

(No Model.)

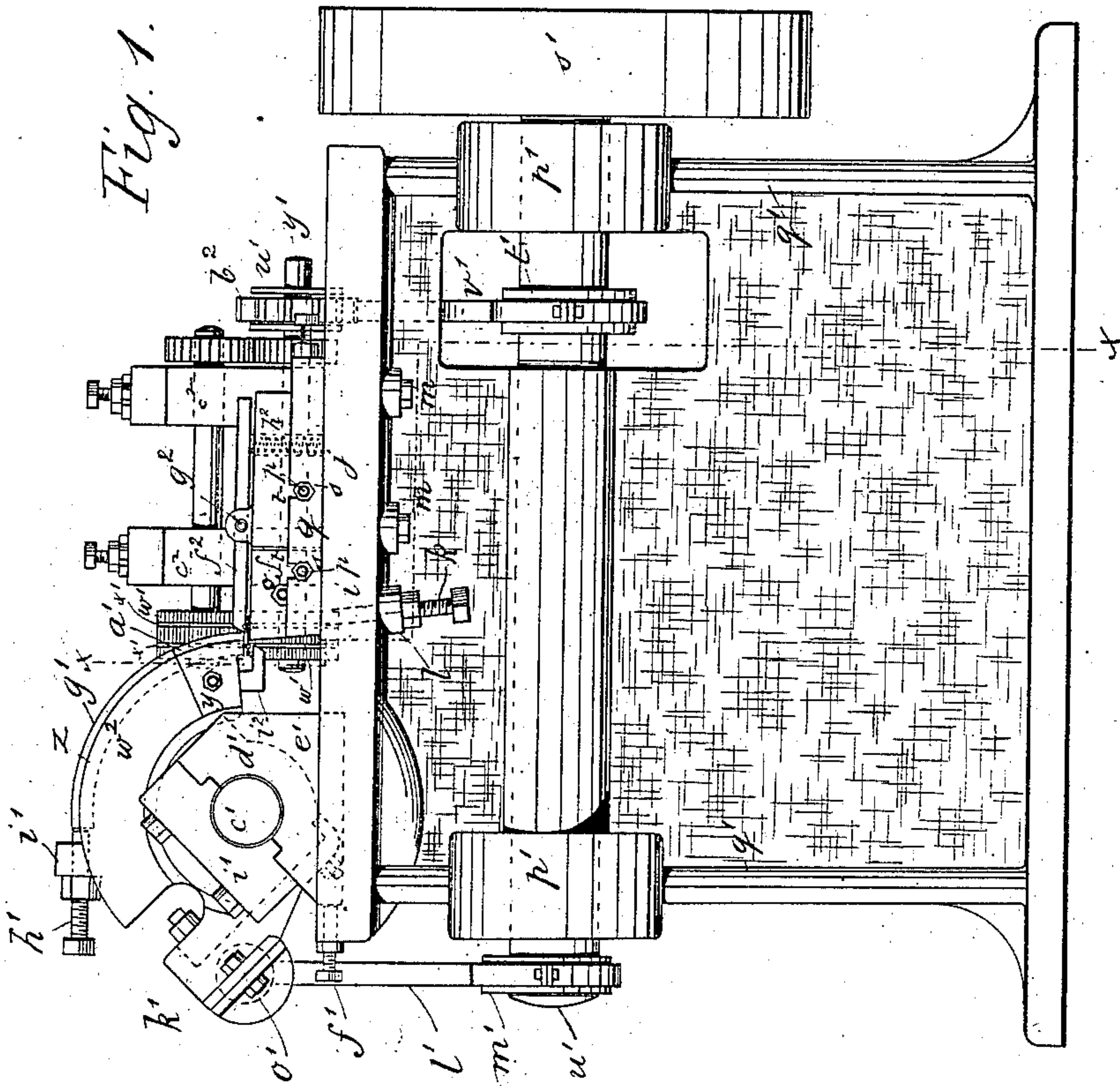
2 Sheets—Sheet 1.

H. L. ARNOLD.

MACHINE FOR BARBING METALLIC FENCING.

No. 294,105.

Patented Feb. 26, 1884.



