

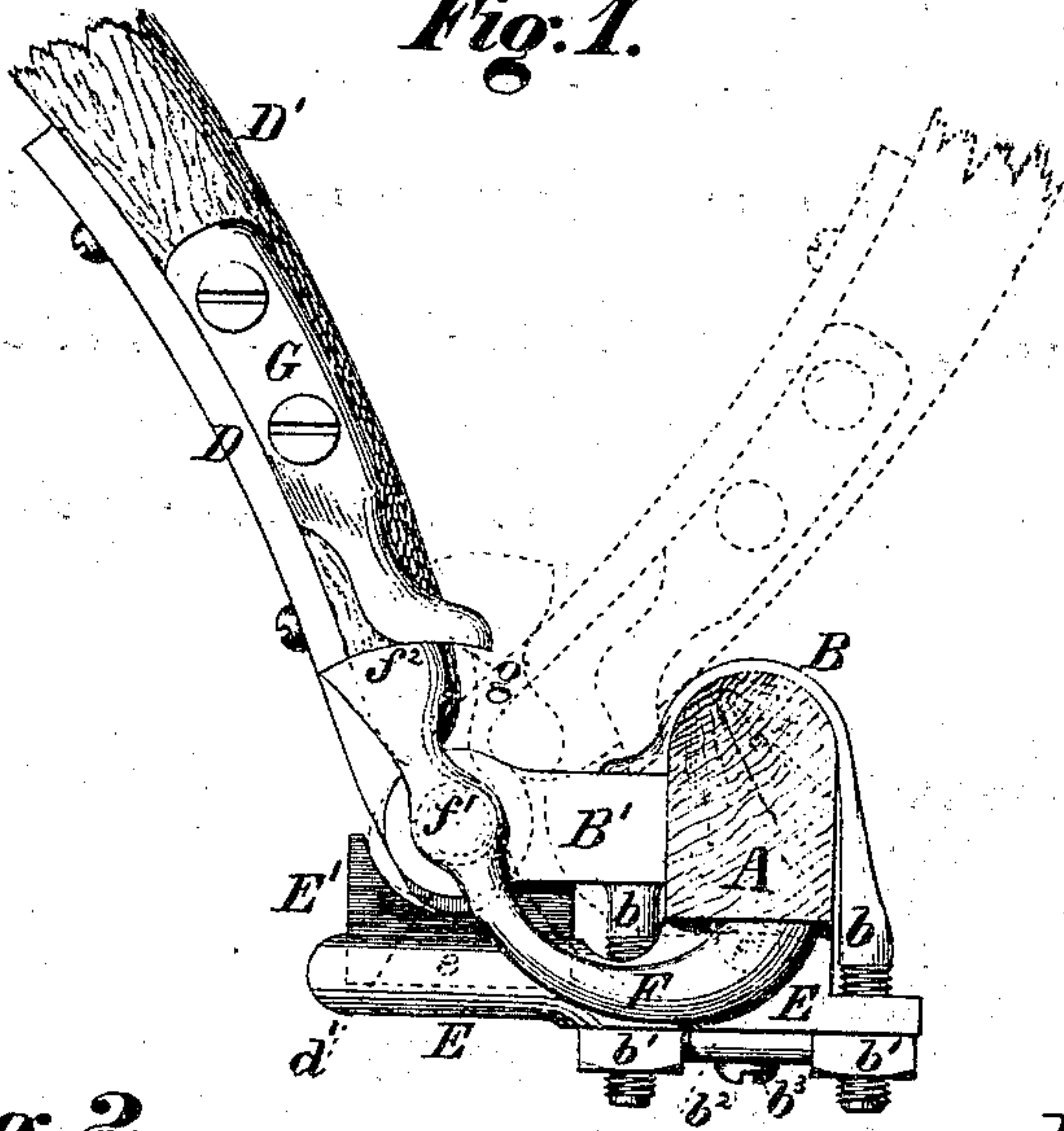
A. B. CROWELL & C. W. HORN.

