

(No Model.)

2 Sheets—Sheet 1.

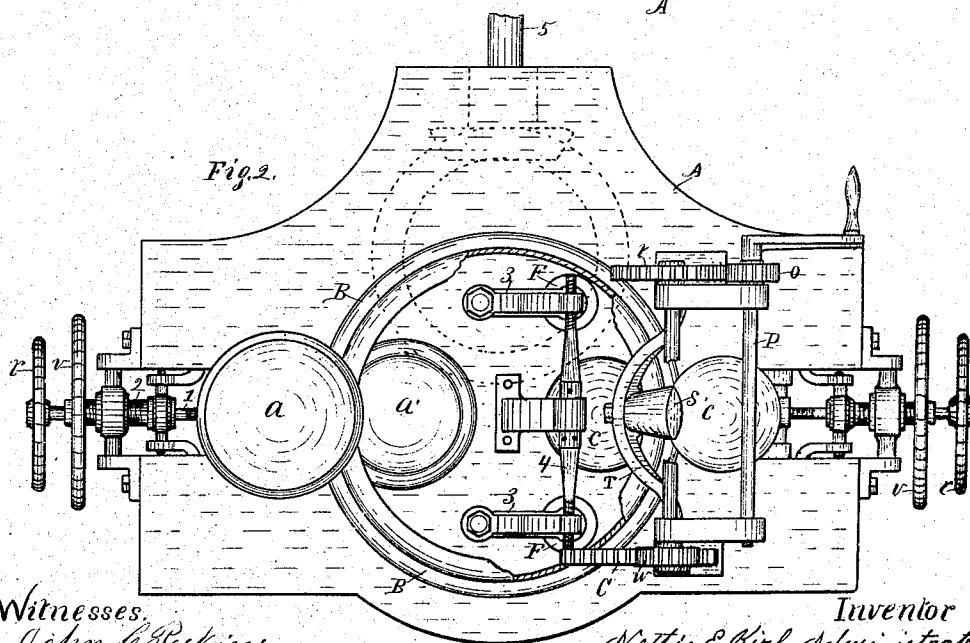
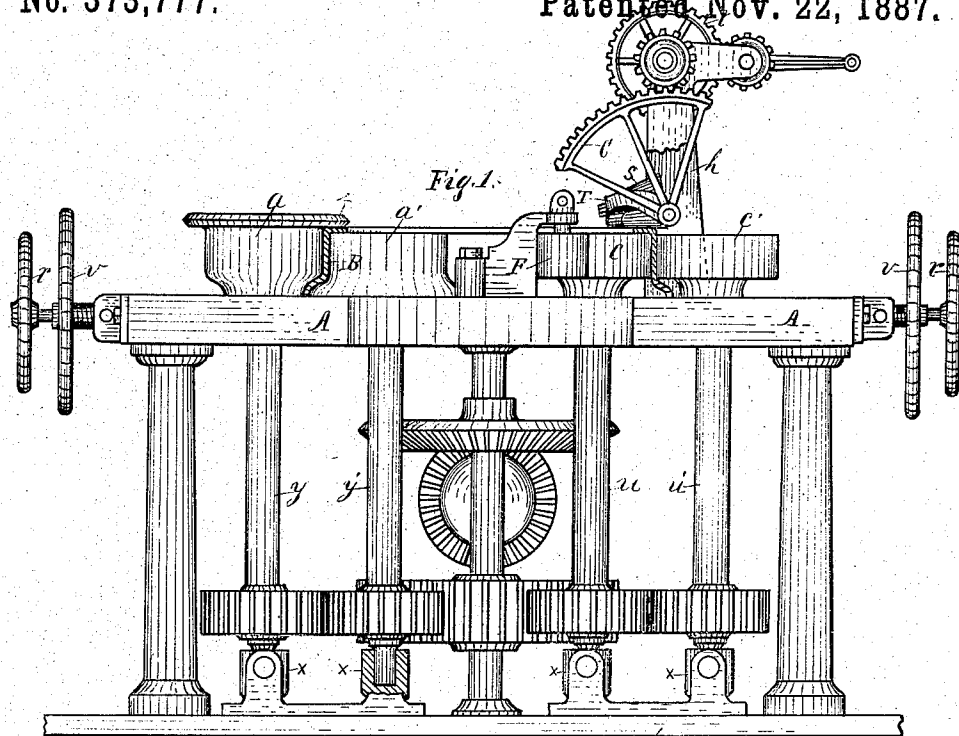
J. J. KIRBY, Dec'd.

