

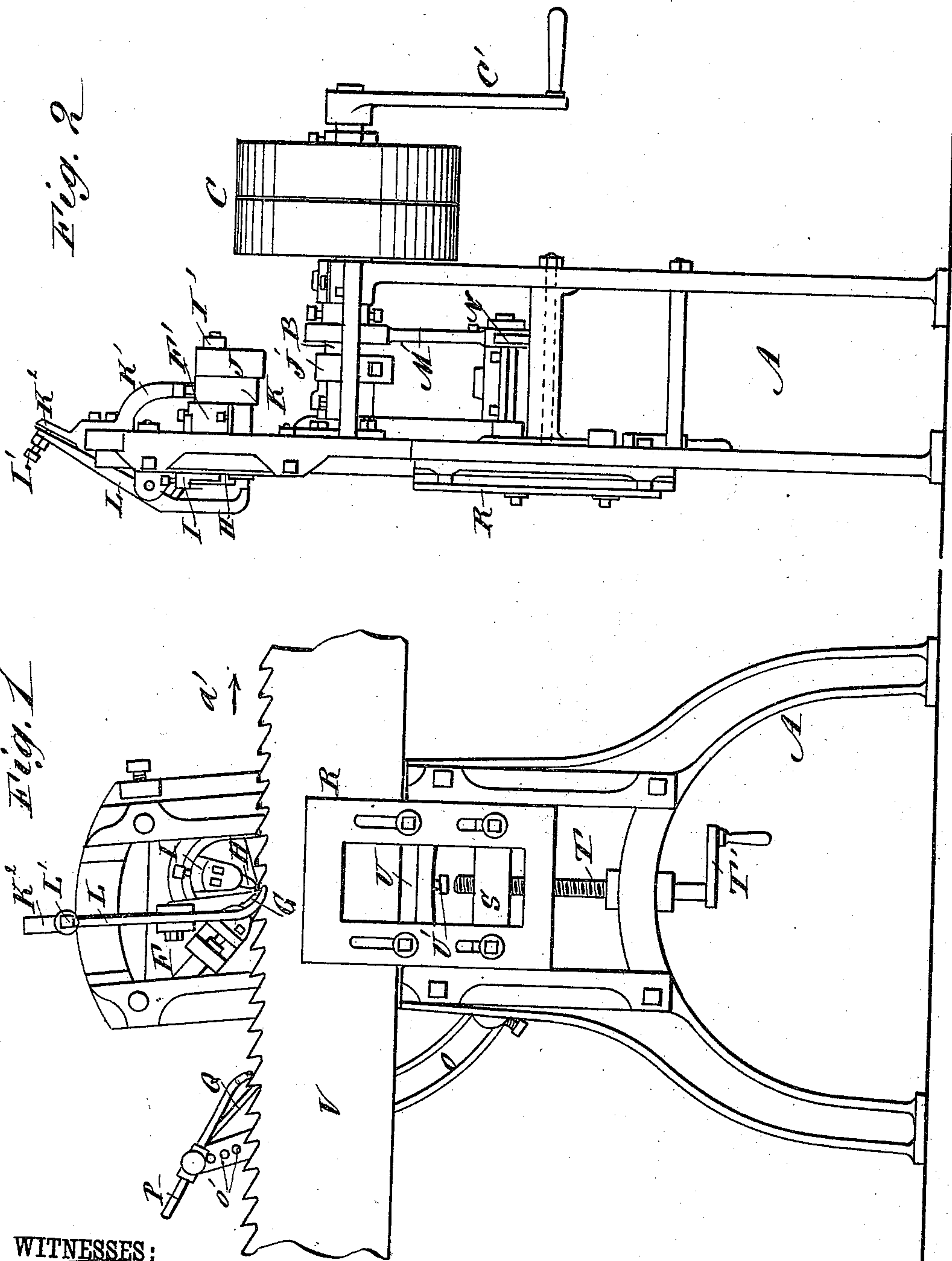
(No Model.)

2 Sheets—Sheet 1.

W. G. BAUMGARDNER.
SAW SWAGING MACHINE.

No. 355,912.

