2 Sheets--Sheet 1.

C. H. DENISON.

Paper-Collar Machine.

No. 165,803. Patented July 20, 1875.

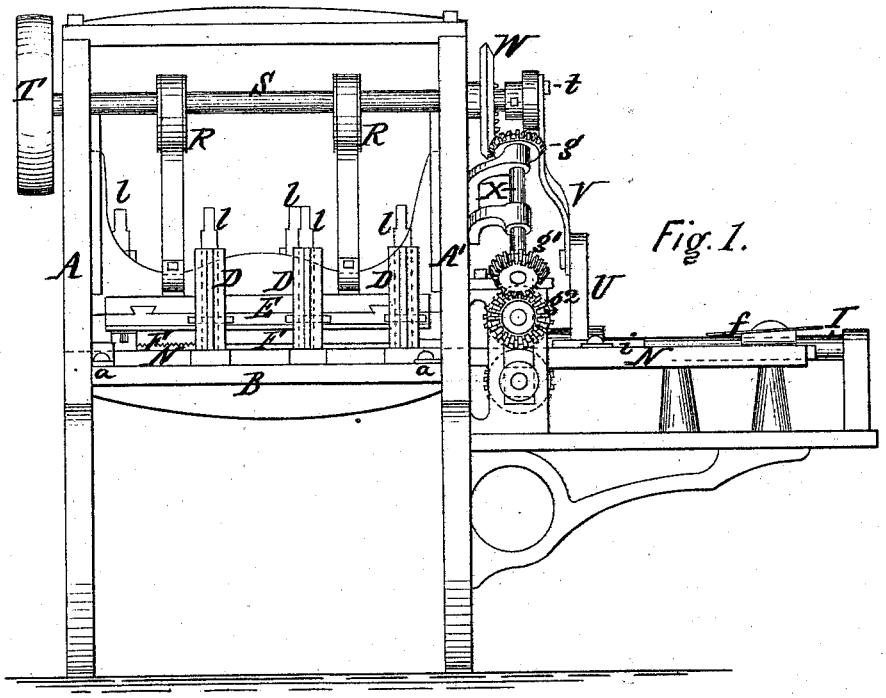
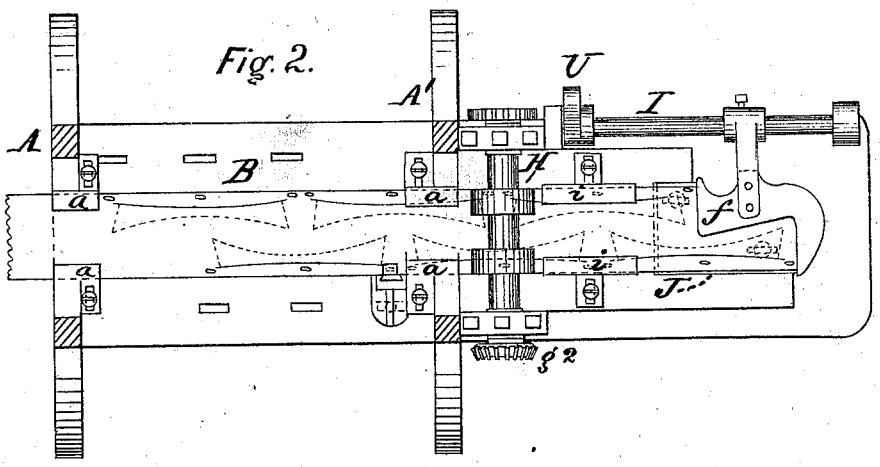


Fig. 1.

Fig. 2.



Witnesses.

C. E. Buckland.

W. B. Hall.

Inventor.

Charles H. Denison,

By J. A. Curtis, Atty.

2 Sheets--Sheet 2.

C. H. DENISON.

Paper-Collar Machine.

