J. J. Austin,

Artificial Leg,

No. 48,251, Patented June 20, 1865.

Fig 2

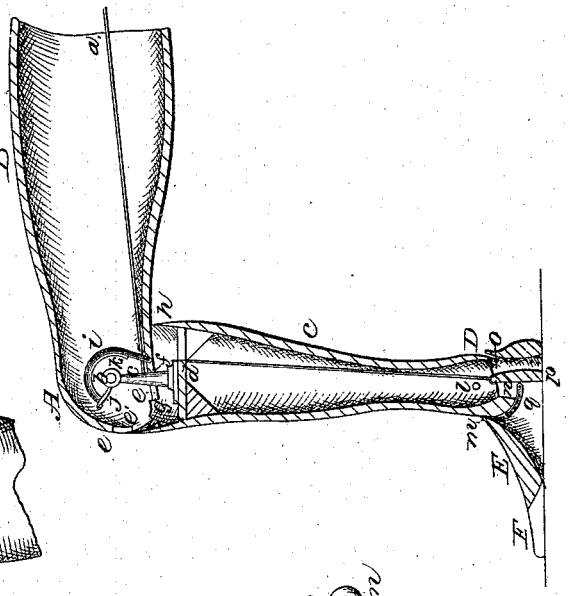


Fig 5

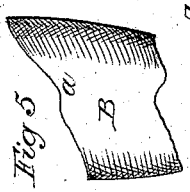


Fig 4

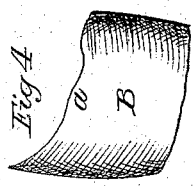


Fig 3

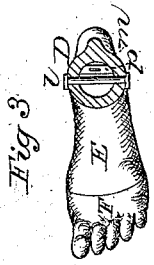
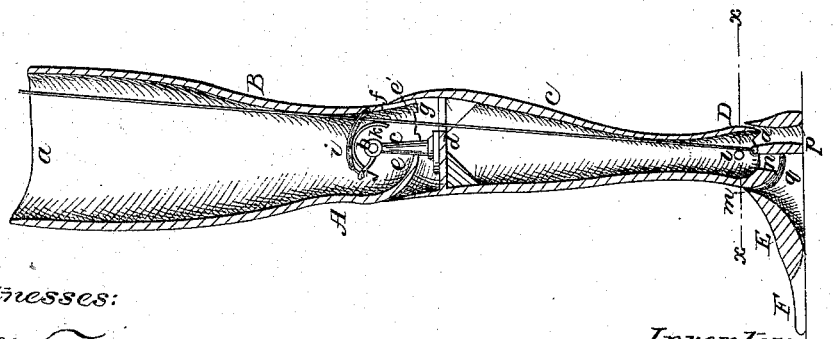


Fig 1



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UNITED STATES PATENT OFFICE.

JOHN J. AUSTIN, OF NEW YORK, N. Y.

IMPROVEMENT IN ARTIFICIAL LEGS.

Specification forming part of Letters Patent No. **48,251**, dated June 20, 1865.

To all whom it may concern:

Be it known that I, JOHN J. AUSTIN, of the city, county, and State of New York, have invented a new and useful Improvement in Artificial Legs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of my improved leg in a standing position. Fig. 2 is a similar section of the same in a sitting position. Fig. 3 is a horizontal section of the same, the line *x x*, Fig. 1, indicating the plane of section. Figs. 4 and 5 are detached elevations of the thigh-cup.

Similar letters of reference indicate like parts.

