

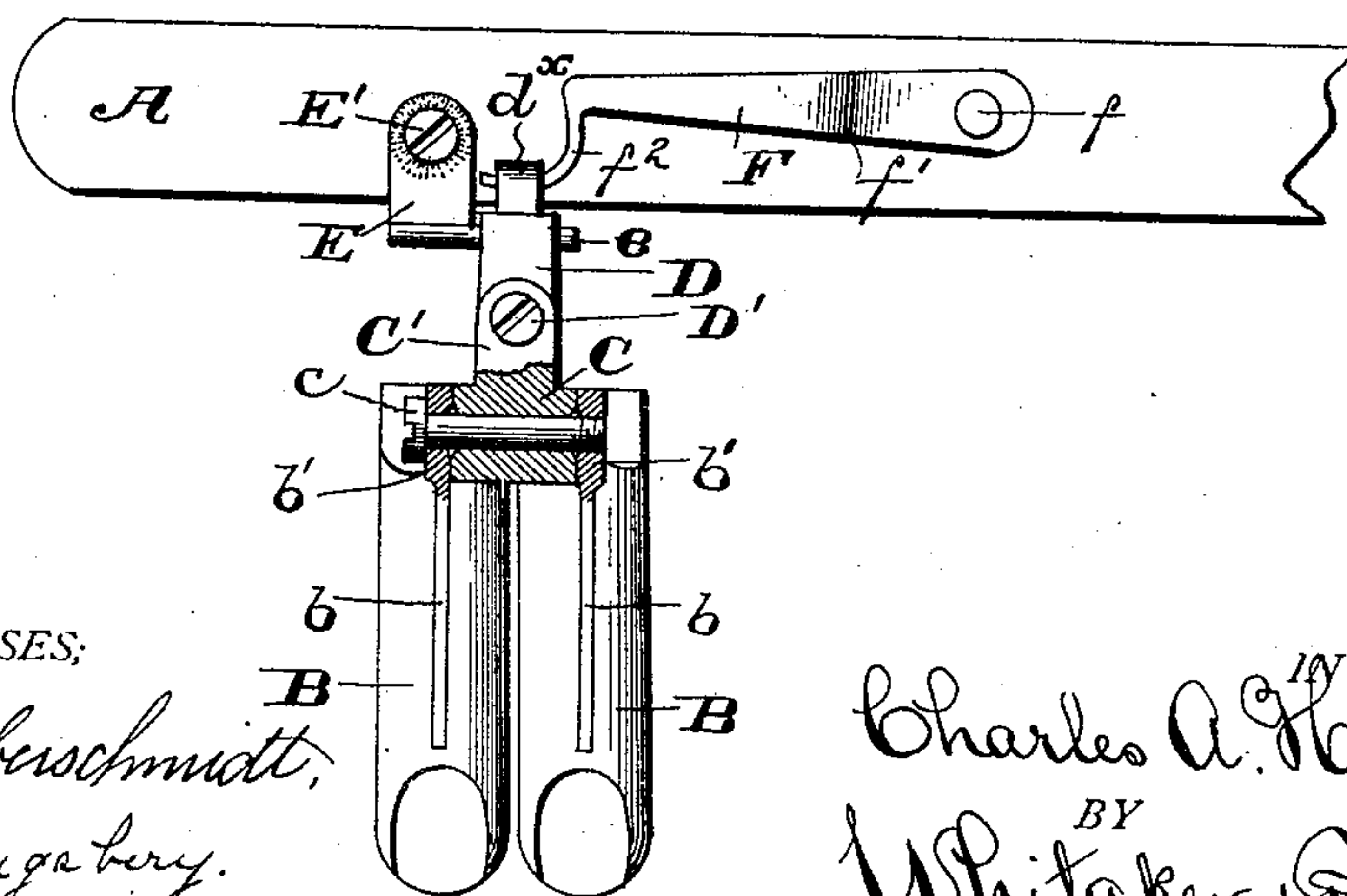
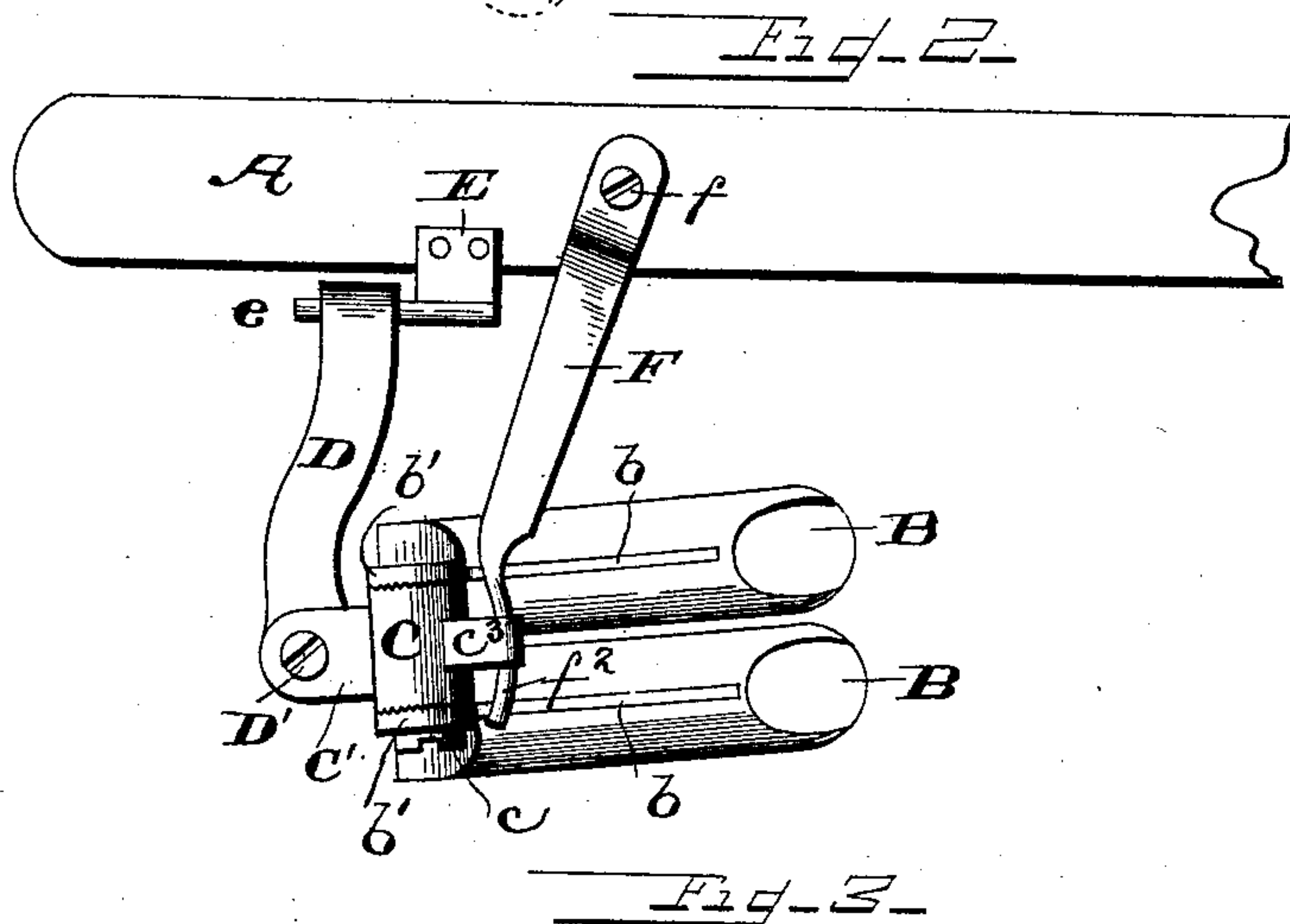
