

A. Kloman,

Making Bridge Irons,

N^o 55,674.

Patented June 19, 1866.

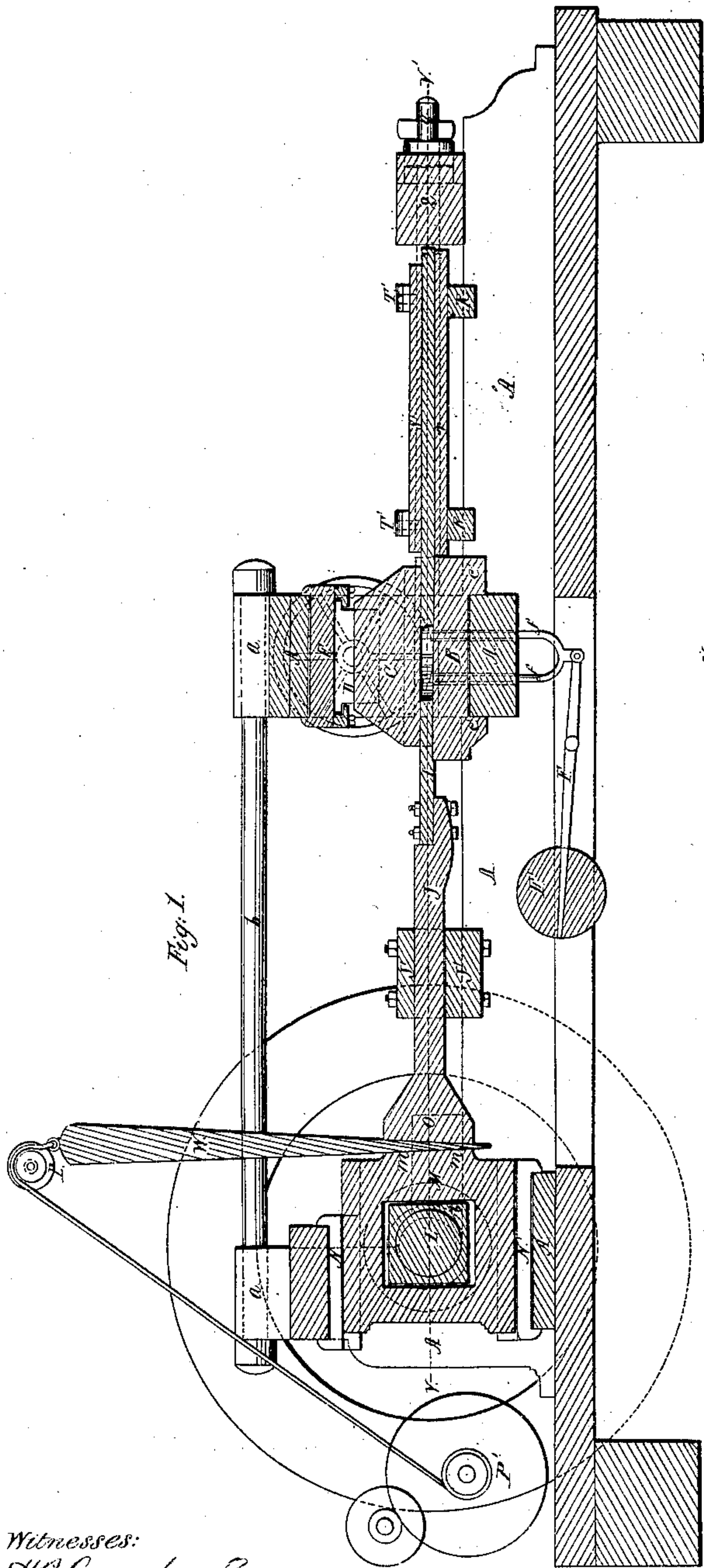


Fig. 1.