WITNESSES:

Wm. H. Lowe
W. J. Morgan

INVENTOR

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ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

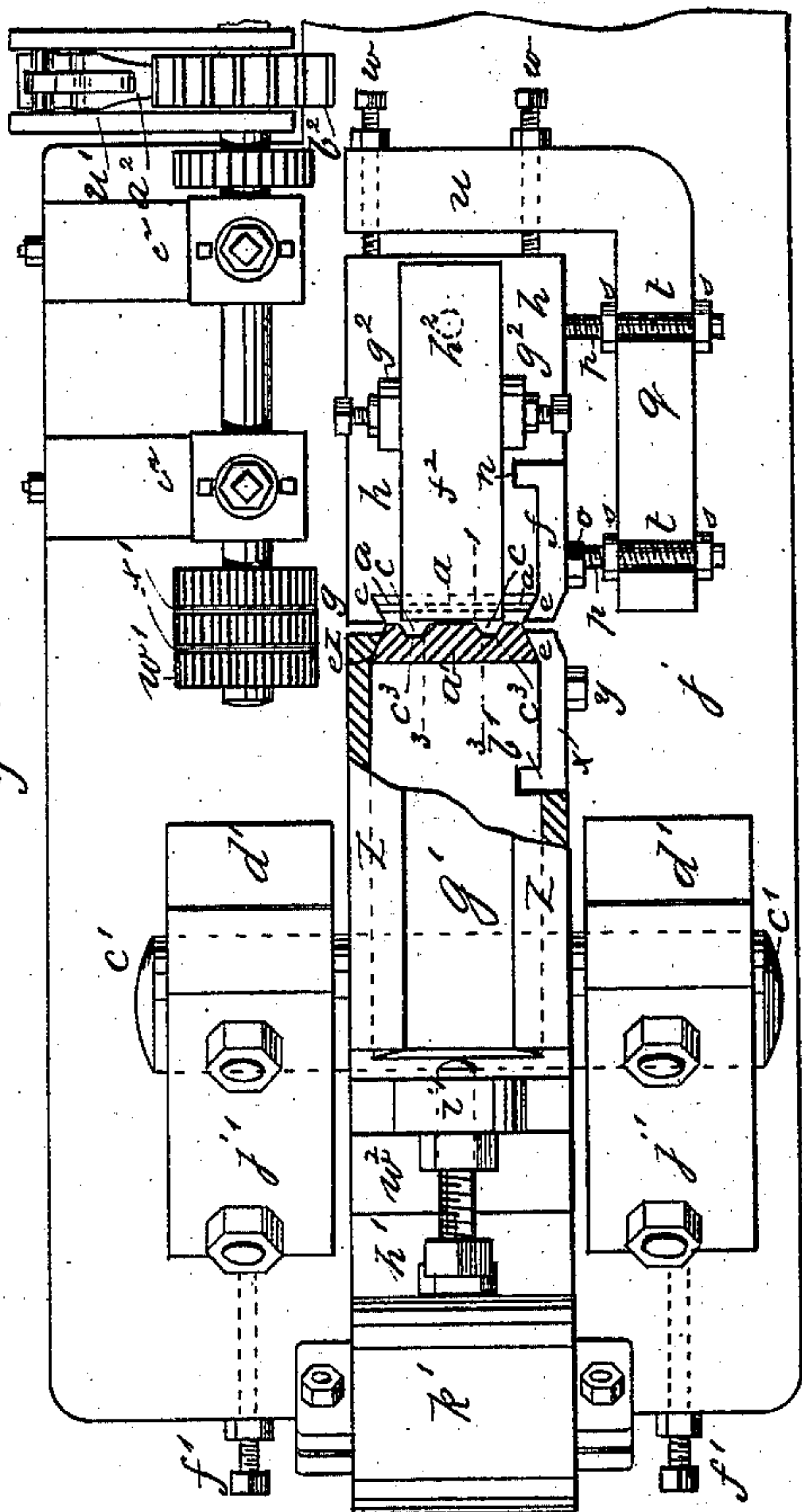


Fig. 4.

