

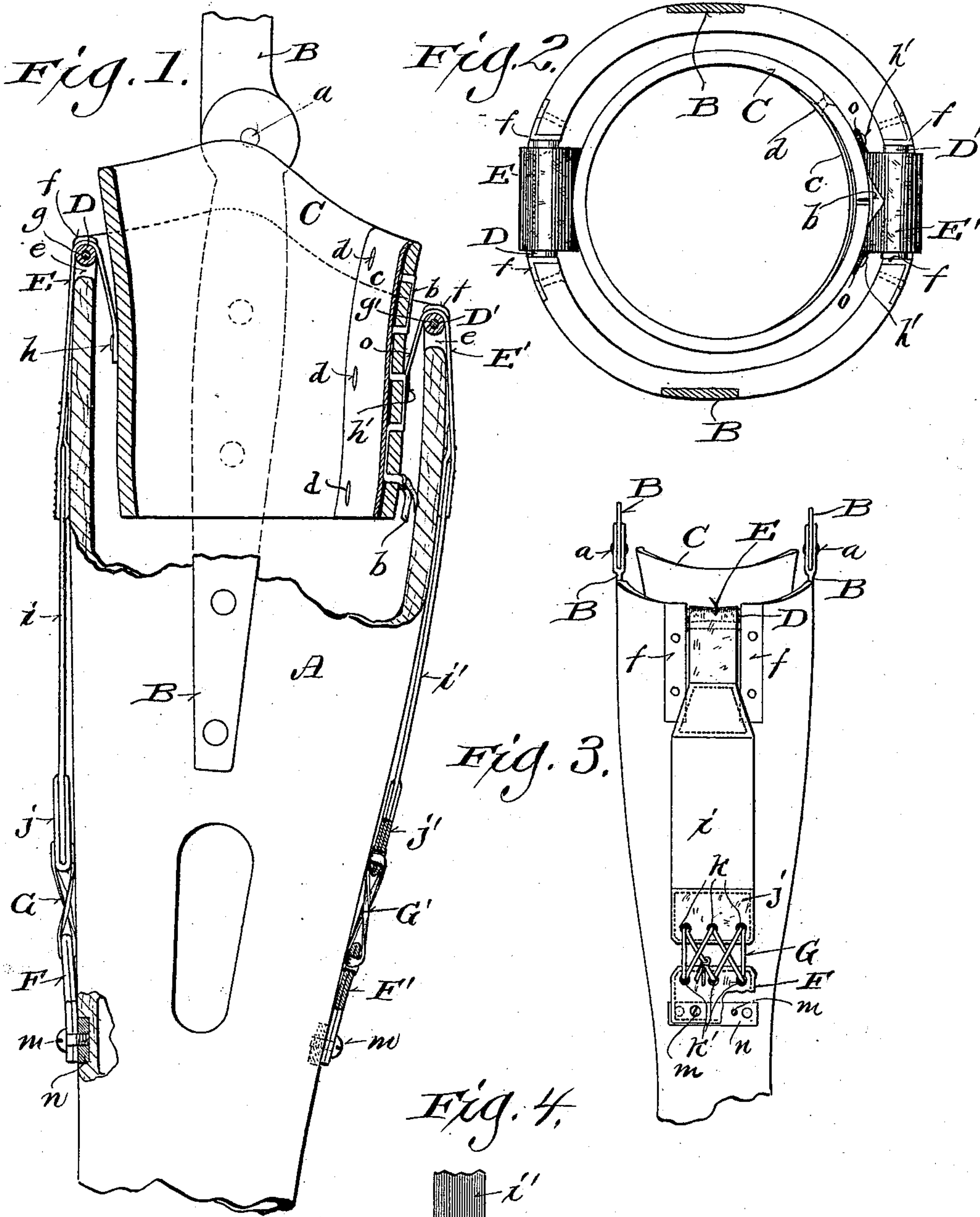
**No. 619,716.**

**Patented Feb. 21, 1899.**

**J. BURG.**  
**ARTIFICIAL LIMB.**

(Application filed Nov. 29, 1897.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## ARTIFICIAL LIMB.

