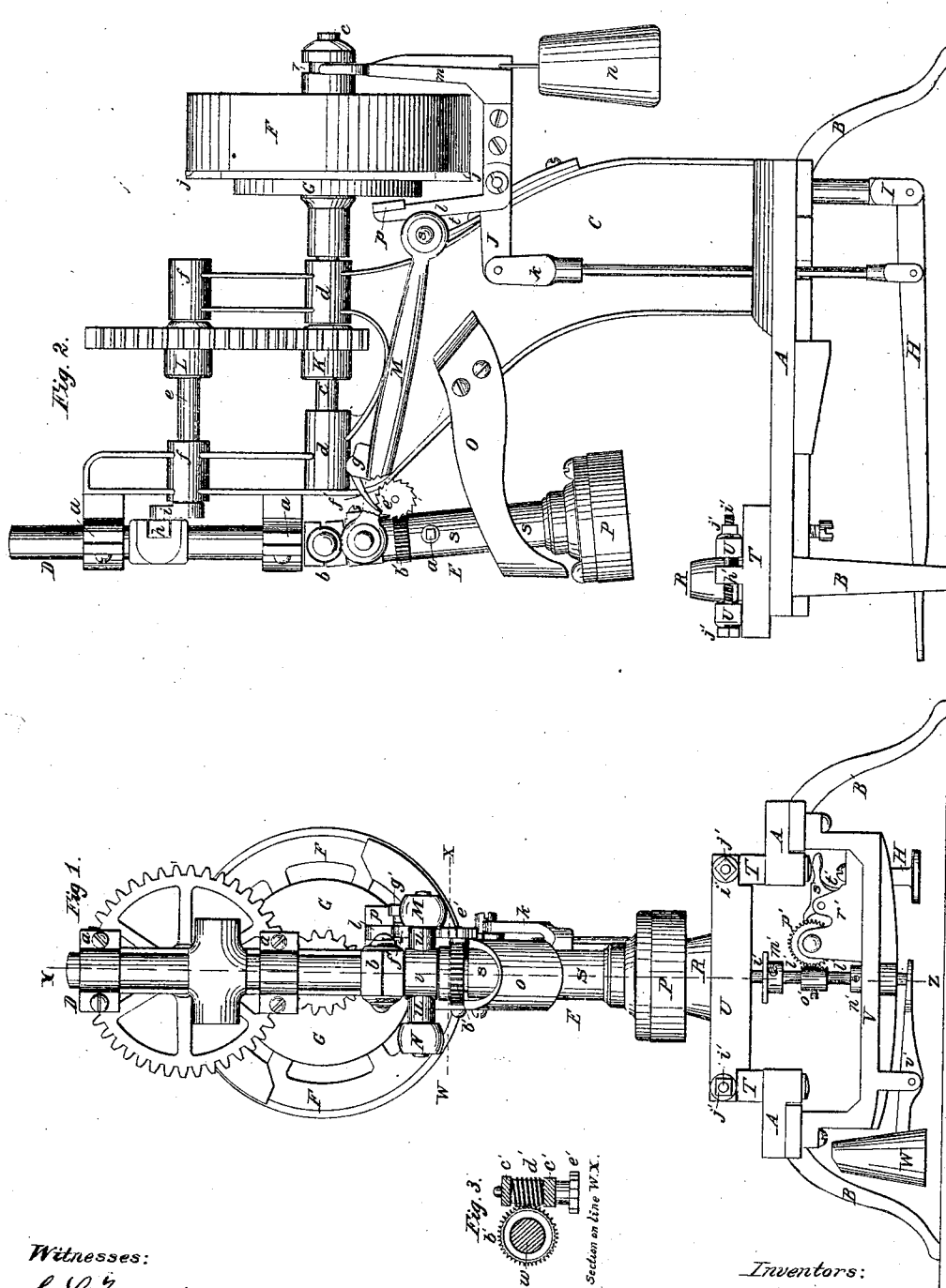


N. J. SIMONDS.
LEATHER CUTTING PRESS.

No. 101,931.

Patented Apr. 12, 1870.



