

(No Model.)

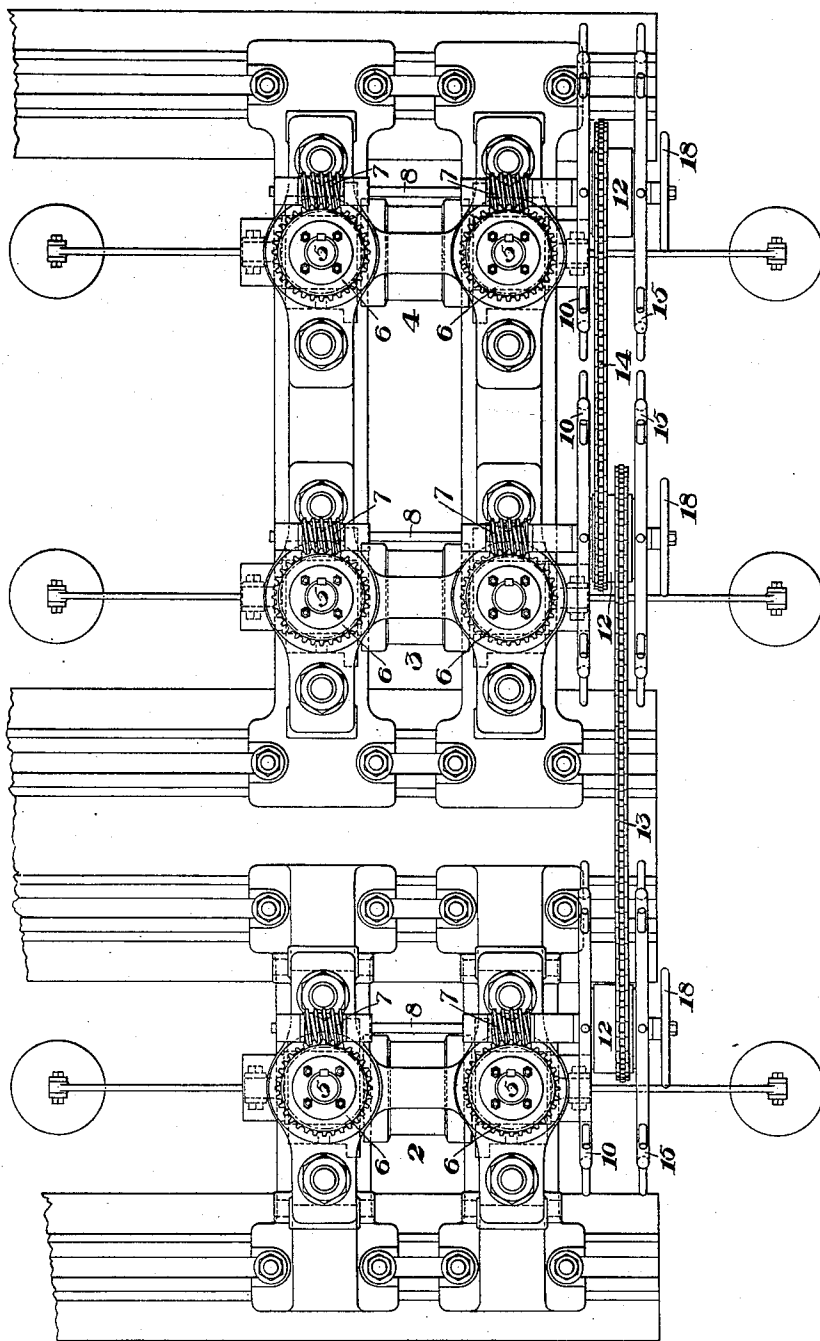
3 Sheets—Sheet 1.

J. KENNEDY.
ROLLING MILL.

No. 595,572.

Patented Dec. 14, 1897.

Fig. 1.



WITNESSES

Warren W. Swartz
H. M. Corwin

INVENTOR

Julian Kennedy
by Buchanan & Buchanan
his attys.

