

No. 846,755.

PATENTED MAR. 12, 1907.

J. J. NEWBAKER.

BRAKE SHOE.

APPLICATION FILED DEC. 5, 1905.

2 SHEETS—SHEET 1.

FIG. 1.

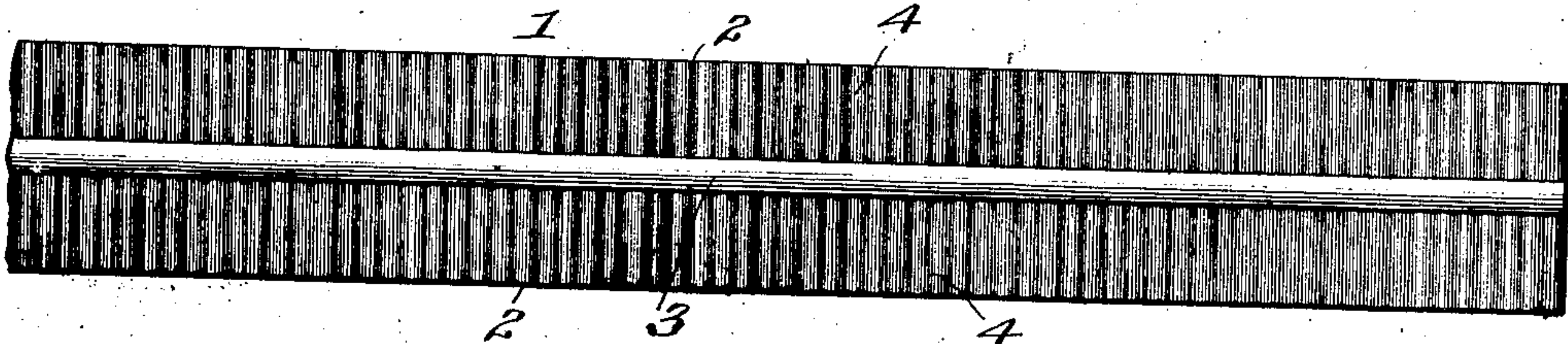


FIG. 2.

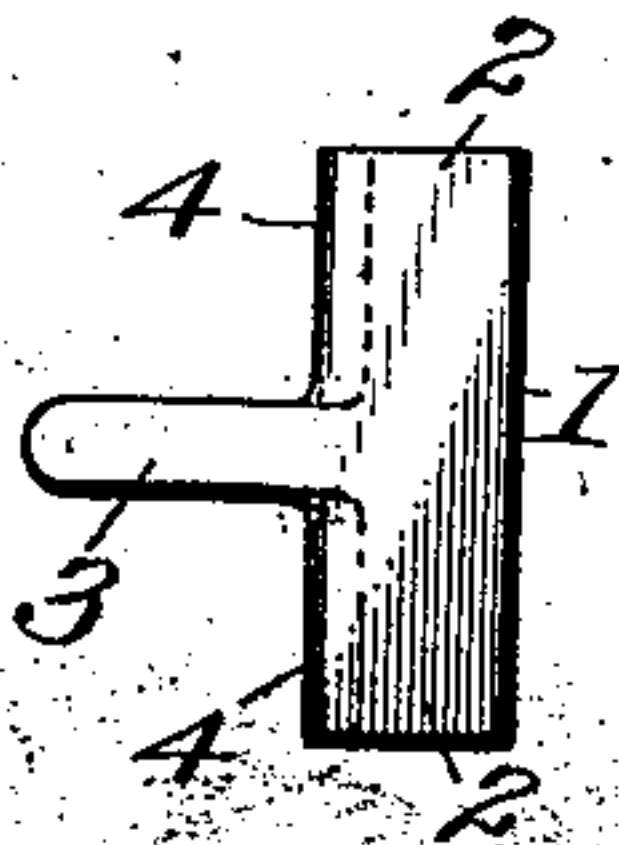


FIG. 3.

