

(No Model.)

H. SEE.

APPARATUS FOR FITTING AND FINISHING CRANK SHAFTS.

No. 322,205.

Patented July 14, 1885.

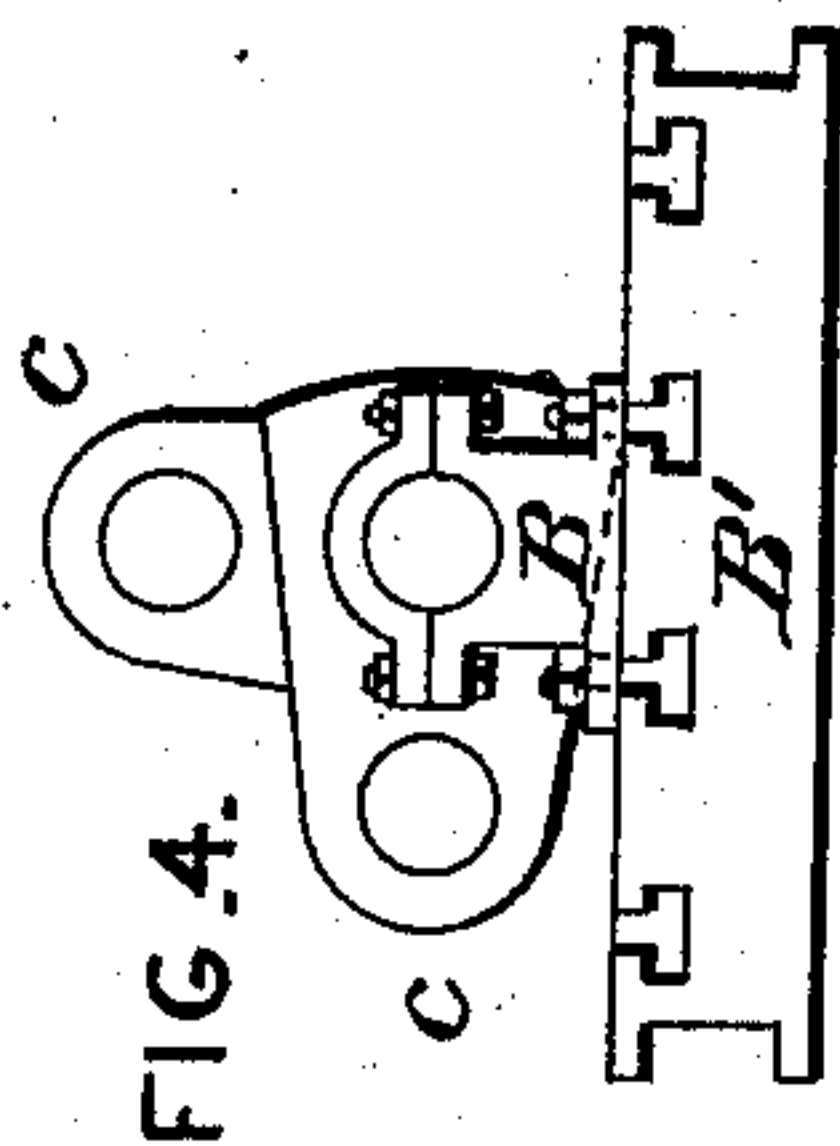
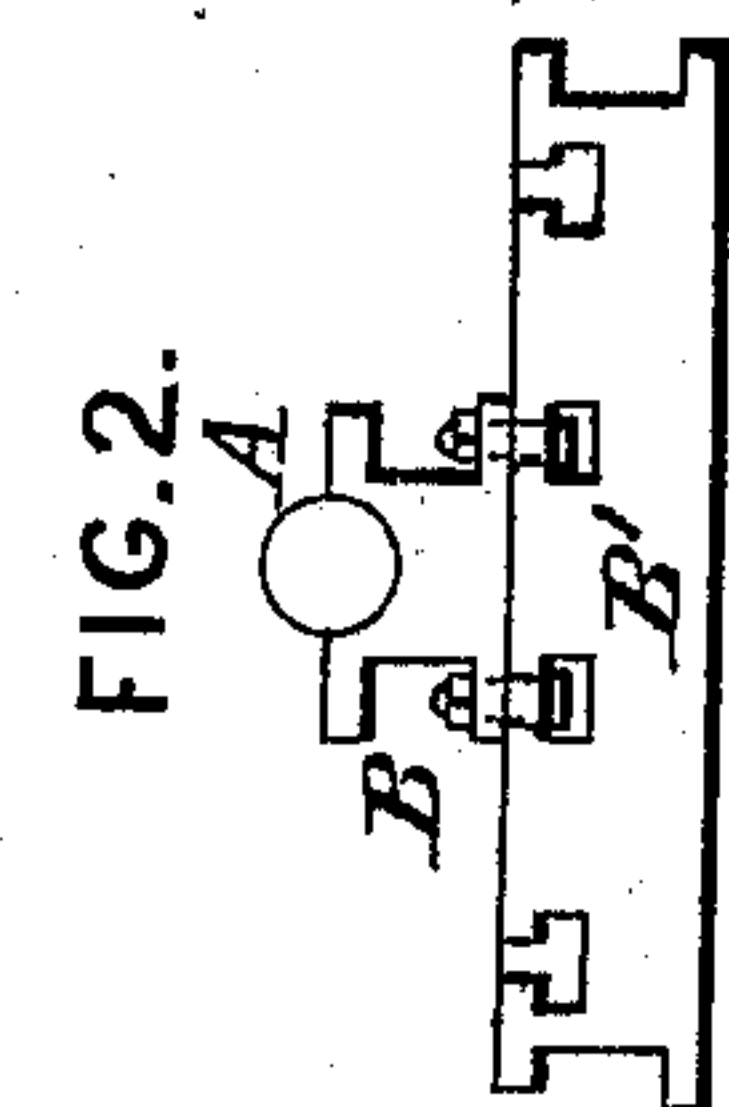


