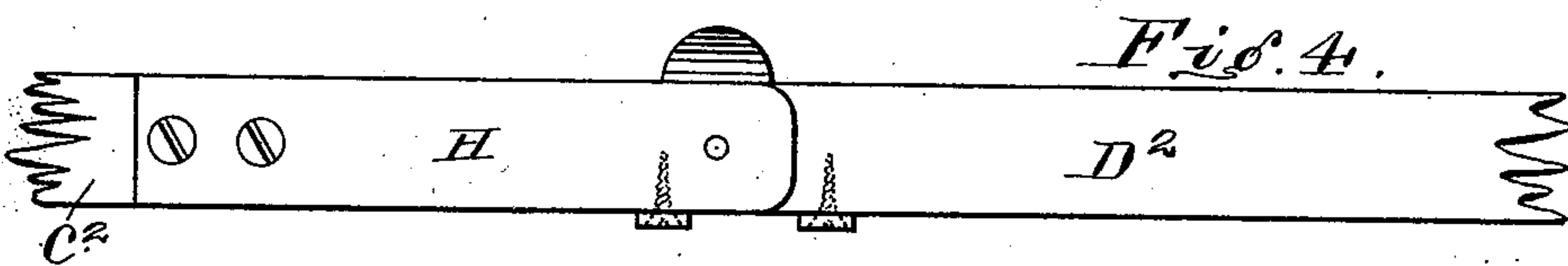
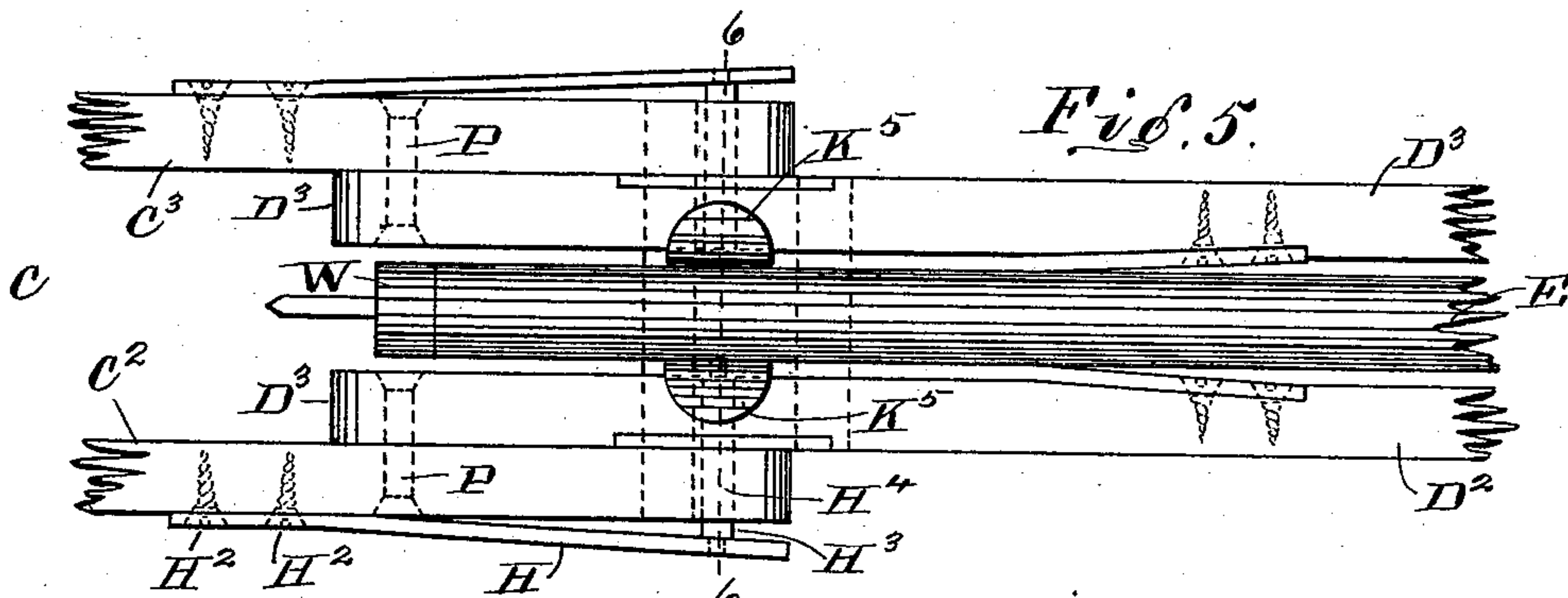
