(No Model.) 2 Sheets—Sheet 1.

J. S. GRIFFIN.

ROLLING MILL.

No. 282,718. Patented Aug. 7, 1883.

Fig. 1.

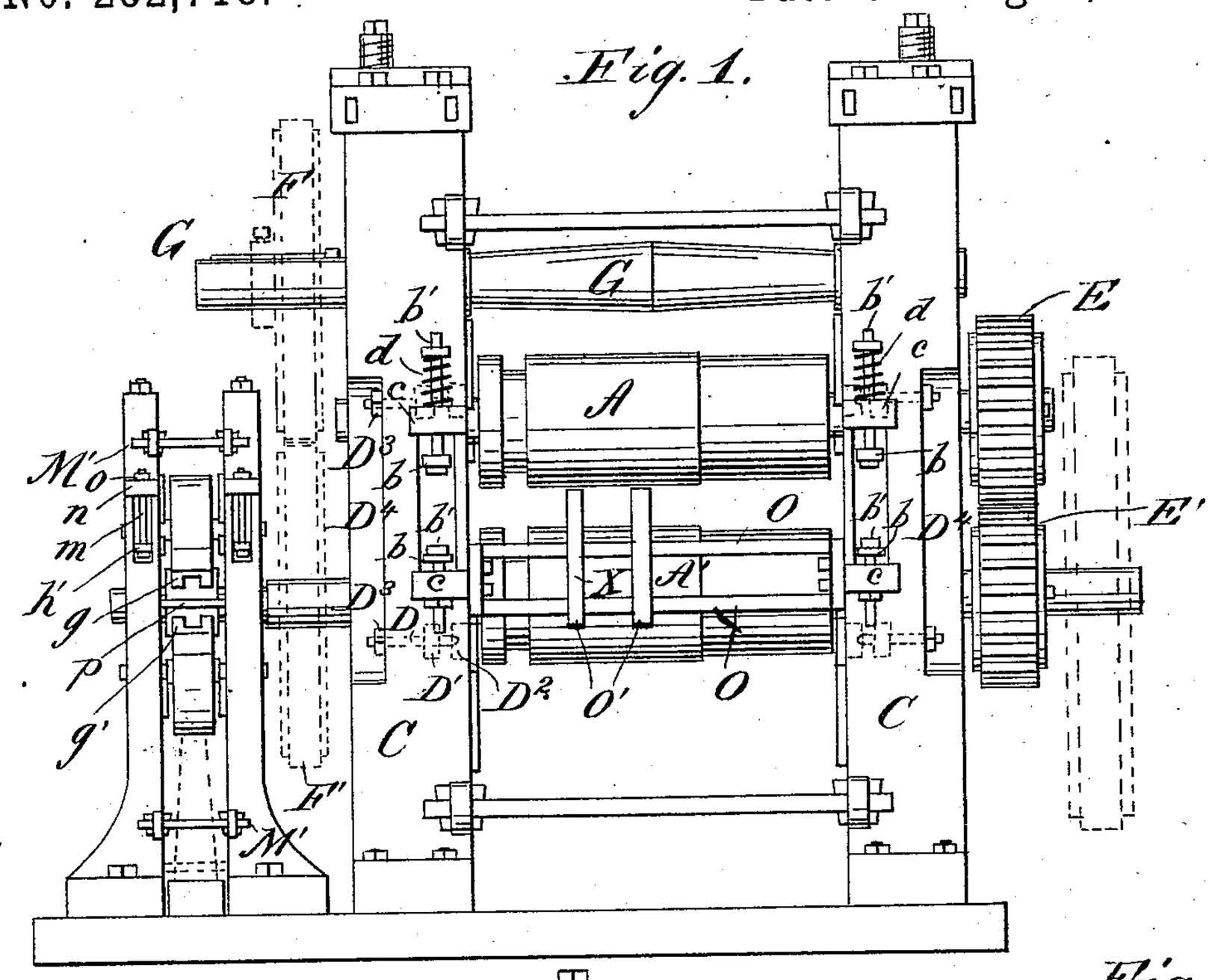


Fig. 3.

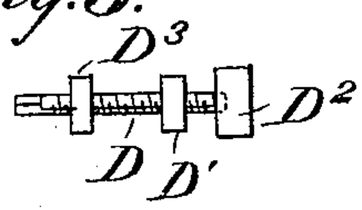


Fig. 4.

