

(No Model.)

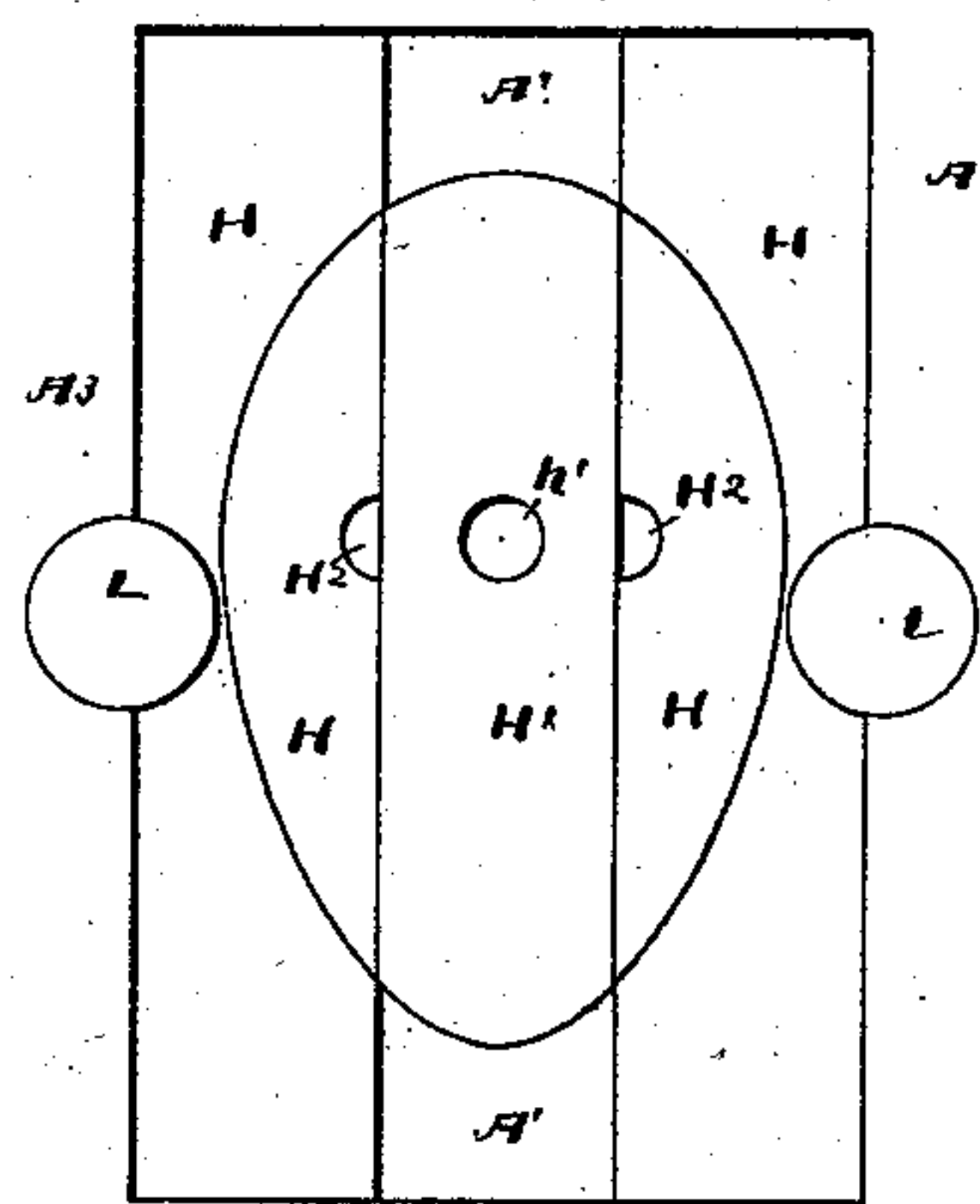
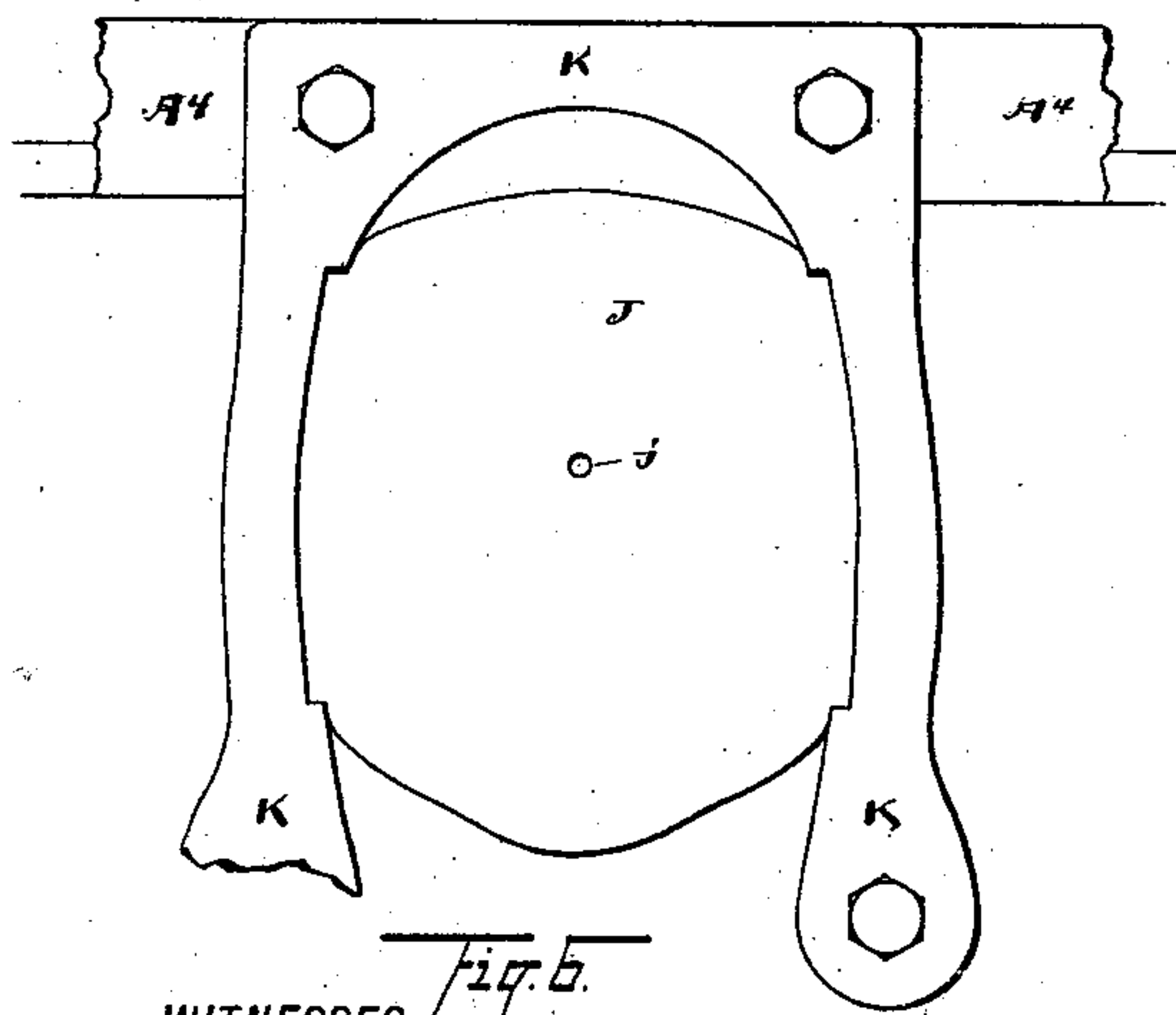