FIG. 7.

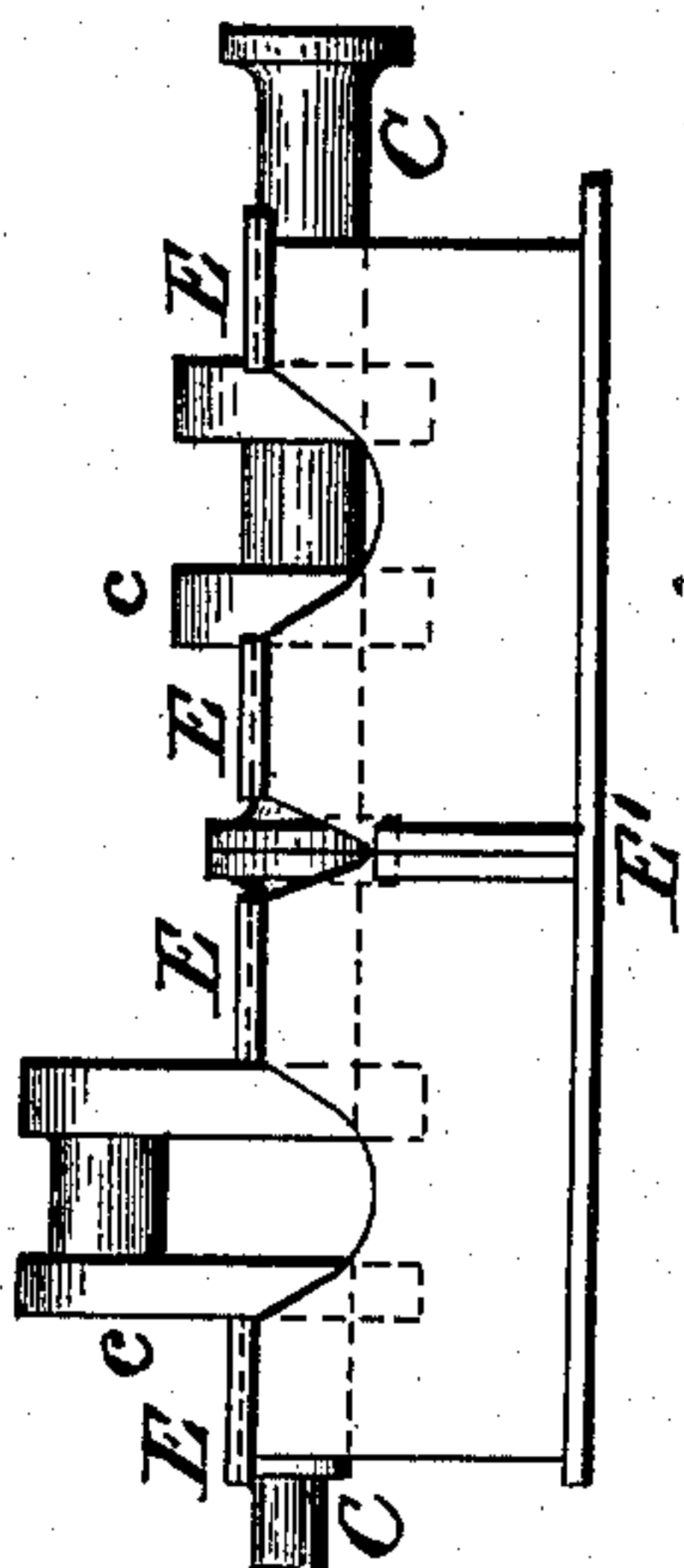


FIG. 8.

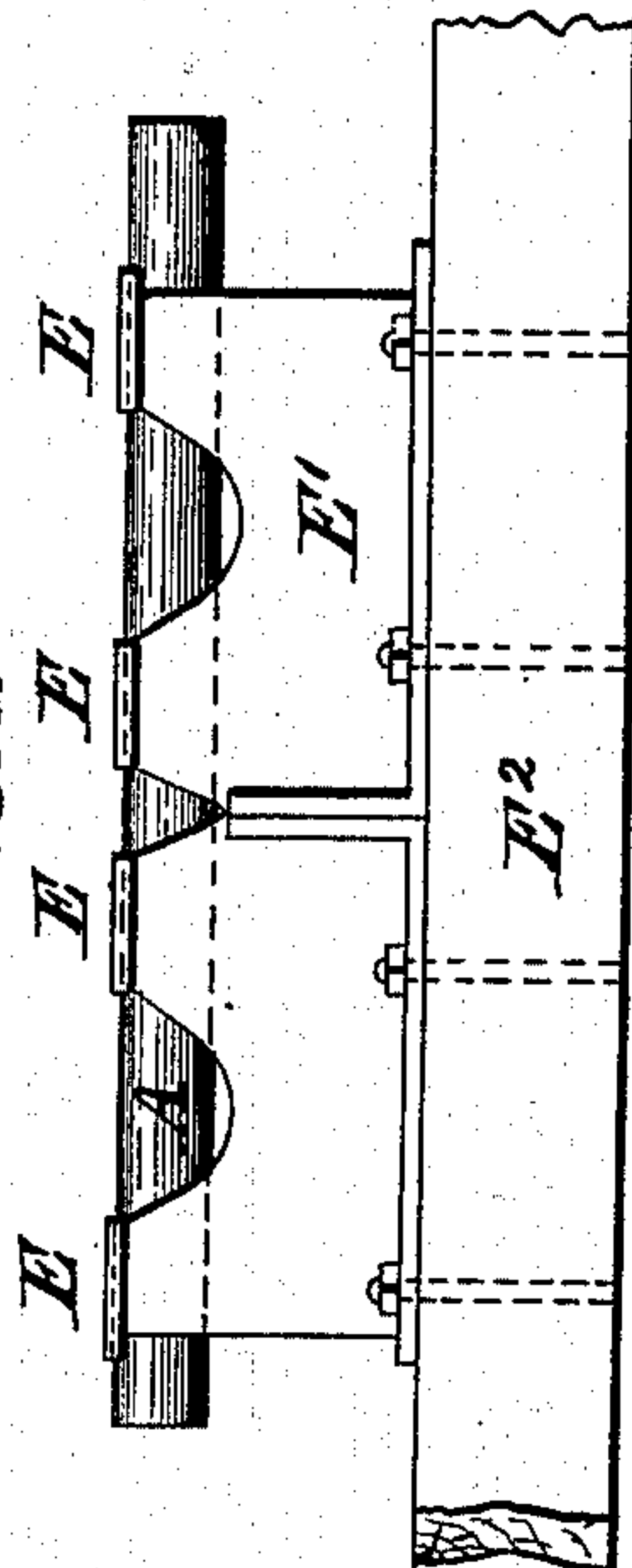


FIG. 1.

