4 Sheets—Sheet 1.

R. B. & J. R. PARKS.

Tire-Setting Machine.

No. 214,000. Patented April 8, 1879.

Fig. 1

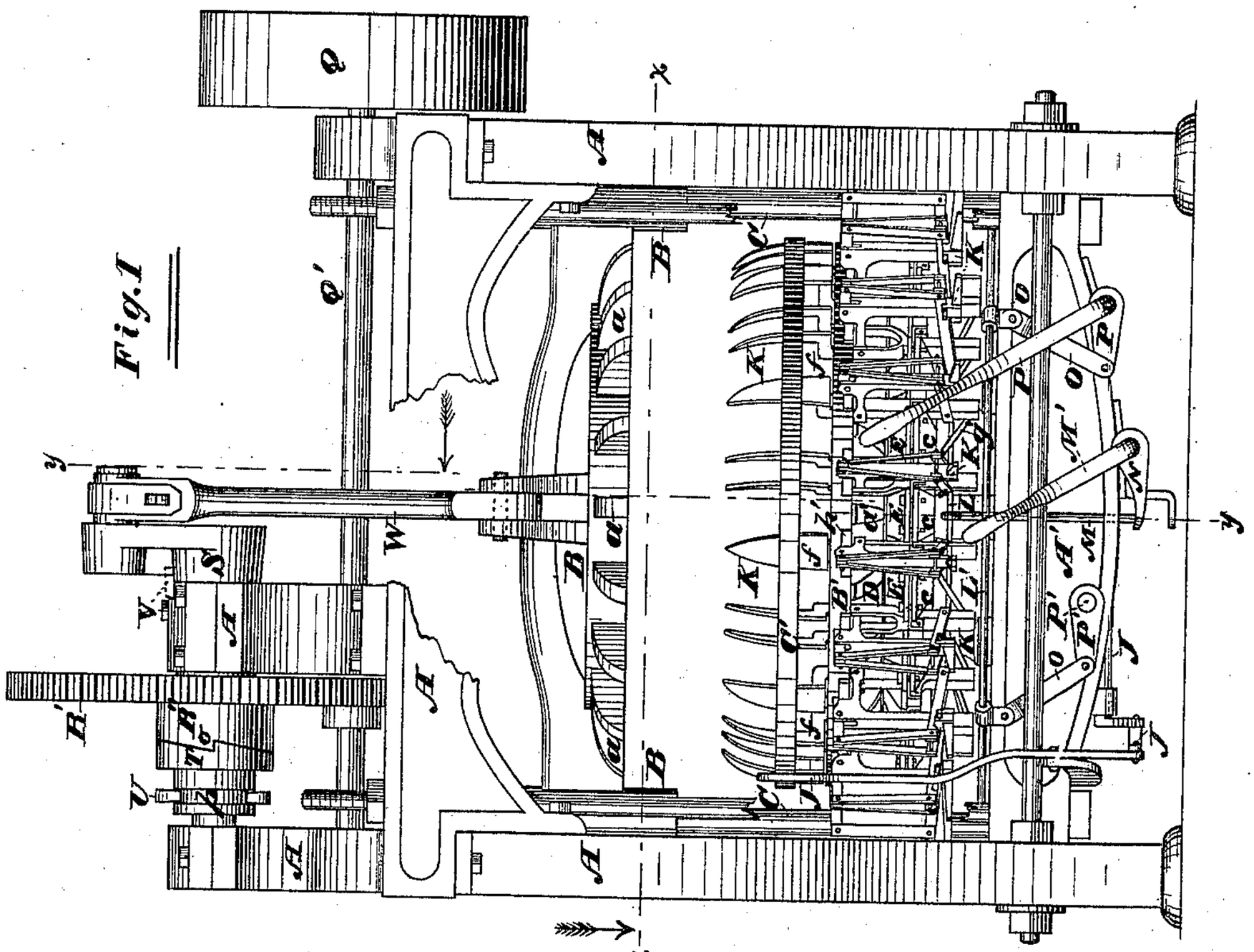
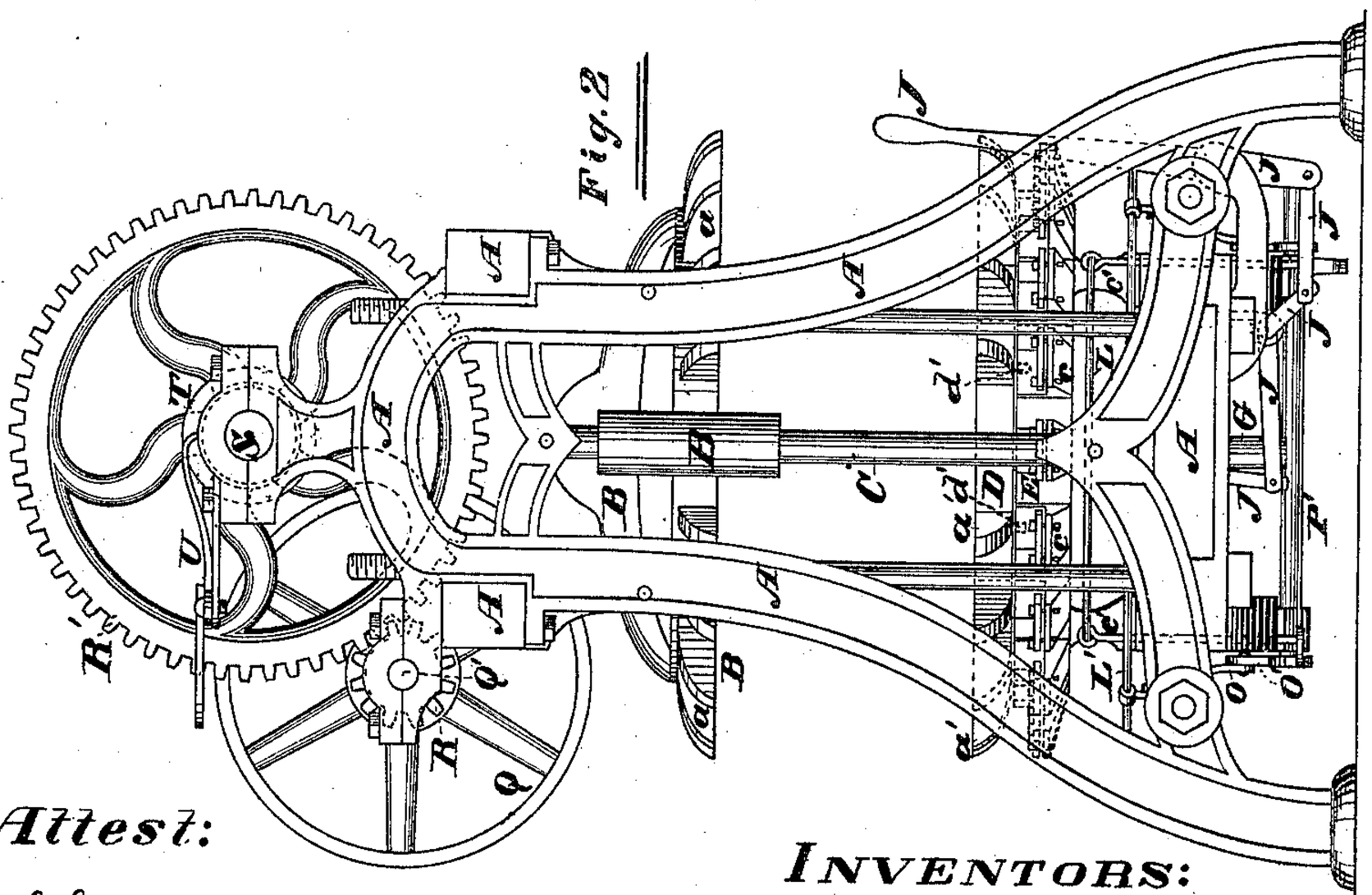


