

(No Model.)

G. J. H. GOEHLER.
FORGING MACHINE.

3 Sheets—Sheet 1.

No. 435,494.

Patented Sept. 2, 1890.

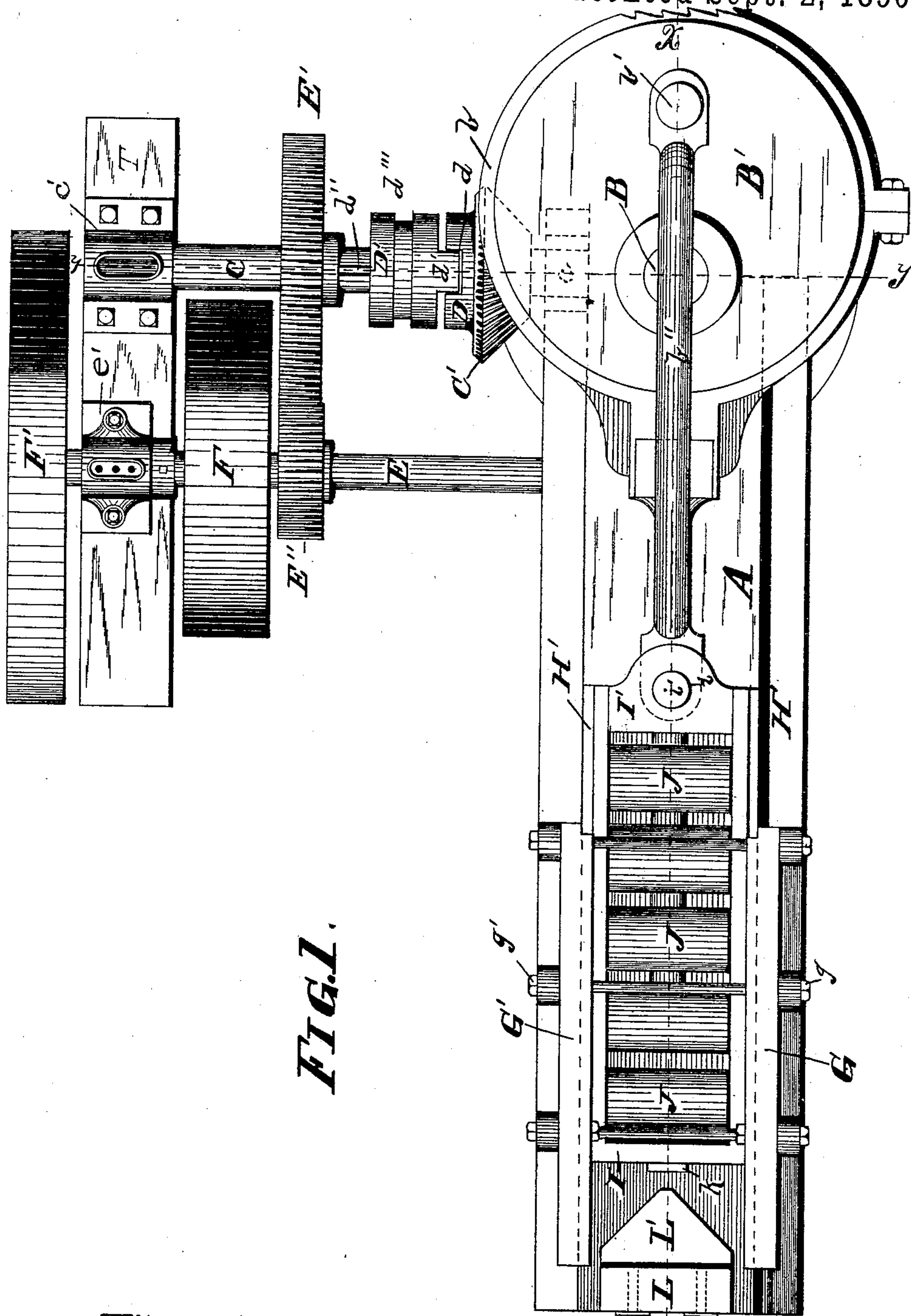


FIG. 1.