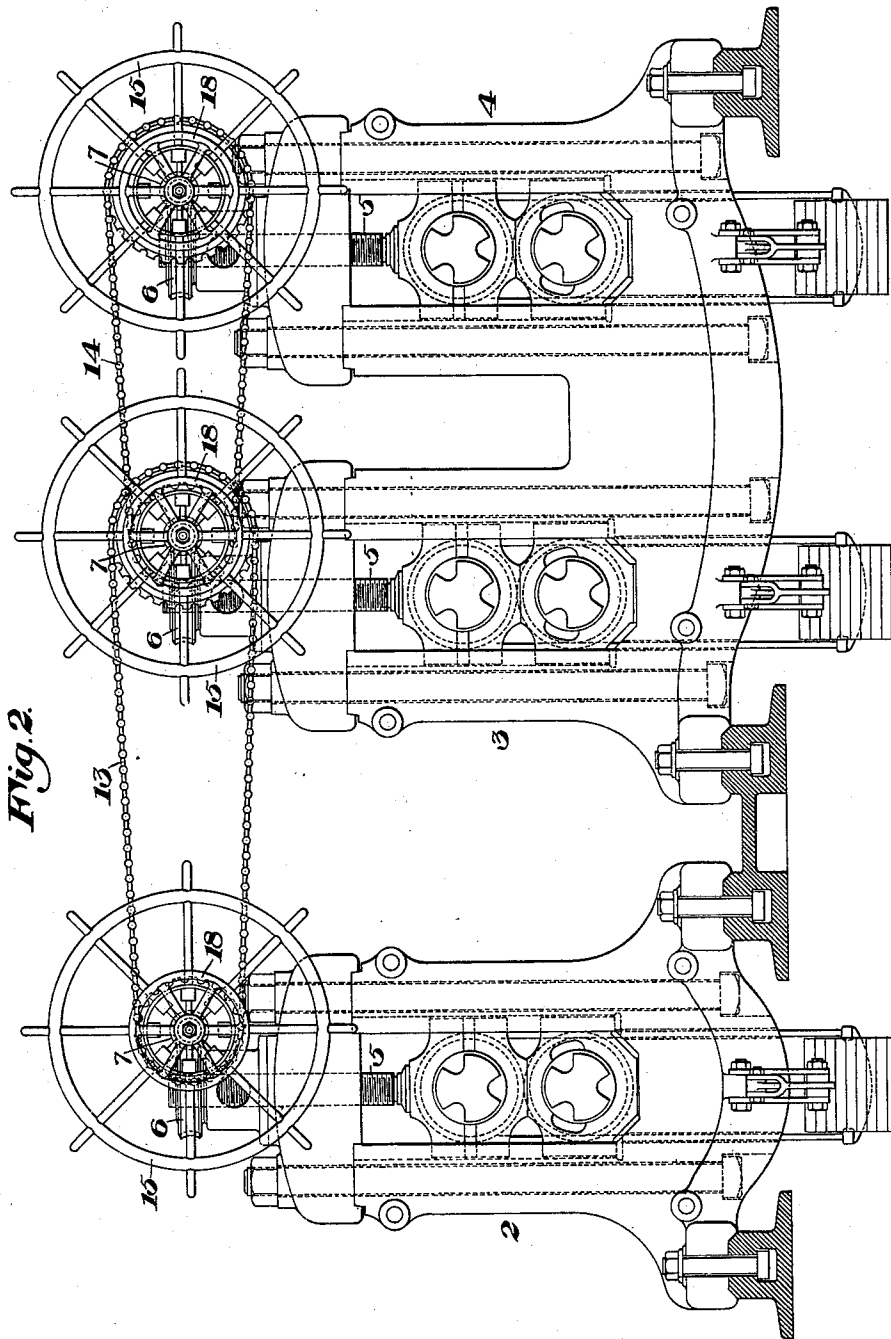
(No Model.)

3 Sheets—Sheet 2.

J. KENNEDY.
ROLLING MILL.

No. 595,572.

Patented Dec. 14, 1897.



WITNESSES

Warren W. Swartz
H. M. Connor

INVENTOR

Julian Kennedy
by Baker & Baker
his attys.