N. E. KIRBY, Administratrix.

MACHINE FOR MAKING RIMS OF CAR WHEELS.

No. 373,777.

Patented Nov. 22, 1887.



Witnesses.

John C. Perkins...

John H. Chase...

Inventor

Nettle C. Kirby, Administratrix
of the Estate of James J. Kirby
By Lucas B. West...

Atty.

(No Model.)

2 Sheets—Sheet 2.

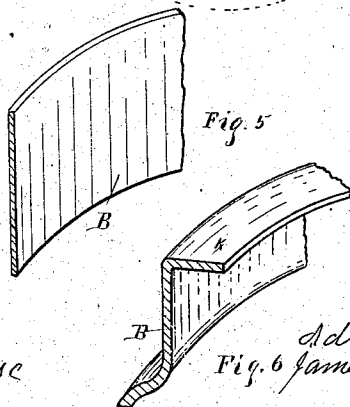
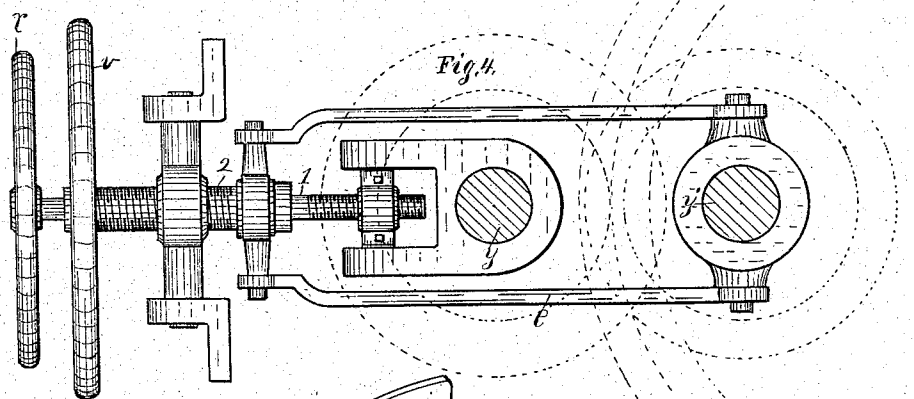
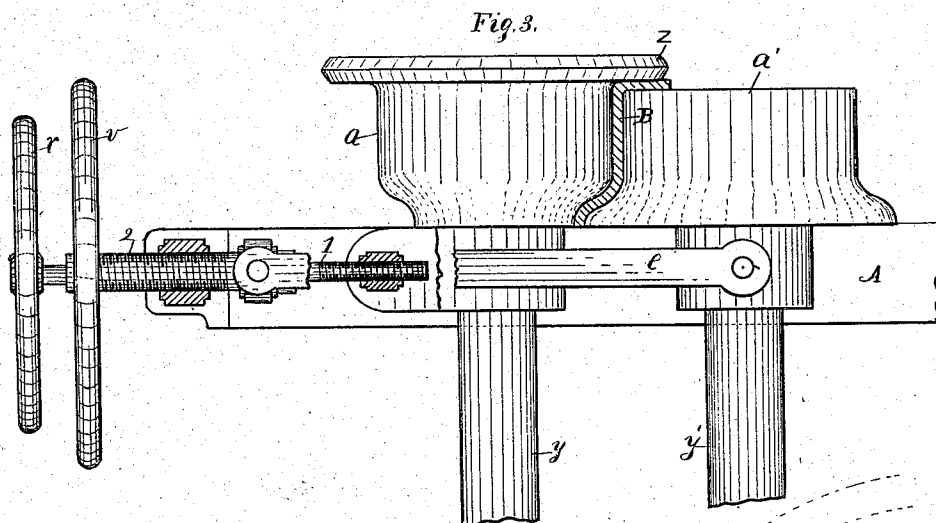
J. J. KIRBY, Dec'd.

N. E. KIRBY, Administratrix.

MACHINE FOR MAKING RIMS OF CAR WHEELS.

No. 373,777.

Patented Nov. 22, 1887.



Witnesses.

John C. Perkins.
John A. Chase

Inventor

Nettie C. Kirby.
Administratrix of the estate of
James Kirby By Lillian C. West.

att'y.

