(No Model.)

F. E. EDGERLY & C. E. GOULD.

HAIR PIN MACHINE.

No. 452,778. Patented May 26, 1891.

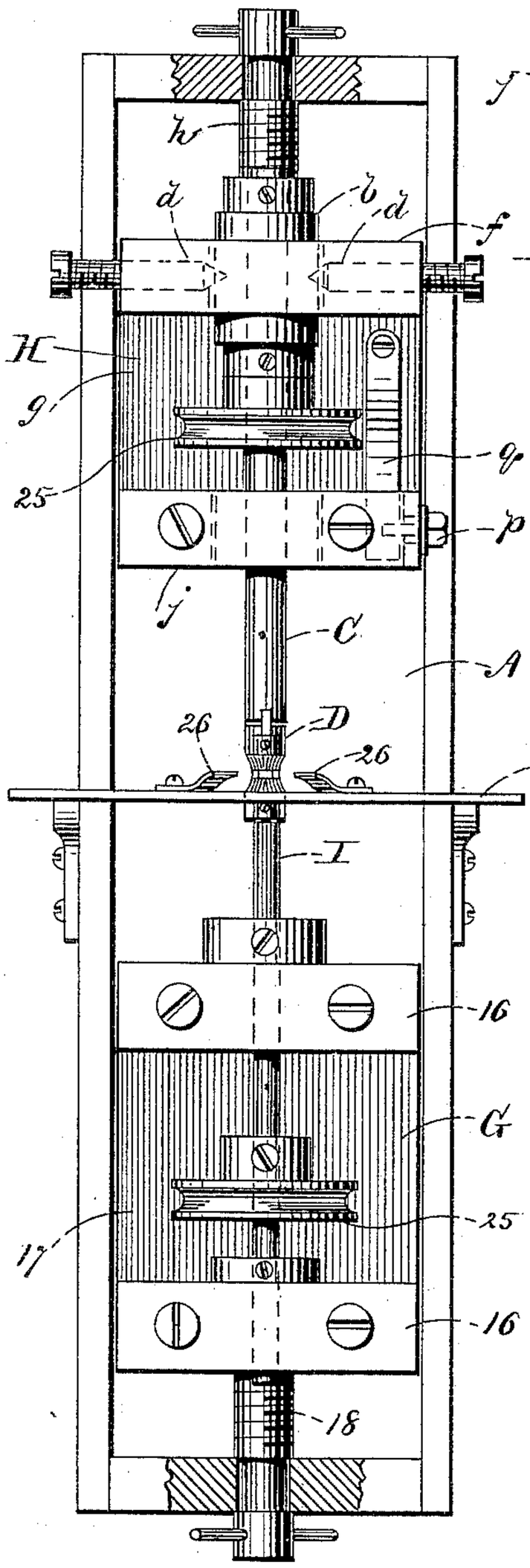

Fig. 1.

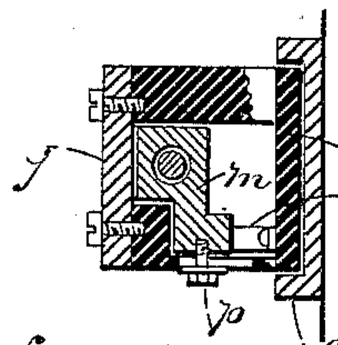

Fig. 3.

