

No. 698,165.

Patented Apr. 22, 1902.

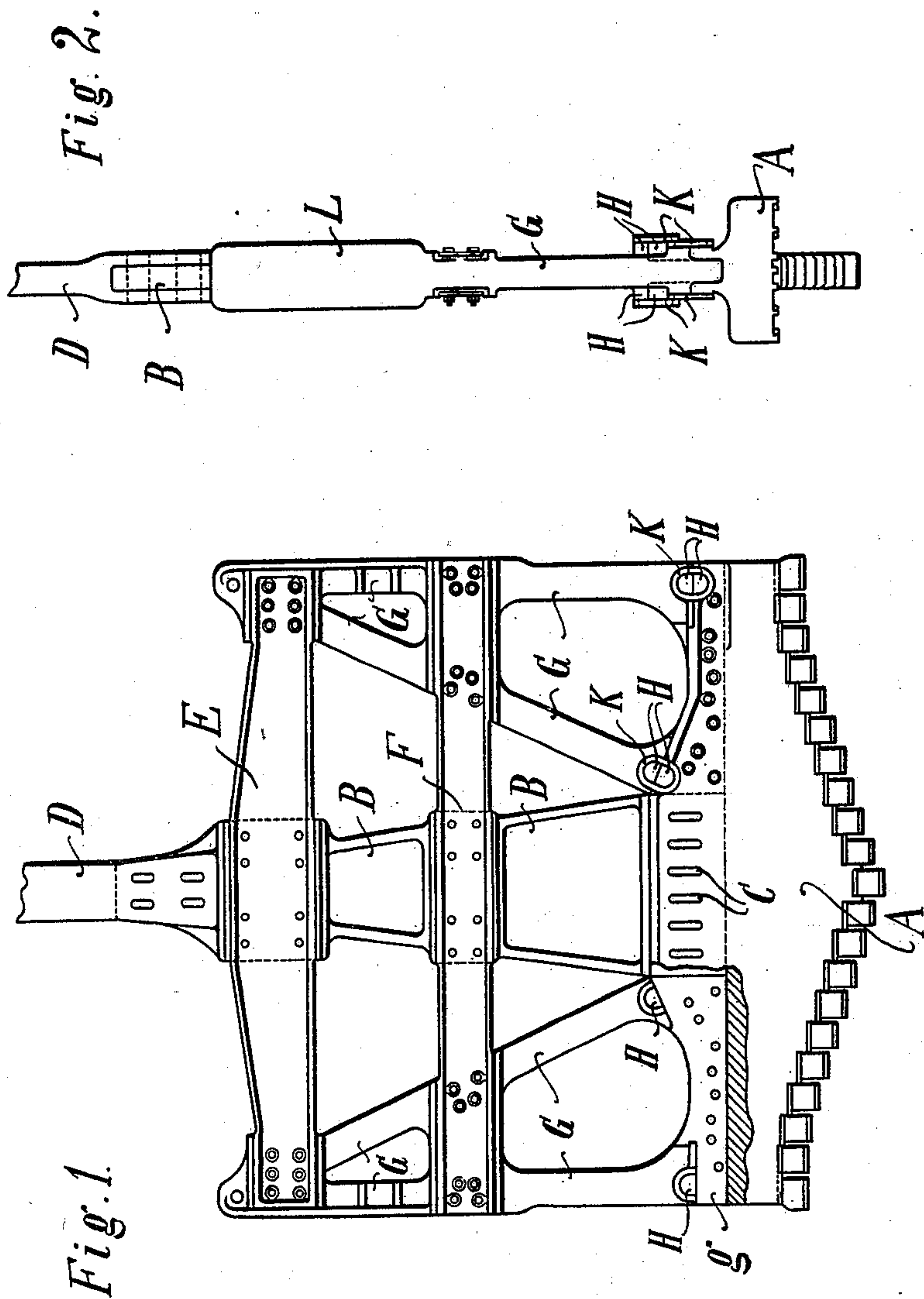
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APPARATUS FOR BORING SHAFTS.

(Application filed Nov. 25, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 4.

Fig. 3.

