SAMUEL C. MURDOCH.

Improvement in Machines for Rolling Harrow-Teeth.

No. 121,653. Patented Dec. 5, 1871.

Fig. 1.

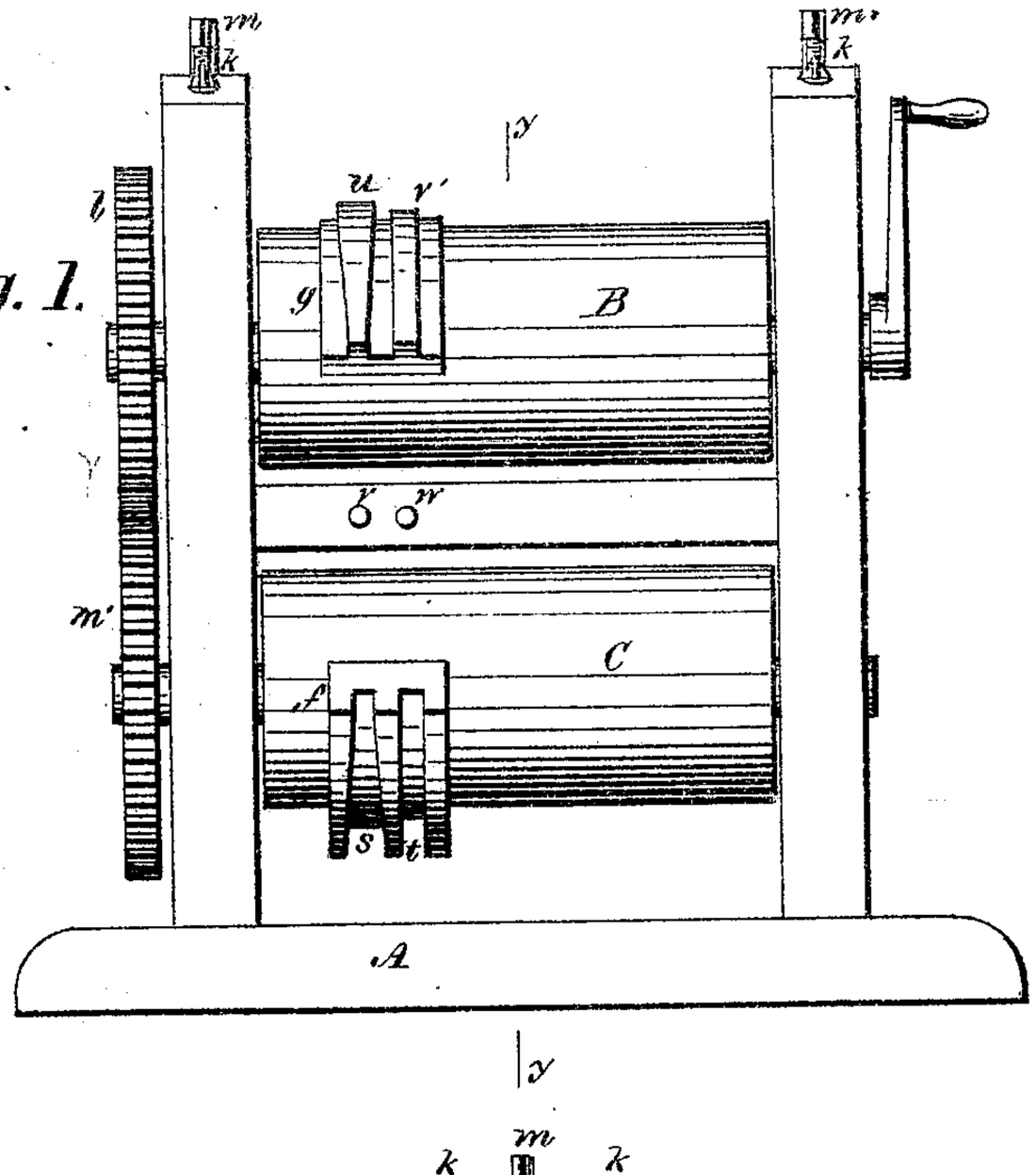
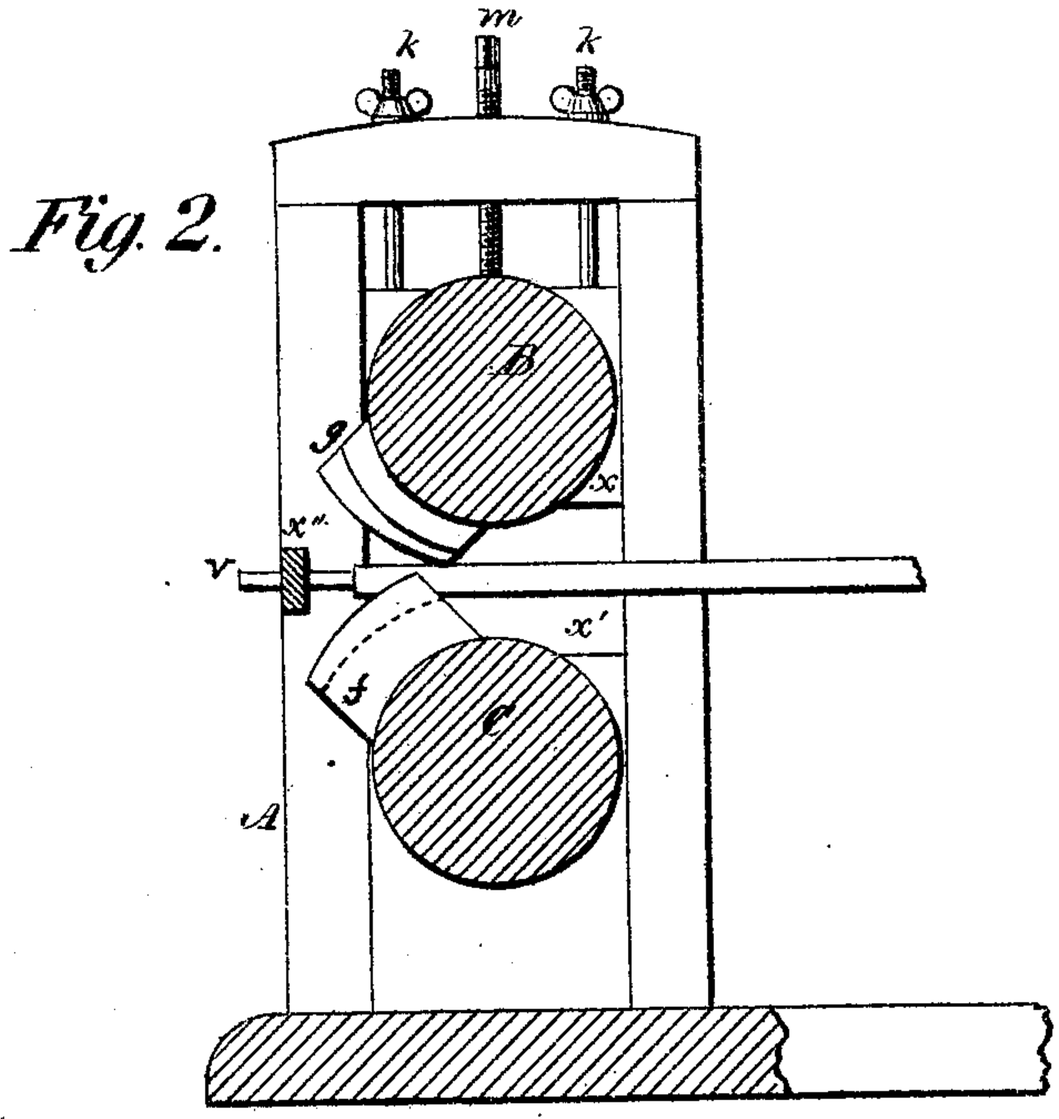


