# J. F. Flanders,

## Cutting and Bending Sheet-Metal.

No. 8,627. Patented Jan. 6, 1852.

Fig. 2.

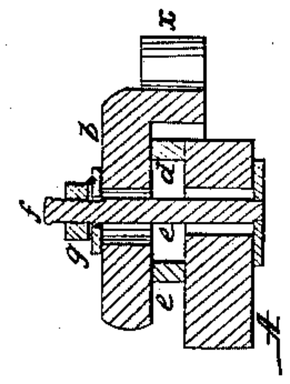



Fig. 3.

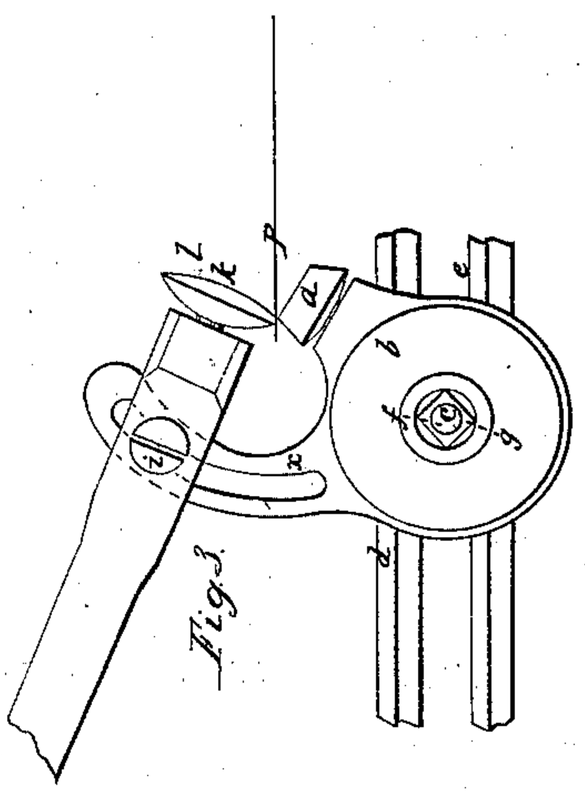
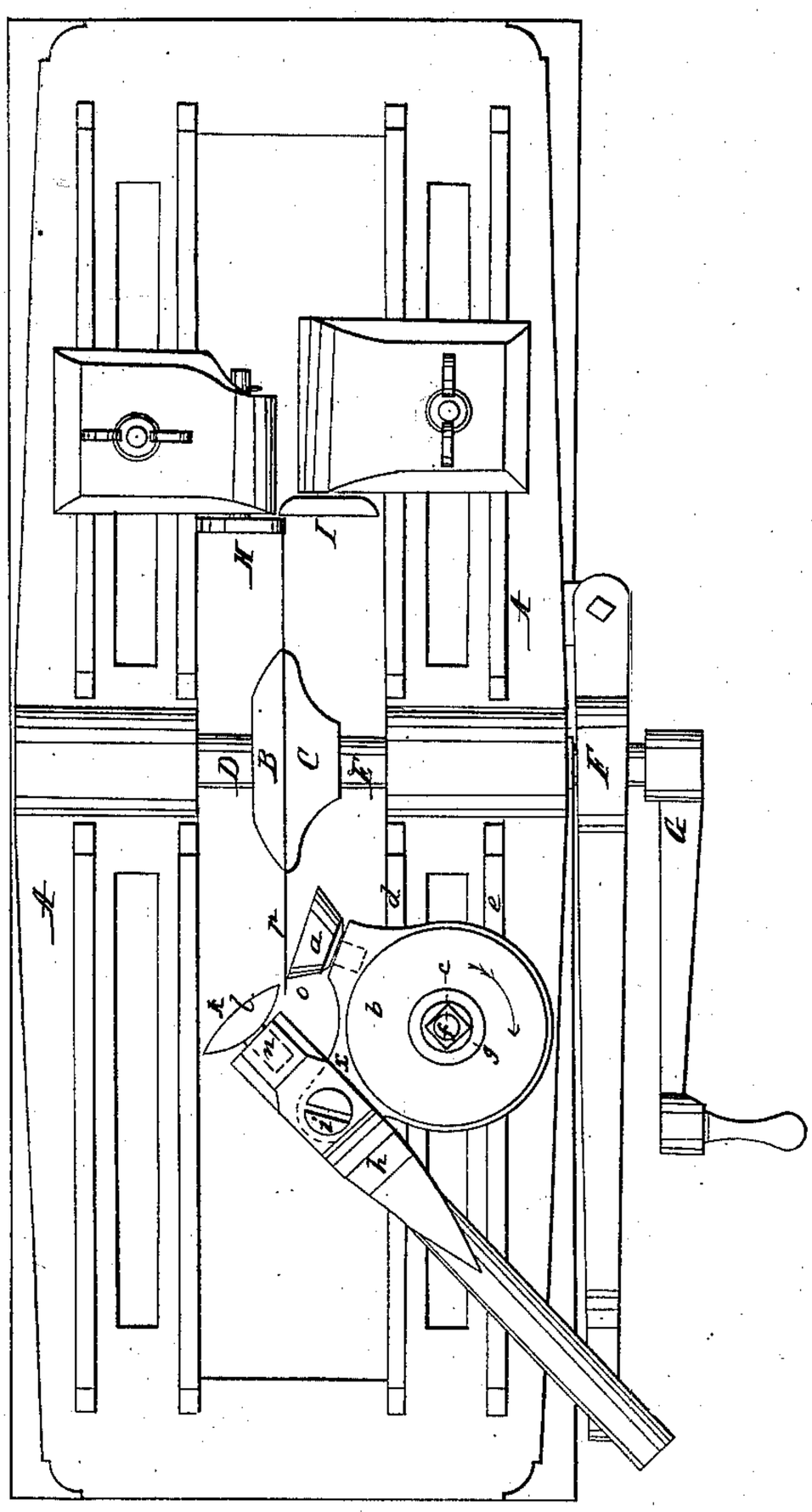



Fig. 1.