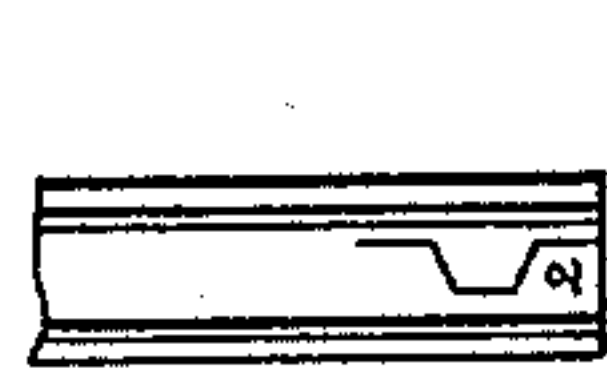
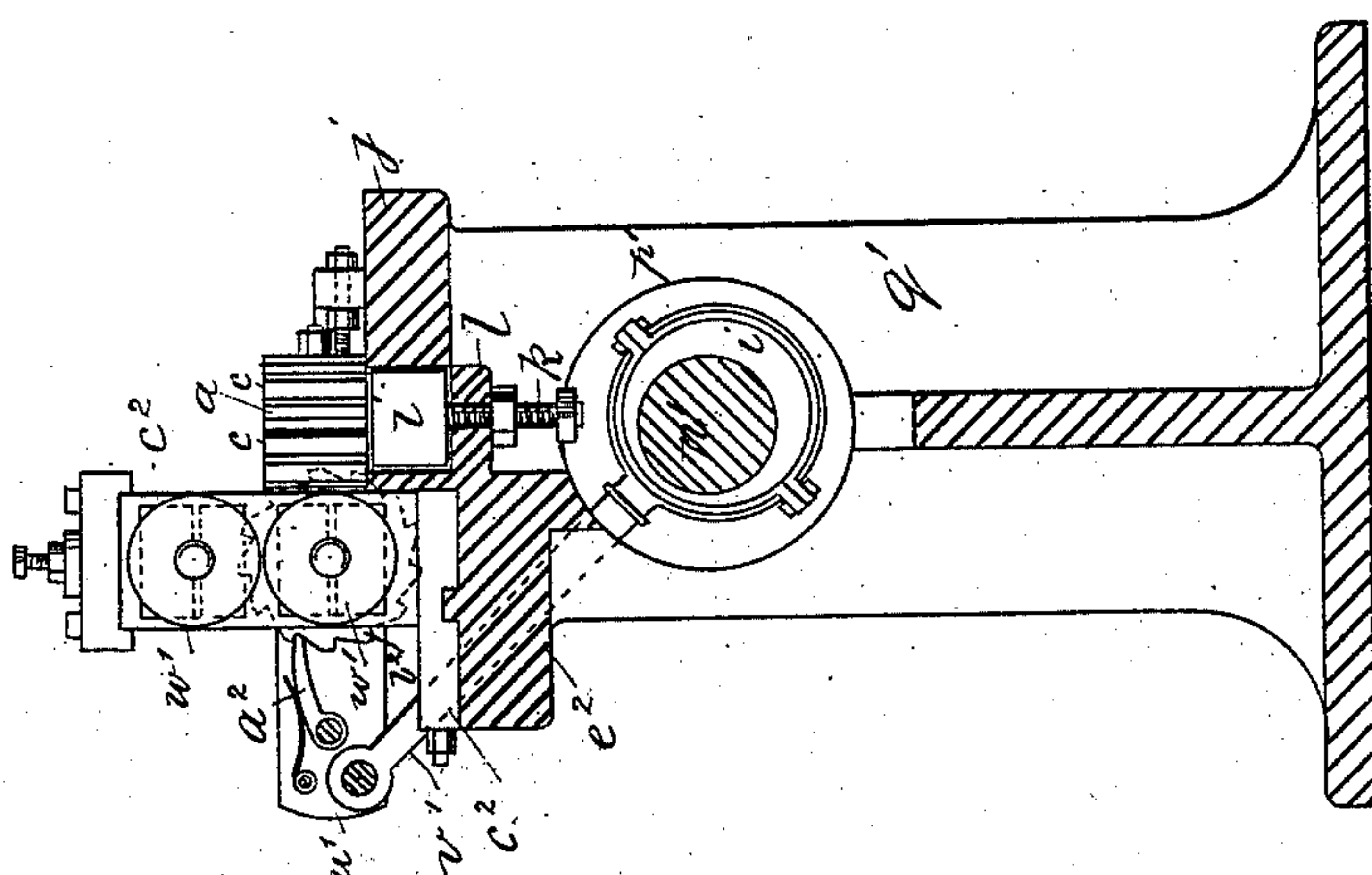


Fig. 5.



