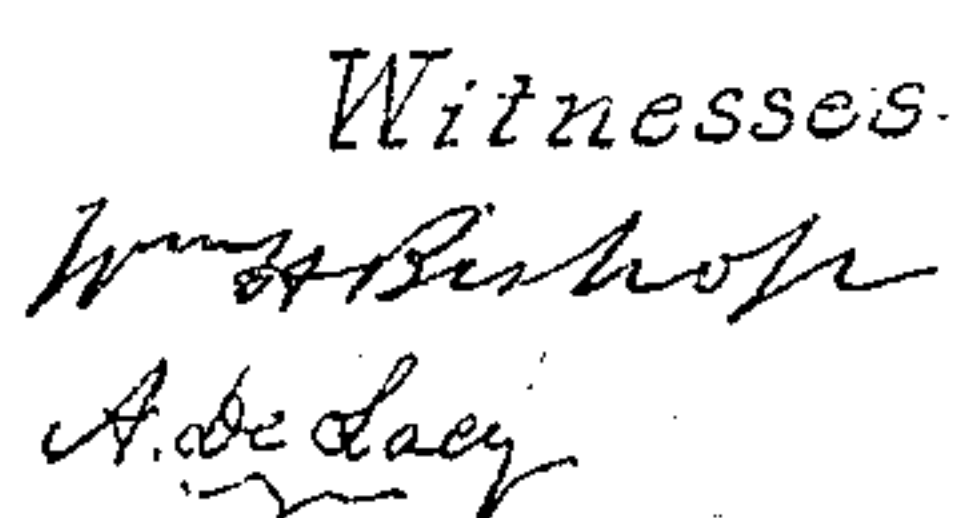


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H. G. Gursch

M. P. Dorsch
Collar Mach.

N^o 46,340

Patented Feb. 14, 1865.

Fig. 2. A, a.