Witnesses:

Michael Stark
Centre Stark

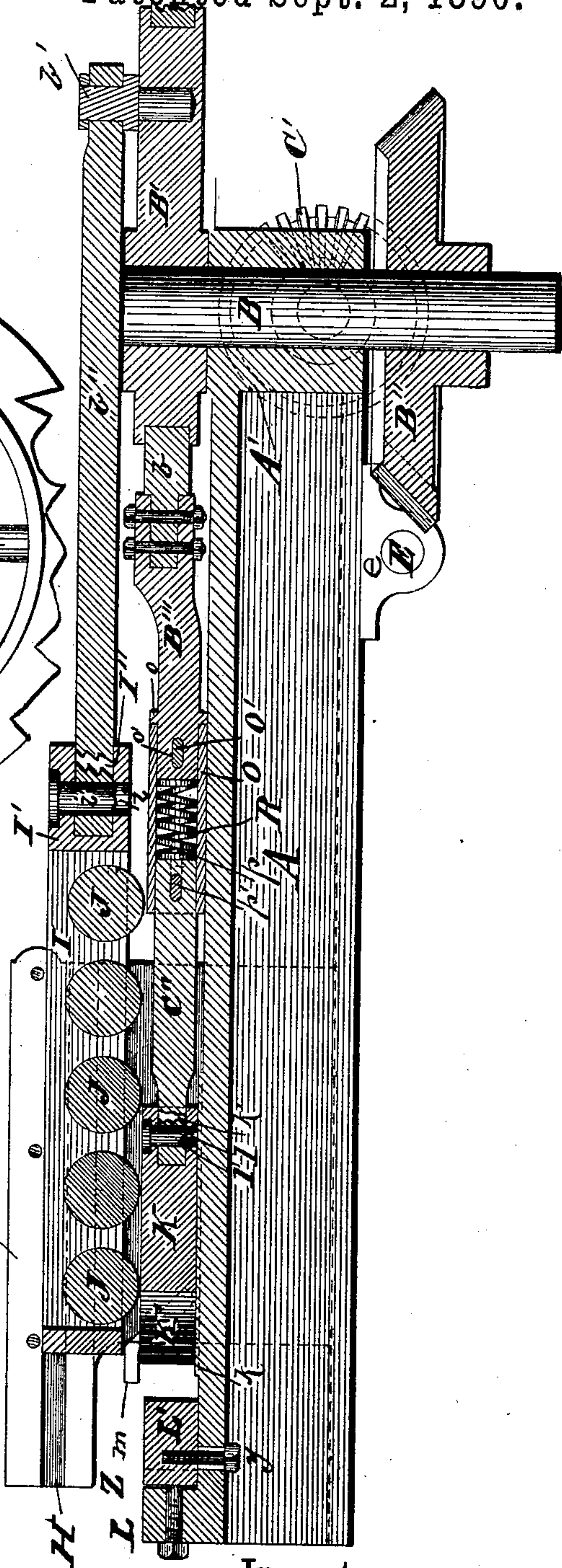
Inventor :

Geo J H Goehler
by *Michael J Ed Wm Stark*
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3 Sheets—Sheet. 2.

No. 435,494.

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Inventor :

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3 Sheets—Sheet 3.

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FIG. 4.