Fig. 2



Attest:

Charles H. Schoff

S. S. Schoff

INVENTORS:

Robert B. Parks

John R. Parks

By Coyne & Co, his Attorneys

R. B. & J. R. PARKS.

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Tire-Setting Machine.

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Fig. 3

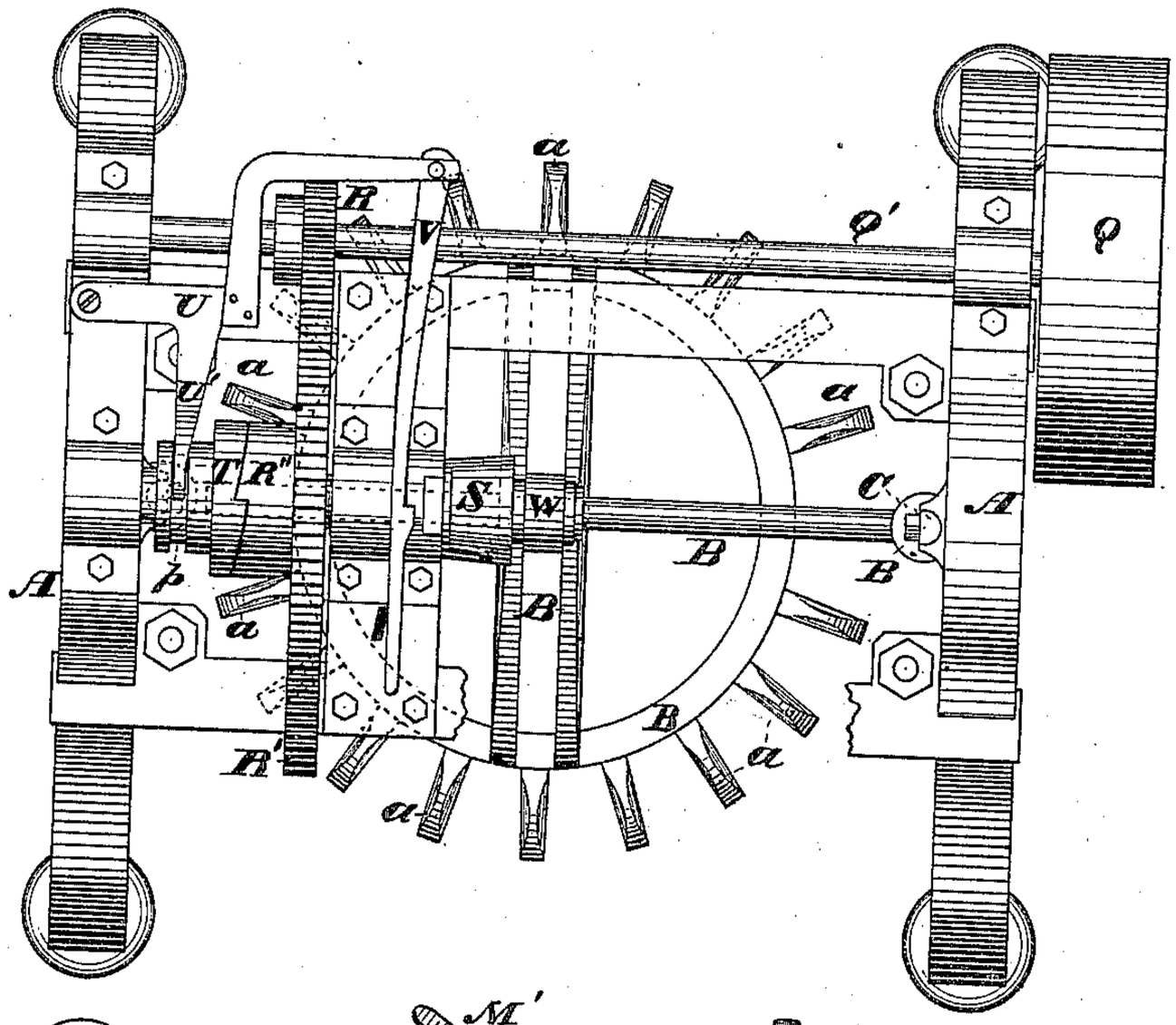
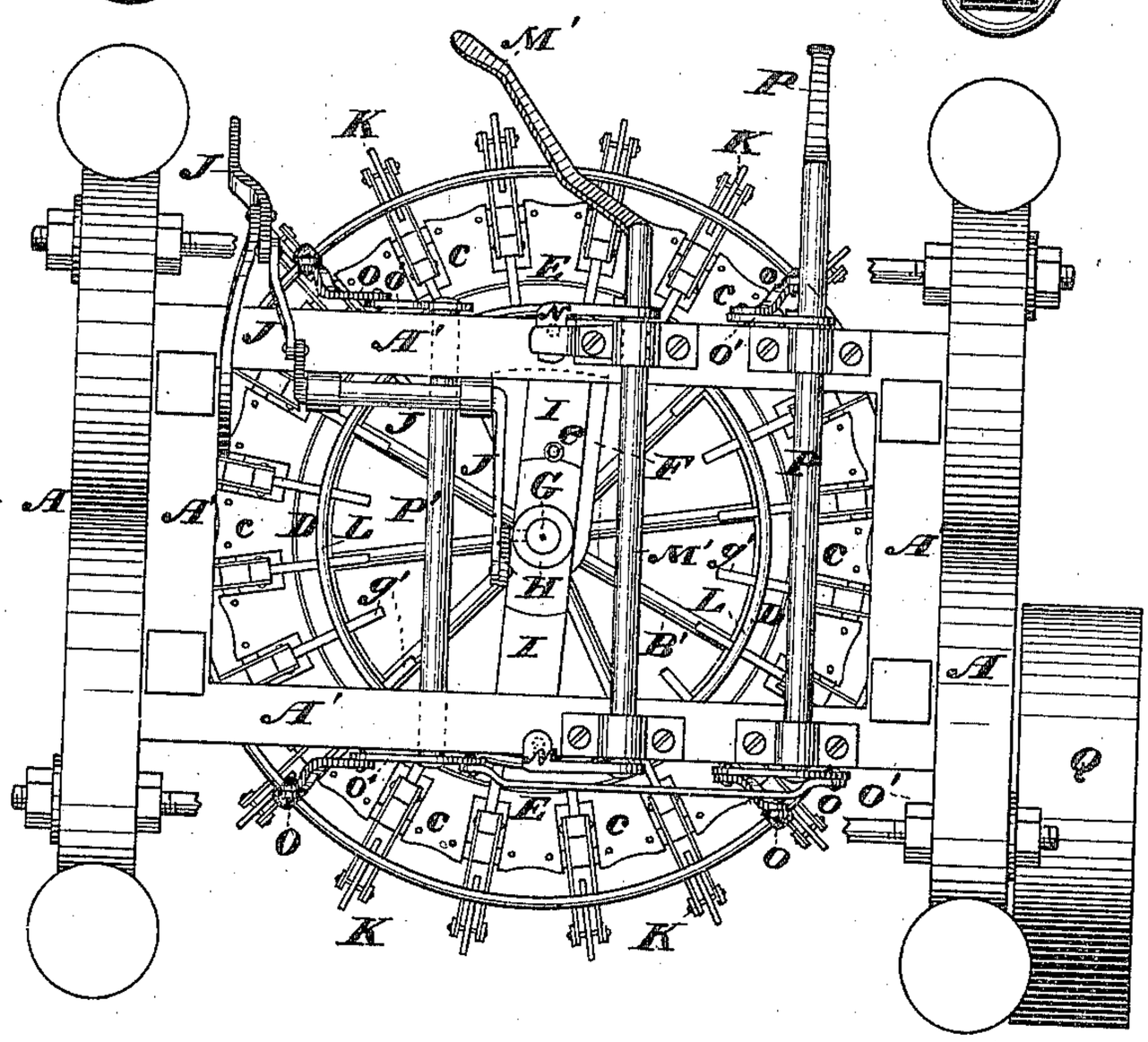