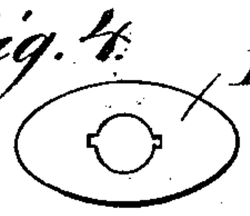
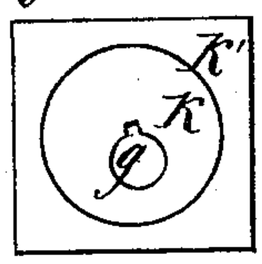


Fig. 5.



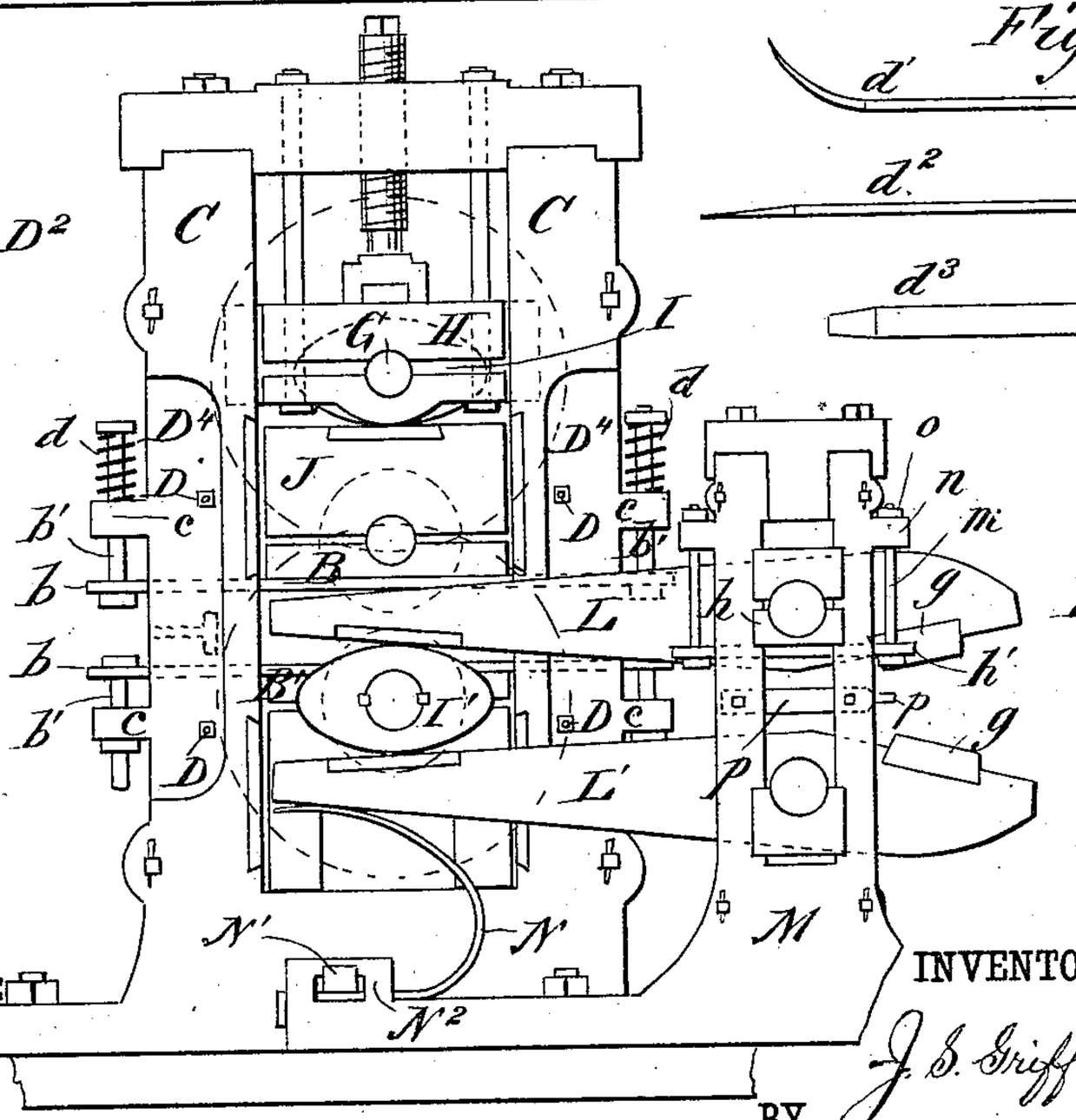


Fig. 2.

