C. A. BLATCHFORD.

ARTIFICIAL LIMB.

APPLICATION FILED JAN. 24, 1918.

1,402,709.

Patented Jan. 3, 1922.

2 SHEETS—SHEET 1.

Fig. 1

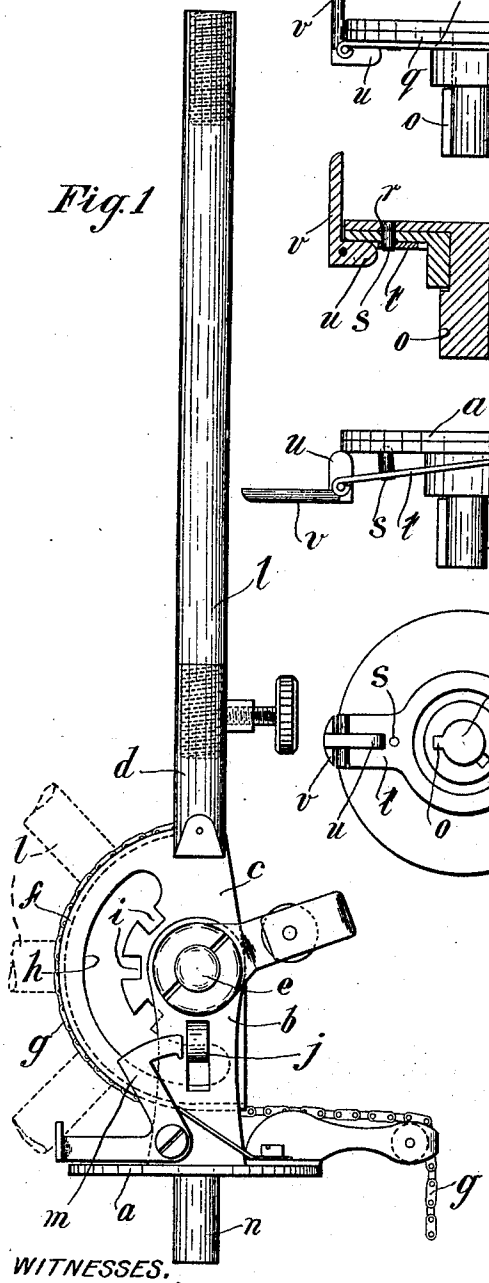


Fig. 3.

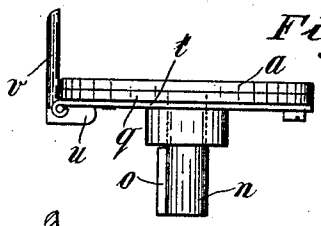
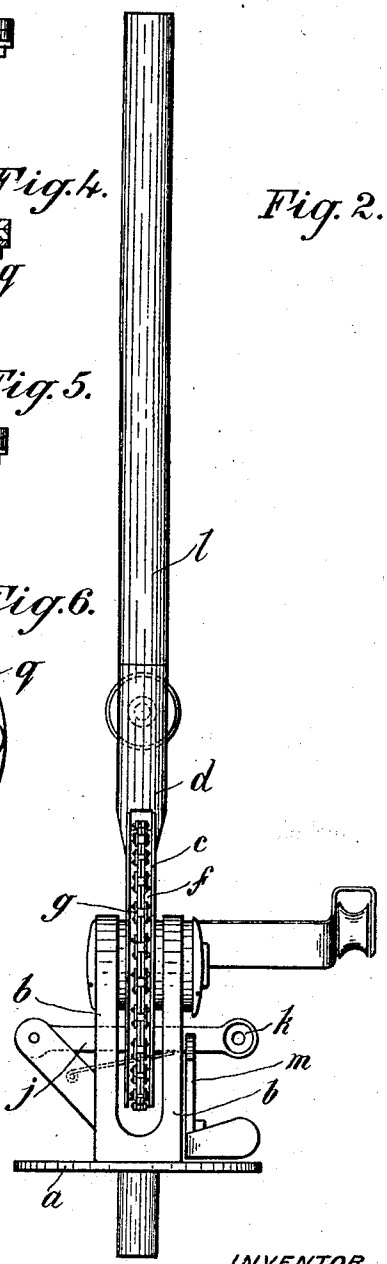


Fig. 4.

