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RATCHET BRACE.

APPLICATION FILED OCT. 23, 1911.

1,045,509.

Patented Nov. 26, 1912.

2 SHEETS—SHEET 1.

FIG. 1.

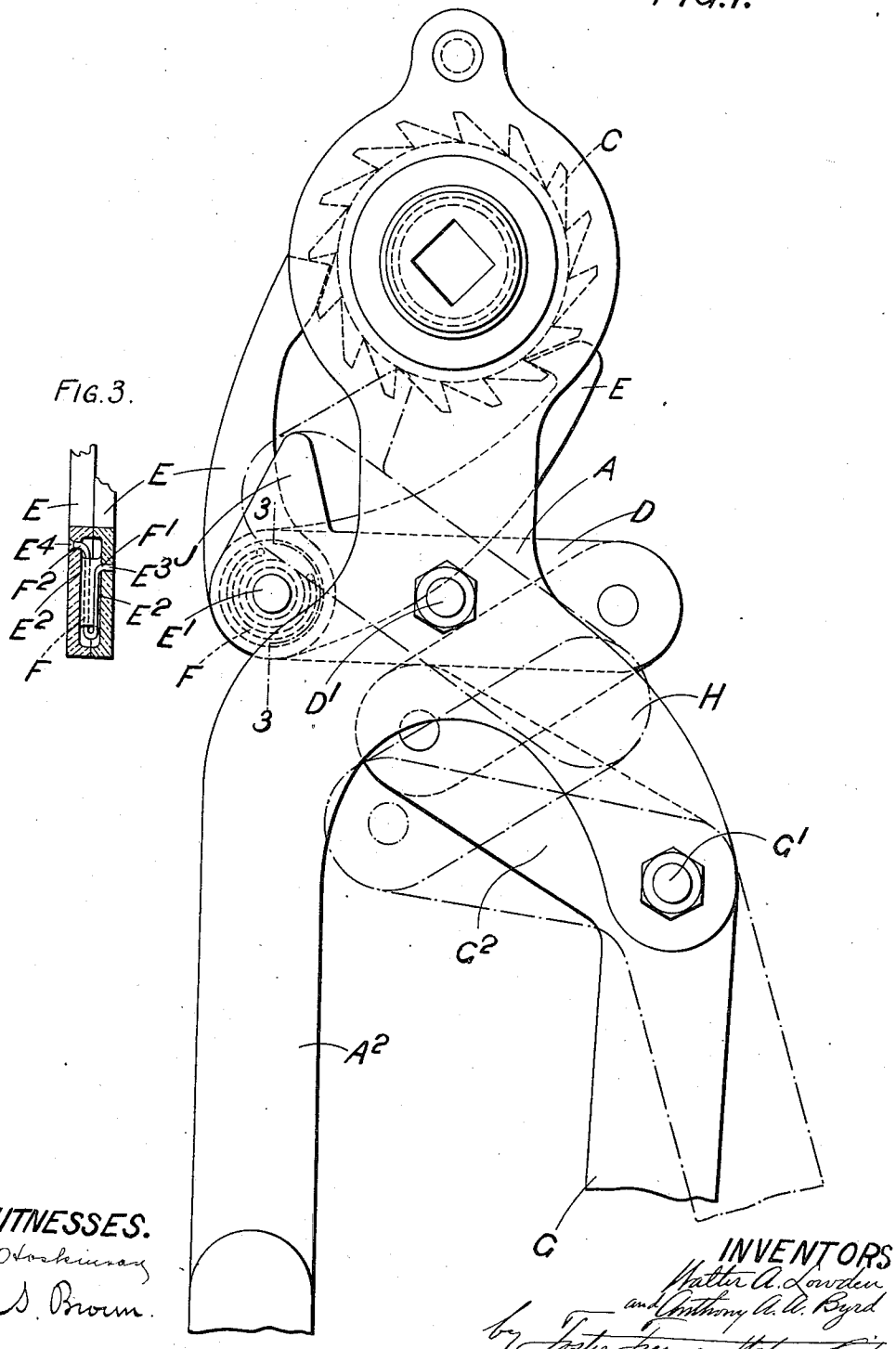

FIG. 3.