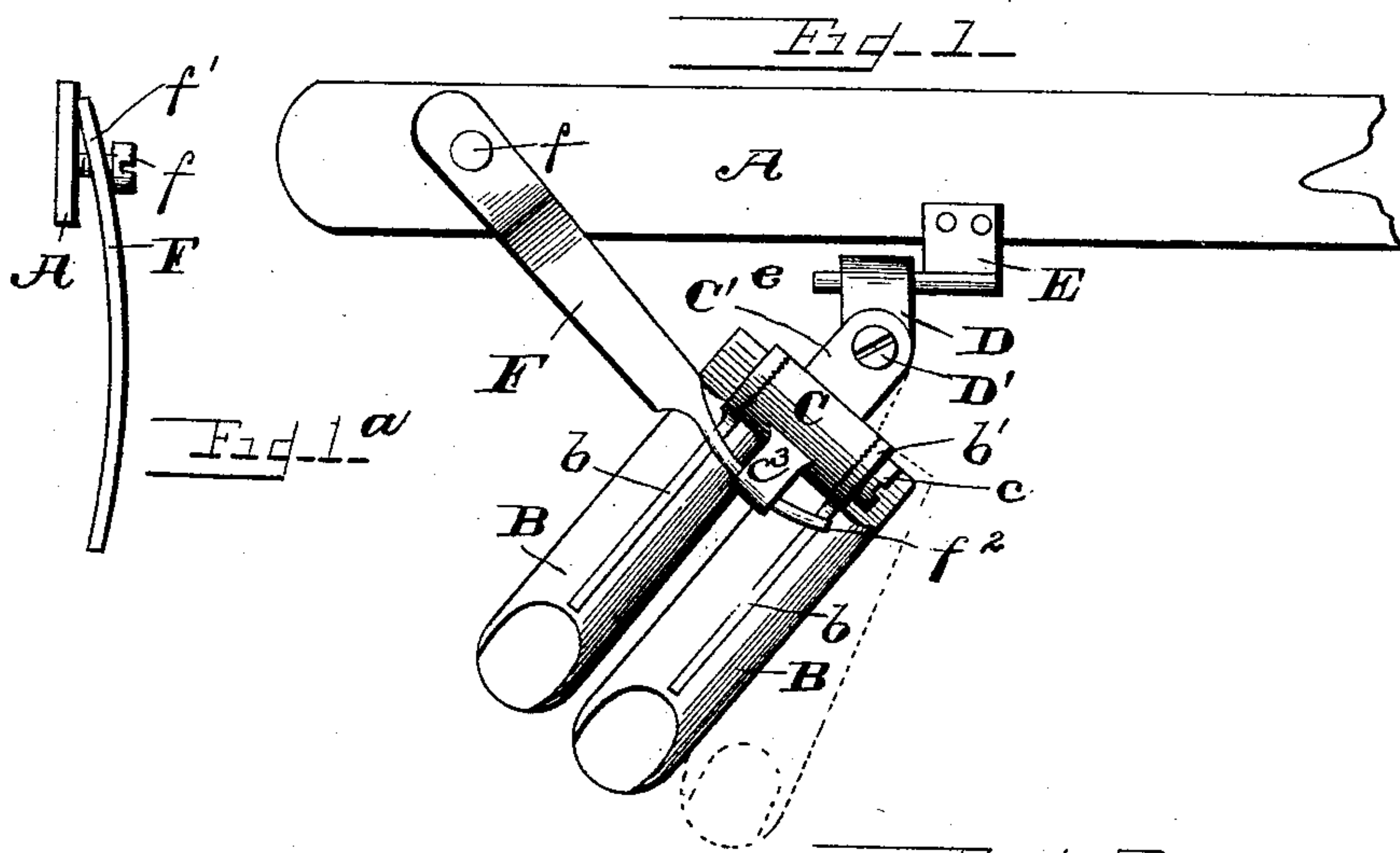
(No Model.)

