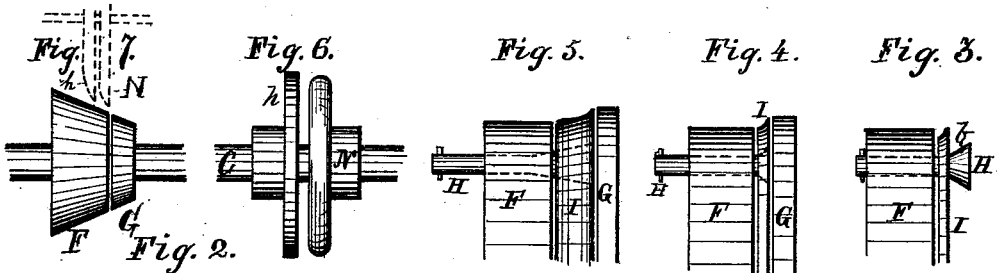
2 Sheets—Sheet 1.

J. E. WELLS.

SHEET-METAL SPINNING-MACHINE.

No. 187,946. Patented Feb. 27, 1877.



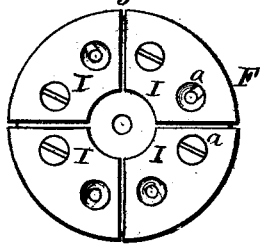
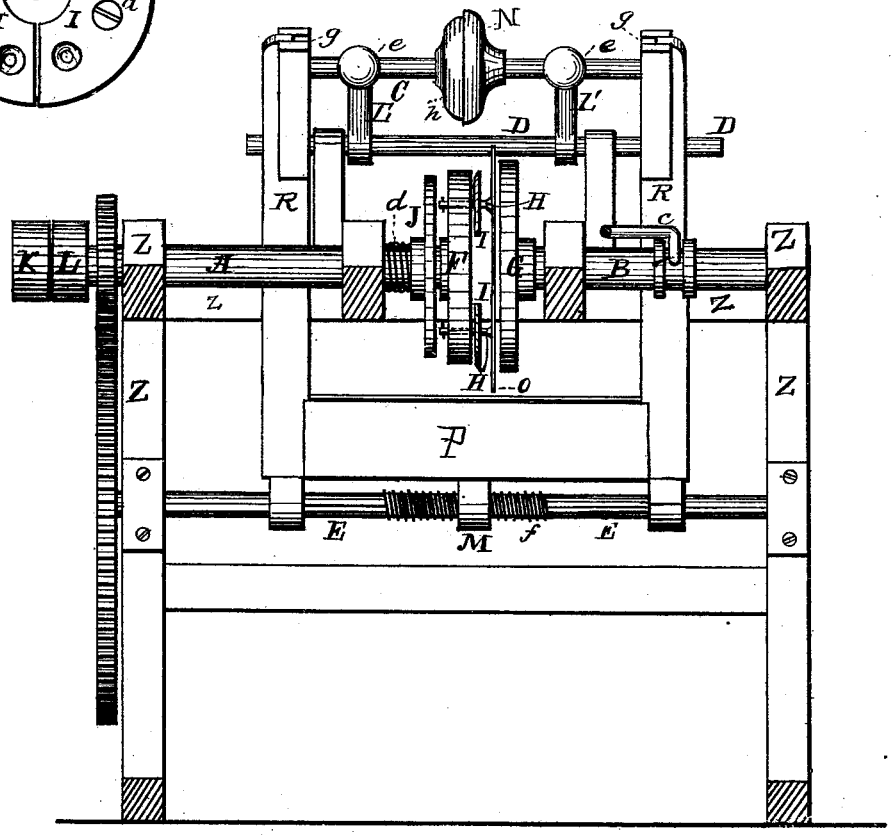


Fig. 1.



Witnesses:

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Edward J. Wells.

Inventor.

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2 Sheets—Sheet 2.

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Fig. 8.