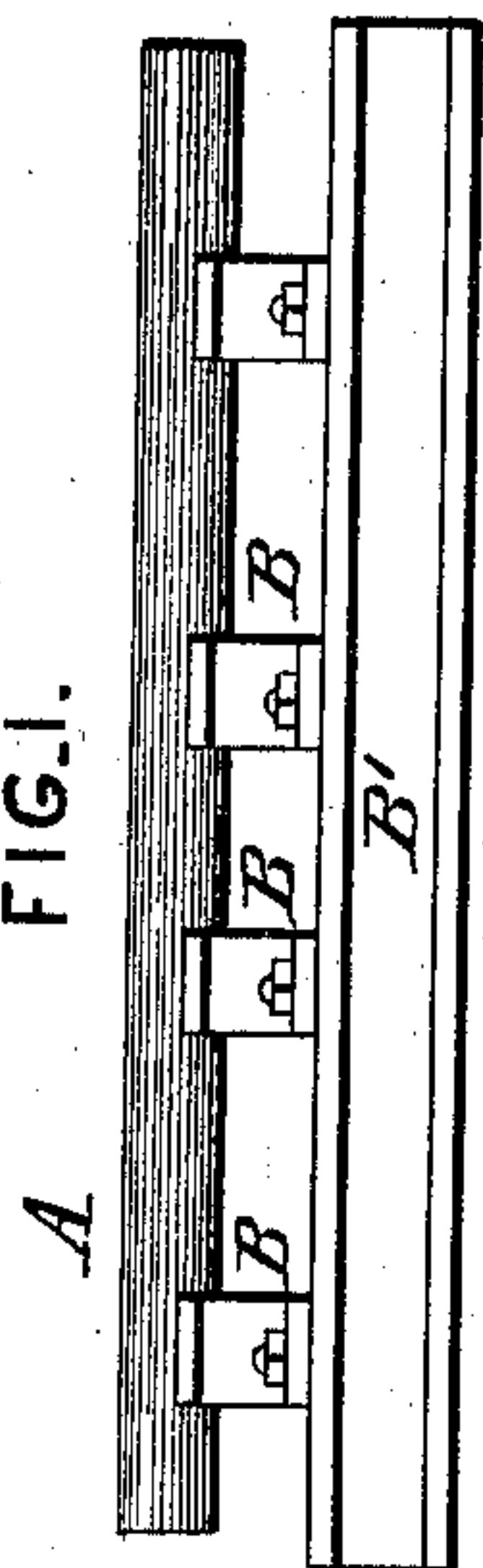


FIG. 3.