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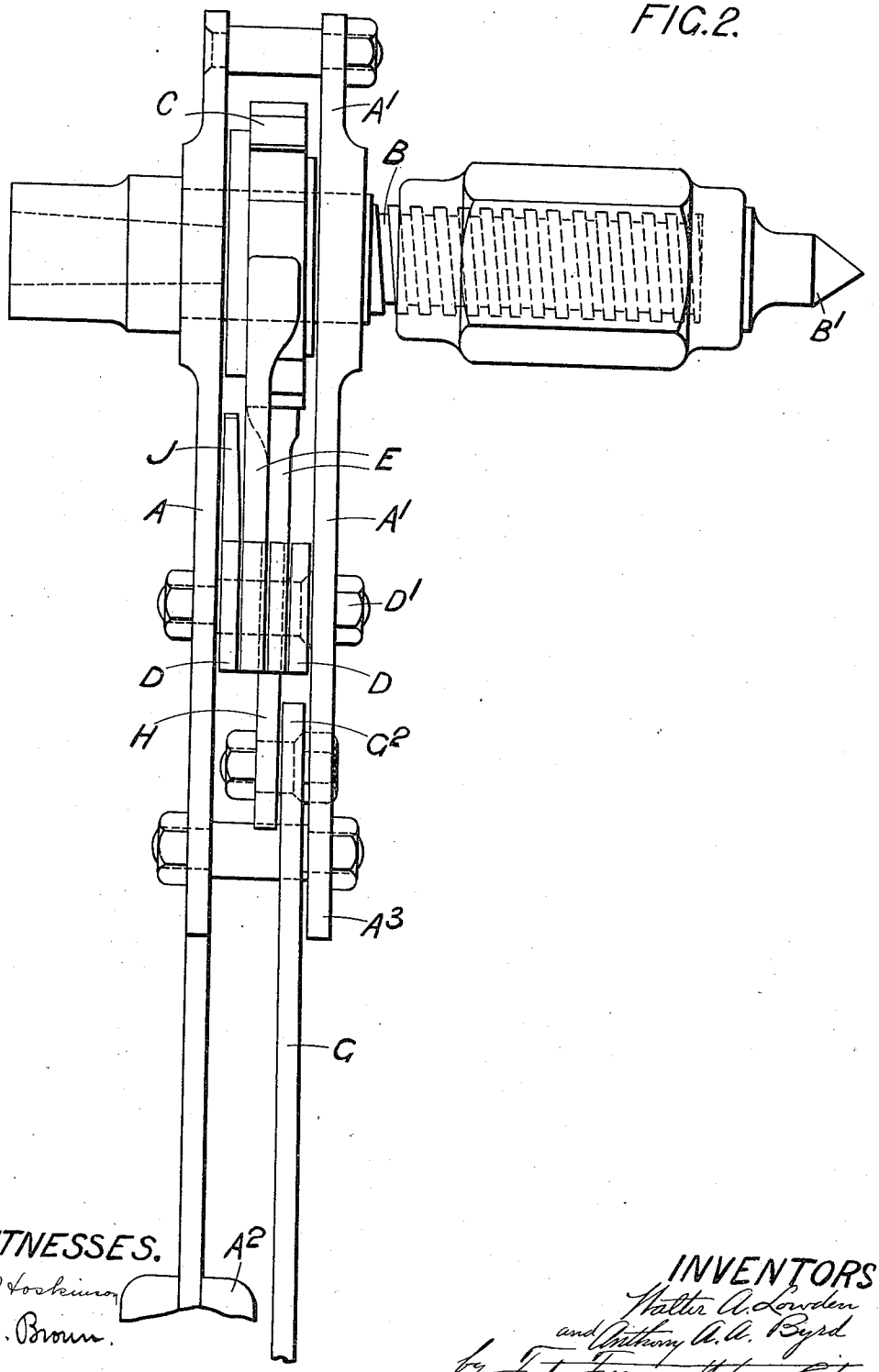
2 SHEETS—SHEET 2.

FIG. 2.



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UNITED STATES PATENT OFFICE.

ANTHONY ALBERT AUGUSTUS BYRD AND WALTER AVIS LOWDEN, OF LONDON, ENGLAND.

RATCHET-BRACE.

1,045,509. Specification of Letters Patent. Patented Nov. 26, 1912.

Application filed October 23, 1911. Serial No. 656,197.

To all whom it may concern:

Be it known that we, ANTHONY ALBERT AUGUSTUS BYRD and WALTER AVIS LOWDEN, subjects of the King of England, and both residing at London, in England, have invented certain new and useful Improvements in Ratchet-Braces, of which the following is a specification.

This invention relates to ratchet braces and the like of the kind in which double pawls are provided to effect continuous rotation of the tool by reciprocation of the operating handle and has for its object to increase the power and simplify the construction of such articles.

According to this invention the pawls are pivotally carried at one end of a two-armed lever pivotally mounted on what may be termed the fixed member of the brace as it holds the rotating parts. The opposite end of the pawl carrying lever is connected by a link to the end of one arm of a second two-armed lever which constitutes the movable or operating member of the brace as the other arm of this second lever is formed as the handle which is reciprocated to effect rotation of the tool. This operating lever is carried on a pivot on an extension or bracket forming part of the fixed handle member, and the proportions of the arms of these two pivoted levers are such that an increase in power is obtained for the rotation of the tool through the pawls as compared with the power obtainable by a single operating lever one arm of which constitutes the handle while the pawls are carried on the other arm. While an increase in power is obtained with this construction it involves little if any increase in the general bulk of the whole tool and the construction and arrangement of the parts may be quite simple.

