

(No Model.)

2 Sheets—Sheet 1.

E. E. SLICK.
MANUFACTURE OF AXLES.

No. 470,354.

Patented Mar. 8, 1892.

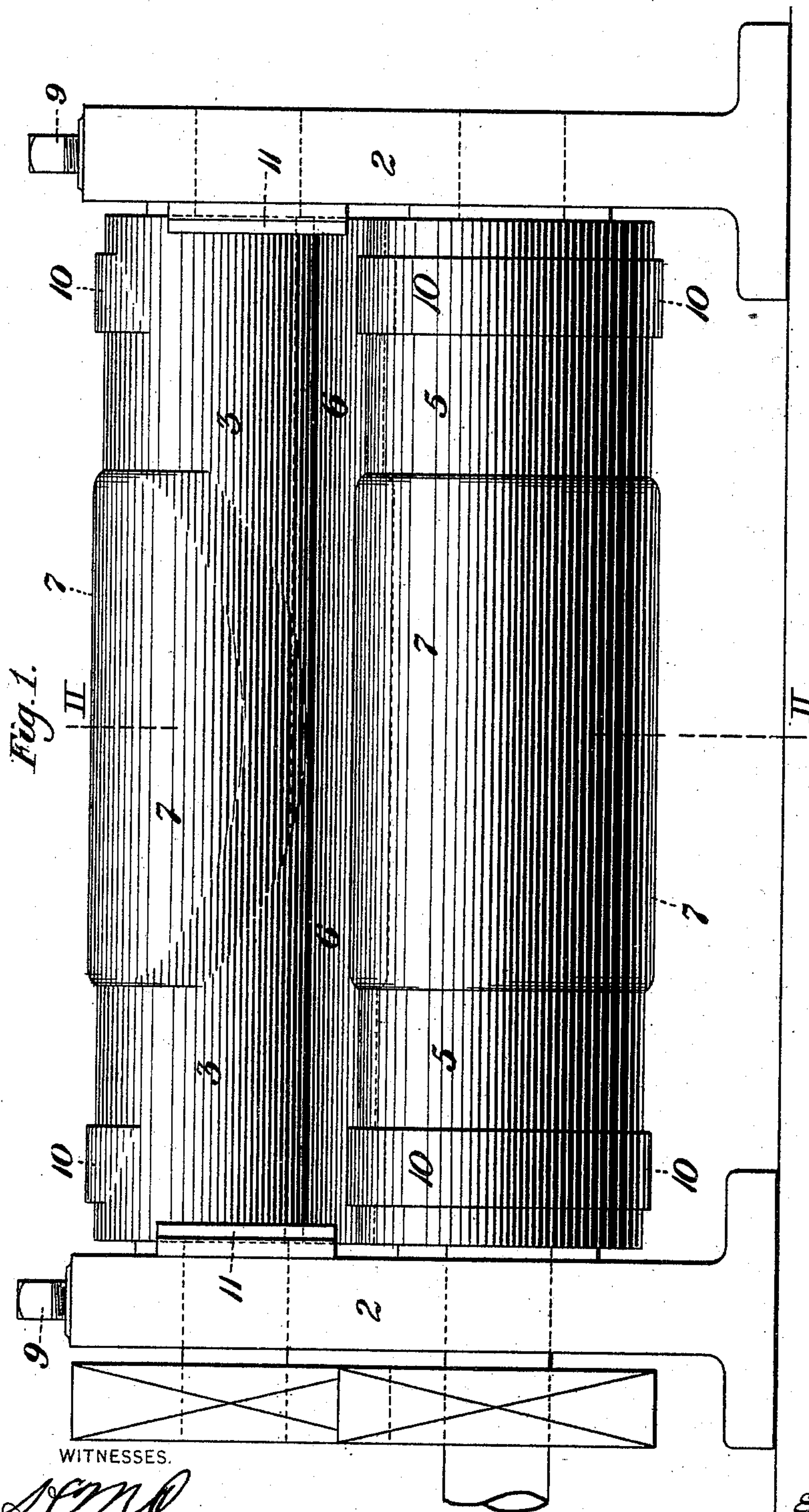


Fig. 5.