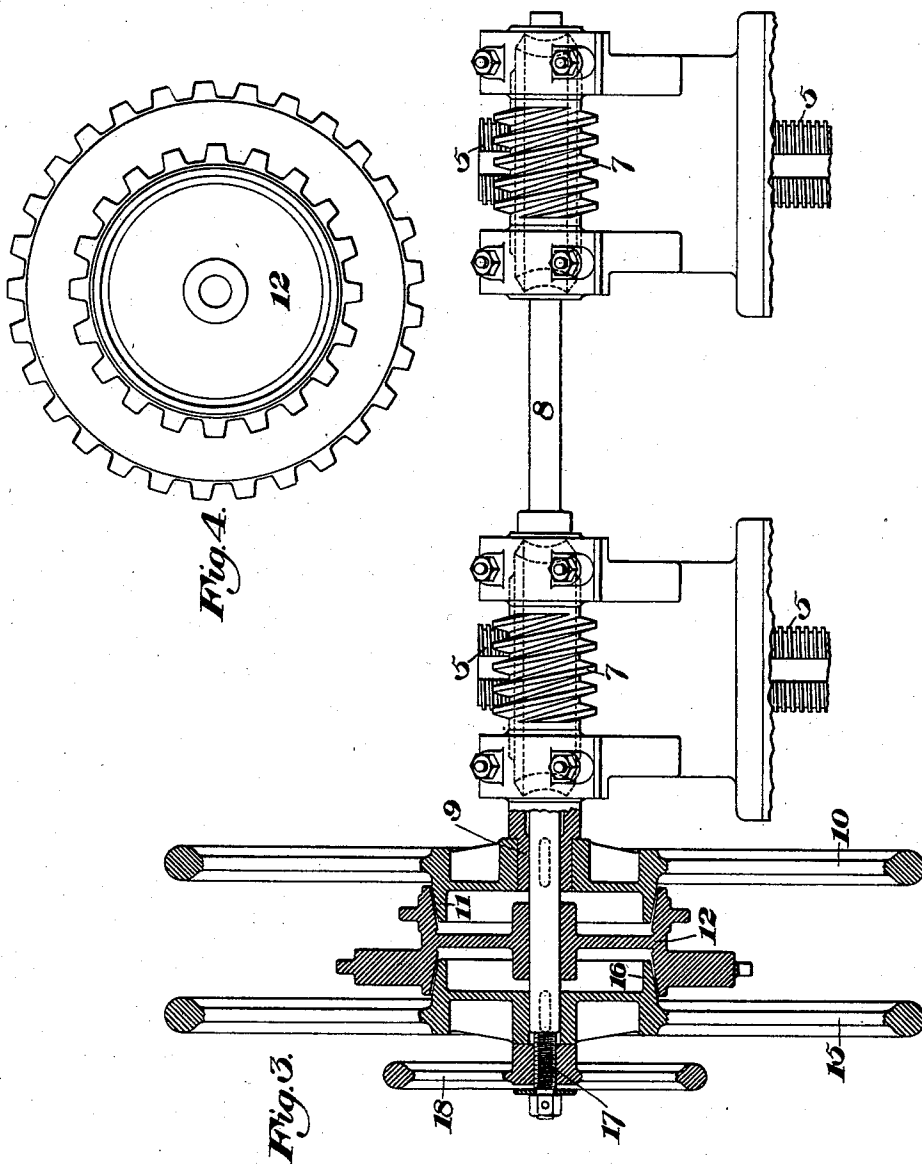
(No Model.)

3 Sheets—Sheet 3.

J. KENNEDY.
ROLLING MILL.

No. 595,572.

Patented Dec. 14, 1897.



WITNESSES

Warren W. Swartz
J. M. Corwin

INVENTOR

Julian Kennedy
by B. Kewell & B. Kewell
his attys.

UNITED STATES PATENT OFFICE.

JULIAN KENNEDY, OF PITTSBURG, PENNSYLVANIA.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 595,572, dated December 14, 1897.

Application filed March 18, 1897. Serial No. 628,072. (No model.)

To all whom it may concern:

Be it known that I, JULIAN KENNEDY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolling-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of a portion of a continuous mill constructed in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail side elevation, partly in section, of the adjusting mechanism of one of the sets of rolls; and Fig. 4 is a detail view of the double sprocket-wheel I employ.

My invention relates to that class of rolling-mills wherein several sets of rolls are employed in tandem, the metal passing through the series in succession, and more especially to the class of continuous mills wherein the metal enters one set of rolls before it leaves the preceding set. Heretofore in this class of mills the adjusting mechanism of one set of rolls has been entirely independent of the adjusting mechanism of that of the others, and in consequence it has been a matter of considerable difficulty and skill to adjust one set of rolls to the proper point relative to the following and preceding sets. My invention overcomes this difficulty; and it consists in providing a series of sets of rolls arranged in tandem with connected adjusting mechanism so arranged that the adjusting of one set of rolls simultaneously adjusts one or more of the other sets of rolls.

It also consists in the above combination, together with means for severing the connections between the adjusting mechanism of the different sets, whereby each set may be adjusted independently of the others when desired.