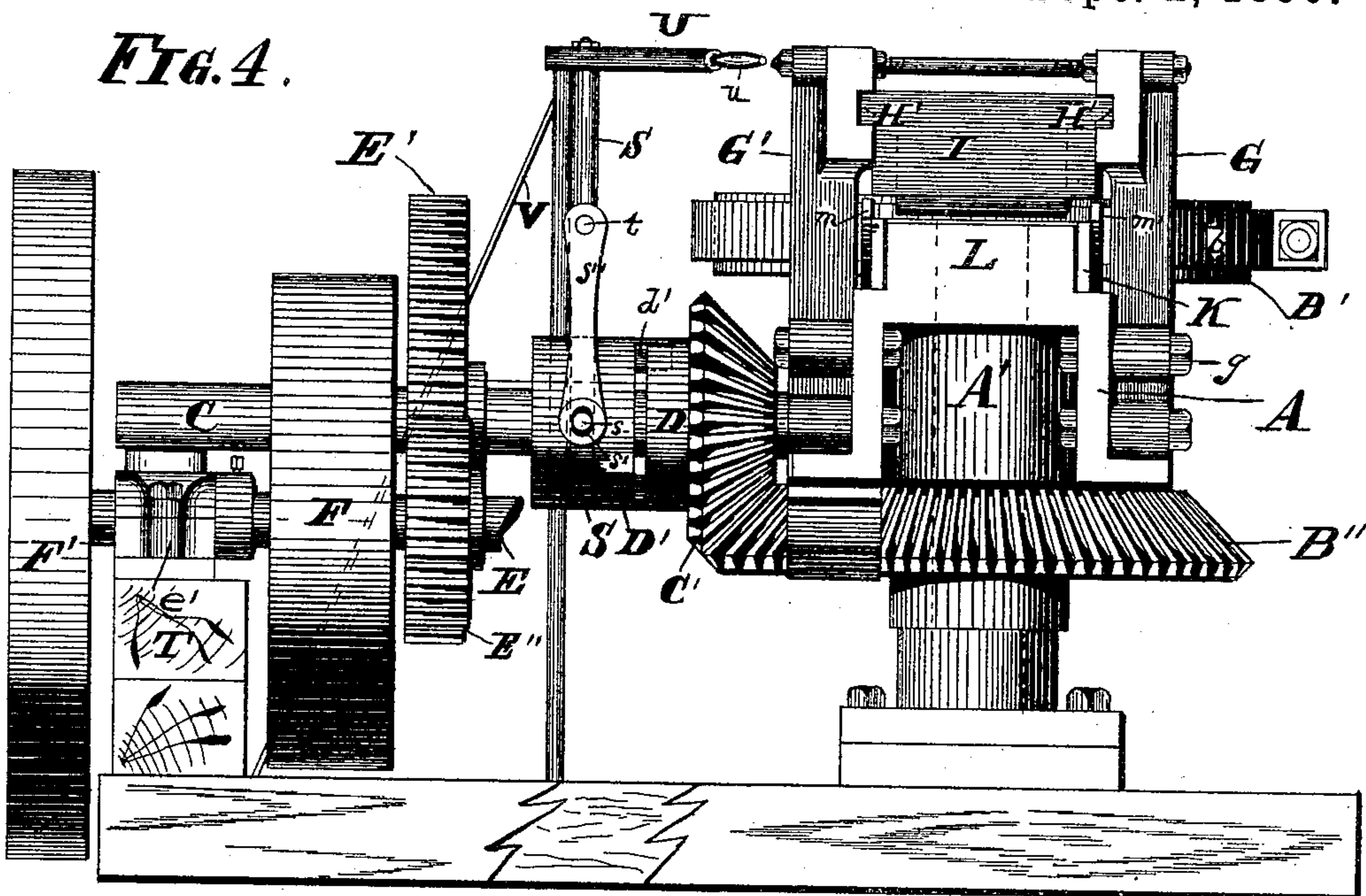
