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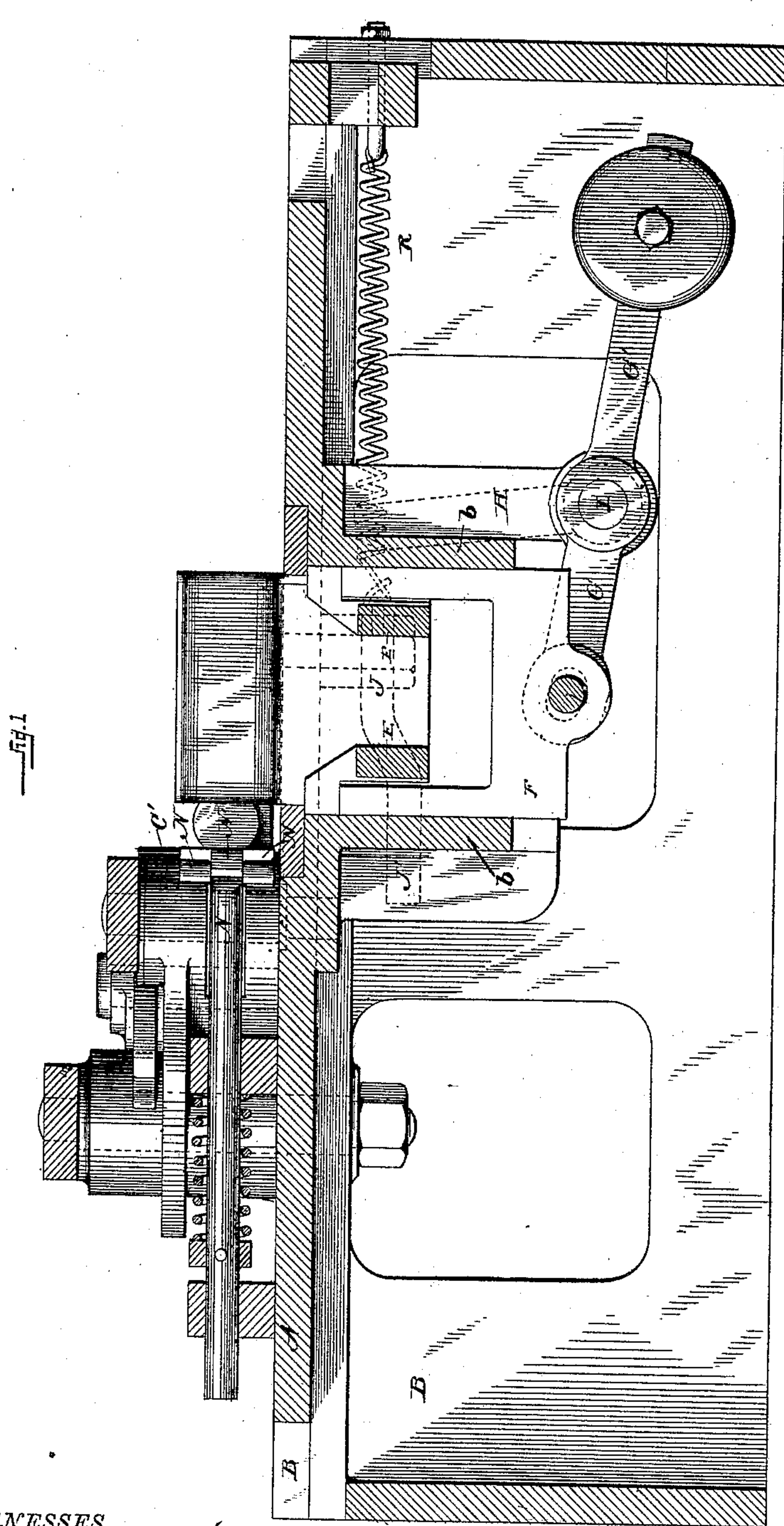
3 Sheets—Sheet 1.