SPECIFICATION forming part of Letters Patent No. 619,716, dated February 21, 1899.

Application filed November 29, 1897. Serial No. 660,056. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH BURG, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Artificial Limbs; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has especial reference to the construction of artificial legs; and it consists in certain peculiarities of construction and combination of parts, as will be fully set forth hereinafter and subsequently claimed.

In the drawings, Figure 1 is a side elevation of the leg portion of an artificial leg embodying my present invention, portions being broken away or shown in section to better illustrate certain details of construction. Fig. 2 is a plan view of said leg portion. Fig. 3 is a front elevation thereof, drawn to a reduced scale. Fig. 4 is a detail rear view of the socket detached, also on said reduced scale.

Referring to the drawings, the same illustrate my invention applied to an artificial leg adapted to be worn by a person who has suffered amputation below the knee, (although my invention may be applied to members amputated above the knee, as hereinafter explained,) and I have not deemed it necessary to show the thigh-socket or the foot, both of which may be of any approved construction.

A represents the lower leg portion, and B B are metallic straps pivotally hinged, as shown at *a a*, and secured to and connecting the said leg portion A with the thigh-socket. (Not shown.) This leg portion is made hollow and preferably of willow-wood suitably shaped.

C is the stump-socket, which receives the lower end of the amputated member, and is made of any suitable material, preferably sole-leather, and of the shape shown in the drawings, said socket being vertically split at the rear and provided with two vertical series of perforations, so that the separated edges can be adjustably drawn together by a lacing-cord *b*, the joint thus laced together being covered and protected from contact with the stump of the wearer by a thin flap of leather or other suitable material *c*, secured to the inner surface of the said socket C, as by

smooth-headed rivets *d d* along one vertical end of said flap. The front upper part of this socket C is much higher than the rear part back of the center thereof, as best shown in Fig. 1, to afford room for the ready bending of the knee of the wearer. The top of the leg portion A is recessed or cut out at both front and rear, as shown at *e e*, and there preferably reinforced by metal wear-plates *f f* of angular form to receive horizontally-disposed rollers D D', which in their preferred form, illustrated in the drawings, are longitudinally-bored cylinders of metal revolving freely on journals *g g'*, the ends of said journals having bearings in perforations in the opposed inner faces of the said angular wear-plates *f f*.

E E' represent flexible straps, either of leather or thin flexible metal, secured to the opposite front and rear outer sides of the socket C, as by rivets *h h' h'*, and which pass upward between the said socket and the inner surface of the hollow leg portion A and out over the rollers D D' and down outside the leg portion A, and at their ends are joined securely to strips of elastic webbing *i i'*, the lower ends of said webbing being suitably reinforced, as by the leather bindings *j j'*, each formed with a horizontally-disposed series of lacing-holes *k k k* therethrough.

F F' represent the opposed lacing ends, (preferably formed of doubled strips of leather,) having corresponding series of lacing-holes *k' k' k'*, the lower edges of said lacing ends F F' being secured, as by screws *m m*, passing into suitably-tapped openings in transverse metallic plates *n n*, let into and secured to the opposite sides of the ankle portion of the said leg portion A, and suitable lacing-cords G G' adjustably connect the lower strap ends *j j'* with the opposing lacing ends F F' through the described two series of perforations *k k k* and *k' k' k'*, as shown in Figs. 1 and 3. The described strap E is single at its inner end, where it is secured by rivet *h* to the socket C; but the strap E' is forked at its inner end, as shown at *o o* in Fig. 4, and each half of the fork is secured by a separate rivet *h'*, so that the two branches of said forked end may be secured on opposite sides of the vertical separated rear edges of



the socket C to enable said edges to be adjusted at the proper distance apart, according to the size of the stump of the amputated member supported within said socket.