Patented Jan. 11, 1887.



WITNESSES:

Neven
C. Sedgwick

INVENTOR:

W. G. Baumgardner

BY

Munn & Co

ATTORNEYS.

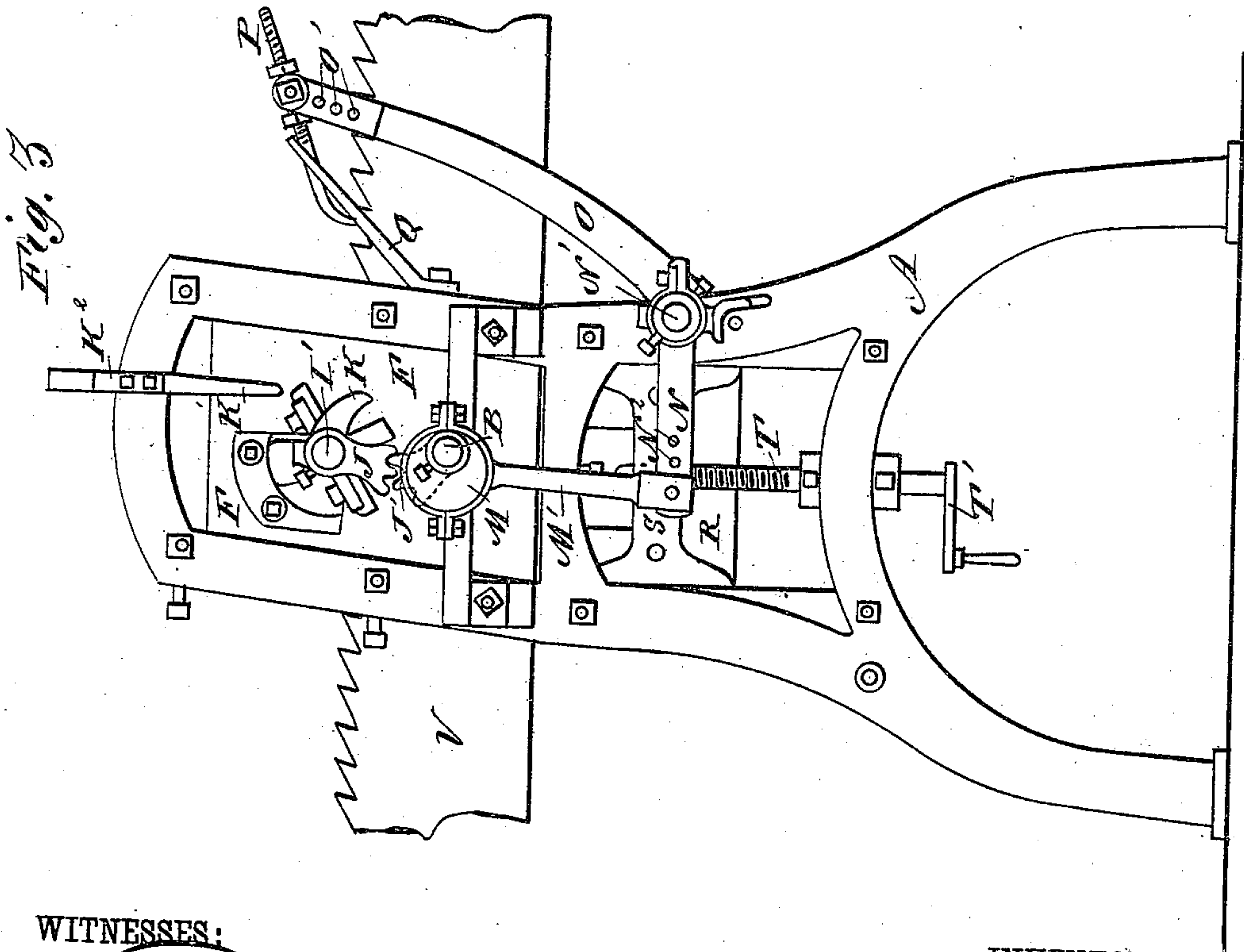
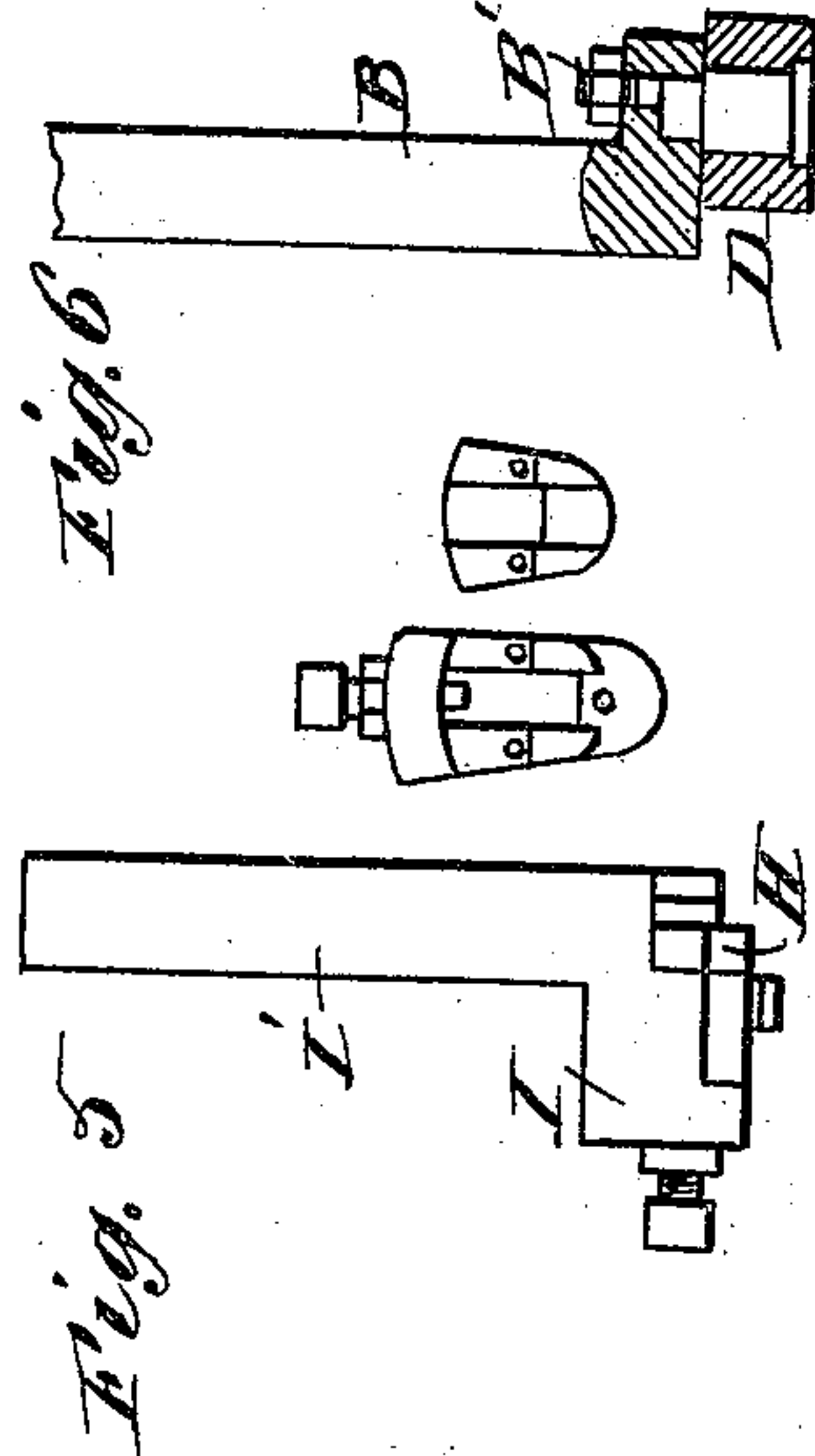