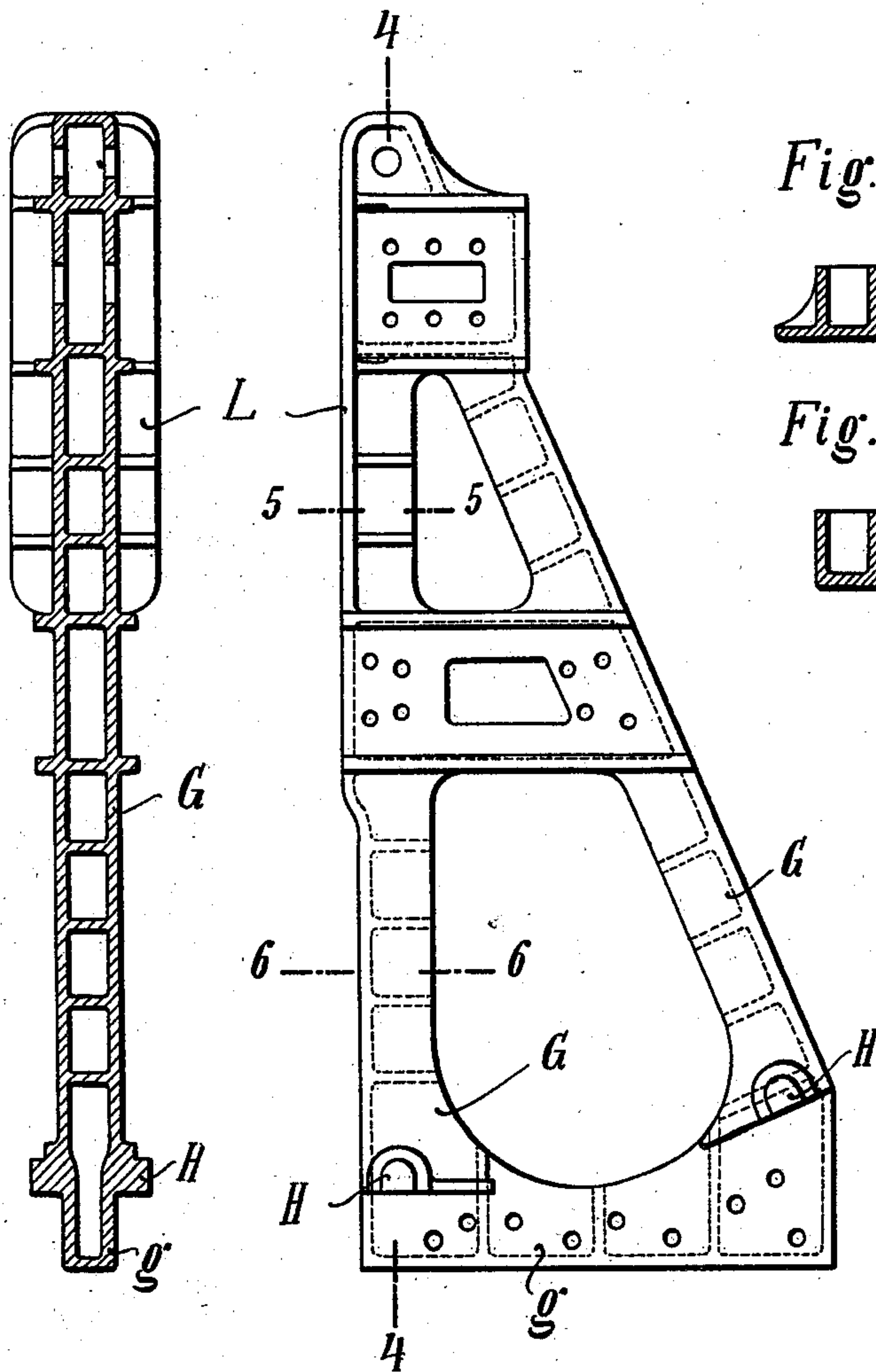
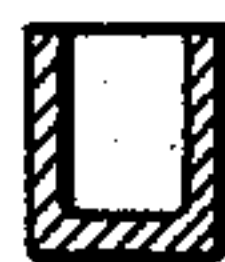


Fig. 5.