Fig. 6.

WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

J. S. GRIFFIN.

ROLLING MILL.

No. 282,718. Patented Aug. 7, 1883.

Fig. 7.

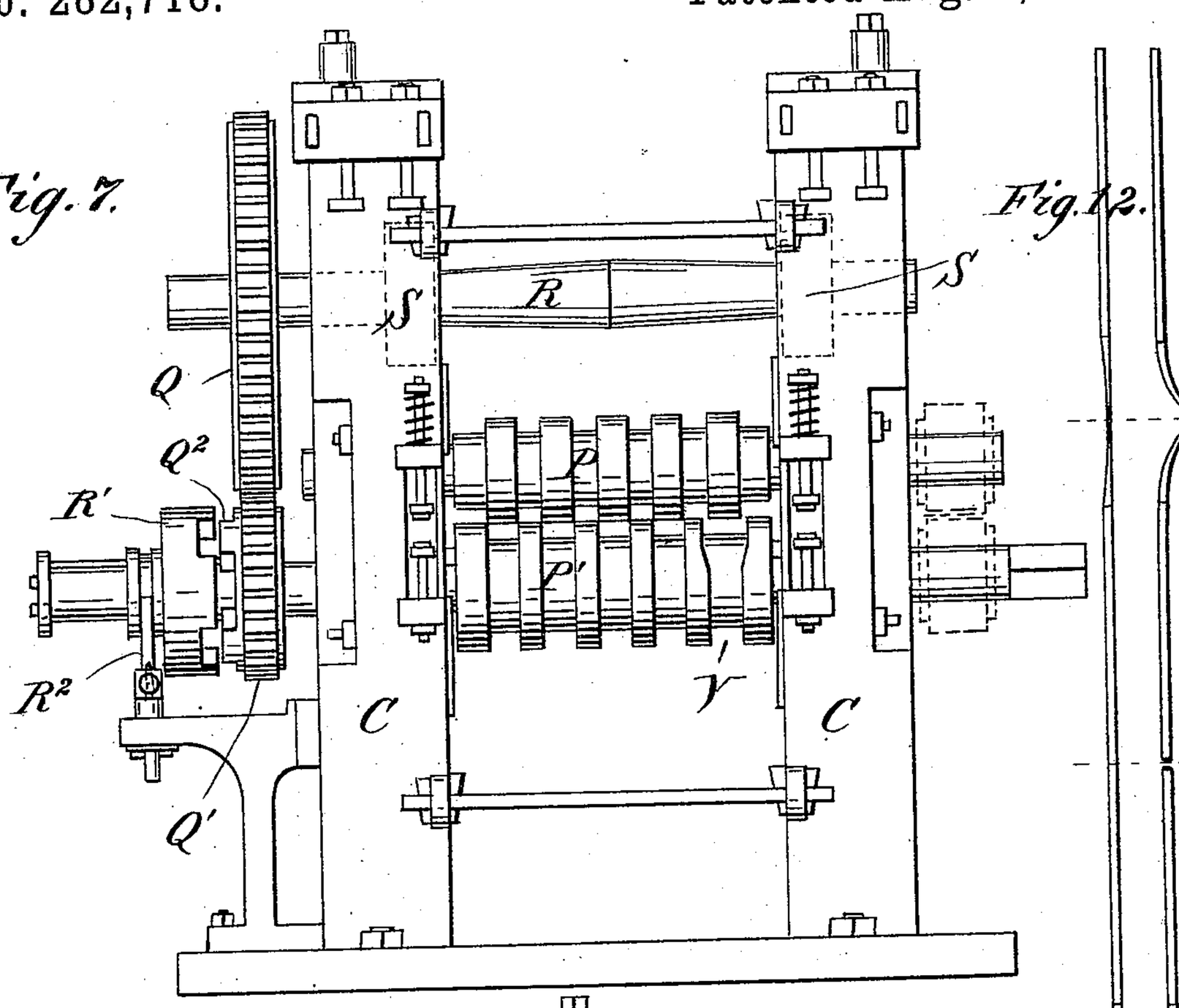


Fig. 12.