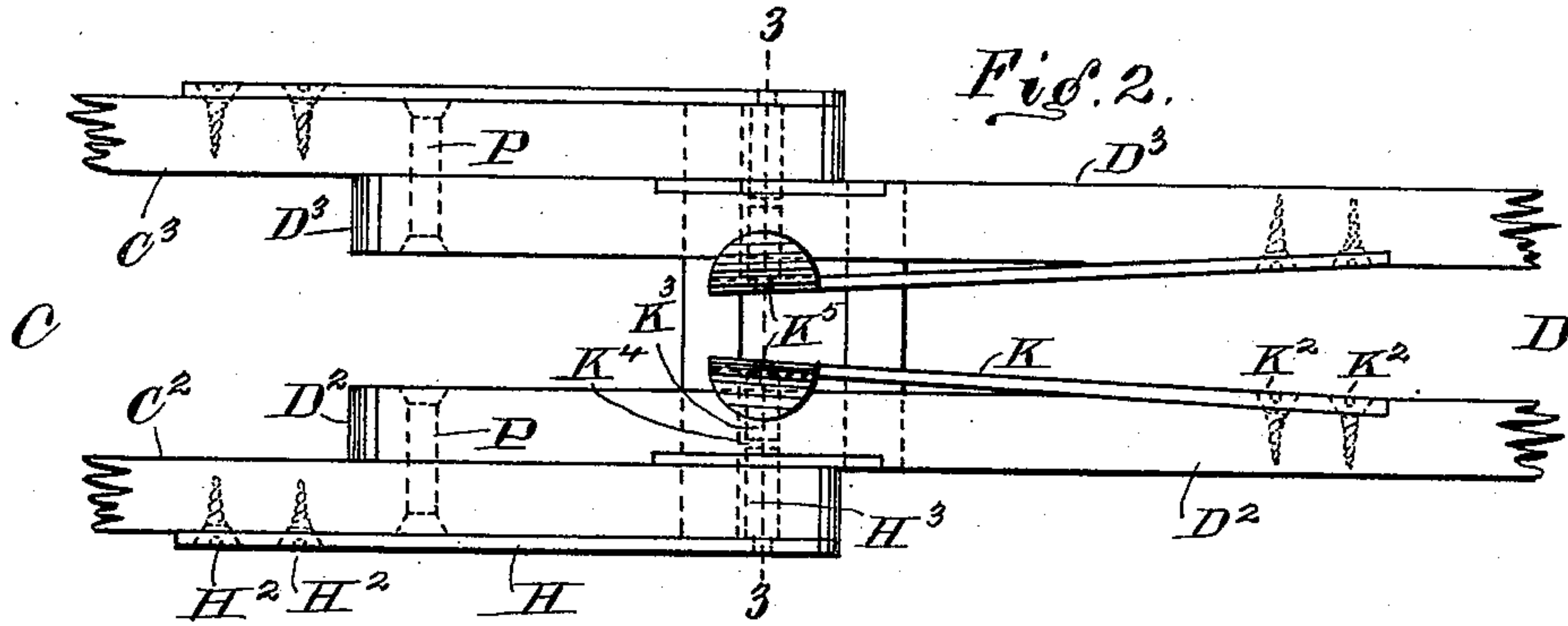
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

