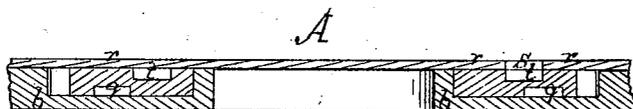
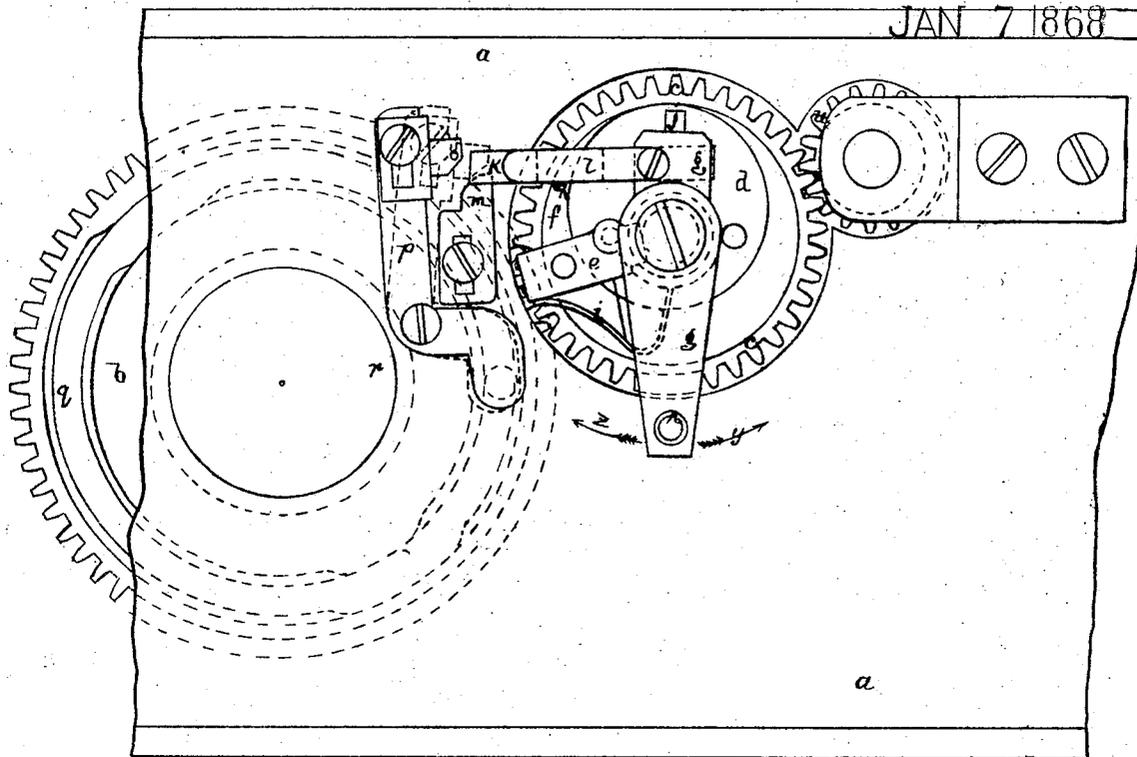


Wm. Chicken.  
Imp<sup>t</sup> in Button Hole Machines.

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PATENTED

JAN 7 1868



William Chicken

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# UNITED STATES PATENT OFFICE.

WILLIAM CHICKEN, OF CHELSEA, MASSACHUSETTS.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 72,974, dated January 7, 1868.

*To all whom it may concern:*

Be it known that I, WILLIAM CHICKEN, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Button-Hole Machines; 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 practice it.

This invention is an improvement on the button-hole machine made under the United States Letters Patent granted for the invention of D. W. G. Humphrey August 29 and October 3, 1865, and now generally known as the "Union Button-Hole Machine," and it relates specially to an improvement in the means for rotating the disk which operates the cloth clamp or holder, to effect the feed of the work and present properly the edges of the cut in the material to the action of the stitch-forming mechanism. In said machines the cloth-clamp is moved by the conjoint action thereon of a cam-groove cut in a rotating disk intermittently operating on a pin, which passes through a slot of peculiar form cut through a fixed plate placed over said rotating disk. This disk in the Union Button-Hole Machines receives its rotation from a pawl acting on ratchet-teeth cut in the edge of the disk the fault of this being that the disk can only be moved in rotation at each intermission an amount or angle which is determined by the action of the pawl on one, two, or more teeth, there being no way in which the movement of the disk can be made through the space represented by any fraction of one of the ratchet-teeth.

The object of my invention is to remedy the defect mentioned by providing a means by which the movements of the disk may be made whatever is desired, instead of being confined to fixed divisions of a circle, like those of ratchet-teeth.

The drawing is a plan of a portion of the underneath surface of the top of the body or bed of a button-hole sewing-machine, from which all the parts not immediately connected with the gist of my invention are removed.

*a* represents the part of the body of the machine specified.