A. O. DAVID.

MACHINE FOR MAKING SPRING WEDGES FOR RAILWAY CHAIRS.

No. 424,408.

Patented Mar. 25, 1890.



WITNESSES

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INVENTOR

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his Attorney

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3 Sheets—Sheet 2.

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Fig. 4.

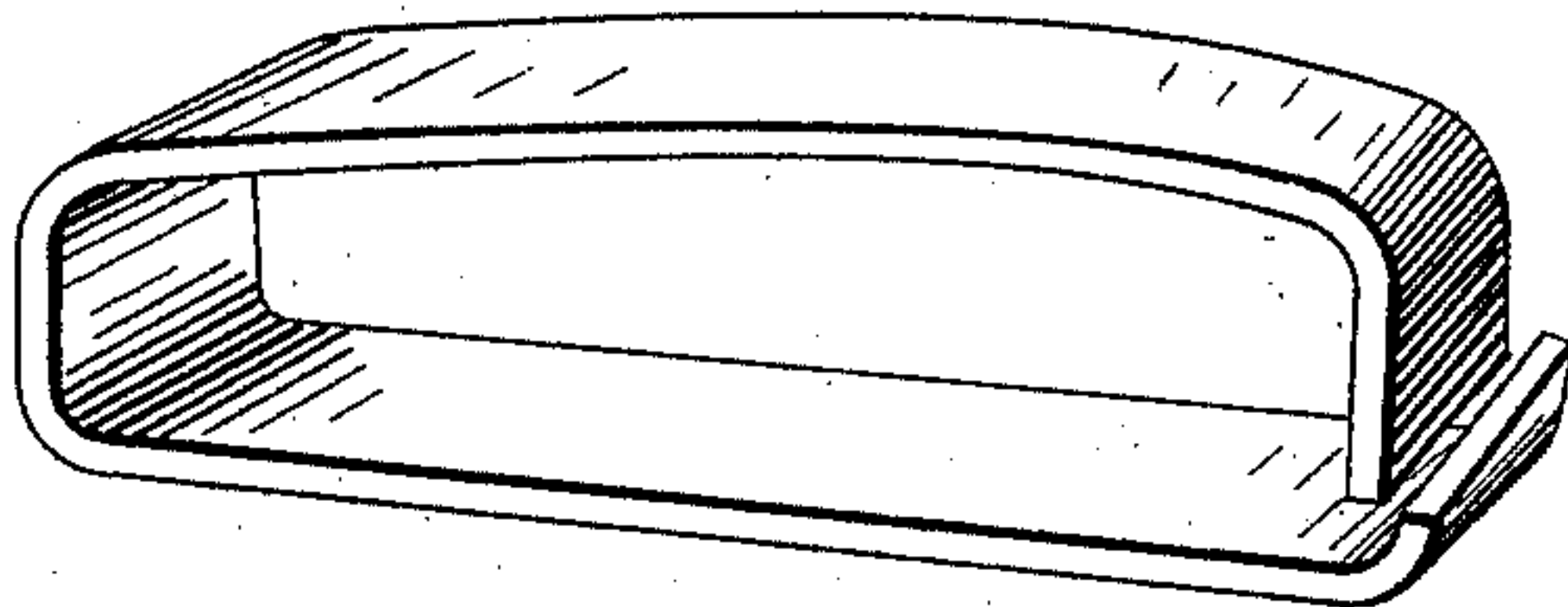
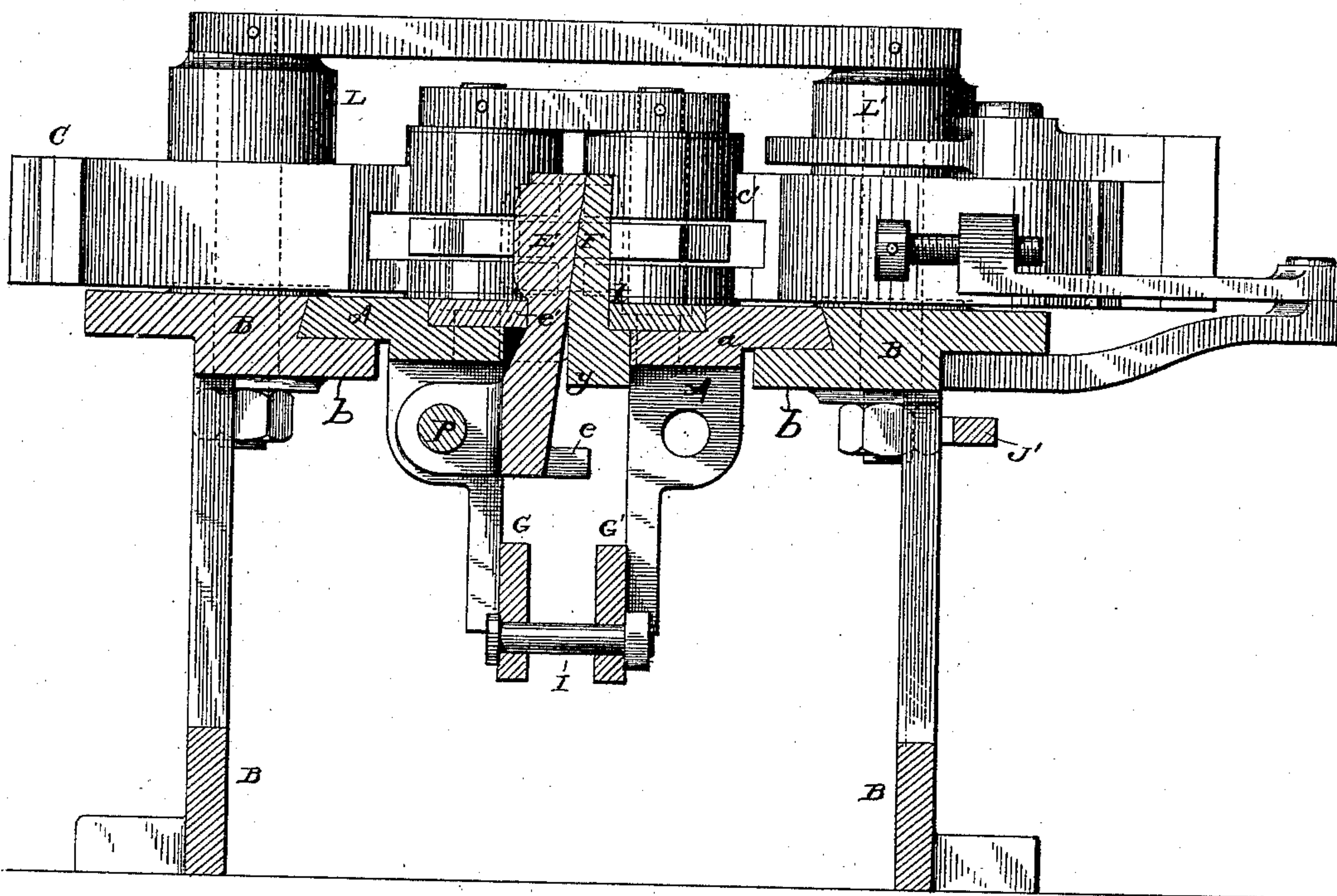