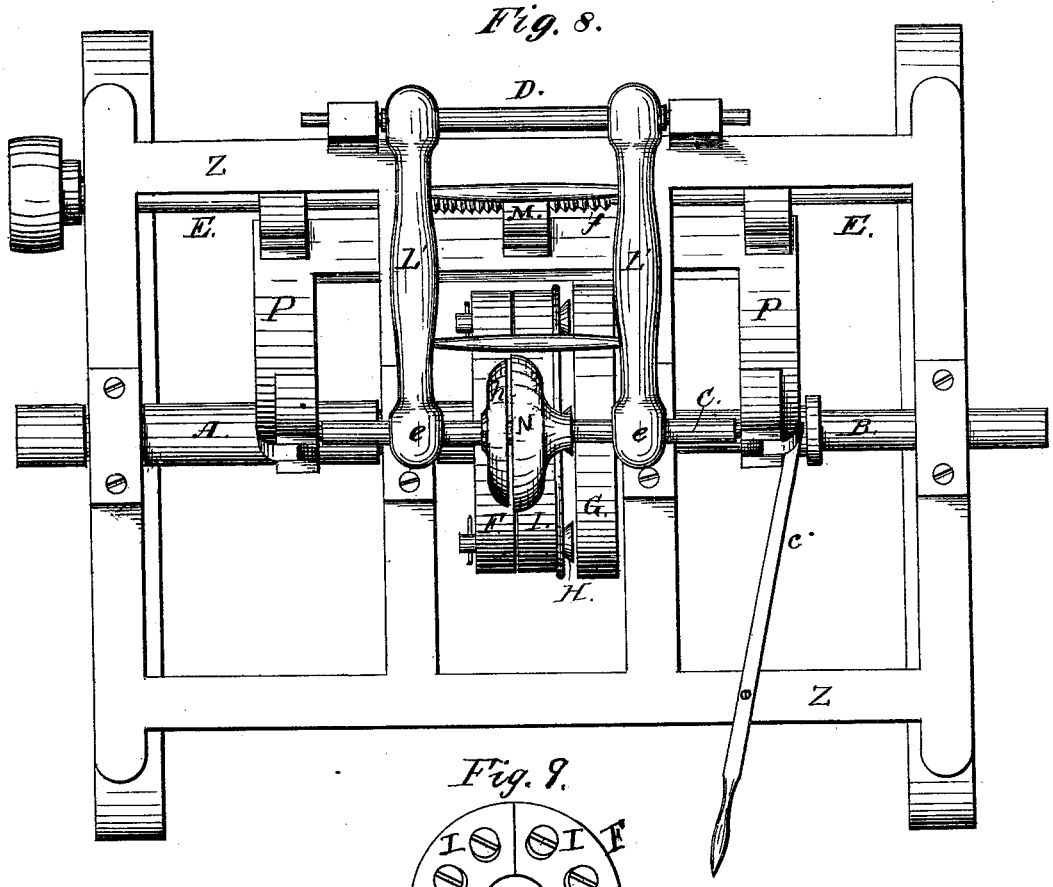
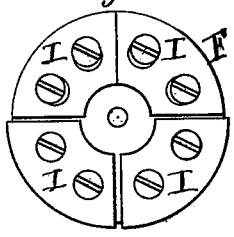


Fig. 9.



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UNITED STATES PATENT OFFICE.

JAMES E. WELLS, OF NEW MILFORD, CONNECTICUT.

IMPROVEMENT IN SHEET-METAL-SPINNING MACHINES.

Specification forming part of Letters Patent No. **187,946**, dated February 27, 1877; application filed March 23, 1875.

To all whom it may concern:

Be it known that I, JAMES E. WELLS, of the town of New Milford and State of Connecticut, have invented an Improvement in a Machine for Making Metal Lids, of which the following is a specification:

This invention has relation to means for forming metallic blanks into the proper flanged shape for a lid or other article requiring that the edge shall be rolled or turned over at right angles, or at any other angle; and it consists in the construction and novel arrangement of the expanding and contracting sectors or edge-pieces connected with the head over which the rim-flange of the blank is spun; and, in combination therewith, the opposite head, which holds the metallic blank against said sectors or edge-pieces, and the traveling spinning-tool, its holding arms and carriage, and the shafts of the machine to which said parts are connected, as hereinafter shown and described.

In the accompanying drawings, Figure 1 represents a front view of this invention. Fig. 2 is a face view of the forming-head, showing the expanding pieces in the position which they assume when the heads of their holding-pins are driven completely home, one pin being shown in each quadrant, and the others not being represented in order that the slots may appear. Fig. 3 is a partial side view, showing the adjustable face-pieces of the head dropped or drawn inward toward the center of the head to admit of the removal of the lid. Fig. 4 is a partial side view, showing the opposite heads between which the metal blank is received, and the adjustable face-pieces expanded between them. Fig. 5 is a partial side view, showing adjustable face-pieces adapted to form an inwardly-beveled edge on the rim, or to spin it gradually smaller from flange to edge. Fig. 6 is a side view, showing the tool and an extra roll or plate for holding the metal while it is being operated upon. Fig. 7 is a side view of a beveled forming-head adapted to be used in this machine. Fig. 8 is a top view of the machine. Fig. 9 is a detached view of the forming-head, showing the sections dropped, the upper sections being then in the contracted position, and the lower ones in the expanded position.

In these drawings is presented a construction which will clearly illustrate this invention.