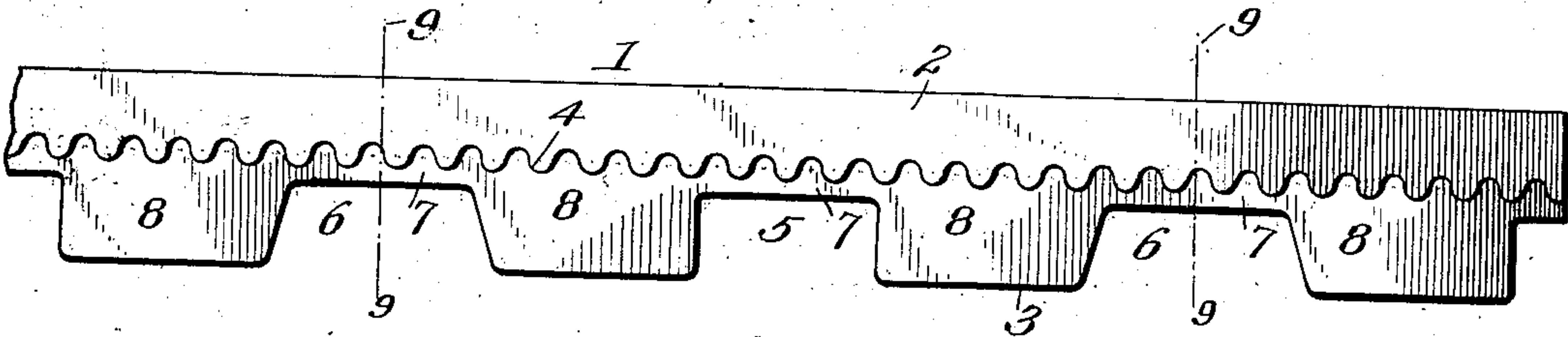
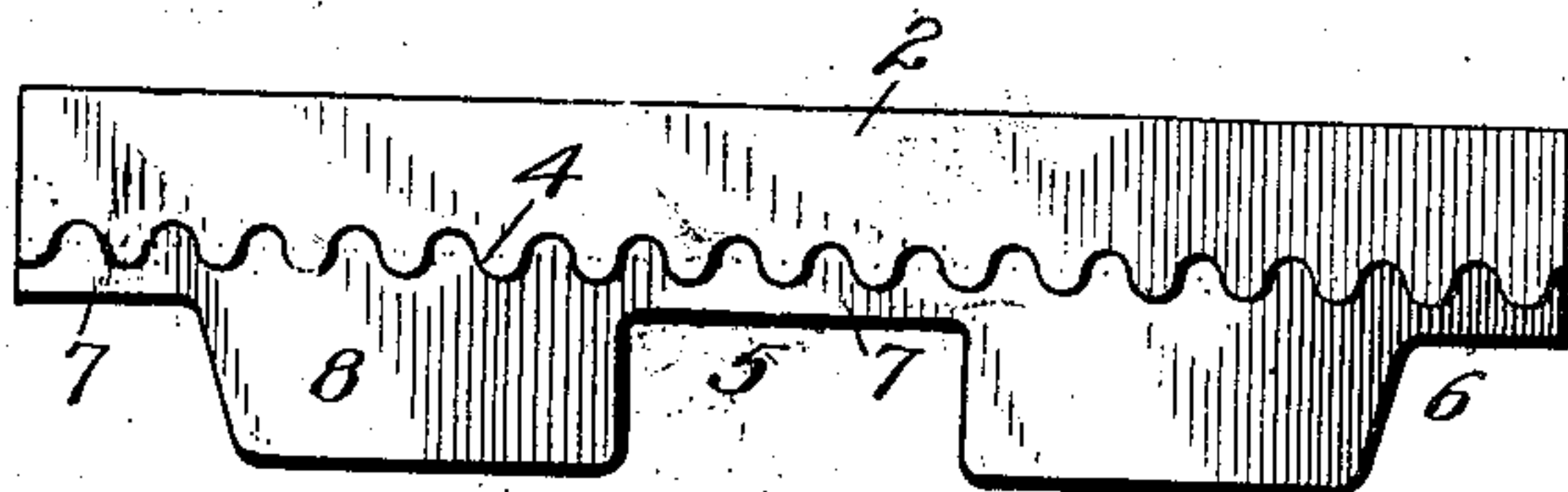


FIG. 4.



Witnesses

*W. C. Lyddane*  
*J. F. Riley*

*John J. Newbaker, Inventor*

By

*E. G. Siggers*

Attorney

No. 846,755.

PATENTED MAR. 12, 1907.

J. J. NEWBAKER.

BRAKE SHOE.