Fig. 2.



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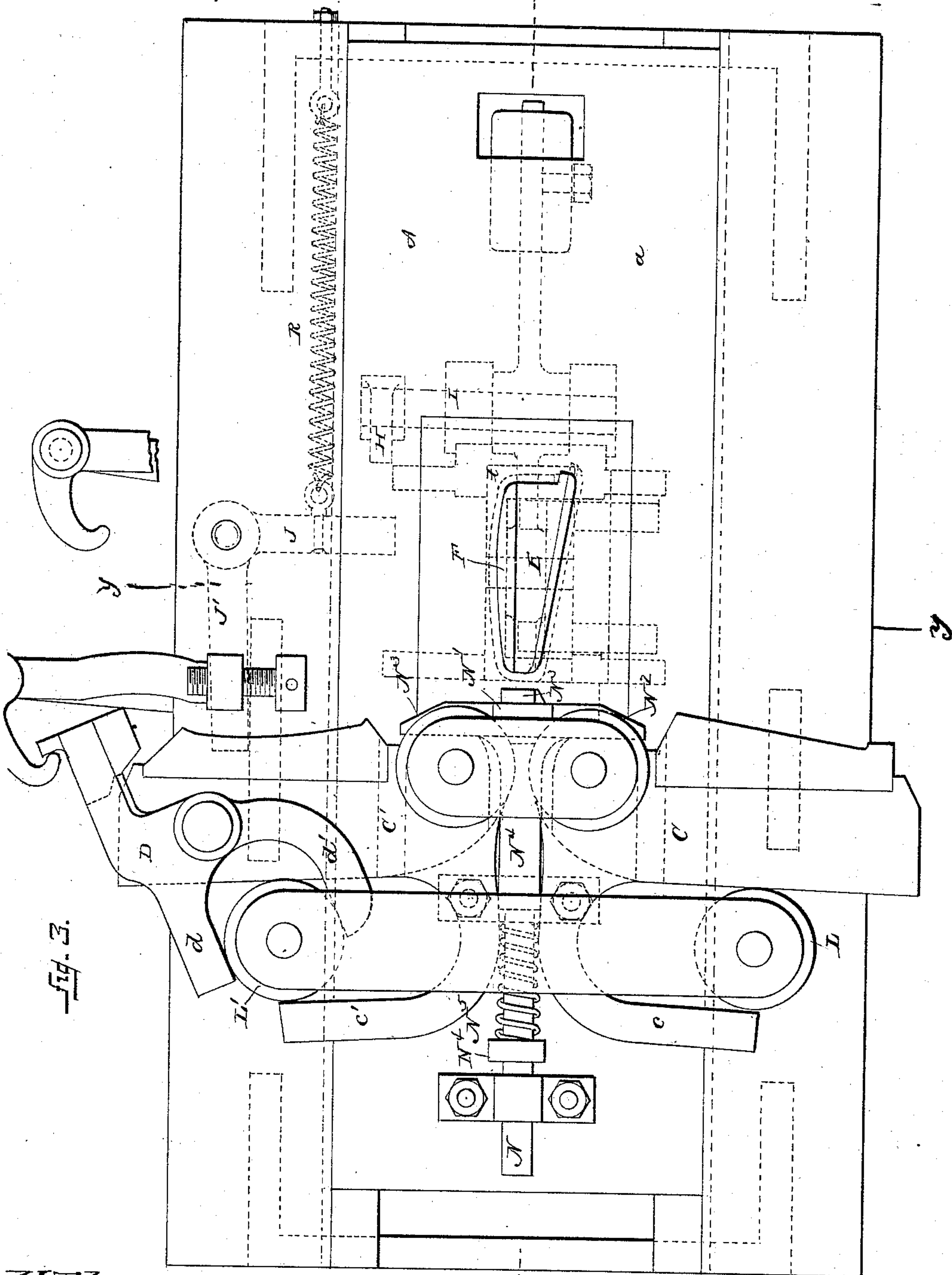
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Inventor:

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# UNITED STATES PATENT OFFICE.

AUGUSTIN ONÉSIME DAVID, OF PARIS, FRANCE, ASSIGNOR TO EUGENE MIANNAY, OF ELIZABETH, NEW JERSEY.

## MACHINE FOR MAKING SPRING-WEDGES FOR RAILWAY-CHAIRS.

SPECIFICATION forming part of Letters Patent No. 424,408, dated March 25, 1890.

