

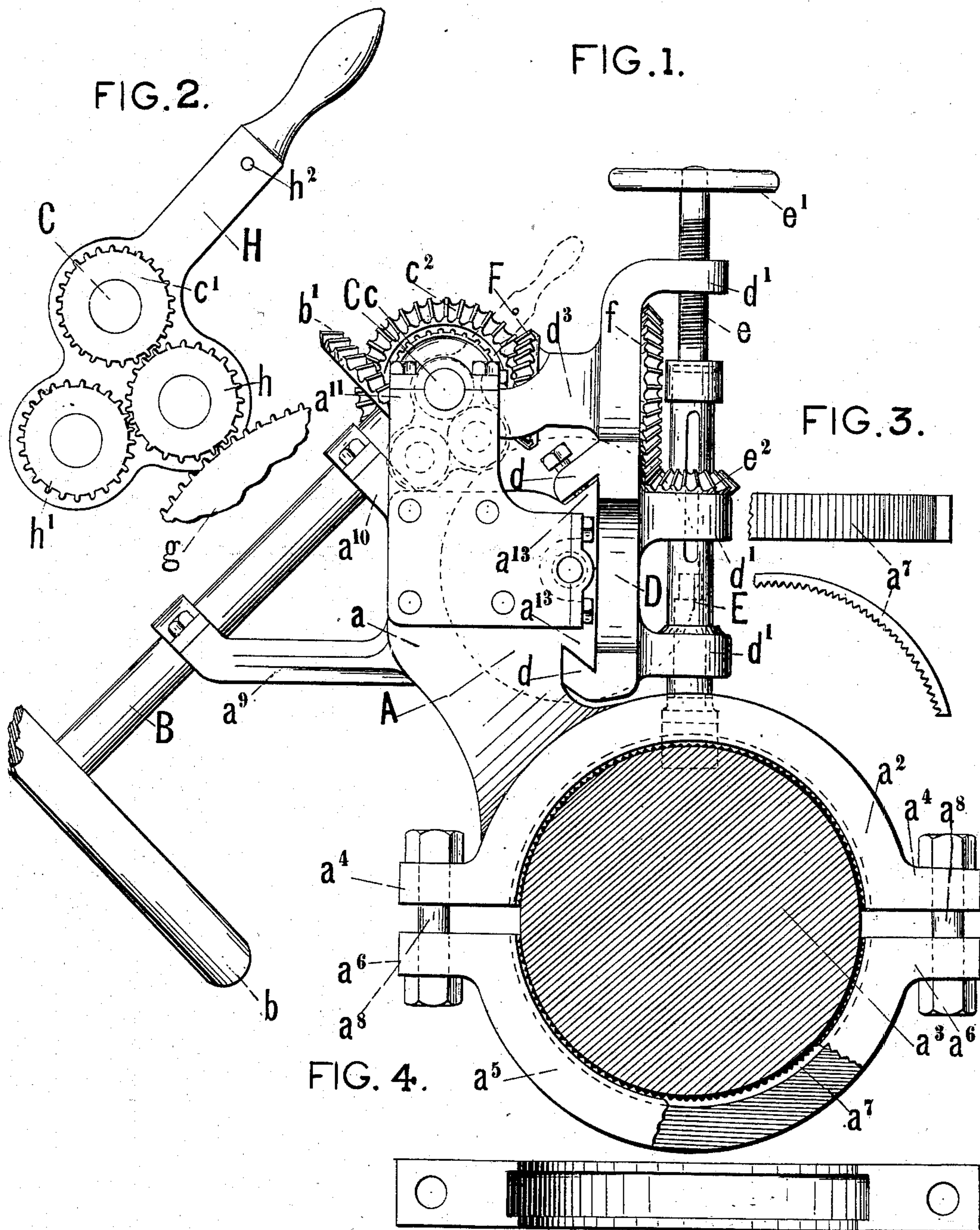
(No Model.)

3 Sheets—Sheet 1.

A. H. CAMPBELL.
KEY SEAT MILLING MACHINE.

No. 274,906.

Patented Apr. 3, 1883.



WITNESSES.

Wm. J. Emerson.

E. P. Rider

INVENTOR.

*A. H. Campbell by
H. W. Beadles.*

ATTY.

(No Model.)

