

No. 659,723.

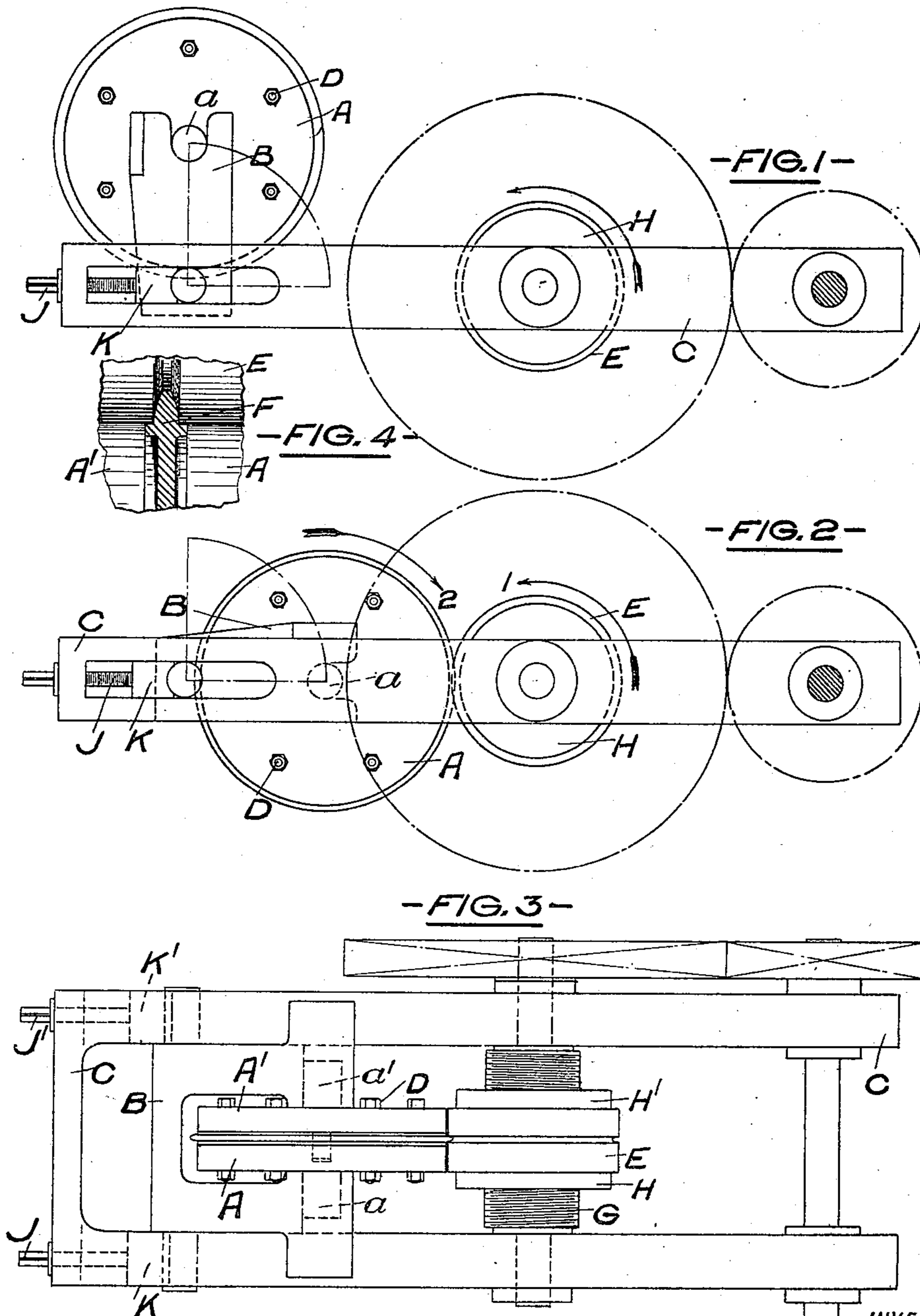
Patented Oct. 16, 1900.

E. WILLIAMS.

MACHINE FOR MANUFACTURING SHEET METAL WHEELS.

(Application filed Jan. 23, 1900.)

(No Model.)



WITNESSES:  
Ella L. Giles  
O. Williams

INVENTOR  
Edward Williams  
BY  
Richardson  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

EDWARD WILLIAMS, OF BIRMINGHAM, ENGLAND.

## MACHINE FOR MANUFACTURING SHEET-METAL WHEELS.

SPECIFICATION forming part of Letters Patent No. 659,723, dated October 16, 1900.