Fig. 10.

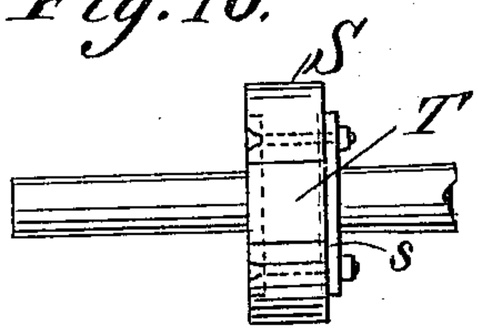


Fig. 11.

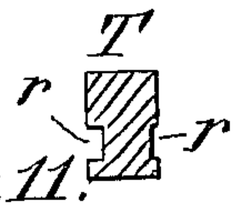


Fig. 8.

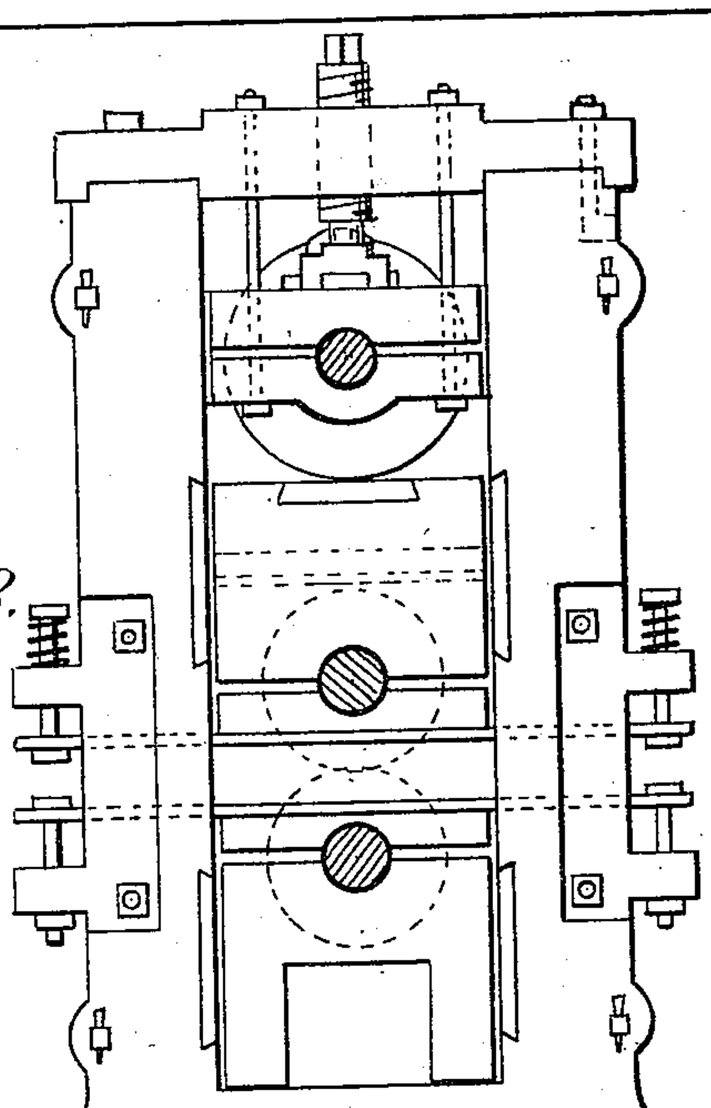
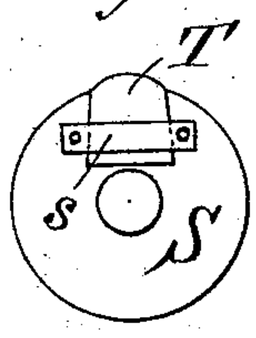


Fig. 9.



WITNESSES:

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C. Sedgwick

INVENTOR:

J. S. Griffin

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN S. GRIFFIN, OF CLEVELAND, OHIO.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 282,718, dated August 7, 1883.

Application filed February 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. GRIFFIN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Rolling-Mills, of which the following is a full, clear, and exact description.

