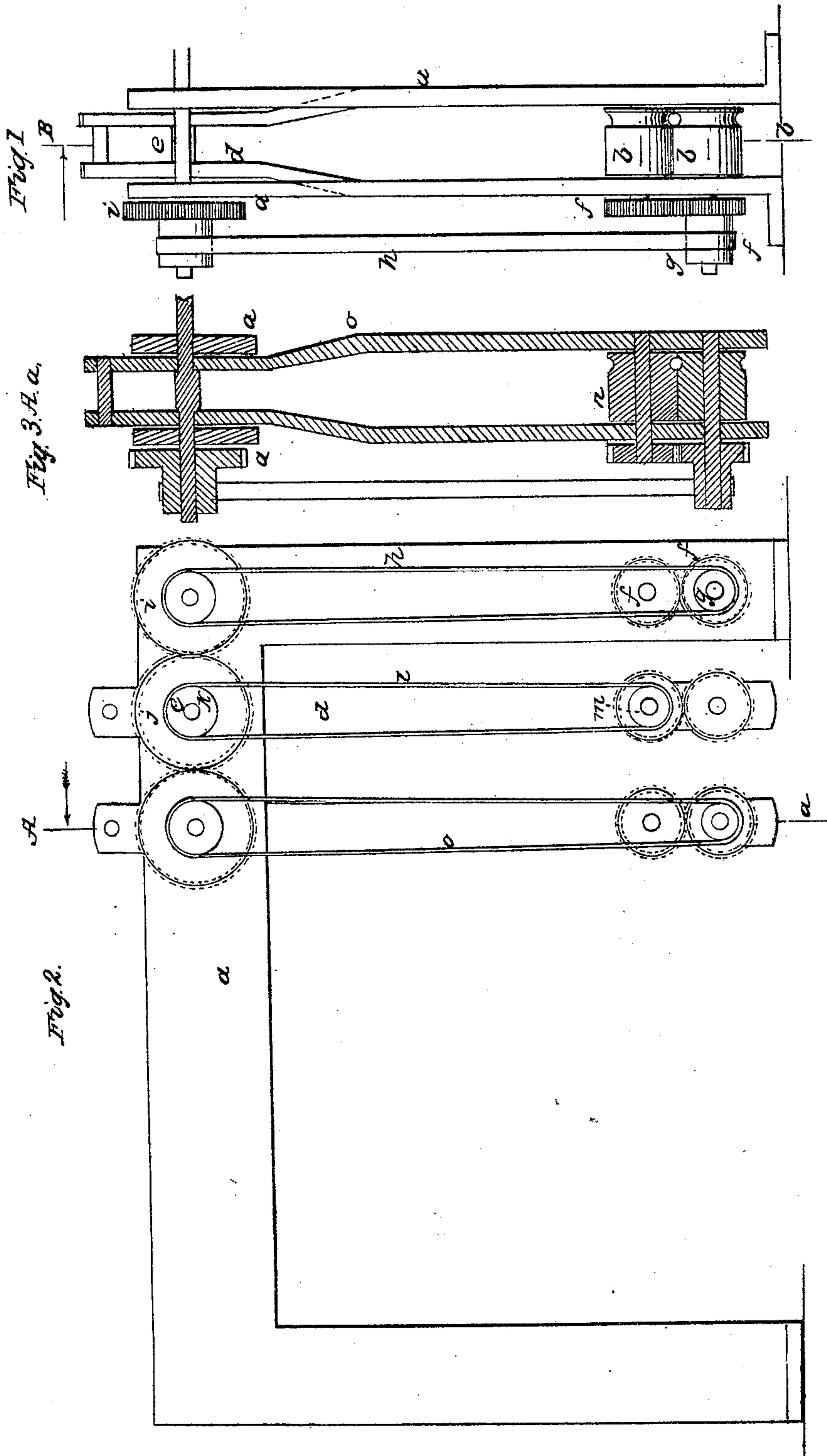


A. B. SEYMOUR.
Rolling Railroad Iron.

No. 9,928.

