(No Model.) 3 Sheets—Sheet 1.

S. T. WILLIAMS.

FLANGING MACHINE.

No. 338,901. Patented Mar. 30, 1886.

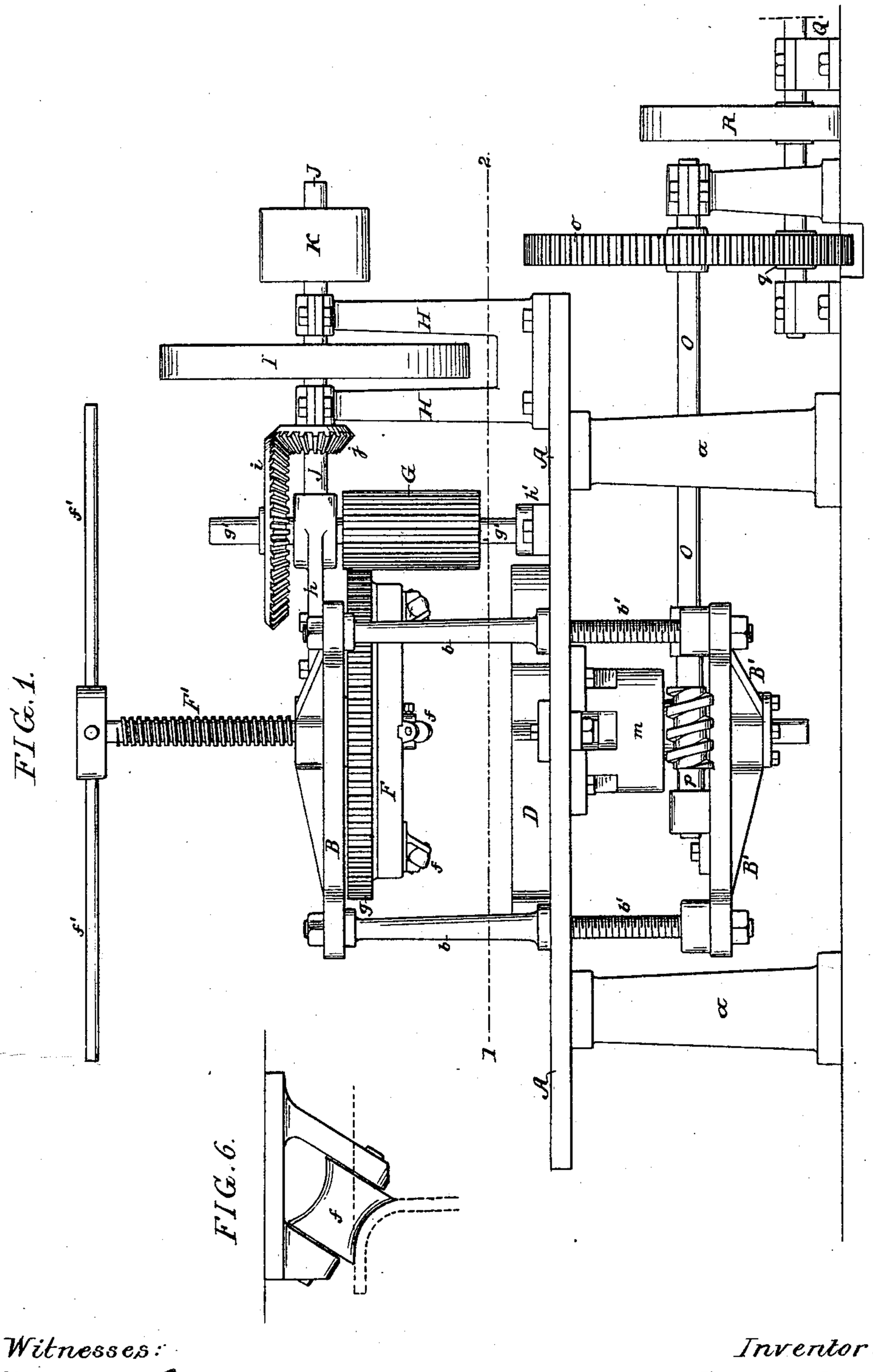

FIG. 1.

