

(No Model.)

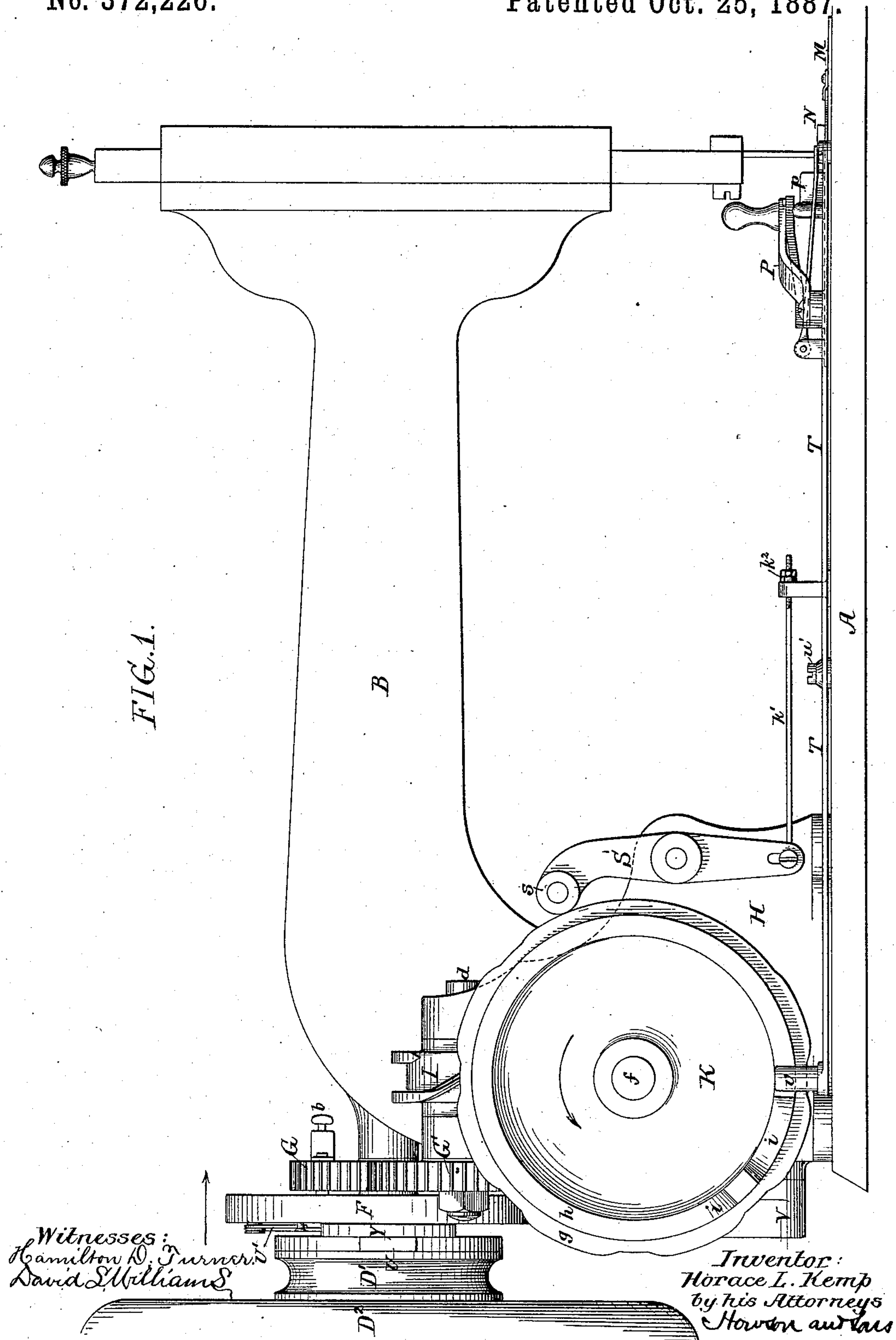
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H. L. KEMP.

# MACHINE FOR BARRING BUTTON HOLES.

No. 372,226.

Patented Oct. 25, 1887.



(No Model.)