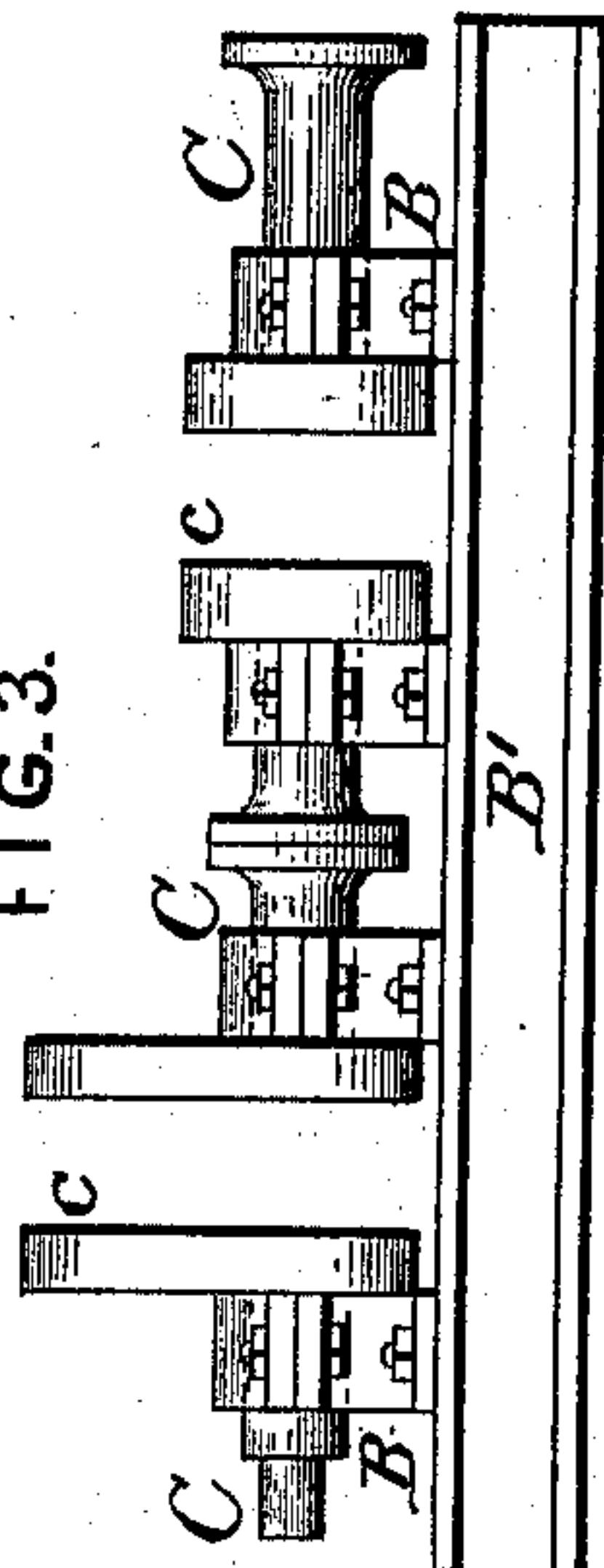


FIG. 5.