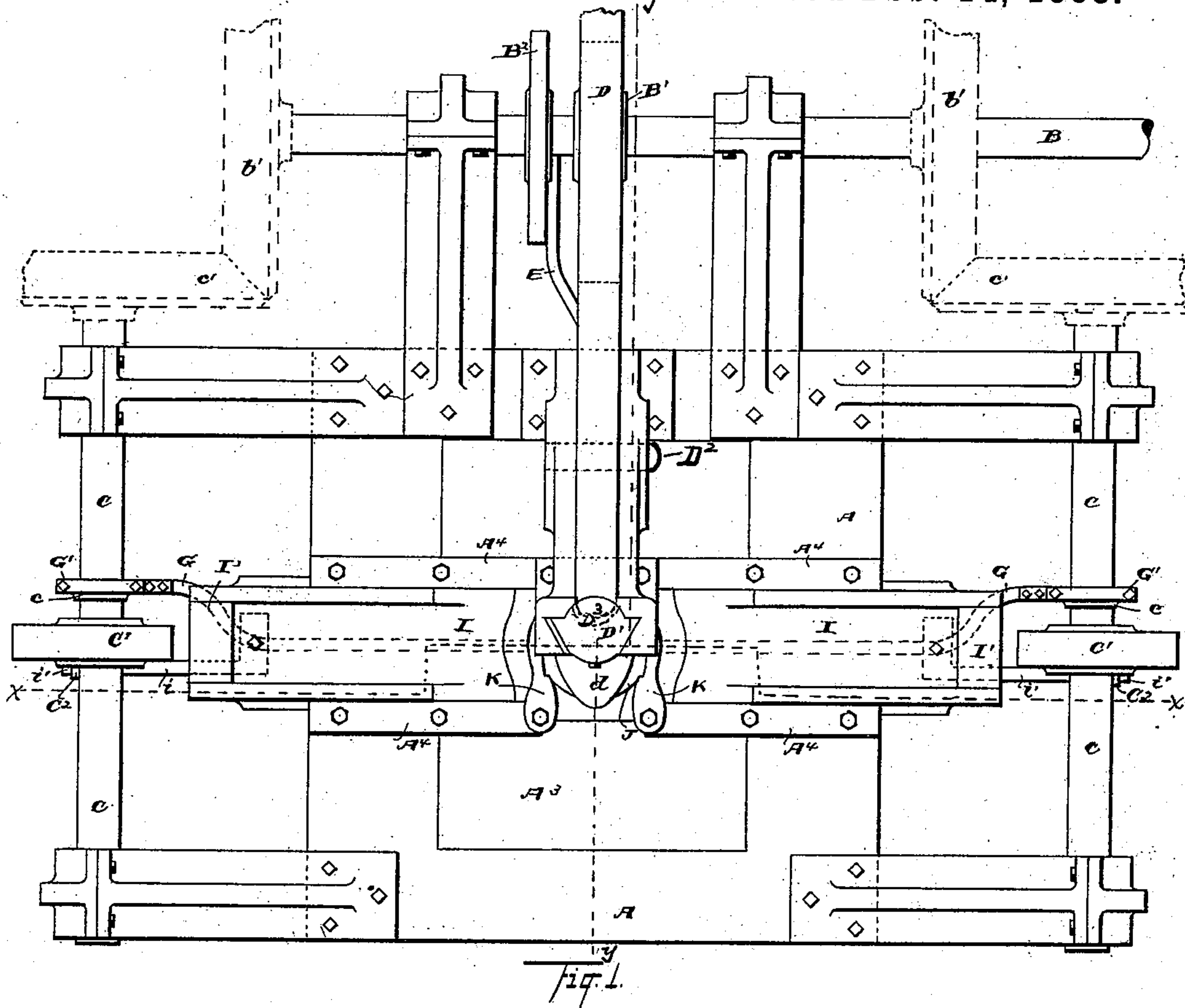
3 Sheets—Sheet 1.