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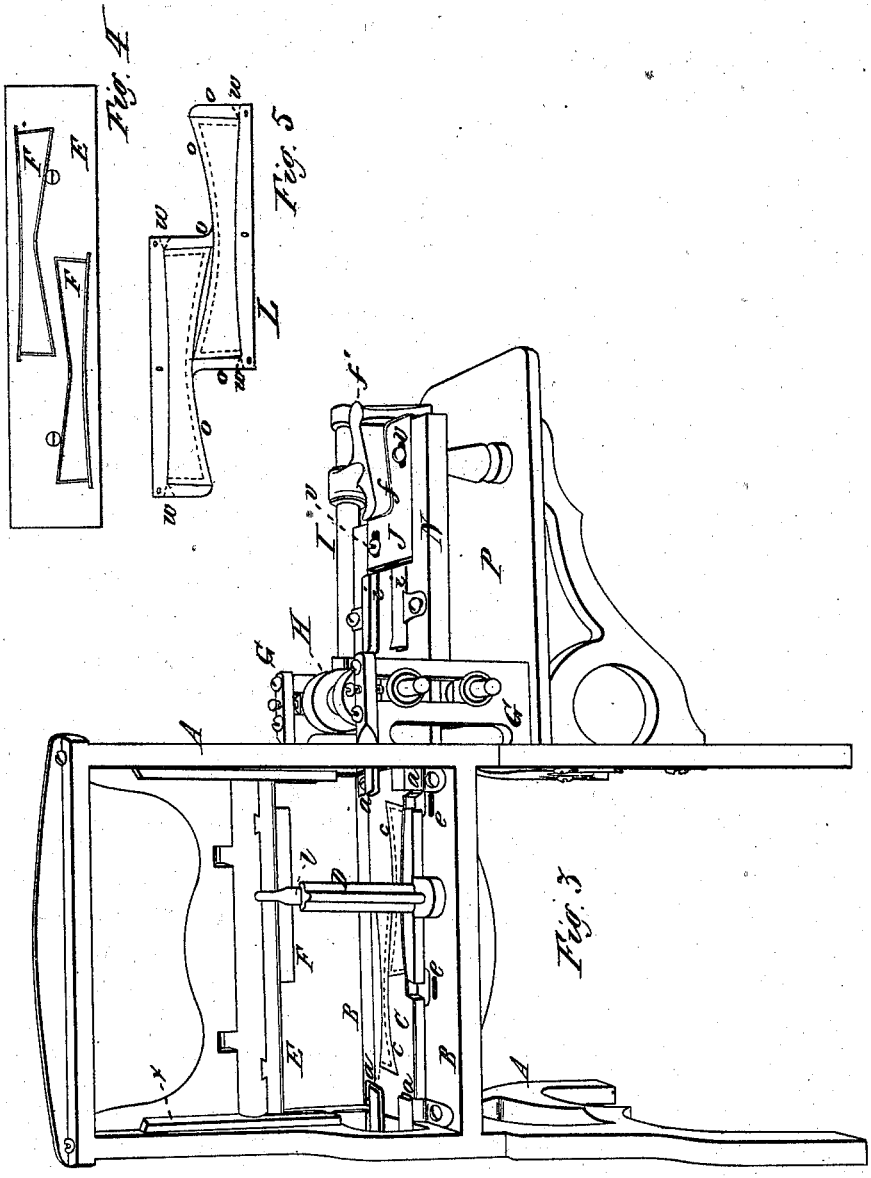

Witnesses,

W. B. Hall.

C. E. Buckland.

Inventor,

Charles H. Denison

By J. A. Lewis

his Atty.

UNITED STATES PATENT OFFICE.

CHARLES H. DENISON, OF NEW YORK, N. Y.

IMPROVEMENT IN PAPER-COLLAR MACHINES.

Specification forming part of Letters Patent No. **165,803**, dated July 20, 1875; application filed January 11, 1875.

To all whom it may concern:

Be it known that I, CHARLES HENRY DENISON, of the city, county, and State of New York, have made an invention of certain new and useful Improvements in Paper-Collar Machines; and that the following is a full, clear, and exact description and specification of the same.

The object of this invention is to produce from a continuous sheet or strip of collar-stock duplex collar-blanks, each comprising two prints of collars, which lap by each other endwise half their length, or thereabout; and to this end my invention consists, principally, of certain combinations of embossing-dies, a supporting-bed, feeding mechanism, and cutting mechanism, which are specified in detail at the close of this specification; and by whole action the sheet of paper-stock is moved between embossing-dies, which lap by each other longitudinally for half their length, or thereabout, and which indent it as required for the finished collar, and is then transferred lengthwise of the dies to the cutting mechanism, by means of which the embossed blanks are cut from the sheet, so that the necessity of taking the stock out of one machine and of entering it into another is dispensed with.

In order that the invention may be fully understood, I have represented in the accompanying drawings, and will proceed to describe, a collar-blank machine in which all my said improvements are embodied in the best form which I have thus far devised.

Figure 1 represents a front view of the said machine. Fig. 2 represents a plan of it with certain portions removed. Fig. 3 represents a perspective view of it with certain parts removed. Fig. 4 represents a plan of the platen reversed, with the embossing-dies. Fig. 5 represents the blank severed and embossed.

The embossing-dies F F in said machine are constructed with edges adapted to indent the paper, so as to produce the appearance of stitching, and also with an edge to crease it at the line of junction of the collar and the collar-band. They may also be fitted with other edges for creasing the stock at other places. These dies are secured to a platen, E, in such manner that each die (as represented in the drawing) laps by the other for half its length. The platen is caused to rise and descend by means of two revolving eccentrics, R R, that are secured to a driving-shaft, S. This shaft is supported and constructed to revolve in suitable boxes secured to the standards A A′, and is fitted with a pulley, T, to which power is imparted by means of a belt. The sheet of paper to be operated upon is supported beneath the embossing-dies by means of a supporting-bed, N, the surface of which should be faced with a sheet, C, of hard pasteboard. This bed N is secured to the platform B of the machine, and the paper, while passing over it, is guided lengthwise of the dies by edge-guides *a*, two arranged at each end of the bed. In order that the button-holes for the stud and back button may be cut simultaneously with the embossing, I combine button-hole cutters *l* with the embossing-dies, and cause both to be operated by the platen E. For this purpose the bar or shaft of each button-hole cutter is arranged to slide vertically in a suitable guide, D, and is provided with an arm, which projects into a slot, *e*, formed in the edge of the platen, so that when the latter moves down and up it forces the button-hole cutter down through the collar-stock and raises it afterward; or the arm of each button-hole cutter may project under the edge of the platen, and be caused to rise with it by means of a spring, which I prefer to arrange in a cavity of the guide. I prefer to construct the operating end of each button-hole cutter as a punch, and to make a hole in the supporting-bed to act as a die, so that a narrow piece is punched out of the collar-stock in forming the button-hole.

