

C. H. Field, Engraving Machine.

N^o 17,146.

Patented Apr. 28, 1857.

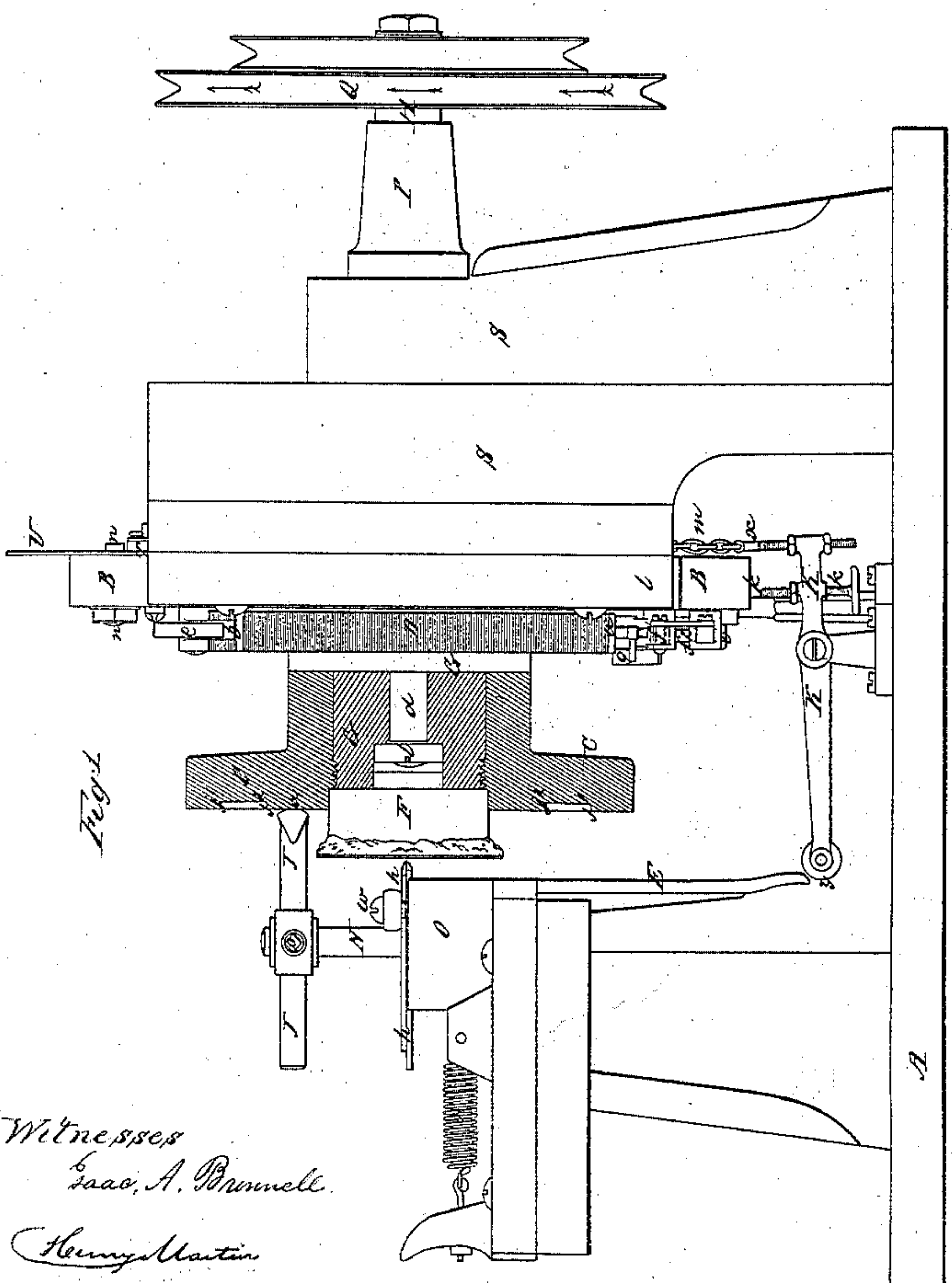
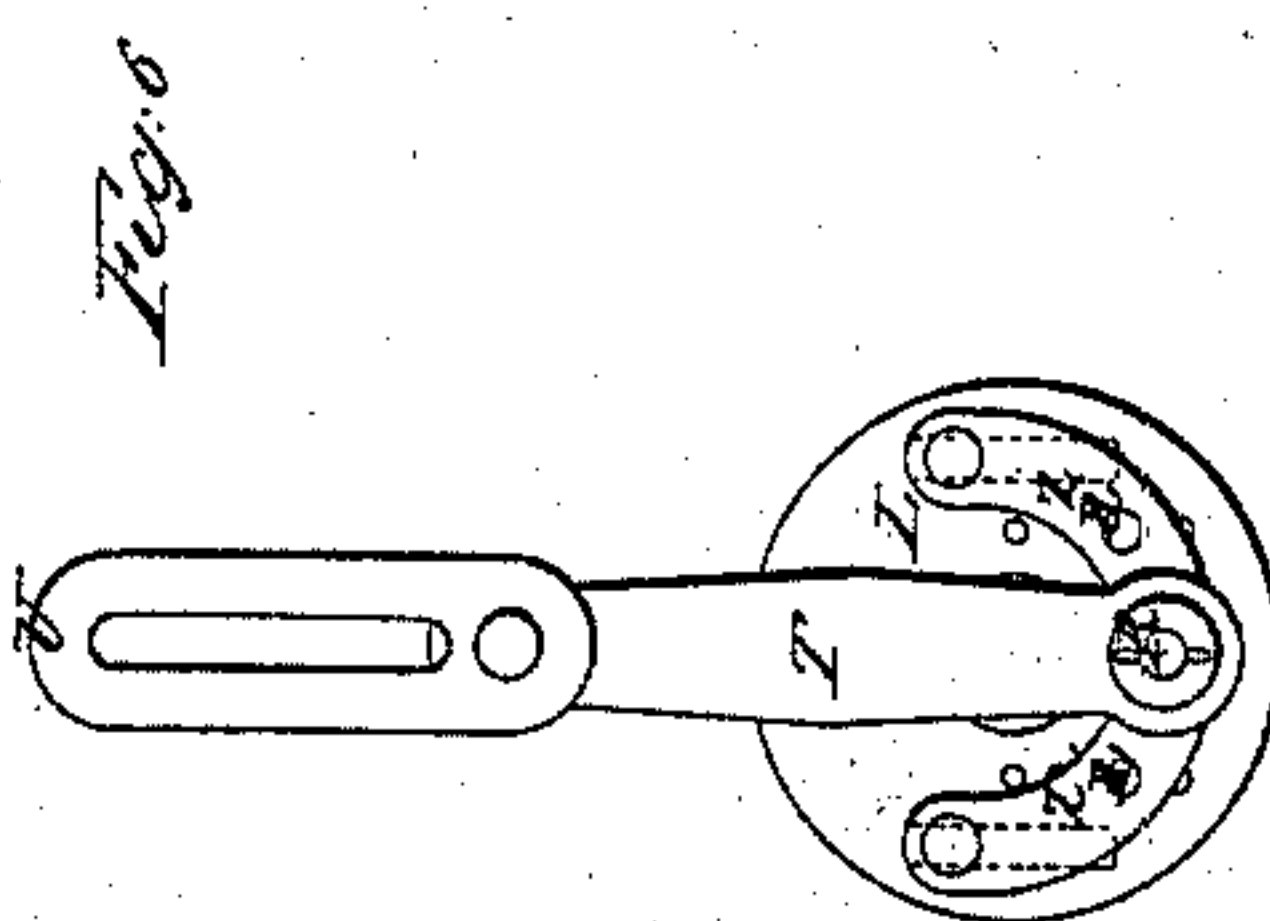