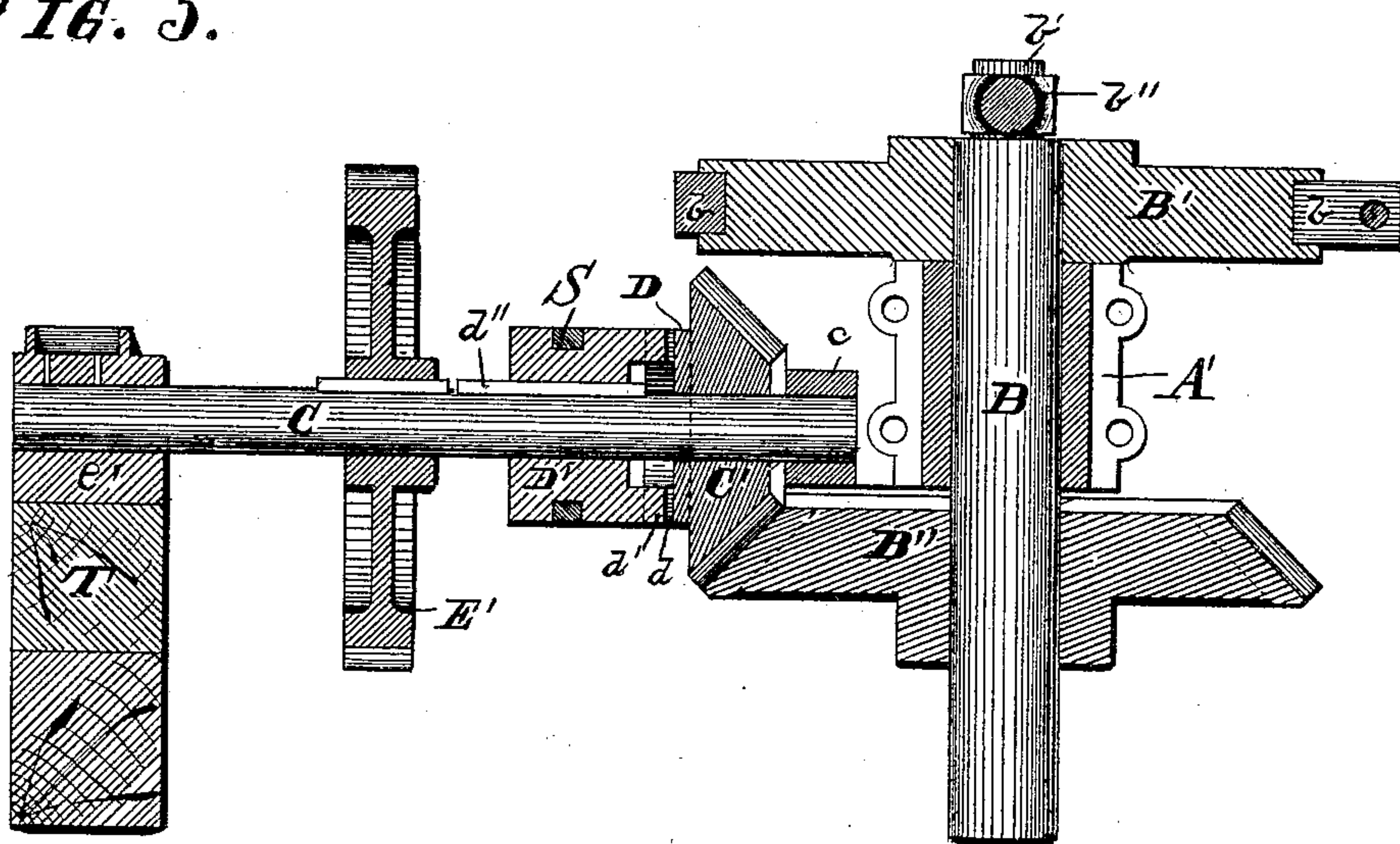