*b* is the rotating disk, which operates to

move the cloth-clamp by a cam-groove in the side opposite to that shown, as in Humphrey's, or the Union Button-Hole Machine named.

The disk, it will be observed, is provided at its edge with the teeth of a gear instead of with the teeth of a ratchet, and into the gear-teeth mesh the teeth of a pinion, *c*. This pinion has a flange projecting downward from its plate, and on the stud or shaft on which said pinion rotates is located an eccentric, *d*, which comes nearly into contact with the inner surface of the flange of the pinion, and is of a thickness equal to the projection of the flange from the plate or web of the pinion.

On the surface of the eccentric is pivoted a lever, *e*, to the outer or long arm of which is hinged a curvilinear wedge, *f*, which fits in the "lune"-like recess left between the eccentric and the flange of the pinion.

On the same stud or shaft on which the pinion *c* is placed is a lever, *g*, the long arm of which is provided with a pin or friction-roll, *h*, intended to mesh into a grooved cam, by which motion is given to the lever *g*, which effects, through the mechanism described herein, movement of the disk *b*.

The lever *e* has its short arm entered into a mortise made in lever *g*, the mortise being slightly larger than the entering end of lever *e*, which, consequently, is allowed a slight play or movement with respect to lever *g*, though subject to be moved thereby; and there is fixed to lever *g* a spring, *i*, which, by contact with lever *e*, keeps a definite relation between the two levers *g* and *e*, except when force enough is applied to lever *e* to deflect the spring *i*.

To the short-arm of lever *g* is hinged, by pivot *j*, an arm, *k*, which has a capability of movement at right angles to the plane surface of the eccentric, the spring *l* having for its function the keeping of arm *k* pressed constantly toward the eccentric.

In the wedge *f* there is a pin, *n*, the outer end of which is inclined, so as to let the arm *k* pass over the end of the pin as the arm is pressed away from the surface of the eccentric, as occurs by contact of the end of the arm with either of the inclined surfaces *m* and *o*.

The tendency of the spring *i* is to force the wedge *f* between the rim of pinion *c* and the eccentric *d*, and thus cause a frictional union

between the pinion and the eccentric, that shall cause them to move together as one piece; but when the piece *k* is not lifted by one or the other of the inclines *m* or *o* it acts as a bar against pin *n* in the wedge *f*, and keeps the spring *i* from forcing the wedge tightly between the pinion-rim and the eccentric.

When the long arm of the lever *g* is started and moved by any suitable cam in the direction indicated by the arrow *z*, the arm *k* takes and keeps a position in which the pin *n* abuts against the side of the arm, so that the wedge cannot move with reference to said arm, and no union or binding of the pinion to the eccentric can take place while the long arm of *g* moves in direction of arrow *z*.

When the cam which acts upon the long arm of the lever returns it in the direction indicated by the arrow *y* no turning of the pinion is effected till the arm *k* strikes one or the other of the inclines *o* or *m* and is lifted, so that spring *i* can push the arm *e* toward arm *k*, and thus causes the wedge to bind together the eccentric and the pinion, so that further movement of the long arm of *g* in the direction of arrow *y* will be utilized in partially rotating the geared cam-disk *b*, which operates on the cloth-clamp.

In feeding around the eye of a button-hole it is necessary to have the feed-movement considerably greater in extent than the feed-movement along the straight sides of the hole, and to effect this change in the extent of the feed-movement automatically there is cut in the disk another cam-groove than the one before referred to, the function of which is to operate a lever, *p*, so as at the proper times to throw the incline *o* into and out of the path of the vibration of arm *k*.

The cam-groove which operates arm *p* is marked *q*, and when it operates to move the

arm *p* and incline *o* into the position shown in red lines, then the arm *k* is lifted sooner than it is when arm *p* is in the other position shown, and the extent of feed given is that suited for the eye of the button-hole.

The pieces on which the inclines *m* and *o* are formed are slotted, so that they may be adjusted with reference to arm *k*, so that thereby variations in the feed-movements can be effected either to considerable or to very slight degrees.

The detail marked *A* is a cross-section taken through the disk *b* and a portion of the top of the bed, showing the stationary plate in which the cam-groove is cut, the plate being marked *r*, and the cam-groove therein *s*, while the cam-groove in the disk, which, in connection with cam-groove *s*, operates on the cloth-clamp, is marked *t*.

The pinion marked *u* is to be rotated by a wrench by the operator, and is used only for the purpose of moving the disk *b* independently of the regular feed mechanism, to bring back the disk to proper position for working a new button-hole after one has been previously completed.

I claim—

In combination with a disk provided with gear-teeth and having a cam for working in connection with a stationary plate-cam, as described, a pinion which meshes into the teeth of the disk, and on which pinion a friction-clamp or gripe operates to impart intermittent rotative movements to said disk, for the purpose of giving movement to a stock or cloth-clamp, substantially as described.

WILLIAM CHICKEN.

Witnesses:

J. B. CROSBY,  
FRANCIS GOULD.