Fig. 5.

Fig. 6.

Fig. 2.



WITNESSES.

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2 SHEETS—SHEET 2.

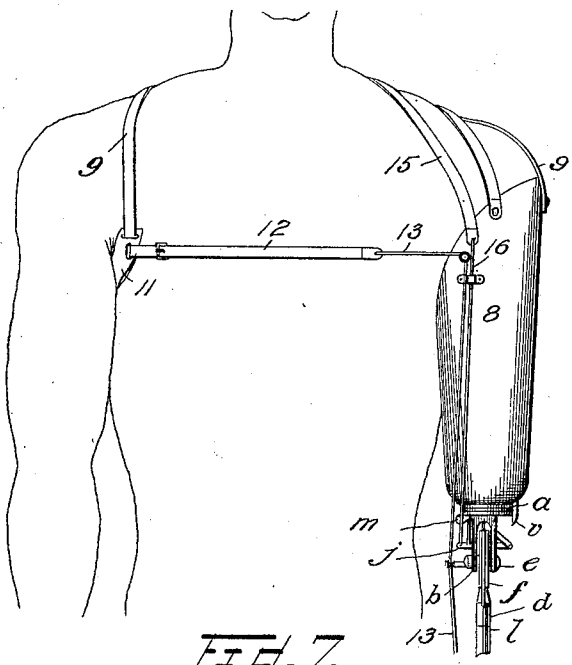


FIG. 7.

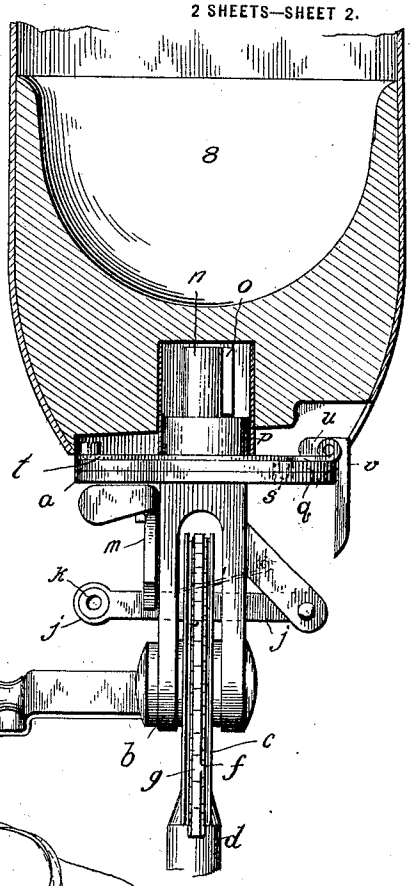


FIG. 9.

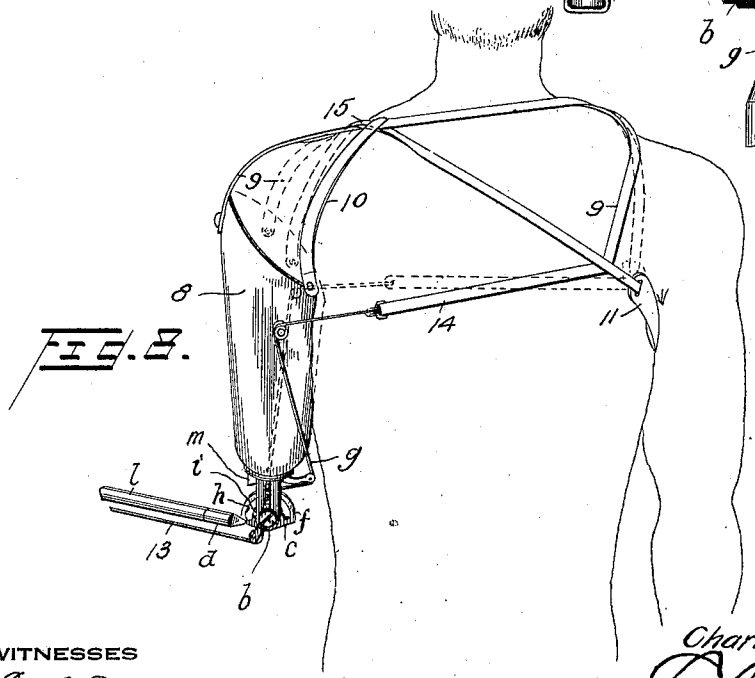


FIG. 8.