FIG. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE J. H. GOEHLER, OF BUFFALO, NEW YORK, ASSIGNOR TO THE
CARY SAFE COMPANY, LIMITED, OF SAME PLACE.

FORGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 435,494, dated September 2, 1890.

Application filed July 2, 1890. Serial No. 357,546. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. H. GOEHLER, of Buffalo, in the county of Erie and State of New York, have invented certain new and
5 useful Improvements in Metal-Forging Machines; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact
10 specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in machines for forging and
15 welding metal; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

20 In the drawings hereunto annexed, Figure 1 represents a plan view of my device. Fig. 2 represents a side elevation of the same; Fig. 3, a longitudinal sectional elevation in line X X of Fig. 1; Fig. 4, an end elevation
25 of my machine; Fig. 5, a transverse sectional elevation in line Y Y of Fig. 1.

Corresponding letters of reference indicate like parts in the several figures.

30 The object of my invention is the production of an efficient machine for bending and welding angle-iron safe-frames in one heat. To attain this result I construct my machine substantially as shown in the drawings, in which—

35 A represents the frame or bed of my apparatus. It is preferably of U-shaped cross-section to give strength and rigidity to the same. At one end of this bed is formed a vertical bearing A' for the reception of a
40 shaft B, which shaft is provided at its lower extremity with a bevel-gear B'', with which engages a bevel-pinion C', secured to a horizontal shaft C, which is journaled at one extremity in a bearing c on the bed A and the
45 other in a bearing c' fastened to the timber T. This bevel-pinion C' is provided on its back with a shoulder D, having two diametrically-opposite transverse recesses d for the reception of the projections d' of a loosely-fitting
50 collar D', which is provided with a recess in its interior, fitting the key or feather d'' upon

the shaft, whereby it may be moved laterally, but cannot be revolved independently of the same, thereby forming a "clutch," so called, to stop the machine.

55 Upon the shaft C hereinbefore referred to is provided a spur-wheel E', which is engaged by a pinion E'', secured to a shaft E, which shaft is journaled with one end in a bearing e on the bed, and with the opposite extremity
60 in a bearing e' on the timber T. This shaft is further provided with a driving-pulley F, for the reception of a suitable belt for driving the machine, as well as a fly or balance wheel F', for obvious reasons.

65 At the upper extremity of the shaft B before mentioned is secured an eccentric B' of proper dimensions, having the usual groove in its periphery for the reception of the eccentric-strap b, which eccentric is further provided with a crank-pin b, projecting from its
70 upper surface, thereby forming a disk-crank and eccentric combined. Over this crank-pin is placed the crank end of the connecting-rod b'', and to the eccentric-strap b is secured the eccentric-rod B'''. The crank-pin
75 b' is so placed upon the face of the eccentric that when the same is revolved both connecting-rod and eccentric-strap will move in the same direction, the crank-pin, however,
80 being given more throw than the eccentric, so as to give the carriage I a wider range of motion.

Near the opposite extremity of the bed A are fastened on opposite sides side frames or
85 guides G G', these frames being cut away at their forward lower extremities to form a throat Z, Figs. 2 and 3. On the inner faces of these frames, near the upper ends thereof, directly opposite each other, are provided
90 longitudinal grooves H, Figs. 3 and 4, running throughout the entire length of the frames, and into which fit guides H', Fig. 4, of the carriage I. This carriage is substantially
95 a rectangular frame, within which fit rollers J, journaled in the sides of the carriage at such a height that they just clear the top of a forming-carriage K, Fig. 3, located below the said carriage. The rear end of the
100 carriage I is closed by a cross-bar I', which is provided with a horizontal opening I'' for the reception of the head end of the connect-

ing-rod b'' , said cross-bar also having a transverse aperture i for the wrist-pin i' .

The forming-carriage K, before mentioned, reciprocates upon the upper surface of the bed A, which is planed to a plane surface to such an extent as is necessary, and is guided in a straight line by a rib k on the bed, and which fits in a groove in the lower surface of the said carriage. This carriage is provided at its rear extremity with a horizontal opening k' for the end C'' of the eccentric-rod B''' , there being provided in said opening a vertical aperture l , for the wrist-pin l' , passing vertically through the rod c'' and the carriage K, as seen in Fig. 2. The forward end of this carriage is provided with an angular incision corresponding in size with the forming-block L in the forward end of the bed A. (Illustrated in Fig. 1.) It is also provided on both sides with angle-bars $m m'$, extending beyond the front of the carriage and slightly higher than the upper surface thereof, the object of which being to form a guide for the metal to be bent, as hereinafter stated.