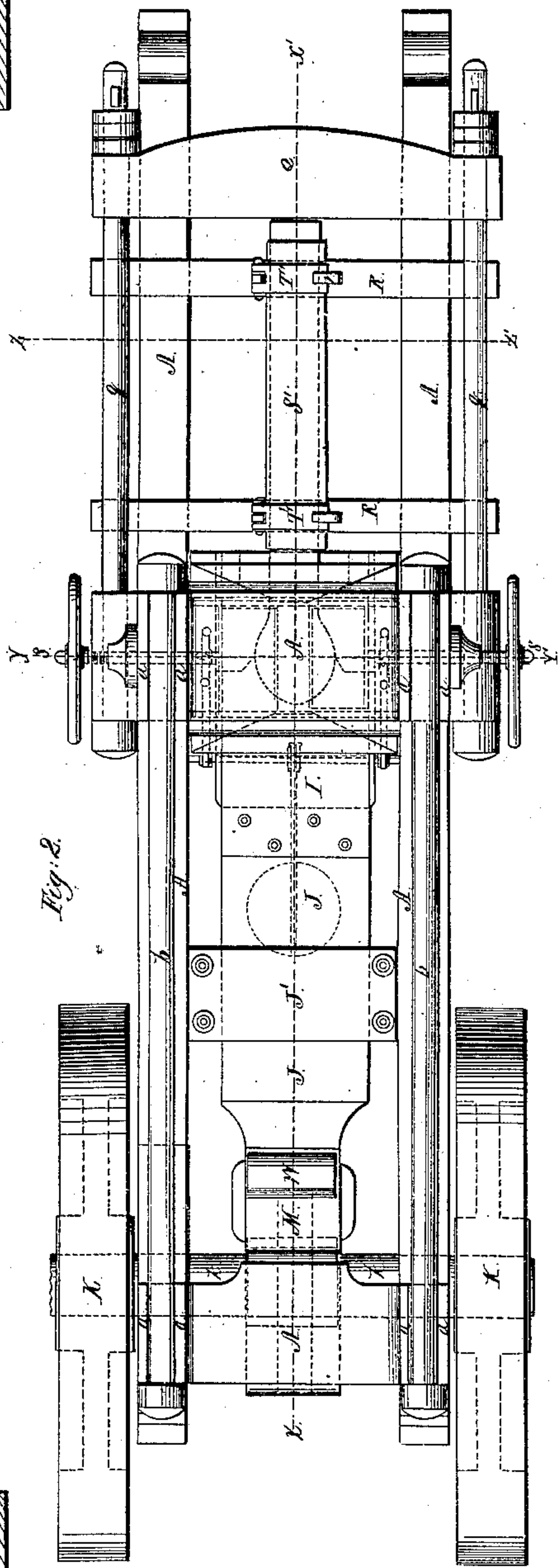


Fig. 2.

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Fig. 3.