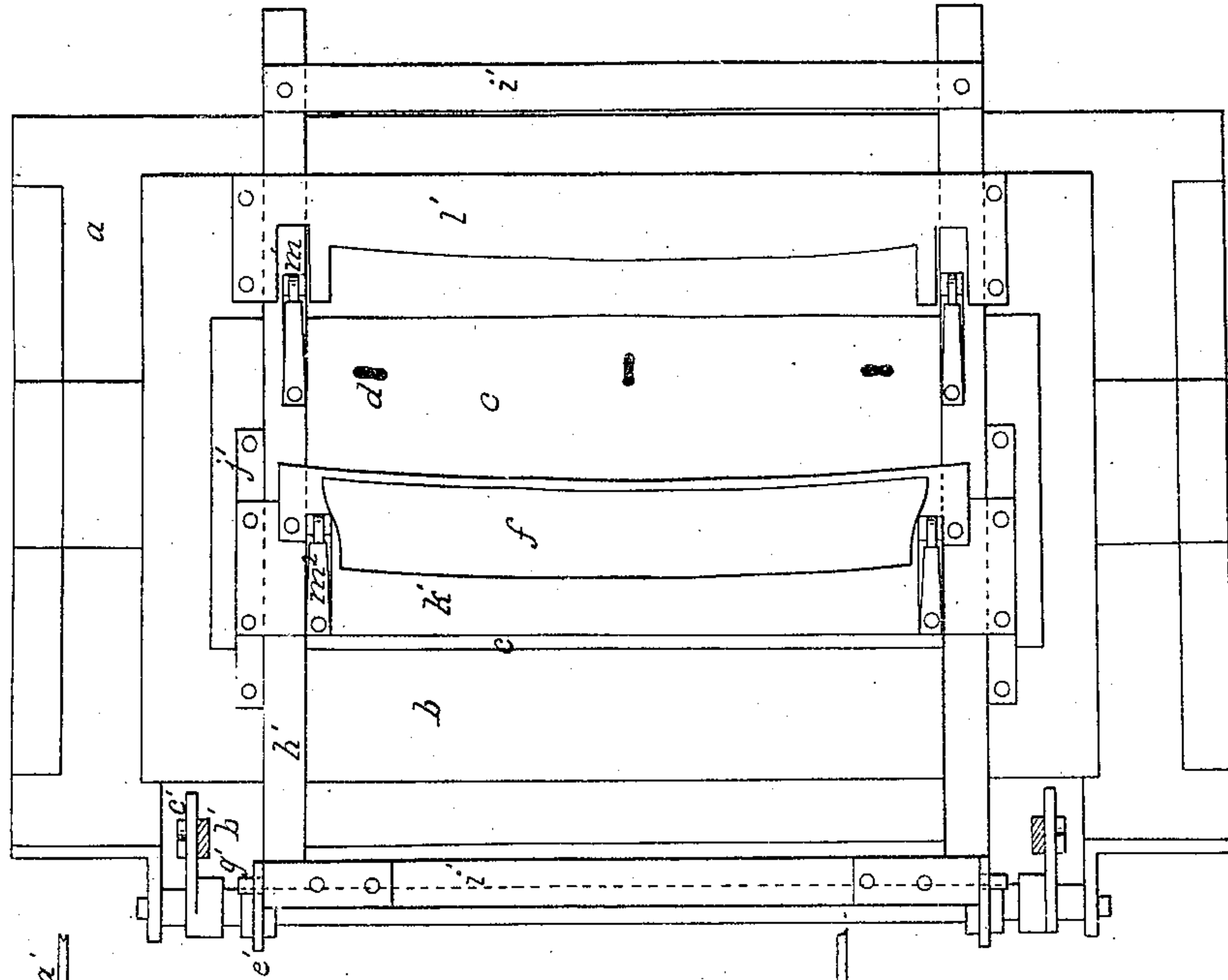


Fig. 3

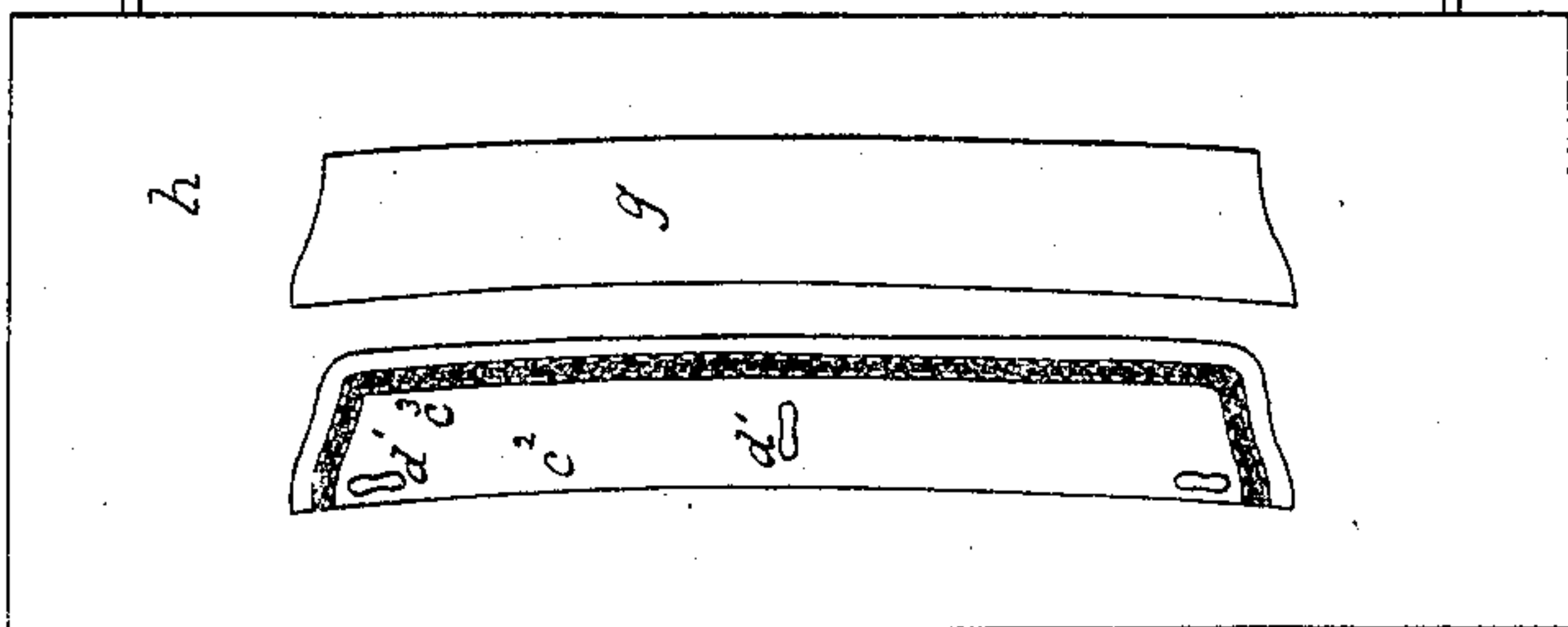


Fig. 4. B, b.