APPLICATION FILED DEC. 5, 1905.

2 SHEETS—SHEET 2.

Fig. 5.

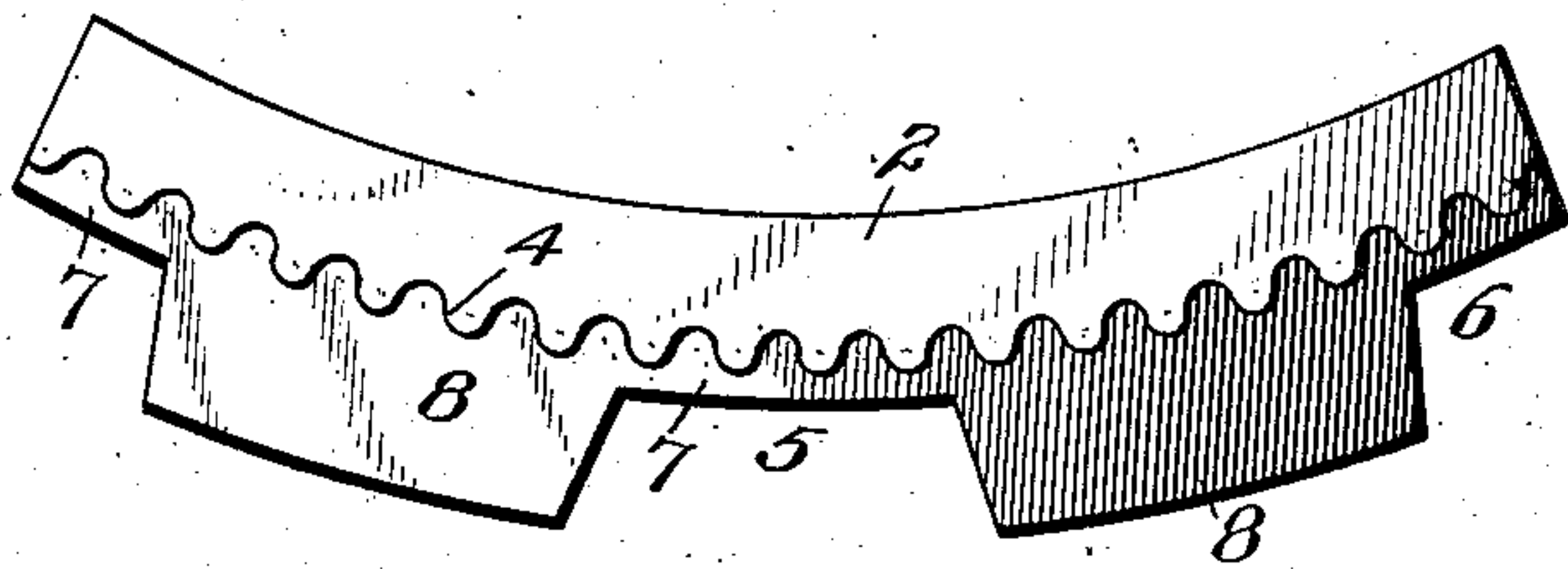


Fig. 6.