FIG. 6.

Witnesses:
William D Conner
William F. Davis

Inventor:
Samuel T. Williams
by his Attorneys
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(No Model.)

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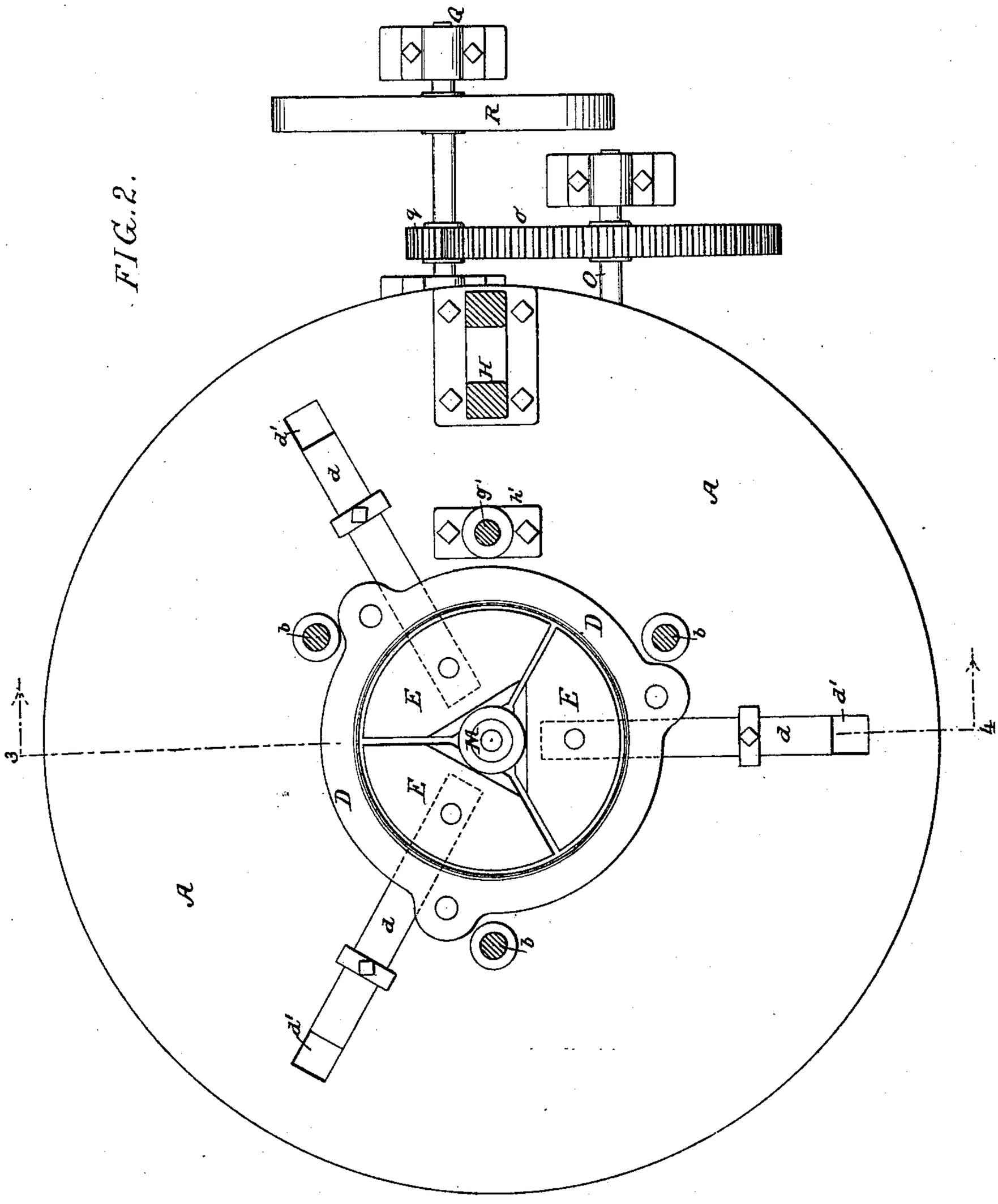
FIG. 2.