## Thill-Couplings.

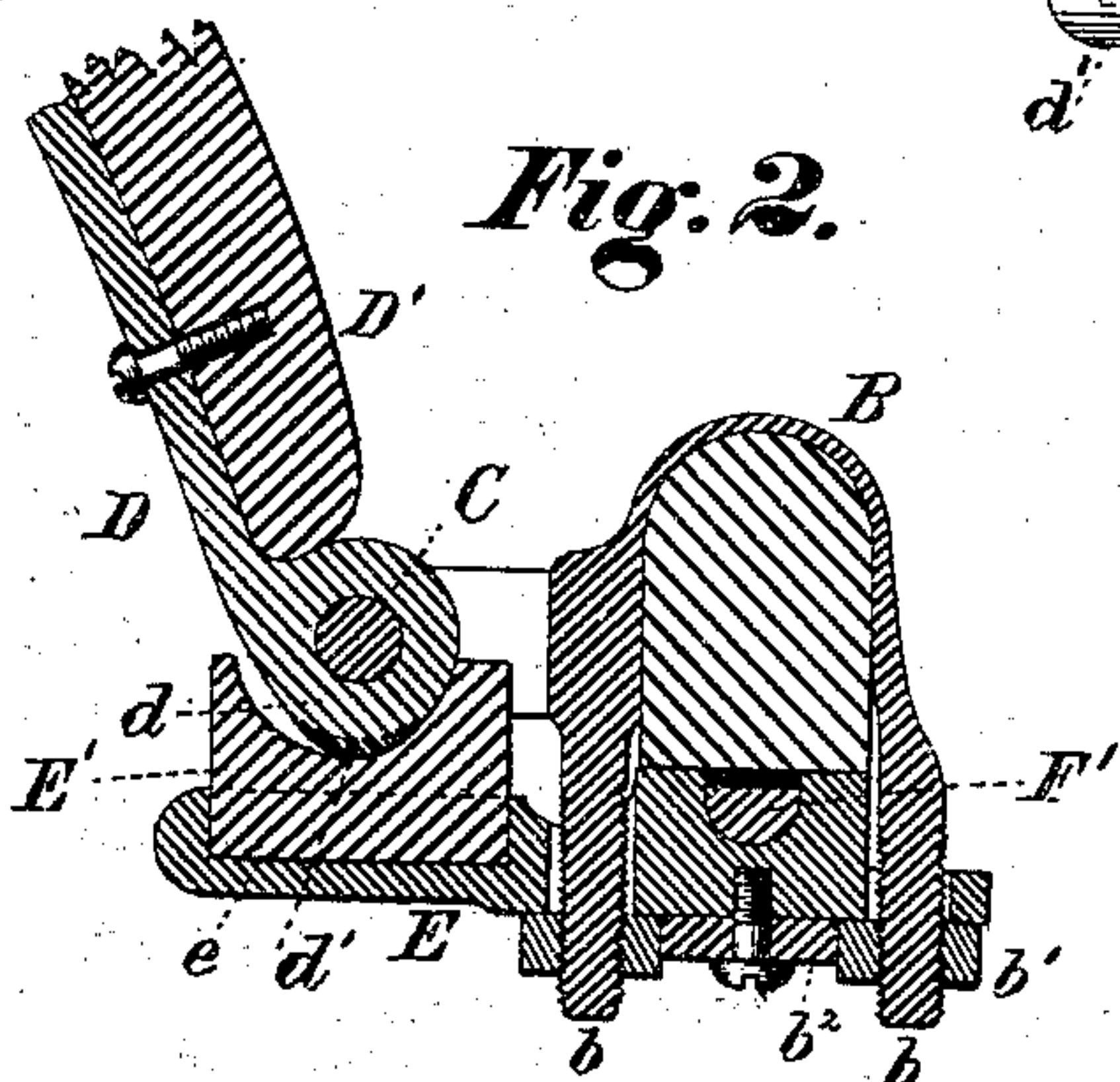
No. 153,811.

Patented Aug. 4, 1874.