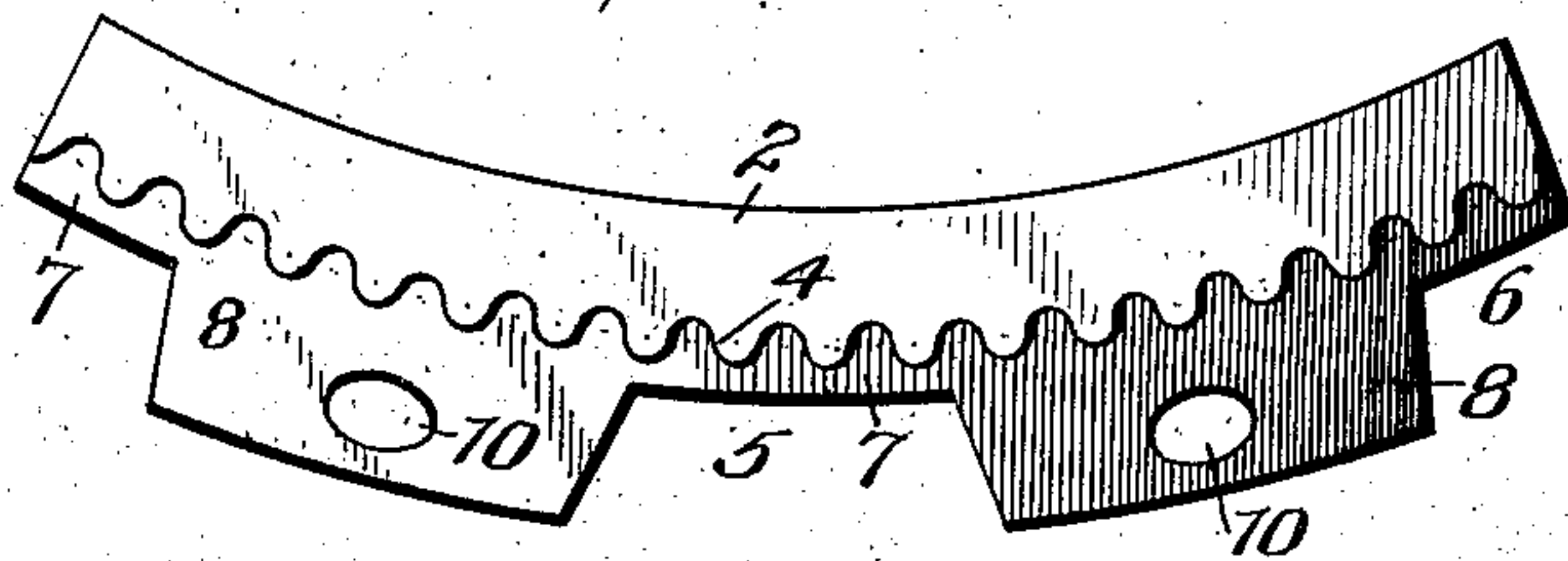


Fig. 7.