Fig. 6.

Fig. 2.



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HORACE L. ARNOLD, OF MIDDLETOWN, CONNECTICUT, ASSIGNOR TO THOMAS W. HALL.

MACHINE FOR BARBING METALLIC FENCING.

SPECIFICATION forming part of Letters Patent No. 294,105, dated February 26, 1884.

Application filed February 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, HORACE L. ARNOLD, a citizen of the United States, and a resident of Middletown, in the county of Middlesex and State of Connecticut, have invented new and useful Improvements in Machines for Barbing Metallic Fencing, of which the following is a specification.

My invention consists of an improved machine for separating and pointing the blank strips for barbed fencing, consisting of two parallel cores or ribs and a connecting-web—such as described in the Patent No. 234,936, dated November 30, 1880, the same being a double blank strip out of which two separate barbed rods or strips are to be produced by the separating and pointing operation. The distinctive feature of the dies employed is a duplex arrangement of shear-cutting dies, whereby the strip is first slit apart a portion of its length by a portion of the dies, and then by the next operation the waste parts to be removed between the points or barbs are cut away by another portion of the dies, each point or barb being subject to two operations, but the result being two barbs produced at each operation of the dies—that is, one barb on each rod.

The improved machine which is the subject of the present application for a patent consists of the contrivances of mechanism for working the movable die, holding and adjusting the bed-die, and feeding the blank strip; all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a transverse sectional elevation taken on line *xx* of Fig. 1. Fig. 3 is a plan view with a part broken out to show the form of the working-die. Fig. 4 is a transverse section of the blank strip to be separated and barbed. Fig. 5 is a plan view of a portion of the strip, showing the slit made by the first part of the dies. Fig. 6 is a plan view, showing the operation of the second part.

The bed-die, which is shown in top face view at *a*, Fig. 3, and in side view, Fig. 2, and having two vertical ribs, *c*, on its front side, is finished with bevel or dovetail edges *e*, by which it is clamped between the cheek-piece

f and the rib *g* of the die-block *h*, against the end of said die-block, so as to be firmly held in position with its lower end resting on the follower *i*, suitably fixed in a recess of the bed-plate *j*, with an adjusting-screw, *k*, in the boss *l* below, by which the bed-die is to be supported against the thrusts of the movable die, and be shifted up from time to time as the upper end wears and is ground away. The cheek-piece *f* and the rib *g* of the die-block *h*, between which the die is clamped, are beveled correspondingly to the bevel-edges of the die, making a dovetail groove to confine it and firmly draw its back against the end of the die-block, the cheek-piece being secured by a rib, *n*, at its back end fitting in a vertical groove in the side of the die-block, and being strongly bolted to the side of the die-block by the bolt *o*, tapped into the side of said block. The die-block *h*, to which the said bed-die is thus connected, is bolted down on the top of the bed-plate *j* by bolts *m*, extending up through said bed-plate from below, and screwing into the block, the holes in the bed-plate for said bolts being larger than the bolts, to allow the die-block to be shifted a little for setting it in proper relations with the working-die *a'*. Besides these holding-down bolts, the die-block *h* is provided with tap-bolts *p* in one of its sides, as a further means of securing it by the strong rib or flange *q* of the bed-plate through which said bolts pass, and to which they are secured by the clamp-nuts *s*, the said flange being grooved or slotted at *t*, from the top down, to make the holes for the bolts, in order that the die-block may be removed and replaced more readily than with bored holes. Behind the die-block *h* there is another flange or rib, *u*, of the bed-plate, in which set-screws *w* are located, to set up the die-block from time to time, as required. The working-die *a'*, of which an end or face view is shown in Fig. 3, has vertical grooves *c'* in its front face, corresponding to the ribs *c* of the die *a*, and it is similarly beveled at its edges *e* and secured to the rocker working-stock *w'* by a check-piece, *x*, bolted on the side of the rocker by bolt *y*, and having a beveled edge, which clamps the die against the dovetail rib *z*, and against the side