2 Sheets—Sheet 1.

C. A. HARVEY.  
TRUSS.

No. 482,946.

Patented Sept. 20, 1892.



WITNESSES:

G. A. Taubenschmidt,  
J. D. Kuegler.

INVENTOR.

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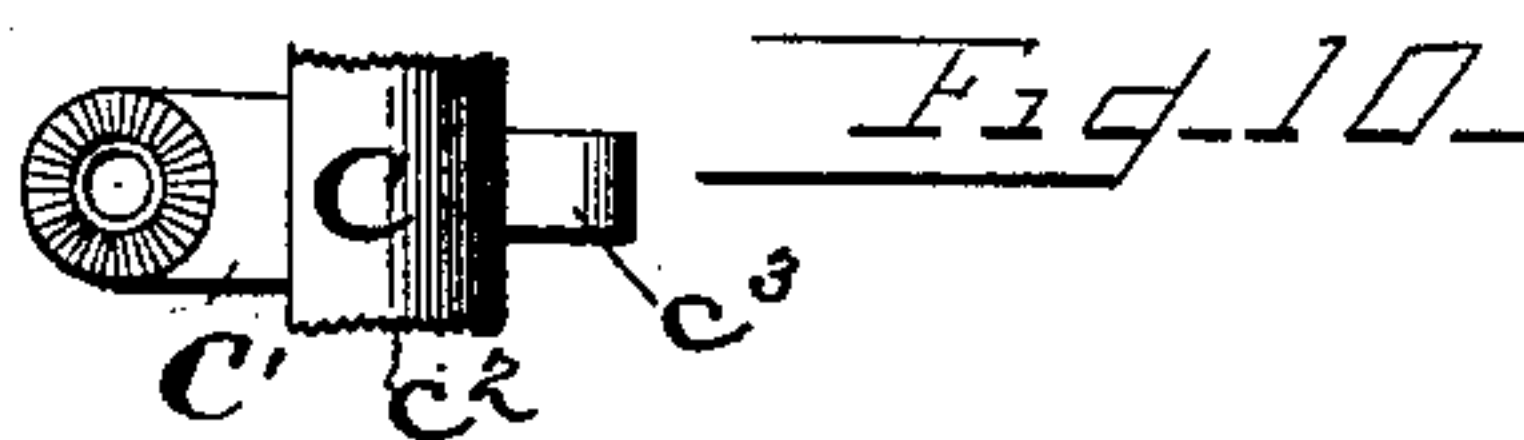