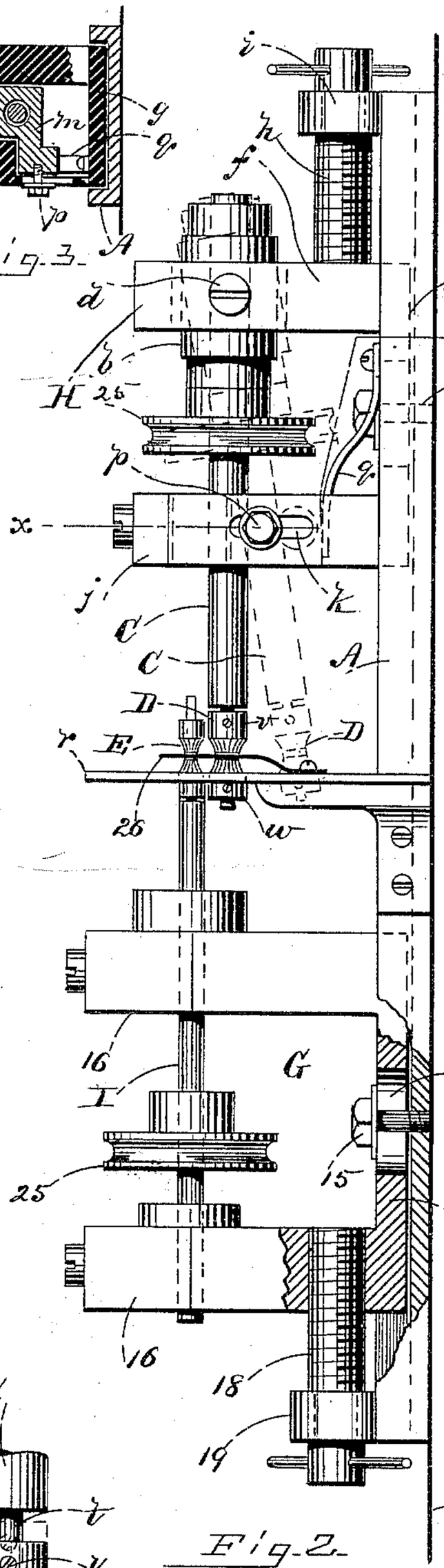

Fig. 2.

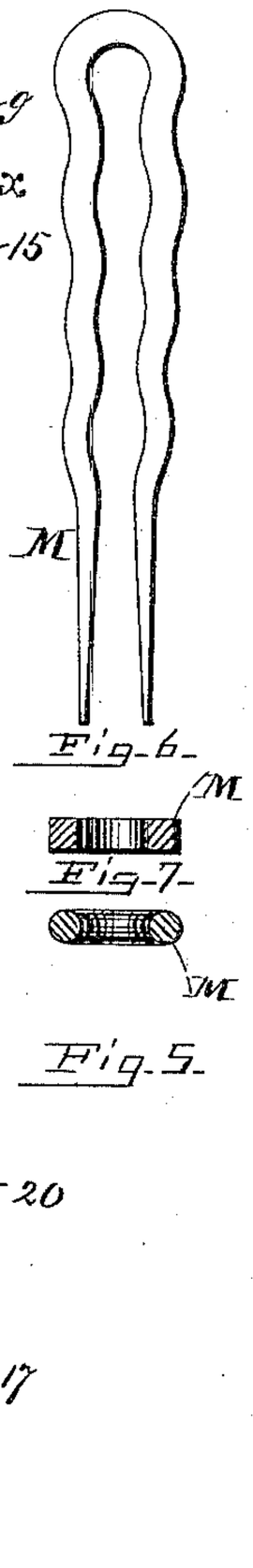

Fig. 6.

Fig. 7.

Fig. 5.

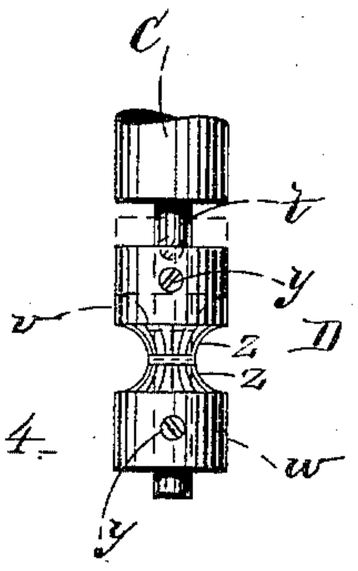

Fig. 4.

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FRANK E. EDGERLY AND CHARLES E. GOULD, OF LEOMINSTER, MASSACHUSETTS; SAID GOULD ASSIGNOR TO SAID EDGERLY.

HAIR-PIN MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,778, dated May 26, 1891.

Application filed August 18, 1890. Serial No. 362,268. (No model.)

To all whom it may concern:

Be it known that we, FRANK E. EDGERLY and CHARLES E. GOULD, both of Leominster, in the county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Hair-Pin Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of our improved machine; Fig. 2, a side elevation of the same, partly in section; Fig. 3, a horizontal section taken on line *x x* in Fig. 2; Fig. 4, an elevation of the cutters detached; Fig. 5, a transverse section of the completed pin; Fig. 6, an elevation showing the pin before being rounded, and Fig. 7 a cross-section of the same.

Like letters and numerals of reference indicate corresponding parts in the different figures of the drawings.

Our invention relates especially to a machine for rounding the edges of horn or shell hair-pins; and it consists in certain novel features hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents a vertically-arranged back plate, which is secured to a standard B.

A vertically-arranged rotary shaft C is journaled in a box or bearing *b*, pivoted to swing laterally by means of cone-bearings *d* in a horizontal arm *f*, which projects from the back plate A near its top. Said arm is secured to a vertically-arranged plate *g*, which is fitted to slide on said back plate.