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OF BOND HILL, OHIO; SAID PALMER ASSIGNOR TO SAID FISHER.

STAND FOR SUPPORTING CAMERAS, &c.

SPECIFICATION forming part of Letters Patent No. 540,611, dated June 4, 1895.

Application filed June 9, 1894. Serial No. 513,998. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM HUBBELL FISHER, a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, and RICHARD P. PALMER, a resident of the town of Bond Hill, in the county and State aforesaid, citizens of the United States, have invented certain new and useful Improvements in Stands for Supporting Cameras and other Articles, of which the following is a specification.

The several features of our invention and the various advantages resulting therefrom will be apparent from the following description and claims.

In the accompanying drawings, Figure 1, Sheet 1, is a view in perspective of a tripod embodying our invention extended and set up for use. Fig. 2, Sheet 2, is a side elevation of a joint of the leg. Fig. 3 is a transverse section taken in the plane of the dotted line 3 3 of Fig. 2, that face of the section being shown which faces toward the left in Fig. 2. Fig. 4 is an edge elevation of the same joint. Fig. 5 is a side view similar to Fig. 2 with this difference, that in Fig. 2 the sections are extended and locked and in Fig. 5 the same sections are unlocked and ready to be folded together and a portion of a lower section is folded between these sections. Fig. 6 represents a transverse section taken in the plane of the dotted line 6 6 of Fig. 5, that face of the section being shown which faces toward the left in Fig. 5. Fig. 7 is another view of the same joint, and wherein the end of one section and the rear side of the other section are presented to view, the latter being shown at right angles to the other for the purpose of illustration. Fig. 8, Sheet 1, is a front side elevation of the adjacent parts of the two lower parts or sections of the leg when extended and locked and showing the preferred means of interlocking and unlocking the same. Fig. 9 is a view of that edge of the device shown in Fig. 8 which carries the thumb or finger trigger for unlocking these joints. Fig. 10 represents a section taken in the plane of the dotted line 10 10 of Fig. 8 and showing that face of the section which faces toward the left in Fig. 8. Fig. 11 is another view of the joint shown in Figs. 8, 9, and 10. In this view the lower end of the upper section

and the rear side of a part of the adjacent or upper section are in view, the latter section being unlocked and shown at right angles to the former for the purpose of illustration. Fig. 12 is a section taken at the same plane as the section Fig. 10 was taken and being a section of the same joint with this exception, that the thumb-latch is located at a different place on the lower section. Fig. 13 is a view of the entire leg when folded together. Fig. 14 is a view in perspective of one of the legs when one-half of each of the upper sections is dispensed with, thus presenting a modified construction inferior in some respects to the leg shown in Fig. 1, but nevertheless useful and valuable. Fig. 15 is an enlarged side view of one of the legs, showing the lowermost joint.

One of the principal features of our invention consists in novel means whereby each section of the leg or stand may be unfolded or extended, and as thus unfolded may be automatically locked and rigidly held in such a position until afterward unlocked.

Another principal feature of our invention consists in novel means whereby the folding up of one section together with its adjacent one operates to unlock the succeeding joint (between one of these sections and the one following) and enable these latter to be folded together without further effort to unlock their said joint.

Other features of our invention will also become apparent from the following description and claims.

Our invention is applicable to many kinds of stands employing legs, and the number of legs employed by such stand is not set or restricted, as our invention has nothing to do with the number of such legs. Consequently one leg alone can be employed, as in a sextant. Inasmuch as a tripod is a very useful and common description of stand, and one which especially for outdoor photographic uses requires to be very portable, and to this end requires to be folded into a small compass, we have selected for the purposes of illustration and description such a kind of stand.

For convenience of reference, we will first describe the leg as extended.