As seen in the drawings, the eccentric-rod consists of two pieces which are joined together by a yielding fastening M, which consists of a tubular socket O, fitting with one end over the extremity of the eccentric-rod B''' and abutting against a collar o thereon, both socket and eccentric-rod being provided with an oblong aperture o' for the reception of a key O' , whereby the parts are rigidly locked together. The opposite end of the socket fits over the end of the rod C'' , and both are provided with an oblong aperture p , the aperture in the socket, however, being considerably longer than the aperture in the end of the rod, a key p' is driven through the aperture in the socket and into the rod to prevent the said socket from being withdrawn from the rod. Within the socket and between the ends of the rods is placed a coiled spring R, whereby when an unusual pressure is brought to bear upon the carriage K the spring will be compressed.

Upon the forward end of the bed A is formed an upwardly-projecting boss or protuberance L, against which the forming-block L' rests, two tap-bolts $n n'$ being provided to adjust the block and to bring the same into proper position for operation. This block L' is prevented from lifting off from the bed by the bolts y , Fig. 3, screwed into the same from underneath the bed.

To enable me to start and stop the machine without shifting the belt, I form a groove d''' , Figs. 1, 4, and 5, in the periphery of the clutch-collar D, and into which fits an annular ring S, provided on diametrically-opposite sides with pivots s . Over this ring fits a fork-shaped lever S' , having in its arms S'' thereof oblong apertures s' , in which the pivots s fit. This lever is pivoted at t , and is provided at its upper extremity with a handle U, extending to the front of the machine, and pivoted at its rear end to a vertical brace V. It is evi-

dent that while the projections on the collar D' are out of engagement with the recesses d in the pinion, even if the shaft C is in motion, the pinion, and consequently the eccentric, will remain stationary. Should it be desired to set the machine in motion, the operator may, by means of the lever U, force the collar D' into engagement with the recesses, and thereby start the machine.

I may use instead of the present clutch mechanism one which will automatically stop at the end of each revolution until the same is again set in motion.

Safes as now manufactured are constructed of front and rear frames of rectangular shape, which are joined together at the corners by cross-pieces, and plates riveted to the cross-pieces and the frames so as to form a rectangular structure. These front and rear frames before mentioned are generally constructed of single pieces of L-shaped or angle iron and are provided with V-shaped notches at the points where the corners are to come. These frames are then heated and bent into rectangular form, the V-shaped notches enabling the frames to be bent into shape. The frames are now reheated and the overlapping portions of the notches at the corners are welded together. These frames, as now manufactured, require to be reheated at least twice to finish a corner. It is to these frames that my machine is especially designed for, and it has for its object the bending of a corner and compressing the portions of the metal at the corners together without notching the same, as well as to completely finish a corner at one heat.

To prepare the angle-iron for bending into shape, I cut the iron of the required length and heat the same at the point where the first corner will come to a welding-heat, and then place it against the forming-block L' . The machine is now set in motion, and the forming-carriage advancing causes the angle-bars $m m'$ to pass over the horizontal portion of the angle-iron to prevent the same from lifting. As the carriage advances, it bends the iron to the shape of the forming-block. The carriage, the iron, and the forming-block being in close contact before the eccentric has traveled its greatest distance causes the spring R in the fastening M to be compressed, and thereby exert a pressure upon the iron. During this time the carriage I has advanced, and the wheels J, rolling over the iron at the corner, compress the buckled portion caused by the bending of the iron (without notching the same) into proper shape. The carriages, returning to their original position, are stopped, and the frame, with one finished corner, is taken away to be replaced by one which had been heated during the time that the present one had been operated upon.