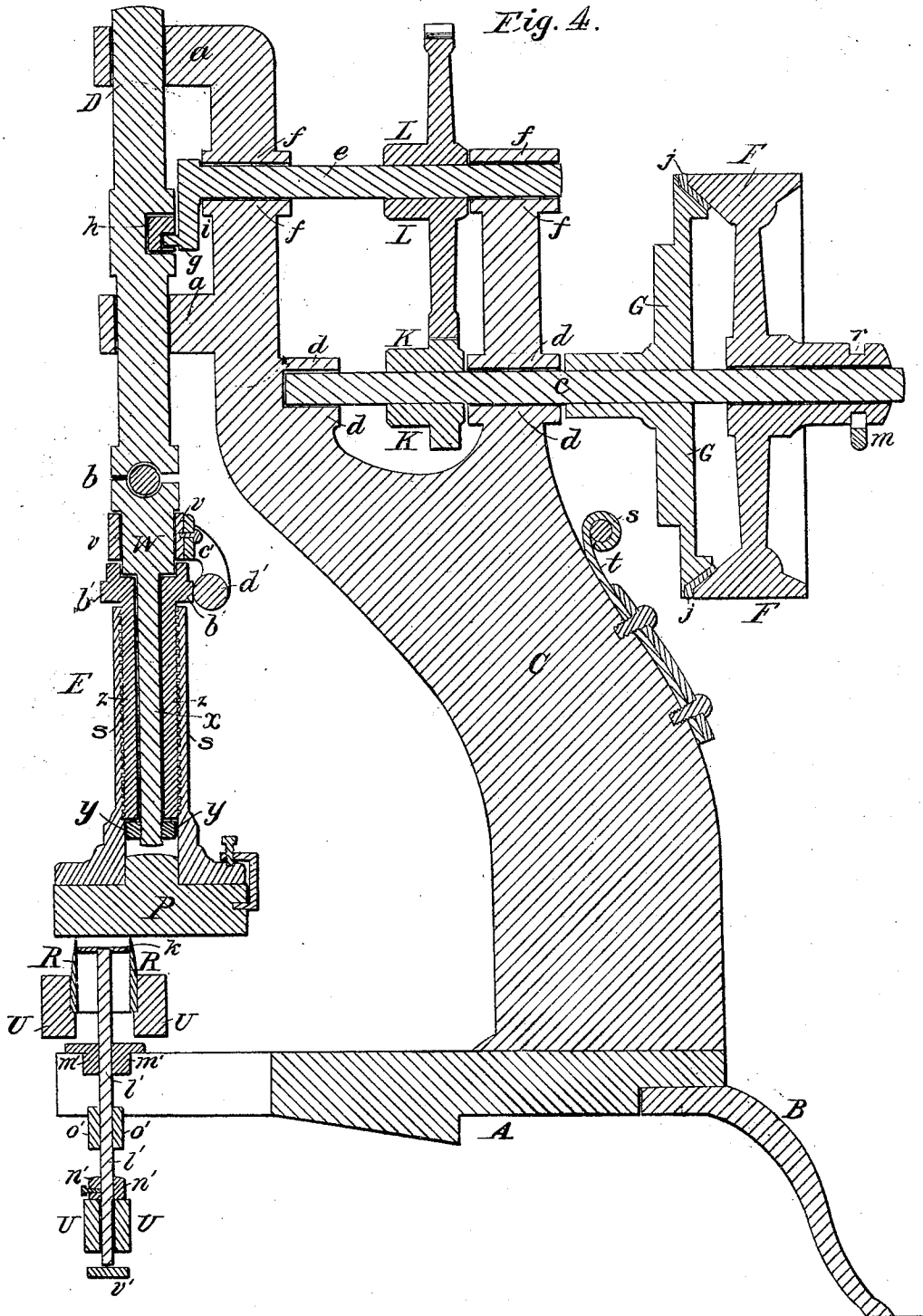
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UNITED STATES PATENT OFFICE.

N. J. SIMONDS, OF WOBURN, MASSACHUSETTS.

IMPROVED LEATHER-CUTTING PRESS.

Specification forming part of Letters Patent No. 101,931, dated April 12, 1870.

To all whom it may concern:

Be it known that I, N. J. SIMONDS, of Woburn, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Cutting-Presses and Process of Manufacturing Shoe-Stock with the Same; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to which it appertains to practice it.

This invention relates to certain improvements in cutting-presses used for cutting shoe soles, heels, and stiffenings, or other shoe-stock, and also in the process of preparing and cutting the leather into soles, heels, stiffenings, and other articles; and it consists in so constructing and arranging the press that the cutting-block, as it recedes from the die, shall vibrate or swing, so as to unmask and expose the cutting-die; also, in imparting to the cutting-block a rotary or changing motion relatively to the cutting-die, whereby, in cutting, a change of contact of surfaces is successively produced; and also in certain of the mechanical devices by which these movements are produced, the manner of seating the cutting-die, the device for imparting motion and releasing the same; and also in the process of pasting the sheets of uncut stock, and afterward cutting and compressing the same in the cutting-die.

Figure 1 is a front elevation of my press. Fig. 2 is a side elevation. Fig. 3 is a horizontal cross-section taken on line W X, Fig. 1, and Fig. 4 is a vertical section taken on line Y Z, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

In the drawings, A represents the bed-plate, and B B B the legs which support the press.

C is a standard or frame rigidly secured to bed A.

D is the upper section of a vertical shaft sliding in bearings *aa*, formed upon or attached to frame C.