or face of the rocker, said check-piece having a rib, b' , which is secured in a groove in the side of the rocker. This die is curved from end to end or top to bottom, as seen in Fig. 1, to the radius of the rocker-stock w^2 , which is fitted with trunnions c' , that are arranged in bearings d' of a pillow-block, e' , located in a recess in the bed-plate j , and being adjustable toward the bed-die by set-screws f' . The dovetail rib z , against which the die a' is clamped, as shown in Fig. 3, is extended up along the circumference of the rocker w^2 , and a similar rib is made in extension of the cheek-piece x , for holding a similarly-curved follower, g' , which bears at its lower end on the upper end of die a' , and at its upper end is fitted with an adjusting-screw, h' , in a lug, i' , for setting it forward, from time to time, to adjust the die a' . These two ribs z are integral with the stock, which is turned out on its face between them, to form the groove for the follower; which is not required to be clamped as firmly as the die is. The follower and also the die a' are turned to fit the stock. The boxes d' of the pillow-block for the trunnions c' of the working-stock w^2 are inclined to an angle of about forty-five degrees to the plane of the bed-plate, and they face backward or away from the dies, so that the caps j' will draw the rocker w^2 and the working-die toward the bed-die as they wear away, in taking up the slack of the trunnions; but while this is advantageous, in that it favors the maintenance of the dies in working condition as far as it goes, the adjusting-block e' is also required for securing perfect accuracy; but its use is less frequently required with the said arrangement of the trunnion-bearings than without it, which thus saves some time and labor in adjusting the dies.

The rocker w^2 has an arm, k' , to which the rod l' of an eccentric, m' , on the driving-shaft n' is connected by a ball-and-socket joint, o' , for operating it and the working-die. This driving-shaft is arranged in bearings p' of the end plates, q' , of the supporting-frame for the bed-plate, so as to range along under the rocker w^2 and the die-block h and parallel with the axis of the feed-rollers by which the blank strips are to be fed to the dies with the driving-pulley s' on the opposite end, and having an eccentric, t' , between its bearings, that works the ratchet-lever u' by its connecting-rod r' , for working the feed-rolls w' , the said ratchet-lever being pivoted on the shaft y' of the lower feed-roll, and working it intermittingly by a pawl, a^2 , and ratchet-wheel b^2 . The feed-rolls have grooves x' for the ribs of the blank strips to be cut. The feed-rolls are mounted in bearings c^2 , which stand on a depressed portion, e^2 , of the bed-plate at the front side of the dies, the rolls being parallel to the driving-shaft, which being so arranged with relation to them, and also with the rocker w^2 , as described, enables them to be geared with it in the simplest manner.

In the use of these dies it is important to hold the strips down on the bed-die, so as not

to be tilted up by the working-die when it descends, and also to prevent said die from thrusting the strips up when it rises, as only half the breadth of the strips is supported by the bed-die. I have therefore provided a plate or bar, f^2 , above the bed-die, to project over it as far as the working-die will allow, the under side being grooved like the face of the bed-die for the rib of the strip, said plate being attached to the bed-die, preferably by being pivoted at q^2 to ears of the die-block with a strong spring, h^2 , in a recess of the die-block under the back end of the guard which presses the front end down on the strips, which will thus be held by a slightly-yielding guard that will accommodate itself to any variations in the size of the strips, if desired; but when the strips are accurately sized, the yielding contrivance will not be required, and to lift up that part of the strip that is pressed down in the grooves of the bed-die by the working-die and raise it flush with the surface of the bed-die, to enable the strip to be fed along, a hook-shaped stripper, i^2 , is fixed on the lower end of the working-stock, said hook projecting as much below the end of the stock as the latter rises above the bed-die, so that it will lift the strip to the surface of the bed-die when the stock rises to the highest point, and will not rise any higher nor interfere with the feeding of the strip along the dies.