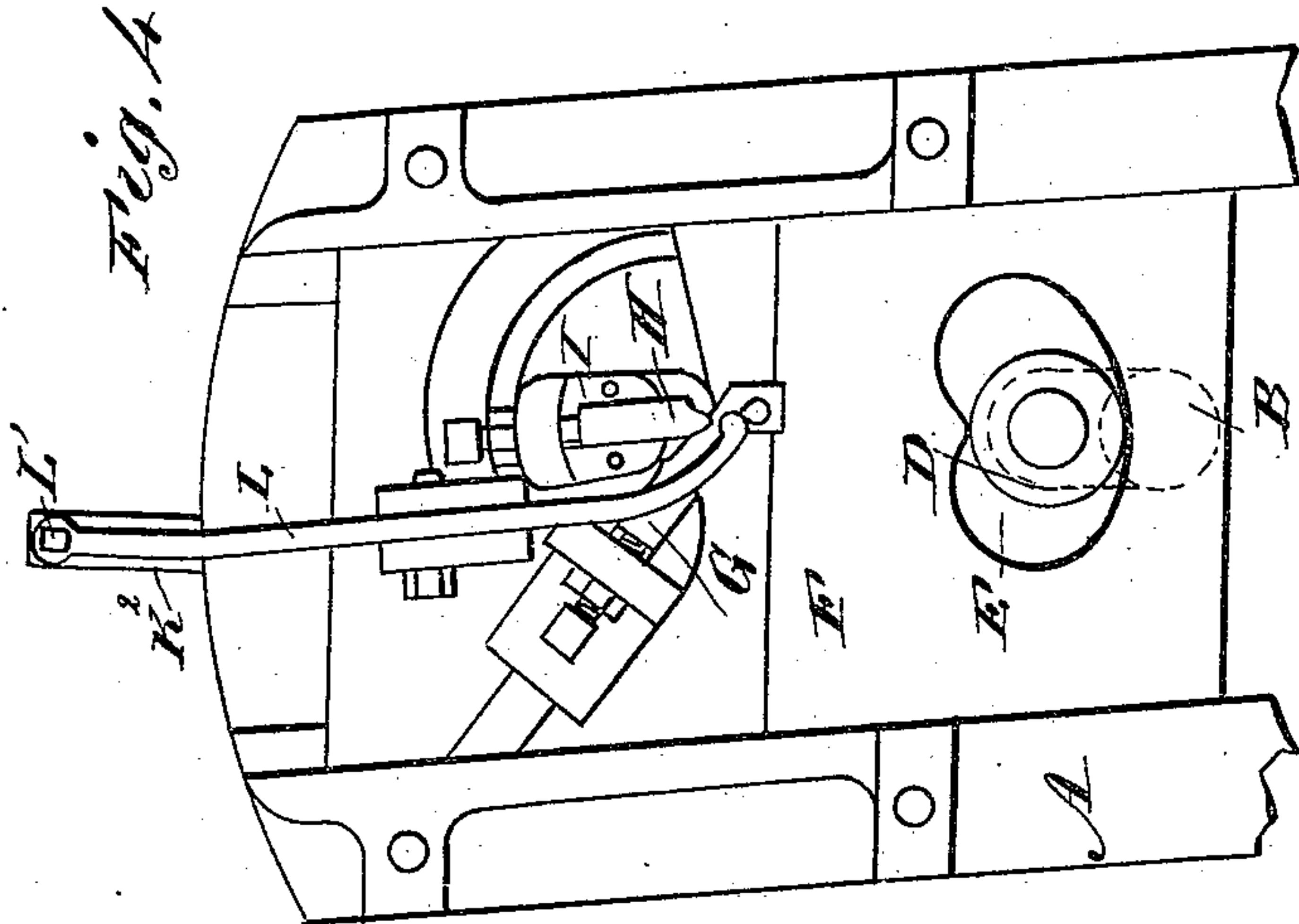
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UNITED STATES PATENT OFFICE.