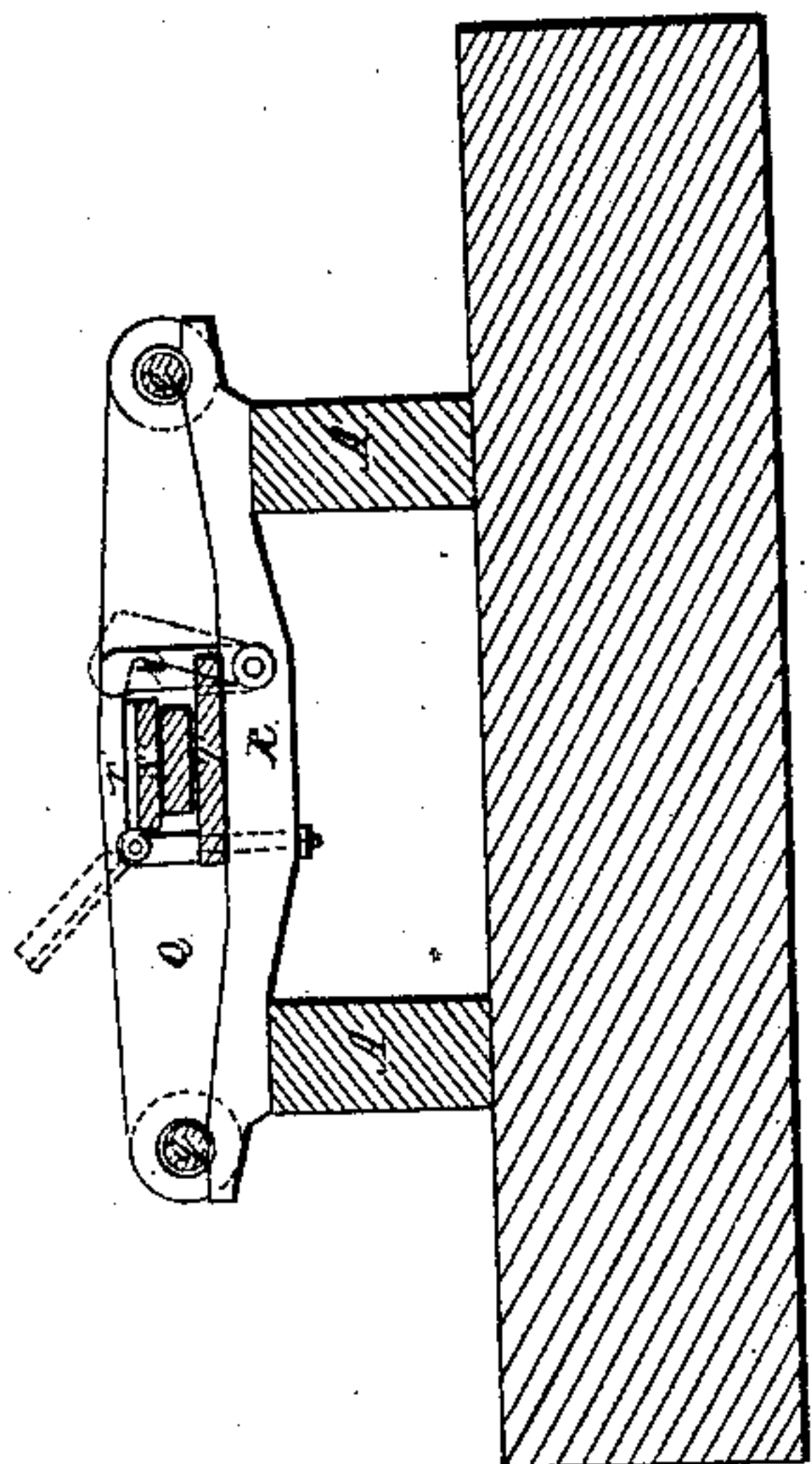


Fig. 4.