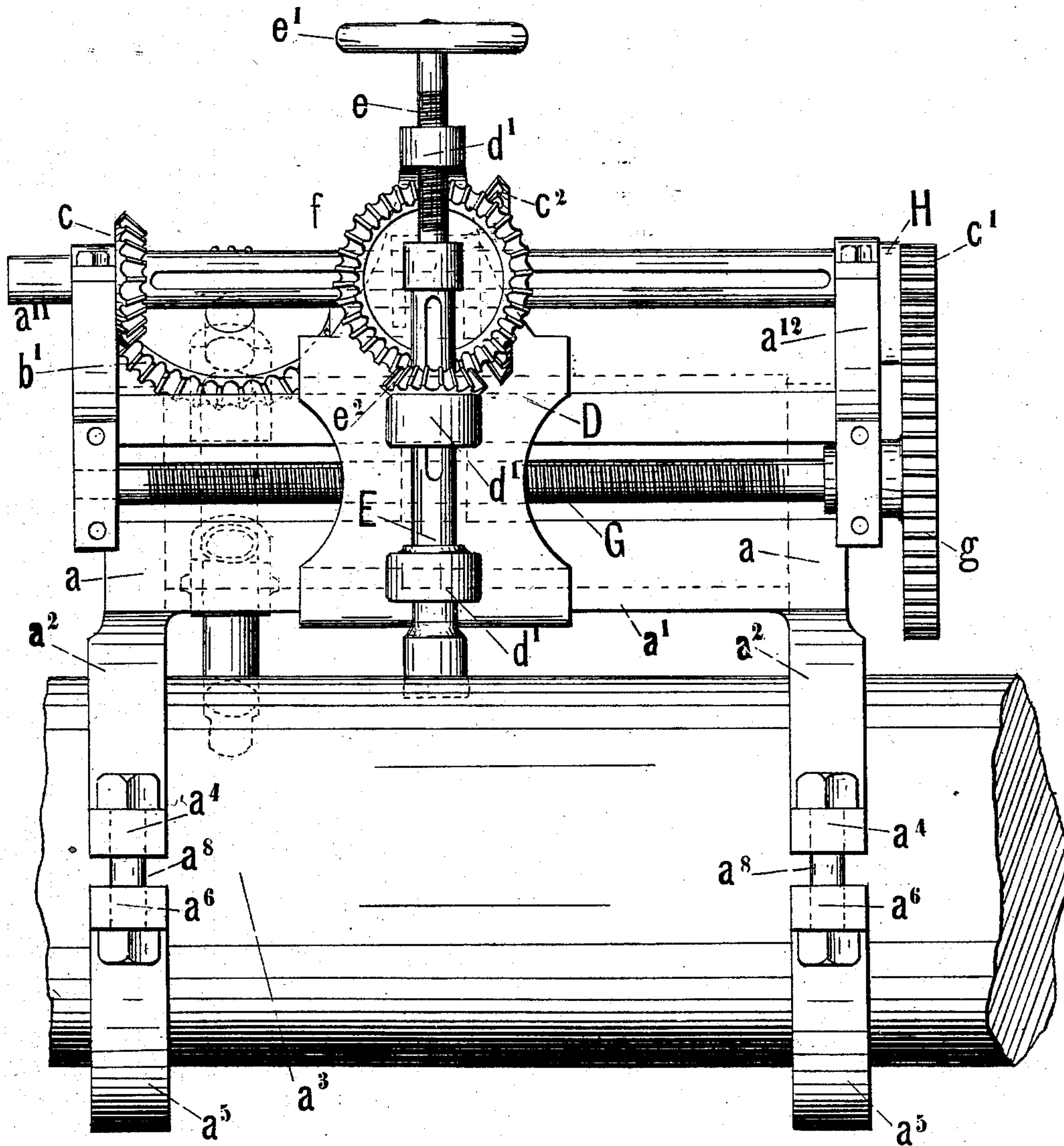
3 Sheets—Sheet 2.

A. H. CAMPBELL.
KEY SEAT MILLING MACHINE.

No. 274,906.

Patented Apr. 3, 1883.

FIG. 5.



WITNESSES.

Wm. J. Emerson.
E. P. Rider

INVENTOR.

A. H. Campbell by
H. W. Beadle & Co.
ATTY

(No Model.)

3 Sheets—Sheet 3.

A. H. CAMPBELL.
KEY SEAT MILLING MACHINE.

No. 274,906.

Patented Apr. 3, 1883.

FIG. 6.