One construction of tool according to this invention is shown in the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a side elevation, and Fig. 3 a section on the line 3—3 showing the pawl-controlling spring.

In the construction illustrated the main or fixed member carrying the various parts of the tool is built up of two plate like members A A^1 one of which A having an extension A^2 constitutes the handle for holding the tool while the other member A^1 constitutes a cover member and has an extension or bracket A^3 on which the operating lever hereafter described is fulcrumed. Rotatably mounted in the fixed member is a spindle B carrying a ratchet wheel C which lies between the two members A A^1. The spindle can have the tool connected to one of its ends in the usual manner and is provided at the other end with a back point B^1 of the well known kind.

Pivotally mounted between the fixed members A A^1 is a two-armed lever D comprising two similar superimposed plates fulcrumed about their central points on a stud D^1 so that the arms of the levers are of equal length. The lever D carries at one end a pair of pawls E which are disposed between the two plates constituting the lever on a pin or stud E^1. Formed in the adjacent surfaces of the pawls are circular recesses E^2 concentric with the pivot E^1 and adapted to receive a spring F which tends to keep the pawls in contact with the ratchet wheel C. This spring comprises an incomplete circle of spring wire or the like the ends of which are turned in opposite directions so that one end F^1 engages a hole E^3 in one recess E^2, the other end F^2 engaging a similar hole E^4 in the recessed portion of the other pawl. The arrangement is such that when the two ends of the spring engage the two pawls respectively, the latter can move relatively about their common pivot E^1 but when the pawls are moved away from each other that is to say away from the ratchet teeth this movement tends to expand the spring ring F which thereupon tends to bring the pawls together again and maintain them in engagement with the teeth of the ratchet wheel C. This arrangement of spring is such that it provides a neat appearance to the tool and as the spring is inclosed prevents it from being damaged while allowing a powerful spring to be used to keep the pawls up to their work. The shape and dimensions of the spring may vary to meet requirements.

The operating lever G is mounted upon the stud G^1 carried by the extension A^3 of the plate member A^1 and the short arm G^2 of the operating lever is pivotally connected by means of a link H with the free end of the pawl-carrying lever D, the link H being disposed between the two plate like members which constitute the lever D. Mounted on or formed in one with the pawl-

carrying end of the lever D is a stop member J which engages a ring or smooth surface on the ratchet wheel and thus limits the extent of feed movement of the pawls over the ratchet teeth.

In the construction illustrated the two arms of the pawl-carrying lever D are approximately equal in length, the short arm G^2 of the operating lever being greater in length than either arm of the lever D so that a gain in power is thus obtained.

It will be appreciated that by apportioning the several levers in different ways as found convenient an increase in power may still be obtained and that the other parts of the tool may be constructed and arranged in various ways as found convenient without departing from this invention.

What we claim as our invention and desire to secure by Letters Patent is:—

1. In a ratchet brace the combination of a rotatable spindle, a fixed support therefor, constituting a handle member, a ratchet wheel mounted on a spindle, a two-armed lever pivotally mounted on the handle member, a pair of pawls pivotally mounted on one end of said lever and engaging the ratchet wheel, a spring mounted in a recess formed in the adjacent surfaces of the pawls concentric with the pivot thereof, the ends of the spring being secured respectively to each pawl, a two-armed operating lever fulcrumed on the fixed support and a link connecting one arm of the operating lever with the pawl-carrying lever.

2. In a ratchet brace the combination of a rotatable spindle, a fixed support therefor comprising two plate-like members constituting a handle and cover member respectively, a ratchet wheel mounted on the spindle between said fixed members, a two-armed lever pivotally mounted between the fixed members and comprising two similar superimposed plates, a pair of spring-controlled pawls mounted between said plates on a pivot at one end thereof, an extension of the cover plate, a two-armed operating lever fulcrumed on the extension and a link connecting one arm of the operating lever with the end of the pawl-carrying levers as set forth.

3. In a ratchet brace the combination of a rotatable spindle, a fixed support therefor comprising two plate-like members constituting a handle and cover member respectively, a ratchet wheel mounted on the spindle between said members, a two-armed lever pivotally mounted between the fixed members and comprising two similar superimposed plates, a pair of spring controlled pawls mounted between said plates on a pivot at one end thereof, a spring disposed in a recess formed concentric with said pivot in the adjacent surfaces of the pawls and having its ends secured respectively to each pawl, an extension of the cover member, a two-armed operating lever fulcrumed thereon, a link connecting one arm of the operating lever with the end of the pawl carrying lever and a stop member mounted on the pawl pivot.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ANTHONY ALBERT AUGUSTUS BYRD.
WALTER AVIS LOWDEN.

Witnesses:
MARSH DIXON,
CHARLES NEWITT.