The blank strip to be separated and barbed, and consisting of the parallel ribs j^2 , intermediate web, k^2 , and outer webs, l^2 , is first fed in between the dies to the point 1, or thereabout, Fig. 3, by which it is then slitted along the line 2, Fig. 5, by the first part of the dies; then it is fed along, prior to the next operation of the dies, a distance equal that from 3 to 3, Fig. 3, and is then cut along the dotted line 4, Fig. 6, by the second part of the dies, and again slitted by the first part, extending the line 2, as in Fig. 6. By the operation of the second part of the dies, the blanks 5, partly cut by the first part of the dies, are finally cut entirely away, leaving barb 6 complete. When the strip is again shifted along, the blanks 7 will be cut away, leaving barbs 8 complete, and for each subsequent operation two barbs will be completed, one on each separate rod j^2 . The ribs and grooves of the dies are located the same distance apart the barbs are to be when formed. The said ribs and grooves are as much wider than the barbs as the width of the waste material to be cut away between the barbs of the two rods before they are separated. The distance from outside to outside of the ribs and grooves in the direction the strip moves is double the distance from barb to barb on the single rods, and the strips feed half said distance at each operation, whereby the strip is separated by cutting it along two different lines, one of which is cut by the first portion of the dies and the other by the second portion, said dies being of like form and proportions each side of their transverse center.

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

1. The combination, in a barbing-machine, of a bed-die, *a*, having two projecting ribs in its side, a movable die, *a'*, having two grooves in its side corresponding to the ribs of die *a*, mechanism for working the movable die, and mechanism for feeding the blank strips, said ribs and grooves having bevel sides to produce the required taper of the barbs, and being located the same distance apart the barbs are to be, also being as much wider than the barbs to be formed as the width of the waste material to be cut away between the barbs, and said feed mechanism being adapted to feed the blanks intermittingly half the length of the dies from outside to outside of the ribs and grooves at each operation, substantially as described.

2. In a barbing-machine, the combination of mechanism consisting of bed-die *a*, working-die *a'*, rocker die-stock *w*², feed-rolls *w'*, and a driving-shaft, *n'*, said driving-shaft being arranged with relation to said die-stock and feed-rolls and connected directly to said die-stock by eccentric *m'* and rod *l'*, and to the feed-rolls by the eccentric *t'*, rod *v'*, and ratchet *u'* *a*², substantially as described.

3. The rocker die-stock *w*², having a turned and grooved face for the die *a'* and follower *g'*, the cheek-piece *x*, for clamping the die, and the adjusting-screw *h'*, substantially as described.

4. The rocker die-stock *w*², having pivot-trunnions *c'*, mounted in inclined boxes *d' j'*, by which the taking up of the slack of the

journals also takes up the slack of the dies, substantially as described.

5. The rocker die-stock *w*², having pivot-trunnions *c'*, mounted in inclined boxes *d' j'*, by which the taking up of the slack of the journals also takes up the slack of the dies, in combination with the pillow-block *e'*, adjustable toward the stationary die, substantially as described.

6. The combination of the die-block *h*, bed-die *a*, cheek-piece *f*, follower *i*, and adjusting-screw *k*, substantially as described.

7. The combination, with the dies *a* and *a'*, in which the blank strip is supported in part of its breadth only by the bed-die, of a guard, *f*², attached to the die-block *h*², and projecting over the strip to or near the limit of the working-die, substantially as described.

8. The combination, with the dies *a* and *a'*, in which the blank strip is supported in part of its breadth only by the bed-die, of a guard, *f*², attached to the die-block *h*², and projecting over the strip to or near the limit of the working-die, said guard having a groove in the lower face of its projecting part for the rib *j*² on the strip to be cut, substantially as described.

9. The combination, with the die-block *h*² and dies *a a'*, of the presser-guard *f*² and spring *h*², said presser being pivoted to the die-block, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HORACE L. ARNOLD.

Witnesses:

SAML. L. WARNER,
S. A. ROBINSON.