From the bottom of the plate *g* a frame-arm *j* projects parallel with the arm *f*, one portion thereof being slotted longitudinally at *k*.

A block *m*, in which the shaft C works, is fitted to slide in the frame-arm *j*, and is held in position therein by a screw *p* passing through said slot *k*. A flat spring *q*, secured to the back plate, bears against the block *m* and tends to force the shaft outward.

The arms *f j* and plate *g* form a sliding frame H, which is adjustable on the back plate by means of a screw H, working in a lug *i* on said back plate and passing into the upper arm *f*. A horizontal table *r* is secured centrally on the back plate.

The lower end of the shaft C is reduced at *t*, (see Fig. 4,) and a rotary cutter D is secured on said reduced portion. Said cutter D is formed in sections *v w*, adjustable on the shaft by means of set-screws *y*. Each section has a working edge *z*, comprising an annular groove, in which cutting-teeth are formed.

Below the table *r* a sliding frame G is mounted. Said frame comprises two horizontal arms 16, secured to a plate 17, and is adjustable on the back plate by means of a screw 18, working in a lug 19 on said back plate.

The frames G H are held in position by set-screws 15, which pass through slots 20 in their plates 17 into the back plate.

A vertically-arranged shaft I is fitted to rotate in the arms 16 and bears a cutter E on its upper end, of like construction with the cutter D and parallel therewith when in working position, as shown in Fig. 2.

Each shaft C I bears a driving-pulley 25.

On the table *r*, at either side of the cutters D E, a flat spring 26 is mounted, said springs serving as guides for the pin as it passes through the cutter in a manner hereinafter described.

Horn pins, one form of which is illustrated in Fig. 6, when bent or formed, are rectangular in cross-section, as shown in Fig. 7.

To round or polish the arms of the pin, so that it may be circular in cross-section, as shown in Fig. 5, it is the custom to reduce the edges by hand or grind the outer edges by machinery and then finish the inner edges, necessitating the expenditure of much time and labor. Our invention obviates these objections, reducing or finishing the sharp edges of the pin simultaneously.

In the use of our improvement, the shafts C I being set in motion, the cutters D E are

caused to rotate. The pin M is placed flat on the table *r* beneath the guide-springs 26 and astride the cutter E. The spring *q*, forcing the shaft C outward, causes the cutter D to press firmly against the pin. The peculiar shape of the cutters forms an approximately circular opening between them when in engagement, as shown in Fig. 2, and their cutting-edges, working on the sharp edges of the pin, rapidly reduce the same to the form shown in Fig. 5, said pin being passed or fed between the cutters by the operator. The swinging shaft C permits pins varying greatly in size to be inserted between the cutters, and by adjusting the cutter-sections *v w* on said shafts their working edges may be readily disposed on arcs of circles varying in size, avoiding the necessity of changing the cutters for the size of pin to be finished. The shaft I may be mounted to swing in the same manner as the shaft C, if desired.

Having thus explained our invention, what we claim is—

1. The combination of a vertical supporting back plate, a table secured thereto, a frame secured to said back plate below said table, a vertical shaft having its bearings in said frame and extending upward through a slot in said table, a concaved cutter-head on said shaft opposite said table, a frame supported on said back plate above said table, a dependent shaft supported in an oscillating bearing in said upper frame and extending downward through said table, and a concaved cutter-head at the lower end of said dependent shaft adjacent to the upper end of said lower shaft, substantially as described.

2. The combination of a vertical supporting back plate, a table secured thereto, a frame secured to said back plate below said table, a vertical shaft having its bearings in said frame and extending upward through a slot in said table, a concaved cutter-head on said shaft opposite said table, a frame supported on said back plate above said table, a dependent shaft supported in an oscillating bearing in said upper frame and extending downward through said table, and a concaved cutter-head at the lower end of said dependent shaft adjacent to the upper end of said lower shaft, said frames being vertically adjustable on said back plate, substantially as described.

3. The combination of a vertical supporting back plate, a table secured thereto, a frame secured to said back plate below said table, a vertical shaft having its bearings in said frame and extending upward through a slot in said table, a concaved cutter-head on said shaft opposite said table, a frame supported on said back plate above said table, a dependent shaft supported in an oscillating bearing in said upper frame and extending downward through said table, a concaved cutter-head at the lower end of said dependent shaft adjacent to the upper end of said lower shaft, a horizontally-sliding block supported in said upper frame, through which said dependent shaft passes, and a spring attached to said frame and engaging said block, substantially as described.

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