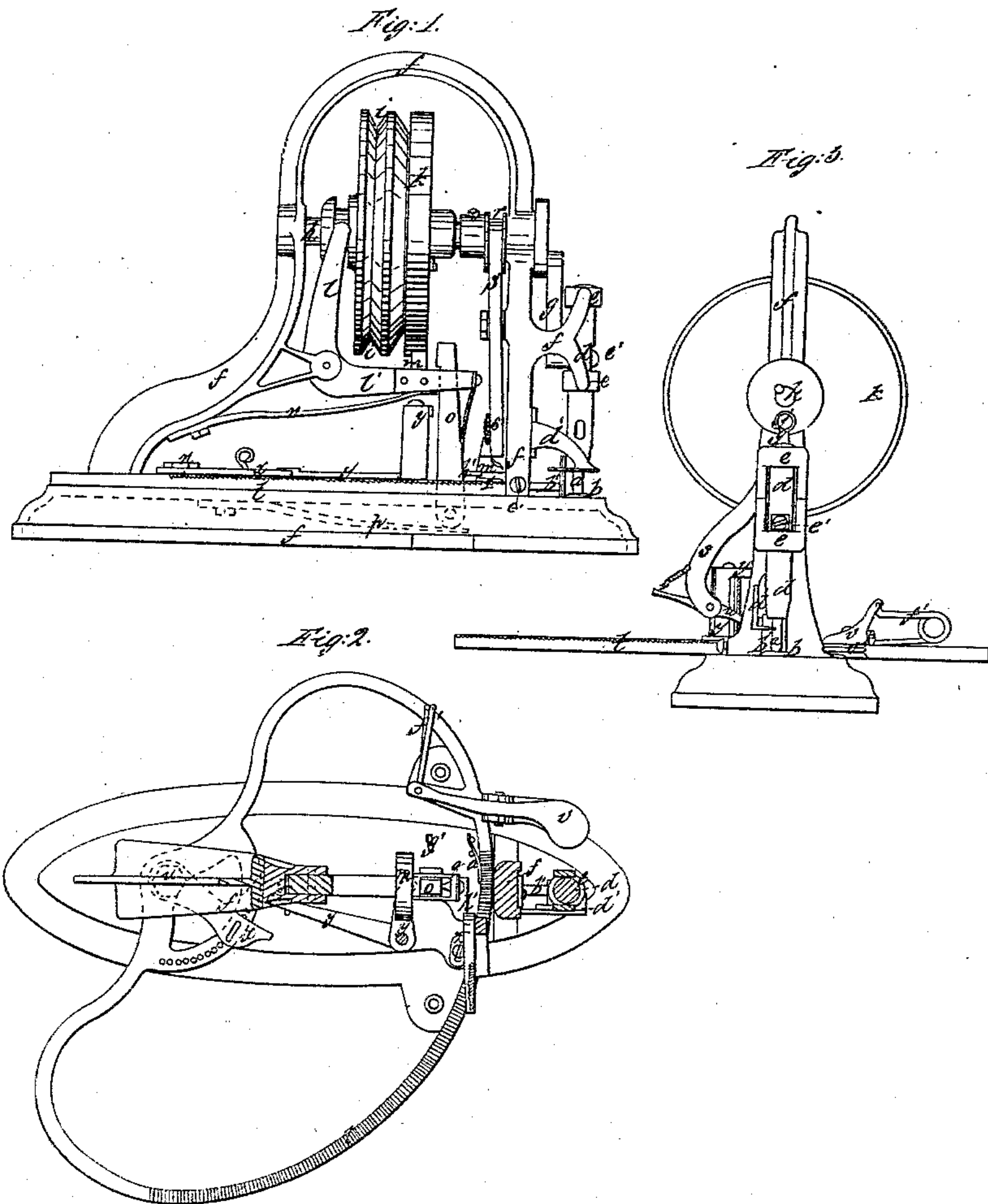


J. E. Wiggin
Cutting Leather

N^o 83014.

Patented Oct. 13, 1868.



Witnesses:
W. B. C. C. C.
James C. C.

Inventor:
John E. Wiggin

United States Patent Office.

JOHN E. WIGGIN, OF STONEHAM, MASSACHUSETTS.

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IMPROVED AUTOMATIC PUNCHING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN E. WIGGIN, of Stoneham, in the county of Middlesex, and State of Massachusetts, have invented an Improved Automatic Punching-Machine; 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 practise it.

This machine is designed for punching, in the material of boots, shoes, &c., the holes intended for the insertion of eyelets, and is shown in side elevation in Figure 1, in sectional plan in Figure 2, and in front elevation in Figure 3.

The punch of the machine is marked *a*, it being of the tubular kind, which acts on a solid bed, *b*, forcing the punchings up the tube of the punch, and delivering them out of a side opening at *c*.

The punch is fixed to a carrier, *d*, which is made to reciprocate in guides, *e*, forming part of the frame, *f*, of the machine, by the link *g*, which is moved by a crank-pin, *j*, rotated by the shaft *h*, which is driven from a belt applied to the friction-coupling-pulley *i*.

The fixed part of the coupling is marked *k*, and the pulley-part *i* of the coupling is made capable of a sliding movement on the shaft *h*, so that the rotations of *i* may be effective in turning said shaft, or so that the pulley *i* may turn on the shaft without rotating it, according to the position of the pulley *i*, which is controlled by the bent lever *l*. The arm *l'* of said lever carries a brake-pad, *m*, and is acted on, to keep the said pad in contact with the part *k* of the coupling, by a spring, *n*.