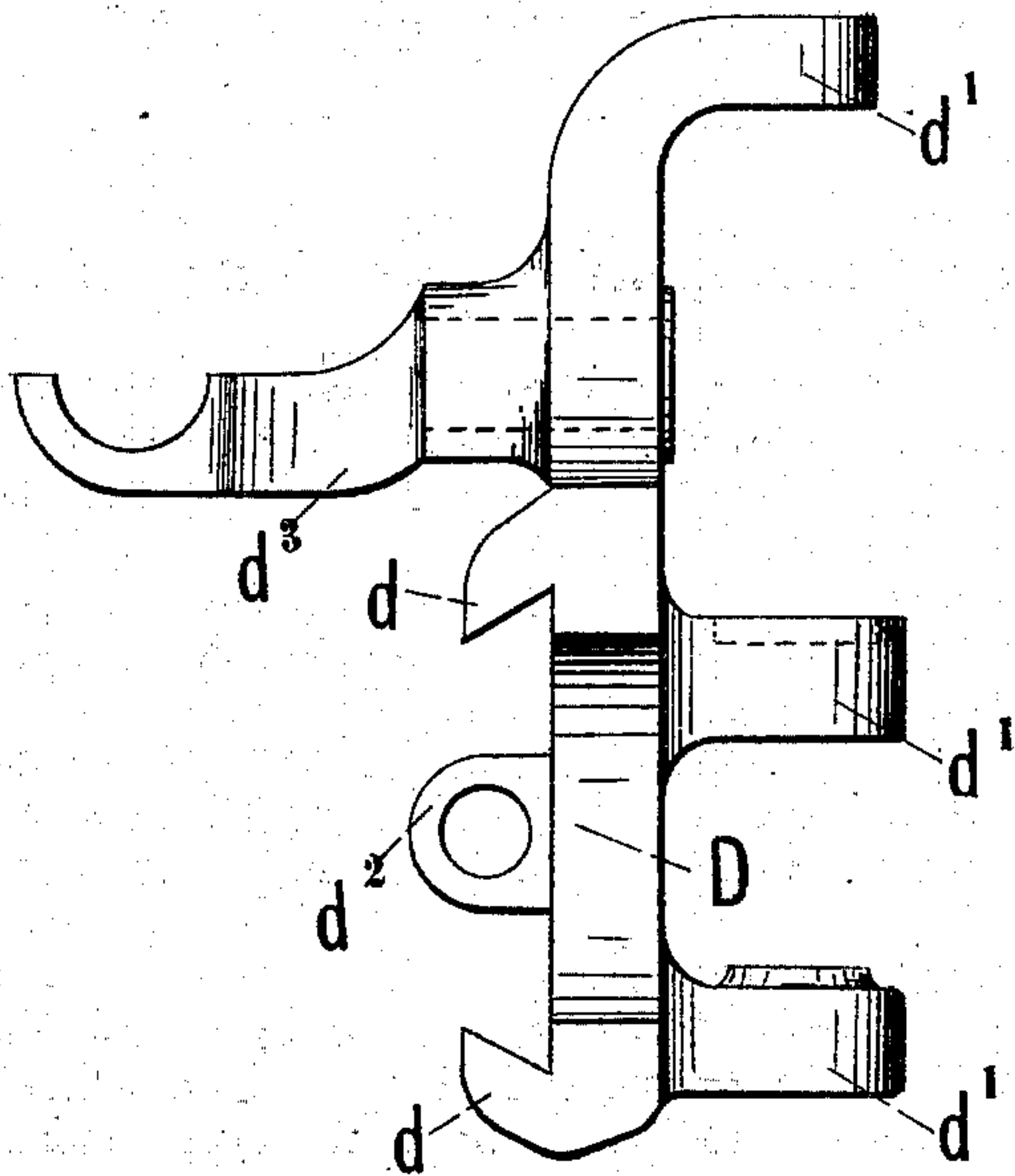


FIG. 7.