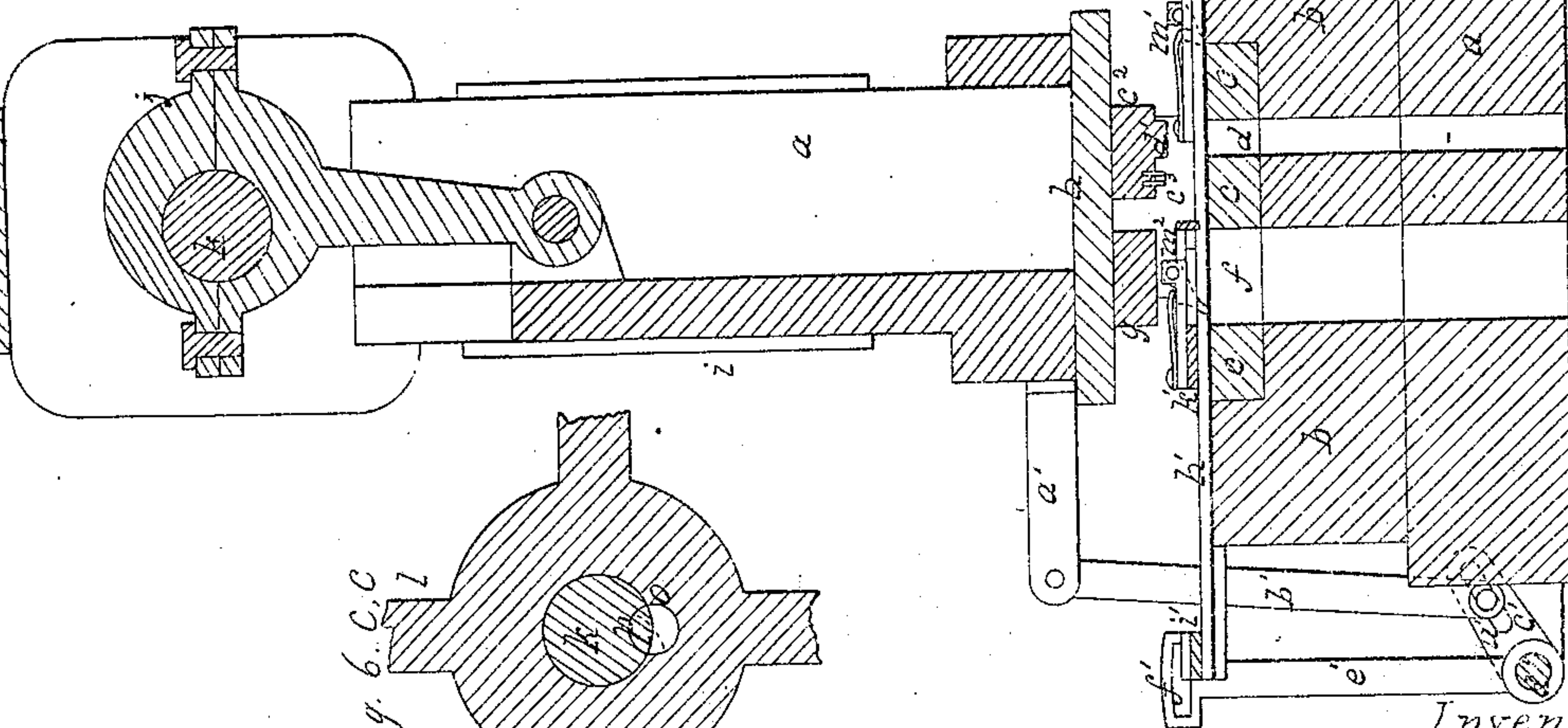