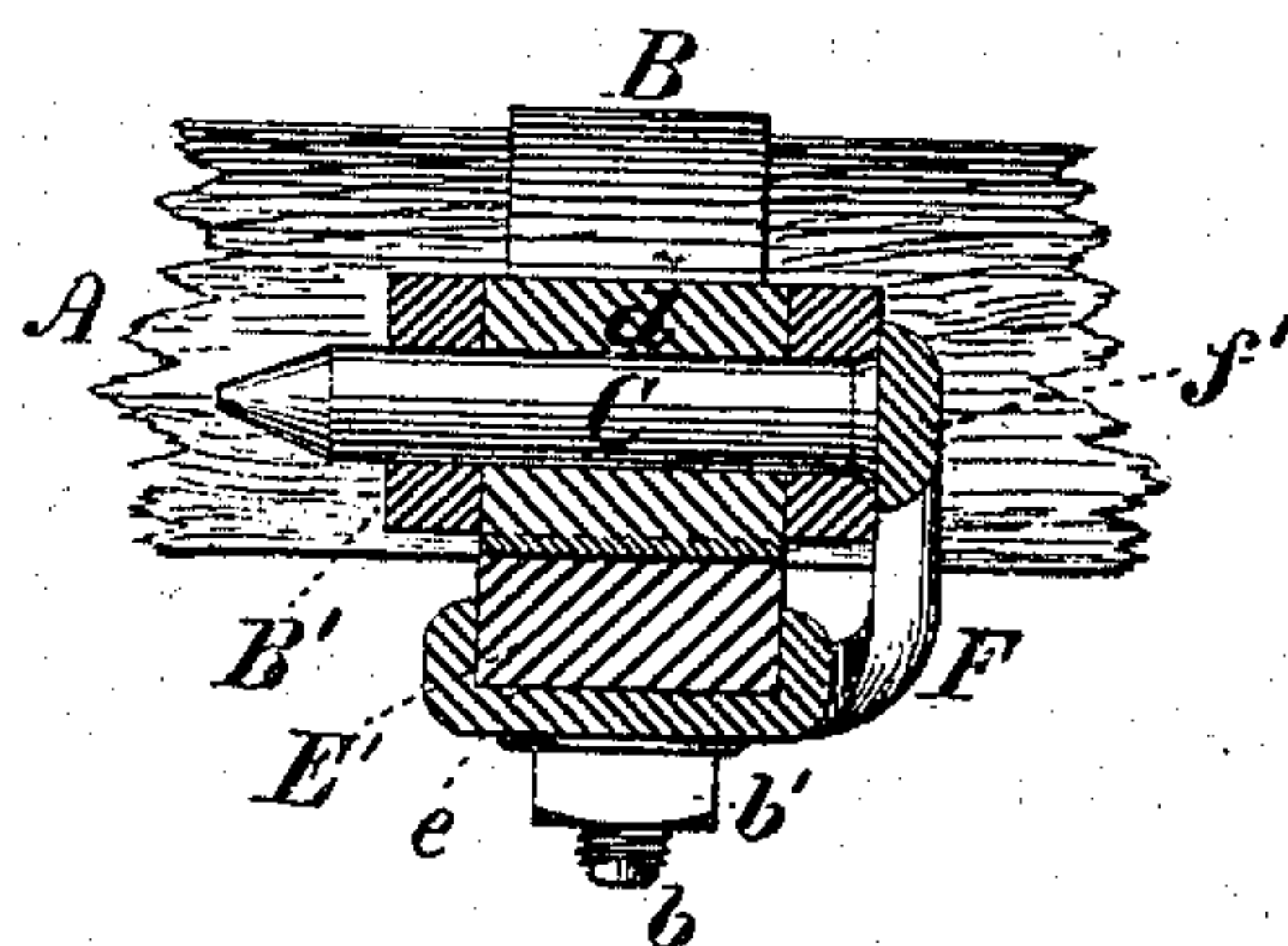
*Fig: 1.*



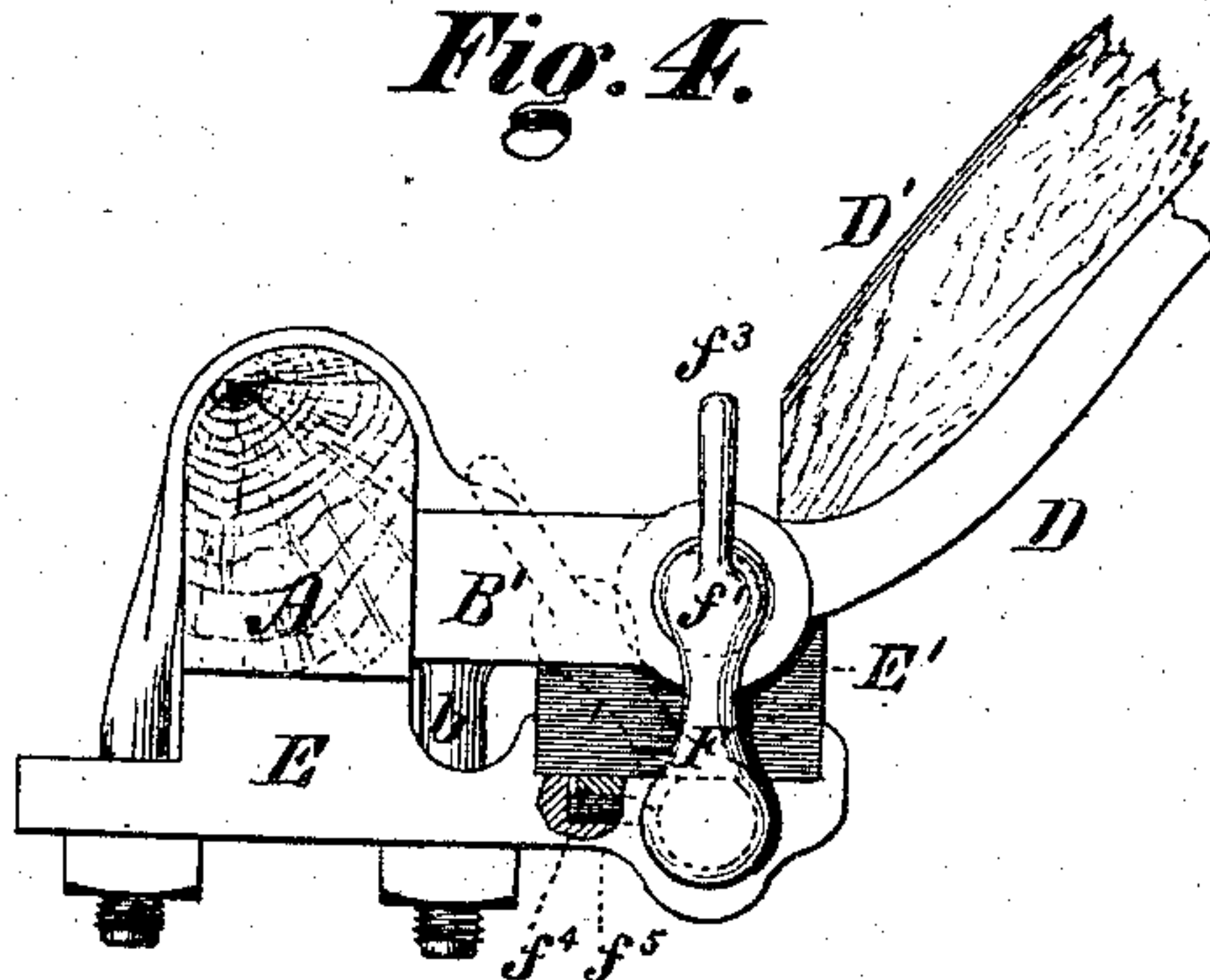
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



***Witnesses.***

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# UNITED STATES PATENT OFFICE.

ABNER B. CROWELL AND CHARLES W. HORN, OF WILMINGTON, DEL.

## IMPROVEMENT IN THILL-COUPPLINGS.

Specification forming part of Letters Patent No. 153,811, dated August 4, 1874; application filed September 6, 1873.

*To all whom it may concern:*

Be it known that we, ABNER B. CROWELL and CHARLES W. HORN, both of the city of Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Thill-Couplings, of which the following is a specification:

The object of our invention is to furnish a simple, secure, and durable device for uniting the thills and axle of a carriage which shall be free from rattling when in use, and permit the ready connection and disconnection of the parts when required; to which ends our improvements consist in combining a clip, clip-plate, connecting-pin, retaining-arm, and guard with the axle and thill, as hereinafter more fully set forth. Our improvements are designed to provide proper facilities for inserting rubber blocks between the working parts, retaining the same in proper position, and keeping the connecting-pin securely in place, our arrangement of parts being economical in first cost, and, from its construction and connection, comparatively free from liability to breakage or derangement in use.