The object of my invention is to provide certain new and useful improvements in rolling-mills for rolling springs and sleigh-shoes and tapering the same on the flat sides and edges.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my improved rolling-mill. Fig. 2 is an end view of the same. Fig. 3 is a longitudinal elevation of the screw for adjusting the bearings. Fig. 4 is a longitudinal elevation of the cam for depressing the journal-box of the upper roller. Fig. 5 is a longitudinal elevation of the eccentric disk, which can also be used for depressing the journal-boxes of the upper roller. Fig. 6 shows tapered bars rolled in my improved rolling-mill in plan view and longitudinal elevation. Fig. 7 is a front elevation of a modification of my improved rolling-mill. Fig. 8 is a cross-sectional elevation of the same. Fig. 9 is an end elevation of the collar containing the segments for depressing the journal-boxes of the upper roller. Fig. 10 is an end elevation of the said collar. Fig. 11 is a cross-sectional elevation of the block inserted in the said collar. Fig. 12 shows a longitudinal elevation of the tapered bars before they are cut and after they are cut and bent.

Two horizontal rollers, A and A′, are journaled in journal-boxes B and B′, which are held in vertical standards C C. The journal-boxes B of the upper roller, A, rest on cross-bars *b*, which extend through vertical slots in the standards and project from the front and rear surfaces of the standards, the ends of which bars are supported by vertical bolts *b′*, passing loosely through brackets *c*, projecting from the front and rear surfaces of the standards C, the heads of which bolts *b′* rest on spiral springs *d*, surrounding the said bolts between the heads of the bolts and the upper surfaces of the brackets *c*. The journal-boxes B′ of the lower roller, A′, are supported by bars *b*, bolts *b′*, and brackets *c*; but in this case the springs are not required. Set-screws D pass transversely through the standards C and through jam-nuts D′ within the standards, and press against blocks D^2, which bear lightly against the flanges of the journal-boxes of the upper and lower rollers to keep the rollers running steady. The nuts D^3, at the opposite ends of the screws, are contained within recesses D^4 in the standards.

Gear-wheels E and E′ are mounted on the shafts of the rollers A and A,′ respectively, and engage with each other. A cog-wheel, F′, is mounted on one end of the shaft of the lower roller, A′, and engages with a cog-wheel, F, mounted on a shaft, G, journaled in journal-boxes H, held in the standard C, the said wheels F and F′ being shown in dotted lines.

On the shaft G are mounted double cams I, directly above the bearing-blocks J, whereby when the shaft G is rotated the double cams will press on the bearing-blocks J, and will thus depress the journal-boxes of the roller A, and also the said roller. In place of the double cams I, eccentric disks K may be mounted on the shaft G, which disks are contained in boxes K′, held above the blocks J in the standards C, whereby if the shaft G is rotated the said boxes K′ will be moved up and down.

On one end of the shaft of the lower roller, A′, is mounted the double cam I′, which is between the longer ends of the two levers L and L′, journaled in the standards M, which levers are provided at their short ends with removable longitudinally-grooved dies *g g′*. The journal-boxes *h* of the upper lever, L, rest on bars *h′*, extending through slots in the standard M and projecting from the front and rear surfaces of the said standards, which bars *h′* are supported at their ends by bolts *m*, passing through brackets *n* on the front and rear surfaces of the standards M, which bolts *m* are held in place by nuts *o*, secured on the ends of the same. By drawing up the nuts *o* the journal-boxes of the upper lever, L, can be raised or lowered more or less, as may be desired, according to the width of the article to be compressed between the dies *g* and *g′*.

A band, *p*, strapped to the standards M, extends from one to the other between the short ends of the levers L, and against the said strap the end of the bar or rod to be tapered is

placed to prevent pushing it too far between the jaws or short ends of the levers L.

A curved spring, N, is secured by means of a key, N′, to jaws N^2 in the base of the machine, and the upper and free end of the said spring presses the longer end of the lower lever L′ and presses the same against the cam I′. The standards M M are braced and united by transverse bracing-rods M′.