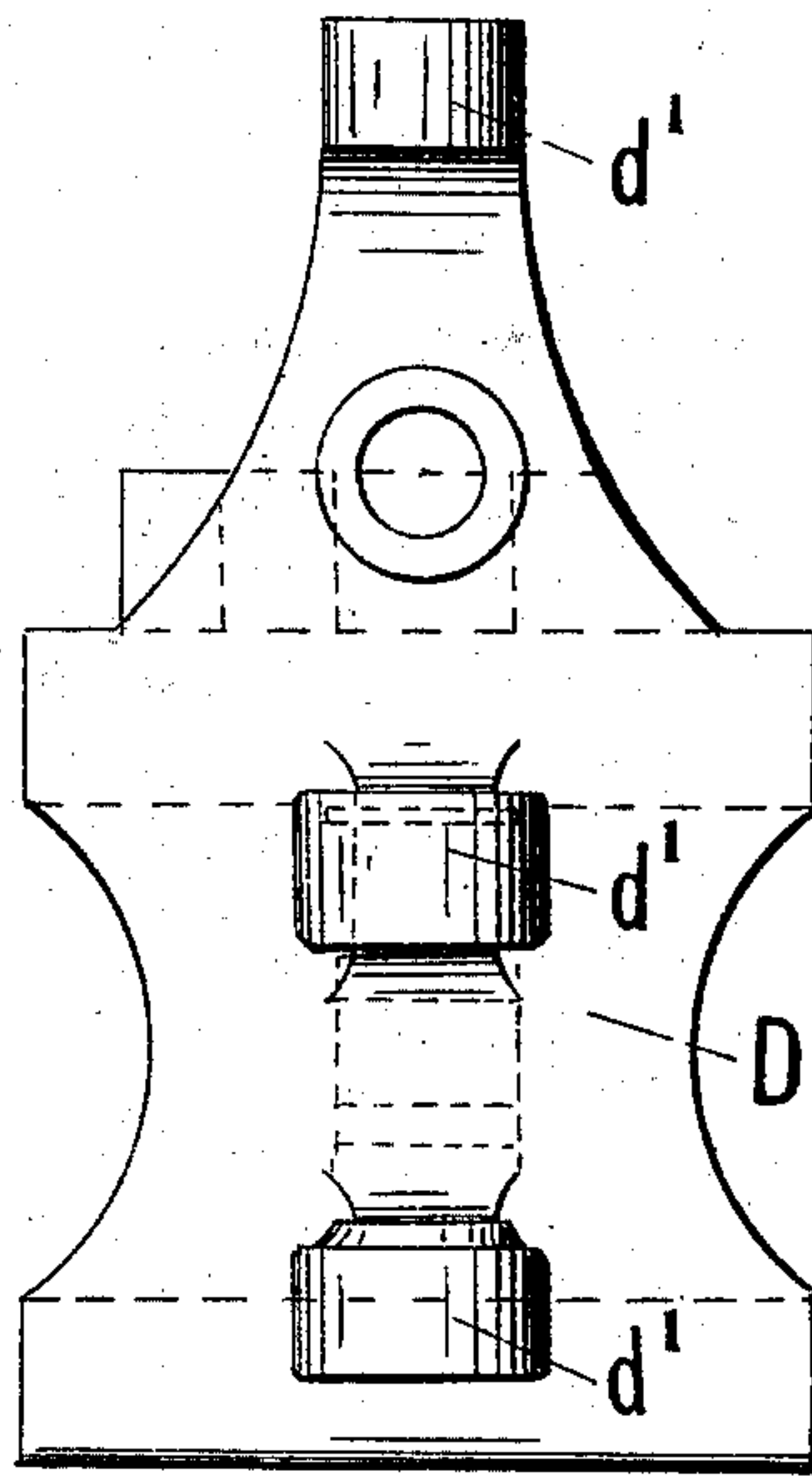


FIG. 8.