WITNESSES.

H. M. Corwin
H. D. Corwin

INVENTOR.

Edwin E. Slick
by W. B. Kewell, Son
his attorney

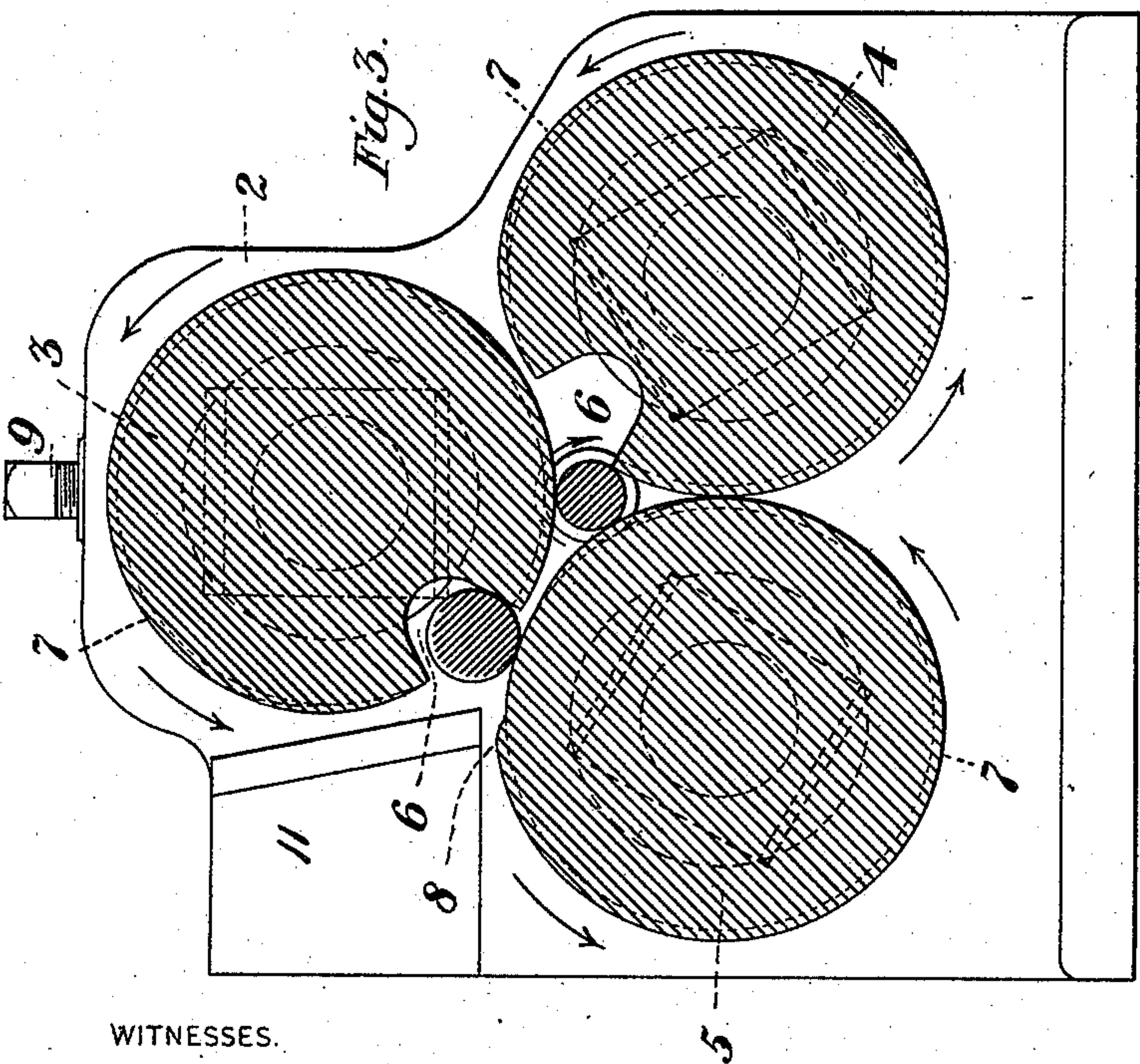