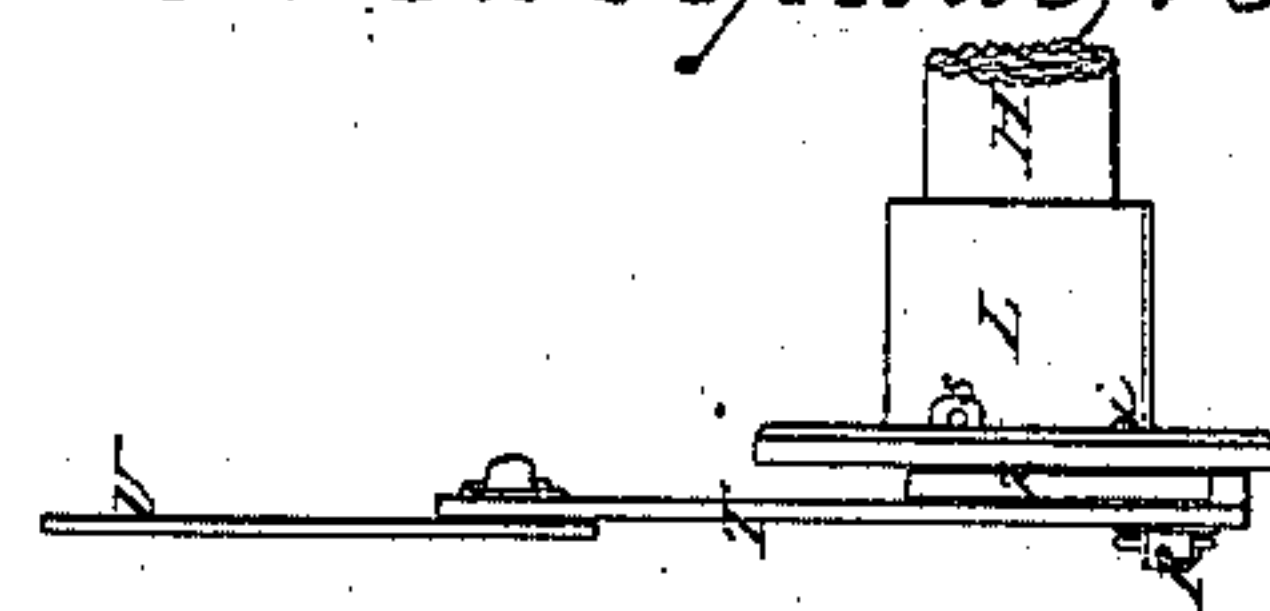
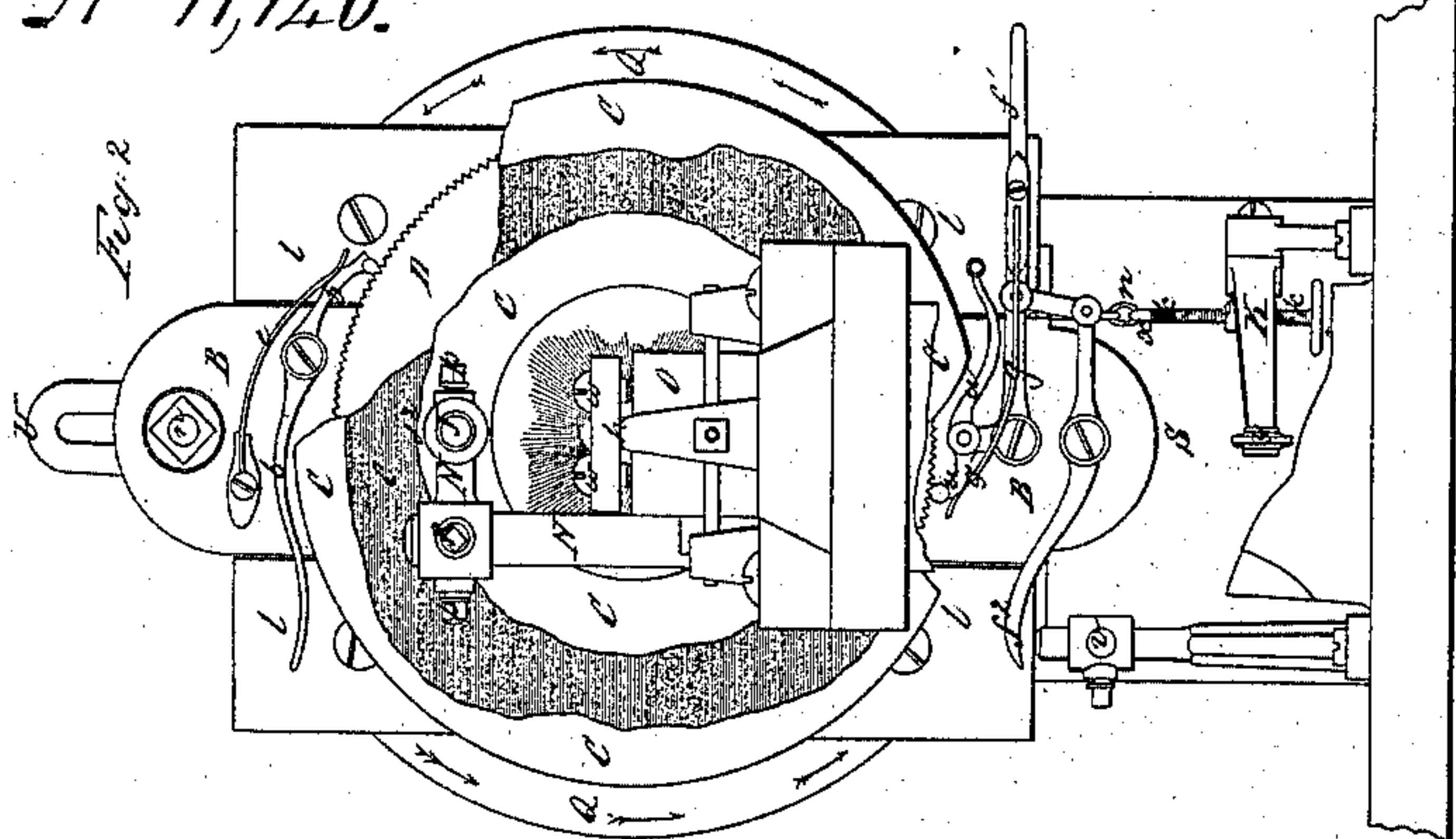