Referring to the drawings, A indicates the

entire leg. The leg is made in sections, respectively marked B, C, D and E. Each section is arranged so that when the leg is to be packed or carried for transportation, it can be located alongside of its neighbor. The lower section E is preferably composed of a single rod or piece, and its lower end is preferably shod with a ferrule W, terminating in a point. The next upper section D is composed of two rods, bars or strips, respectively indicated by the characters D^2 and D^3 . Between the lower portions of these rods D^2 and D^3 is interposed the upper end of the rod E, and is pivoted to the said rods D^2 and D^3 by a suitable pivot P, so that the rod E can be moved on said pivot and be brought for its entire (or nearly entire) length between the rods D^2 and D^3 . The next upper section C is composed of a rod or strip C^2 and a rod or strip C^3 , parallel to the rod C^2 . The upper end portion of the section D lies between the lower portion of the rods C^2 and C^3 , the rod D^2 being against the rod C^2 and connected thereto by a pivotal connection P. The rod D^3 is close to the rod C^3 and connected to the latter by a pivotal connection P. These pivotal connections are separate, as shown, to allow the lower end of the rod E, when folded back, to come between these upper pivoted ends of the rods D^2 and D^3 . If the rod E does not then reach quite so far as to the pivots, then the pivot may extend across the space between the rods D^2 and D^3 . The next upper section B is composed of the rods or strips B^2 and B^3 . Against the lower portion, the former, viz., rod B^2 , there lies the upper end of the rod C^2 , and the upper end of the rod C^3 lies against the lower portion of the rod B^3 and is pivoted thereto by a pivot P, while the rod C^2 is pivoted to the rod B^2 by a joint P. In case the lower end of the section D is not long enough (when folded between the rods C^2 , C^3 of section C) to reach to the pivots uniting sections C and D, the pivotal connection or connections of said last named sections may extend across the space between the rods.

The upper ends of the rods B^2 and B^3 are connected to the head X by suitable fastenings Z, preferably of a pivotal sort, to enable the feet of the legs to be adjusted at any desired distance apart from one another, in resting on the ground. These fastenings Z may be either of the kind that are not detachable from the head, or be of a kind that are detachable. Ordinarily the latter sort of fastenings are preferred, especially with heads as X, when of large diameter, because in cases where the stand is to be carried, the legs can be packed much closer together, and much room can thereby be saved.

Each of the sections B, C and D has near its lower end a cross brace T, to prevent the next lower section from unfolding farther than in a straight line with the preceding section. This cross brace extends across the back of the section and is rigidly secured to the rods thereof.

In Fig. 1 is shown a screw X^2 , located in the center of the head X, and constituting one of a variety of optional means for securing the article which said stand is to support.

We have now described what is old in the construction delineated on the drawings.

We will now describe our invention.

On the side of the upper end of the rod E is a spring plate F secured to the rod E by a rivet or screw connection F^2 . The plate is set back or sunk in a recess F^3 in the side of the rod E, substantially as shown, so that when the rod is unfolded from the section D, the edge of the plate shall not project beyond the surface of the rod E, so as to strike against the adjacent rod D^3 . Through the plate F is an opening F^4 , and this plate is so located that when the rod E is altogether unfolded this opening F^4 is opposite a fixed latch stud G fixed in one of the rods as D^3 of section D. See more particularly the figures on Sheet 1. This stud projects out into the space between the rods D^2 , D^3 , and, in other words, so as to be in the way of the latch F as the latter is unfolded. That edge of the stud G which will first meet with the plate F when opened has a bevel G^2 . The lower edge of the stud still remains projecting from the side of the rod D^3 , in the form of a detent or shoulder G^3 . The outer surface of the spring plate F when allowed to take its normal or customary position will be in a plane substantially the same as the general plane of the surface of the same side of the rod E. In unfolding the rod E from section D and bringing it into a straight line with the latter, the plate F strikes against the fixed stud G and is bent back by the latter, into the recess F^3 of rod E, until the hole F^4 of the plate comes fully opposite the stud G, and then the plate receives said stud into said opening F^4 and elastically returns to its normal condition, an edge of said plate at the margin of the opening being now behind the shoulder G^3 of the stud. Thus the plate F is held at the stud G and the plate F is so connected to the rod E that it cannot rotate at or on the screw connection F^2 . Consequently the rod E and the section D are rigidly held in the same straight line.

Among the various obvious devices for preventing the plate F from rotating on and at the screw or fastening F^2 is the following preferred one, to wit, the ears, or guards or laps F^5 of the plate F, one of these ears in front and the other behind the rod E. The curved junction of one of these laps with the plate F also operates as a beveled edge F^6 to throw the plate F back as it first strikes the beveled stud G.