E is the lower section of the vertical shaft, the two parts being hinged together at *b* in such manner as to allow a backward and forward swinging or vibratory motion to the lower end of section E.

c is a horizontal shaft revolving in bearings *d d*, formed upon frame C.

e is a cranked shaft, which revolves in bearings *ff*, also formed upon frame C, as shown. The wrist-pin *g* upon the crank-shaft *e* is inserted and revolves in the crank-slide *h*, which latter moves horizontally in a slot formed transversely in shaft D, as is plainly shown in Figs. 2 and 4, so that as shaft *e* is revolved the jointed shaft D E will have a vertical movement corresponding to the stroke of the crank *i*.

F is a pulley revolving freely, when disengaged, upon shaft *c*; and G is a friction-clutch keyed upon shaft *c*, the bearing or contact surfaces between pulley F and clutch G being formed at an angle of forty-five degrees with their faces, as is shown in Fig. 4, the friction-bearings of the clutch being faced with leather, as shown at *j j*, Fig. 4.

For producing and securing contact between pulley F and clutch G the following device is employed: The treadle H is pivoted at its back end to prop I, while it extends forward so as to be accessible to the foot of the operator, as shown. Near the rear end of this treadle is pivoted the connecting-rod *k*, which at its upper end is pivoted to the lever J, as shown in Fig. 2. This lever is pivoted upon the stud *o*, and a rigid upright arm, *l*, extends upward from the lever to such height that its face *p* may act against the side of the clutch G, and another rigid arm, *m*, also extends upward from lever J, terminating in a fork, which engages in an annular groove in the hub of pulley F, as shown. Motion is imparted to the press by means of a belt acting upon pulley F, leaving all other parts at rest, except when the operator shall by the action of his foot upon treadle H, through the agency of rod *k*, lever J, and upright *m*, force pulley F against clutch G, thus imparting a rotary motion to shaft *c*, and through the agency of pinion K, keyed upon this shaft, and gear-wheel L, keyed upon shaft *e*, and with which the pinion engages, imparting motion to shaft *e*, and by means of crank *i* imparting a reciprocating motion to vertical shaft D E. By releasing treadle H the weight *n*, acting upon lever J, instantly disconnects pulley F from clutch G, while the upright *l* is thrown back, so that the leather-faced pad P is brought in contact with

the clutch, instantly arresting the motion of the press, while the pulley revolves freely upon shaft *c*.

For the purpose of imparting a swinging or vibratory motion to section E of the vertical shaft, two arms, M N, are at their back ends pivoted upon a short shaft, *s*, while at their front ends they are pivoted to the trunnions *u u*, which are formed upon collar *v*, through which the vertical shaft passes. The height of shaft *s* coincides with that of the trunnions when the shaft E is fully depressed, thereby throwing the lower end of shaft E forward and in line with section D, so that the wooden cutting-block P shall bear upon cutting-die R, as is plainly shown in Figs. 1 and 4; but upon the ascent of the shaft the action of arms M N swings back the lower end of shaft E and exposes the cutting-die, as is plainly shown in Fig. 2. The stay O, which is rigidly secured to frame C, serves to guide the shaft E as it vibrates back and forth. The stout spring *t*, in which shaft *s* is held, serves as a buffer when shaft E is thrown forward against stay O, thus preventing shocks, while it insures a certainty of vibration in the shaft E.

The section E of the vertical shaft is formed with the following constituent parts: the section *w*, jointed at *b*, as before described, the outer sleeve, S, and the inner sleeve, Z, as is plainly shown in Fig. 4. The section *w* is formed of about the size of shaft D for a short distance below the joint, as shown, when it is diminished to a small spindle, upon which revolves the inner sleeve, *z z*, held thereon by the screw-nut *y*. Upon the upper end of this sleeve is formed or secured (as desired) the concave-face gear-wheel *b'*, for the purpose hereinafter stated. The outer sleeve, S, is secured to the inner sleeve, *z z*, by male and female screws, as shown, so that by rotating the sleeve S it may be adjusted relative to the cutting-die, as the block P is worn by use. A small set-screw, *a'*, holds sleeve S relatively to sleeve *z z* when adjusted.

For the purpose of rotating the cutting-block P, I attach to collar *v* a forked bracket, *c'*, in which is held and revolves the worm-gear *d'*, which engages with the concave gear-wheel *b'*. Upon the shaft of the worm-gear is secured the ratchet *e'*. Upon arm M is secured a small boss, *g'*, to which is pivoted the pawl *f'*, which engages in ratchet *e'*, so that as the shaft D E rises and shaft E is swung back by means of arms M N the action of pawl *f* rotates the worm-gear *d'*, which, acting upon the gear-wheel *b'*, serves to revolve slightly the cutting-block P, as the sleeve *z* revolves freely upon spindle *x*, as described. Thus, by the rotary motion of the block P and its changing relative position to the die, a large and changing surface is presented to the cutting-edge, thereby saving a very large portion of the usual expense of facing the block and keeping it in order.