WITNESSES

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UNITED STATES PATENT OFFICE.

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ARTIFICIAL LIMB.

1,402,709. Specification of Letters Patent. Patented Jan. 3, 1922.

Application filed January 24, 1918. Serial No. 213,557.

To all whom it may concern:

Be it known that I, CHARLES ALBERT BLATCHFORD, a subject of His Majesty the King of England, and resident of London, Kingdom of England, have invented certain new and useful Improvements in Artificial Limbs, of which the following is a specification.

This invention relates to artificial limbs. The invention has for its object to provide an improved, simple, strong and durable adjustable and jointed device for attachment to artificial limbs, whereby tools and other implements, fittings or articles can be detachably connected thereto and manipulated with ease and precision, and to provide a device of this character which is particularly adapted for use as an elbow joint on artificial arms.

The invention will now be described with reference to the accompanying drawings in which:—

Figure 1 is a side elevation of a suitable construction of the improved attachment device, and

Figure 2 is an edge elevation of the same.

Figure 3 is an elevation showing suitable means for securing the device to an artificial limb, and

Figure 4 is a sectional elevation of the same, the securing means in these two views being in their operative or locking position;

Figure 5 is an elevation showing the securing means unfastened;

Figure 6 is an underneath plan of Figure 3.

Fig. 7 is a front elevation of a human figure showing the invention applied thereto.

Fig. 8 is a rear elevation of the same showing the attachment in an adjusted position.

Fig. 9 is a cross-section on an enlarged scale of the device of the invention shown applied to a stump socket.

In the attachment device shown the outer side of a disc *a* is formed with a pair of spaced ears *b* between which an enlargement *c* of a stem piece *d* is pivoted at *e*. On one side of the enlargement *c* a quadrant *f* is formed, over which latter a control chain *g*, wire or cord, which passes up or is connected to the shoulder or back, is guided. Within this quadrant is a slot *h* the inner edge of which is formed with notches *i* for engagement with a spring-pressed pivoted catch *j* which catch is adapted to be actuated by the other hand or by means of a control secured at *k* and passing up to the shoulder. Thus, by means of the two controls it is possible to move the stem piece *d* into any desired position, as indicated in full and dotted lines, without touching it with the other hand, and to secure it in its adjusted positions by means of the spring catch *j*.

Any preferred fitting, tool, implement, artificial hand or article may be secured to the end of the stem piece *d* to suit any particular requirements of the wearer, such as through the medium of a stem *l* which may serve as a forearm. The plate or disk *a* of the attachment device is permanently or detachably secured to a stump socket 8 which is held upon the stump by means of harness straps 9, an elastic member 10, and a pad 11 engaged under the armpit of the sound arm. A strap 12 connected by a buckle to the front of the pad serves for controlling a hand, split hook or other suitable device through a wire or the like 13. Another strap 14 connected to the harness at the back serves for bending the lower arm or stem *l* upon the joint *e* and through the chain or the like *g*, and the joint locking catch *j* is controlled by the control strap 15 through a wire or the like 16.

The control strap 15 passes up over the shoulder of the wearer, as seen in Figure 7. By moving the stump socket as indicated in Fig. 8, the stem *l*, which serves as a forearm, is moved into any desired angular position.

If it is desired at any time to render the members *c*, *d* quite free on their pivot *e* the catch *j* can be held out of engagement with the notches *i* by means of a pivoted spring-pressed catch *m* adapted to engage over it.

Various means may be adopted for adjustably securing the device to the artificial limb, according to requirements. For instance, the haft *n* may be screwed into a plate provided at the end of a socket piece or bucket containing the stump of an upper arm, and the part carrying said haft may be provided with a catch adapted to engage with any one of a plurality of recesses formed in said plate so as to hold the whole device in any adjusted position. The securing means preferably provided are shown in Figures 3 to 6. In this arrangement the haft *n* is feathered at *o* and adapted for rotatable engagement in known manner with

a slotted socket p formed on a disc q which is secured in any suitable manner to a socket piece or bucket on an artificial limb. The disc a is formed with a number of holes r any one of which is adapted to receive in known manner a pin s carried by a spring plate t having one of its ends secured to the disc q. The free end of the spring plate t carries a pivoted cam u provided with an operating finger piece v, by means of which cam the pin s is moved and retained out of engagement with the holes r when required. By positioning the cam u in the manner indicated in Figure 5 the attachment device can be turned round bodily and axially on the disc q and adjusted to various positions in relation to the artificial limb to which it is secured.

