

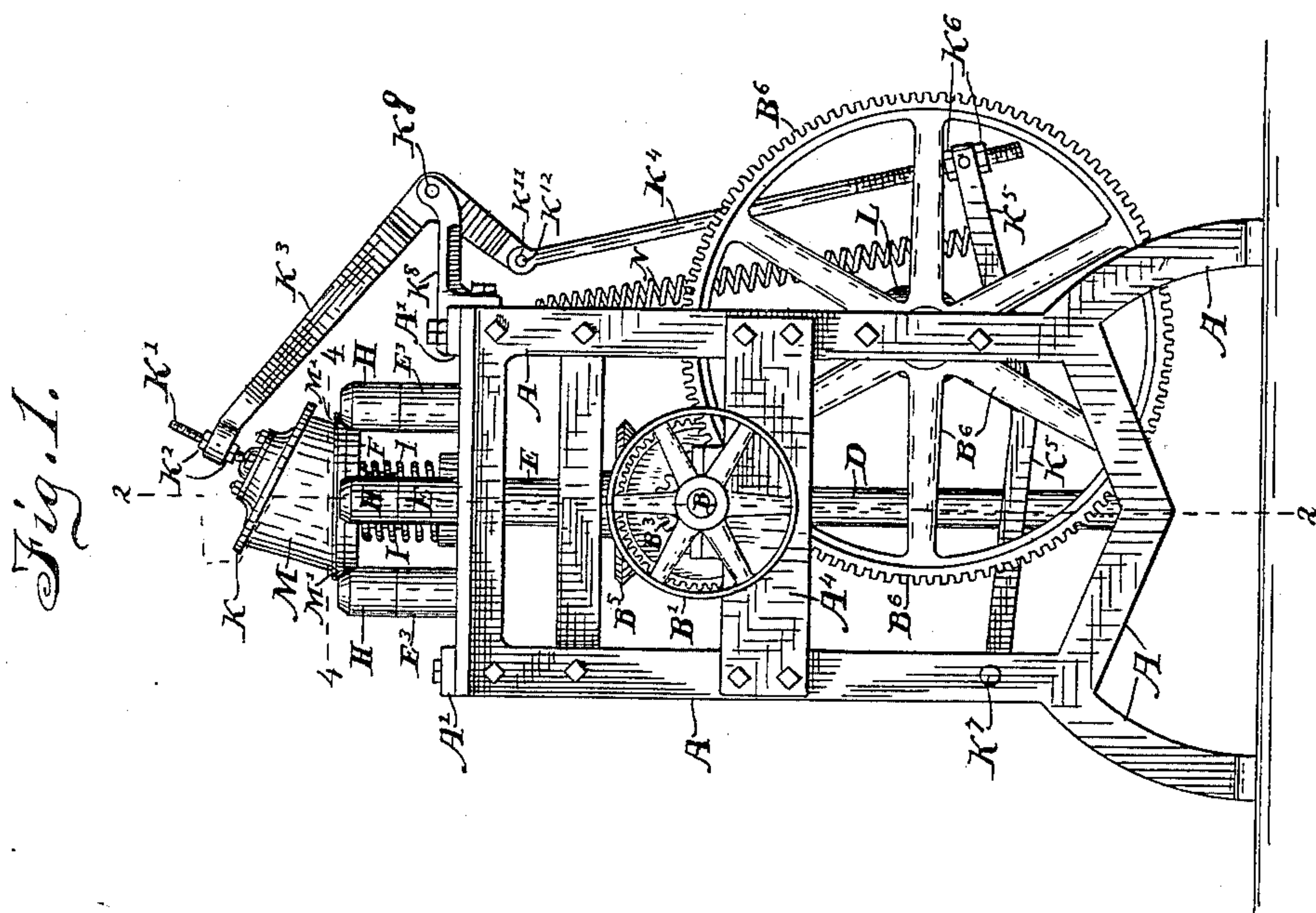
