

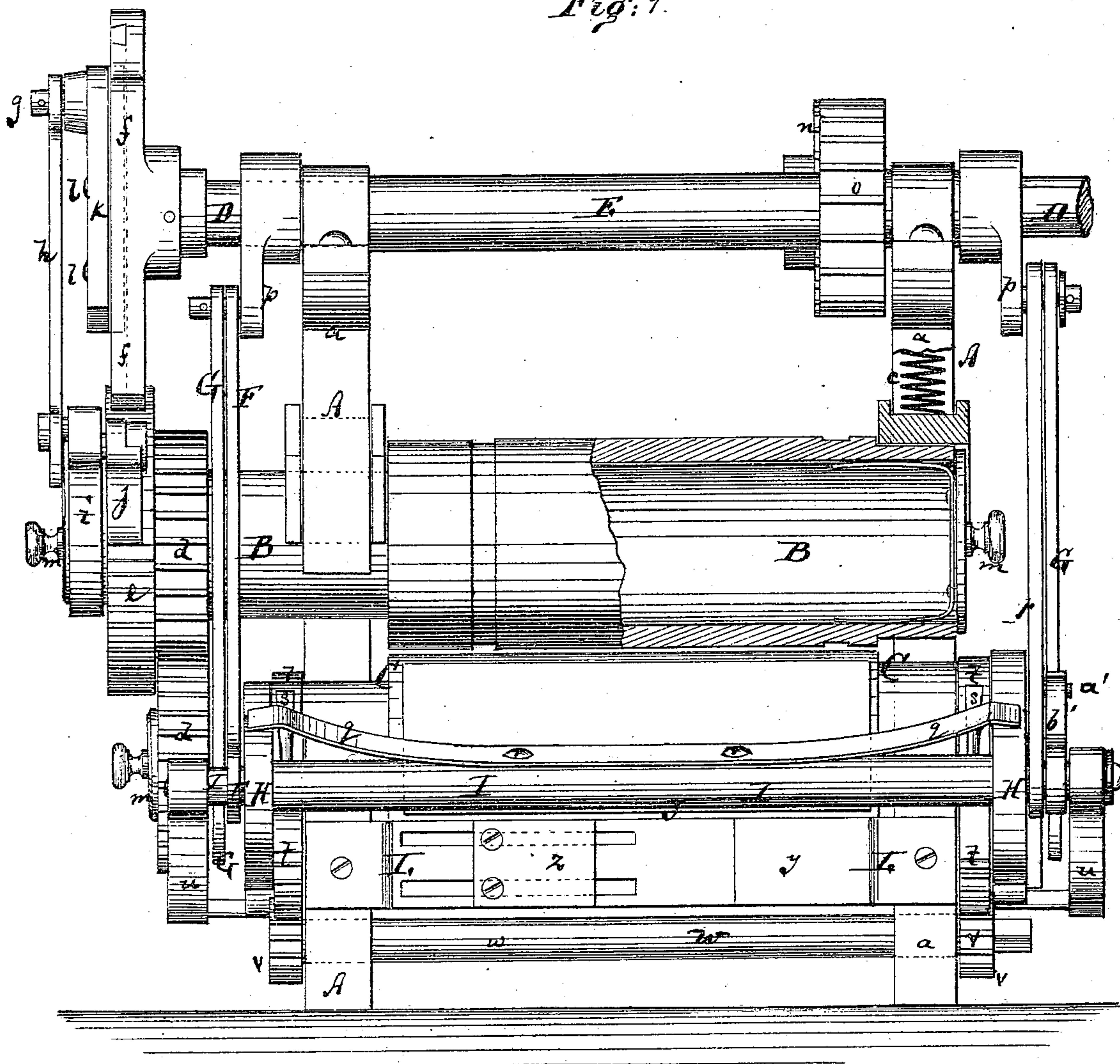
JOSEPH A. SAWYER.

Improvement in Cloth Plaiting Machines.

No. 123,425.

Patented Feb. 6, 1872.

Fig: 1.



