T. CURR, JR.

TUBE ROLLING MILL.

APPLICATION FILED AUG. 6, 1910.

1,007,924.

Patented Nov. 7, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

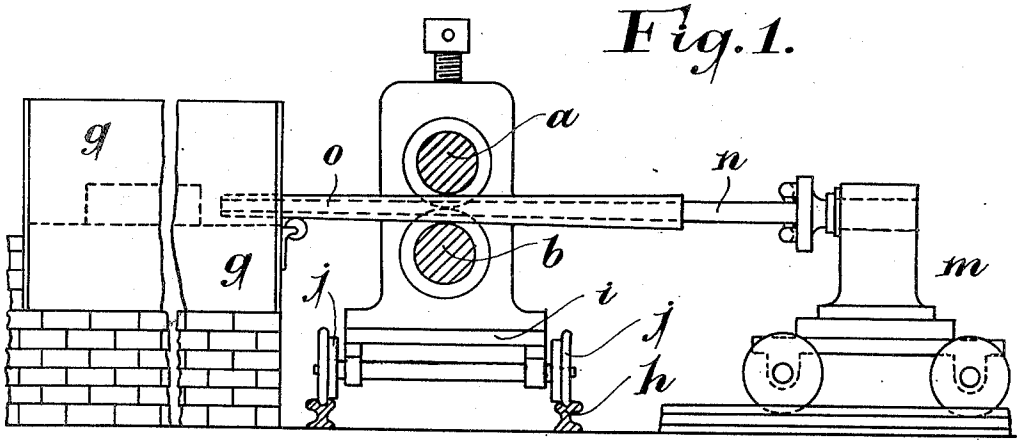
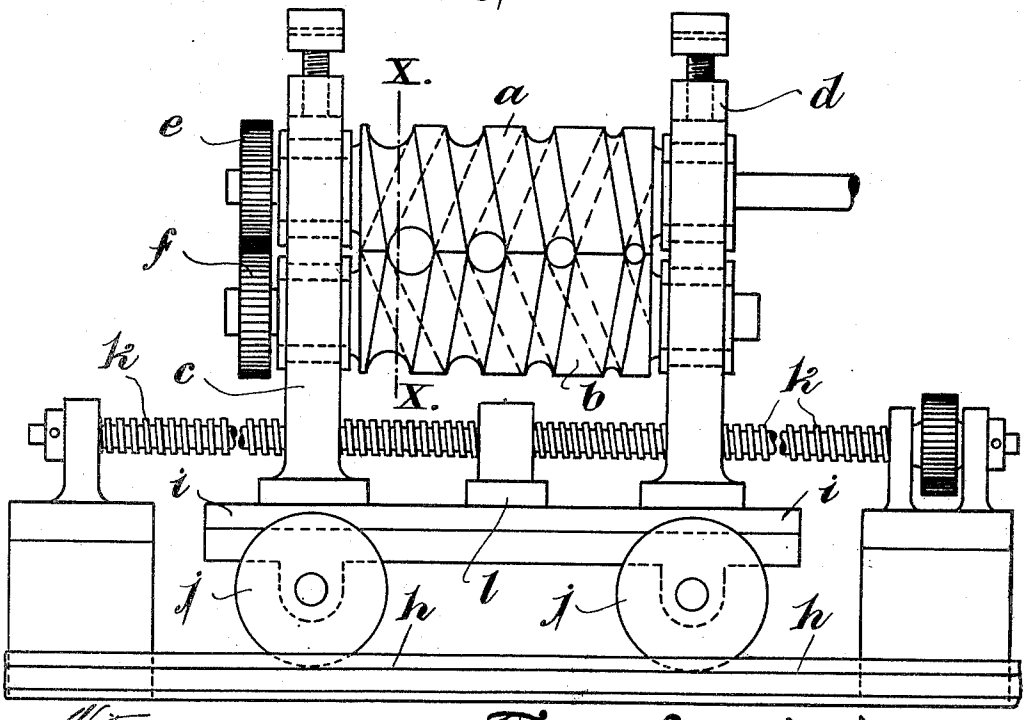


Fig. 2



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

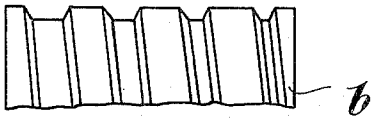


Fig. 5.