The heated bar that is to be rolled in the mill is first placed between the grooved dies *g g′* in the short ends of the levers L L′, which dies are pressed toward each other by the action of the cam I′ on the long ends of the levers L L′. The dies *g g′* are grooved to prevent the bar that is passed in between them from twisting. The bar will be beveled or tapered edgewise at the end, as shown at d^3, Fig. 6. The bar is then passed between the rollers A A′, the bar resting on the guide O, attached to the standards C C, and between the side guards, O′, the guide O being used to guide the bar straight through the rolls until the end strikes against the stops that are fixed behind the rolls A A′, and as the upper roller is pressed downward by the cam I the pressure tapers the end of the bar flatwise and forces it outward toward the operator. The opposite end of the bar is heated and tapered the same as shown at d^2, Fig. 6, to suit it for carriage and buggy springs. One tapered end of a bar can be bent upward, as shown at *d′*, Fig. 6, to form sleigh-runners, &c.

In the device shown in Figs. 7 to 11, inclusive, the grooved rollers P P′ are journaled in standards C C in the same manner as described above, and on the end shaft of the lower roller, P′, a cog-wheel, Q, is mounted loosely to engage with a cog-wheel, Q, mounted rigidly on a shaft, R, journaled in the standards C C above the rollers. A male clutch, Q^2, is made integral with the wheel Q′, and a female clutch, R′, is loosely mounted on the shaft of the lower roller in such a manner that it rotates with the same, but can be moved longitudinally on the same to be engaged with the clutch Q^2. If the clutches R′ and Q^2 are engaged, the wheel Q′ will be rotated with the lower roller, and will rotate the wheel Q on the shaft R. The clutch R′ is provided with a fork, R^2, for moving the clutch R′ toward or from the clutch Q^2 for engaging or disengaging the same, all in the usual manner. On each end of the shaft R a collar, S, is mounted, which is provided with a recess adapted to receive a cam-block, T, the outer edge of which is rounded and projects beyond the periphery of the collar S. The block T is provided in each surface with a transverse groove for receiving straps *s*, which extend across the said block and are held on the collar by means of bolts, which may be countersunk, if desired. In the lower roller, P′, a groove, V, in the same is widened throughout half its length, so that it will be wider than the corresponding annular ridge of the roller P above it. I have widened this groove for the purpose of permitting bars of various widths to be passed into the same for the purpose of tapering the said bars.

In operating with the last-described machine the billet is placed between the rollers and passed from groove to groove until it is of the desired thickness. Then the operator engages the clutch R′ with the clutch Q^2, thus causing the loose wheel Q′ to be revolved with the shaft of the lower roller, and thereby rotating the wheel Q on the shaft R. The collar S will be revolved, and the cam-blocks T, held in the same, will depress the journals of the upper roller, and the bar held between the rollers will be compressed—that is to say, in the length of the bar a part will be made thinner than the rest, and if the bar is cut at the said thinner part two tapered ends will be formed. The tapered ends can be bent upward to form sleigh-runners, as is shown in Fig. 12.

In place of the collar S, with cam-block T, a cam, I, or eccentric disk K, can be used, as may be desired.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a rolling-mill, of the cam I′, mounted on the shaft of the lower roller, and the levers L L′, journaled on the standard M, and having their free ends above and below the cam I′, respectively, substantially as herein shown and described, and for the purpose set forth.

2. The combination, with a rolling-mill, of the cam I′ on the shaft of the lower roller, A′, the levers L L′, journaled on the standards M, and the dies *g g′*, held in the short ends of the levers L L′, substantially as herein shown and described, and for the purpose set forth.

3. The combination, with a rolling-mill, of the cam I′ on the shaft of the lower roller, the levers L L′, journaled in the standards M, the dies *g g′*, held in the short ends of the levers L L′, and of devices for vertically adjusting the journal-boxes of the upper lever, substantially as herein shown and described, and for the purpose set forth.

4. The combination, with a rolling-mill, of the cam I′ on the shaft of the lower roller, the levers L L′, journaled in the standards M, the dies *g g′*, held in the short ends of the levers L L′, and the spring N, attached to the base of the machine and pressing the long end of the lower lever upward, substantially as herein shown and described, and for the purpose set forth.

5. The combination, with a rolling-mill, of the cam I′ on the shaft of the lower roller, the levers L L′, journaled in the standards M, the bar *h′* below the journal-box *h* of the upper lever, and the bolts *m* supporting the ends of the bar *h′*, and passing through brackets *n* on the standards M, substantially as herein shown and described, and for the purpose set forth.

JOHN STEWART GRIFFIN.

Witnesses:
A. HUTCHISON,
JOHN SHAW.