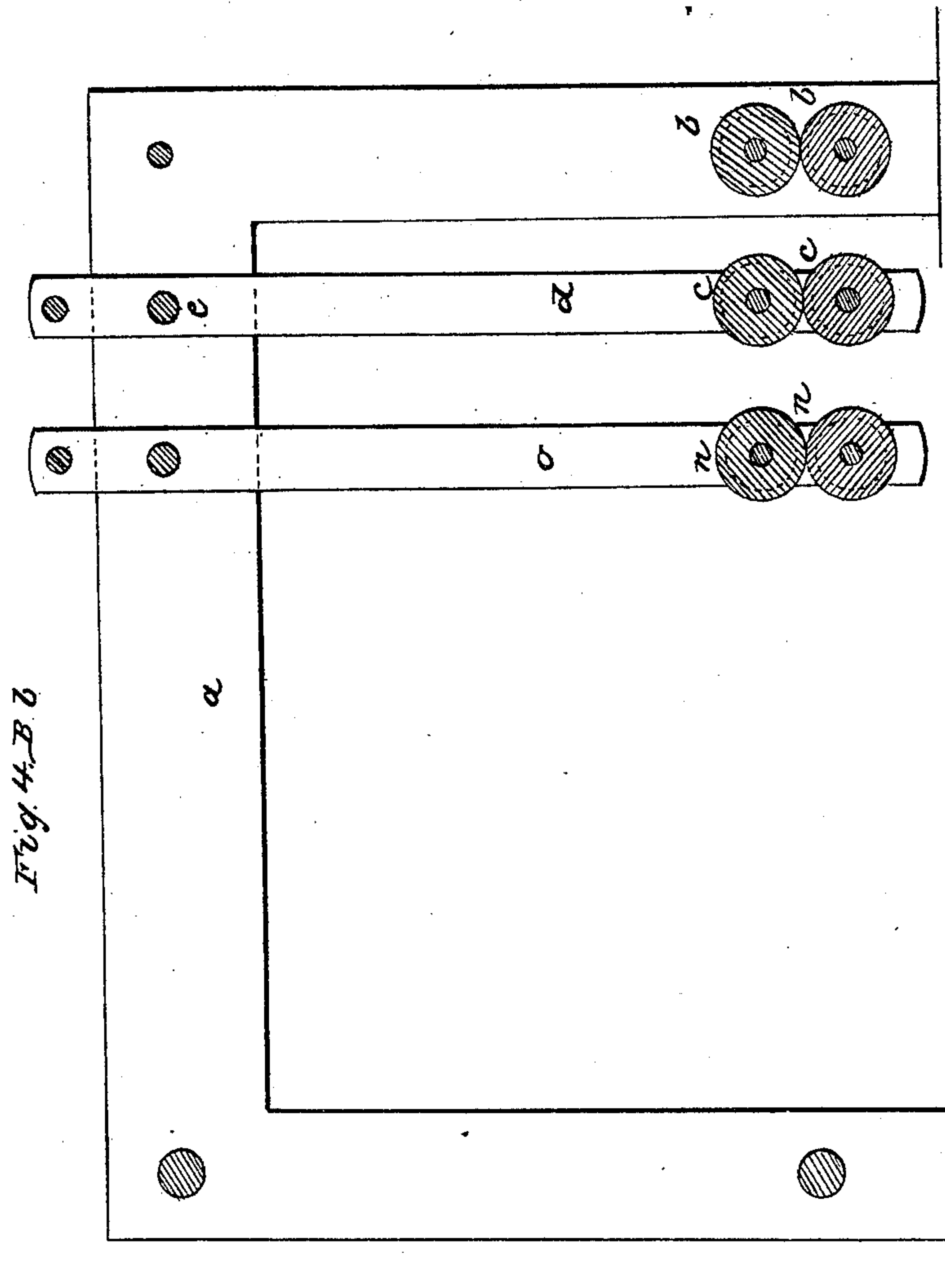
Patented Aug. 9, 1853.



A. B. SEYMOUR.
Rolling Railroad Iron.

No. 9,928.

Patented Aug. 9, 1853.



UNITED STATES PATENT OFFICE.

A. B. SEYMOUR, OF HUDSON, NEW YORK.

ROLLING RAILROAD AND OTHER IRON.

Specification of Letters Patent No. 9,928, dated August 9, 1853.

To all whom it may concern:

Be it known that I, A. B. SEYMOUR, of Hudson, New York, have invented certain Improvements in the Method of Rolling Railroad and other Bars of Iron and other Metals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a front elevation; Fig. 2, a side elevation; Fig. 3, a section taken at the line A, *a*, of Fig. 2; and Fig. 4, a section taken at the line B, *b*, of Fig. 1.

The same letters indicate like parts in all the figures.

My invention is intended for rolling railroad and other bars which require repeated rollings to complete them, with the view to save labor in handling the bars, and to expedite the rolling, and to avoid or reduce the number of reheatings.

It is well known that in rolling bars of iron, particularly where flanches must be raised, that the bar must be passed through a succession of rolls before it can be completed, the shifting of the bar from one pair of rolls to another being attended with great labor and loss of time, so that for many purposes the bar cannot be completed at one heating.