This invention consists, first, in sinking the part or parts of the thigh-socket on which the hip-bone rests so as to make it match all the parts of said hip-bone, and to render the operation of fitting the same to the stump easier than with artificial legs of the ordinary construction; second, in the application of double stops to the knee-joint as well when the leg is in a standing as when it is in a sitting position, said double stops being produced by a stud rising from a horizontal platform below the knee-joint, and forming a bearing for the fulcrum-pin of the same, said stud being brought in contact with the ends of the slots in the lower end of the artificial thigh, and the other stops being produced by the shell of the leg itself in both positions in such a manner that the snapping of any part of the knee-joint is prevented, and a strong and substantial leg is produced; third, in the use of an elastic segment attached to the stud which forms the bearing for the fulcrum-pin of the knee-joint, in combination with a spring fastened at one end to an arm which extends from said stud, and at the other to the shell of the artificial thigh, near the hough, in such a manner that by the combined action of said elastic segment and spring a soft cushion is produced when the leg is bent, and the operation of straightening the leg is facilitated; fourth, in the peculiar construction of the ankle-joint, which is provided with two stops formed by the lower end of the artificial leg, in combination with an abutment rising from the sole of the foot, near the heel, and with a spring extending from said abutment to the lower end of the leg in such a manner that the heel is raised when stepping or springing on the foot, and the motion of a natural foot is imitated; fifth, in the use of toes made of india-rubber or other elastic material, to imitate the form and motion of the natural toes.

A represents the shell of my leg, which consists of two parts, the artificial thigh B and the artificial leg C. In the upper edge of the thigh-socket two cavities, *a a*, are sunk, as clearly shown in the drawings. These cavities are intended to conform to the processes of the "os innominatum," thereby insuring a close and comfortable fit of the socket to the stump and preventing all chafing and rubbing.

The knee-joint is produced by a pivot, *b*, which passes through the sides of the artificial thigh, and has its bearings in a stud, *c*, rising from a platform, *d*, which is firmly secured in the interior of the artificial leg C, below the knee. This stud forms a stop for the artificial thigh as well when the same is in a standing position as when it is in a sitting position In the first case the edge *e* of a slot, *e'*, in the lower end of said artificial thigh strikes the stud and forms the stop, and in the second case the edge *f* of said slot performs the same function. Besides the stops produced by the action of the edges *e* and *f* against the stud *c*, another stop is formed by the lower end, *g*, of the artificial thigh striking the inner surface of the upper end, *h*, of the artificial leg when in a standing position, as shown in Fig. 1, and when in a sitting position the artificial thigh rests on the upper end, *h*, of the artificial leg, as shown in Fig. 2. In both cases, therefore, when the leg is in a sitting and when it is a standing position, a double stop is obtained, and the snapping of the knee-joint by a sudden strain is avoided. The motion of the knee-joint is facilitated by a short spring, *i*, which is fastened with one end to an arm, *j*, extending from the stud *c*, and its other end to the lower end of the artificial thigh. Said spring bears on an elastic segment, *k*, which extends from the stud, and by the combined action of this spring and segment a cushion is produced, which renders the motion of the knee-joint soft and prevents jarring.

The ankle-joint D is formed by a pin, *l*, passing through the lower end of the artificial leg C and the upper edge of the foot E. The end

of the leg is rounded off and fitted into a socket, *m*, formed by the foot, as shown in Fig. 3 of the drawings, and it forms two stops, *n o*, which strike an abutment, *p*, rising from the sole and prevent the foot from assuming an unnatural position. A short spring, *q*, extending from the abutment to the lower end of the leg, as shown, serves to control the position of the foot and to raise the heel in stepping or springing. The motion of the foot is thus controlled entirely without the heel-cord.

The toes E are made of vulcanized india-rubber or other elastic material, to imitate the form and the motions of the natural toes as near as possible without increasing the cost of the mechanism.

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

1. Sinking the edge of the thigh-socket to fit to the os innominatum, substantially as and for the purpose set forth.

2. The double stops of the knee-joint produced by the stud *c*, the edges *e f* of the slot *e'*, and the end *g h* of the thigh B and leg C, substantially as and for the purpose described.

3. The combination of the elastic segment *k* and spring *i* with the stud *c* and with the knee-joint, substantially as and for the purpose specified.

4. The two stops *n o* and abutment *p*, in combination with the spring *q* in the ankle joint, constructed and operating substantially as and for the purpose set forth.

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