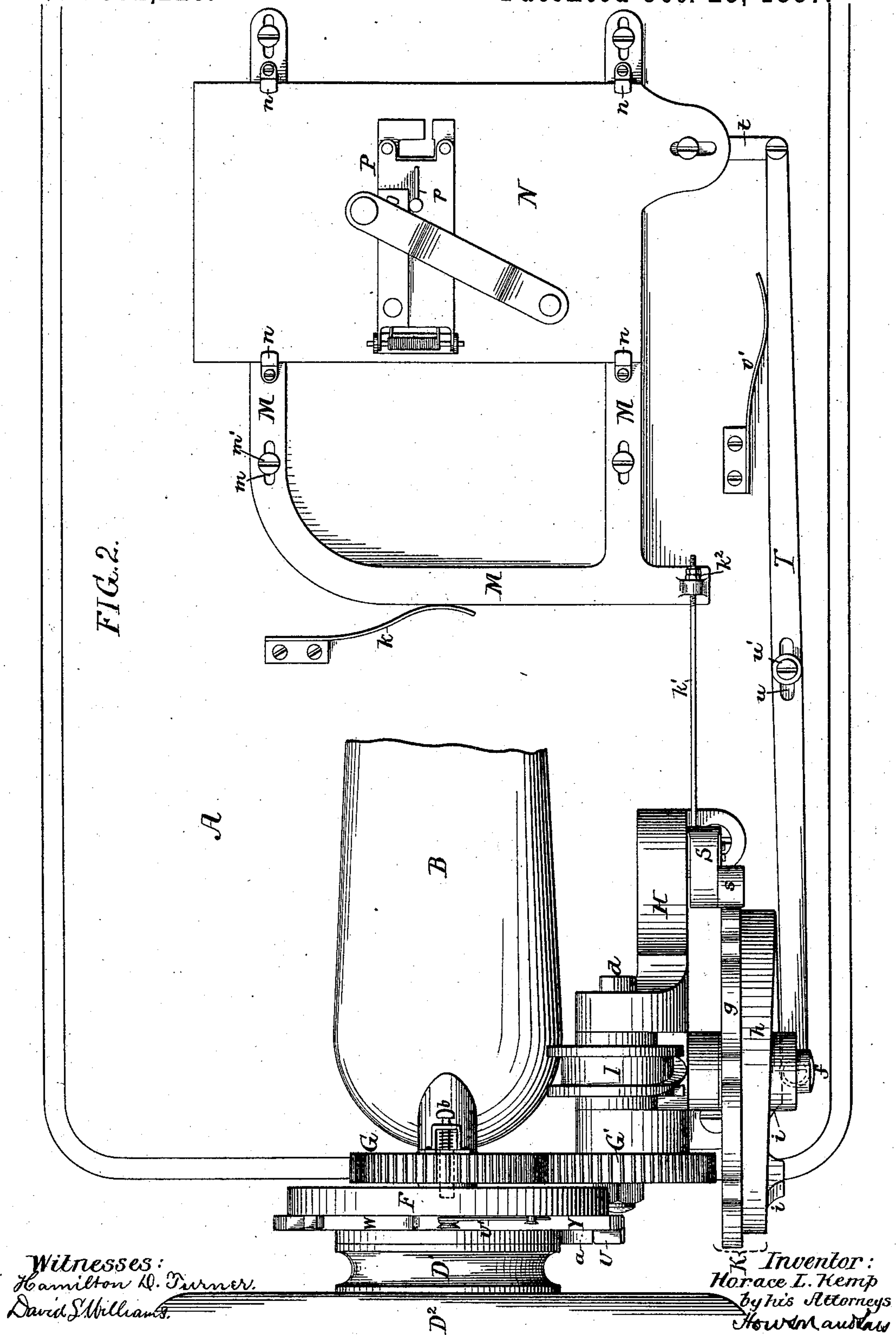
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Patented Oct. 25, 1887,



Witnesses:  
Hamilton H. Turner.  
David S. Williams.

*Inventor:*  
*Horace L. Kemp*  
*by his Attorneys*  
*Howe, Mumford & Co.*

(No Model.)