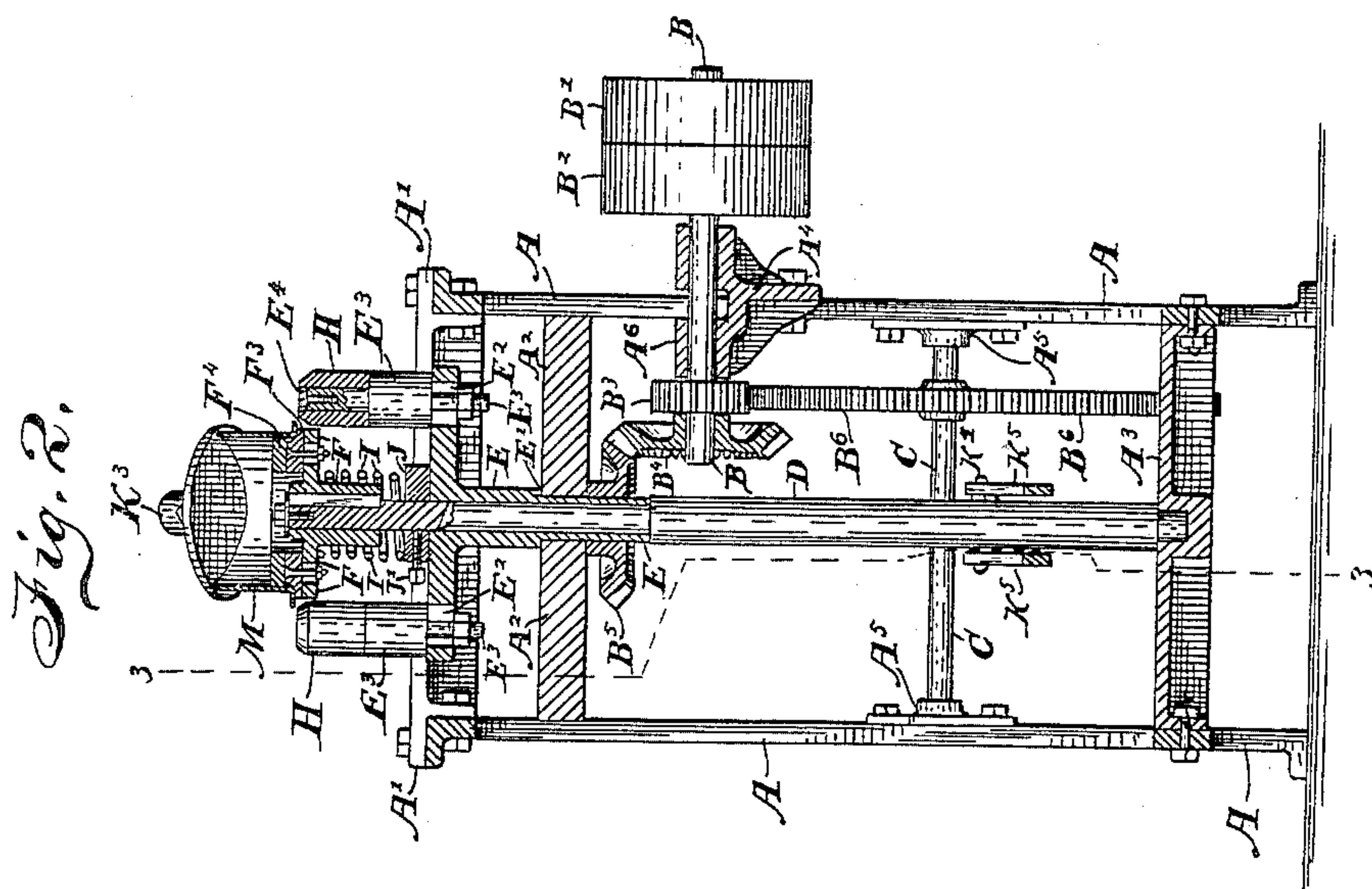
(No Model.)