N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

J. F. FLANDERS, OF NEWBURYPORT, MASSACHUSETTS, ASSIGNOR TO F. ROYS AND E. WILCOX, OF BERLIN, CONNECTICUT.

## MACHINE FOR TURNING UP THE EDGES OF SHEET-METAL DISKS.

Specification forming part of Letters Patent No. **8,627**, dated January 6, 1852.

*To all whom it may concern:*

Be it known that I, JOSEPH F. FLANDERS, of Newburyport, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Machinery for Bending Down the Edges of Metallic Disks; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

The said drawing, in Figure 1 thereof, denotes a top view of a tin-cutting machine having my improvement applied to it.

In the same, A represents the frame for supporting the operative parts. B and C are the circular disks or grippers by and between which the plate of tin is held. One of the said grippers—viz., B—is affixed to the inner end of a journal or shaft, D, while the other, C, is secured to the inner end of another shaft, E, both shafts being supported in proper boxes or bearings. The shaft E is moved longitudinally toward the shaft D by means of a hand-lever, E, and it is put in rotation by means of a crank, G. The cutting-rolls are seen at H and I, they being applied and used as they are in other machines of like character.

In bending down the circular edge of a circle of tin, held between the gripper-plates and cut by means of the rolls H I, it has been customary to make the grippers of a diameter large enough to allow the flange to be bent down upon the periphery of one of them, and when this is the case we are obliged to have a set of grippers of different sizes, or one for any size of circle we may desire to cut and bend.

The object of my improvement is not only to obviate this difficulty, so that I can employ but one set of grippers, but it is to enable me to bend the flange of the tin plate down to either a right, obtuse, or acute angle with the plane of the circle or the remainder of the tin. For this purpose I make use of a conic frustum or roller, *a*, whose axle is supported by a frame, *b*, which is so applied to the frame A as not only to be capable of being moved either toward or away from the shaft E, but to be also capable of being turned around horizontally on a center-pin *c*, and also have a slight motion (either toward or away from the plane of the sheet to be operated on) by means of the center-pin *c*, being smaller than the aperture through which it passes. This frame rests, moves, and turns on slideways or rails *d e*, and is confined in any suitable position by a set-screw, *f*, and nut *g*. (See Fig. 2, which is a cross-section of the frame *b* and that part of the main frame directly above which it is placed.)

On a projection or ear, *x*, from the frame *b* a lever, *h*, is supported and made to turn horizontally on a fulcrum, *i*, secured to the ear, the said ear being represented by dotted lines in Fig. 1. The said lever carries on its inner end a bending-roller, *k*, whose operative or external side, *l*, is in the form of a segment of a sphere whose radius is equal to the distance between the axis of the fulcrum of the lever *h* and the nearest point of the periphery of the larger base of the frustum or roller *a* minus the thickness of the tin plate. The roller *k* turns freely on an axle extending into the lever, as seen by dotted lines at *n*.

In the use of the machine made in the above described manner the circle of tin plate held by the grippers or holders is made to rest with one of its faces against the edge of the base of the conic frustum-roller *a*, and to project beyond it to the extent of the depth of the flange or lip which is to be turned down, the same being as seen in Fig. 1, wherein the plate of tin is represented by a red line at P. If while the plate is so resting against the supporting-roller *a* we put the tin plate in revolution and turn the lever *h* so as to force the spherical segment-roller with sufficient force against that part of the plate which projects by or beyond the roller *a*, we can bend such part at either a right or acute angle to the rest of the plate, in accordance with the position or angle which the side *o* of the conic surface of the roller *a* is set or bears with respect to the plane of the circular plate. It is often very convenient to have the flange stand at an acute angle to the general plane of the plate, and thus it will be seen that I can not only bend such flange down to a right angle, but also to an acute angle with the general plane of the plate, according as circumstances may require.

In Fig. 3 I have represented how the conic roller or frustum *a* and the spherical segment bending-roll *k* may be made and arranged so as to bend the flange down to an obtuse angle to the tin plate P. For this purpose the roller *a* is arranged so as to have the edge of its smaller base in contact with the plate P. The lever *h* is supported on a curved ear or arm, *x*, which is extended out from the frame *b*, as seen in the drawings, or so as to bring the spherical segmental roller *k* into a correct position to operate on the plate.

I do not claim as my invention the use of cylindric rollers for either bending or beading a circular tin plate when held between and rotated by holders or grippers; but

What I do claim is—

The employment of the spherical segmental bending-roller *k*, in connection with the conic frustum-roller *a*, to operate together, and so as to enable me to either turn down the flange at a right, acute, or obtuse angle, all essentially as specified, and at the same time dispense with the necessity of having several sets of holders or grippers to bend the tin plate against, as heretofore practiced.

In testimony whereof I have hereunto set my signature this 4th day of March, A. D. 1850.

J. F. FLANDERS.

Witnesses:
R. H. EDDY,
JEREMIAH A. MARDE.