G. A. FORD & C. R. HUSSEY.

FLANGING MACHINE.

No. 377,999.

Patented Feb. 14, 1888.



WITNESSES
C. S. Amstutz
Geo. W. King

INVENTORS
Geo. A. Ford, Chas. R. Hussey
Siggeth & Siggeth
Attorney

(No Model.)

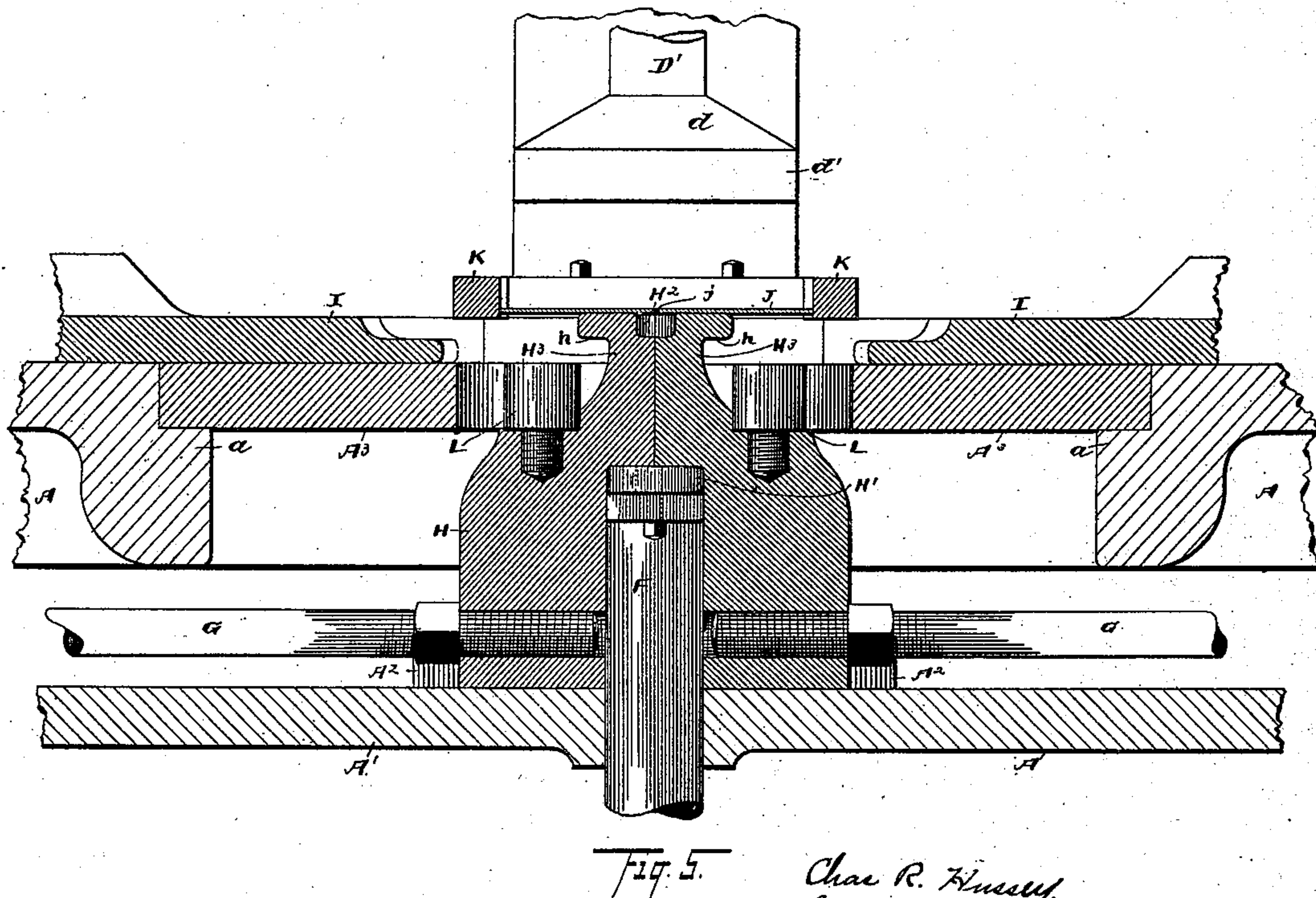
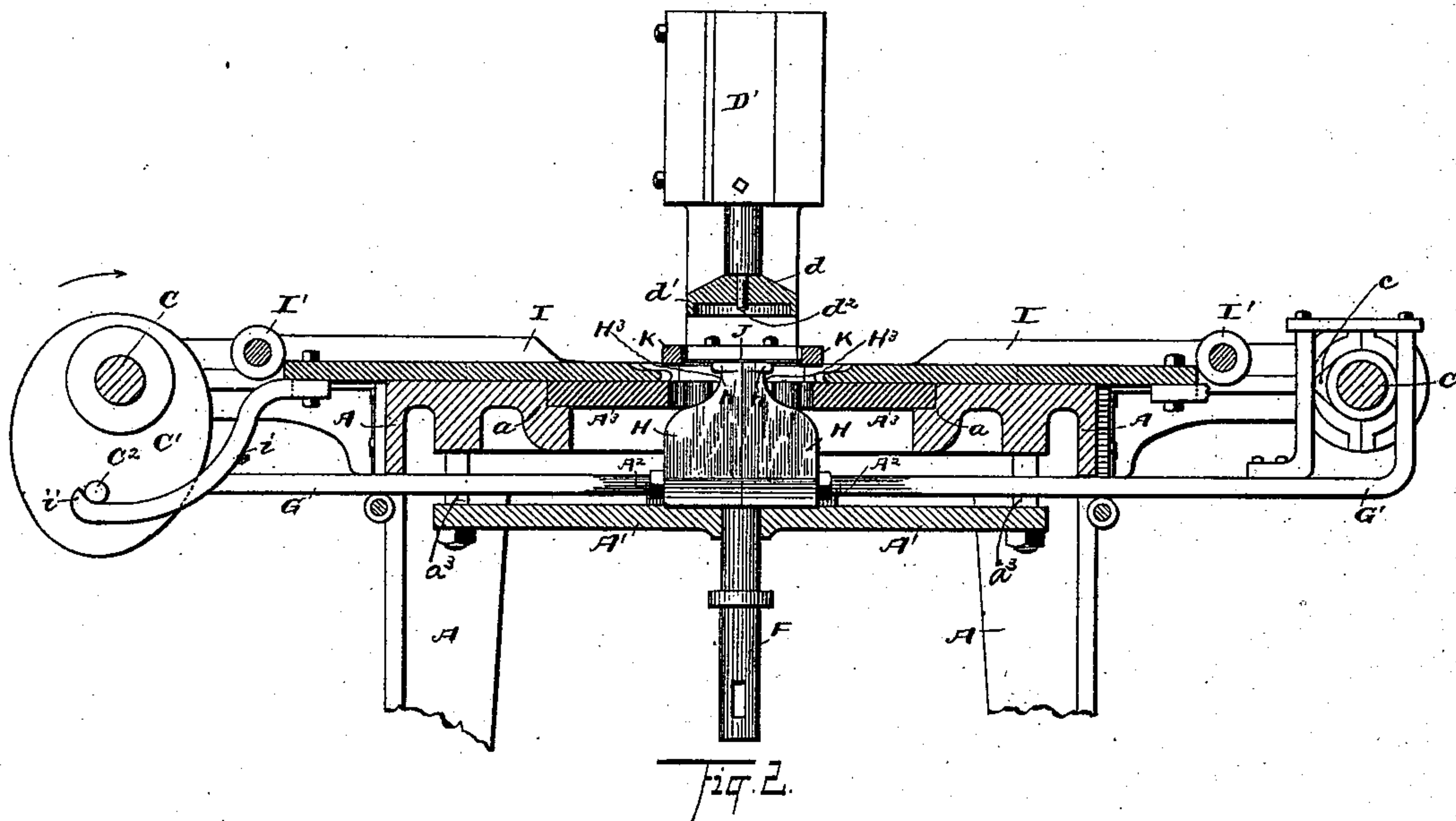
3 Sheets—Sheet 2.