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(No Model.)

3 Sheets—Sheet 3.

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FIG. 5.

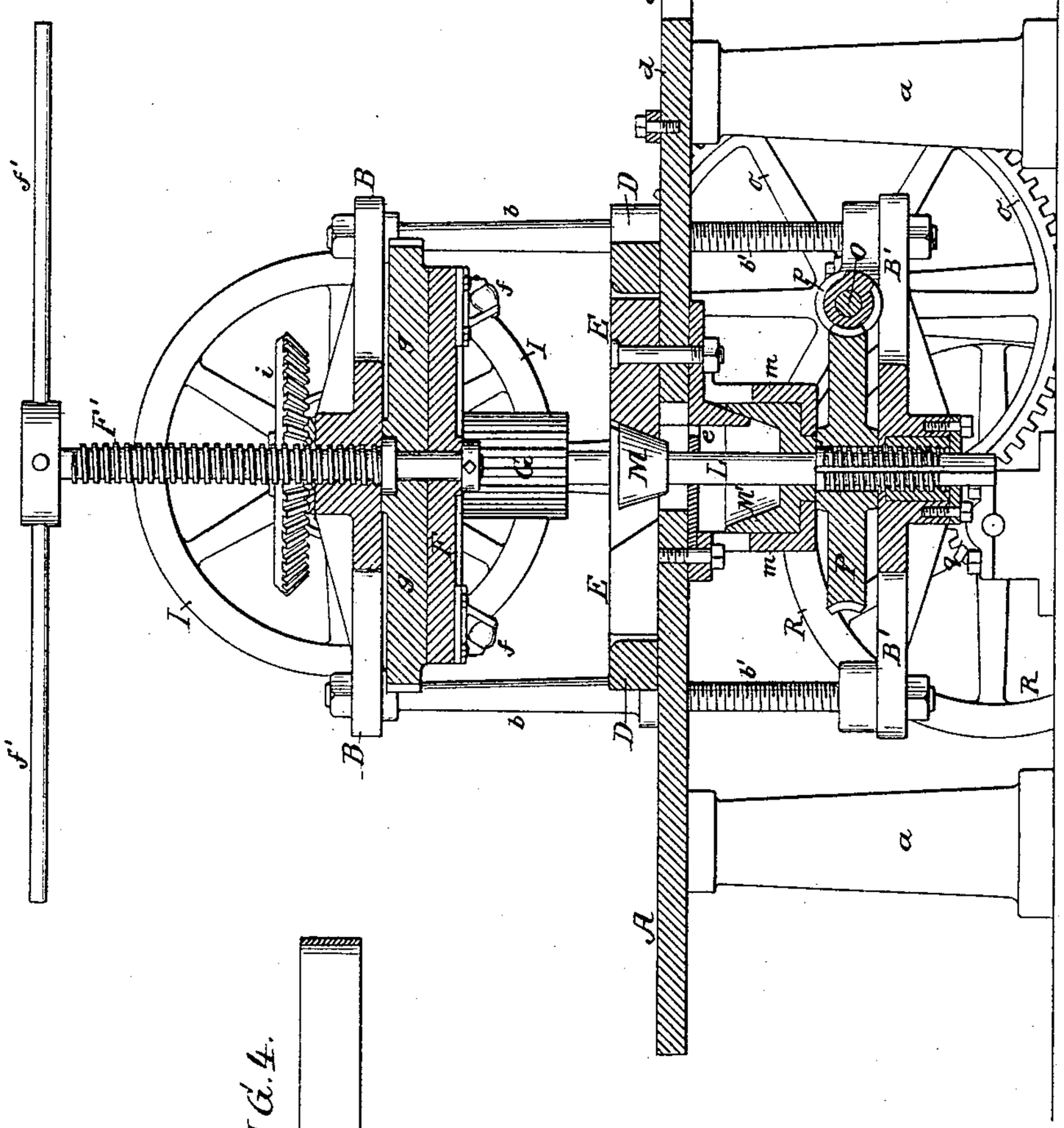

FIG. 4.