Fig. 6.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR BORING SHAFTS.

SPECIFICATION forming part of Letters Patent No. 698,165, dated April 22, 1902.

Application filed November 25, 1901. Serial No. 83,495. (No model.)

To all whom it may concern:

Be it known that I, RICHARD ABÉ, a citizen of Germany, residing at Annen, Westphalia, Germany, have invented certain new and useful Improvements in Apparatus for Boring Shafts, of which the following is a specification.

This invention has reference to improvements in apparatus for boring shafts, and has for its object to render such apparatus most durable and effective, and particularly to prevent breaking of the same by strains unevenly distributed on the striking-beam.

In the constructions heretofore employed it has quite frequently occurred that during the operation of boring, where a stratum presenting an area of variable hardness to different parts of the trepans or striking-beam was encountered, the lateral vertical stays were bent by the lateral or turning movement caused by the unequal surfaces acted upon and also the connections with the shaft and footpiece were loosened.

The object of the present invention is to prevent such detrimental occurrences by forming the lateral vertical stays in triangular shape and so connected and placed as to transfer any and all lateral impact to the central and strongest part of the footpiece. At the same time the footpiece is strengthened by this same triangular construction of the stays, so that the danger of the wings of the footpiece breaking is practically avoided.

The nature of my invention will best be understood when described in connection with the accompanying drawings, in which—

Figure 1 represents a front elevation of an apparatus for boring shafts embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a side elevation of one of the triangular stays, drawn on an enlarged scale. Fig. 4 is a vertical section on the line 4 4, Fig. 3, looking from the right of said figure. Figs. 5 and 6 are horizontal sections on the lines 5 5 and 6 6, Fig. 3.

Similar letters of reference designate corresponding parts throughout the several views of the drawings.

In the present example I have shown a two-winged footpiece A, which is provided, as

usual, on its lower surface with trepans arranged in stepped form and has a U-shaped cross-section at its upper portion. In the central part of the gutter so formed the shaft B, strengthened by suitable ribs, is securely fastened by means of keys C. The connection of the shaft B with the rod D is effected in the same manner. To the shaft B is secured a top cross-piece E and a bottom cross-piece F, each of which consists of two parts, which abut flatly against the shaft B and are received by suitable sockets formed in said shaft and are firmly connected to the same by screws or bolts. The cross-pieces E and F are received at their ends by two triangular stays G, which, similarly to the shaft B, lie between the cross-pieces and are connected with the latter by screws or bolts to form a rigid structure. Each stay G is made of one piece in the form of a hollow ribbed casting, the construction of which is clearly shown in Figs. 3 to 6 and requires no further description. For the purpose of uniting the stays with the wings of the footpiece the former are provided each with a foot g, which exactly fits into the gutter next adjoining the shaft B in the footpiece A and is secured to the latter by means of screws or bolts. Besides this the stays, as well as the footpiece, are provided with horizontally-projecting and adjacent lugs H, which are held rigidly together by means of rings K, preferably shrunk thereon, so that the connection between the footpiece and the stays is absolutely rigid. The upper portion of the stays G is formed with broad flanges L, adapted to guide the boring apparatus in the shaft.

The previously-described arrangement of the boring apparatus has the advantage that in case the nature of the ground varies within the area of the trepans in view, for instance, by varying conditions of stratum or by the presence of rock or unequal hardness of rock in the same stratum, which would throw an unequal strain upon one side of the wings of the boring-shaft, the strain is transmitted through the triangular stays to the central part of the footpiece and upon the cross-pieces, and therefore in view of the construction hereinbefore described a considerable

ably increased rigidity of the whole boring apparatus is accomplished, so that a breaking or looseness of the single parts is not possible.

What is claimed as new is—

- 5 In an apparatus for boring shafts, the combination of a shaft or beam, a footpiece rigidly secured to said shaft and provided with trepans, side stays of triangular construction resting with their bases upon said footpiece
10 and secured thereto, and cross-pieces rigidly

connected with said shaft and with said stays, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

RICHARD ABÉ.

Witnesses:

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WOLDEMAR HAUPT.