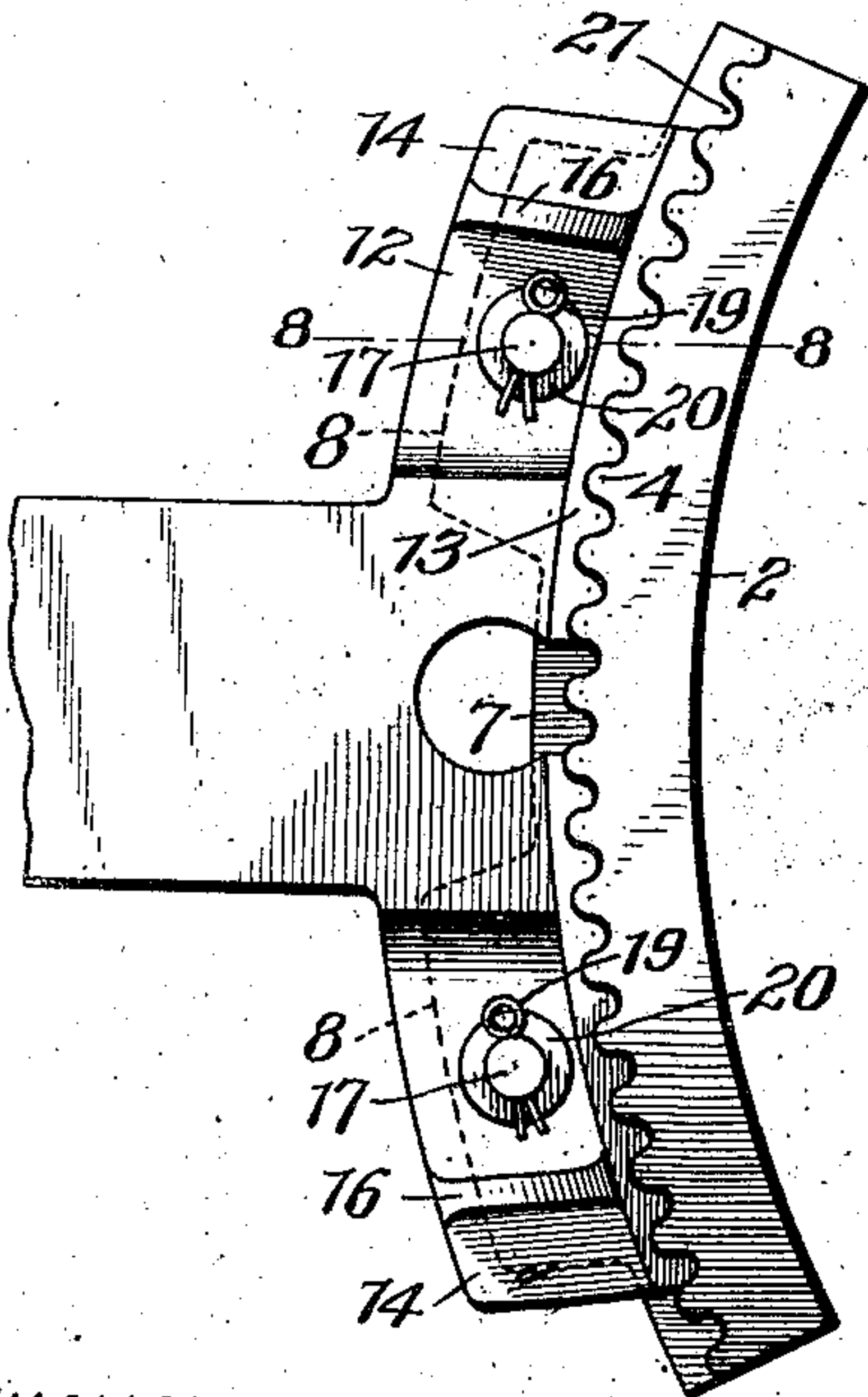
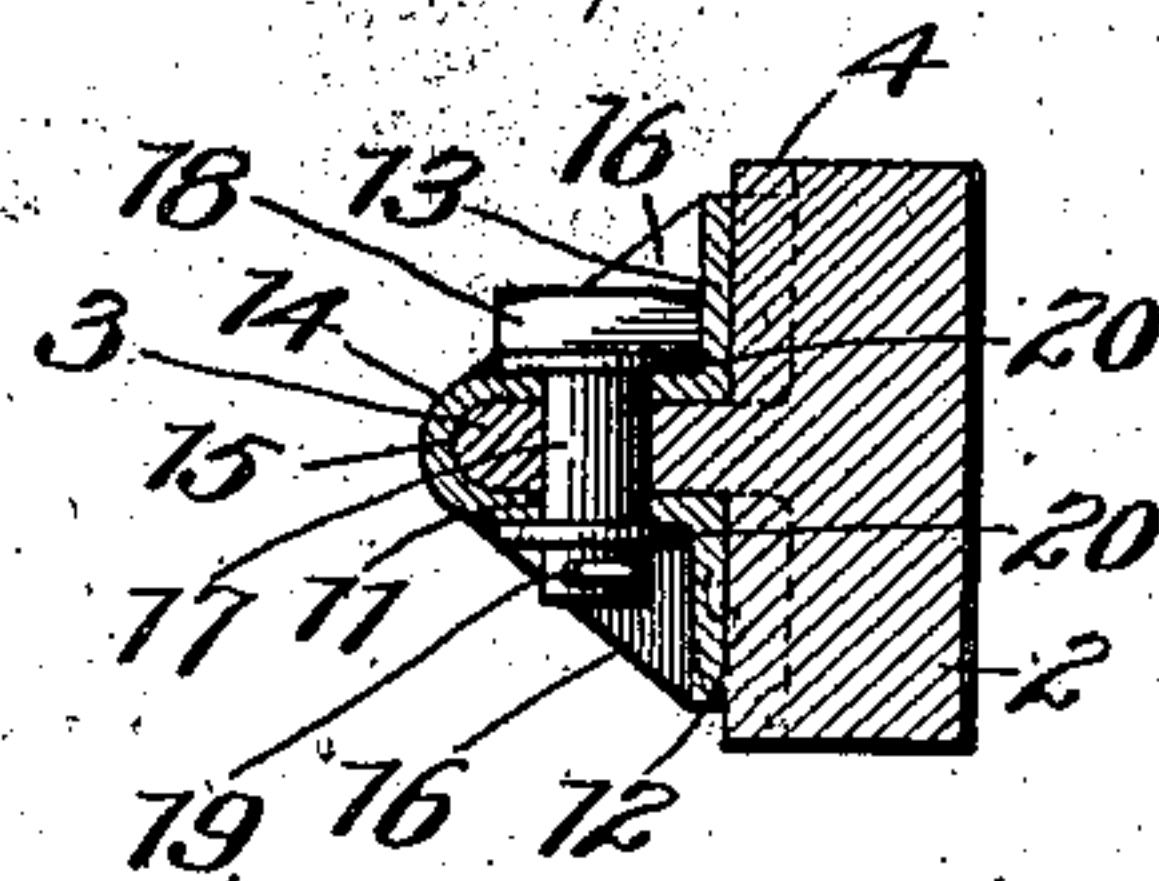


Fig. 8.