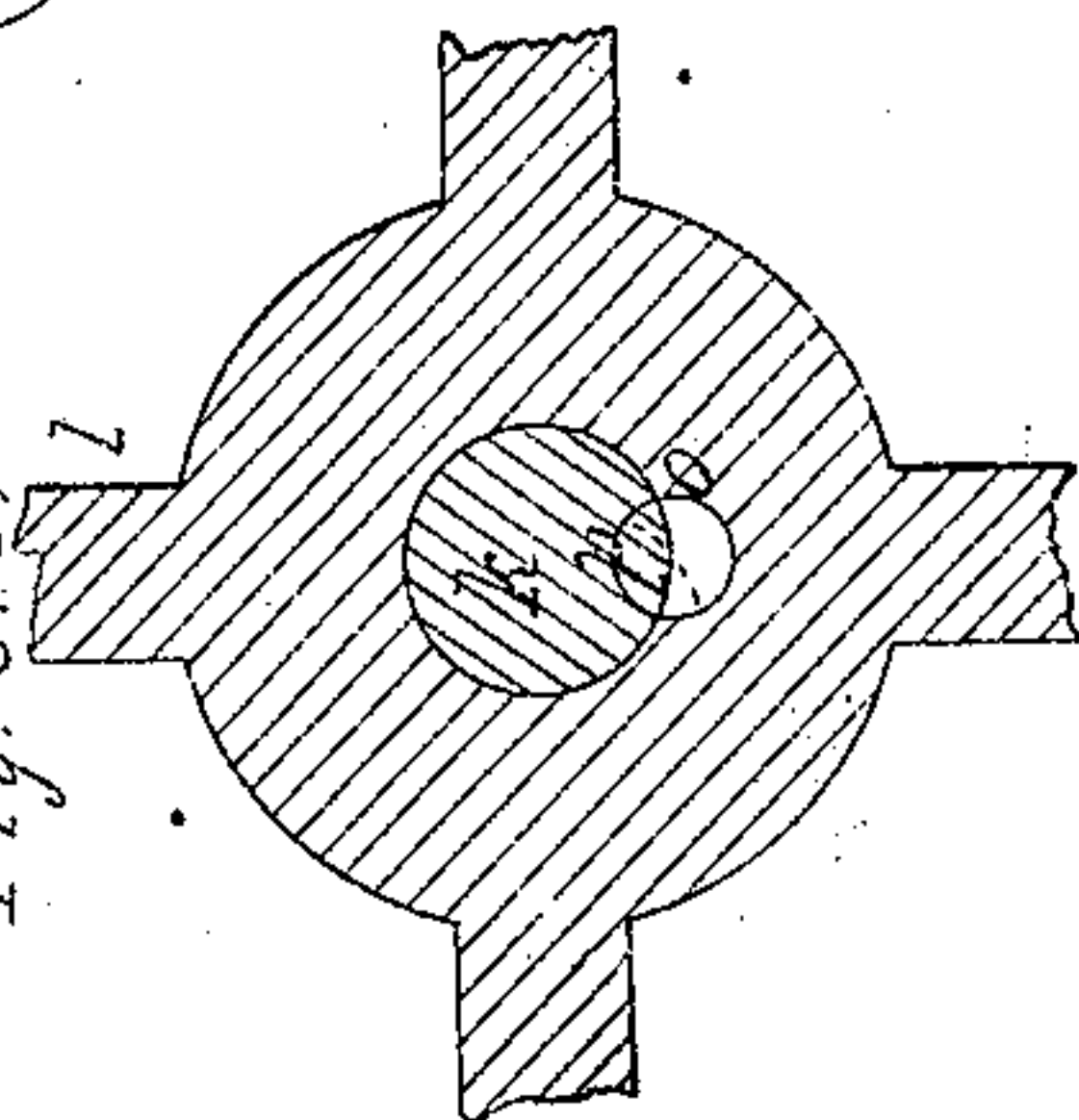