Fig. 5

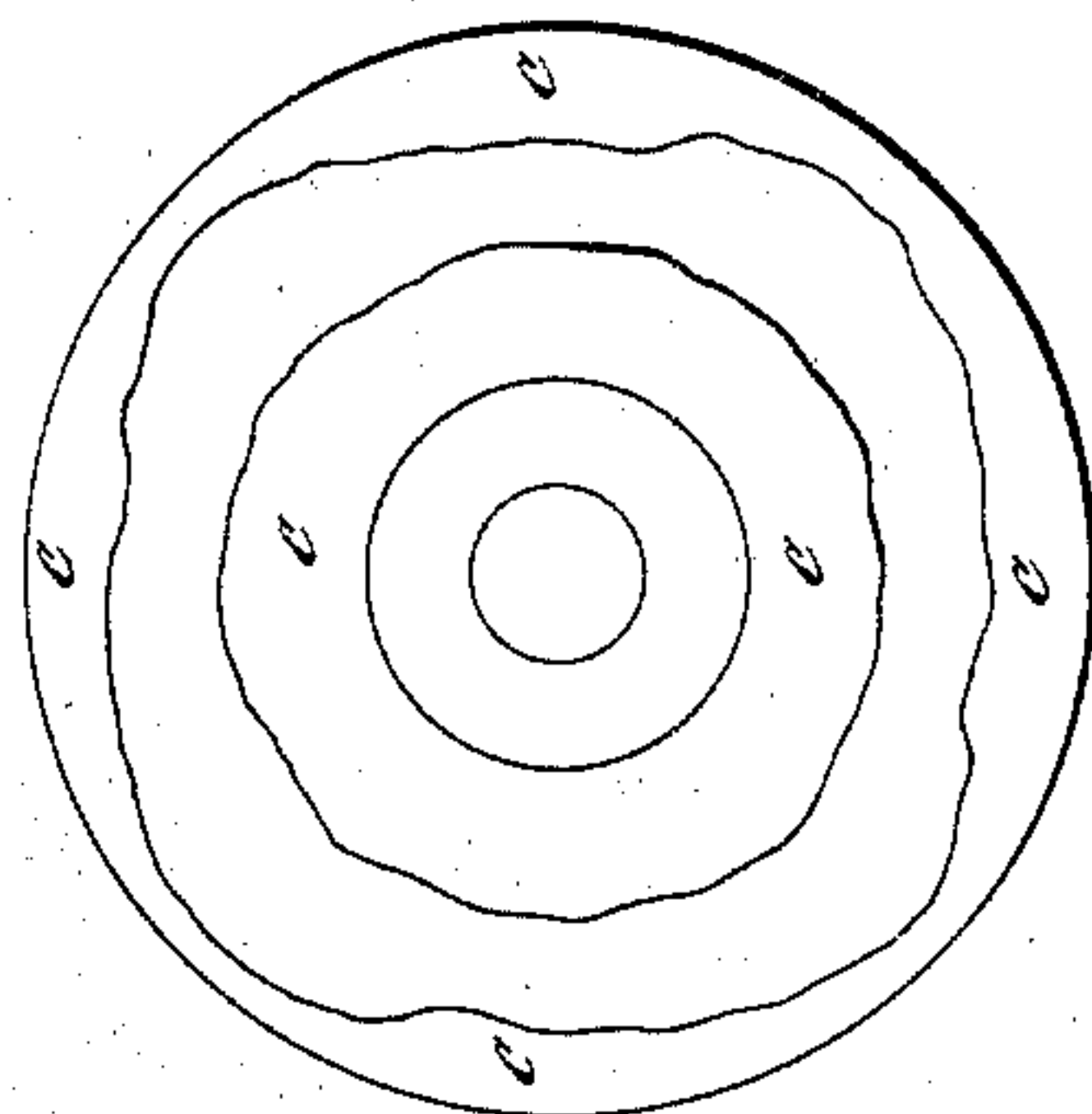
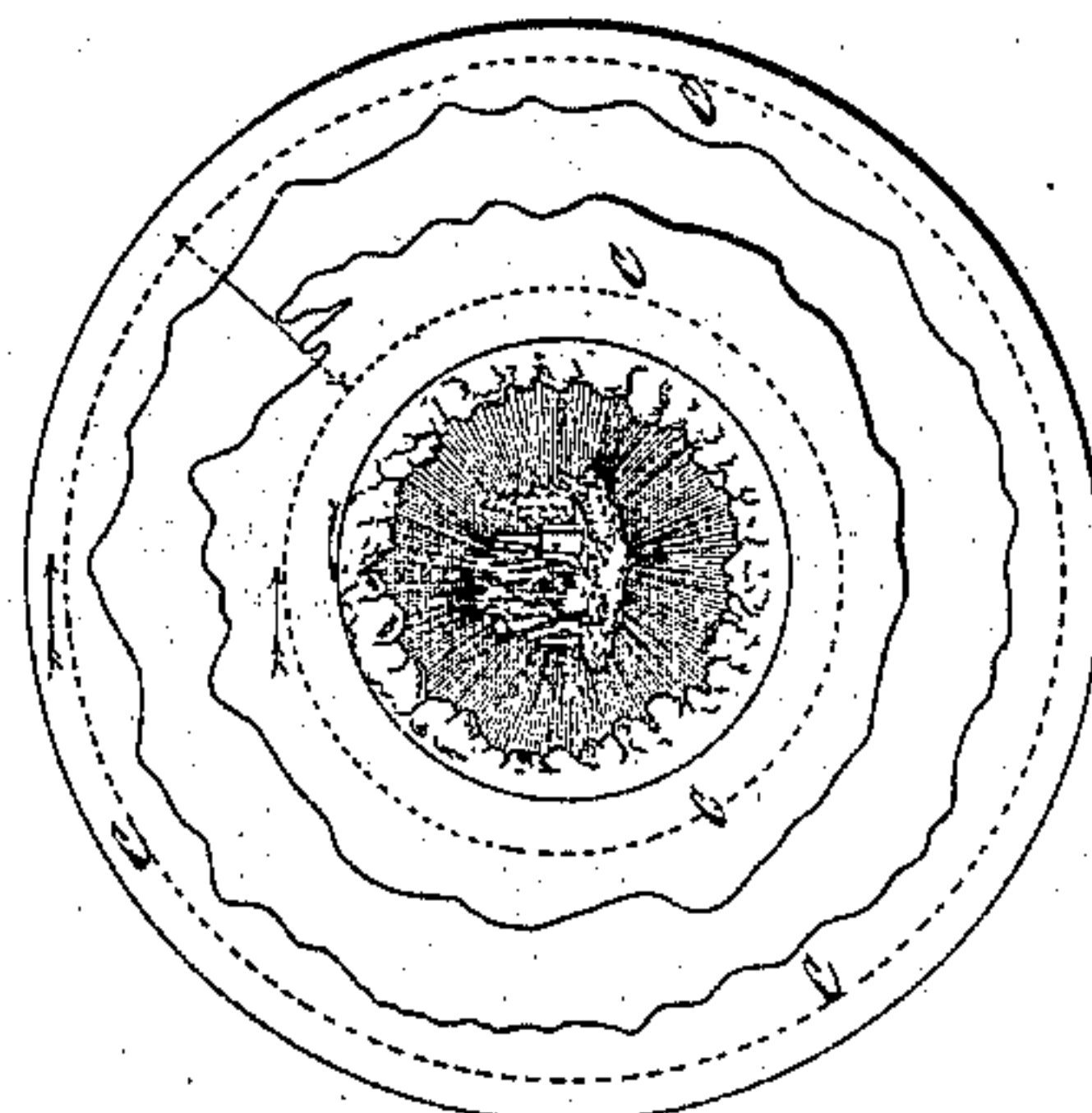


Fig. 4



Fig. 3



Witnesses
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CHARLES H. FIELD, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR ENGRAVING DESIGNS ON WATCH AND LOCKET CASES, &c.