In the accompanying drawings, Figure 1 is a view, in elevation, of a thill-coupling embodying our improvements; Fig. 2, a vertical longitudinal central section of the same; Fig. 3, a vertical transverse section through the coupling-pin; and Fig. 4, a view, in elevation, showing a modification of our improvements.

The axle A is provided with a clip, B, having downwardly-projecting bolts *b*, of the usual construction. Lugs B' are formed upon the clip B, and extending forward furnish bearings for the coupling-pin C, by which the thill-iron D and thill D' are connected to the clip. The clip-bolts *b* pass through a clip-plate, E, which is held up firmly against the bottom of the axle by the nuts *b*<sup>1</sup> on the clip-bolts. This clip-plate extends forward beneath the lugs B' of the clip, and is provided with a pocket, *e*, for the reception of a rubber block, E', which is recessed to receive the eye *d* of the thill-iron D. A cam, *d'*, is formed upon the periphery of the eye *d*, which bears closely against the rubber block E' when the thills are in position for use, and compress the same against the bottom of the pocket *e*, thus preventing any rattling at the connec-

tion of the thill and clip, and the recess in the rubber block is cut so that this compression is only relieved when the thills are thrown upward, as shown in dotted lines in Fig. 1, thus allowing the thills to be readily disconnected. The pocket *e* effectually prevents the accidental displacement of the rubber block E'. To guard against the slackening of the nuts *b*<sup>1</sup> upon the bolts, we provide a lock-plate, *b*<sup>2</sup>, which fits neatly between the nuts, and is held in position by a tap-bolt, *b*<sup>3</sup>, screwed into the clip-plate E. The retention of the pin C in its position is, of course, of the greatest importance, as regards security, in the construction of a practical coupling, and in addition to this feature it should, for convenience, likewise possess the capacity of being easily and quickly removed and replaced. We accomplish these objects by providing a retaining-arm, F, which is formed in one piece with or properly united to a shaft, F', passing through the clip-plate E, immediately beneath the axle. The shaft F' is flattened on its upper side, so as to provide space for the insertion of a rubber strip, *f*, which prevents slackness or rattling of the shaft in its bearings. The rubber may be inserted below the shaft, if preferred, but we deem the arrangement shown to be more desirable. The arm F is curved upward and forward, and provided with an enlargement, *f*<sup>1</sup>, which covers the head of the coupling-pin and maintains the same in its position in the lugs. The arm F extends beyond this enlargement, and has a curved face, *f*<sup>2</sup>, formed on its extremity, which bears against a corresponding curved face, *g*, on the lower extremity of a guard, G, secured to the thill D', as clearly shown in Fig. 1, the distance from the center of the pin C to the face of the guard being made less than that from the center of the shaft F' to the rear end of the face *f*<sup>2</sup> of the arm. From this difference of the radii it results that when the thill is in position for use the guard bears firmly upon the arm and maintains the enlargement *f*<sup>1</sup> over the head of the pin C, thereby preventing its withdrawal or displacement. When the thill is raised, as shown by the dotted lines in Fig. 1, the arm F can likewise be raised and the pin C and thill D be readily withdrawn.



Figure 4 shows a modification of our improvements, in which the shaft  $F'$  bears in the clip-plate  $E$ , immediately beneath the coupling-pin, the arm  $F$  being provided with an enlargement,  $f^1$ , to cover the head of the coupling-pin, and a thumb-piece,  $f^3$ , by means of which it can be pushed back so as to uncover the same for the purpose of removal. The rubber block  $E'$  bears upon the flattened top of the shaft  $F'$ , and upon an arm,  $f^4$ , projecting therefrom, beneath which is placed a rubber strip,  $f^5$ , which serves to throw the arm  $F$  back to its position when the pressure upon the thumb-piece  $f^3$  is released.

We are aware that retaining-arms have heretofore been employed to cover one or both

ends of a coupling-pin, and thereby prevent its displacement, and do not, therefore, broadly claim such device.

We claim as our invention—

The clip-plate  $E$  and a retaining-arm,  $F$ , in a bearing therein, with a guard,  $G$ , secured upon the thill or the equivalents shown, so as to maintain the arm in position to cover the coupling-pin  $C$  when the thills are in working position, all combined substantially as set forth.

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Witnesses:

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