By the use of the present machine a great saving of time, labor, and expense is effected. While the blacksmith is welding or forming one angle-iron, his helper may attend to the

fire and heat the next iron for the smith. In this manner one heat, at least, is saved in finishing each corner, besides requiring much less time, because the machine can be kept constantly in motion, the blacksmith being, in some cases, able to keep two helpers busy to furnish him sufficient frames to form into shape.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. The combination, with the bed, of the frame on the end thereof, the forming-block fastened to said bed, the roller-carriage and rollers sliding in said frame over said block, the forming-carriage on said bed underneath said carriage, and means for giving a simultaneous reciprocating movement to said carriages, as set forth.

2. The combination, with the bed, of the frame on the end thereof, the roller-carriage sliding in said frame, the forming-carriage, the eccentric journaled in the opposite end of said bed, the wrist-pin on said eccentric, a connecting-rod connecting said wrist-pin and roller-carriage, and an eccentric strap and rod connecting said eccentric and forming-carriage, substantially as described.

3. The combination, with the bed, of the eccentric journaled in the end thereof, the eccentric-strap upon said eccentric, the forming-block secured to the opposite end of said bed, the forming-carriage, the eccentric-rod connecting said carriage and the said eccentric-strap, said rod being formed in two pieces and jointed together by a yielding fastening, and means for revolving said eccentric, substantially as described.

4. The combination, with the eccentric and strap, of a split eccentric-rod connected together by a socket M, having the apertures $o' p$, the keys $O' p'$, and the spring R, as set forth.

5. The combination, with the bed, of the frame on the forward end thereof, the block L', secured to the bed at its forward extremity, the eccentric journaled in the opposite extremity of the same, the wrist-pin on said eccentric, the carriage I, sliding in said frame and over said block L', the rollers J, journaled in said carriage, and the connecting-rod connecting said wrist-pin and carriage, substantially as described.

6. The combination, with the bed, of the shaft B, journaled in one end thereof, the bevel-gear B' at the lower end of said shaft, the bevel-pinion engaging said bevel-gear, the

shaft C, journaled in bearings $c c'$, the spur-gear upon said shaft, the pinion engaging said gear and fastened to the shaft E, journaled in bearings $e e'$, and the driving-pulley F', all as set forth and described.

7. The combination, with the bevel-pinion C', having the shoulder D and recesses d , of the shaft C, having the key d'' thereon, and the clutch-collar D', having the projections d'' , as set forth.

8. The combination, with the shaft C, of the clutch-collar D', having the groove d'' , the ring fitting in said groove, the pivots on said ring, the fork-shaped lever S', engaging said pivots and pivoted as described, the pivoted handle U, engaging said lever, and the vertical brace V, all as set forth and described.

9. In a welding-machine, a bed, a forming-block upon the same, forming devices to operate in conjunction with said forming-block, and welding or compressing devices for welding the portions to be operated upon on said forming-block, in a manner substantially as and for the purpose set forth.

10. The combination, with the bed, of a forming-block for the safe-frames secured to the same, forming devices for bending said frames into proper shape against said block and holding them thereon, and devices for welding or compressing the said frames together while so held upon said block, as set forth.

11. A bending and welding machine consisting, essentially, of a bed or frame, a forming-block for safe-frames upon said bed, yielding forming devices for bending said frames against said block and holding them against the same, and welding devices for welding the portions of the safe-frames while so held, substantially as described.

12. In a welding-machine, the combination, with the bed, of a forming-block for the safe-frames located thereon, forming devices for bending the frames against the block, and a welding device consisting of a carriage and rollers passing over the frames while upon said block and compressing the same together by rolling-pressure, substantially as described.

In testimony that I claim the foregoing as my invention I have hereto set my hand in the presence of two subscribing witnesses.

GEO. J. H. GOEHLER.

Attest:

S. L. CARY,

WM. O. STARK.