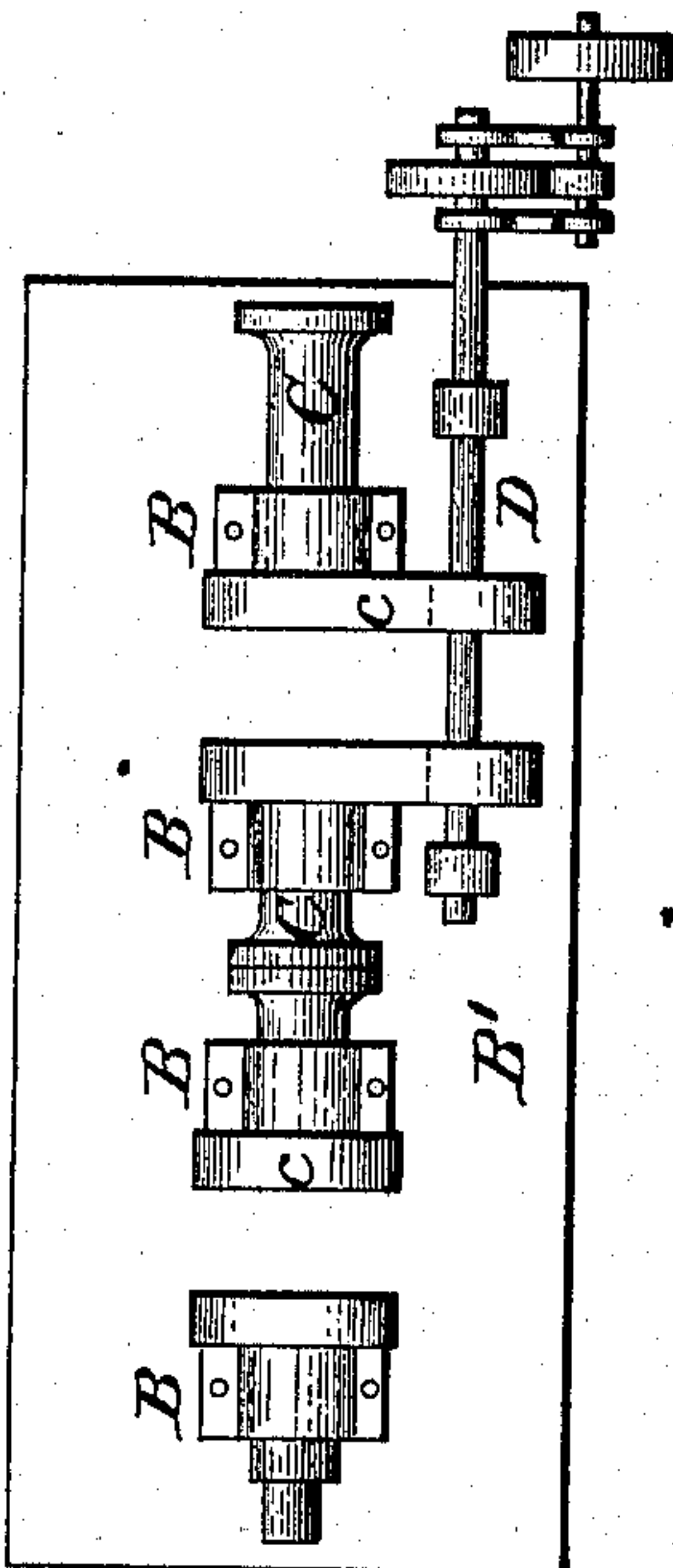
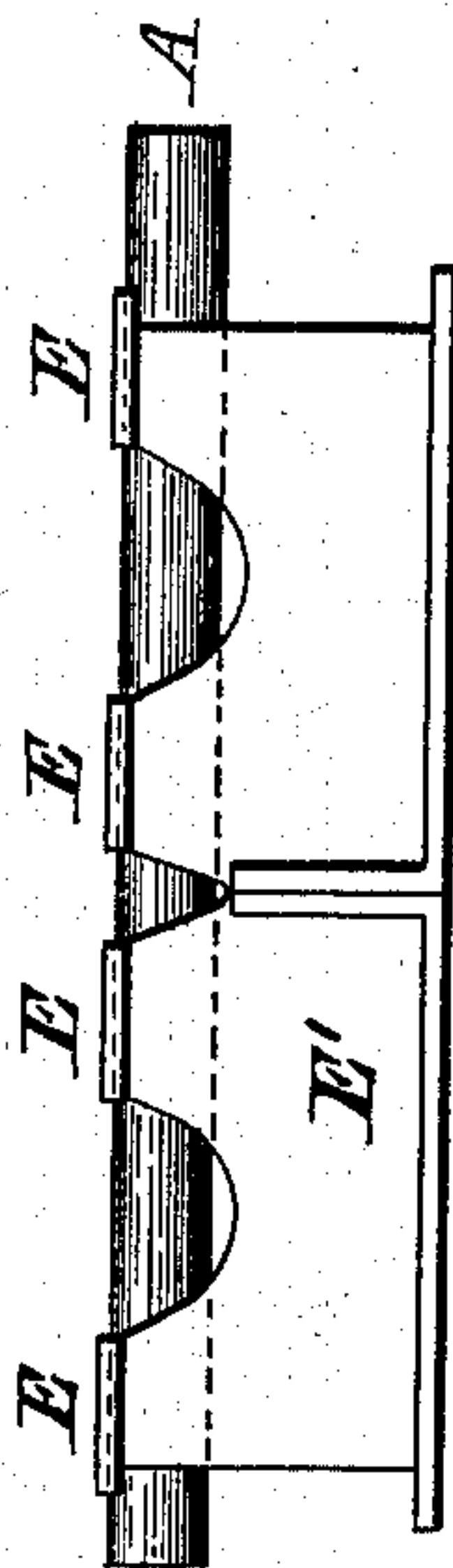