G. A. FORD & C. R. HUSSEY.

FLANGING MACHINE.

No. 377,999.

Patented Feb. 14, 1888.



WITNESSES
C. S. Amstutz
Geo. W. King

Chas. R. Hussey,
Geo. A. Ford, INVENTORS
By
Siggett & Siggett
Attorney

(No Model.)

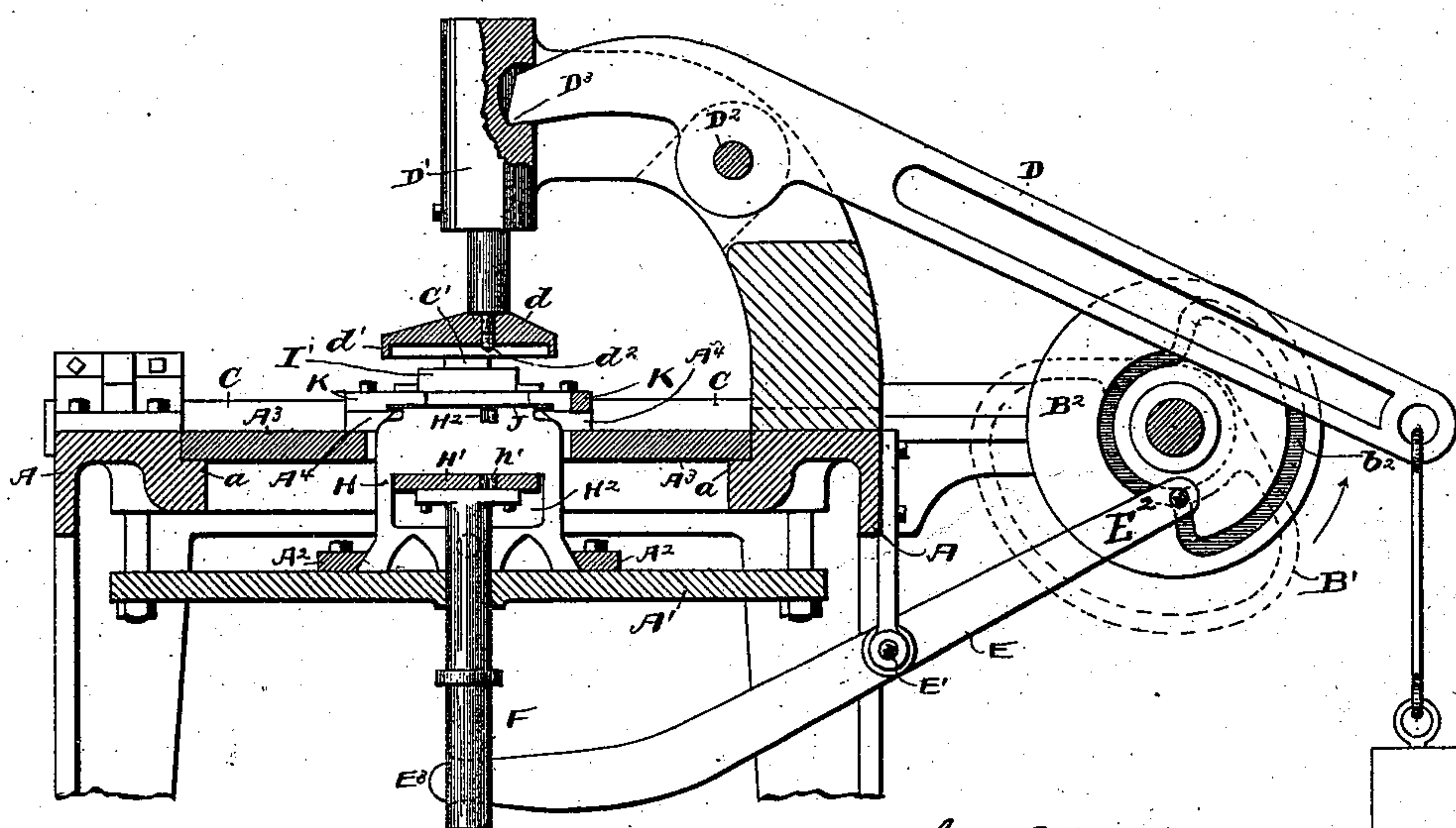
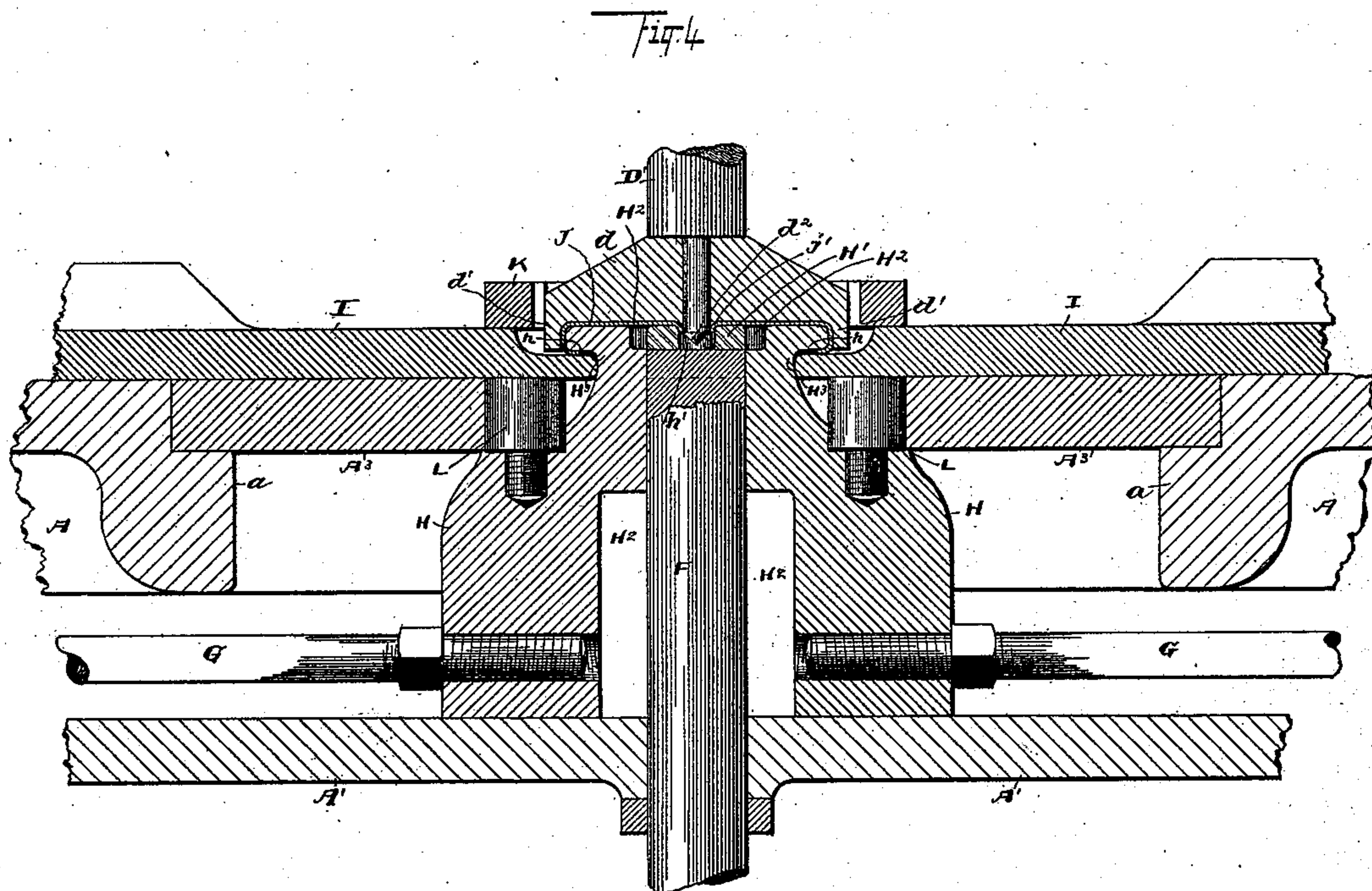
3 Sheets—Sheet 3.

G. A. FORD & C. R. HUSSEY.

FLANGING MACHINE.

No. 377,999.

Patented Feb. 14, 1888.



WITNESSES

WIRELESS
C.S. Amstutz
Geo. W. King

Fig. 3.

Chas R. Hussey,
Geo A. Ford.

INVENTORS

By
Siggett & Siggett
Attorney

UNITED STATES PATENT OFFICE.

GEORGE A. FORD AND CHARLES R. HUSSEY, OF CLEVELAND, OHIO; SAID
HUSSEY ASSIGNOR TO SAID FORD.

FLANGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 377,999, dated February 14, 1888.

Application filed November 7, 1887. Serial No. 254,559. (No model.)