5 By reason of supporting the stump-socket C in the manner described and illustrated in the drawings friction between the stump of the wearer's leg and the stump-socket C is obviated, thus rendering the said artificial limb  
10 much easier and more comfortable. Further, by the described lacing systems at G G' in case the elastic webbing *i i'* should stretch and become slack this slack can be instantly taken up, and also, as already stated, the  
15 socket C, by its lacing-cord *b*, can be quickly adjusted so as to be either diminished or increased in diameter, as required in any particular instance—as, for example, should the stump of the amputated member shrink or  
20 swell, as often happens.

In the event that the leg is amputated above the knee in applying my invention to an artificial limb therefor the outer thigh-socket would be made of willow-wood and would be  
25 constructed practically like the upper part of the lower leg portion A (shown and described) and would have an inner thigh-socket applied thereto, which would be substantially like the stump-socket C shown, with the same form  
30 of straps E E', elastic-webbing sections *i i'*, lacing ends F F', lacing-cords G G', &c., and hence as the construction of all these parts has been already minutely described and illustrated I have not thought it necessary to duplicate the same to show the adaptation of  
35 the device to support a case of thigh-amputation, the knee-joint in the latter case being of any desired and approved construction.

In place of the described perforations illustrated in the drawings for the engagement of the lacing-cord *b* in the stump-socket and the like perforations *k k k* and *k' k' k'* in the opposing lacing ends *j j'* and F F' for engagement with the lacing-cords G G' it is obvious  
45 that hooks or other devices may be employed for accomplishing this desired adjustable connection without departing from the spirit of my invention.

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

1. In an artificial limb, the combination with a hollow outer portion having horizontally-disposed rollers journaled in the upper  
55 part thereof at both front and rear, of a stump-socket practically parallel with and of less diameter than that of said outer portion, extending above and adapted to project downward within the upper part of the latter,  
60 but everywhere absolutely free from contact therewith; and flexible straps secured at their inner and upper ends to said stump-socket and adapted to pass over said rollers and be secured at their outer and lower ends to the  
65 outer surface of said outer portion of said limb.

2. In an artificial limb, the combination with a hollow outer portion having horizontally-disposed rollers journaled in the upper part thereof at both front and rear, of a rearwardly vertically-divided stump-socket practically parallel with and of less diameter than that of said outer portion, extending above and adapted to project downward within the upper part of the latter, but everywhere absolutely free from contact therewith; flexible  
75 and partly elastic straps secured at their inner and upper ends to said stump-socket and adapted to pass over said rollers and down outside said outer portion, the portions of  
80 said straps connecting the stump-socket and outer portion being inelastic; adjustable fastening devices for connecting together the separated rear edges of said stump-socket; and other fastening devices for adjustably  
85 connecting the lower ends of said straps to the said outer portion and for taking up the slack of said straps.

3. In an artificial limb, the combination with a hollow outer portion having horizontally-disposed rollers journaled in the upper part thereof at both front and rear, of a stump-socket practically parallel with and of less diameter than that of said outer portion extending above and adapted to project downward within, but everywhere absolutely free from contact with, the upper part of the latter, said stump-socket being vertically split at the rear, and the adjacent separated edges being provided with lacing-perforations; a  
90 lacing-cord in engagement with said perforated edges for adjustably uniting the said separated edges; a protective flap secured to the inner surface of said stump-socket, adjacent to one of said separated edges, and  
95 extending over the connected joint between them; a flexible and partly elastic strap secured at its inner and upper end to the front of said stump-socket and passing over the front roller of the hollow outer portion, and  
100 thence down along the front, and the lower and outer end of said strap being adjustably secured to the lower outer part of said outer portion; and another flexible and partly elastic strap having a forked inner and upper  
105 end, the branches of said forked end being separately secured to said stump-socket, one on each side of the said separated rear edges thereof, and said strap passing over the rear roller of the hollow outer portion and thence  
110 down along the rear of said outer portion and the lower and outer end of said strap being adjustably secured to the lower outer part thereof.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JOSEPH BURG.

Witnesses:

H. G. UNDERWOOD,  
B. C. ROLOFF.