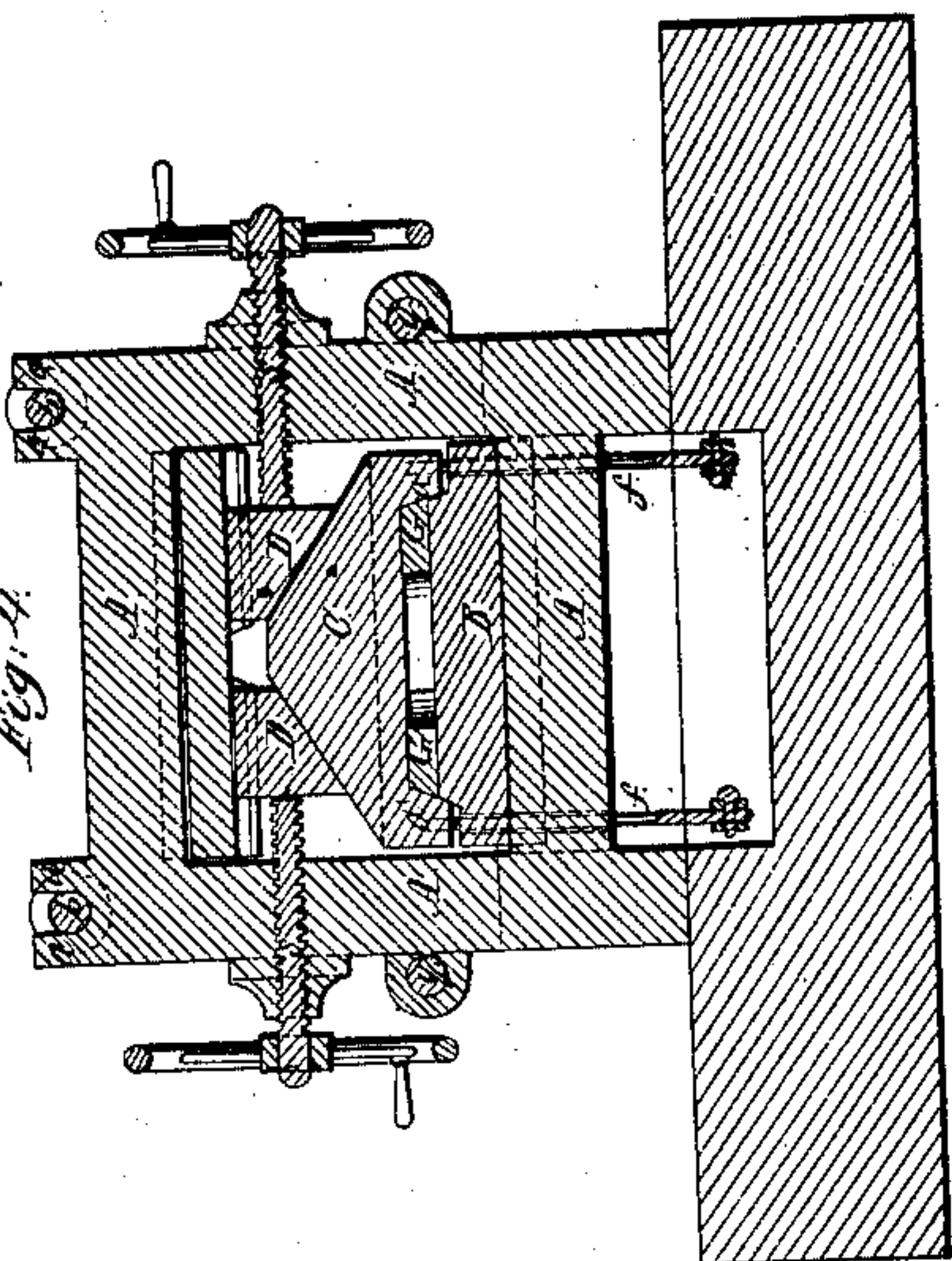
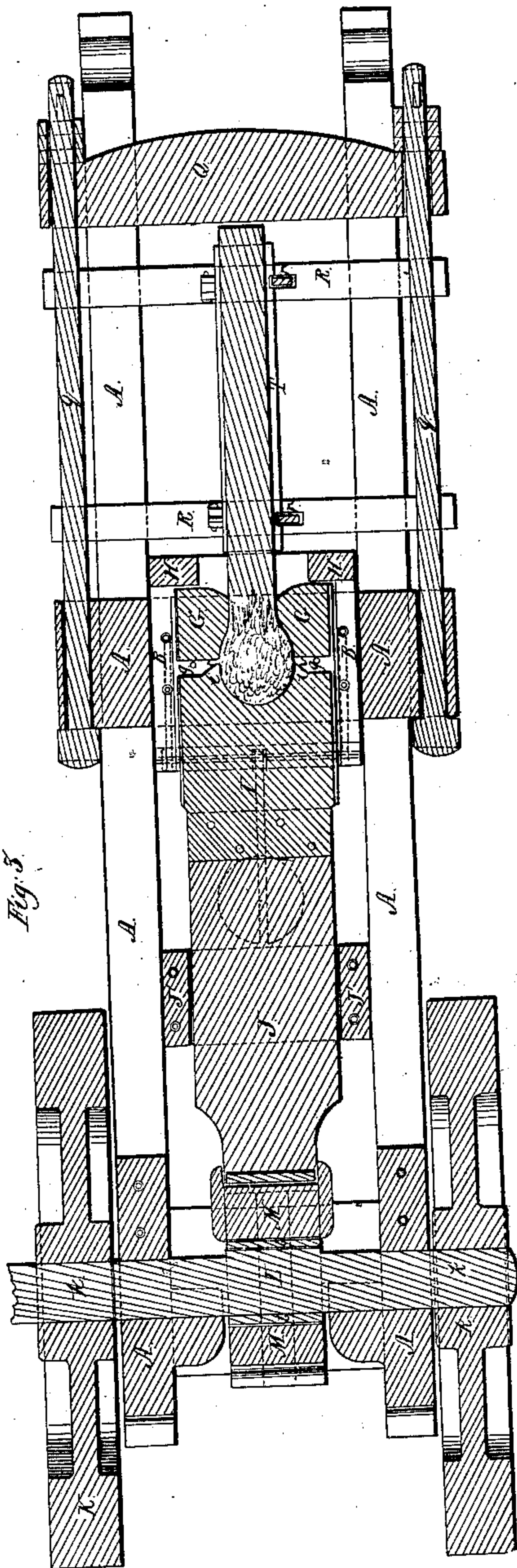


Fig. 5.