WILLIAM G. BAUMGARDNER, OF FILER CITY, MICHIGAN.

SAW-SWAGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 355,912, dated January 11, 1887.

Application filed June 4, 1886. Serial No. 204,148. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. BAUMGARDNER, of Filer City, in the county of Manistee and State of Michigan, have invented a new and Improved Saw-Swaging Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved saw-swaging machine which is automatic in operation and adjustable to saws of any size or shape.

The invention consists of a sliding swage-gate carrying a stationary anvil-die, of an oscillating die operated from the main shaft, of an automatic clamp-lever, of an adjustable saw-blade holder, and of a device for moving the saw.

The invention also consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my improvement. Fig. 2 is an end view of the same. Fig. 3 is a rear elevation of the same, parts being removed. Fig. 4 is a detail view of the dies and the swage-gate. Fig. 5 shows detail views of the oscillating die and its carrier; and Fig. 6 is a sectional view of the main shaft and the friction-roller operating the swage-gate.

On the main frame A, of suitable construction, is mounted the main driving-shaft B, rotated either by means of a pulley, C, or a crank-arm, C'. The front end of the shaft B is provided with a crank-arm, B', on which is mounted the friction-roller D, operating in the cam-groove E, formed in the swage-gate F, sliding in suitable bearings on the frame A. To the swage-gate F is secured in an inclined position the stationary anvil-die G, of suitable construction. The oscillating die H is held in a head, I, attached to a shaft, I', mounted in a bearing, F', on the swage-gate F. The shaft I' is provided with a sector-gear, J, which meshes into a sector-gear, J', secured to the main shaft B, and with a tripping-lug, K, which engages with the arm K', secured to the frame A, and having an upwardly-projecting inclined part, K², on which rests the set-screw

L', screwed in the upper end of the clamping-lever L, pivoted on the front of the swage-gate F.

The main shaft B is provided with an eccentric, M, having the eccentric-strap M', the lower end of which is pivotally connected with the arm N, secured on the rocking shaft N', mounted in a bearing on the main frame A and carrying an arm, O, on the upper end of which is pivoted the feed-arm P, one end of which engages with the teeth of the saw V to be swaged, and rests on an arm, Q, rigidly secured to the side of the frame A. In suitable bearings on the front of the frame A slides the saw-gage plate R, provided with the adjustable cross-head S, which is raised and lowered by the screw T, having a crank-arm, T', and mounted on the frame A. The saw-rest U is also adjustable on the gage-plate R. The main frame A is provided with a set-screw, U', on which rests the swage-gate F when in its lowest position.

The operation is as follows: The saw V to be swaged is placed in the saw-gage plate R, and rests with its lower edge on the saw-rest U, the dies H and G are set to the shape of the teeth of the saw to be swaged, and the feed-arm P is adjusted on the arm O so as to move the saw V one tooth for every revolution of the main shaft B. The stationary anvil-die G rests against the front end of the tooth of the saw V, and the lower end of the clamp-lever L rests on the outside of the tooth of the saw and prevents the tooth from bending sideways under the pressure of the oscillating die H when the tooth is swaged. It will be seen that when the main shaft B is rotated the friction-roller D will raise the swage-gate F, and at the same time the saw V will be moved the distance of one tooth in the direction of the arrow α' by the action of the eccentric M, rocking the shaft N', which swings the arm O so that the feed-arm P moves the saw V. When the swage F descends by the action of the friction-roller D in the cam-groove E, the stationary die G takes the position in front of the tooth to be swaged, and the lower end of the clamp-lever L is pressed against the outside of the tooth by the action of the screw L' on the inclined arm K². When the swage-gate F is in its lowest position, the sector J' on the revolving main shaft B engages the sector J on

the shaft I', and thereby turns the latter, so that the die H passes over the upper end of the respective tooth of the saw V and swages the same. The swage-gate F is firmly held at rest during this operation and during one-fourth of the revolution of the main shaft B by the peculiar form of the cam-groove E in the swage-gate F. The action of the friction-roller D in the cam-groove E then raises the swage-gate F, and the tripping-arm K comes in contact with the lower end of the stationary arm K', whereby the shaft I' is turned to its former position and the sector J is again moved to such a position that the sector J' will engage the sector J in the next revolution of the shaft B.