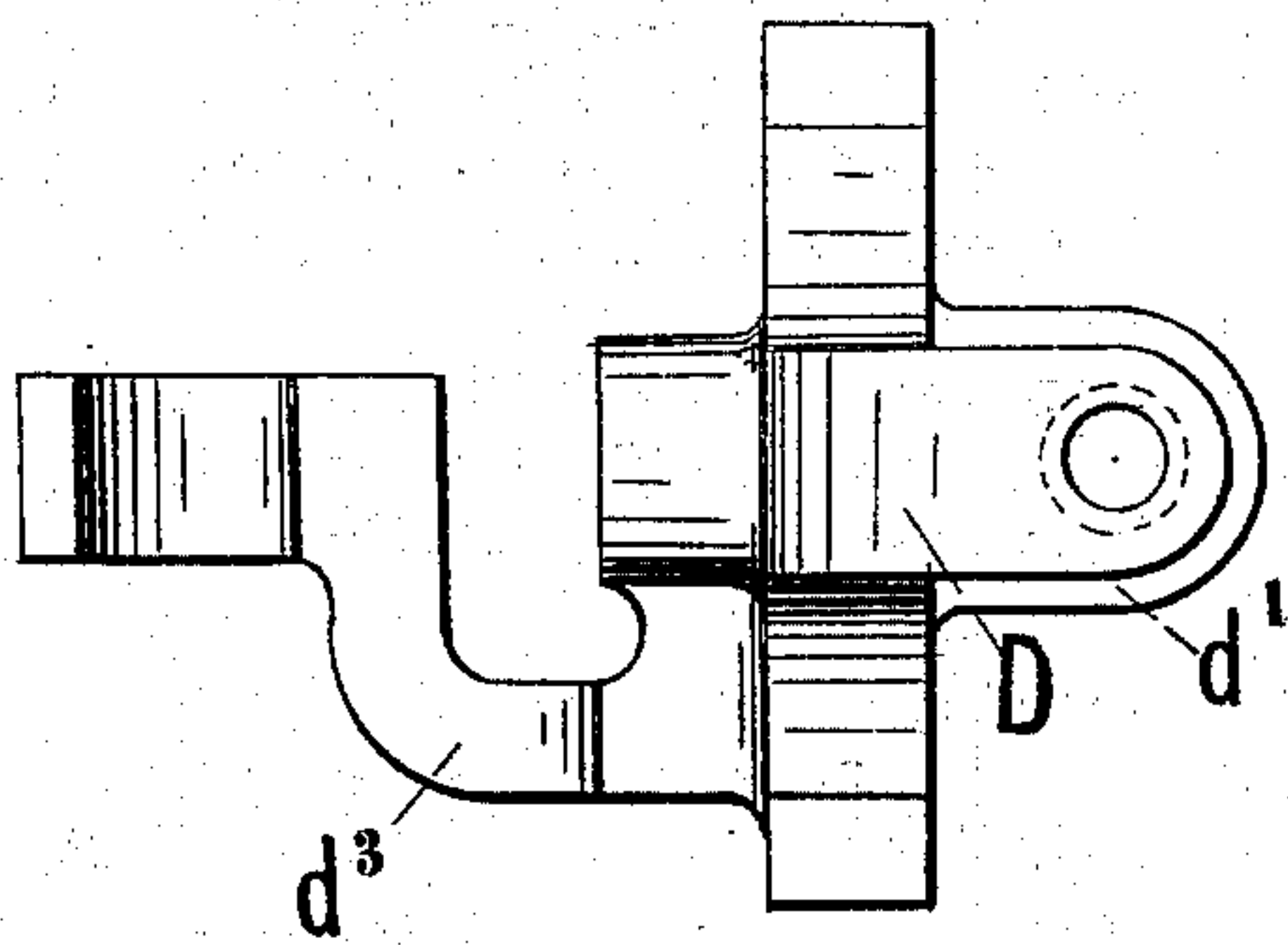


FIG. 9.