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UNITED STATES PATENT OFFICE.

ANDREW KLOMAN, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN UPSETTING-PRESSES.

Specification forming part of Letters Patent No. 55,674, dated June 19, 1866.

To all whom it may concern:

Be it known that I, ANDREW KLOMAN, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Upsetting-Press; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional view of the press, in elevation, through the line XX' of Fig. 2. Fig. 2 is a plan or top view of the same. Fig. 3 is a sectional view of the press, also in plan, through the line V V' of Fig. 1. Fig. 4 is a transverse sectional view of the press, in elevation, through the line Y Y' of Fig. 2, and Fig. 5 is a similar view of the same through the line Z Z' of Fig. 2.

Similar letters of reference indicate like parts in all the figures.

The subject of this invention is a press for upsetting wrought-iron while heated into different articles.

My press consists, first, of an efficient stationary mold to confine the heated iron when it is pressed, so that it will retain the counter-shape of said mold; secondly, of a movable plunger or former acted upon by an enormous pressure in a peculiar manner hereinafter described; thirdly, of a mechanical device by which the motion of the plunger or movable former is regulated so as to give different speed and power with the same motion of the driving-power, either automatically or by hand; and, fourthly, in an improved arrangement for holding in a secured manner the cold part of the iron to be worked, to prevent it from being thrown out of shape by the enormous strain put upon it while the process of upsetting is going on.

My process is intended for upsetting any kind of work; but for the purpose of illustration I have represented in my drawings and model the press which I have been using practically and extensively for the past eighteen months, with its tools adapted for upsetting the ends of flat iron bars, so as to prepare them for links in the construction of wrought-iron bridges.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is a cast-iron frame. *bb* are wrought-iron

bars fitted in slotted lugs *a a a a*, and serve the purpose of strengthening the frame A.

B is the bed or lower part of mold. This bed is made either of cast-iron, wrought-iron, or steel, and is held perfectly stationary in the frame A by being capped over said frame, the two projecting ribs *c' c'* keeping it from sliding. The top part of the bed B is in the present case perfectly flat.

C is the top piece of the mold or former, the under part of which is flat and perfectly smooth and has two projecting ledges, *a' a'*, the inner sides of which are slightly beveled, as seen in Fig. 4. The piece C can be made of wrought-iron, of cast-iron, or of steel; but I prefer it of wrought-iron. The top part of the piece C is formed of two plane surfaces, forming an angle with the under surface and sloping in opposite directions one from the other.

D D' are two wedges which have the same pitch as the slanty part of the top of the piece C, so that they will have a good bearing on it and on the piece E. These two wedges D D' are hung by projecting ledges sliding in grooved pieces *e e*, Figs. 1 and 5, bolted to the piece E.

S S are two screws with hand-wheels acting on the wedges D D' and pushing them forward, so that they will force the piece C downward and hold it firmly down.

F is a lever with counterpoise F' and forks *ff'f'*, which keep the head-piece C always up against the wedges D D'.

G G' Fig. 2, are the side pieces of the mold, made of cast-iron, wrought-iron, or steel. Their inner edges are shaped as required for the mold, and their outer edges are made to correspond to and fit nicely on the two projecting ledges *d d'* of the piece C, so that when the piece C is down the said ledges *d d'* will keep the pieces G G' from spreading apart.

g' g', Fig. 2, are two pins driven in holes in the bed-plate B to prevent the side pieces, G G', from sliding out of place when the heated iron is introduced in the mold, and H H' are lugs or projections of the piece B, against which the pieces G G' rest, and that prevent them from being pushed forward when the iron is being acted on by the press.

I is the plunger or movable part of the mold. It is flat, made of wrought-iron, cast-iron, or steel of the proper thickness and width, with its sides made to fit in the space left between

the ledges *d d* of the piece C, so that they will act as guides.

The end of the shover or plunger I is shaped so as to be the counterpart of the shape the heated iron is to be brought to; but it does not come quite close to the pieces G G', Fig. 2, leaving the two spaces *g'' g''*, allowing any excess of heated metal to find an outlet in them.

The former I has two points, *i i*, Fig. 3, which have for object the cutting-off of the excess of heated metal forced out in the spaces *g g*.