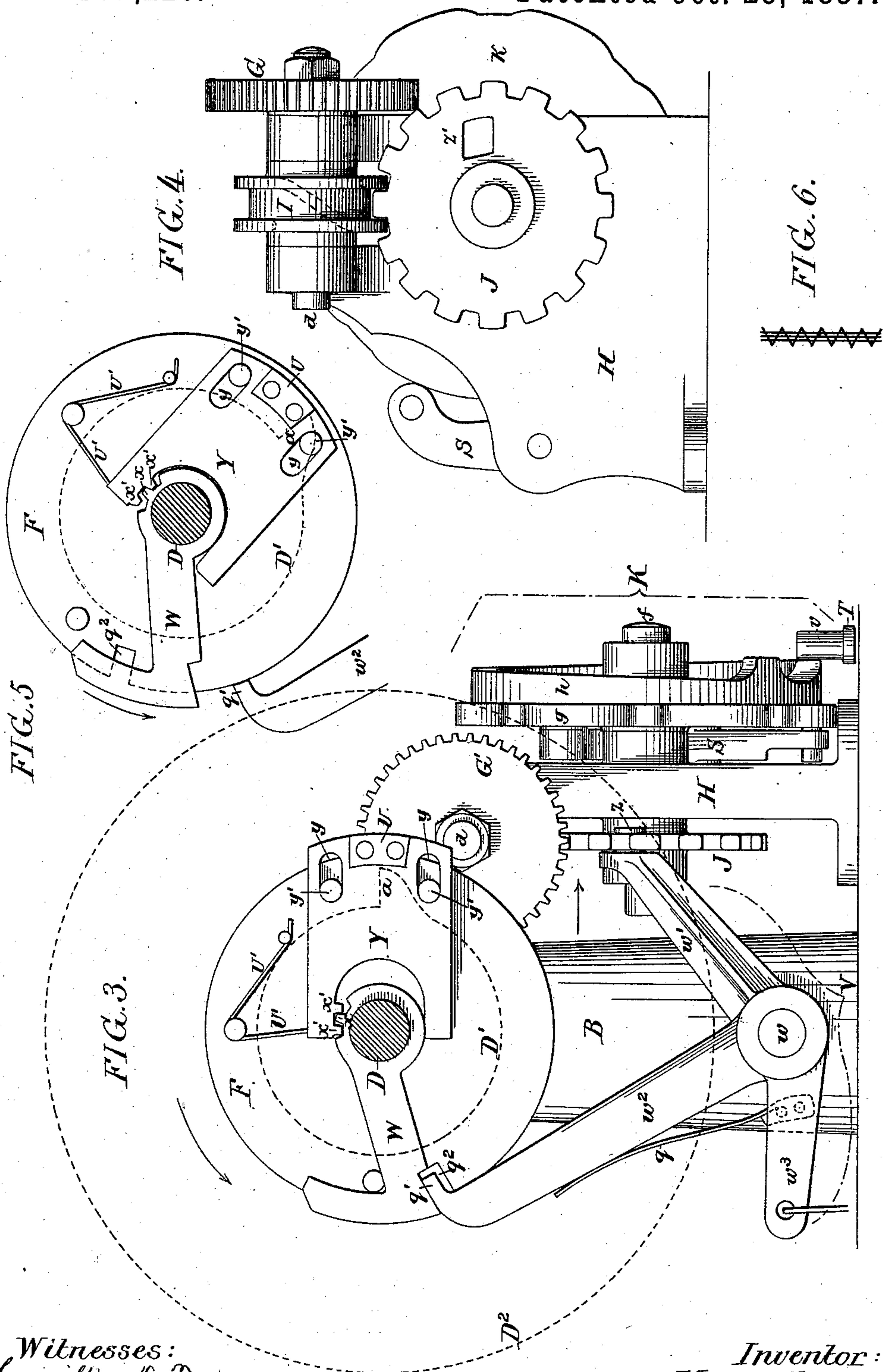
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by his Attorneys  
Horton and Sons



# UNITED STATES PATENT OFFICE.

HORACE LEROY KEMP, OF GLOUCESTER CITY, NEW JERSEY.

## MACHINE FOR BARRING BUTTON-HOLES.

SPECIFICATION forming part of Letters Patent No. 372,226, dated October 25, 1887.

Application filed January 22, 1887. Serial No. 225,090. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE LEROY KEMP, a citizen of the United States, and a resident of Gloucester City, Camden county, New Jersey, have invented Improvements in Machines for Barring the Ends of Button-Holes, of which the following is a specification.

My invention consists of improvements in machines for barring the ends of button-holes which have been previously sewed along the sides and around one end in a separate machine, the object of my invention being to provide a simple and comparatively inexpensive attachment which can be readily applied to machines now in use for the purpose of adapting them for the performance of this class of work.

In the accompanying drawings, Figure 1 is a side view showing my improved attachment applied to a machine of the "Singer" type. Fig. 2 is a plan view of the attachment with part of the projecting arm of the machine broken away. Fig. 3 is an end view looking in the direction of the arrow, Fig. 1, and showing the fly-wheel and driving-disk in dotted lines. Fig. 4 is a view looking in the direction of the arrow, Fig. 3. Fig. 5 is a view of part of the devices shown in Fig. 3, but in a different position; and Fig. 6 is a view of the stitching which forms the bar for the end of the button-hole.