Witnesses:

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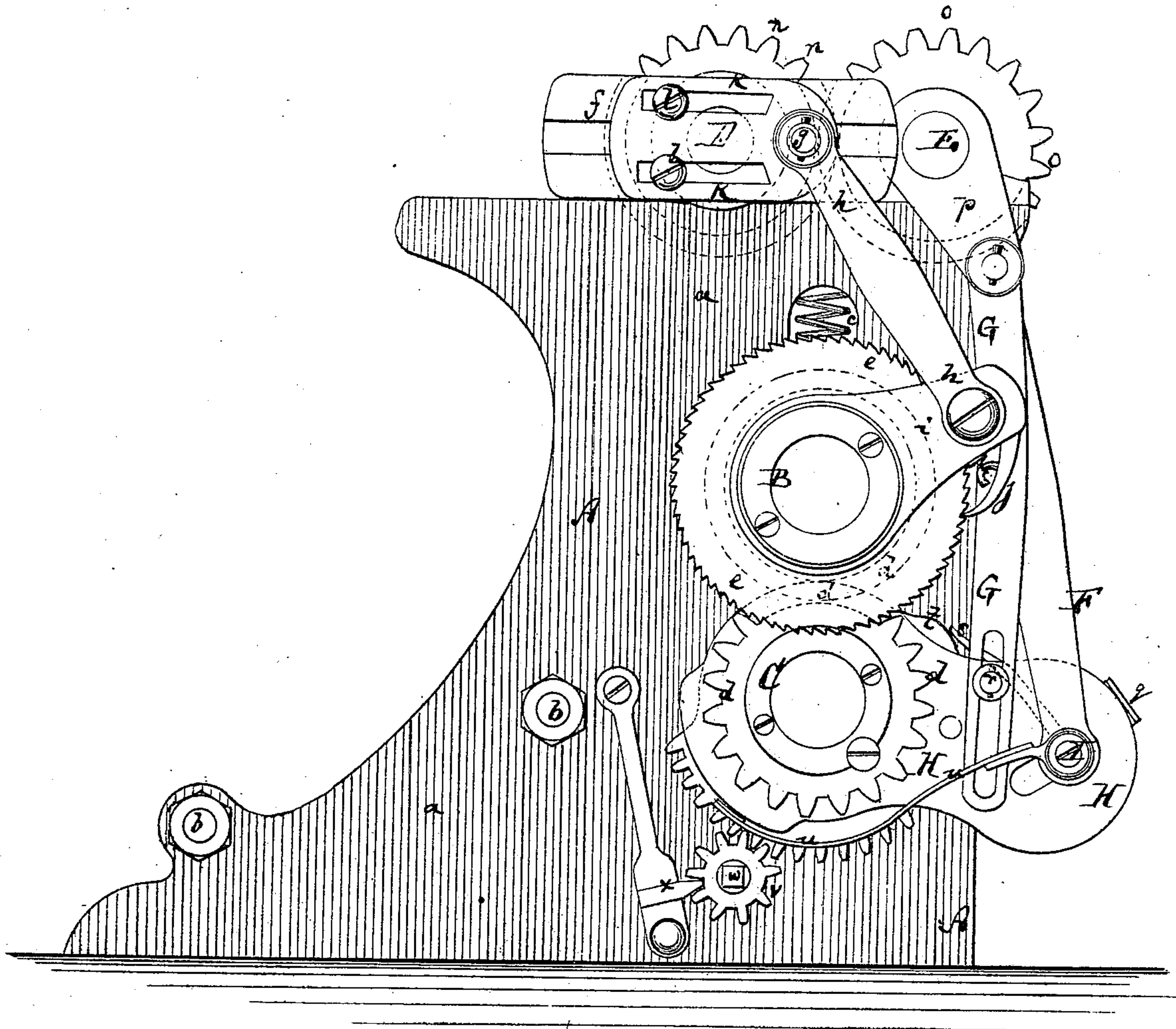
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Fig. 2