Witnesses:
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William D Conner

Inventor:
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UNITED STATES PATENT OFFICE.

SAMUEL T. WILLIAMS, OF RED BANK, ASSIGNOR TO THE WILLIAMS TENSION WHEEL COMPANY, OF NEWARK, NEW JERSEY.

FLANGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 338,901, dated March 30, 1886.

Application filed January 25, 1886. Serial No. 189,699. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. WILLIAMS, a citizen of the United States, residing in Red Bank, Monmouth county, New Jersey, have invented a certain Improved Flanging-Machine, of which the following is a specification.

The object of my invention is to construct a machine for the forging of wrought-metal flanged tires to uniform diameters, and this object I attain in the manner which I will now proceed to describe.

In the accompanying drawings, Figure 1 is a side view of my improved flanging-machine. Fig. 2 is a sectional plan on the line 1 2, Fig. 1. Fig. 3 is a vertical section on the line 3 4, Fig. 2. Fig. 4 is a sectional view illustrating the welded blank before it is put into the flanging-machine. Fig. 5 is a corresponding view of the flanged tire, and Fig. 6 is a view of a modified form of flanging-roller which may be used in the machine.

The frame of the machine I have shown in the present instance as consisting of a table or bed, A, mounted on posts or pillars *a*, and carrying above the bed a cross-head, B, mounted on posts *b*, while below the bed is another cross-head, B′, carried by posts *b′*, depending from the bed or table A.

Secured to the table between the pillars *b* is a flanging-ring, D, having an inner diameter corresponding with the outer diameter and form to be imparted to the flanged tire. For this reason the ring D is detachable from the bed, so that rings of different sizes may be used. The upper edge of the inner face of the ring is rounded or turned off, as illustrated in Fig. 3, to form a contour such as is required for the formation of the flange.

Within the flanging-ring D are the adjustable dies E—three in the present instance. These dies are bolted or otherwise secured to horizontal slides *d*, adapted to radial slots or ways *d′* in the bed-plate, Figs. 2 and 3, so that the dies E may be adjusted toward and from the flanging-ring D by the devices hereinafter described, to grip and release the blank for the formation of the flanged tire.

The cross-head above the flanging-ring and dies carries a rotary flanging wheel or tool, F, carrying suitable flanging-rollers, *f*, which, when the wheel is depressed, come into contact with the edge of the blank and turn it down to form the flange, as hereinafter set forth. The wheel F is carried by and free to turn on the lower end of a vertical screw-shaft, F′, adapted to a threaded opening in the cross-head B. The upper end of this screw-shaft is provided with arms, by manipulating which to turn the shaft the flanging-wheel F may be moved toward or from the blank, which is held between the dies and the flanging-ring D. To impart a rotary motion to this wheel F on the shaft F′, I provide the periphery of the wheel with teeth *g*, which gear at all times into an elongated pinion, G, on a shaft, *g′*, which has an upper bearing in an arm, *h*, projecting from the cross-head B, while its lower end turns in a step-bearing, *h′*, secured to the bed-plate A. The upper end of the shaft *g′* carries a bevel-gear, *i*, into which meshes a bevel-pinion, *j*, on a horizontal shaft, J, mounted in bearings in standards H on the bed-plate A. This shaft J may be provided with a fly-wheel, I, and suitable belt-pulley, K, to which a constant rotary motion can be imparted by suitable means.