Application filed April 3, 1886. Serial No. 197,660. (No model.) Patented in France August 1, 1884, No. 163,590.

*To all whom it may concern:*

Be it known that I, AUGUSTIN ONÉSIME DAVID, a citizen of France, residing at Paris, in the Republic of France, have invented certain new and useful Improvements in Machines for Making Spring-Wedges for Railway-Rail Chairs; and I 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 appertains to make and use the same.

This invention forms the subject-matter of Letters Patent in France, No. 163,590, granted to me August 1, 1884.

This invention relates to a machine the principal purpose of which is to form a wedge of spring metal adapted to lock railroad-rails in place in their chairs, said wedge having a peculiar configuration which will be more clearly described in connection with the drawings, my said improvement, however, not being limited in its use to the production of spring-wedges, nor of wedges, nor of other devices of the specific form to which the machine herein described is adapted.

The object of my invention is to produce a machine of greater simplicity of construction, greater accuracy in operation, and greater strength than machines for a similar purpose which have heretofore been constructed; and a further object of my invention is to produce a machine which shall form the completed product in a single operation—that is to say, in a single movement of the carriage.

To these ends my invention consists in a machine comprising a stationary frame and a movable carriage mounted thereon, a die mounted upon the moving carriage, a pivoted forming jaw or jaws upon the moving carriage, and a guide or guides upon the stationary frame acting upon the pivoted jaws to cause them to approach the die when moving with the carriage.

My invention further consists in the preferred construction of the die—viz., to form it of two or more parts separated on a vertical line, one of said parts being vertically movable to permit the withdrawal of the wedge or other product after it is completed.

My invention further consists in the gen-

eral and specific construction of the mechanism for operating the parts of the die.

My invention further consists in the general and specific construction of the forming-jaws and the actuating parts therefor.

My invention further consists in a machine of the general character above described, in which one or both of the forming-jaws are provided with a supplemental former pivoted thereto and operated at the same time to form certain parts of the wedge or other products not readily accessible in the use of the preferred construction of forming-jaws.

My invention further consists in the details of construction and combination of parts hereinafter more fully set forth.

In the drawings, Figure 1 is a longitudinal vertical section through the center of the machine. Fig. 2 is a transverse vertical section through the center of the forming-dies, viewed from the right of Fig. 1. Fig. 3 is a plan view of the machine, showing the blank placed in position to be operated upon and the parts of the machine in their normal position. Fig. 4 is an enlarged perspective view of the wedge for the production of which the machinery, as illustrated in the other figures, is principally intended.

B represents the frame of the machine, which is preferably of the form of a slotted table mounted upon suitable supports, as shown.

A is the moving carriage, upon which are mounted, in the manner hereinafter described, the die E F, the forming-jaws C C', and certain of their operating parts, hereinafter more fully described. The length of the carriage is less than the length of the slot in the table B, and it is connected in any of the usual manners with a suitable motive power to give it a forward and back movement.

Located upon the table B, on each side of the slot therein and in a suitable position for operation, are vertical standards l l', which may be connected by a cross-piece above the operating parts, as shown, and carry, respectively, guide-rollers L L'. The rollers L L' operate in a manner hereinafter shown, to cause the forming-jaws to close upon the die.



