C. Spofford & C. H. Montague.

Collar Mach.

No. 85037. Patented Dec. 15. 1868.

Fig: 1

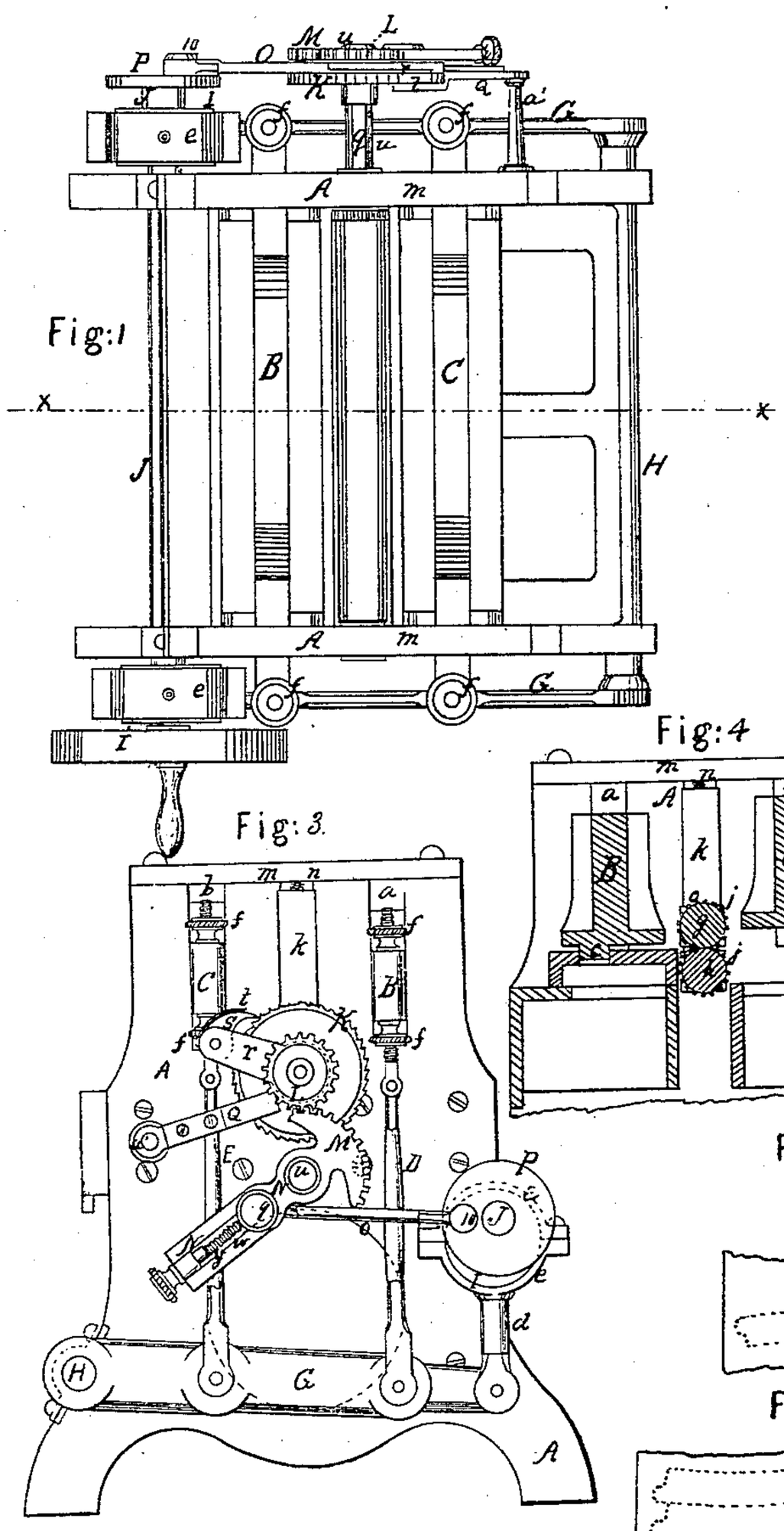


Fig: 2

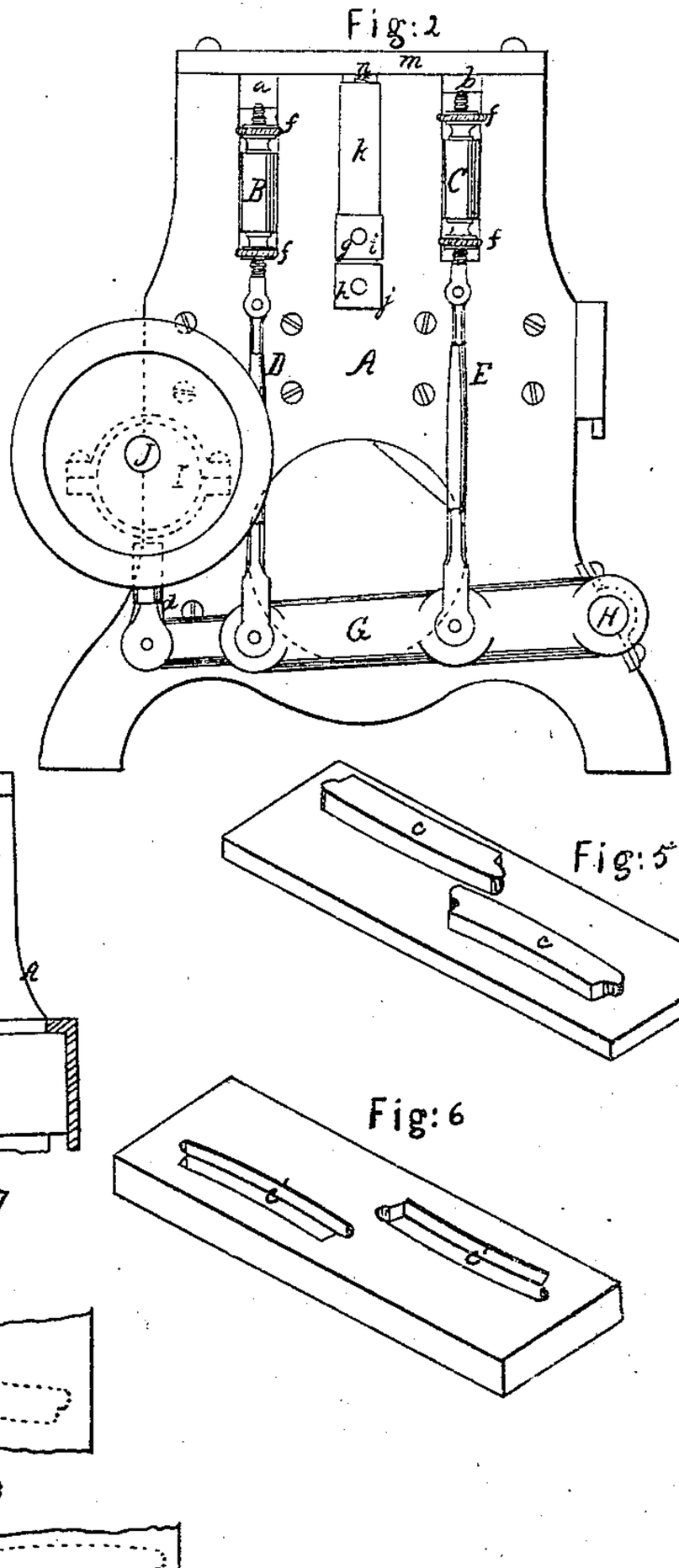


Fig: 3.

Fig: 4

Fig: 5

Fig: 6

Fig: 7

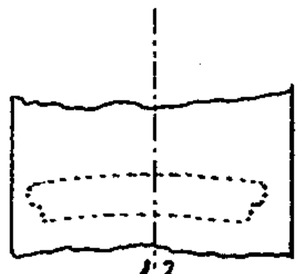
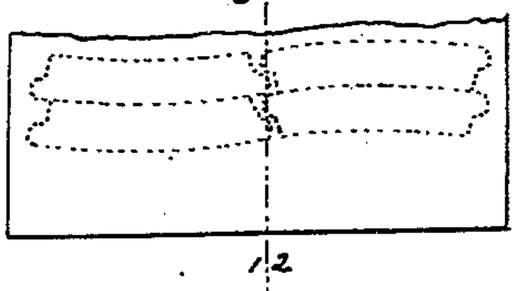


Fig: 8



Witnesses:

W. J. Cambridge
L. E. Batchelder

Inventors:

Charles Spofford & Charles H. Montague
Per his Attorneys Teschemacher & Stearns

United States Patent Office.