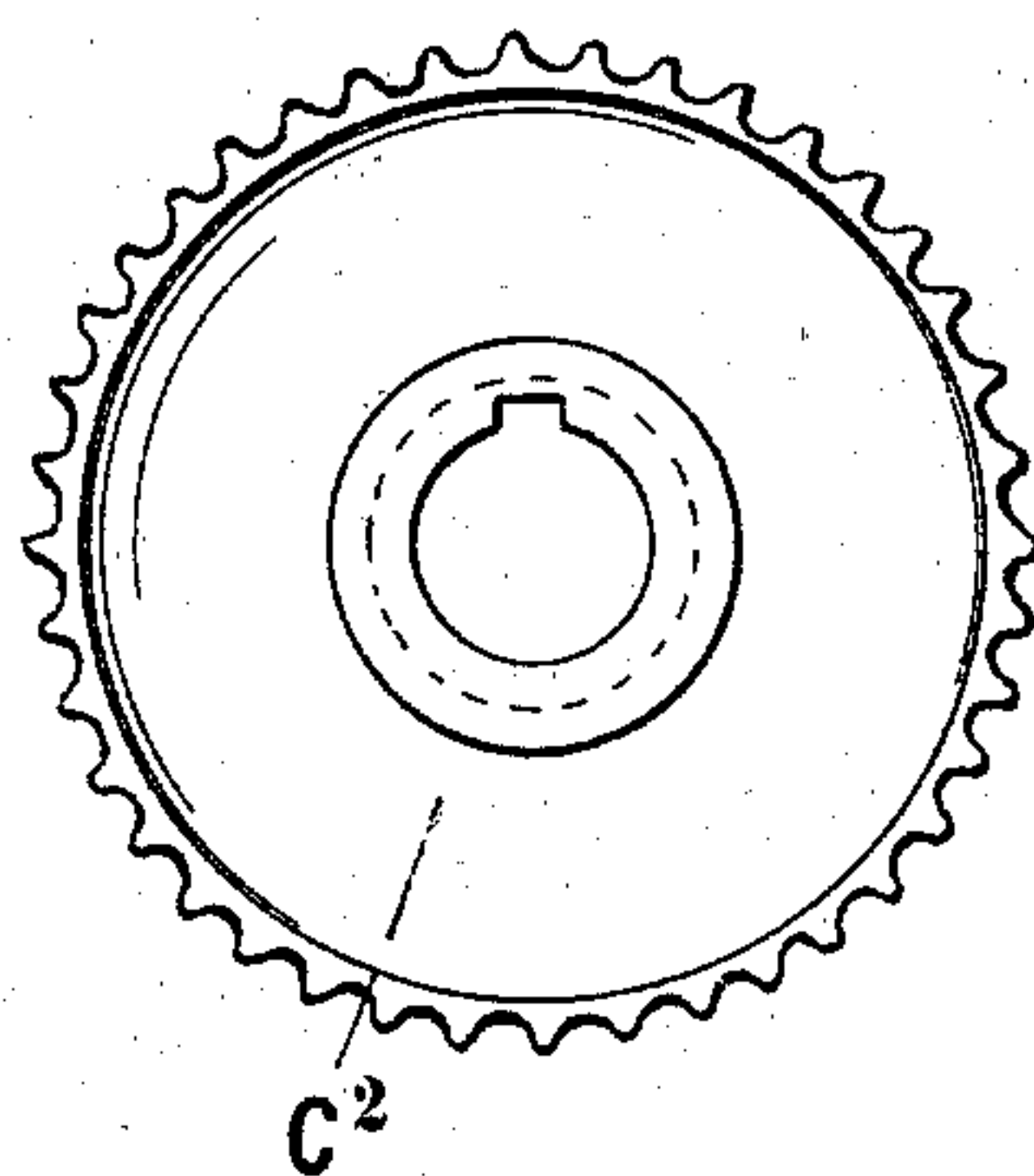
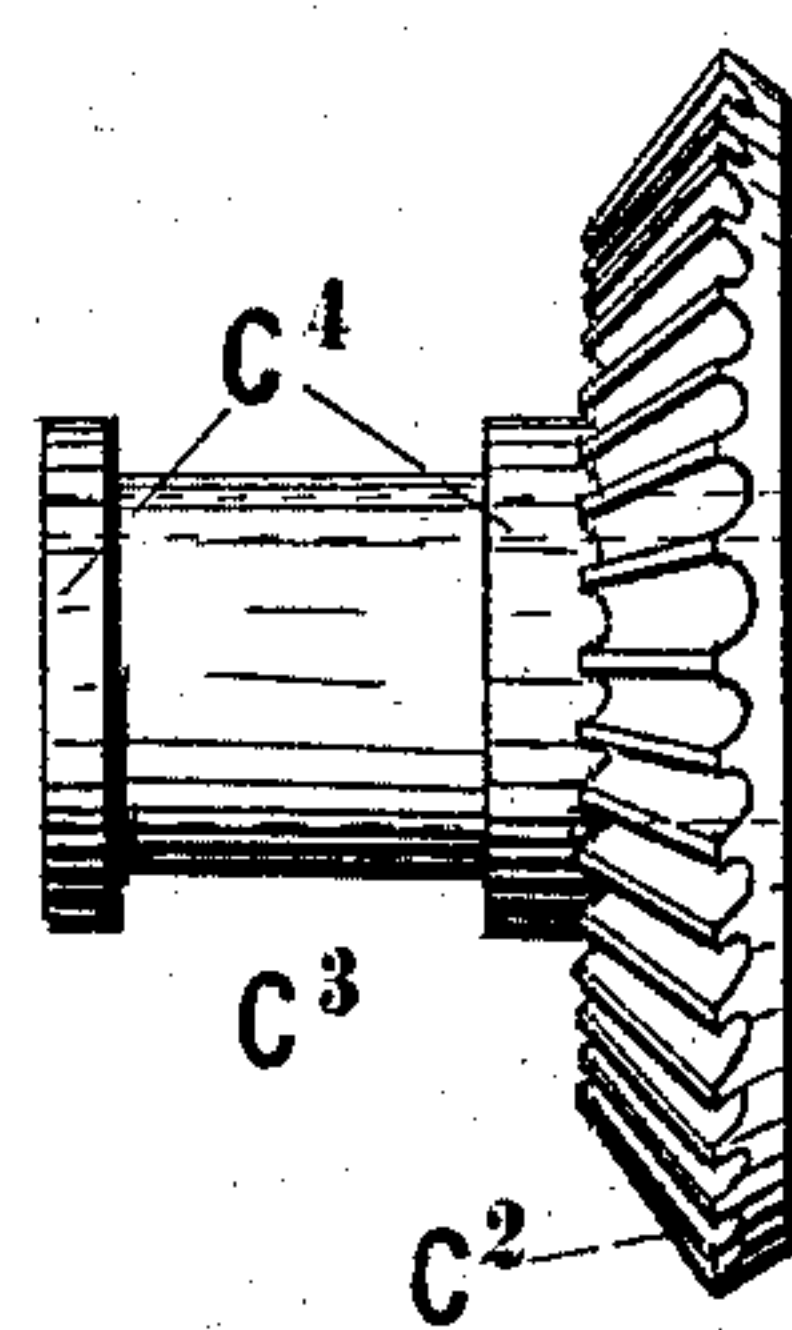