Toward the center of the carriage A is provided an opening of sufficient size to receive the die, consisting of the two parts E F, the construction and arrangement of which are preferably as follows: The part E where it projects above the opening is formed with three sides of the contour intended for the outer or springing part of the wedge, and having its fourth side inclined inward on a vertical line, and in its lower parts it is provided with an ear and pivoted upon the rod or bar *p*, extending longitudinally through the machine, as shown in Fig. 2. The part E is also provided with projections *e e'*, as shown, for the purpose presently disclosed. The part F is formed in its upper section with an outline to constitute, with the part E, the configuration intended for the completed wedge—that is to say, it has its inner surface inclined to coincide with the inner surface of the part E, and has its outer surface straight with or without rounded corners and with the projecting part shown at *y*, Fig. 3. The part F embraces the lower section of the part E, as shown in Fig. 2, slides in the ways Q Q', and is mounted upon a pivoted lever G, which is mounted upon a pivot I and carries a counter-weight P at its outer end. The parts are so arranged that in its uppermost position or when held up by the counterpoise of the weight P, the part F, by engaging the projection *e'* on the part E, shall hold the latter in its uppermost position, while when allowed to fall it shall, by engaging the projection *e* on the part E, cause the latter to turn upon its pivot *p*. The latter operation permits the ready removal of the wedge after it has been formed. The actuation of the lever G is effected through the medium of the arm H, mounted upon the pivot I and extending upward, as shown, and the pivoted L-shaped catch J J', mounted at *j* upon the stationary table B, the arm J' being limited in its inward movement by a stop on the frame, and the arm J being controlled by a tension-spring R. It will be seen that when in the forward movement of the carriage the arm H comes in contact with the arm J the latter is pushed aside against the resistance of the spring R and retracted when released from the pressure of the arm H, while on the return of the carriage the arm J', being prevented from inward movement by the stop, when the arm H comes in contact with the arm J the former is turned upon its pivot I and turns with it the lever G, pulling down the part F of the die, causing the latter to engage the projection *e* on the part E with the result above mentioned. When the arm H is released from the pressure, the action of the counterpoise P returns the die to its normal position.

Mounted centrally upon the carriage is a rod N, encircled by a compression-spring of ordinary construction in part of its length, and having at its outer end the arms N'' and N''', producing a T-head, and centrally be-

tween the two the plunger-head M'''. The rod N, near its T-head, is cut away to produce a recess for the inner ends of the forming-jaws C C', which, when turned upon their pivots, as presently shown, serve to press forward the rod N against the resistance of its spring, carrying with it the plunger-head M'.

The blank *s' y'*, Fig. 3, is held by suitable stops mounted upon the table B against the inner end of the die E F, and the movement of the rod N causes the plunger-head to impinge firmly upon the blank and hold it in position against the die.

Mounted upon the pivots *o o'* on the moving carriage are the jaws C C', having their rear faces substantially straight, and having upon their front faces formers M M' of the necessary shape to fit the dies E F. Curved arms *c c'* project from the rear part of the jaws and leave the U-shaped openings shown, which embrace the rollers L L' upon the frame of the machine. The rollers L L' being stationary while the jaws C C' move with the carriage A it is apparent that by this arrangement, when the carriage moves from right to left, Fig. 3, the jaws C C' are forced toward each other and toward the dies E F, pressing the interposed blank *s' y'* firmly against the latter, but with an even uniform movement and great power, which, while effecting the permanent bending of the blank, will not break the fiber or otherwise injure its elastic character. It is clear that the forming-face of the die C may be such as to produce the completed wedge shown in the dotted lines *s t u v x*, Fig. 3; but I have found that a supplemental former to act upon the part *t s* is desirable, and with a view to effecting the formation of this part through the use of a separate former at the same time that the wedge is otherwise completed I have devised the following construction:

Upon the jaw C', toward its outer edge, through the medium of a pivot *o''*, I mount the supplemental former D, having the forming-face M'' at its outer end, and the arms *d d'*, producing the U-shaped recess shown at the inner end, which embraces the roller L' on the frame of the machine. A projecting catch S', mounted on the bearing S, engages a lug *d''* on the former D to limit its backward movement. The bearing S is regulated by means of the screw-thread S'' and nuts S<sup>3</sup> S<sup>4</sup>, Fig. 3.