There is arranged, in a mortise through *l'*, a latch-piece, *o*, passing through the base of the frame, which piece, *o*, notches upon *l'*, and is kept from falling by the spring *p*, which is seen in dotted lines, fig. 1, said latch-piece being pivoted on said spring, and pierced with a hole beneath the base of the frame, so that a link from a foot-treadle can be attached to the latch-piece, to draw it down, and thus cause movement of lever *l* to slide the pulley part, *i*, of the coupling into driving contact with the part *k* of the coupling.

Spring *q*, fixed on the end of *l'*, acts on the latch-pull *o* to keep its notch in gear with the upper corner of the mortise in *l'*.

On the shaft *h* is fixed an eccentric, *r*, which, in its rotation, operates to vibrate the lever *s*, which carries at its lower end a feeding-pawl, *w*, which moves the segment-rack *t*, which rack is pivoted at *u*, and carries a pair of gripping-jaws, *v*, which seize the material to be punched, and by which said material is drawn along over the bed *b* and under the punch *a*.

The pivot *u* secures the piece *x*, so that it can move with reference to the rack *t*, and can be pinned to the rack in any desired position relative thereto. The function of this piece *x* is to operate the rocker *y* to dis-

connect the latch *o* from arm *l'*, impingement of the end of *x* against one arm of rocker *y*, causing the other arm of the rocker to move the latch against the resistance of spring *q*.

The end of the arm of rocker *y*, which is acted on by piece *x*, is provided with a screw, by which adjustment can be made which will affect the time when the latch *o* is moved, so as to release the lever *l*, which, when released, is moved by the spring *n* to uncouple the parts *i* *k* of the coupling, and to bring the brake-pad *m* into contact with part *k* of the coupling, to stop rotation of shaft *h*.

The movement of the pawl *w* being constant, an adjustable shield, *z*, is used to vary the amount of movement given rack *t* by each double reciprocation of the pawl. This shield being made to cover part of the rack, and being made adjustable as to position, will, according to its adjustment under the pawl, allow it to operate on one or more teeth of the rack, according to the distances which are desired between the holes made by the punch.

To keep the rack from moving by momentum a distance greater than that designed to be imparted by the pawl *w*, a friction-spring, *a'*, is made to bear on the rack, as seen in fig. 2.

To regulate the distance which the holes are to be punched from the edge of the material, the gauge *b'*, to be fixed in position by set-screw *c'*, is employed; and to keep the stock upon the bed *b*, and strip the material from the punch, the adjustable piece *d'* is employed.

The bed *b* is secured by a set-screw, so that as its face-end is worn by the punch, it can be refaced by filing, and readjusted in the machine.

The connection between the link *g* and the punch-bar *d* is made by a wrist-pin, *e'*, which passes through *d*, and is screwed into the link *g*, so that the wrist-pin turns in the punch-bar.

To disconnect from the link *g*, so as to remove the punch for sharpening, or to insert a different size, the wrist-pin has to be removed.

The clamping-jaws *v* are made to gripe the material to be punched by the action of spring *f'*, and when the jaws are brought to the position nearest the punch, a slide, *g'*, operated by means of a lever placed beneath the table on which the machine stands, may be made to depress the rear arm of the pivoted upper jaw, and thus release the material from the gripe of the jaws, and hold them open in readiness to receive a new piece to be punched.

Operation.

Suppose the parts of the clutch in the position shown in fig. 1, and the gripping-jaws at their nearest proximity to the punch, the shoe *z* is adjusted so as to allow the pawl *w* to operate on as many teeth of the rack as is necessary to effect the proper length of feed at each stroke of the pawl, and the piece *x* is adjusted so as

to stop the machine automatically at some desired position of the rack.

The operator, by movement of the knee, works the lever, which works the piece *g'*, to open the jaws *v*, to cause them to gripe the material to be punched.

The latch-piece *o* is then drawn downward by the foot-treadle, which causes the rotation of shaft *h*, and movements of the punch and feeding-pawl, and the rack, till the piece *x* moves the rocker *y*, so as to disengage the latch *o* from arm *l'*, when spring *n* operates and uncouples the friction-coupling, and applies the brake *m*, stopping the machine.

The foot-treadle is then released from pressure, and the spring *p* raises the latch *o*, while a piece, *h'*, thereon lifts the pawl *w* out of gear with the rack, so that the rack can be turned to bring the jaws *v* near the punch and under piece *g'*, by which said jaws are opened to discharge the punched piece and receive a new one.

In the return of the rack, which is pushed back by the operator, the piece *x* moves away from contact with the rocker *y*, permitting the spring *q* to move latch *o*, so that its notch will catch upon the lever *l'*, so that the described operation may be repeated on drawing down the latch *o*.

1. I claim, in combination with a punching-device, an automatic intermittent-moving feed, to which the material to be punched is affixed, substantially as and for the purpose described.

2. Also, the combination of the coupling *i k* with the work-feeding device through the piece *x*, the rocker *y*, lever *l l'*, latch-pull *o*, and spring *n*, or their equivalents, substantially as described.

3. Also, the combination of the brake *m* with the lever *l l'*, spring *n*, and fixed part *k* of the coupling.

4. Also, the combination of a segmental rack with clamping-jaws, substantially as described.

5. Also, the combination of the piece *h'* with the pull *o* for throwing the pawl *w* out of gear with the rack.

6. Also, the employment of a friction-applying device arranged to operate on rack *t* to steady its movement, and to prevent it from moving beyond the distance intended, substantially as described.

JOHN E. WIGGIN.

Witnesses:

J. B. CROSBY,
FRANCIS GOULD.