For the adjustment of the dies E E toward and from the flanging-ring D, I provide two cones, M M′, the latter being a hollow cone, and both being secured to and carried by a vertically-adjustable shaft, L, mounted at its lower end in a cross-head, B′, and passing up through an opening in the bed-plate A, where it may be guided by a plate, *l*. The cone M is adapted to bear against and act on the beveled inner faces of the adjustable dies E, while the hollow cone M′ is adapted to bear against and act on beveled lugs *e*, Fig. 3, bolted or otherwise secured to the dies E or slides carrying the same. The hollow cone M′ is adapted to and guided in a socket or box, *m*, bolted to the under side of the bed-plate A, and in the present instance I have shown this hollow cone as secured to the shaft L by being screwed thereon. The lower end of the shaft L is threaded and adapted to a corresponding female thread in the cross-head B′, so as to turn therein. The shaft also passes through a worm-wheel, P, supported on the cross-head B′, and connected to the shaft L by a feather adapted

to a corresponding longitudinal groove in the said shaft, so that while the latter can traverse longitudinally on the worm-wheel it must turn therewith. Into the worm-wheel gears the worm *p* on a horizontal shaft, O, to which a rotary motion may be imparted in either direction by any suitable means. In the present instance I have shown the shaft O as carrying a spur-wheel, *o*, into which gears a pinion, *q*, on a horizontal counter or driving shaft, Q, mounted in suitable bearings, and carrying a fly-wheel, R.

In making the flanged tire on the above machine, the strip of iron or steel is first welded into a ring, as illustrated in Fig. 4, and while in a heated condition it is inserted between the ring D and the dies E. Motion is then imparted to the devices described, to depress the shaft L, and thereby cause the cones M M′ to force the dies E outward to grip the blank and stretch the latter out to the desired uniform diameter. The rotating flanging-wheel F is then lowered by turning the shaft F′ until the flanging-rollers *f* come into contact with the edge of the blank held between the dies and ring D, and as the wheel F with its rollers *f* rotates, and as the depression of the wheel continues, the upper edge of the blank will be turned outward onto the rounded edge of the ring D, so as to flange the upper edge of the ring to the form illustrated in Fig. 5. When this is accomplished, the wheel F is raised again, and motion is imparted to the shaft O in the opposite direction to that above described, to raise the shaft L, and withdraw the dies E by means of the hollow cone M′, when the flanged tire can be removed from the machine and another blank inserted.

In Figs. 1 and 3 I have shown the flanging-rollers *f* as convex; but in some cases, and for some constructions of flanges, concave rollers, as illustrated in Fig. 6, may be used.

I claim as my invention—

1. The combination of the frame and flanging-ring with adjustable dies and an adjustable rotary flanging-wheel, substantially as set forth.

2. The combination of the frame and flanging-ring with adjustable dies and an adjustable rotary flanging-wheel carrying rollers to flange the edge of the blank.

3. The combination of the frame, flanging-ring, and adjustable dies with a rotary flanging-wheel, F, and adjustable shaft F′, on which the flanging-wheel is free to turn, substantially as specified.

4. The combination of the bed-plate, flanging-ring, and adjustable dies with cross-head B, carried by the bed-plate, screw-shaft F′, mounted in the cross-head and carrying a flanging-wheel, F, free to rotate on said shaft, substantially as described.

5. The combination of the frame, flanging-ring, and rotary flanging-wheel with adjustable dies and adjustable shaft L, carrying cones to act on said dies, all substantially as specified.

6. The combination of the frame and flanging-ring with adjustable dies beveled at their inner sides and carrying beveled lugs, and an adjustable shaft, L, carrying a cone, M, and hollow cone M′, substantially as specified.

7. The combination of the frame, flanging-ring, and adjustable dies with a threaded shaft, L, having cones to act on said dies, a cross-head to which the threaded portion of the shaft is adapted, and the rotary wheel P, having a key-and-feather connection with the shaft, all substantially as specified.

8. The combination of the bed-plate A, flanging-ring, and adjustable dies with a vertical shaft, L, having a cone, M, and hollow cone M′, and a socket, *m*, secured to the under side of the bed-plate A, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL T. WILLIAMS.

Witnesses:
WILLIAM F. DAVIS,
HARRY SMITH.