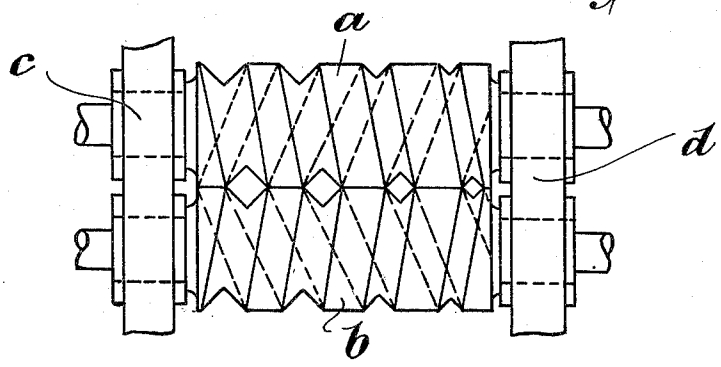
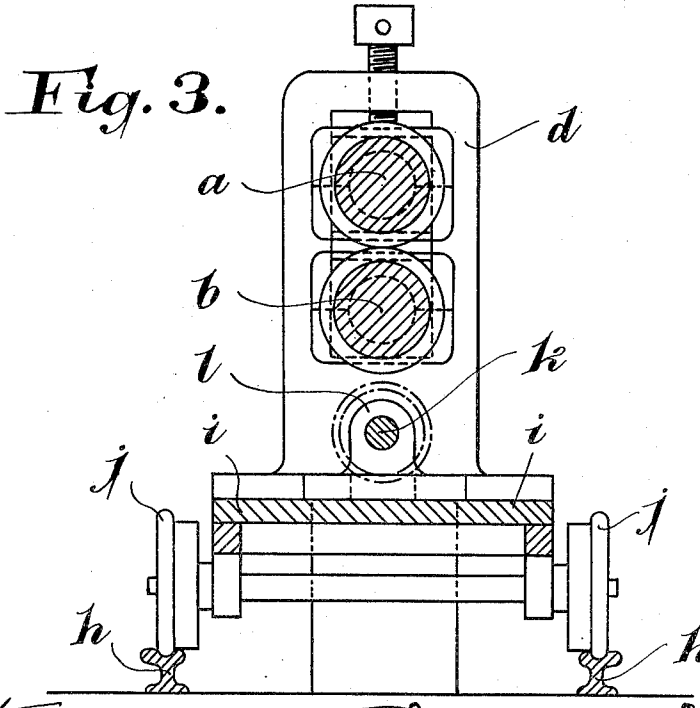


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS CURR, JR., OF AIRDRIE, SCOTLAND.

TUBE-ROLLING MILL.

1,007,924. Specification of Letters Patent. Patented Nov. 7, 1911.

Application filed August 6, 1910. Serial No. 575,932.

To all whom it may concern:

Be it known that I, THOMAS CURR, Jr., a subject of the King of Great Britain, residing at Airdrie, Lanarkshire, Scotland, have invented certain new and useful Improvements in Tube-Rolling Mills, of which the following is a specification.

This invention relates to rolling mills which are specially adapted for rolling tapered tubes. Under this invention the rolls, which are each made with a helical surface are carried in suitable housings mounted on a bogie carriage which may work in a pit, on rails or otherwise, and be capable of being moved backward and forward in front of the furnace by means of screw and worm or other gear. The driving gear for the rolls is such that although the rolls are laterally traversed backward and forward yet they are always capable of being rotated.

In order that my said invention may be clearly understood I have hereunto appended an explanatory sheet of drawings whereon, I have shown, by way of illustration, or example, a method of rolling tapered tubes in accordance with my invention.

Figure 1 is an end view in section of the rolling mill. Fig. 2 is a front elevation thereof to an enlarged scale. Fig. 3 is a vertical section on the line X—X Fig. 2. Figs. 4 and 5 show modifications.