To all whom it may concern:

Be it known that we, GEORGE A. FORD and CHARLES R. HUSSEY, of Cleveland, in the county of Cuyahoga and State of Ohio, have
5 invented certain new and useful Improvements in Flanging-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to improvements in flanging-machines for flanging the cheek-pieces for metal tackle-blocks; and it consists in certain features of construction and in
15 combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan. Fig. 2 is a section on line $x x$ of Fig. 1. Fig. 3 is a section on line $y y$ of Fig. 1.
20 Figs. 4 and 5 are enlarged sectional views of the central portion of the machine, the former showing the dies closed for flanging and the latter showing the dies open for removing the blank. Fig. 6 is an enlarged plan of the
25 guides for setting the blank. Fig. 7 is an enlarged plan of the sectional former in position distended for flanging.

A represents a supporting-frame provided with suitable boxes, in which respectively are
30 journaled the driving-shaft B and the parallel shafts C, the latter being intergeared with the driving-shaft by miter-gears b' and c' in position at right angles to the driving-shaft. On the driving-shaft are mounted cam B' and disk
35 B², the former being shown in dotted lines, Fig. 3. Disk B² has a cam-groove, b^2 , on the one side thereof. On each shaft C are mounted side by side cams C' and c , the former being shown at the left hand and the latter at the right hand
40 in Fig. 2. The cam B' operates the lever D, which in turn operates the upper plunger, D', the lever being fulcrumed at D², a head, D³, of the lever operating in a mortise of the plunger. (See Fig. 3.) To the lower end of
45 the plunger D' is attached the primary flanging-die d . This die is usually oval in plan, and in general terms might be described as inverted-cup-shaped, the central portion of the under surface or face thereof being flat, with
50 a depending rim, d' . A conical-ended punch,

d^2 , depends from the die d in position, preferably, to enlarge a small hole, j , previously made in the blank J.

The lever E is fulcrumed at E' to frame A, or to an attachment of the latter, this lever having
55 a laterally-projecting wrist, E², that operates in the cam-groove b^2 , by means of which the lever is operated in a vertical plane. The head E³ of this lever operates in the mortise of the lower plunger, F. This plunger passes
60 through a hole in the plate A', the latter serving as a guide for the plunger. On top of this plunger is mounted a head or cross-piece, H', which, when elevated by the plunger F, forms the central member of a former, over which
65 the blank is flanged by means of the die d on the downstroke of the latter. The other members, H, of the former rest and reciprocate on the plate A', being held in place by undercut guides A², that fit the beveled edges of sections
70 H. These sections are chambered or recessed on their inner sides at H², to allow the sections H to come together over the plunger F and head H' when the two latter are depressed.
75 (See Fig. 5.) The sections H are connected by rods G with yokes G', in which yokes operate, respectively, cams c for intermittently reciprocating sections H.

It will be seen in Fig. 2 that a cam, c , has a single toe of moderate width at the base for
80 engaging the respective sides of the yoke, from which it follows that the movements of sections H in either direction are quickly made, and that the sections remain stationary some
85 time at either end of their throw.

The sections H are undercut along the outer sides thereof, leaving shoulders or underfaced ledges h , under which the edges of the blank are flanged inward by means of dies I. A
90 plate, A³, rests on shoulders a of the frame, and upon this plate the dies I rest and reciprocate, these dies being held laterally by guides A⁴. The plate A³ has a central opening to accommodate the former-sections H and other
95 adjacent parts. The dies I are curved in plan at their inner ends to fit the neck H³ of sections H. In flanging the edges of the blank under ledges h there is considerable upward pressure against the ledges and a corresponding downward pressure on the dies I, and to
100

prevent these members from springing apart steel plugs L are secured to sections H in position to support dies I. As these plugs are secured by studs, they may be adjusted vertically to take up the wear, so as always to fit nicely against the under side of the dies I, such wear being usually taken up by means of disks of thin metal or paper placed under the plugs. The dies I at their outer ends are provided with friction-rollers I', that are engaged by cams C', by which engagement the dies I are moved inward. Rods *i* are fastened to the dies I, these rods being curved substantially as shown in Fig. 2, and having hook ends *i'*, that are engaged by pins C², projecting laterally from the cams C', and by means of which engagement the dies I are drawn back or outward, the cams on the two shafts C being set to throw simultaneously in opposite directions. The middle former-section, H', has a hole, *h'*, for receiving the punch *d*², the hole being somewhat larger in diameter than the punch, and the latter having a conical end. A hole, *j*, having previously been made in the blank, the material of the blank is flanged down into hole *h'*, thus giving considerable additional thickness for a bearing for the pin that supports the sheave of the tackle-block. For instance, if the blank were a sixteenth of an inch in thickness, the depending flange *j'* would usually be about an eighth of an inch in depth, thus giving a bearing-surface for the sheave-pin of three-sixteenths of an inch. Sections H have semicircular vertical grooves H², usually about a quarter of an inch in depth and large enough in plan to close round the flange *j'* when the sections H are brought together. A guide, K, (shown more clearly in Fig. 6,) serves in placing the blank centrally over the former. Usually a belt-shifter is operated automatically from the machine, and is arranged to stop the machine with the plunger D' elevated, and there is a treadle for shifting the belt to start the machine, all of which are old and of ordinary construction, and consequently are not shown. With the plunger D' elevated, plunger F depressed, sections H close together, and dies I drawn out, the blank is placed in position between the legs of the guide, the blank in such position resting on the former-section H.