It also consists in the construction and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, 2, 3, and 4 represent three sets of rolls of a continuous mill, arranged in tandem, the upper rolls of each set having the usual adjusting-screws 5. These screws are provided at their upper ends with worm-wheels 6, which engage with worms or screws

7, mounted upon horizontal shafts 8. One of these worms is secured to the shaft, while the other is in the form of a sleeve or collar surrounding the shaft and having a projecting hub 9, to which is secured a hand-wheel 10. The hub of the wheel 10 is provided with a projecting ring 11, having a tapered outer surface, which engages with a similarly-tapered surface upon the interior of a sprocket-wheel 12, which is loose upon the shaft 8. I show my adjusting mechanism as applied to a series of three sets of rolls, and in such case the sprocket-wheel upon the shaft 8 of the middle set of rolls is formed with two sets of teeth, as shown in Fig. 3, one sprocket-chain 13 extending from one set of teeth to the similar sprocket-wheel of the preceding set of rolls, while the chain 14 extends from the other set of teeth to the sprocket-wheel of the succeeding set. Each shaft 8 is provided with a second hand-wheel 15, which is suitably keyed or splined to the shaft so that it rotates with the shaft but may slide longitudinally thereon. This wheel 15 is provided with an inclined ring 16, which coöperates with a recess in the sprocket-wheel 12, similarly to the flange 11 upon the wheel 10. At its end the shaft 8 is provided with a reduced screw-threaded portion 17, with which engages a tightening-wheel 18. It is evident that when the tightening-wheel is screwed up, so as to cause the inclined faces upon the hand-wheels and the sprocket-wheels to bind upon each other, the shaft, with the two hand-wheels and the sprocket-wheel, will all be locked together, and consequently the turning of the hand-wheel of the middle set of rolls will actuate both worm-gears of this set and adjust the upper roll vertically in parallel lines, while through the sprocket-chains 13 and 14 the upper rolls of the other set are simultaneously adjusted, the degree of adjustment of the various rolls being governed by the relative sizes of the sprocket-wheels and screw-gears. If adjustment of one set of rolls is desired independently of the others, the tightening-wheel 18 of such set of screws is loosened, and the operator, seizing the two hand-wheels of this set, moves them together the desired distance, after which the wheel 18 is again tightened. If adjustment of one end of a roll is desired rela-

tively to its other end, after the tightening-wheel is loosened one of the hand-wheels is turned to make this adjustment.

The advantages of my invention will be apparent to those skilled in the art, since the delay and expense necessary to get the correct relative adjustments of the several sets, several pieces being very commonly spoiled in this operation, are avoided. The proper relationship between the adjustments of the several sets being obtained, the adjusting of one set simultaneously adjusts the others the correct amount independently of the operator.

It is evident that the adjusting mechanism of each set may be varied, as well as the means for connecting the adjusting mechanism, without departing from my invention, since

What I claim is—

1. The combination with a series of sets of rolls arranged in tandem, of driving mechanism arranged to drive the sets at different speeds, each set having adjusting mechanism and said adjusting mechanism having connections arranged to operate the same to different amounts corresponding to the different speeds of the sets of rolls.

2. The combination with a series of sets of rolls arranged in tandem, and having adjusting mechanisms, of connections between these adjusting mechanisms, and means for severing said connections, so that each adjusting mechanism may be operated independently of the others.

3. The combination with a series of sets of rolls, arranged in tandem, and having con-

nected adjusting mechanisms, of means for adjusting one set of rolls independently of the other, and means for adjusting one end of one roll of a set relatively to its other end.

4. The combination with a series of sets of rolls arranged in tandem, of screw-shafts for the rolls of each set, worm-gears engaging said screw-shafts, two hand-wheels arranged to operate said worm-gears, means for connecting the hand-wheels, and connections between the hand-wheels of the several sets.

5. The combination with a series of sets of rolls arranged in tandem, each set having worm-gear adjusting mechanism, of a hand-wheel arranged to operate said mechanism, a sprocket-wheel having a clutch connection with the hand-wheel, and sprocket-chains connecting the sprocket-wheels of the several sets of rolls.

6. The combination with a series of sets of rolls, arranged in tandem, each set having adjusting screw-shafts, a transverse shaft having a worm keyed thereto and a worm rotating loosely thereon, two hand-wheels upon the shaft, one of said wheels rotating loosely upon the shaft and connected to the loose worm, the other hand-wheel rotating with but slidable endwise from the shaft, and a sprocket-wheel having clutch connections with the two hand-wheels; of chains connecting the sprocket-wheels of the several sets.

In testimony whereof I have hereunto set my hand.

JULIAN KENNEDY.

Witnesses:

C. BYRNES,

H. M. CORWIN.