After the rod has been latched in its extended position as just described, and as shown in Figs. 1, 8 and 9, it is unlatched by pressing the plate F back toward the rod E, so as to withdraw it (the plate) from engagement with the latch stud. To this end, we provide a thumb lip or piece F^7 , and this may

be as shown in Figs. 8 and 9, an extension of plate F extending along the same side of the rod E as the plate F is located, and being below the lower end of the section D (when the rod E is unfolded) or instead thereof a side ear F⁸ extending from the plate F around in front of the extended rod E, substantially as shown in Fig. 12. The former of these two illustrated modes is preferable because it obviates any twist in the plate F when the latter is depressed, and hence prevents it (this plate) binding on the adjacent surfaces of the rod E and rod D³.

The devices for locking together sections C and D and for unlocking the same are as follows: An elastic plate or strip H is fixed to the outer side (or edge) of rod C², by suitable securing devices, of which latter the screws H², H², are a convenient kind. The lower end or portion of this plate carries a locking stud H³, and the latter is located in a passage H⁴ running transversely through the rod C². The stud H³ is longer than the width of the rod C², and when the plate H lies in its normal position, viz., flat against the rod C² as it will do, when permitted, this stud H³ will project through the rod C² and out into the space between the rods C² and C³. The front edge of the inner end of this stud H³ is beveled at H⁵, see especially Figs. 3 and 6, so that when the section D is unfolded the rod D² will strike against the beveled edge of this stud and force it back from the space between rods D² and D³, and back in opening H⁴, thereby deflecting the free end of plate H away from rod C³. Through the upper end of the rod D² is an opening K⁴, in which plays a stud or push bolt K³, fixed to an elastic plate or strip K, the latter being fastened at the lower end to the rod D², and there let into the rod, viz., into a recess, so that there its outer surface shall be flush with the general surface of the rod D². This plate K is secured to the rod by suitable fastenings as K², K², and its upper free end (when in normal position) stands out away from the inner surface of the rod D². As a means of enabling a lower section when folded into the next section above and between the plates K, K, (as more particularly hereinafter described) to very readily (in such operation) pass between these plates K, K, and press them back, these plates K are each provided with a guard K⁵, bent obliquely back and over or toward their respective adjacent rods D² and D³. The length of each stud H³ is longer than the transverse passage way in which it lies and moves in its rod section C, and the combined length of the stud H³ and the push bolt K³ is greater than the combined thickness of the rods C² and D² through which they pass, and hence when one of these parts H³ or K³ is altogether pushed in its opening, the other of these parts will be partly out of the passage it occupies. On the opposite side of each of the sections C and D, a similar construction is present, the rod C³ of section C having a plate H with stud H³ sliding in said rod, and

the rod D³ has a plate K with stud K³ moving across through said rod D³.

The mode in which this joint operates is as follows: When not fully extended (*i. e.*, fully unfolded) the studs H³ respectively bear against their respective adjacent outer sides of the rods D², D³, and the latter force these studs back and therefore press the springs H, H, back, and they will thus remain until the sections are fully unfolded, at which time the studs H³ coming opposite the openings K³, each stud H³ enters its adjacent opening K⁴ and forces back the lock bolt K³ therein, presses back the spring K of the latter, and enters the passage K⁴ of the adjacent rod of section D, and locks that rod with the adjacent rod of section C. Thus the unfolded sections are securely locked in a rigid and useful manner, substantially as shown in Figs. 2 and 3.

In the operation of unlocking this joint, it is not expected that the same will be unlocked until the lowest section, viz., the rod E, is folded up. As the lower end of the latter is brought between the upper end of the rods D² and D³, it passes between the strips K, K, and is sufficiently thick to press the latter apart and toward the respective rods D² and D³, as shown in Figs. 5 and 6. In this operation, each push rod K³ pushes back its adjacent locking bolt H³, till the latter is altogether out of the rod D² or D³ of section D, and thus the sections are unlocked from one another, and the bolts H³ are in the position shown in Figs. 5 and 6. The sections C and D are now folded together, the section D being folded over within section C.