FIG. 10.



WITNESSES.

Wm. T. Emerson.
E. P. Rider

INVENTOR.

A. H. Campbell by
H. W. Beader & Co.,
ATTYs.

UNITED STATES PATENT OFFICE.

ALEXANDER H. CAMPBELL, OF WAYNESBOROUGH, PENNSYLVANIA.

KEY-SEAT-MILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 274,906, dated April 3, 1883.

Application filed December 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER HAMILTON CAMPBELL, of Waynesborough, county of Franklin, and State of Pennsylvania, have invented new and useful Improvements in Key-Seat-Milling Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention is specially adapted for cutting a key seat or groove in the axle of a locomotive when the same is in position under the engine, this groove being designed for holding the key of the eccentric, the position of which latter cannot be determined until the axle is in place.

In the drawings, Figure 1 represents an end elevation of my improved machine; Fig. 2, a side elevation of the shifting-lever and its attachments, by means of which the feed-screw G is either thrown out of gear or caused to revolve in either direction; Fig. 3, a partial view of the tightening-pieces detached; Fig. 4, a plan view of one of the clamping-bands detached; Fig. 5, a front elevation of the machine; Figs. 6, 7, and 8, various views of the cross-head detached, and Figs. 9 and 10 front and side elevations of the gear-wheel C².

To enable others skilled in the art to make my improved machine and properly use the same, I will proceed to describe fully its construction and manner of operation.

A represents a metal frame, having vertical standards *a a* at each end, and a horizontal beam, *a'*, uniting the standards together, as shown.

a² a² represent semicircular feet upon the standards, adapted to rest upon an axle or shaft, *a³*, which are provided with horizontal flanges *a⁴ a⁴*, and with a central longitudinal recess, as shown.

a⁵ a⁵ represent semicircular bands, having horizontal flanges *a⁶ a⁶* and a central longitudinal recess, as shown.

a⁷ a⁷ represent semicircular pieces or strips having roughened or serrated faces, which are adapted to lie in the recesses of the feet and clamping-bands, as shown in Fig. 1. The inner faces of these pieces coincide with the outer faces of the article to be grasped.

a⁸ a⁸ represent bolts adapted to extend

through the horizontal flanges *a⁴ a⁶* for the purpose of clamping the frame securely to the axle or shaft.

a⁹ a¹⁰ represent brackets extending from the frame A in lateral direction in such manner as to furnish proper bearings for the inclined driving-shaft B, as shown.

b represents a hand-wheel located on the lower end of the shaft B, and *b'* a bevel-gear on the upper end of the same.

a¹¹ a¹² represent vertical extensions of the frame at each end of the machine, which serve to furnish proper bearings for the longitudinal shaft C.