Fig. 6. C, c.



Witnesses
Wm. Bishop
A. Deacy

Inventor

M. P. Dorsch

UNITED STATES PATENT OFFICE.

MERRIMAN P. DORSCH, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR MAKING PAPER COLLARS.

Specification forming part of Letters Patent No. 46,340, dated February 14, 1865.

To all whom it may concern:

Be it known that I, MERRIMAN P. DORSCH, of the city, county, and State of New York, have invented a new and useful Improvement in Machinery for Cutting and Embossing Paper Collars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation; Fig. 2, a horizontal section taken at the line A *a*, Fig. 1; Fig. 3, a face view of the upper die; Fig. 4, a vertical section taken at the line B *b* of Fig. 1; Fig. 5, a vertical section of the driving wheel or pulley, taken in the plane of the axis of the driving shaft; and Figs. 6 and 7 cross-sections taken at the lines C *c* and D *d* of Fig. 5.

The same letters indicate like parts in all the figures.

The object of my invention in machinery for cutting and embossing shirt-collars out of paper is by an intermittent motion to feed or move forward the sheet of paper to the required places between the cutting and the swaging dies, and there hold it while these operations are being performed.

In the accompanying drawings *a* represents a suitable frame, and *b* the bed which forms the lower press-face or die, *c*, and what may be termed the “female” portion of the shears. The lower die, *c*, is simply a flat smooth face of metal. I prefer to make it of steel. There are three apertures, *d d d*, made in it, of the form of the button-holes required to be made in each collar. These holes should be formed with sharp square edges.

A mortise, *f*, of the size and shape of the intended collar, is formed through the bed *c*, leaving the upper edge square and sharp, and this forms what I term the “female” part of the shears. To this mortise is accurately fitted a plunger, *g*, which forms the male portion of the shears. This is secured to the under face of a follower, *h*, which is fitted to slide in suitable ways, *i i*, of the frame, so as to slide accurately therein, and the lower face of this plunger *g* is beveled in opposite directions from the middle toward each end, so as to give the cutting-edges thereof, in entering the mortise or female part of the shears, a shearing cut, so that by this and the accuracy with which it fits the mortise the collars will be

cut with a perfectly-smooth edge and without bending the paper, thereby avoiding a serious difficulty heretofore experienced.

The face of the follower *h* by the side of the plunger is provided with an embossing-die, *c*², whose surface is smooth and parallel with the face of the die or bed *c*, and this is provided with three punches, *d' d' d'*, so as to accurately fit in the apertures *d d d* in the bed to punch the button-holes, and this embossing-die *c*² is formed with a groove near the edge, which corresponds with the edge of the collar, to which groove are fitted the plates *c*³ *c*³ which emboss the imitation of stitching.

The follower receives an up-and-down motion from an eccentric, *j*, on a horizontal shaft, *k*, or the required motion may be given by other and equivalent means.

The required motion is given to the main shaft *k* by a belt-wheel, *l*, which receives motion by a suitable belt from some suitable motor. It is necessary at the end of each complete series of operations to stop the machinery while the belt-wheel *l* continues to move, and it is important that the stoppage should take place in every instance at the same part of the range of motions. For this purpose the hub of the belt-wheel *l* is mounted to turn freely but accurately on the shaft and between collars *m* and *n*—the one *m* being a shoulder on the shaft and the one *n* a circular plate on the outer face of the belt-wheel, but connected with the shaft so as to turn with it.

After the hub of the belt-wheel has been properly fitted to turn on the shaft, a cylindrical hole, *o*, is bored parallel with the axis of the shaft, and partly in the shaft and partly in the hub of the wheel, and into this is fitted a turning stop, *p*, having a journal at one end fitted to turn in and extending through the outer collar or plate, *n*, and projecting sufficiently beyond the outer face to have attached to it an arm, *q*, by which the stop *p* can be turned. The periphery of the stop *p* is so cut away that when in the position represented by full lines in Fig. 6 its outer surface will be like a continuation of the cylindrical part of the shaft, on which the belt-wheel will turn freely, and in that position of the stop the extremity of the arm *q* will be in the position represented by full lines in Fig. 7 of the drawings; but when the arm *q* is moved inward toward the axis of the shaft, as represented

by dotted lines in Fig. 7, which is effected by the tension of a spring, r , the stop p will then be turned in the position represented by dotted lines in Fig. 6 of the drawings, and in that position it will clutch the belt-wheel to the shaft, and thereby communicate motion to the machinery.