Application filed January 23, 1900. Serial No. 2,495. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD WILLIAMS, a subject of the Queen of Great Britain and Ireland, and a resident of 48 Benson road, in the city of Birmingham, England, have invented certain new and useful Improvements Relating to Chain and other Gear Wheels, (for which I have filed an application in Great Britain, No. 13,696, bearing date July 3, 1899,) of which the following is a specification.

This invention consists of improvements relating to chain and other gear wheels as employed on cycles and other machines, my object being to produce such wheels of light weight but of great strength and durability in a more expeditious and economical manner than heretofore.

On the accompanying sheet of explanatory drawings, Figure 1 is an elevation of the special mechanism I employ in the manufacture of wheels in accordance with my invention, one part of such mechanism being shown in the out-of-service position. Fig. 2 is an elevation, and Fig. 3 a plan, showing the whole of the mechanism in position for action or service. Fig. 4 is an end elevation showing to a larger scale a portion of the rim-forming roll, the gear-wheel disk or blank, and the blank-clamping plates.

The same reference-letters in the different views indicate the same parts.

I produce wheels in accordance with my invention from sheet metal, preferably from cold bright rolled sheet-steel, the thickness of the sheet being equal only to the required thickness of the arms, spokes, or central web of the wheels. From such sheet I stamp or otherwise cut out circular blanks of a diameter rather larger than that of the required finished wheel and make a central eye or aperture through each. For the purpose of forming a rim of the required width and thickness I mount each disk between a pair of clamping-plates A A', having gudgeons *a* *a'* mounted in an arm or bracket B, pivoted to the framing C. The two clamping-plates, with the wheel disk or blank between them, are rigidly connected together by the clamping bolts and nuts, as D, the said bolts passing through holes formed in the blank. The peripheries of the circular clamping-plates A A' are grooved on their inner sides, and the

roll E has a plain central groove cut around its periphery, as illustrated at Fig. 4. The space inclosed by the said grooves (where the roll E is adjacent to the plates A A') constitutes the mold or die for the formation of the rim F, the metal at the periphery of the blank being caused by the pressure imposed upon it to flow or assume the shape of the said die-space. Such pressure I impose by forcing the blank periphery onto the grooved roll E, which is clamped in position on the screwed shaft G by nuts H H' and driven through gearing arranged in any ordinary manner. The periphery of the blank or disk of metal mounted between the plates A A' is fed onto the grooved periphery of the rotating roll E, preferably by the gradual descent of the pivoted arm or bracket B from the position shown at Fig. 1 to the position indicated at Fig. 2, such descent being effected by means of any suitable and ordinary mechanical device for turning the arm or bracket B about its pivot-supports. The periphery of the blank being thus forced into contact with the grooved roll E, rotating in the direction indicated by the arrow 1, the blank and the plates A A' will be caused to rotate in the direction indicated by the arrow 2, and as the movement of the turning gear is gradually continued the metal at the periphery of the blank will be caused to flow and fill the die-space formed by the grooves of the roll E and the plates A A', and thus to assume the rim form, as shown at F, Fig. 4.

Adjustment of the position of the pivoted bracket to suit wheel-blanks of varying diameters is effected by means of the screws J J' and abutment-blocks K K'.

I sometimes form the teeth in the wheel simultaneously with the formation of the rim by the employment of a roll having the required depressions formed in the groove around its periphery instead of the plain grooved roll A, as hereinbefore described, or I may form the teeth after the formation of the rim and in one way by stamping out the portions corresponding with the teeth-spaces and subsequently finishing the rim by subjecting it to the rolling and pressing action with the before-mentioned recessed and grooved roll.

I pierce the blank as may be necessary for

the formation of arms or spokes or of a perforated center of the required design and machine the inner edges and other parts in any ordinary manner.

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

1. In machines for the manufacture of sheet-metal wheels for chain and other driving  
10 gear, the combination with a positively-driven grooved roll E, of rotatable clamping-plates A A' secured by bolts and nuts D to the opposite sides of the required wheel-blank, an  
arm B in which said plates are journaled and  
15 means for slidingly pivoting said arm to the frame C, substantially as described.

2. In machines for the manufacture of sheet-metal wheels for chain and other driving gear, the combination with a positively-driven roll having a peripheral groove, of rotatable  
20 clamping-plates A A' secured by bolts and nuts D to the opposite sides of the required wheel-blank and having gudgeons *a* and *a'* respectively which are freely mounted on an  
arm B having a sliding pivotal connection to  
25 the frame C, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

EDWARD WILLIAMS.

Witnesses:

HERBERT BOWKETT,  
HARRY DAVIS.