CHARLES SPOFFORD AND CHARLES H. MONTAGUE, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 85,037, *dated December* 15, 1868.

MACHINE FOR MAKING PAPER COLLARS.

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

To all whom it may concern:

Be it known that we, CHARLES SPOFFORD and CHARLES H. MONTAGUE, both of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain Improvements in Machines for Making Paper Collars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

To utilize a much larger percentage of the material employed than has heretofore been accomplished, and to enable us to cut collars, cuffs, or articles in irregular shapes, and to cut a greater number of the said articles in a given time, are among the objects of our invention, which consists of two or more pairs of cutting-dies, placed transversely across our machine, as shown in figs. 5 and 6, which, although they show only the regular-shaped collars, may be of any irregular shapes desired, thus meeting the present demands of the market for such goods, which demand cannot be met by any other machine now in existence, except by a much greater consumption of time and material, and necessarily at a greatly increased cost.

We are aware that machines have been used which resemble somewhat our invention in regard to the cutting of the projecting ends of collars; but in all such machines yet made, the collars must be cut from comparatively narrow strips of paper, and also requiring more than one operation of the machine to cut a collar of an irregular shape, while, by our improvements, collars or other articles may be cut in any desired shape, however irregular, by one operation of the machine.

And, again, the dies for cutting the projecting ends, in the machines heretofore used, being placed directly opposite each other, there is a much greater amount of wastage at the two ends, which we obviate by arranging our dies transversely across our machine, one in advance of the other, so as to secure a proper and sufficient bearing for each die, and still cut the paper without loss of material, which cannot be done if the ends of the dies are directly opposite each other, unless they are separated sufficiently to secure the proper bearing, and this separation necessarily involves a heavy loss of material.

To illustrate, we would state that a good article of linen-finished paper, used in the manufacture of collars, weighs about one hundred pounds to the ream, a ream being sufficient to cut five thousand collars of the ordinary width.

To separate the points of the dies one inch, which is the distance necessary to stand the strain, would involve the loss of a strip of paper one inch in width and thirteen thousand four hundred and forty inches in length, or about six and a half pounds of paper, which, at the lowest market-price of forty cents per pound for finished paper, would be a loss of two dollars and sixty cents on every lot of five thousand collars, or fifty-two cents per thousand, which is of itself a fair profit in the business.

To enable others skilled in the art to construct and use our invention, we will proceed to describe the manner in which we have carried it out.

Figure 1 is a plan or top view of a machine for making paper collars, with our improvements applied thereto.

Figure 2 is an elevation of one side of the same.

Figure 3 is an elevation of its opposite side.

Figure 4 is a section on the line *x–x*, fig. 1.

Figure 5 is a perspective view of a pair of male dies, arranged according to our improvements.

Figure 6 is a perspective view of a pair of female dies, arranged according to our improvement.

Figures 7 and 8 are details, to be referred to in the following description.

In the drawings, A represents the frame of the machine, which is provided, on each side, with slots *a b*, fig. 4, for the reception of the extremities of the heads B C, which slide vertically therein, the head B carrying the male portions, *c c*, of the cutting-dies, each die cutting a collar at every downward motion of the lever G; and the head C, that of the embossing-dies, not shown.

c′ c′ are the female cutting-dies, secured to the frame-work, and through which the collars fall, in a finished condition, into a receptacle below.

These heads, B C, are connected by means of jointed rods, D E, with the levers G, one set on each side of the machine, which are secured to a horizontal shaft, H, having its bearings in the frame-work A.

The opposite ends of these levers G are pivoted to the short arms, *d*, projecting down from the straps *e*, of the eccentrics I, which are secured to the opposite ends of the shaft J, outside of the frame-work A, and by this means the levers G are vibrated so as to impart the required vertical motion to the heads B C.