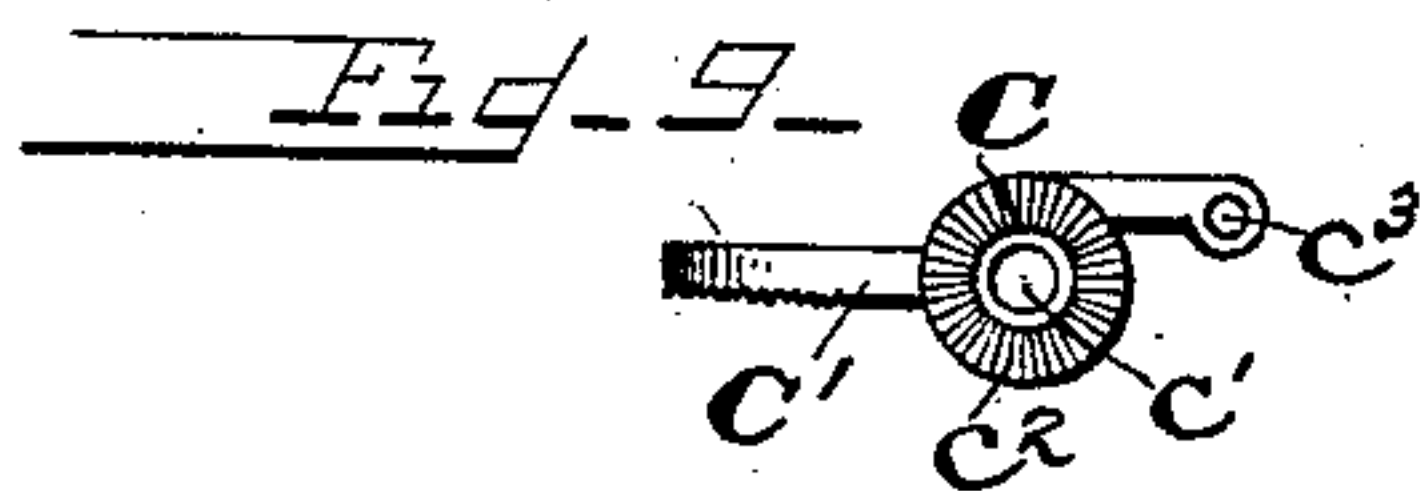
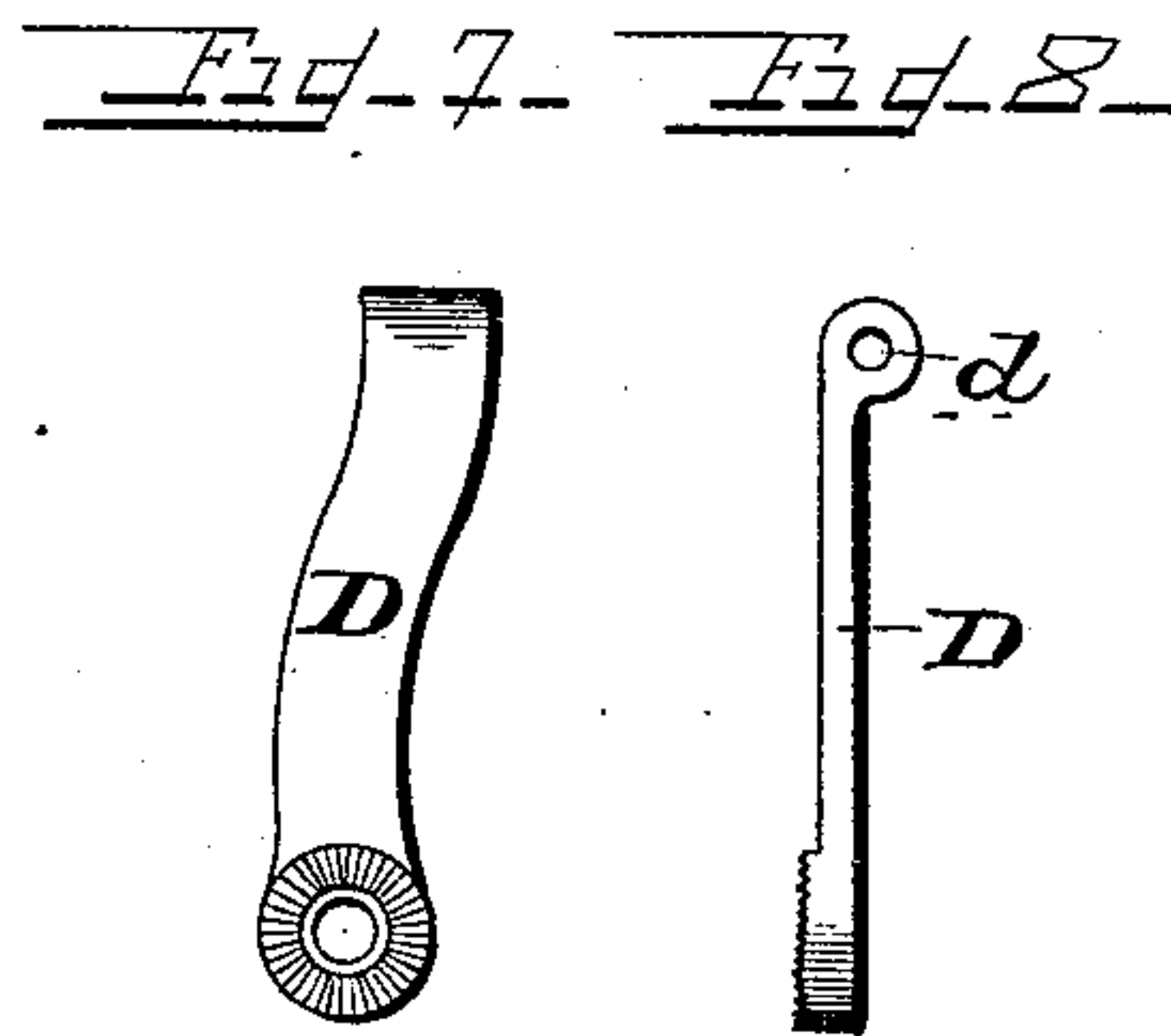
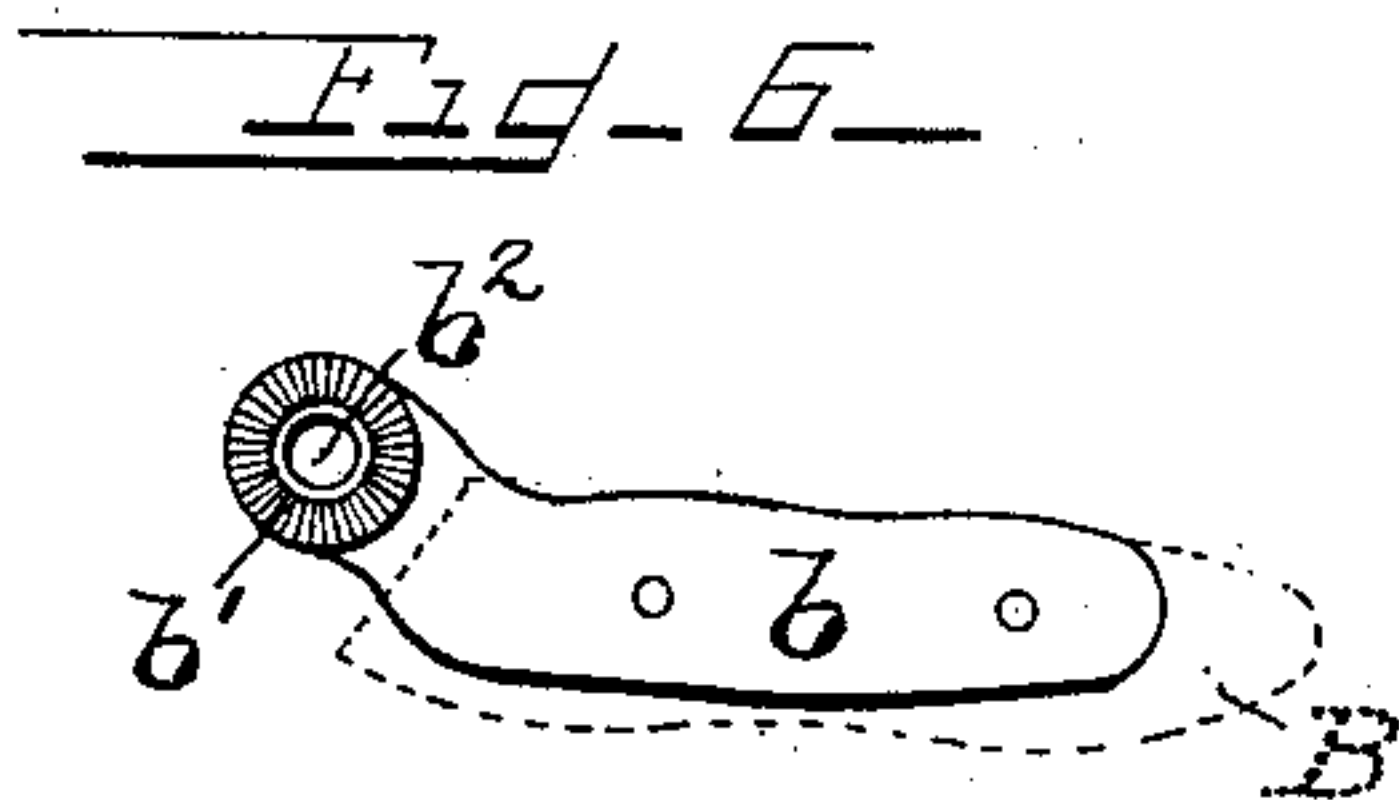
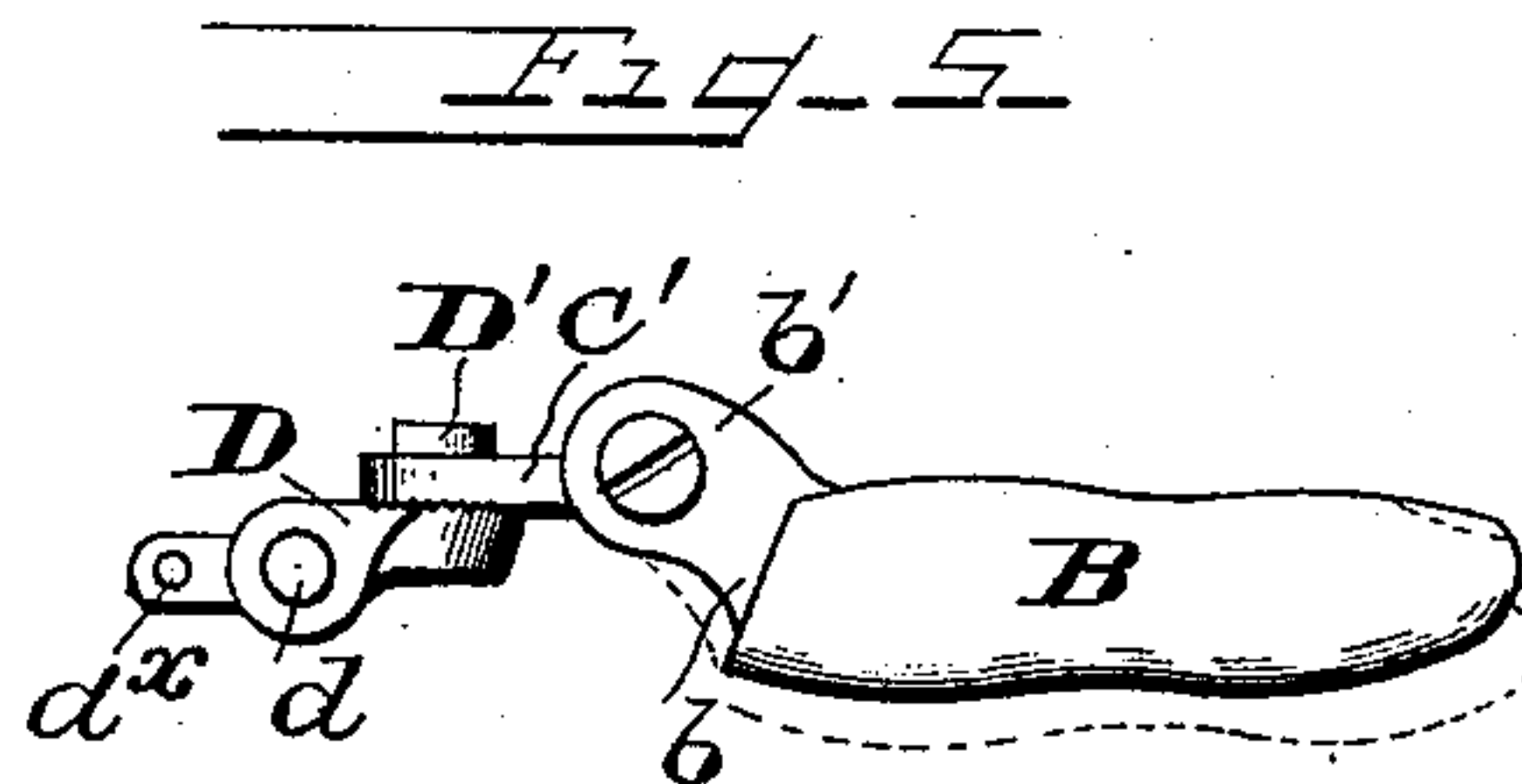