Fig. 2.



Witnesses.

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121,653

UNITED STATES PATENT OFFICE.

SAMUEL C. MURDOCH, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR ROLLING HARROW-TEETH.

Specification forming part of Letters Patent No. 121,653, dated December 5, 1871.

To all whom it may concern:

Be it known that I, SAMUEL C. MURDOCH, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machine for Rolling Bars of Metal into a Taper Form; and I do hereby declare the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and the letters of reference marked thereon.

The object of my invention is to reduce a bar of metal that is rectangular in cross-section, or the extremity of such a bar, to a pyramidal form with four sides—bars of such form being useful for many purposes, and particularly in the manufacture of harrow-teeth, in the manufacture of which, mainly, I contemplate using it.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawing, which forms part of my specification, Figure 1 is a side elevation of my improvement in machine for reducing bars of iron to a pyramidal form with four sides. Fig. 2 is a vertical transverse section of the same at line *y*.

The frame or housing A is of ordinary construction, and is provided with bearings *x x'* and guide *x''*, in which are arranged adjustable points *v w* directly opposite the grooves or cavities *s* in the die *f*, which is fitted into and secured to roll C. On the face of the die *g*, which is fitted in and secured to roll B, are tongues *u v'*, of such length and shape as to exactly fill, laterally and longitudinally, the grooves *s t*. The grooves or cavities in the die *f* and the tongues or projections *u v'* on the face of the die *g* may be made on the roll B, and in the roll C if so desired. But it will be found more convenient to use the dies so arranged in the rolls that they may be changed at the pleasure of the operator. The cavities in the die *f* are wider and of greater depth at their front end than at their back end—that is to say, they gradually contract in breadth and depth from the front end to the back end. The tongues or projections of the die *g* also gradually diminish from the front end to their back end, but increase in depth, and fit neatly and closely to the sides of the grooves or concavities in the die *f*. The roll B and die *g* are adjusted with relation to the roll C and its die *f* through the medium of screws *k* and *m*.

The construction and arrangement of my improvement in machines for rolling metal will readily be understood from the foregoing description and by reference to the accompanying drawing.

I will therefore proceed to describe its operation: The rolls B and C being revolved through the medium of the wheels *l* and *m'*, iron of suitable size is placed against the projection *v*, and the dies *f* and *g* revolving with the rolls will impinge upon the iron and spread it out in the concavity *s*, forcing or pressing the iron down and back into the concavity and backward from the operator, giving to the iron a taper form. The motion of the roll and dies having delivered the iron toward the operator, he turns it one-fourth around, placing the end of a partially-formed point against the projection *w*, (the iron when turned one-fourth around being less in width than the next concavity *t*,) and the revolving of the dies will cause the iron to be pressed down into the concavity *t* and drawn out a degree further, in the process of giving the desired form, by the revolving action of dies. The further finishing of the article is accomplished by other means and labor which it may require to complete its construction as an article of manufacture.

In the process of rolling iron, as hereinbefore described, the iron is gradually broken down by two or more passers, and is turned one-fourth around at each pass after coming from the first concavity of the die *f*, the iron being forced back in the concavities in the die from the operator, and is discharged from the die while moving toward him.

I am aware that roller-die grooves circular in cross-section, and with convergent bounding walls or surfaces for rolling bars to a taper form, are common, and also that roller-die grooves, more or less rectangular in cross-section, and with convergent walls or surfaces, are and have been used for rolling bayonet-blades and, perhaps, other articles; and it is also known to me that Andrew H. Holmes, of Allegheny City, Pennsylvania, claims to have invented a device and has applied for a patent therefor for rolling harrow-teeth, consisting of a pair of rolls, on or in one of which is mounted a die-groove the bottom and side walls of which are convergent and perpendicular to one another viewed in cross-section, while upon the other roll is mounted a projecting tongue of length and breadth corresponding accurately

to the length and breadth of the die-groove, and of which the periphery is eccentric, the mode of operation of the device being such, it is said, that at one pass the bar subjected to its action will be reduced on all four sides to a tapered form, rectangular in cross-section.

These inventions, all and severally, I hereby disclaim; but

What I do claim, and desire to secure by Letters Patent, is—

The series of die-grooves *s* and *t*, each groove rectangular in cross-section and having convergent walls or bounding surfaces, and the series of tongues or projections *u* *v*, each tongue rectangular in cross-section and in length and breadth corresponding accurately to the die-grooves, and with eccentric peripheries jointly with the rolls and with the adjustable guides and stops, said series of grooves and tongues, two or more of each in number, being from first to last of diminished area and used for the gradual reduction of the bar to a taper form, in the manner herein set forth.

SAMUEL C. MURDOCH.

Witnesses:
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(73)