





# United States Patent Office.

WILLIAM NEWSHAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO  
MORRIS, TASKER & CO., OF SAME PLACE.

*Letters Patent No. 100,654, dated March 8, 1870.*

## IMPROVED MACHINE FOR TURNING BALLS OR MANDRELS.

The Schedule referred to in these Letters Patent and making part of the same

I, WILLIAM NEWSHAM, of the city of Philadelphia, and State of Pennsylvania, have invented an Improved Machine for Milling Balls, of which the following is a specification.

In the process of manufacturing metal tubes, a long iron bar over which the tubes pass is used, and upon the end of this bar a loose mandrel is placed. This is usually made of iron or steel, sized and made smooth. The mandrel is held up to its position between the rolls by a guard at the other end of the iron bar. This mandrel, among tube-makers, is called a ball.

The especial object of this invention is finishing the balls in an expeditious and accurate manner. It is applicable, however, to the milling of other devices.

Hitherto the balls used in the manufacture of tubes have been turned or ground off to the proper size, requiring much time, labor, and expense. My improved machine for finishing or sizing the balls, as hereinafter described, does it expeditiously, and at the same time accurately.

To enable others skilled in the art to which my improvement appertains to make and use my invention, I will now proceed to give a detailed description thereof.

In the accompanying drawings which make a part of this specification—

Figure 1 is a side elevation of the milling-machine.

Figure 2 is a front view of the same.

Figure 3 is a plan view.

Figure 4 is a plan view of the female milling-tool.

Figure 5 is a cross-section at the line *xx* of fig. 4.

Like letters in all the figures indicate the same parts.

A is the standing part of the machine.

B is a vertical shaft, which is guided by the bearing C.

The said shaft has on its lower end the ball D, the shaft having a square, *a*, to receive the ball.

The shaft B receives a rotary motion by means of the shaft E, and miter or bevel-wheels F F', during the milling of the ball D, the said shaft E being propelled by means of the crank G or otherwise.

H is a female milling cutter-head, which is provided with a series of cutters, I, arranged in radial grooves,

and adjustable by means of the set-screws J, or any other suitable device, as seen in detail in figs. 4 and 5.

The cutter-head is secured to the base *b* of the standard A by means of screws *c c* and flanges *d d*, as seen in fig. 3.

K is a forked lever for elevating and depressing the shaft B, being jointed to the standard A by means of the fixed lugs *e e* and rod L, and having a joint connection with the said shaft B by means of the loose sleeve M (between the collars N) and the radial pins *f f*, which project from the sleeve into the slots *g* of the lever.

The operation is as follows:

The ball D in its rough state is placed on the square *a* on the lower end of the revolving shaft B, and the cutters I are adjusted, by means of the set-screws J, for taking off the rough surface of the ball, the shaft B being revolved in the direction of the arrows by means of the crank G on the shaft E, operating through the miter-wheels F F', and the shaft being depressed by means of the lever K, for the advancement of the ball D between the cutters.

When the ball has been operated on by the cutters throughout the whole of its cylindrical portion, the shaft B is elevated to its first position seen in figs. 1 and 2, the cutters I readjusted, if necessary, for another size, and the ball D passed through them, as above explained, to be brought to its proper size, and its surface completely smoothed.

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

The combination of the cutter-head H and the adjustable radial cutters J with the shaft B, squared at the end as shown at *a*, the lever K, for moving said shaft toward and from said cutter-head, and mechanism to rotate said shaft, substantially as described.

In testimony that the above is my invention, I have hereunto set my hand and affixed my seal this 12th day of January, 1870.

WM. NEWSHAM. [L. s.]

Witnesses:

STEPHEN USTICK,

THOMAS J. BEWLEY.