(No Model.)

J. H. KANE.

ARTIFICIAL FOOT.

No. 515,691. Patented Feb. 27, 1894.

Fig. I.

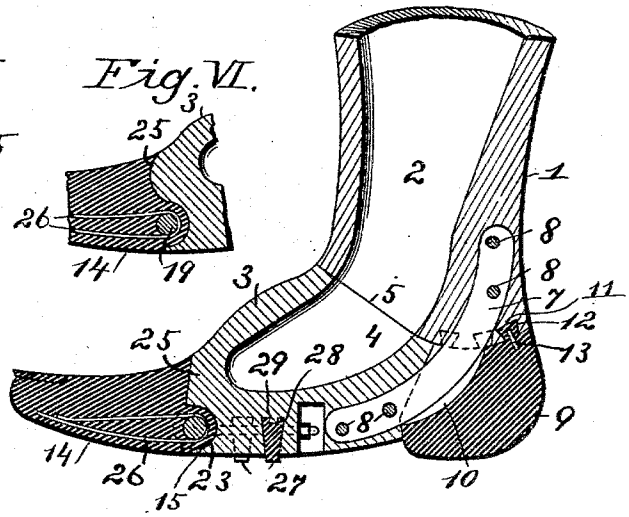


Fig. VII.

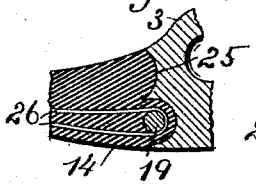


Fig. VI.

Fig. II.

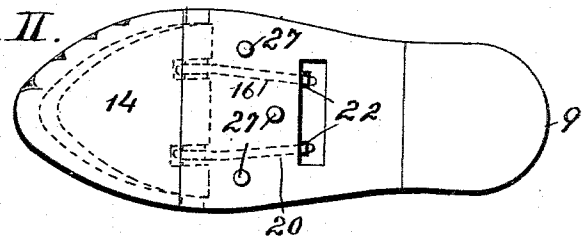


Fig. III.

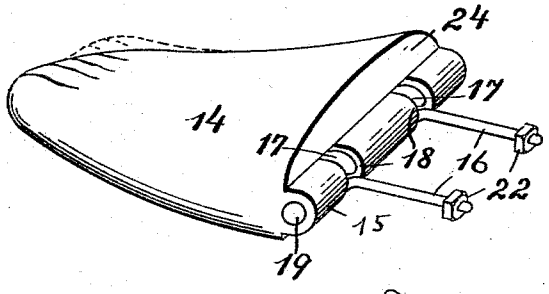


Fig. IV.

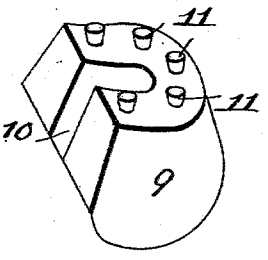
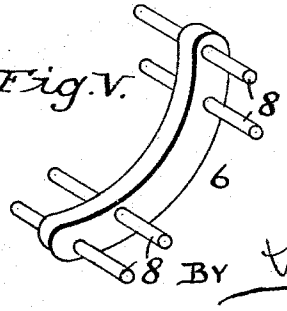


Fig. V.



WITNESSES:

F. G. Fischer

Walter E. Allen.

INVENTOR:

J. H. Kane.

BY Wright Brown

ATTYS.

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES H. KANE, OF KANSAS CITY, MISSOURI.

ARTIFICIAL FOOT.

SPECIFICATION forming part of Letters Patent No. 515,691, dated February 27, 1894.

Application filed February 6, 1893. Serial No. 461,229. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. KANE, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Artificial Feet, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in artificial feet, relating more especially to the removable, flexible toe, the hollow ankle and foot, the removable heel and the means for connecting the ankle and foot, and consists of features of novelty hereinafter described and pointed out in the claims.

Figure I, represents a vertical, longitudinal sectional view of my improved foot with ankle and toe attached. Fig. II, is a bottom view of the same. Fig. III, is an enlarged perspective view of the toe removed from the foot proper. Fig. IV, is an enlarged detail perspective, showing the removable heel. Fig. V, is an enlarged detail perspective view of the curved tie bar for connecting the body of the foot with the ankle, and the cross pins which pass through said tie bar, and the foot and ankle portions. Fig. VI, is a detail sectional view showing a modification of the means for connecting the toe with the foot proper. Fig. VII, is an enlarged detail sectional view showing a modification for connecting the toe with the foot proper.

Referring to the drawings 1, represents the ankle having a hollow center, as shown at 2.