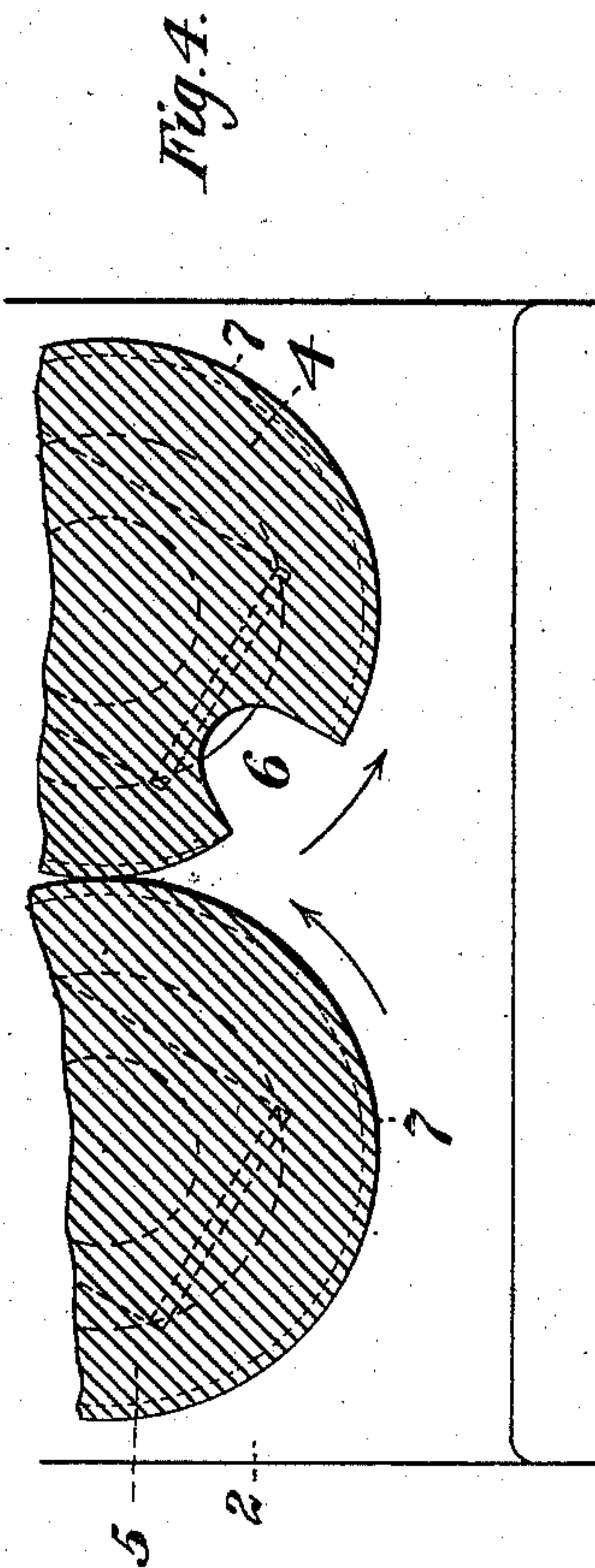
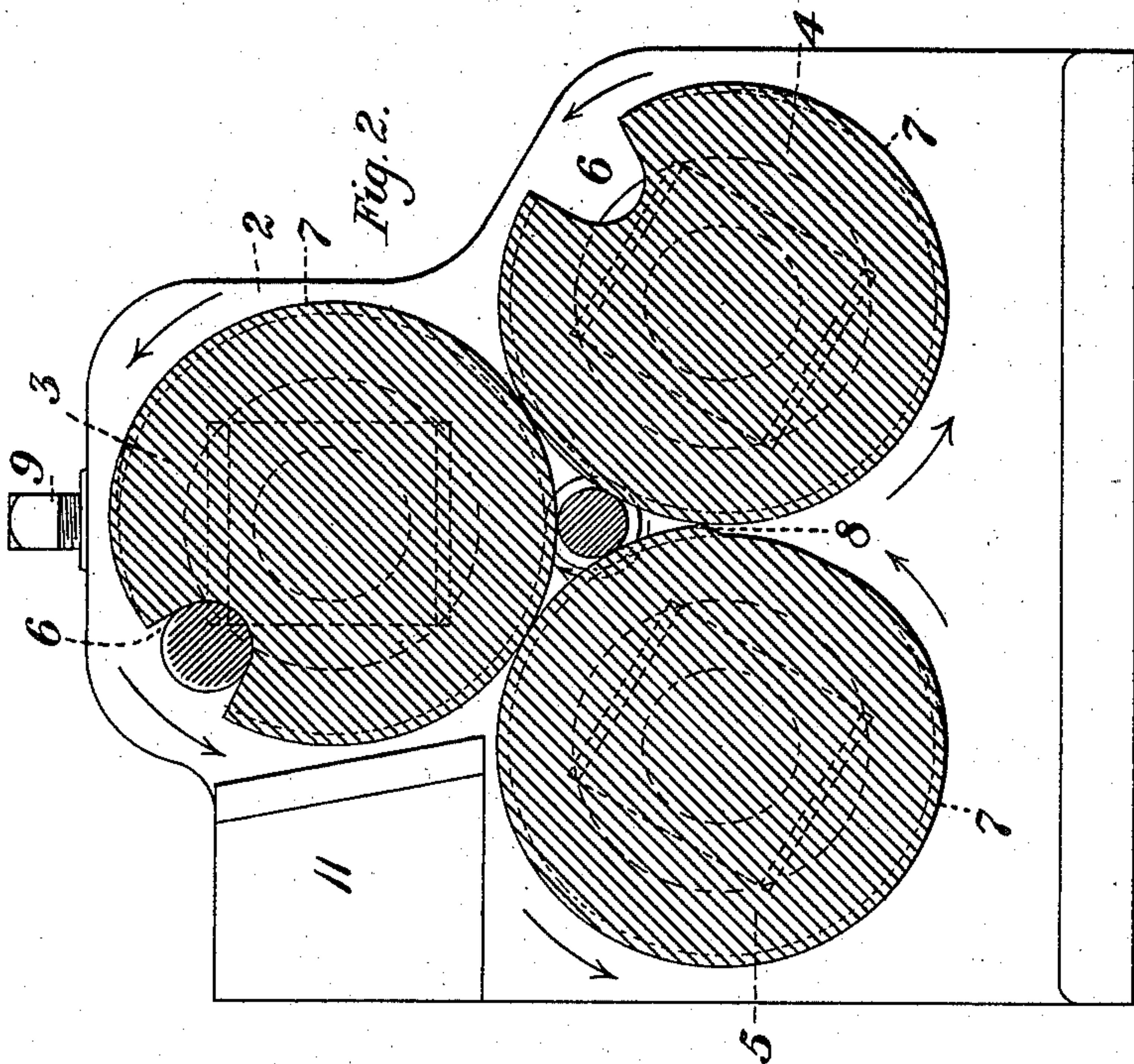
(No Model.)