c represents a gear-wheel on one end of the shaft, which is adapted to engage with the gear-wheel *b'*, as shown, and *c'* a gear-wheel, hereinafter referred to, upon the other end of the shaft. If it is designed to run the machine by power, the shaft B is dispensed with, and a pulley is substituted for the gear-wheel *c* upon the shaft C.

a¹³ a¹³ represent ways with inclined bearing-faces upon the horizontal portion of the frame A, and D a cross-head having projections *d*, with inclined bearing-faces, adapted to engage with the ways of the frame, as shown.

d' d' d' represent extensions upon one side of the cross-head, which furnish proper bearings for the milling shaft or spindle E and its feeding-screw, as shown.

d² represents an extension upon the opposite side of the cross-head, which is provided with a threaded opening to receive the feed-screw *g*, as shown.

d³ also represents an extension upon the same side of the cross-head as *d²*, which is provided at its outer end with a semicircular recess adapted to inclose partially the hub *c³* of the shifting-wheel *c²* upon the shaft C, hereinafter referred to.

e represents a screw having the hand-wheel *e'*, by means of which the milling-shaft may be adjusted in a vertical direction when desired.

c² represents a gear-wheel, which, by means of a key engaging with a longitudinal groove in the shaft C, is secured to the latter in such manner as to revolve rigidly therewith without interference with its freedom of movement in a longitudinal direction.

c³ represents a hub of the wheel, having col-

lars $c^4 c^4$, by means of which connection is made with the extension d^3 of the cross-head before referred to.

F represents a gear-wheel attached to one end of a shaft held in proper bearings in the cross-head D, which is adapted to engage with the wheel c^2 upon the shaft C, as shown.

f represents a gear-wheel upon the other end of this shaft, which is adapted to engage with the horizontal wheel c^2 upon the milling-shaft E, as shown.

G represents a feed-screw extending through the extension d^2 of the cross-head D, which feed-screw is supported by proper bearings in the vertical standard, as shown, and is provided at one end with the gear-wheel g , as shown.

H, Fig. 2, represents a lever pivoted upon the main shaft C between the gear-wheel c' and the extension a^{12} of the vertical standard, which is provided with proper bearings for supporting the gear-wheels $h h'$, as shown, each of which is adapted to engage with the wheel g of shaft G when the lever is properly adjusted for that purpose.

h^2 represents a spring-pin, which, in connection with any proper supporting device, is adapted to lock the lever in any position in which it may be adjusted.

The operation is substantially as follows:
The machine having been strongly secured to the axle or shaft to be operated upon at the proper point by means of the semicircular feet, clamping-bands, tightening-strips, and bolts, the cross-head is adjusted upon the horizontal ways of the frame in such a manner as to bring the milling spindle or shaft E into its proper position relatively to the axle. The change gear lever H then being adjusted so that neither of its gear-wheels $h h'$ is in contact with the gear-wheel g of the horizontal feed-screw G, the tool of the milling-shaft may be caused to drill a hole in the axle when the machine is in operation by simply revolving the hand-wheel e' in the manner well understood.

By adjusting the change gear lever so that

one of its gear-wheels, h or h' , is in contact with the gear-wheel g , then the movement of the main shaft will be communicated not only to the milling-spindle, but also to the horizontal feed-screw shaft, and consequently the cross-head is moved laterally across the machine for the purpose of milling the work in the manner well understood.

It will be understood, of course, that when the gear-wheel h is in contact with the wheel g the cross-head D is caused to travel in one direction, and that when the gear-wheel h' is in contact with the same the cross-head is caused to travel in the opposite direction.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the semicircular saddle $a^2 a^2$, the clamping-bands $a^5 a^5$, having the central longitudinal recesses, the bolts $a^8 a^8$, and the tightening-strips $a^7 a^7$, as described.

2. In combination with the frame A, having devices, substantially as described, for clamping the same to an axle or shaft, the cross-head D, with mechanism, substantially as described, for moving it upon the frame.

3. In combination with the frame A, having devices, substantially as described, for clamping the same to an axle or shaft, the cross-head, and screw, as described.

4. In combination with the saddle and clamping-bands, having recesses, as described, the tightening-pieces, as set forth.

5. In combination with spindle mechanism, substantially as described, having clamping device, as set forth, a milling-tool, substantially as described, and mechanism for running the same to and over the work.

This specification signed and witnessed this 23d day of November, 1882.

A. H. CAMPBELL.

Witnesses:

D. M. GOOD, Jr.,

C. E. BESORE,

GEO. W. WELSH.