Referring to the drawings:—The rolling mill comprises two rolls *a*, *b*, carried horizontally in housings *c*, *d*, and geared together by spur gearing *e*, *f*. Each roll, as will be seen, is made with a spiral thread thereon and the spiral thread on the one roller is a right hand thread, while that on the other roller is a left hand thread. As will be seen the spiral groove of each roller is so made that the pass between the rollers is gradually lessened from the left hand toward the right, the screw thread on each roller being gradually increased in breadth to produce this. The rolls are carried, as usual, in bearings in housings and the top roller is driven in any suitable manner at the desired speed which speed is imparted to the bottom roller by means of the gearing *e*, *f*.

g represents a furnace in front of which rails *h*, *h*, are laid and the housings of the rolls are mounted upon a bogie or carriage *i*, provided with wheels *j* which run upon the aforesaid rails *h*. The bogie is capable of being traversed backward and forward in front of the furnace by means of a screwed spindle *k* rotated by means of worm or other suitable gear, the screwed spindle passing through a block *l* with nut formed therein and which is mounted on the bogie.

m is a carriage which is movable on rails at right angles to the carriage *i* and carries a mandrel *n*.

The whole arrangement is, preferably, such that the tubular skelp *o*, as it is drawn from the furnace *g*, is passed between the rolls *a*, *b*, at the left hand thereof (Fig. 2) where the largest pass is provided and as the rolls rotate, the tube, while being rolled, moves from one end to the other of the said rolls owing to the nature of the screw threads thereon and at the same time is drawn from the furnace.

In order that the tube may be drawn out of the furnace in a straight line the gear for moving the rolls and their housings is provided and the movement of the screwed spindle *k* is so regulated that, as the tube travels between the rolls in the one direction, the rolls are bodily moved in the opposite direction in exact proportion.

The rolls at Fig. 2 are cut with grooves of semi-circular form in order to roll tapered tubes of round section, but, if it is desired to roll tapered tubes of rectangular section then the grooves can be made of V form as shown at Fig. 5.

The same arrangement may be adapted for rolling solid bars as well as tubes.

I do not limit myself to the specific details of construction, as the same may be modified or altered and still come within the scope and tenor of the appended claims.

It is apparent that an embodiment of the invention described and illustrated is adapted for rolling solid bars as well as tubes.

It is evident that various shapes may be rolled, dependent upon the shapes of the rolls themselves, as indicated in Figs. 2, 4 and 5.

I do not limit myself to the exact form, proportion or arrangement shown and described, as these may be departed from in some respects without departing from the spirit of my invention as defined in the appended claims.

Having now fully described my invention what I claim and desire to secure by Letters Patent is:—

1. The combination with a furnace, of a

carriage with spirally threaded pass forming rolls thereon, and means for positively moving the carriage across the front of the furnace at such speed that the working portion of the pass shall remain relatively fixed with the furnace.

2. The combination with a furnace, of a carriage with spirally threaded pass forming rolls thereon, and means for positively moving the carriage across the front of the furnace in a straight line, at such speed that the working portion of the pass shall remain relatively fixed with the furnace.

3. The combination with a furnace, of a carriage adapted to move across the front of the furnace at such speed that the working portion of the pass shall remain relatively fixed with the furnace, said carriage being provided with spirally threaded pass forming rolls, and a draw carriage provided with a mandrel and adapted to move substantially at right angles to the line of movement of the first-mentioned carriage.

4. The combination with a furnace, of rails laid in front of the furnace, a carriage adapted to move in a straight line back and forward on the rails, pass forming rolls on the said carriage, a second set of rails laid substantially at right angles to the first set, a draw carriage carrying a mandrel arranged to travel on the second set of rails and means for positively moving the first carriage across the front of the furnace at such speed that the working portion of the pass shall remain relatively fixed with the furnace.

5. The combination with a furnace, of a carriage adapted to move across the front of the furnace, spirally threaded pass forming rolls on the carriage, means for positively moving the carriage and its rolls at such speed that the working portion of the pass shall remain relatively fixed with the furnace, a draw carriage and a mandrel projecting from said draw carriage and adapted to pass through between the rolls of the first carriage.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS CURR, JUNR.

Witnesses:
SAMUEL BURGESS,
WILLIAM GALL.