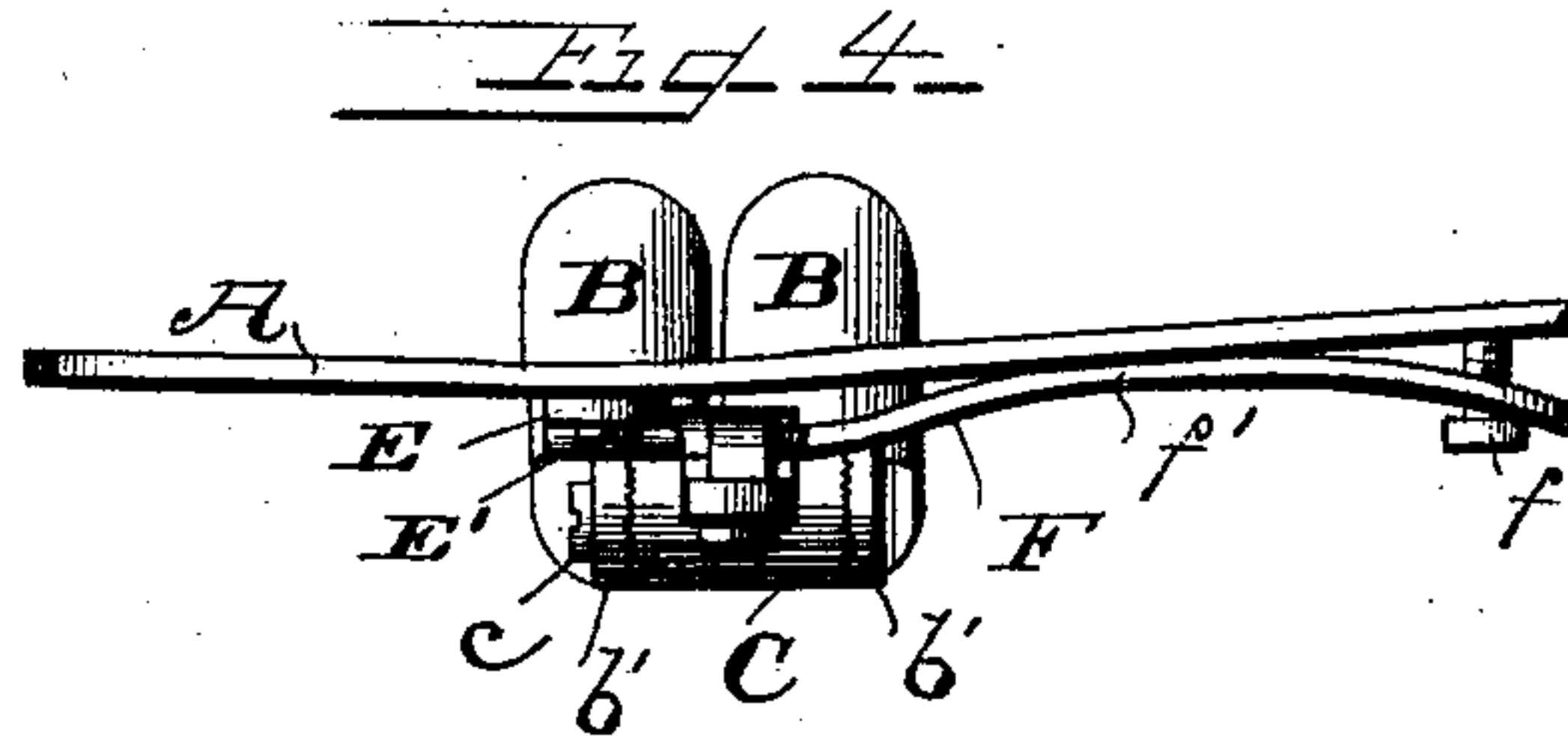
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2 Sheets—Sheet 2.