UNITED STATES PATENT OFFICE.

NETTIE E. KIRBY, OF MOLINE, ILLINOIS, (ADMINISTRATRIX OF JAMES J. KIRBY, DECEASED.) ASSIGNOR TO THE SHEFFIELD VELOCIPEDE CAR COMPANY, OF THREE RIVERS, MICHIGAN.

MACHINE FOR MAKING RIMS OF CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 373,777, dated November 22, 1887.

Application filed June 24, 1887. Serial No. 242,401. (No model.)

To all whom it may concern:

Be it known that JAMES J. KIRBY, a citizen of the United States, formerly residing at Moline, county of Rock Island, State of Illinois, deceased, has invented a new and useful Machine for Forming Wheel-Rims, of which the following is a specification.

The object of this invention is to construct a machine for forming the rims of car-wheels by roller-pressure.

The peculiarities, utility, and novelty of the invention are below described and claimed.

In general terms the main essentials of the machine consist in a set of three rollers for forming an internal flange on one edge of the wheel-rim and a set of two rollers for forming the external flange of the tread part of the wheel, and during the operation these sets of rollers act separately and conjointly in performing different functions, as below explained.

In the drawings forming a part of this specification, Figure 1 is a side elevation with parts broken and the wheel-rim in section; Fig. 2, a plan with parts broken away; Fig. 3, broken lettered details of Fig. 1, enlarged; Fig. 4, a plan of parts in Fig. 3, with the roller-axes in cross-section below the rollers, the latter being shown in dotted lines; Fig. 5, a broken piece of the wheel-rim prior to its subjection to the machine; and Fig. 6 is the same after treatment, these two last figures being in perspective.

Referring to the lettered parts of the drawings, A is the top of the machine-frame, and A' is the bottom thereof. At *y y'* are two shafts gear-connected, having bearings in the frame, and are provided at the upper ends with rollers *a a'*. The roller *a* conforms in shape to the exterior of the wheel-rim B when completed, and the roller *a'* conforms in shape to the interior of said rim. To this end the roller *a* is flanged at the top and tapered at the base. The roller *a'* is flared out at the base to conform to the taper of the other roller, *a*. These portions of the rollers *a a'* form the external flange of the wheel-rim. Their form in Figs. 1 and 2 is such that the flange is formed scalloped; but as this is a matter of choice the terms "tapered" and "flared" as used above are

deemed sufficiently specific. It will be observed that the roller *a'* is shorter than that portion of the roller *a* below its flange. Thus in use the flange *z* projects over the end of the roller *a'*, leaving a space between said end of the roller and the flange corresponding to the thickness of the metal from which the rim is made.

At *u u'* are two like shafts, also gear-connected, as in Fig. 1. These shafts are provided at the top with rollers *c c'*. The periphery of these rollers is straight vertically, or nearly so, except that they are cut away at the base to accommodate the external flange of the wheel-rim.

The internal flange, *k*, (see Fig. 6,) of the wheel-rim is formed by crimping the edge over the upper edge of roller *c* while the rim revolved between the rollers *c c'* by means of the conical roller S, Fig. 1, which is brought to bear against the upper outer edge of the metal, which is vertically straight, as in Fig. 5, and as the metal yields a continuous and increasing pressure of the roller S is brought to bear upon it until it is finally at right angle to the tread part of the wheel-rim, as shown at the right of Fig. 1.

Any suitable means may be employed to operate the roller S. It is shown attached to a curved swinging bar, T, having end bearings. A segmental gear, C, is attached to the end of the bar T, and this gear C is gear-connected with the crank shaft P by means of gears *o t w*, arranged as in Fig. 2, and supported by standards *h*, Fig. 1. This illustrates a successful way of handling the conical roller S with sufficient power.