It has been attempted to avoid the labor of handling, and the necessity of reheating by causing the bar to pass directly through a succession of pairs of rolls arranged in succession one behind the other, so that the bar shall pass directly through and be delivered complete in nearly the same time that it takes to pass through one pair of rolls. But this has failed because of the difficulty of so adjusting the pairs of rollers in the series that the increased motion of each succeeding pair shall correspond with the increased elongation of the bar in passing through the previous pair, particularly as the slightest variation in the texture or quality of the metal will make a sensible difference in the elongation.

In view of the objects to be attained and the difficulties to be overcome, the nature of my invention consists in so arranging a series of pairs of rollers—two or more—in a line or nearly so, that they shall be self adjusting, in their distance apart, to the elongation of the bars in the process of rolling. In this way it will be seen that if

the bar in passing between the first pair of rollers is elongated more than to correspond with the increased motion of the second pair of rollers, by virtue of the self-adapting principle, this second pair of rollers will, during the operation, recede from the first pair, and so with reference to a third or any number of pairs of rollers. And if in passing through between the first pair, the bar should not be sufficiently elongated to correspond with the increased motion of the second pair, the second pair, during the operation, will approach the first pair.

In the accompanying drawings *a*, represents the frame and *b, b*, the first pair of rollers mounted on fixed bearings except that one of the rollers is adjustable to the other. Motion is communicated to this pair of rollers in the usual way from some suitable motor. Just back of this first pair there is a second pair of rollers *c, c*, mounted in the lower end of a pendulous frame *d*, suspended at its upper end to a shaft *e*, hung in the upper part of the frame *a*. The first pair of rollers are geared together by cog or spur wheels *f, f*, and on the shaft of one of these rollers there is a belt wheel *g*, which by a belt *h*, communicates motion to a cog wheel *i*, in the upper part of the frame *a*, and this cog wheel engages a corresponding wheel *j*, on the shaft *e*, on which is suspended the pendulous frame of the second pair of rollers. And this last named wheel carries a pulley *k*, to communicate motion by a belt *l*, to a pulley *m*, on the shaft of one of the rollers of the second pair. And as the pulley *k*, is on the shaft to which the pendulous frame is suspended, it follows that the moving of the frame will not affect the communication of the driving power.

A third pair of rollers *n*, are mounted in a pendulous frame *o*, back of the first, and in every particular like the second pair. And, if desired, the series may be increased in number, each succeeding one being mounted in the same manner.

The second pair of rollers must be geared to turn faster than the first; the third faster than the second, and so on throughout the series. The relative motions of the pairs of rollers will depend upon the extent of the reduction of the iron by each pair. As the iron passes through from between the first pair of rollers, it is caught by the second pair, and as it passes from the second pair it

is presented to and caught by the third pair and so on throughout the series, whatever may be the number of pairs.

Now it will be seen that if the motion
5 given to the pairs of rollers is not sufficient relatively to the elongation of the bar by the preceding pair, the pendulous frame will swing from the preceding pair, and thus compensate for the deficiency of motion in
10 the rollers; but if, on the contrary, the bar should not elongate sufficiently relatively to the increased motion, then the pairs of rollers will approach each other, and in this way adapt themselves to the condition of
15 the iron.

Instead of mounting the pairs of rollers in pendulous frames, they may be mounted, each pair—after the first—in a separate frame adapted to slide in the main frame
20 by having the gearing for communicating the driving power either by cog or belt wheels so adapted as to follow the motions, which can readily be done by interposed cog wheels on joint links in manner well known
25 in mechanics. When the rollers are thus mounted in sliding frames it would be advisable by weighted pendulous or other levers or springs to give them a preponderance, for assuming, when free, a given position relatively one pair to another, from
30 which position they could readily shift to

adapt themselves to the condition of the iron. But I prefer the mode first described, as being the simplest and most durable.

I do not wish to limit myself to the modes 35 of application herein specified, as other modes of applying the principle of my invention either superior or inferior may be devised. Nor do I wish to limit myself to any particular manner of communicating 40 the driving power to the series of rollers, as any equivalent mode may be substituted or some better mode may be devised.

I do not claim as my invention the employment of a series of draw rollers to act 45 in succession on a bar of iron or other metal to draw it into a required form, as this has long since been devised and tried. But

What I claim as my invention and desire 50 to secure by Letters Patent is—

The employment of a series of pairs of rollers, so arranged that the pairs in the series shall be free to move from or toward each other to adapt themselves to the condition of the metal in the process of rolling, 55 substantially as and for the purpose specified.

ALFRED B. SEYMOUR.

Witnesses:

STEPHEN L. MAGOWN,
JOHN B. LONGLEY.