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# UNITED STATES PATENT OFFICE.

CHARLES A. HARVEY, OF NEW YORK, N. Y.

## TRUSS.

SPECIFICATION forming part of Letters Patent No. 482,946, dated September 20, 1892.

Application filed February 12, 1891. Renewed March 4, 1892. Serial No. 423,729. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. HARVEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Trusses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in trusses; and it consists in the novel features of construction and combination of parts hereinafter fully described.

It is a well-known fact that in cases of hernia the rupture can be held in place to the best advantage and with the greatest comfort by the human hand and especially by placing the fingers of the hand in such position as to most perfectly conform to the parts, according to the nature and circumstances of the case.

The object of my invention is to provide a mechanical construction which will resemble as exactly as possible the fingers of the human hand in its adaptability and comfort in holding the rupture in place. To this end I provide a truss in which the pad consists in one, two, or more fingers made of some soft pliable material, as rubber, and connected in such manner with their supporting devices that each finger is adjustable independently so as to assume different positions with respect to each other, and said fingers are also arranged so as to be adjustable in other directions by means of a compound wrist movement, and the fingers are held in operative position by a yielding or spring pressure. In applying and using this improved form of truss it will be seen that the person intending to use the same can place the fingers of his hand in proper position to support the rupture in the most perfect and comfortable manner, and then by removing his hand and holding it in the same position the fingers of the truss can be adjusted to the same positions, so that when the truss is applied the artificial fingers will assume the same positions with respect to the body as were assumed by the fingers of the person's hand, and the comfort of the wearer can be readily

secured. Any desired number of artificial fingers may be employed; but it is not thought that more than three will be required in cases of ordinary difficulty, and in fact one or two will usually be found sufficient.

In the accompanying drawings I have shown several forms in which I have contemplated embodying my invention, and my said invention is fully disclosed in the following description and claims.

Referring to said drawings, Figure 1 is a front elevation of one form of my improved truss, showing it in the position assumed when applied to the person. Fig. 1<sup>a</sup> is a detail view of one form of spring used in my improved truss. Fig. 2 is a view of a truss, showing the fingers supported in an inverted position. Fig. 3 is a view of a truss, showing the fingers supported in another position. Fig. 4 is a top plan view of the truss supports and fingers. Fig. 5 is a side view of the fingers and their adjusting devices. Figs. 6, 7, 8, 9, and 10 are details of the parts referred to in the course of the description.

In the said drawings, A represents the metallic band from which the artificial fingers B B are supported, and this band is preferably covered with webbing or any other suitable material, as is customary.

The fingers B B are formed, preferably, of rubber, as this substance affords a soft and yielding surface not unlike human flesh; but they might, if preferred, be made of some other material and covered with rubber or other soft material to give them a certain softness, which is very desirable. The fingers, if made from rubber, are formed upon or suitably secured to a central rib or web *b*, (shown in detail in Fig. 6,) which is provided at its rear end with a lug or projection *b'*, having a central aperture *b<sup>2</sup>* to receive a bolt or screw for securing said finger to its support and being also provided with serrated portions, as indicated in the drawings, the serrations being preferably radial. The lugs *b'* of two fingers, in case two are to be employed in the truss, are secured to a block C (shown in detail in Figs. 9 and 10) by means of a screw or bolt *c*, passing through the aperture *b<sup>2</sup>* of one finger-lug, an aperture *c'* in the block, and engaging screw-threads on the interior or the



aperture  $b^2$  of the other finger-lug, as shown in Fig. 3, or a separate nut may be provided, if desired.

The end faces of the block C are provided with serrations  $c^2$ , which engage and intermesh with the serrations of the lugs  $b'$  of the fingers. It will thus be seen that either or both of the fingers can be adjusted to any desired position on the screw  $c$  as an axis and secured in their adjusted positions by tightening the screw and drawing the serrated portions into close engagement.

The block C is provided with a rearwardly-extending projection  $C'$ , which is adjustably secured to the pivoted supporting wrist-piece D by the wrist-pin  $D'$ . The adjacent faces of the parts  $C'$  and D are provided with intermeshing serrations, as seen in Fig. 5, and a wrist connection is thus formed by means of which the fingers can be adjusted laterally to any desired position on the wrist-pin  $D'$  as a pivot. The wrist-pin  $D'$  is provided with screw-threads which engage a screw-threaded aperture in the part D and hold the parts in their adjusted positions. The wrist-piece D is provided with a transversely-extending aperture  $d$ , which engages a pivot-pin  $e$  on a supporting-plate E, which is secured adjustably or rigidly to the band A. By means of the constructions just described it will be seen that the fingers may be adjusted to any desired positions with respect to each other and with respect to their supports, and by means of the wrist connections any desired lateral adjustment can be secured, while the pivot-pin  $e$  allows the whole device to move outward and inward, thus providing a construction very accurately resembling the human hand in its adjustments and adaptability.

The manner of connecting the fingers to the truss-band A may be varied to suit the circumstances of the case and to secure the position which is most desirable.