2 Sheets—Sheet 2.

E. E. SLICK.
MANUFACTURE OF AXLES.

No. 470,354.

Patented Mar. 8, 1892.



WITNESSES.

J. M. Corwin
H. B. Corwin

INVENTOR.

Edwin E. Slick
by W. Beckwith Stans
his attorney

UNITED STATES PATENT OFFICE.

EDWIN E. SLICK, OF BRADDOCK, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO JOHN F. LEWIS, OF SAME PLACE.

MANUFACTURE OF AXLES.

SPECIFICATION forming part of Letters Patent No. 470,354, dated March 8, 1892.

Application filed October 30, 1891. Serial No. 410,310. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. SLICK, of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Axles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved machine. Fig. 2 is a cross-section on the line II II of Fig. 1. Fig. 3 is a similar view in a more advanced position than Fig. 2. Fig. 4 is a partial section similar to Fig. 2, showing rolls in discharging position. Fig. 5 is a view of the finished axle.

My invention relates to the manufacture of axles, and more particularly to the rolling of axles from a bar of steel, the rolling being done while the bar is either hot or cold. It will be understood, however, that my invention is not restricted to the making of axles alone, but is applicable to rolling many bodies of irregular forms.

In the drawings, 2 2 represent the roll-housings, and 3, 4, and 5 the three rolls mounted therein. Of these rolls Nos. 3 and 4 are each provided with a groove 6 throughout their length of sufficient size to allow the bar from which the axle is manufactured to drop therein. Each of the three rolls is provided at its central portion with an annular enlargement or band 7, one end of which tapers down to a point on a level with the surface, from whence it widens and rises in height until it merges in the band proper, the bands of rolls Nos. 3 and 4 terminating in the edge of the groove, while that of No. 5 terminates in an abrupt shoulder 8. The upper roll 3 is adjustable in its bearing by means of adjusting-screws 9, so that different sizes of axles may be produced, and, if desired, a like adjustment may be provided for the other rolls. Near each end of the rolls, and separated from the central band 7, are additional bands 10, which terminate in a point at the inner edge of the band, tapering down to a level with the face of the roll, as in the case of the bands 7. A guide 11 is provided for directing the rods or bars into the groove in roll No. 3, this guide being suitably supported, as shown.

The rolls all rotate in the same direction, as

indicated by the arrows in Fig. 2. The action is as follows: The bar being placed in the groove of the upper roll is held therein by the guide until it is guided by roll No. 5 into the space between the three rolls, at which point it drops from the groove and is seized by the points of the middle bands upon the three rolls, and as the rolls rotate the middle depressed portion of the axle is produced, the surplus metal being thrust toward either end of the axle-blank. The blank is then engaged by the points of the bands 10, these points being sufficiently removed from the points of the middle bands to engage the blank only when the elongation of the middle parts of the axle is complete. By these bands 10 the necks at the ends of the axle are produced, the metal again being forced toward the ends of the axle. When the rolls have completed one revolution the rolling operation is complete, and the axle, dropping into the groove of the roll 4, is carried around thereby and ejected from the machine.

Fig. 2 represents the rolls as one axle is being completed and ready to drop into the groove of roll No. 4, while a blank is being carried in by the groove of No. 3, the rolls being so timed that the blank is engaged by the edge of the groove 6 in the roll 4 as it drops from the groove in the roll No. 3, and thus being engaged by the points of the central bands upon the three rolls is reduced in its center, the metal being elongated toward both ends.

It is obvious that many changes may be made in the construction and arrangement of the parts without departing from my invention. For instance, the number of the rolls may be increased, the shape and relative positions of the raised parts of the rolls may be changed to suit the article desired, and the manner of feeding and ejecting the blank may be altered.

The advantages of my construction are numerous. The machine is simple, compact, and performs its work in an extremely efficient and rapid manner, and by rolling or finishing while cold an axle may be produced which will require little or no finishing in the lathe.

I claim as my invention—

1. The process of making cold-rolled axles, consisting in finishing the same by axially rolling them while cold, substantially as and for the purposes described.
- 5 2. In rolling apparatus, the combination of several rolls having raised portions thereon, said raised portions tapering down to a level with the surface of the roll and arranged to co-operate with each other in reducing the
10 blank, substantially as and for the purposes described.
3. In rolling apparatus, the combination of several rolls arranged to coact with each other, said rolls being provided with grooves ar-
15 ranged to carry in the blank and eject the article after rolling, respectively, substantially as and for the purposes described.
4. In apparatus for rolling, the combination of several rolls arranged to turn in the same
20 direction, two of the rolls having grooves arranged to feed in the blank and eject the rolled article, substantially as and for the purposes described.
5. In rolling apparatus, the combination of several coacting rolls, two of the rolls having
25 grooves arranged to feed in and eject the metal, and a guide arranged to hold the metal in the feeding-in groove, substantially as and for the purposes described.
6. In apparatus for rolling axles, the com-
30 bination of three coacting rolls, two of the rolls having grooves arranged to feed in the blank and eject the axle, and raised bands upon the rolls arranged to elongate the metal toward the ends, substantially as and for the
35 purposes described.

In testimony whereof I have hereunto set my hand this 15th day of October, 1891.

EDWIN E. SLICK.

Witnesses:

H. M. CORWIN,
W. B. CORWIN.