It will be, of course, understood that the rim before being acted upon is a band of metal, of which Fig. 5 shows a broken piece. The rollers *a a'* are separated as well as the rollers *c c'*, and the metal band is placed between these rollers of each set. The rollers *c c'* are then brought to bear against the band and the machine set in motion. The frictional engagement of these rollers with said band causes it to revolve. After the internal flange has been formed by the roller S, as before stated, then the rollers *a a'* are brought to bear against the band or rim until it is bent to form

the external flange, as appears in Figs. 1 and 3. These flanges can be formed without having the two sets of rollers in position to receive the rim between the rollers *a a'* and *c c'* at the same time; but this would necessitate taking the rim from one set and placing in another, whereas, as here shown, the rim does not have to be removed until it is perfected. Besides, by allowing the operation to continue after the flanges are formed unevenness and irregularities in the desired true circular form of the wheel-rim are overcome. The shafts *y y'* and *u u'* have bearings at the lower end in pivoted rocking blocks *x*, Fig. 1. By this means the shafts can be separated to separate the rollers when putting in the rim B and when desiring to take it out. Both sets of shafts can be tilted slightly to properly locate the rollers. As well can the shafts of either set be tilted independently of each other.

Fig. 4 clearly shows the means for tilting the shafts and holding them at desired positions. To the bearing of the shaft *y'* at the upper end, and to a cross-head swiveled on screw 2, are pivoted the draw-bars *e*, one on each side. This screw has threaded bearings in the machine-frame. By turning the handle or rather wheel V the angle of shaft *y'* can be changed, and hence the position of the roller *a'* as well. The bearing of the shaft *y* has screw-connections with the screw 1, said screw passing through a screw-threaded hole in the screw 2, the latter-named screw being, of course, hollow. By turning the wheel *r* of screw 1 the shaft *y* may be tilted.

In the operation of forming the external flange of the wheel-rim B the wheel *r* and screw 1 are turned to gradually force or press the roller *a* against the rim, which yields a little at a time until it is finally crimped, as shown in Fig. 3. A great advantage of these screws as a means of handling the shaft and rollers is that it can be quickly done and with great accuracy, and the rollers are rigidly held at any given point of adjustment.

Like rollers and screws are duplicated on the other side of the machine to handle the shafts *u u'* and their rollers.

In Figs. 1 and 2, at F F, are shown two vertical rollers adapted to contact the inner surface of the tread portion of the wheel-rim. They assist in keeping the rim in true position and from warping during the operation of forming the flanges; but in some instances these rollers may be dispensed with, if preferred. The axes of these rollers are attached to the brackets 3 3, and these brackets are connected at the upper ends by a shaft 4, which has screw-threaded ends passed through screw-threaded holes in said brackets. By loosening the nuts which hold the brackets

and turning the shaft 4 the rollers F F are adjusted laterally. In Fig. 1 is shown how the shafts are gear-connected with the power shaft 5, (shown broken in Fig. 2); but any other suitable propelling mechanism may be employed.

It may be mentioned that it is not always necessary that the shafts *y' u* should have bearings which enable them to be tilted, and with accurate construction and proportion of parts perhaps never, but desirable, however, for contingent needs.

Having thus described the invention, what is claimed is—

1. In a machine for forming wheel-rims, the combination of two revoluble rollers adapted to receive and revolve the wheel-rim between them, a conical roller, and means for sustaining a pressure of said roller against the edge of the wheel-rim in forming the internal flange, substantially as set forth.

2. In a machine for forming wheel-rims, the combination of two revoluble rollers adapted to receive and revolve the wheel rim between them, two revoluble rollers, one tapered and the other flared at the base, and adapted to receive the wheel-rim between them, and means for sustaining a pressure of said rollers against the revolving wheel-rim in forming the external flange, substantially as set forth.

3. In a machine for forming wheel-rims, the combination of the revoluble rollers adapted to receive and revolve the wheel-rim between them, the conical roller, and means for sustaining a pressure of said roller against the edge of the wheel-rim in forming the internal flange, the revoluble rollers, one tapered and the other flared at the base, and one of them being longer than the other and flanged at the top, said rollers adapted to receive the wheel-rim between them, and means for sustaining a pressure of these rollers against the wheel-rim in forming the external flange, substantially as set forth.

4. In a machine for forming wheel-rims, the combination of the sets of rollers constructed and arranged, as set forth, to form the internal flange and external flange of the wheel-rim, and means for operating them, and the single idle-rollers adapted to contact the inner surface of the revolving wheel-rim, substantially as set forth.

In testimony of the foregoing I (NETTIE E. KIRBY, administratrix of the estate of the late JAMES J. KIRBY) have hereunto subscribed my name in presence of two witnesses.

NETTIE E. KIRBY,

Wife of the late James J. Kirby and administratrix of his estate.

Witnesses:

GUSTAF SWENSSON,

E. E. WHEELLOCK.