J is a bolt sliding in suitable guides J' J'', and to which the former I is bolted firmly.

K K are heavy fly-wheels fastened to a shaft, *k k*, and driven at a high speed by any suitable gearing and motive power.

At the center of the shaft *k* there is a cam or eccentric of a small throw—say from half an inch to one and a half inch. This cam L works in a sliding frame, *l*, and yoke M, so that at each revolution of the fly-wheels K K the yoke M will travel forward and then backward of the throw of the said cam in the slides NN', placed top and bottom to guide it in a straight direction.

The front of the yoke M, which is opposite to the bolt J, is so shaped, as is also the end of the bolt J, that it presents two flat surfaces, forming an angle one with the other, leaving a space between them larger at top than at the bottom.

W is a wedge, made of wrought-iron, cast-iron, or steel, suspended by a chain, rope, or other material, and hanging between the yoke M and the bolt J. The pitch of the wedge W is such as to correspond exactly and fit snugly to both surfaces of the yoke M and bolt J.

P is a pulley with suitable gearing for lowering or hoisting, either by hand or by steam power, the wedge W, so as to regulate perfectly the working of the press, and, as it were, feed the plunger I forward with more or less rapidity. This feeding can be done by hand or automatically by connecting the feed-gearing with the motive power.

Q is a butt to receive the end *p* of the heated bar and prevent it from being pushed out of the mold by the action of the press. This butt Q is strongly held to the body of the press by two or more bars, *q q*.

R R are two or more cross-pieces resting on the frame A, or on any suitable blocks, and held from rising by projecting at each end under the bars *q q*.

T is a plate resting on the cross-pieces R R, and serving as a bed for the cold part of the bar of iron to be worked. T' T' are hinges, to which is fastened a plate, S, so that when the said plate S is dropped on the bar to be worked and the hooks *r r'* are closed any pressure applied on the end of the heated bar will not throw it out of shape.

Operation: The screws SS' being unscrewed, the wedges D D' slide back, and the piece C, being free, will be lifted by the forks *f f f f*, pushed up by the counterpoise F. The side pieces, G G', are now free and can spread apart.

Thus the mold is open ready to receive the heated iron. The wedge W is hoisted to its highest position and the bolt J is pushed back until it touches the wedge W. The fly-wheels K K are now put in motion, and when they have a rapid rotary motion the press is ready to receive the heated bar. The bar of iron to be worked, properly heated at one end, is placed on the bed T so that the heated portion will be in the mold, the plate S is closed over it, and the hooks *r r* locked. The side pieces, G G', are brought close to the heated bar and the top piece, C, is forced downward, and there held firmly by the screws S S' being applied to the wedges D D'. The mold is thus closed on the bar. The wedge W is now allowed to descend, either gradually and regularly or all at once of its full pitch, either by hand or automatically by the press itself, and every time that the frame or yoke M retreats the wedge W, by dropping farther and farther, will move forward the bolt J and plunger I until it has reached the proper distance for finishing the work, which is regulated either by putting a block to receive the wedge W and stop its downward course or by stopping it by the rope, chain, &c., which suspends it. The mold is now open, as before, the bar removed, and the press again put in readiness for another operation, as before described.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The top piece, C, with its side projecting ledges, *d d*, and inclined top, when used in an upsetting-press, as described, and for the purpose specified.
2. The combination of the two wedges D D', screws S S', frame A, plate E, and piece C, arranged as specified, and for the purpose already described.
3. The combination of the two pieces G G' with the piece C and bed B, as described, and for the purpose specified.
4. The mode of forcing down and holding stationary the piece C and of preventing the pieces G G' from spreading apart at one and the same time by use and means of the screws S S', wedges D D', inclined top piece, C, plate E, and ledges *d d*.
5. The plunger I, having two points or projecting angles, *i i*, and notches *g' g'*, as described, and for the purpose already mentioned.
6. The combination of the fly-wheels K K, shaft *k k*, cam L, box *b*, yoke M, wedge W, and bolt J, for obtaining from a motive power comparatively small an enormous pressure and long throw in a short space of time, variable in intensity to any desired degree of power or speed, by the single motion of the wedge W.
7. The combination of the bars *q q*, piece Q, pieces R R, plates T and S, and pieces *r r* and T' T', as described, and for the purposes specified.

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Witnesses:

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