On starting the machine, first the sections H are drawn apart, and immediately afterward the section H' is elevated, thus making a complete former. Next the plunger D' is brought down, the attached die *d* flanging down the edges of the blank over the edges of the former, the depending flange thus formed extending some little distance below the ledges *h* along the sides. At the ends, for want of metal in the blank, the depending flanges only extend down about flush with the under side of the section H'. Simultaneously with the flanging just mentioned the punch *d*² performs its function. Next the dies I are moved inward, engaging so much of the depending flange already formed as extends below ledge *h* and flanging this

part of the metal under the ledge. Next the dies I are moved outward and plunger D' is elevated. Next the section H' is depressed, after which the sections H are closed together, thus leaving the different members of the machine at their starting-point, leaving the finished work free to be removed from the machine.

We have reduced our invention to practice, and have in successful operation a large-sized machine capable of flanging the cheek-pieces for a twenty-inch tackle-block. For each smaller size tackle-block sections H and H', dies *d* and I, and guide K are of course changed, and the plate A', being suspended by bolts *a*², can be raised or lowered to accommodate the machine to any variation in thickness of the removable parts.

What we claim is—

1. In a flanging-machine, the combination, with an expansible former consisting of side sections and a middle section, the latter having a movement at right angles to the movement of the side sections, of rods connected to said side sections and devices for positively actuating the rods, whereby said side sections are moved toward and away from each other, substantially as set forth.

2. In a flanging-machine, the combination, with an expansible former consisting of two side sections and a central section, the latter adapted to move at right angles to the movement of the side sections, of rods connected to the side sections and cams for actuating the rods, substantially as set forth.

3. In a flanging-machine, the combination, with an expansible former consisting, essentially, of side and middle sections, the former mounted on ways so as to move toward and away from each other in the same plane, of rods connected to the side sections, devices for moving the rods, and a lever and cam for moving the central section, substantially as set forth.

4. In a flanging-machine, an expansible former consisting of side sections and a middle section, the side sections capable of moving apart to admit the middle section between the side sections, and the middle section capable of retiring into a recess in the side sections to allow the side sections to approach each other, substantially as set forth.

5. In a flanging-machine, the combination, with an expansible former consisting, essentially, of two side sections and a middle section, the said side sections being recessed on their inner faces, of rods for moving the side sections and a lever for moving the middle section, substantially as set forth.

6. In a flanging-machine, the combination, with a sectional expansible former, of a primary flanging-die, the latter operating in a plane perpendicular to the face of such former and in alignment with the middle section of the expansible former, substantially as set forth.

7. In a flanging-machine, the combination,

with a sectional expansible former, of a primary flanging-die, the latter operating in a plane perpendicular to the face of the former and in alignment with the middle section of the expansible former, and a set of lateral flanging-dies having a movement toward and from the sides of such former and perpendicular to this movement of the primary die, substantially as set forth.

8. In a flanging-machine, the combination, with an expansible former consisting, essentially, of two side sections and a middle section, of a primary flanging-die operating in a plane perpendicular to the face of such former and lateral dies moving in a plane at right angles to the primary flanging-die, substantially as set forth.

9. In a flanging-machine, the combination, with an expansible sectional former consisting of two side sections and a middle section, of plungers movable toward and from each other, the one plunger bearing the primary flanging-die and the other plunger bearing the middle section of the former, substantially as set forth.

10. In a flanging-machine, the combination, with an expansible sectional former consisting, essentially, of two side sections and a middle section, of plungers operating in a plane

perpendicular to the face of such former, said plungers having a movement toward and from each other, the one plunger bearing the primary flanging-die and the other plunger bearing the middle section of the former, substantially as set forth.

11. In a flanging-machine, the combination, with the sectional expansible former and a primary flanging-die, substantially as indicated, of a punch set in the face of the primary flanging-die and a hole in the middle section of the former for receiving the punch when the die is closed upon the former.

12. In a flanging-machine, the combination, with a sectional expansible former and primary and lateral flanging-dies, substantially as indicated, of mechanism, substantially as described, for actuating the plungers, the dies, and the different members of the former, the parts being timed to co-operate with each other, substantially as set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 15th day of October, 1887.

GEORGE A. FORD.

CHARLES R. HUSSEY.

Witnesses:

CHAS. H. DORER,

ALBERT E. LYNCH.