What I claim is:—

1. An elbow joint for artificial limbs comprising two members pivoted to each other with one member angularly adjustable relatively to the other, means for locking the first named member in its various angularly adjustable positions, controlling means adapted to be supported across the back of the wearer to operate the first named member and turn it on its pivot, and controlling means supported upon the shoulder for operating the locking means.

2. An elbow joint or attachment device for artificial limbs, comprising a member detachably secured to the artificial limb and axially adjustable thereon, a second member pivoted on the first member and angularly adjustable in relation thereto, means for locking the second member in its various angularly adjusted positions. means for operating the second member from the body of the wearer, and means for operating the locking means by hand or from the body.

3. An elbow joint or attachment device for artificial limbs, comprising a member detachably secured to the artificial limb and axially adjustable thereon, means for locking said member in its various axially adjusted positions, a second member pivoted on the first member and angularly adjustable in relation thereto, means for locking the second member in its various angularly adjusted positions. means for operating the second member from the body of the wearer, and means for operating the locking means by hand or from the body.

4. An elbow joint or attachment device for artificial limbs, comprising a member detachably secured to the artificial limb and axially adjustable thereon, a second member pivoted on the first member and angularly adjustable in relation thereto, and provided with a series of notches and a quadrant, means co-operating with said notches for locking the second member in its various angularly adjusted positions, and means co-operating with said quadrant for operating the second member from the body of the wearer.

5. An elbow joint or attachment device for artificial limbs, comprising a member detachably secured to the artificial limb and axially adjustable thereon, a second member pivoted on the first member and angularly adjustable in relation thereto, and provided with a series of notches and a quadrant, a spring-pressed pivoted catch co-operating with said notches for locking the second member in its various angularly adjusted positions, and means co-operating with said quadrant for operating the second member from the body of the wearer.

6. An elbow joint or attachment device for artificial limbs, comprising a member detachably secured to the artificial limb and axially adjustable thereon, a second member pivoted on the first member and angularly adjustable in relation thereto, and provided with a series of notches and a quadrant, means co-operating with said notches for locking the second member in its various angularly adjusted positions, and a chain, cord or wire engaged over said quadrant and connected to the shoulders and/or back of the wearer.

7. An elbow joint or attachment device for artificial limbs, comprising a member detachably secured to the artificial limb and axially adjustable thereon, a second member pivoted on the first member and angularly adjustable in relation thereto, and provided with a series of notches and a quadrant, a spring-pressed pivoted catch co-operating with said notches for locking the second member in its various angularly adjusted positions, a second spring-pressed pivoted catch for rendering the first catch inoperative, and means co-operating with said quadrant for operating the second member from the body of the wearer.

8. An elbow joint or attachment device for artificial limbs, comprising a disc detachably secured to the artificial limb and axially adjustable thereon, means for locking said disc in its various axially adjusted positions, spaced ears on said disc, a stem piece formed with an enlargement pivoted between said ears, a quadrant formed on said enlargement and to which is secured a control chain, wire or cord, notches formed in said quadrant, and a spring-pressed pivoted catch for co-operation with said notches.

9. An elbow joint or attachment device for artificial limbs, comprising in combination a member having a feathered haft adapted for detachable and rotary engagement with a slotted socket secured to the artificial limb, a pin carried by a spring plate secured to the socket and adapted to

co-operate with a number of holes formed in the member, a cam pivoted on the spring plate and provided with a finger piece, a second member pivoted on the first member and angularly adjustable in relation thereto. means for locking the second member in its various angularly adjusted positions, and means for operating the second member from the body of the wearer.

10. An elbow joint for artificial limbs having means for attaching the joint to the stump of an arm, means whereby angular adjustments of the joint may be made, means for locking the joint in the various positions of angular adjustment, means controlled by the shoulder of the wearer for disengaging the locking means from its locking positions, and means for holding the locking means in an inoperative position.

In testimony whereof I have hereunto signed my name.

CHARLES ALBERT BLATCHFORD.