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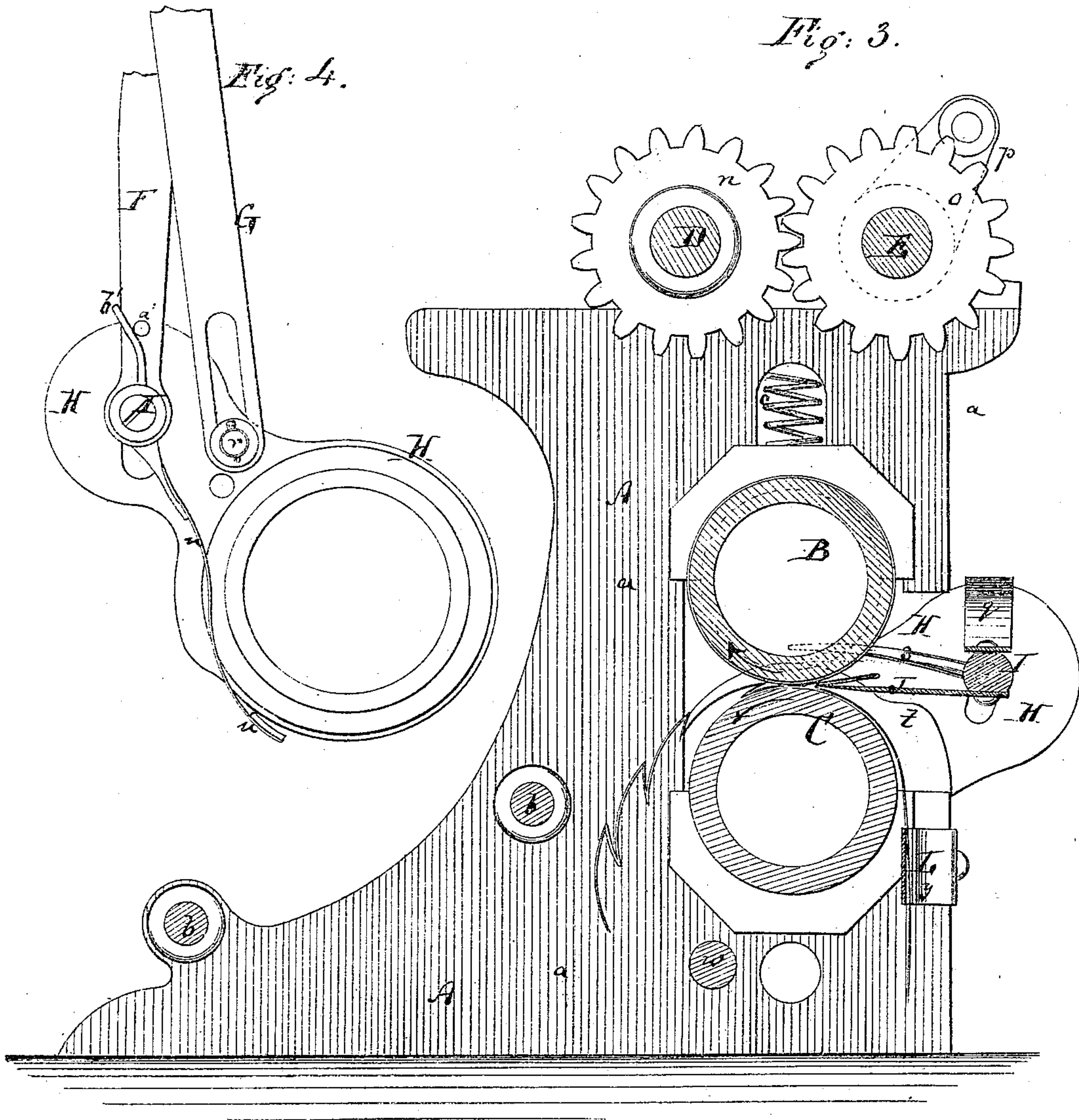
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UNITED STATES PATENT OFFICE.

JOSEPH A. SAWYER, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN CLOTH-PLAITING MACHINES.

Specification forming part of Letters Patent No. 123,425, dated February 6, 1872.