Witnesses

*M. C. Lyddane*  
*J. F. Riley*

John J. Newbaker, Inventor

By

*E. G. Siggers*  
Attorney



# UNITED STATES PATENT OFFICE.

JOHN J. NEWBAKER, OF STEELTON, PENNSYLVANIA.

## BRAKE-SHOE.

No. 846,755.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed December 5, 1905. Serial No. 290,473.

*To all whom it may concern:*

Be it known that I, JOHN J. NEWBAKER, a citizen of the United States, residing at Steelton, in the county of Dauphin and State of Pennsylvania, have invented a new and useful Brake-Shoe, of which the following is a specification.

The invention relates to a brake-shoe.

The object of the present invention is to improve the construction of brake-shoes and to enable a simple and efficient brake-shoe of great strength and durability to be manufactured more rapidly and at less expense than heretofore.

The method of making the brake-shoe consists, essentially, in rolling an ingot of iron or steel into a bar substantially T-shaped in cross-section and corrugating the rear faces of the side flanges of the bar at the last pass between the rolls, allowing the metal to cool, and then punching the web of the bar to form alternate parallel-sided and tapered or beveled recesses, then shearing the bar while cold at the beveled recesses, then reheating and curving the severed pieces to the radius of a wheel, and finally punching bolt-holes in the web while the metal is cold.

In the drawings, Figure 1 is a rear elevation of a corrugated bar, showing the same after it has passed through the corrugating-rolls. Fig. 2 is an end elevation of the same. Fig. 3 is a side view of the bar after the web has been punched to form the parallel-sided and tapered or beveled recesses. Fig. 4 is a detail view of one of the pieces cut from the bar to form a brake-shoe. Fig. 5 is a similar view, the brake-shoe being curved. Fig. 6 is a side view of the brake-shoe after the final step in the punching of the bolt-holes in the web of the bars has been finished. Fig. 7 is a side elevation of the brake-shoe, showing the same applied to a brake block or head. Fig. 8 is a sectional view on the line 8 8 of Fig. 7.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In carrying out the method an ingot of iron or steel is rolled into a T-shaped bar 1, consisting of opposite side flanges 2 and a web 3, which is thinner than the side flanges, as clearly illustrated in Fig. 2 of the drawings. The side flanges 2, which constitute the body of the brake-shoe and which may be of any desired thickness, have their rear faces 4 corrugated by the last pass between the rolls.

The bar is then permitted to cool, and while cold the web is punched to form alternate parallel-sided and tapering or beveled recesses 5 and 6. The recesses extend inward from the rear edge of the web and terminate short of the side flanges to provide narrow intermediate portions 7, which connect the tongues 8, formed by punching the recesses 5 and 6 in the web. This results in strengthening the brake-shoe throughout its length, and the shoe possesses all the strength incident to the T-shaped structure of the bar.

While the bar is still cold it is sheared centrally through the tapered or beveled recesses 6 on the lines 9 9 of Fig. 3 to cut the bar into the proper lengths for forming the brake-shoes. The punching of the recesses in the web of the bar removes a considerable portion of the metal thereof and enables the bar to be sheared while it is cold, which is desirable; as the bar can be cut more accurately while cold than when in a heated condition.

After the bar has been cut into proper lengths the brake-shoe lengths are reheated and placed between suitable dies for curving them to the radius of a wheel. This curving or bending of the brake-shoe changes the form of the parallel-sided recess 5, which is transformed into an inwardly-tapered recess, as clearly illustrated in Fig. 5 of the drawings. The inwardly-tapered recess of the curved shoe presents an appearance similar to the inwardly-tapered recesses 6, and the tongues 8 formed, by cutting the web, are tapered, as shown.

