C. De QUILLFELDT.

Machine for Bending Wire Frames of Bottle-Stoppers.

No. 167,650. Patented Sept. 14, 1875.

Fig. 2.

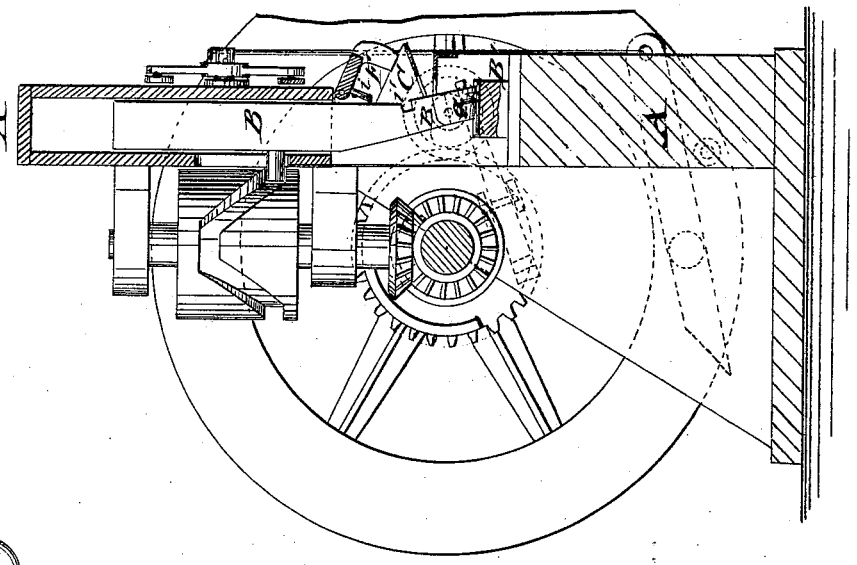

Fig. 3.

Fig. 1.

WITNESSES:

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CHARLES DE QUILLFELDT, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR BENDING WIRE FRAMES OF BOTTLE-STOPPERS.

Specification forming part of Letters Patent No. **167,650**, dated September 14, 1875; application filed July 10, 1875.

To all whom it may concern:

Be it known that I, CHARLES DE QUILLFELDT, of the city, county, and State of New York, have invented a new and Improved Machine for Bending Wire Frames of Bottle-Stoppers, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a front elevation, partly in section, of my improved machine for bending wire frames of bottle-stoppers. Fig. 2 is a vertical transverse section of the same on the line *c c*, Fig. 1; and Fig. 3 shows the different parts or wire frames that are to be bent by the machine.

Similar letters of reference indicate corresponding parts.

My invention relates to a machine for bending rapidly and accurately the wire parts of bottle-stoppers, being mainly designed to manufacture the wire lever-frame and yoke of the bottle-stopper, for which a patent has been granted to me under date of January 5, 1875, and No. 158,406.

The invention consists of different mechanisms, to which the wire blanks are fed for being bent in consecutive order into the required shape, one wire lever-frame or yoke being turned out at each revolution of the driving-shaft.

In the drawing, A represents a supporting-frame, of suitable shape and strength, which guides in a central recess the vertically-sliding plunger B, that is operated by a grooved cam wheel or cylinder placed in gear connection with the driving-shaft, to which hand or other power is applied in the customary manner. A hopper, C, attached to the front part of frame A, feeds the wire blanks of the exact length required to the descending plunger, which takes hold of the wire blank by its grooved bottom and side part, and bends it into U-shape until arriving at a concaved bottom or bed-block B′, on which the wire is held for the succeeding operations. The groove *a* of the plunger extends and deepens toward the front part for the purpose of carrying the bent part of the blank by the action of the eye-forming shafts into inclined direction, and producing on the completion of the eyes the required angle between the curved part at one side of the eyes and the legs at the other side. At both sides of the plunger, when in its lowermost position, are arranged sliding and revolving shafts D, which are acted upon by springs of suitable power, and thrown forward as soon as the plunger reaches its position on the block. Fulcrumed levers *b* slide on sectional cams *b′* of the motion-transmitting gear-wheels of the driving-shaft, and release the sliding-shafts as soon as the levers leave the cams. When the levers rise again on the cams the opposite ends act on the shafts and carry them back within the guide perforations of frame A, the gear-wheels of the driving-shaft being of such width that the continual rotation of the shafts is kept up whether they are thrown forward or withdrawn. Each shaft is provided at its end with a central pin, *d*, that fits into a side recess of the plunger, a raised cam-shaped part, *e*, of the shaft taking hold of the wire and carrying the same around the pin, so as to form an eye at each side of the wire. When the revolution of the shaft is completed, the shafts recede and leave the wire ends in position, having formed the required obtuse angle with the curved part. On the completion of the eyes, spring-acted side plungers E, which are guided at suitable inclination at both sides of the descending plunger in such a manner that they pass over the recessed shoulders of the same at the instant when the eyes are formed, and produce the bending in of the wire ends. The bent ends are to be inserted into the eyes of the wire neck-band, by which the lever-frame is attached to the bottle. The sliding side plungers E are operated by fulcrumed side levers *f*, that are connected by links *f′* with a T-shaped lever, *g*, to which the spiral spring *g′*, for withdrawing the plungers, is also attached. The T-lever is fulcrumed at the point of intersection of the main arm with the cross-arms, the end of the main arm being connected by a pivot-rod, *h*, with fulcrumed lever *h′* that is actuated by a projecting roller of the fly-wheel to produce thereby the finishing strokes of the side plungers. A forked, hook-shaped extractor, F, is pivoted to frame A in front of the plunger across the recess, and a staple or lug, *i*, of the same engaged by a recess, *i′*, of the main plunger on the upward motion of the

same, so that the extractor swings down and along the sides of the plunger to detach the bent wire frame from the shoulders of the same, and throw it back into a suitable receptacle.

The machine may also be employed for bending the U-shaped yoke part, a plunger-head of more angular shape being used for this purpose. As no eyes have to be formed, the eye-forming shafts are thrown out of operation by suitable mechanism. The side plungers are used to bend in the same manner the ends of the yoke, which are sprung into the eyes of the lever-frame when the parts are connected.

Any other wire parts or frames of corresponding shape, but with some alterations in form, may also be produced in rapid and accurate manner on this machine by slight changes in the operative parts, so that they can be manufactured cheaper and better than by hand.

I do not confine myself to the exact arrangement of the power-transmitting parts, as these may be varied more or less to be more perfectly adapted to the exact working of the bending parts.

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

1. A machine for bending the wire frames of bottle-stopping devices, composed of a vertically-sliding plunger and bed-block, sliding and revolving eye-bending shafts, end-bending side plungers, and swinging extractor, all arranged to operate substantially in the manner and for the purpose set forth.

2. The combination of the recessed main frame and feed-hopper with the grooved descending main plunger for imparting the first bending to the wire blank, substantially as set forth.

3. The combination of the grooved plunger with the concave bed-block and the revolving spring-shafts, having central pins and raised cams, to secure inclined position of wire frame and formation of eyes at both sides, as set forth.

4. The combination of main plunger, having recessed side shoulders, with the sliding side plungers to bend the ends of wire frames, as specified.

5. The combination, with the vertically-sliding plunger B, having notch i', of the pivoted, hook-shaped extractor F, having projection i, to operate as shown and described.

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Witnesses:
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