It will be seen that the rods E, secured to the heads C, are pivoted to the levers G at a less distance from their fulcrum than the rods D, so that more power is applied to the head C than to the head B. Thus, by employing two heads, arranged as described, and operating by different rods, attached to the same lever, at unequal distances from the pivot, we secure an increased pressure upon the embossing-dies, greater than that necessary for the cutting-dies, which enables us to avoid the twisting or displacing the cutting-out die or dies from their true position, which it is impossible to avoid where both the cutting and embossing-dies are attached to the same head, as has hitherto been customary.

The heads B C may be adjusted vertically upon the rods D E, by means of the thumb-screws *f*.

We will now describe the manner in which the paper is fed from the roll through the machine, being drawn through the embossing-dies, instead of being pushed

through, as heretofore—a very important consideration in the saving of material—and in carrying the paper then steadily forward, still uncut, to the cutting-die or dies.

This arrangement of the feed-roll between the heads B C, by which the paper is drawn forward after being embossed, also avoids the difficulty, heretofore encountered, in having the paper pushed through the embossing-dies, by which it was liable to double up and spoil the imitation-stitches, or other devices.

g h are two feed-rolls, which are placed between the two heads B and C, and revolve in movable boxes, *i j*, which slide vertically within slots in the frame-work A, the upper roll, *g*, being pressed down towards the lower one, *h*, by means of blocks, *k*, figs. 3 and 4, on the upper ends of which may be placed springs *n*, underneath the bars *m*.

The upper roll, which is driven by the lower one, is connected thereto by means of gears *o p*, the shaft *g*, of the lower roll, extending out at one side beyond its box, *j*, where it is provided with a ratchet-wheel, K, securely keyed thereto; and upon the outer end of this shaft *g* is loosely fitted a gear, L, to the inner face of which is attached an arm, *r*, carrying, at its outer end, a pawl, *s*, which engages with the teeth of the wheel K, in contact with which it is retained by a flat spring, *t*. The arm *r* is vibrated so as to produce an intermittent revolution of the wheel K and the feed-rolls, as required by the gear L, which is operated by a toothed segment, M, at the upper end of a lever, N, which is pivoted to a stud, *n*, projecting from the frame-work.

This segment is vibrated by means of a connecting-rod, O, one extremity, 9, fig. 3, of which is secured to lever N, the opposite end being pivoted to a crank-pin, 10, on the disk P, secured to the outer end of the driving-shaft J.

In order to regulate the vibration of lever N, with its toothed segment M, and consequently the amount of feed, the end 9, of rod O, is secured to a sliding block, which is moved within a slot, *w*, in the lever N, by a screw, *y*, and the distance from the fulcrum of the lever N to the point where the power is applied may thus be readily varied, as desired, to increase or diminish the amount of feed at each revolution of the driving-shaft.

Q is a bifurcated arm, which is secured to the end of a stud, *a'*, and embraces the ratchet-wheel K, the inside of the bifurcations being lined with felt or other suitable material, so as to produce sufficient friction upon the wheel to prevent it from being rotated by the friction of the pawl *s*, as it is vibrated in a contrary direction.

Fig. 7 illustrates the appearance of the paper after being cut with one die on our machine as at present in use. Fig. 8 represents the appearance of the paper when cut by one or more pairs of dies by means of our new improvement.

It will be observed that our improvements, as stated in our second claims, are equally applicable to our machine, whether one or more cutting-dies be used. By the use of our improvements, we are enabled to manufacture nearly one hundred thousand more collars in ten hours than any other machine now in use, and without any additional expense for labor.

What we claim as our invention, and desire to secure by Letters Patent, is—

The arrangement of the dies *c c*, with relation to each other, substantially as shown, and for the purpose set forth.

Also, the heads B C, arranged as set forth, and operated by the lever G, to which they are attached at different points by the arms D E, one actuating the cutting-die or dies, and the other the embossing-dies, substantially as and for the purpose described.

Also, the feed-rolls *g h*, when arranged as described, in combination with the heads B C, substantially as and for the purpose set forth.

CHAS. SPOFFORD.
C. H. MONTAGUE.

Witnesses:
N. W. STEARNS,
P. E. TESCHEMACHER.