Specification describing a new and Improved Plaiting-Machine, invented by JOSEPH A. SAWYER, of Worcester, in the county of Worcester and State of Massachusetts.

Figure 1 is a front elevation, partly in section, of my improved plaiting-machine. Fig. 2 is an end elevation of the same. Fig. 3 is a vertical transverse section of the same. Fig. 4 is a detail end view of the frame and levers for operating the plaiting-blade.

Similar letters of reference indicate corresponding parts.

This invention relates to a new machine for plaiting fabrics to be used in the manufacture of shirt-bosoms, and for other purposes. The invention consists in the use, in connection with the above, of several appliances for imparting and regulating the necessary motion and guiding the fabric, all as hereinafter more fully described.

A in the drawing represents the frame of my new plaiting-machine. The same consists of two upright end pieces, *a a*, which are connected by suitable longitudinal bolts or braces *b b*, to keep them the requisite distance apart and hold them properly firm and connected. In these end pieces are hung two horizontal parallel drums, B C, one directly above the other. The lower drum C hangs in bearings at or near its ends, while the upper drum B is, by springs *c c*, held down upon the lower drum, and is vertically adjustable against said springs. D is the driving-shaft of the machine, hung in the frame A, and provided with an operating-crank or pulley, whereby it can receive constant rotary motion from suitable power. The two drums B C carry intermeshing toothed wheels *d d* at one end, and the upper drum furthermore carries a ratchet-wheel, *e*. A crank, *f*, at the end of the shaft D has an adjustable crank-pin, *g*, which, by a pitman, *h*, is connected with a lever or frame, *i*, that is swiveled to one end of the drum B, and carries a pawl, *j*. This pawl is in contact with the ratchet-wheel *e*, and serves, as the frame *i* is vibrated by means of the rotary shaft D, to impart intermittent rotary motion to the upper drum, which motion is, by the wheels *d d*, transmitted in opposite direction to the lower drum C. The crank-pin *g*, it was stated, is adjustable on the crank *f*, which is for the purpose of varying the strokes

of the lever *i*, and thereby also the turns of the drums. This adjustment is obtained by fastening the crank-pin to a slotted plate, *k*, which is, by screws *l l*, secured to the face of the crank, as is clearly indicated in Fig. 2. The drums B C I prefer to make hollow and with removable caps *m m* at the ends. This not only reduces their weight and the consequent power of moving them, but permits also the application to their inner chambers of heated irons or gases, which may aid in the process of plaiting by imparting a superior finish to the surface of the fabric. A toothed wheel, *n*, mounted upon the shaft D, meshes into a similar wheel, *o*, on a shaft, E, that has its bearings in the frame A. Cranks *p p*, mounted upon the ends of the shaft E, are each, by a pair of rods, F G, connected with frames H H that are swiveled to the ends of the lower drum C. A bar, I, is fitted through the slotted ends of the frames H so as to be in front of the drums, as shown, and carries a blade, J, projecting toward the lower drum, as is clearly shown in the drawing. The rods F F from the cranks *p* are, at their lower ends, directly connected with the ends of the bar I. This bar is held in the upper end of the slots in H by a spring, *q*, fastened to it, as in Fig. 1, and bearing upon the upper edges of the said frames H. The lower ends of the rods G are slotted, and are, by pins *r* that project from the sides of the frames H through such slots, connected with the frames H. *s s* are fingers projecting inwardly from the bar I near the ends of same, and *t t* are rings placed loose around the ends of the drum C, and provided with projecting cam-edges, as in Fig. 3, for the fingers *s* to rest upon. Springs *u*, projecting from the bar I and held against the lower edges of the swivel-frames H, serve to keep the fingers *s* in contact with the cam-edges of *t* during certain part of the motion. The rings *t t* bearing the cam-edges can be turned on the drum C to bring the cams more or less forward. In order to effect this the lower segmental edge of each ring *t* is toothed and meshes into a pinion, *v*, which can be turned by a key applied to its shaft *w*. The shaft *w* extends clear across the machine, as in Fig. 1, and carries both pinions *v* so that they will be adjusted simultaneously. A lock is applied to one pinion in form of a pivoted hook, *x*, for se-

curing the rings *t* in any desired position. *L* is a guide for the fabric to be plaited. It is affixed to the front of the frame *A*, and has one fixed hook, *y*, and one adjustable hook, *z*. Between these two hooks the fabric is fed to between the drums, the distances between the hooks being regulated to correspond with the width of the fabric.