A is the bed-plate of the machine, and B the projecting arm of the same, which has at the outer ends the usual guides for the needle-bar, the presser-bar of the machine being dispensed with or the presser-foot detached, as my improved attachment takes the place of said presser-foot and also of the feeding mechanism of the machine.

D is the main driving-shaft of the machine, which has at the rear end the usual belt-pulley, D', and fly-wheel D<sup>2</sup>, which are in the present instance hung loosely on the shaft, the pulley D' having a projecting lug, a, which serves to drive the attachment in the manner which I will hereinafter set forth.

Loose on the shaft D are a disk, F, and a spur-wheel, G, a suitable spring-pin, b, serving to lock the spur-wheel to the disk, or by its withdrawal from engagement with the disk permitting the rotation of one independently

of the other. The pin may have a wing or spur, which is adapted to a slot in the wheel when the pin is projected, and may be turned out of line with said slot to retain the pin when the latter has been retracted.

The spur-wheel G meshes with a pinion, G', carried by a shaft, d, which is adapted to suitable bearings on a standard, H, bolted or otherwise secured to the bed-plate A of the machine. The shaft d is provided with a worm, I, which gears into a worm-wheel, J, secured to a transverse shaft, f, also adapted to bearings on the standard H, the outer end of this shaft being provided with a compound cam, K, comprising a peripheral cam, g, and a projecting scroll-cam, h, the peripheral cam having projections and recesses disposed as the character of the stitches to be produced may suggest, and the scroll-cam having recesses i, for a purpose described hereinafter.

Resting upon the bed-plate of the machine is a frame, M, having slots m for the reception of screws m', which serve to confine the frame vertically to the bed-plate, but permit longitudinal reciprocation of the frame thereon; and to suitable guides, n, on the frame M is adapted a transverse slide, N, which has a spring-clamp, P, between which and the top of the slide the fabric can be confined, the slide having an elongated gage-plate, p, which projects upward through an opening in the clamp and enters the button-hole, to the shape of which it conforms, so as to retain the button-hole in position for the proper presentation of the end of the same to the needle of the machine.

The frame M is acted upon by a spring, k, which tends to press it outward, and said frame is connected by a rod, k', to the lower arm of a lever, S, which is hung to a stud on the standard H, the upper arm of the lever carrying an anti-friction roller, s, which bears upon the peripheral cam g. The outer end of the rod k is threaded and provided with nuts k<sup>2</sup>, so that the frame M can be adjusted in position longitudinally in respect to the lever S.

One end of the slide N is connected, by means of a link, t, to one arm of a lever, T, which has a slot, u, for the reception of the fulcrum-pin u', the other arm of the lever having an anti-friction roller, v, which, by the ac-



tion of a spring,  $v'$ , is caused to bear against the face of the scroll-cam  $h$ .

The attachment shown in the drawings is intended for forming across the end of the button-hole a series of long stitches forming a bar, which is afterward covered by a series of short transverse stitches, the series commencing at one end of the bar and extending to the opposite end of the same, as shown in Fig. 6.

The transverse movement of the slide  $N$  necessary to effect the formation of the long barring-stitches at the end of the button-hole is caused by the recess  $i$  in the scroll-cam  $h$ , the latter being such as to cause three transverse movements of the slide—one between each of three successive movements of the needle-bar—so as to form three straight stitches. During this time a plain portion of the peripheral cam  $g$  is traversing beneath the anti-friction roller  $s$  of the lever  $S$ ; hence there is no longitudinal movement of the frame  $M$  during the time that these three long straight barring-stitches are being made, and the threads which form said stitches are consequently placed one above another or closely together and occupy a position which is central in respect to the subsequently-formed transverse stitches, owing to the fact that the plain face of the peripheral cam  $g$  is intermediate of the lines of the elevations and depressions of the cam.

As soon as the formation of the long stitches is completed the elevations and depressions of the peripheral cam will so act upon the lever  $S$  as to impart a series of short longitudinal movements to the frame  $M$ , there being one movement for each movement of the needle-bar. At the same time there is a slow transverse movement of the slide  $N$ , due to the action of the scroll-face of the cam  $h$  upon the anti-friction roller  $v$  of the lever  $T$ , the consequence being that the bar or core formed by the three long stitches will be covered by a series of short stitches formed transversely over the same, the series commencing at one end of the bar and terminating at the opposite end of the same.