At the junction of sections B and C is a joint constructed similarly to that connecting sections C and D, and having a similar lock. Consequently when the lower end of the section D is folded within the upper end of section C, it presses back the lock and it then presses the plates K and their push rods K³ and thus rebuts the lock bolts H³ into their respective rods C² and C³. It unlocks this joint, so that the section C can be folded into section B. When thus folded, the entire leg has been folded together, and the entire length of the folded leg is only that of a single section, and the various sections are nested, the one within the other, substantially as shown in Fig. 13. At the upper end of the section B, a cross brace T² is present, so that when the sections are folded together this brace prevents the infolded sections as C, D and E from slipping back between the rods B² and B³ of the section B.

The operation of folding occupies a very short time, and the operation of unfolding and locking occupies a still shorter period of time. The unfolding is preferably done in the reverse order in which the folding was done. As the section C carrying sections D and E is unfolded from section D, and brought into alignment with the latter, these sections C and D are locked by the automatic locking

device at their joint. A similar result occurs as section D carrying section E is unfolded from section C and comes into alignment therewith, both sections interlocking automatically, and as the unfolding of section E from section D is completed, the latter are also automatically interlocked. This unlocking requires no care on the part of the operator, as the devices automatically do the locking, as the leg is extended. He can hold the upper end of the section B, or the tripod head with one hand, and unfold the leg with the other, with perfect ease. He can unlock the section E from section D and then fold up the sections with a given hand, the other holding the upper end of the leg or the stand, the parts above the joint at sections D and E automatically unlocking through the mere operation of folding. The legs when folded are exceedingly compact.

Obviously one rod of each of the sections B, C and D can be employed in connection with the section E, viz., either each right hand rod or each left hand rod of said sections B, C and D. Such a construction would be of advantage where a narrow leg was required.

Ordinarily the construction shown in Fig. 1, viz., where the sections as B, C and D each have two rods is preferable, because such a construction affords the greatest strength and firmness and breadth of brace which are compatible with the greatest lightness.

In a folding sectional leg such as we have herein especially described, we provide a suitable stop for preventing a given section folded up from passing by the section against or in conjunction with which it is folded. Such a stop is seen in Fig. 1, and is indicated by the letter M. Such stops are to be placed on each section as needed.

Our invention can be successfully applied to a series of leg sections, arranged to shut together after the manner, in general, of the joints or sections of a telescope. The principal change would consist in exchanging the hinges P for suitable guides disposed on the sections so that each section could be closed into or upon the succeeding one. A mode of such construction is shown in Fig. 15, Sheet 1, where guide guards X are fastened on the sides of the sections, and the latch G⁶ or stop prevents each section from altogether separating from the adjacent section when the leg is extended. The bevel H⁵ of the latch H³ will be formed, substantially as shown, to render the latter functionally operative in connection with the altered direction in which the interlatching ends of the section approach one another.

While the various features of our invention are preferably employed together, one or more of said features may be employed without the remainder, and in so far as applicable, one or more of said features may be employed in connection with stands other than the one herein specifically described.

What we claim as new and of our inven-

tion, and desire to secure by Letters Patent, is—

1. In a compactible knock down leg, the combination of rods pivotally connected, and having a locking device for rendering the rods rigid when brought into alignment, and having means for enabling a lower rod when brought or folded back to unlock the locking device, substantially as and for the purposes specified.

2. In a compactible or knock down leg, composed of sections or parts, as regards its length, the combination of a section having a reciprocating lock bolt, and a sliding bolt substantially as shown located when operative in the same section and in axial alignment with the first named bolt, for enabling another section to unlock the said bolt, substantially as and for the purposes specified.

3. In a knock down leg, the combination of two rods united pivotally, the one carrying the spring latch H, H³, and the other having the latch K, K³, the bolts H³, K³, operating against one another, and latching or unlatching the rods, according as one or the other of the said latches is operating, substantially as and for the purposes specified.