The operation of the machine is as follows: The fabric is, from a suitable roll or spool, carried between guide-hooks, and thence under the blade *J* between the two drums. The blade in its lowermost position is, by the contact of the fingers *s* with the cams *t*, held off the drum *C*. The first result of the motion is that the blade is carried up against the fabric that rests on the drum *C*, the latter, meanwhile, being stationary, and, by bearing against such fabric, doubles it under, carrying a fold under the main part of the fabric. This motion of the blade is continued until it has brought its fold or plait between the two rollers or drums, so that it is taken hold of and compressed by the same. The blade reaches the drum *C* at the same time that the fingers *s* have passed the cam-edges on *t*. The position of the latter, therefore, regulates the length of plait made by the blade, the plait being the longer the earlier the blade takes hold of the fabric. The motion of the drums is, by the adjustment of the crank-pin *g*, regulated to correspond with that of the blade, so that they may feed the required length of plait at each turn and no more. The moment the blade has interposed the fabric between the drums the latter are started and feed the fabric ahead. The difference in the comparative time of starting, which would be varied by every adjustment of the crank-pin and rings *t*, is rectified by shifting the gear *n* on *D* and giving the crank *f* a proper inclination, or by setting such crank directly on the shaft *D* at the desired angle. The motion of the blade is, by the connection *F G*, very peculiar, and not only vibratory with the bar *I* and frames *H*; for, when the rods *F* have drawn the bar and blade as high as they can and then even against the spring *q* in the slots of *H*, the rods *G* take hold of and move the frames *H* up against the bar *I*, which gives the front edge of the blade *J* an inward motion, driving it through between the drums and insuring the effectiveness of the machine. The blade is then lifted off the fabric by a pin, *a'*, on *F*, striking an arm, *b'*, of *I*, and starts on its return stroke. An extra cam may

be supplied to keep the edge of the blade entirely clear of the fabric during the return move, but may as well be dispensed with, except on fabrics of peculiar fineness. The motions of the blade and drums being thus repeated will produce a series of continuous plaits on the fabric.

Although the motions of the blade have been described as peculiar, and the devices for moving it also, and although the latter are included in my claims, I do, nevertheless, not confine the invention in its principal feature to a necessary connection with such moving devices, nor to the peculiar motions of the blade herein specified.

The peripheries of the drums *B C* are either entirely smooth or one or both of them may be slightly grooved, as shown, to admit hems or bindings on the edges of the fabrics to be plaited.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the spring *g*, shank or bar *I*, blade *J*, and frames *H*, substantially as and for the purpose specified.

2. The adjustable guide *L*, composed of the fixed hook *y* and movable hook *z*, arranged in connection with the rollers *B C* and folding blade *J*, as and for the purpose specified.

3. The blade *J* affixed to a bar or holder, *I*, which has projecting fingers or equivalent devices, whereby the edge of the blade is held off the fabric during part of its motion, as set forth.

4. The cams *t*, made adjustable and combined with the fingers *s* and blade *I* in such manner that the effective stroke of the latter can be lengthened or shortened by the change of position of said cams, as specified.

5. The drums *B C* combined with the crank-shaft *D*, whereby they receive intermittent rotary motion, and with the wheel *n* or its equivalent on said shaft, whereby motion is imparted to the blade *J*, as specified.

6. The combination of the cranks *p*, rods *F G*, and frames *H* with the plaiting-blade for imparting motion to the same, as specified.

7. The combination of the springs *u* with the fingers *s* and bar *I* for producing the necessary contact with the cams *t*, as set forth.

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Witnesses:

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