Specification of Letters Patent No. 17,146, dated April 28, 1857.

To all whom it may concern:

Be it known that I, CHARLES H. FIELD, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Machines for Interlining Engraved Designs upon Watch and Locket Cases, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a front elevation of the same. Fig. 3 is an elevation of the pattern disk with a finished locket-back therein. Fig. 4 is a view of the block to which the backs are attached while being operated upon. Fig. 5 is a view of the pattern disk removed from the machine. Fig. 6 is a side and front elevation of the pitman and connection which gives the vertical motion to the pattern disk.

The same letters refer to like parts in the different figures.

The nature of my invention consists in securing to a sliding plate (moving vertically in guides upon a proper stand) a toothed wheel upon the hub of which is secured a metallic disk having in its center a socket (in which is placed the block to which the watch or locket-back is attached) and upon the face of which is an enlarged pattern of the required design so cut into the disk that it may be transferred—in radii or lines—to the locket-back, through the medium of a stud attached to the tool post (which holds the tool for cutting the lines) which is pressed against the pattern disk (by a spring upon the tool post for that purpose) and allows the tool to cut only while it (the stud) is passing over the pattern. The toothed wheel with the disk and locket back to be lined is moved to produce the successive lines, and the tool is regulated and adjusted by mechanisms to which motion is imparted by the sliding plate above mentioned, so that the machine is rendered self operating.

In machines heretofore in use for this purpose, two rosettes or irregular disks of metal, one describing the outline of the border and the other and smaller one describing the outline of the center of the re-

quired design, were secured upon the shaft to which the locket-back was attached, and by means of two studs bearing against the irregular edges of the two disks the length of the line was determined and the tool regulated accordingly by the hand of the operator. By this arrangement one pattern only could be produced upon the same machine, and that pattern must be without any skips or intervening blank spaces between the center and the border, and the tool and other parts of the machine required not only both hands but also both feet of the operator in imparting motion and in regulating the same. Again, an eccentric operated by the foot was employed to determine the length of the line, by means of which nothing like accuracy in the work could be obtained, from the fact that it required a nice adjustment to produce the required length in each line, which could not be approached by working the same by the foot of the operator.

The machine herein described is not restricted to any particular pattern, as the pattern disk upon which it is cut can be removed and replaced by others of a different pattern. The tool may be made to skip to any extent and at any required point upon the surface of the work. The design being reduced in size upon the work from the pattern disk, and the engraving being filled in after the lining is completed, any inaccuracy in the pattern, will be wholly absorbed in the first operation, or easily corrected in the second. Adding to these advantages and improvements that of its being self-operating in all its parts, and what was heretofore a difficult artistic operation requiring a considerable degree of skill and expertness in the operator, is by this machine reduced to a mere mechanical operation.

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

A is the table of cast iron to which is secured by bolts or otherwise the upright stand S, within which the plate B, slides vertically upon suitable guides l, l, &c., provided for that purpose. By means of the pitman L, upon the driving shaft H, which is connected with the plate B, by the link T,