The cutting mechanism for separating the embossed collar-blanks from the sheet consists of a fixed shear-blade, J, and of a reciprocating shear-blade, *f*, which shear the stock. The edges of these two shear-blades have a Z form, as represented in the drawings, so that the cut made by them corresponds with the line of division between the adjacent ends and edges of the blanks when cut out so as to lap by each other endwise. This cutting mechanism is arranged beyond the ends of the embossing-dies, and the distance of the shear-blades from the embossing-dies is a multiple of the length of a collar-blank, so that when the shear-blades and embossing-

dies operate simultaneously the former will sever the sheet at the correct dividing-line between successive prints of the embossing-dies. The shear-blades are combined with the embossing-dies by the frame of the machine, and through the intervention of the rock-shaft I, the arm U, the connecting-rod V, the crank-pin *t*, the driving-shaft S, and the platen E; but as the peculiarities of this combining mechanism constitute no part of the invention it may be varied as circumstances or the peculiar views of different users may render expedient. The embossed sheet is held in place edgewise during cutting by means of edge-guides *i i*. The feeding mechanism, by means of which the stock is moved through the machine lengthwise of the embossing-dies, is arranged between the embossing-dies on the one side and the cutting mechanism on the other. It is composed, in this example, of a pair of feeding-rollers, H H, one of which is arranged beneath the level of the face of the supporting-bed N, and the other above it. The journals of each roller are fitted to revolve in suitable boxes connected with the frame of the machine, and the boxes of the upper roll have set-screws applied to them, so as to regulate the gripe of the rollers upon the sheet passing between them. The rollers are caused to move the stock, when the embossing-dies and movable shear-blades have risen from the stock, and before their descent, by connecting the feed-rollers with the driving-shaft by means of the toothed segment W, the wheels g g^1 g^2, and the shaft X. As the toothed segment W is used the feed-rolls are operated intermittently during the periods when the teeth of the segment W are driving the wheel *g*. In the intervals between these periods the feed-rolls rest. The feeding mechanism may be greatly varied, as found expedient.

When the machine is to be put in operation a sheet of paper wide enough to form two rows of collars whose members interlock sidewise, but lap by each other endwise, as represented in Figs. 2 and 5, is introduced at the opening in the standard A, and is pushed along the bed of the machine until it is nipped between the feed-rolls H. The machine is then set at work, and the paper is embossed by the dies and moved through the machine, lengthwise of the embossing-dies, over the supporting-bed at intervals. As soon as its end passes between the shear-blades they lop off an embossed piece containing the prints of two collars, as represented at Fig. 5; and this shearing is effected simultaneously with the indenting of the new prints by the embossing-dies upon the extension of the sheet moved into the machine. The button-hole cutters, when used, operate simultaneously with the embossing-dies.

I do not claim the members of my machine separately. Neither do I claim broadly to be the first who combined, in one machine, embossing-dies, feeding mechanism, and cutting mechanism. Nor do I claim any feeding mechanism combined with lengthwise-cutting dies, which cut out one or more perfect collars from a strip, as shown in patents granted to G. K. Snow, October 29, 1872, whether said cutting-dies lap by each other or not; neither do I claim any part of these; but

What I claim as my invention is—

1. The combination and arrangement, substantially as before set forth, of the two collar-embossing dies, arranged to lap by each other longitudinally, the supporting-bed, the cutting mechanism, and the feed mechanism, located between the said dies and cutting mechanism, whereby the web is drawn past and from said dies, and advanced to the cutting mechanism, by which pieces are severed from the web by a combined longitudinal and transverse cut, having upon each piece two or more collars embossed.

2. The combination and arrangement, substantially as before set forth, of the two collar-embossing dies, arranged to lap by each other longitudinally, the supporting-bed, the button-hole cutter, the cutting mechanism, and the feed mechanism, arranged between the said dies and cutting mechanism, whereby the web is drawn past and from the said dies and button-hole cutters, advanced to the cutting mechanism, and pieces of paper severed from the web by a combined longitudinal and transverse cut, each piece having two or more collars embossed thereon and the button-holes cut.

Witness my hand this 25th day of November, A. D. 1874.

CHARLES HENRY DENISON.

Witnesses:
T. A. CURTIS,
M. B. HALL.