Fig. 4



Attest:

Charles A. Schoff.

S. S. Schoff.

INVENTORS:

Robert B. Parks.

John R. Parks.

By Coyne & Cousins

Attorneys.

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R. B. & J. R. PARKS.

Tire-Setting Machine.

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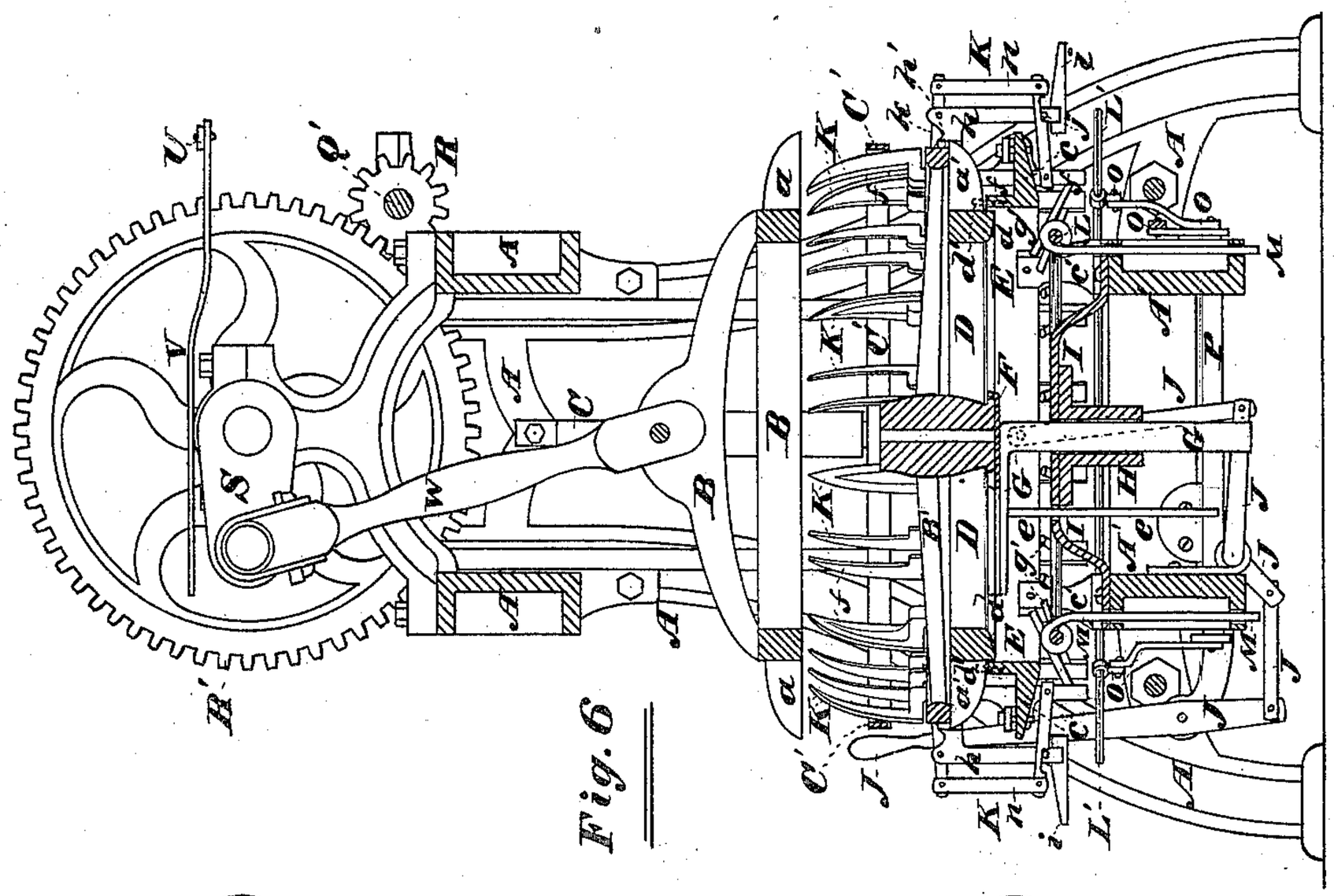