2 Sheets—Sheet 1.

W. THOM.
FLANGING MACHINE.

No. 398,674.

Patented Feb. 26, 1889.



Witnesses,
Chas Leonard,
Aquila Z. Jones

Inventor,
William Thom

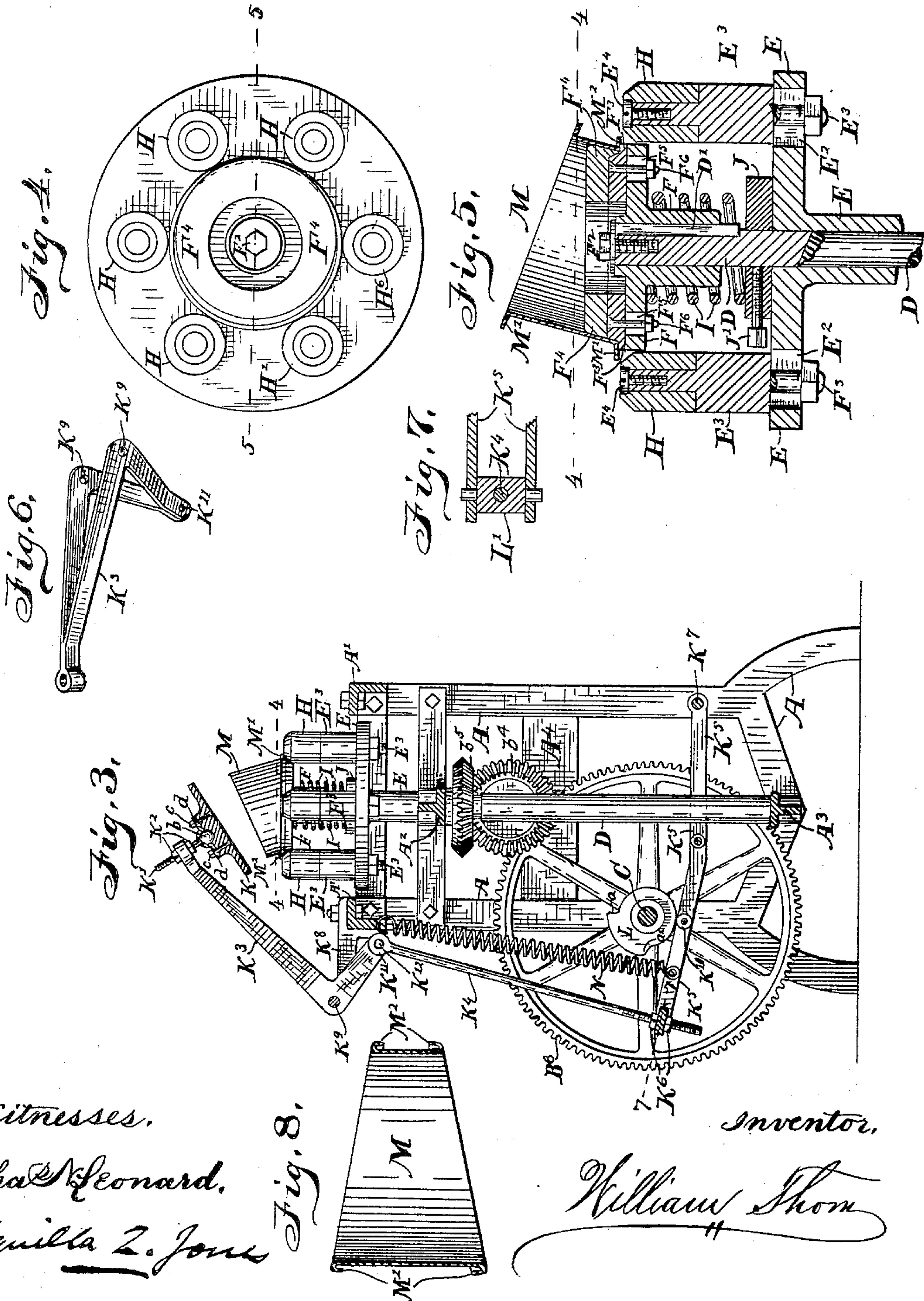
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UNITED STATES PATENT OFFICE.

WILLIAM THOM, OF INDIANAPOLIS, INDIANA.

FLANGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 398,674, dated February 26, 1889.

Application filed March 27, 1888. Serial No. 268,714. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM THOM, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Automatic Lock-Seam Elbow "Hook-Flanging" Machines, of which the following is a specification.

My said invention consists of an automatic machine for forming a "hook-flange" on the edges of sheet-metal cylinders, such as are used in the manufacture of stove-pipe elbows, the edges of which have been "straight-flanged" on another machine for this purpose, (shown in an accompanying application filed of even date and numbered 268,713,) and thus produce an elbow the sections of which are united by a "lock-seam," as shown in Patent No. 365,652, issued to me June 28, 1887.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side plan from the right. Fig. 2 is a front section from dotted line 2 2 in Fig. 1. Fig. 3 is a side plan from the left on the dotted line 3 3 in Fig. 2. Fig. 4 is a top plan on dotted line 4 4 in Figs. 1, 3, and 5. Fig. 5 is an enlarged section of the revolving head. Fig. 6 is a plan of the crank-lever. Fig. 7 is a section showing the rock-pivot. Fig. 8 is a section of an elbow as finished by my said machine.

In said drawings, A represents the cast-iron frame, and A', A², and A³ the cross-bars securing said frame together. The driving-shaft B has its bearings in the box A⁶, which is secured to the cross-bar A⁴.

On the shaft B are two pulleys, B' being the idler, and B² the driving-pulley, which communicates the power through the shaft B and bevel-gears B⁴ B⁵ to the revolving head E, carrying the cone-rollers H. The head E runs around and upon the central stationary standard, D. The pinion B³ drives the spur-wheel B⁶ on the counter-shaft C, which is supported at each end by lug-bearings A⁵ A⁵. The cam L is also mounted on said counter-shaft C, its periphery traveling on the friction-roller K¹⁰, which is inserted between the two sides of lever K⁵, Fig. 7. The connecting-rod K⁴ is provided with a screw-thread on its

lower end and two lock-nuts, K⁶, for adjustment. The upper end of said connecting-rod K¹¹ is secured to the lower end of the crank-lever K³ by pin or bolt K¹². The crank-lever K³ swings on a fulcrum at K⁹ and is secured to the lug K⁸, which is bolted to A'. The hood K is secured to the crank-lever K³ by screw K' for adjustment, and is rigidly held by lock-nuts K².