The cutting-die R is seated and held in the following manner: Upon bed-plate A are se-

cured two blocks, T T, in the middle of each of which is raised a boss, *h' h'*. In each of these bosses is secured a rod, *i*, threaded at each end, to which are fitted screw-nuts *j' j'*. Two bars, U U, extending from one rod *i'* to the other, are fitted with holes at each end, so as to move freely upon the rod *i*. Upon the inner sides of these bars are formed rabbets, bearings, or projections of about the thickness of the shell of the die, as is shown in Fig. 4, and upon which the back of the die rests; and by actuating the nuts *j'* the bars U are pressed against the sides of the die with just sufficient force to hold it in position. By curving the lines of bars U to correspond with the shape of irregular dies, such as are used for cutting soles and similar forms, all kinds and forms of dies may be seated in this manner; and as the bars can be made of cast iron of the required form it affords the cheapest method of seating cutting-dies.

The method heretofore practiced of cutting and pasting inner soling and other shoe stock from thin stuff has been to cut the leather into the desired form by hand and then to paste them together to the required thickness; but by my method I first paste the entire sheet and then cut it into and compress it in the die, after which it is thrown out by a device which I will describe. By thus pasting first and then cutting no paste is left adhering to the edges to the great detriment of tools, as is the case where pasting is performed after the cutting, as the compression in that case forces the paste from the seams and leaves it adhering to the edge.

My device for compressing and ejecting the stock is as follows: A disk or metal plate, *k'*, rigidly secured to the top of rod *l'*, fits to move freely in the cutting-die. The disk *k'* serves as the guide or stay of the upper end of rod *l'*, while its lower end passes freely through the bracket V, secured to the under side of bed-plate A. Near the center of rod *l'*, I attach, by a set-screw, the hub *o'*, while above it is secured in the same manner the flanged hub *m'*, and below the collar *n'*. Upon one side of the hub *o'* are cut teeth, as shown, which engage in the toothed wheel *p'*, which is pivoted and revolves in the slotted block *r'*. A pawl, *s'*, is also pivoted in this block, in position so that the small spring *t'* engages the pawl with the wheel *p'*.

u' is a horizontal lever pivoted, as shown, in a short depending bar formed upon bracket V. One end of this lever bears beneath rod *l'*, while a weight, W, is secured upon the opposite end.

In use the hub *m'* is secured upon the rod *l'* at such point that when the hub bears against the under side of bars U the plate *k'* shall be even with the top of the cutting-die, and the collar *n'* is secured upon the rod at such point that when the required thickness of stock has been cut into the die the collar will bear upon the bracket V, and arrest the descent of the rod and prevent the edge of the cutting-die

from passing through the stock, and allow the cutting-block to compress the leather in the die, when the operator, releasing his foot from treadle H, arrests the movements of the press, and by releasing pawl *s'* from wheel *p'* the weight W, through the action of lever *u'* upon rod *l'*, discharges the stock cut into the die, when the operation is again repeated, the receding motion of shaft E enabling the operator to adjust the stock for each cut with the utmost regard for its economical use.

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

1. The swinging or vibrating cutting-block P, whereby the cutting-die R is uncovered as the block recedes therefrom, substantially as and for the purposes specified.
2. The arrangement of the vertical moving section D, the vertical and vibratory section E, arms M N, guide O or its equivalent, all arranged to operate substantially in manner as and for the purposes specified.
3. The let-off spring *t* or its equivalent, in combination with the pivoted arms M N and the vibratory section E, substantially in manner as described and shown.
4. The revolving cutting-block P, in combination with the cutting-press, substantially as and for the purposes specified.
5. The combination and arrangement of

gear-wheel *b'*, worm *d'*, ratchet *e'*, and pawl *f'*, whereby the relative changing of position of arms M N and shaft E shall impart a rotary motion to cutting-block P, substantially in manner and for the purposes specified.

6. The process of cutting and compressing in the cutting-die the already-pasted stock, substantially in manner as and for the purposes specified.

7. In combination with the cutting-die, the plate *k'*, rod *l'*, stop *n'*, toothed hub *o'*, gear-wheel *p'*, and pawl *s'*, weighted lever *u'*, and stop *r'*, to hold the rod *l'* as it descends, and checks the same when the desired amount of stock is cut into the die and eject the same, substantially in manner as and for the purpose specified.

8. In combination with the cutting-die, the bars U, provided with lateral adjustment, and the die-seats, substantially as described and shown.

9. The combination of pulley F, clutch G, lever J, with the uprights *l m*, actuated by treadle H and weight N, or their equivalents, for imparting motion to the press and arresting the same, substantially in manner and for the purposes specified.

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