and the slotted plate U, which is fastened to the upper part of the plate B, by the bolt *n*, as shown, the stroke or traverse of the plate B, is lengthened or contracted by means of the adjustable plate *z*, upon the pitman (Fig. 6) upon which is formed the stud R, and through which pass the pins *i*, *i*, which are set into corresponding holes in the face of the pitman, the whole being secured to the same by the pin *s*, as shown. Through the plate B, passes the spindle *d*, upon which the toothed wheel D, upon the hub G, is secured by the nut *t*, in such a manner as to permit the hub to turn upon the spindle by the reaction of the spring *g*, upon the pawl *w*, which engages with the teeth of the wheel D, and to that end is attached to the sliding plate B, beneath the wheel and is connected with the tappets *f'*, *f*², in such a manner that when the plate B descends, the tappet *f*², will come in contact with the stud *v*, and in so doing draw the pawl *w*, back one tooth of the wheel which being liberated by the ascending of the plate (B,) the reaction of the spring *g*, moves the wheel one tooth ahead, which is held in its last position by the pawl *b*, above the wheel which is acted upon by the spring *e*. Upon the hub G is placed the pattern disk C, nicely fitted and secured thereon by a thread cut upon each as shown or in any other convenient and effective manner. The block F to which the lock-back is attached (by the ordinary method) is placed in a socket formed in the center of the disk for that purpose. The tool *h*, employed is in every particular similar to those heretofore used for this kind of work, and is secured to a tool-post O, by the set screws *w*, *w*, which tool post forms a part of or is attached to a plate sliding horizontally in proper ways or guides, (as shown) and subjected to the action of the spring *r*, in connection with the same, which spring is made to press the tool against the lock-back, the working of which tool is restricted by the stud J, which is made adjustable within the stand N, by the set screw *p*, (as shown in Figs. 1, and 2,) which stud bears upon the pattern disk at the point *a*, (Fig. 1,) thus withholding the tool from contact with the lock-back until permitted so to do by the form of the pattern which is cut into the disk, and upon which (lock-back) a longer or shorter line is cut according to the width of the space cut into the pattern. When the plate B, has nearly completed its descending stroke, and after the tool *h*, has been tripped by the pattern disk at *j'*, the lower edge of the plate (B,) comes in contact with the point of the set screw *k*, upon the lever K, and in so doing raises the reverse end of the same until the wheel *y*, rides upon the lower end of the arm E, (which is firmly secured to the tool-post) and in so doing removes the stud J, from contact with the pattern-disk,

while the plate B, with it attached is making the ascending stroke, at the latter end of which the chain *m*, being attached to the upper part of the sliding plate at one end, and to the adjusting screw *x*, in the short arm of the lever K, at the other, raises this end of the lever, causing the wheel *y*, to liberate the tool-post, preparatory to making a succeeding cut upon the lock-back.

Operation: A block with a lock-back thereupon being placed in the socket in the center of the pattern disk in the manner and in the position (as shown in Figs. 1 and 2) and power being communicated to the pulley Q, upon the shaft H, the plate B, descending the disk thereon slides beneath the stud J, and in so doing withholds the tool from the back until the edge of the pattern at *j*² passes the end of the stud, when by the action of the spring the tool strikes into the work, the continued motion of which produces a line until the tool is tripped and withdrawn from contact with the work by the edge at *j'* meeting the stud J, the motion of the plate B, from this point of the stroke to its completion is employed to remove the stud J, from contact with the disk, by the lower edge of the plate coming in contact with the point of the screw *k*, upon the lever K which raises the reverse end of the same, and brings the wheel *y*, thereon in contact with the lower end of the arm E, which is secured to the tool post as before explained. At the same time the tappet *f*² comes in contact with the stud V, which through the medium of the tappet *f'* &c., draws the pawl *w* back one tooth, when the descending stroke is completed and the plate B, ascends, and in so doing liberates the tappets, causing the wheel D, to move one tooth by the reaction of the spring *g*. The tappet at the top of the plate also casts off one tooth and holds the disk in this position until the succeeding cut is completed. As the plate B approaches the end of its ascending stroke and after the edge of the pattern at *j*² has passed beneath the stud J, the chain *m*, gradually tightens and raises the short arm of the lever K, and in so doing releases the arm E, upon the tool-post, and allows the tool to resume its former position, preparatory to making a succeeding cut.

I do not claim two rosettes or irregular disks acting upon two studs for the purpose of determining the length of the line nor do I claim an eccentric adjusted by the foot of the operator for this purpose, but—

What I do claim as my invention and desire to secure by Letters Patent is—

1. The variable pattern-disk and the combination of the same with the stud J, for governing the cutting of the tool.

2. I also claim the combination and arrangement of the tappets *f'*, *f*², and the stud

v, also the tappet b in connection with the same, for imparting and regulating the motion of the pattern-disk.

3. I also claim the arm E, and the lever
ε K, and the mechanisms attached thereto,
the whole being so combined and arranged
as to render the machine self-operating.

4. Lastly I claim the adjustable pitman
(as herein set forth) for imparting the re-
quired motion to the vertical sliding plate B. 10
CHARLES H. FIELD.

Witnesses:

ISAAC A. BROUNELL,
HENRY MARTIN.