3, represents the foot having a hollow center, as shown at 4. The foot 3, and ankle 1, are joined to each other, as shown at 5, partially by means of cement and partially by a curved tie bar 6, the tie bar 6, being made of hard wood, steamed and bent into a curved form, as shown in Figs. I and V, in order to conform to the contour of the ankle and foot and not to form a cross grain on the direct line of strain. The curved tie bar 6, is placed within a recess 7, in the foot and ankle portions, said bar being secured therein by means of cross pins 8, a portion of which extend through the foot portion 3, and through the lower end of the tie bar 6, other of said pins passing through the ankle portion and through the upper end of said tie bar, said tie bar being also cemented fast in its recess to give additional strength to the connection between the ankle and foot.

9, represents a removable heel, preferably formed of rubber, or other flexible or elastic substances, said heel having a vertical recess 10, into which a portion of the tie bar 6, rests (see Fig. I) and in which said tie bar is glued when the heel has been placed in position. As an additional means of connection between the heel and ankle, I provide a series of elastic projections 11, made in cone shape, with the broad end of the cone extending into openings 12, in the ankle, said openings being formed so as to conform with said projections, with their larger circumference at their upper end, so that when the extensions 11, are forced into the openings 12, they form a dovetail connection between the ankle and heel. In order to add strength to the projections 11, I have a core 13, of canvas or other tough material, extending from said projections down into the body of the heel. (See Fig. I.)

14, represents my improved removable toe formed of elastic material, preferably of rubber, said toe being provided with a bead 15, at the end to which it is connected with the body of the foot, having eye bolts 16, the eyes 17, or looped ends of said bolts extending into recesses 18, in said bead, which is made in the form of a half circle, and having a bolt or pin 19, extending through said bead and through the loops in said bolts. The bolts 16, extend through a portion of the foot proper, as shown at 20, having their rear ends extending into a vertical recess 21, in the foot which affords access to the structure, whereby the nuts 22, may be placed on the ends of said bolts, and the toe forced into position.

The foot proper is provided with a curved recess 23, into which the bead 15, has its seat, (see Fig. I) the toe 14, being provided with a shoulder 24, which abuts against a shoulder 25, on the foot proper, cement being used to form an additional connection between the toe and the foot. The bead 15, in which the eye bolts are secured is reinforced by means of a strip or strips of canvas 26, being laid within the body of the toe, and extending out to said bead, forming a loop around the pin

19, said canvas also preventing stretching of the bottom of the toe, but allowing the top portion to compress, thus adding materially to the life of the toe.

In Fig. VI, I have shown a slight modification in which the shoulder 25, against which the rear end of the toe abuts, is made in convex form, and the toe, where it abuts against the same is made in concave form.

In Fig. VII, I show still another modification, in which the shoulder against which the toe abuts is made in concave form and the shoulder 24, on the foot is made in convex form.

27, represents a series of flexible pins, preferably of rubber made in cone shape, and having their larger ends inserted into recesses 28, within the foot, said rubber pins extending down a slight distance below the body of the foot, and forming an artificial ball for the same. The holes 28, are made to conform to the cone shaped pins, being larger at their upper ends than at their lower ends, so that the said pins will be held in position, said foot being also provided with dowels 29, which extend down into openings at the upper end of said pins 27, in order to form a connection between the pins and foot, said pins being also cemented fast, if desired in their recesses.

By making my removable toe of elastic material I am enabled to give spring and bend to the toe without bending the same at the point of connection with the foot. (See dotted lines, Fig. III.) One side of the toe may be bent without affecting the opposite side of the toe; whereas, where the bend is entirely at the hinged point between the toe and foot, a portion of the toe cannot bend without bending all of the toe; and at the same time there is serious objection to such a construction, as the toe frequently breaks away from the foot proper where they are hinged and allowed to give. While in my device the toe is secured rigidly to the foot proper, and there can be no bend at this point.

By means of my construction I am enabled to remove the part in which there is the greatest amount of wear, and replace the same without having to throw away the body of the foot and ankle, in addition to the value of giving more elasticity and strength to the foot.

I claim as my invention—

1. As a new article of manufacture, an artificial foot having a removable, flexible toe portion secured rigidly to a rigid foot portion; substantially as described and for the purpose set forth.

2. In an artificial foot, the combination of the foot proper; a removable toe; eye bolts connected with said toe; a pin extending through said eye bolts, and a strip of canvas connected with said toe, and passing around said pin; substantially as and for the purpose set forth.

3. In an artificial leg, the combination of an ankle section; a foot section, and a curved tie bar for rigidly connecting said sections; substantially as set forth.

4. In an artificial leg, the combination of an ankle; a foot formed in sections; a curved tie bar for connecting said ankle sections with said foot sections, and pins which pass transversely through said sections and through said tie bar; substantially as and for the purpose set forth.

5. As a new article of manufacture, an artificial foot having a flexible heel provided with cone shaped projections; and a recess in said foot into which said cone shaped projections project; substantially as and for the purpose set forth.

6. As a new article of manufacture, a flexible heel having cone shaped projections for connecting the same with the foot, said projections having a core formed of canvas; substantially as and for the purpose set forth.

JAMES H. KANE.

Witnesses:
F. E. MULLETT,
JAS. E. KNIGHT.