The letter Z designates the frame of the machine, which may conveniently be built in the ordinary rectangular form, with longitudinal and transverse bars and corner uprights.

A represents the shaft of the main head, seated in suitable bearings in the frame, and provided with a belt-pulley, L, or other means for communicating motion.

F designates the main forming-head. This is keyed, or otherwise rigidly secured, to the inner end of the shaft A, so as to rotate with the same. It is provided on its inner face with adjustable sector-plates or edge-sections I, forming an expansible face to the head, and connected thereto by pins H, or other suitable devices, having beveled cam-surfaces *b*, designed to engage with corresponding countersunk perforations, slots, or surfaces of the edge-sections, which are shown at *a*, Fig. 2, of the drawings.

B represents a shaft of the machine, opposite to and in line with the shaft A, and seated in bearings in the frame Z, in such a manner that it shall have a certain amount of longitudinal play back and forth. To the inner end of this shaft is keyed, or otherwise secured, the head G, opposite the main head F, and designed, when pressed up against the same by means of a lever, *c*, or otherwise, to hold the metallic blank firmly, and, at the same time, to force the upper ones outward, and hold the lower ones, which, by force of gravity, are already at their outermost position.

In rear of the main head it may be advisable to apply upon the shaft a loose plate, J, which, being operated by a spring, *d*, will, when the heads are separated, press against the projecting ends of the pins H, and cause the upper ones of the edge sections I to drop or fall inward.

L′ represents a vibratory frame, pivoted to the main frame of the machine at D, in such a manner that it can be revolved forward

over the heads F and G, or backward away from the same, when desired. Through suitable bearings *e* at the end of this frame extends the shaft C of th · spinning-tool N, having longitudinal motion therein.

P represents the traveling frame or carriage of the spinning-tool. This frame is pivoted by means of suitable arms to a rotary shaft, E, which extends lengthwise of the machine, and is seated in journal-bearings in the main frame. At an intermediate portion of the shaft E it is provided with a screw-thread, *f*, which is designed to engage with a threaded aperture in the arm M of the traveling frame P, so that the latter will have a steady and uniform motion in the direction of the length of the machine when this shaft is turned. At their upper ends the arms R of the frame P are provided with elongated slots or bearings *g* to engage with the ends of the shaft C of the spinning-tool. In this manner sufficient play is given to said tool for oval or elliptical work. Sometimes it is desirable to put on the same shaft with the rotating tool N a loose tool, which, being provided with a handle, can be held steadily against the work, thereby accomplishing the spinning and polishing or smoothing in one and the same operation.

To operate the machine, place the metallic blank, as shown at *o*, between the face-plates I of the head F and the head G. Bring the latter, by means of its shaft, firmly against the blank, forcibly pressing it against the sections I and pins H, thereby expanding the upper of said sections and holding the blank firm. The shaft C is then brought down by means of a foot-lever or other suitable device, in such a manner as to make the tool N take effect on the blank. Then the machine is put in motion, and the spinning-tools carried over the metal by means of the frame P, and its screw-shaft E. The exterior or forming edges of the sections I may have any desirable form in section or profile. Usually they are designed to form the flange of the lid, the rim being spun of smaller diameter to enter the mouth of the bucket or other article. In the spinning operation the blank is passed between the tool and an auxiliary plate, *h*, to keep it steady and prevent kinking or puckering.

When the lid is spun the tool is thrown back on its frame, and the shaft B with its pressure-head G moved away from the work. The upper sections I then drop, and the lid is easily detached from the head F, as by drawing it off the under sections are raised by it upward and inward toward the center of the former F.

Modifications in the construction of this machine will readily occur to those skilled in the art. Hence I do not desire to confine myself to the precise details herein shown and described.

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

1. In a metal-spinning machine, the forming-head F, having the adjustable expanding and contracting face-sections I, the margins of which form a continuous guide for the spinning-tool, substantially as specified.

2. In a metal-spinning machine, the combination, with the forming-head F and its automatically-adjustable contracting and expanding face-sections I, of the longitudinally-adjustable shaft B, and its pressure-head G, substantially as specified.

3. The combination, with the head F and its adjustable sections I, of the pressure-head G and the expanding pins H, substantially as specified.

4. In a metal-spinning machine, the combination with the forming-head, F and its automatically-adjustable face-sections I, of the pressure-head G and the traveling tool N, substantially as specified.

5. In a metal-spinning machine, the combination, with the vibratory frame L′, and its sliding shaft C, carrying the spinning-tool, of the traveling frame P, engaging with said shaft, and the screw-shaft E, substantially as specified.

JAMES E. WELLS.

Witnesses:
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EDWARD J. WELLS.