After the curving or bending operation has been completed the shoe is again allowed to cool, and substantially elliptical bolt-openings 10 are punched in the tongues or projecting portions of the web while the metal is cold. The elliptical bolt-openings 10 of the projecting tongues are adapted to register with bolt-openings 11 of a brake block or head 12, designed to be constructed of cast metal and consisting of a corrugated body portion 13 and opposite web portions 14, having sockets 15 conforming to the configuration of and adapted to receive the tongues 8. The tongues, which are tapered, form wedges for engaging the brake block or head, which has a heavy intermediate portion interposed between the tongues. The said tongues fit against and engage both the side and end walls of the sockets of the brake block or head. The bolt-openings of the brake block or head are circular, and the



elliptical openings 10 are adapted to register more readily with the circular openings of the brake block or head and will compensate for any slight variation in the position of the  
5 said openings. The longitudinal web portions 14 of the brake block or head are reinforced by side flanges or webs 16, which are tapered, as clearly illustrated in Fig. 8 of the drawings.

10 The brake-shoe is secured to the brake block or head by bolts 17, which pass through the openings 10 and 11. These bolts have squared heads 18, which fit against the rear face of the body portion of the brake block or  
15 head, whereby the bolts are held from turning to prevent split keys 19 from being inverted. The split keys are of the ordinary construction and are passed through perforations of the bolts. The heads of the keys  
20 are at the top, and as the bolts are held against rotation there is no liability of a key dropping out, and there is no tendency of the lower spread terminals of the sides of the keys to compress and release the keys.  
25 Washers 20 are arranged upon the bolts between the keys and the web portions of the brake block or head and also between the latter and the heads of the bolts. Any other suitable means, however, may be employed for securing the bolts in the openings  
30 of the brake block or head and the brake-shoe. The tongues, which interlock with the brake block or head, support the same and relieve the bolts of vertical strain, and the corrugated faces 4 of the brake-shoe fit  
35 into and interlock with corresponding corrugated faces 21. These interlocking corrugated faces also assist in supporting the brake-shoe, and they relieve the bolts of  
40 strain when the brakes are applied.

It will be seen that the brake-shoes are adapted to be cheaply and rapidly manufactured and that as the T-shaped bar is sheared after the recesses have been punched  
45 in the web there is less material to cut, and the shearing of the bar may be effected while the said bar is cold, thereby insuring great accuracy both in the cutting operation and in the finished product. By omitting the corrugations of the bar brake-shoes having  
50 smooth rear faces may be made.

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

55 1. A brake-shoe consisting of a body portion, and projecting tongues spaced apart to form an intervening recess and oppositely

tapered at their ends, said brake-shoe being also provided at the back with a narrow longitudinal web portion which connects the  
60 tongues.

2. A brake-shoe consisting of a body portion having corrugated rear faces and provided with projecting tongues spaced apart to provide an intervening recess. 65

3. The combination with a brake block or head having upper and lower sockets provided with side and end walls a brake-shoe provided with upper and lower projecting  
70 tongues spaced from each other and also from the side and ends of the brake-shoe and fitting in the sockets of the brake block or head, said tongues engaging the side and end walls of the sockets and fastening devices  
75 piercing the brake-block and the tongues.

4. The combination of a brake block or head provided with upper and lower tapered sockets, a brake-shoe having upper and lower tapered tongues fitting in the sockets and forming wedges for engaging the brake  
80 block or head, and fastening devices for securing the tongues in the sockets.

5. The combination of a brake block or head having sockets and provided with a corrugated face, and a brake-shoe consisting  
85 of a body portion having corrugated rear faces to interlock with the corrugated face of the brake block or head, and tongues extending from the body portion and secured in the sockets of the brake block or head. 90

6. The combination of a brake block or head consisting of side portions or flanges and web portions having sockets, a brake-shoe having tongues fitting in the sockets,  
95 bolts piercing the tongues and the web portions of the brake-block and having heads engaging the adjacent side portion or flange whereby they are held against rotation, and means for holding the bolts in position.

7. The combination of a brake block or  
100 head provided with a corrugated face, a brake-shoe having a corrugated face fitted against and interlocked with the corrugated face of the brake block or head, and means for securing the brake-shoe and the brake  
105 block or head in their interlocked relation.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN J. NEWBAKER

Witnesses:

ELMER E. NERON,  
D. W. NERON.