The required motion for turning the stop p to unlock or unclutch the belt-wheel, is imparted to the arm q against the tension of the spring r by its coming in contact with a cam-formed spur, s , projecting from the inner face of a boss, t , which slides on the outer end of the main shaft, which is there of a reduced size. This boss is forced toward the face of the plate n by the tension of a helical spring, u , on the shaft, and when so pushed inward the cam-like spur s is placed in the path of the arm q , so that in its revolution it (the arm) strikes the cam-surface by which it is moved outward to turn the stop p to the position represented by full lines in Fig. 6, thereby unlocking the belt-wheel, that it may continue to turn without the shaft.

The boss t is on the end of an arm, v , of a rock-shaft, w , which has another arm or handle, x , by which the attendant can draw back the boss t with its cam-formed spur away from the path of the arm q , so as to leave it free to be operated by the tension of the spring r , to lock the belt-wheel so soon as that portion of the hole o which extends into its hub reaches the stop p , to admit of its turning.

By the proper relative location of the eccentric on the shaft, the hole o , made in the hub of the belt-wheel and in the shaft, the arm q on the stop p , and the cam-like spur on the boss t , the machinery will stop at the required part of its range of motions while the belt wheel continues to run, the operator simply drawing out the boss at any time.

The feeding motion for moving the paper is taken from the platen or follower h , from which project two brackets, $a' a'$, which are connected by connecting-rods $b' b'$ with two arms, $c' c'$, of a rock-shaft, d' . From this rock-shaft project two other arms, $e' e'$, the upper ends of which are formed with concentric segment-slots, $f' f'$, which receive pins $g' g'$ that project from the ends of a bar which constitutes the front part of the feeding-frame, composed of two side pieces, $h' h'$, and two end bars, $i' i'$. This feeding-frame slides on the surface of the bed to which the bed-die is secured, and between ways $j' j'$, and under two cross-plates, $k' k'$, one of which acts as a clearer to prevent the cutter from drawing up the paper.

The inner edges of the side pieces, $h' h'$, of the feeding-frame are grooved longitudinally to receive the edges of the sheet of paper and to permit it to slide therein, and they are both

of them cut away at top to receive and permit spring gripping fingers $m' m'$ to grip and hold the sheet of paper near the two edges. These spring-fingers are so formed that when the feeding-frame moves in the direction of the arrow (see Fig. 2) they will grip the sheet so as to move it toward and between the dies and slide over the sheet as the frame moves back to enable them to take a fresh hold of the paper for the next operation, the sheet being held, as the frame moves back, by similar gripping-fingers, $m^2 m^2$, attached to the cross-plate k^2 . The range of motion of the feeding-frame is equal to the width of a collar—that is, equal to the width of paper required for each collar—and by the motions of the feeding-frame the end of the sheet of paper is first brought under the embossing-dies, there held until it is embossed, and at the next motion the embossed part is brought to the cutters, cut off, and discharged below, and, by the same motion, a fresh portion brought under the embossing-die.

As the motions of the feeding-frame are derived from the platen or follower which carries the cutter and punches to cut out the button-holes, and these in making a collar not only pass through the paper but into the bed-die, it is necessary that the follower with its cutters should rise sufficiently to get out before the feeding-frame begins to move to feed the paper forward. It is for that reason that the arms $e' e'$ of the rock-shaft d' are formed with segment-slots $f' f'$, to receive the pins $g' g'$ of the bar i' of the feeding-frame, so that the said arms can move for some distance, as the platen is rising, before they act on the feeding-frame. The other arms, $t' c'$, of the rock-shaft d' are formed with slots u' , in which are secured the wrist-pins that form the connection with the connecting-rods, so that by shifting the wrist pins the range of motion of the feeding-carriage can be adjusted to any width of collar required to be made.

What I claim as new, and desire to secure by Letters Patent, is—

1. The reciprocating feeding-frame with the sides thereof grooved to receive the sheet of paper, in combination with the gripping-fingers, substantially as described, and having a mode of operation such as described, and for the purpose specified.

2. The reciprocating feeding-frame with its gripping-fingers, operating substantially as herein described, in combination with the dies for embossing and cutting the collars, substantially as described.

M. P. DORSCH.

Witnesses:

WM. H. BISHOP,
A. DE LACY.