The lower end of K' is provided with a ball-joint, b, and is fastened by means of screws c and plate d, so as to permit the hood K to adjust itself to any angle, so as to fit and bear evenly on the top of the elbow-section M. The hollow hub of the head E extends down through the bridge-tree A², and has its bearings therein and rests on the shoulder E'.

The head E is provided with slots E² for adjustment of the studs E³, which support and bear the cone-rollers H. The rollers H are held on said studs by the screws E⁴. The head F is mounted on the top of the central stationary standard, D, and rests on the spiral spring I, which is supported by collar J and set-screw J', and is confined at the top by a washer and machine-screw, F². On the top of the cast-iron head F is a steel ring, F³, which forms a seat for the elbow-section M while being operated upon by the rollers H. This ring F³ is rendered adjustable by means of the slots F⁵, and is secured to said head by the screws and nuts F⁶.

On account of the peculiar angular shape of the elbow-sections it has heretofore been difficult, even at great expense, to procure a close-fitting and uniform support all around the inside of said angular elbow-sections. To accomplish this I set an elbow-section on the top of the steel ring, as shown in Fig. 5, and then fill the inside (to the proper depth) with molten metal, F⁴, which admirably accomplishes the desired result, and as the metal, F⁴, wears off it can be readily replaced, as before. When the hood K is forced down on the elbow-section M, the head F (resting on spiral spring I) yields to said pressure and slides downward on the standard D. A keyway is cut in the top of the standard D and a corresponding one in the hollow hub F, and a splice, D', inserted rigidly in the standard D, so that the

head F may be permitted to slide up and down on said standard D and yet be prevented from turning by the action of the rollers II.

By means of the adjustment obtained through the slots F^5 in head F the steel ring F^3 , with the metal, F^4 , can be set back, so that the throat M^2 of the elbow-section M can be placed nearer the cone-rollers H^4 at M^2 and farther away at M' , so as to offset and equalize the existing variation in the distance (owing to the peculiar angle of the elbow-section, the metal at M' running toward and the metal at M^2 away from the rollers) between the metal and cone-rollers at M' and M^2 .

Having thus fully described the construction of my machine, its operation may be briefly recapitulated as follows: The machine being automatic in its operation, it is only necessary for the operator to insert and remove the elbow-sections, which is easily done at the rate of one thousand per hour without fatiguing the operator. The machine is set in motion and the elbow-section inserted while the periphery of the cam L is traveling on friction-roller K^{10} from a to a' , during which time the hood K remains in position, as shown in Fig. 3; but when the periphery of the cam at a' passes over the friction-roller K^{10} the lever K^5 is suddenly depressed by the action of the cam L, and through said lever K^3 the hood K is brought down on the elbow-section M, which is thereby forced down on the cone-rollers H, as in Fig. 1, and thus the hook-flange is formed and the operation completed, the spring N returning the levers and hood to former position for repeated operations.

Having thus fully described the construction and operation of my said machine, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In an automatic lock-seam elbow "hook-flanging" machine, the combination of the driving-shaft B, head E, gears B^4 and B^5 , cone-rollers H, vertically-moving head F and adjustable hood K, and means, substantially as described, for pressing said hood against the

upper edge of the pipe-section, substantially as set forth and described.

2. In a machine for forming hook-flanges, the combination, with the standard D and the head E, running loosely on said standard, of gearing rotating said head, cone-collars H, mounted in said head and adjustable thereon, the head F, splined on the standard D, the spring I, adjustable collar J, and means, substantially as described, for pressing the pipe-section down on the head F, substantially as described.

3. In a machine for forming hook-flanges, the combination, with the shaft B and standard D and with the gears B^4 B^5 , of the counter-shaft C, gears B^3 and B^6 , the lever K^5 , connecting-rod K^4 , the lever K^3 , the hook K, adjustably mounted thereon, the head F, splined on the standard D and having a seat for the pipe-section, the cone-rollers H, head E, and cam L, substantially as described.

4. In a machine for forming hook-flanges, the combination, with the standard D, of the head E, having slots E^2 , the cone-rollers II, having their supports adjustable in said slots, gearing for rotating the head E, the head F, splined on the standard D, the spring I, collar J, and means, substantially as described, for clamping the pipe-section upon the head F, substantially as described.

5. In a machine for forming hook-flanges, the combination, with the standard D and with gears B^4 B^5 , of the head E, the adjustable cone-rollers H, the head F, splined on standard D and having the ring F^3 , and cast ring F^4 , the spring I, collar J, set-screw J' , and means, substantially as described, for clamping the pipe-section upon the head F, substantially as described.

In witness whereof I have hereunto set my hand, at Indianapolis, Indiana, this 3d day of March, A. D. 1888.

WILLIAM THOM.

In presence of—

AQUILLA Q. JONES,
J. W. JONES.