The operation of the former D is as follows: As the die and jaws C C' are carried forward until the latter by reason of contact with the rollers L L', are in a horizontal position, the former D is retracted and revolved through the joint operation of the jaw C' and of the roller L', so that the former D is substantially in a vertical position with the face M'' impinging firmly against the surface *t s* of the die, bending the blank around the die to the position shown in dotted lines. The operation of the former D, like that of the jaws C C', is gradual, uniform, and powerful. It will



be noted that during the operation of the jaws C C' they continue to press firmly on the rod N, holding the latter in position against the resistance of the spring. When the operation just described has been concluded, the carriage has reached the limit of its movement from right to left, Fig. 3, and thereupon returns. The arms *cc'* and *dd'* being engaged by the rollers L L' serve to turn the jaws C C', and former D to their normal position, thereby releasing the rod N and permitting the section of the spring to withdraw the same and release the head M'', from contact with the blank. The arm H coming in contact with the catch J causes the part F of the die to be drawn downward and the part E to turn on its pivot. The completed wedge being then loose can be readily removed. I have found that when the formers are withdrawn the resiliency of the metal in the wedge causes the latter to spread a very little, rendering the operation of removing it more easy. When it is put into use, the wedge may readily be closed up by the application of manual pressure.

Although I have in the above description confined myself closely to the specific construction and purpose of the machine illustrated in the drawings, it will be apparent that its use is not limited to the manufacture of spring-wedges, but can be applied to good effect in producing a great variety of articles whether of soft or spring metal, and I therefore do not limit myself to its application to this specific purpose.

As mentioned before, the supplemental former D may be omitted with all its operating parts. The arms *cc'*, the principal purpose of which is to cause the retraction of the jaws, may be replaced by any other common form of retracting device—such as a spring, or weight, or the like, or by a positive retractor of another form—without departing from the spirit of my invention. It is clear that either jaw C C' may be successfully used without the other, in which case the latter with its operating parts may be omitted.

The die, which I illustrate in two parts E F, may, in producing certain articles—such as a ring with an interior upward convergence—be formed in one piece F, actuated by the levers G H in the same form or an equivalent construction. Three parts may be employed in constructing the dies E F, the part F acting as a wedge between the other two, either or both being pivoted; and many other obvious changes, which will readily occur to the

mechanic, relating to the specific details and involving the substitution of other well-known mechanical agents may be introduced without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for producing spring-wedges or the like, the combination, with the frame provided with a guide-roller, of the sliding carriage, a die mounted on the carriage, and a forming-jaw mounted on the carriage and operating upon the die by contact with the guide-roller, substantially as described.

2. In a machine for making spring-wedges or the like, the combination, with the frame provided with the central slot, of guide-rollers mounted in the frame on each side of the slot, a sliding table moving in the slot of the frame, a die mounted upon the carriage, and forming-jaws pivotally mounted on the carriage on opposite sides thereof and caused to act upon the die by contact with the guide-rollers, substantially as described.

3. In a machine for making spring-wedges or the like, the combination, with the frame provided with guide-rollers on opposite sides thereof, of a sliding carriage mounted on the frame between the rollers, a die mounted on the carriage and provided with means for raising and lowering it during the operation of the machine, and forming-jaws pivoted upon the carriage and caused to act upon the die by contact with the guide-rollers, substantially as described.

4. In a machine for making spring-wedges or the like, the combination, with the frame, of a guide-roller mounted thereon, a sliding carriage, a die mounted on the sliding carriage, a forming-jaw pivoted on the sliding carriage and caused to act upon the die by contact with the guide-rollers, and a supplemental former pivoted on the forming-jaw and actuated by the latter and by contact with the guide-roller to operate upon the die, substantially as described.

5. In a machine for making spring-wedges or the like, the combination, with a forming-jaw and its operating mechanism, of a die comprising a vertically-sliding part and a horizontally-pivoted part, and projections thereon, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUSTIN ONÉSIME DAVID.

Witnesses:

ROBT. M. HOOPER,  
CH. G. THIRION.