FIG. 6.



ATTEST.

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att'y.

UNITED STATES PATENT OFFICE.

HORACE SEE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO THE WILLIAM CRAMP & SONS SHIP AND ENGINE BUILDING COMPANY,
OF SAME PLACE.

APPARATUS FOR FITTING AND FINISHING CRANK-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 322,205, dated July 14, 1885.

Application filed December 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, HORACE SEE, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and
5 useful Improvements in Apparatus for Fitting and Finishing Crank-Shafts and Bearings Therefor, of which improvement the following is a specification.

The object of my invention, which is more
10 particularly designed for fitting and finishing the large and heavy shafts having one, two, or more pairs of cranks, which are employed in marine steam-engines of the compound type, is to enable the journals and bearings of a
15 crank-shaft, whether said shaft be built or solid, to be brought to a truly cylindrical contour and an axial coincidence, and the crank-pins to be made truly parallel thereto.

The improvements claimed are hereinafter
20 fully set forth.

In the accompanying drawings, Figure 1 is a side view in elevation of a set of special or adjusting bearings and a truing-mandrel adapted to the practice of my invention; Fig.
25 2, an end view of the same; Fig. 3, a side view in elevation of said bearings, with the section of a shaft adjusted therein; Fig. 4, an end view of the same; Fig. 5, a plan or top view of the same, illustrating the boring out
30 of a pair of crank-pin eyes; Fig. 6, a side view of the bed-plate and main bearings of the crank-shaft, with the truing-mandrel applied thereto; Fig. 7, a similar view of the same, with the shaft in position and in readiness for
35 the facing-off of the couplings, and Fig. 8 a similar view of the same after being secured to its foundation and with the truing-mandrel applied.