4. In a knock down leg, the combination of the rods united pivotally, the one having the spring latch H, H³, and the next adjacent one having latch K, K³, in combination with a deflecting shield for enabling a rod when brought back against one of the said rods to unlock the latch, substantially as and for the purposes specified.

5. The combination of a sectional leg, one section having a spring plate H, fixed to the section as at H², and provided with a locking bolt H³ working in and through a transverse opening in the section, toward the adjacent section, and a plate K, fastened to the second section as at K², and having an unlocking bolt K³ working in and through this section and touching the locking bolt, substantially as and for the purposes specified.

6. The combination of a sectional leg, one section having a spring plate H, fixed to the section as at H², and provided with a locking bolt H³ working in and through a transverse opening in the section, and toward the adjacent section, and a spring plate K, fastened to the second section as at K², and having an unlocking bolt K³ working in and through this section and touching the locking bolt, the plate K being provided with a deflecting plate to enable a third section to operate the plate and bolt K, K³, and move back the locking bolt, and unlock the sections, substantially as and for the purposes specified.

7. In a knock down or contractible leg, one section composed of two rods as C², C³, connected by a brace as, and an adjoining section connected to the first named section, the rods C³ each carrying the bolts as H, transversely sliding through the parts C², C³, and respectively impelled forwardly, and the second or adjoining section, having bolt open-

ings or detents for engaging the bolts of the first named section, and also having the bolt unlockers or latches K^3 connectd to latch plates, and a third section, whose interposition
5 between the latch rods of the second section operates to unlatch the bolt rods H^3 , substantially as and for the purposes specified.

8. In a knock down contractible leg, the combination of three or more sections, successively pivoted together, the first two sections being composed of two rods as C^3 , C^3 , each rod of one section being pivotally united to the adjacent rod of the other section, the rods of the second section lying between the
15 rods of the first section, and a space existing between the rods of the second section for the reception of the third section, the rods of the first section being provided at the outer side with an elastic plate H, having a locking
20 bolt, playing through a transverse passage H^3 through the rod, the bolt being continually pressed inwardly by the spring of the plate H, and an unlocking bolt K^3 working in a transverse passage in the adjacent rod of the
25 second section and engaging the end of the locking bolt and carried by an elastic plate as K secured at and to the inside of the rod, the plate K being adapted to yield to the pressure of the third section interposed be-
30 tween the rods of the second section, substantially as and for the purposes specified.

9. In a compactible or knock down leg, composed of sections or parts, as regards its length, the combination of a section having a recip-
35 rocating lock bolt and spring, and a sliding bolt substantially as shown, located when the sections are unfolded in the same section as said lock bolt, for enabling another section to unlock the said bolt, substantially as and for
40 the purposes specified.

10. In a compactible knock down leg, whose length is divided into sections, the combina-

tion of a section having a reciprocating lock detent, and an additional elastic reciprocating device, acting to unlock the said detent
45 and another section to be brought into conjunction therewith, to operate said last named reciprocating device, substantially as and for the purposes specified.

11. In a compactible knock down leg, whose
50 length is divided into sections, the combination of a section having a reciprocating lock detent, on one side of the leg, or limb thereof, and an additional elastic reciprocating device, located on the other side of said limb,
55 and working through said limb upon said lock detent, and another section for operating said last named device, substantially as and for the purposes specified.

12. In a folding sectional leg, the combination of a spring latch, in the vicinity of the
60 junction of two sections, and a stop M located on the lower of these two sections, and in the way of the circular movement of the free end of the next lower section, the spring latch be-
65 ing opposed to said free end, or an extension thereof, substantially as and for the purposes specified.

13. In a folding sectional leg, the following combination, to wit: three sections, the up-
70 per two being pivotally united and having a spring locking device, near their pivotal junction, which device has reciprocatory plate K, carrying a bolt working through the second section and operating the latch of the first
75 section, and the stop M, fixed to said plate, substantially as and for the purposes specified.

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Attest:

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