In Figs. 1 and 3 the fingers are shown as depending from the band A in a vertical or inclined position, and in Fig. 2 I have shown a construction for supporting the fingers in an inverted position and securing the same adjustments and yielding pressure.

In order to secure the desired yielding pressure, I employ a stiff metal spring F, constructed, preferably, as shown in the drawings. This spring F is secured by an adjusting-screw  $f$  to the metal band A, and is provided with an inwardly-bent portion  $f'$ , which engages the band, while its extremities set at a little distance therefrom, as clearly shown in Fig. 4, and this form of spring is shown applied to the fingers in Fig. 3. The end of the spring which is engaged by screw  $f$  may be drawn inward closer to the band by turning up the screw, and the tension of the spring can thus be adjusted to give the pad the desired pressure. The fingers and their connected parts are pivotally hung on the pivot-pin  $e$ , as before stated, and the spring F is connected to said parts on one side or the

other of the pivot to give said fingers the desired pressure.

In Figs. 1 and 2 the block C is shown as provided with a perforated ear or lug  $c^3$  on the side toward the fingers B B, which receives the end  $f^2$  of the spring F, the spring in these cases pressing inward upon the fingers or toward the body of the wearer to give the desired pressure. The adjustment, in case this form of spring is employed, may be secured by giving the spring an outward bend at the point where it is engaged by the screw and permitting the end of the spring to bear again against the band A, as shown in Fig. 1<sup>a</sup>. In order to permit the desired adjustments of the fingers on the wrist-pin  $D'$  as a center without disengaging the spring or straining the parts, the end  $f^2$  of spring is given the form of a segment, as shown in the drawings, concentric with the wrist-pin  $D'$ , so that any desired lateral adjustment may be effected without interfering with the operation of the spring.

In Figs. 2, 7, and 8 I have shown the wrist-piece D constructed somewhat differently from those shown in the other pieces, in order to support the fingers in an inverted position when this is desirable. The wrist-piece is in this case made longer, and is preferably curved slightly, so as not to interfere with the proper lateral adjustments of the fingers on the wrist-pin  $D'$ . The fingers will be held in engagement with the person by a spring F of the construction shown and described in respect to Fig. 1.

In Fig. 3 I have shown the supporting-plate E adjustably secured to the band A by means of the screw  $E'$ , and the adjacent faces are provided with serrations, as indicated in dotted lines. The spring F in this instance engages a lug or ear  $d^x$ , projecting from the wrist-piece D on the upper side of its pivotal connection with the supporting-plate, and the spring F is constructed, as shown in Fig. 4, to press outwardly, and thus cause the fingers to exert an inward pressure. In this form, in addition to the lateral adjustment permitted by the wrist connection, the supporting-plate E may be adjusted on the screw  $E'$  as a center, and the end  $f^2$  of the spring is given a segmental form, in order to permit this adjustment without interfering with the operation of the spring.

When it is desired to use this improved truss, the fingers B B are adjusted to the desired position to hold the hernia in place in the same manner that the fingers of the person's hand would be employed and the tension of spring F is adjusted to give the desired pressure to said fingers. It is to be noted that by the constructions shown and described the very nicest and most delicate adjustments may be accurately effected, and when once effected the parts may be secured rigidly in their adjusted positions. The elastic fingers can thus be made to assume the exact positions which are desired, and they will remain in their ad-



justed positions until readjusted, as circumstances may require.

What I claim, and desire to secure by Letters Patent, is—

5 1. In a truss, the combination, with the pivotally-supported pad, of a spring having a segmental portion engaging a part connected with said pad and means for adjusting said pad laterally about a point concentric with the segmental portion of said spring, substantially as described.

15 2. In a truss, the combination, with the pivotally-supported pad provided with the wrist-piece and wrist-pin for securing the lateral adjustments of said pad, of a spring having a segmental portion concentric with said wrist-pin engaging a part connected with the pad, substantially as described.

20 3. In a truss, the combination, with the truss-band, of the artificial fingers supported therefrom, said fingers being adjustably secured to their supports and independently adjustable in respect to each other and to said supports, substantially as described.

25 4. In a truss, the combination, with the truss-band, of the elastic artificial fingers supported therefrom, means for adjusting said fingers with respect to each other and their supports, and means for adjusting said supports with respect to said band, substantially as described.

30 5. In a truss, the combination, with the truss-

band, of the block supported therefrom, the artificial fingers provided with attaching-ribs, and means for adjustably securing said ribs to said block, the adjacent faces of said ribs and block being provided with serrations, substantially as described. 35

6. In a truss, the combination, with the truss-band, of the block connected thereto by a wrist connection permitting the lateral adjustment of said block and the artificial fingers provided with attaching-ribs adjustably secured to said block, whereby said fingers may be adjusted independently with respect to each other and to said block and said block may be adjusted with respect to said band, substantially as described. 40 45

7. In a truss, the combination, with the truss-band, of the supporting-plate provided with the pivot-pin, the wrist-piece engaging said pivot-pin, the block adjustably secured to said wrist-piece, the artificial fingers adjustably secured to said block, and a spring secured to said band and having a segmental portion engaging an ear secured to said block, substantially as described. 50 55

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

CHARLES A. HARVEY.

Witnesses:

RALPH B. KING,

JOSEPH DE VRIES.