In an application for Letters Patent filed by
40 me August 6, 1883, Serial No. 102,913, I have set forth certain methods of fitting and finishing crank-shafts, and the invention herein claimed relates to apparatus adapted to the performance of the operations described in
45 said application, said apparatus being described and shown but not claimed therein.

In the practice of my invention I provide a cylindrical truing-mandrel, A, the length of which is equal to or somewhat greater than

the distance between the outer ends of the two
50 end journals of the crank-shaft to be dealt with, so as to reach over all the bearings thereof, and which is preferably of the same diameter as the journals of said shaft, although, if desired, it may be made of smaller diameter,
55 so as to have adjustable sleeves or collars fitted upon it of diameters corresponding, respectively, with the journals of different crank-shafts manufactured and to be finished and fitted from time to time. I further provide a
60 set of special adjusting-bearings, B, corresponding in number and diameter with the journals of the crank-shaft, and secured, preferably with the capacity of adjustment longitudinally, upon a stout and truly level bed,
65 B', located in any convenient position upon the floor of a machine-shop or other locality suitable for the application of power and use of tools.

The finishing and fitting of a crank-shaft
70 and its bearings under my invention is effected as follows: The special adjusting-bearings B, having been bored out and secured in their proper positions upon the bed B', are made true and in line axially by applying the
75 truing-mandrel A to them and correcting any irregularities or imperfections which may be developed by the use of said mandrel as a cylindrical face-plate. The several sections of the
80 crank-shaft C, with the cranks c shrunk on and keyed in position, are next dropped into the adjusting-bearings B, and are brought truly into line by correcting any irregularities or lack of
85 correspondence that may be found to exist as between their journals and said bearings. A boring-bar, D, having proper boring-cutters and driving-gear, is then set parallel with the
shaft, in bearings upon the bed B', and the crank-eyes of each pair of cranks are bored
90 out to receive the pin, which is forced in and keyed. The main bearings E of the engine, within which the crank-shaft is to rotate, are bored out and made true and in line axially
by the application of the truing-mandrel, as in the case of the special adjusting-bearing,
95 before described, after which the shaft is tested and made true, if necessary, by dropping it into the bearings E, which are now used as an

external cylindrical face-plate, after which the coupling for connecting the shaft-sections one with the other and with the line-shaft may be faced off truly by the application of a proper tool while the shaft is revolved in the bearings E. As a final assurance against the possibility of the crank-shaft and its bearings being in any manner out of line when located in operative position, the truing-mandrel A may be again applied to the main bearings E, after the line has been run through the same and the engine bed-plate E' has been secured upon the keelsons E², or other foundation upon which it rests when in service. In the event of either of the bearings having been forced out of shape or position in screwing down, it is to be corrected by raising or lowering before the shaft is finally dropped into place.

The several operations above described refer more particularly to the case of a built crank-shaft. Where a solid shaft is to be dealt with, it is, after being turned, tested, and made true with its own permanent bearings, after the same have been lined by the truing-mandrel, after which its coupling is to be faced off, as above described. A built shaft may be similarly operated on, if deemed preferable.

I am aware that a bed or base-plate provided with two or more uprights having seats or grooves to receive the journal portions of a crank-shaft, and arranged to accommodate the crank portions of the shaft between them,

was known prior to my invention, and such, therefore, I hereby disclaim.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, in an apparatus for fitting and finishing crank-shafts and their bearings, of a series of special adjusting-bearings and a cylindrical truing-mandrel, each corresponding in diameter with the journals of the shaft to be operated on, substantially as set forth.

2. The combination, with a series of permanent bearings adapted to support a crank-shaft when in service, of a cylindrical truing-mandrel corresponding in diameter with the journals of the shaft, and of a length substantially equal to the distance between the outer faces of the end bearings of the series, substantially as set forth.

3. The combination, with a series of permanent bearings adapted to support a crank-shaft when in service, of mechanism for rotating a crank-shaft in said bearing, and a facing-cutter supported adjacent to the bearings in position to face off a coupling of the shaft while the latter is rotated in the bearings, substantially as set forth.

HORACE SEE.

Witnesses:

JAS. L. BREEN,
JNO. J. HENKELS.