The saw V is moved the distance of one tooth by the action of the feed-arm P, as above described, so that the next tooth of the saw is swaged when the swage-gate F returns to its lowest position, as before described.

The throw of the arm P can be regulated by the adjustment of its pivot in the apertures O' of the arm O, or by adjusting the pivot of the eccentric-strap M' in the apertures N² of the arm N.

It will be seen that a saw of any size or shape can be automatically swaged by my device. The action of the die H on the back of the tooth imparts a very fine steel-drawn temper to the cutting-edge of the tooth.

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

1. In a saw-swaging machine, the combination of a sliding swage-gate carrying a stationary anvil-die, and a clamp-lever with an oscillating swaging-die, substantially as shown and described.

2. In a saw-swaging machine, the sliding swage-gate, a stationary anvil-die attached to the said gate, and an automatic clamp-lever, in combination with an oscillating swage-die, substantially as shown and described.

3. In a saw-swaging machine, the sliding swage-gate, a stationary anvil-die attached to the said gate, an oscillating swage-die, and an automatic clamp-lever, in combination with a device for moving the saw the distance of one tooth for every revolution of the main shaft, substantially as shown and described.

4. In a saw-swaging machine, the sliding swage-gate, a friction-wheel attached to a crank-arm of the main shaft and operating in a cam-groove on the said swage-gate, a stationary anvil-die on the said swage-gate, an oscillating swage-die attached to a shaft mounted on the said swage-gate and operated by the main shaft, and an automatic clamp-lever, in combination with a device for moving the saw to be swaged the distance of one tooth for every revolution of the main shaft, substantially as shown and described.

5. In a saw-swaging machine, a sliding

swage-gate, a stationary anvil-die attached to the said gate, an oscillating swage-die, and an automatic clamp-lever, in combination with an adjustable saw-gage plate and an adjustable saw-rest, substantially as shown and described.

6. In a saw-swaging machine, a sliding swage-gate, a stationary anvil-die attached to the said gate, an oscillating swage-die, and an automatic clamp-lever, in combination with an adjustable saw-gage plate and adjustable saw-rest, and a device for moving the saw to be swaged the distance of one tooth for every revolution of the main shaft, substantially as shown and described.

7. In a saw-swaging machine, the main shaft B, having the crank-arm B', and the friction-roller D, in combination with the swage-gate F, having the cam-groove E, substantially as shown and described.

8. In a saw-swaging machine, the main shaft B, having the crank-arm B', and the friction-roller D, in combination with the swage-gate F, having the cam-groove E, the stationary anvil-die G, attached to the said swage-gate F, and the swage-die H, mounted in the head I, secured to the shaft I', mounted on the swage-gate F, substantially as shown and described.

9. In a saw-swaging machine, the main shaft B, having the crank-arm B', the friction-roller D, and the sector J', attached to the main shaft B, in combination with the swage-gate F, having the cam-groove E, the anvil-die G, the swage-die H, the shaft I', having the head I, carrying the said swage-die H, and the sector J, mounted on the said shaft I', substantially as shown and described.

10. In a saw-swaging machine, the main frame A, provided with the arm K', the main shaft B, having the friction-wheel D, and the sector J', attached to the said main shaft, in combination with the swage-gate F, having the cam-groove E, the anvil-die G, the swage-die H, mounted in the head I, attached to the shaft I', the sector J, the tripping-arm K, attached to the said shaft I', and the clamp-lever L, having the set-screw L', substantially as herein shown and described.

11. In a saw-swaging machine, the main frame A and the screw T, having the crank-arm T', in combination with the saw-gage plate R, having the adjustable cross-head S, and the saw-rest U, substantially as shown and described.

12. In a saw-swaging machine, the main frame A and the screw T, having the crank-arm T', in combination with the saw-gage plate R, the adjustable cross-head S, and the adjustable saw-rest U, substantially as shown and described.

WILLIAM G. BAUMGARDNER.

Witnesses:

J. P. BAXTER,
C. H. CRANE.