In order that the automatic stoppage of the machine may be effected as soon as the stitching of the end of the button-hole has been completed, I hang to a suitable stud,  $w$ , on the vertical portion of the arm  $B$  of the machine a lever,  $V$ , having three arms,  $w'$ ,  $w^2$ , and  $w^3$ , and to the shaft  $D$ , I hang an arm,  $W$ , the hub of which has a tooth,  $x$ , engaging with teeth  $x'$  upon a slide,  $Y$ , which has slots  $y$  for the reception of pins  $y'$ , projecting from the face of the disk  $F$ , so that said slide is guided and free to slide radially on the face of the disk. The outer portion of the slide has a lug,  $U$ , and when said slide is moved inward by the action of a spring,  $U'$ , this lug is in position to engage with the driving-lug  $a$  on the pulley  $D'$ , motion being thereby imparted to the disk  $F$  and to the gearing of the attachment. Under such circumstances a pin,  $z$ , at the end of the arm  $w'$  of the lever  $V$  bears upon the inner face of the worm-wheel  $J$ , and the end of the

arm  $w^2$  of said lever is held at such a distance away from the periphery of the disk  $F$  that it is out of the path of the outer end of the arm  $W$ . When the series of stitches at the end of the button-hole is completed, however, an opening,  $z'$ , in the worm-wheel  $J$  is brought into line with the pin  $z$  of the arm  $w'$  of the lever  $V$ , and said lever is free to move under control of a spring,  $q$ , so as to bring the end of the arm  $w^2$  into the path of the arm  $W$ , as shown in Fig. 5, the consequence being that said arm is driven backward and the slide  $Y$  moved outward, so as to free its lug  $U$  from engagement with the driving-lug  $a$ , and thus throw the attachment out of gear, a hook,  $q'$ , at the outer end of the arm  $w^2$  finally entering a notch,  $q^2$ , in the periphery of the disk  $F$ , so as to lock the same in position. (See Fig. 4.) When it is desired to again start the attachment, the lever  $V$  is operated by depressing the arm  $w^3$  of the same, which is preferably connected to a suitable treadle.

It is frequently desirable to stop the operation of the attachment before the stitching of the end of the button-hole has been completed, and this is permitted by the provision of the pin  $b$ , the withdrawal of which releases the spur-wheel  $G$  of the driving-gear from its operative connection with the driving-disk  $F$ .

I claim as my invention—

1. The combination, in a button-hole-barring machine, of stitch-forming mechanism, a cloth-clamp, a carrier therefor comprising two parts, one movable longitudinally and the other movable transversely, a rotating compound cam having a peripheral cam and a scroll-cam, and connections whereby the peripheral cam operates one part of the carrier and the scroll-cam operates the other part of the same, all substantially as specified.

2. The combination, in a button-hole-barring machine, of stitch-forming mechanism, a cloth-clamp, a carrier therefor comprising two parts, one movable longitudinally and the other movable transversely, a combined peripheral and scroll cam and connections for operating said carrier, and cam-operating gearing comprising a worm-wheel, a worm, a driving-shaft, a drive-disk, a clutch whereby the latter is subjected to or released from the control of the driving-shaft, and gearing intermediate of said drive-disk and the worm, all substantially as specified.

3. The combination, in a button-hole-barring machine, of stitch-forming mechanism, a cloth-clamp, a carrier therefor comprising two parts, one movable longitudinally and the other movable transversely, a scroll-cam and connections operating the transversely-moving part of the carrier, and a peripheral cam and connections operating the longitudinally-moving part, said cam having alternating elevations and depressions, and a portion occupying a plane between those of said elevations and depressions, all substantially as specified.

4. The combination, in a button-hole-bar-



ring machine, of stitch-forming mechanism, a  
cloth-clamp, a carrier therefor, cam mechan-  
ism operating said carrier, a driving-shaft, a  
drive-disk having a clutch-slide, by the move-  
5 ment of which it is subjected to or released  
from the control of the driving-shaft, a swing-  
ing arm acting on said slide, gearing whereby  
the movement of the disk is transmitted to  
the cam mechanism, and a lever having means  
10 for operating the swinging arm and for be-

ing controlled by one of the wheels of the  
gearing, all substantially as specified.

In testimony whereof I have signed my name  
to this specification in the presence of two sub-  
scribing witnesses.

HORACE LEROY KEMP.

Witnesses:

WILLIAM D. CONNER,  
HARRY SMITH.