Fig. 6

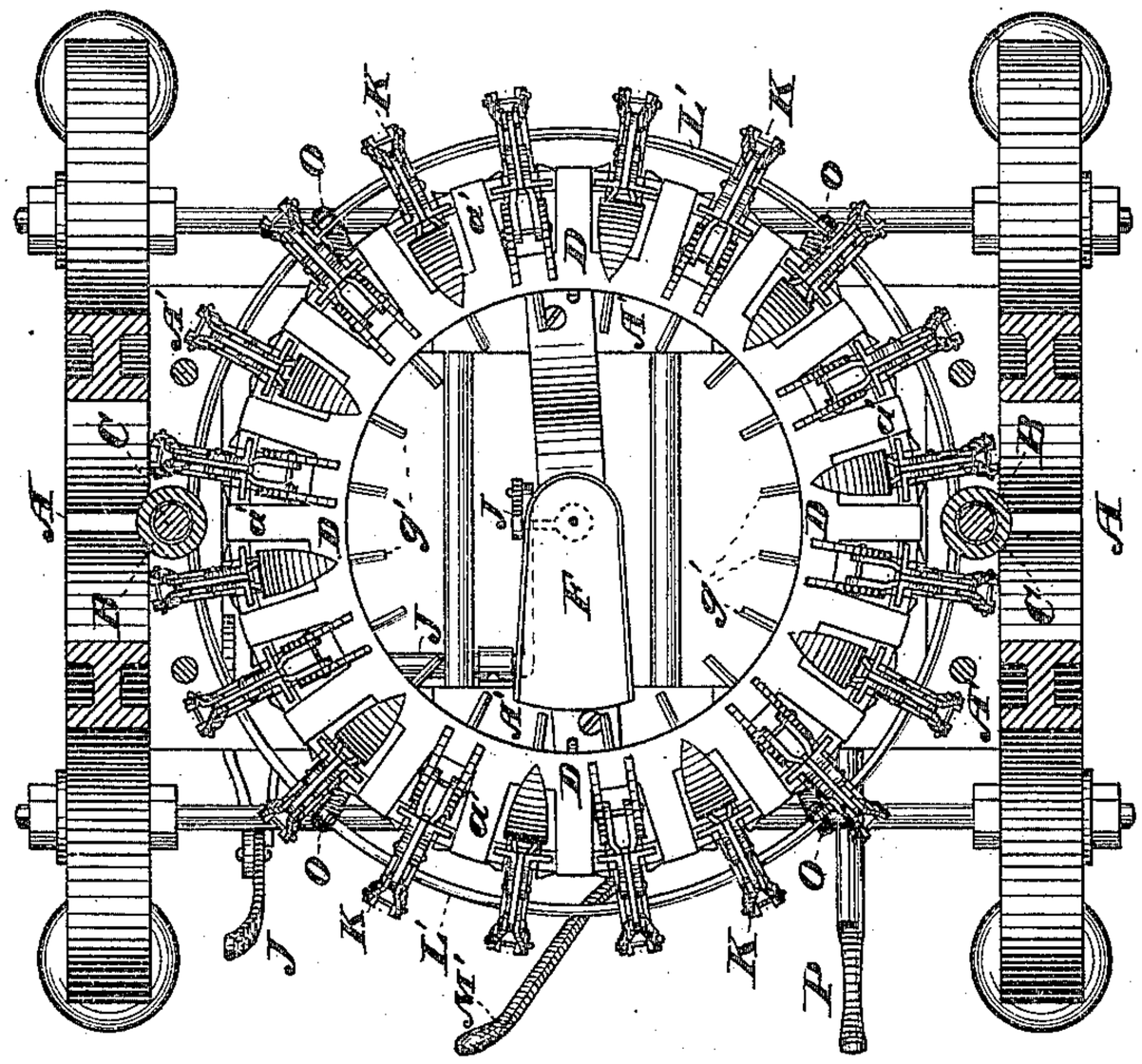

Fig. 5

Attest:

Charles H. Schoff

S. S. Schoff

INVENTORS:

Robert B. Parks

John R. Parks

By Coyne & Co. Hise

Attorneys.

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R. B. & J. R. PARKS.

Tire-Setting Machine.

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Fig. 7

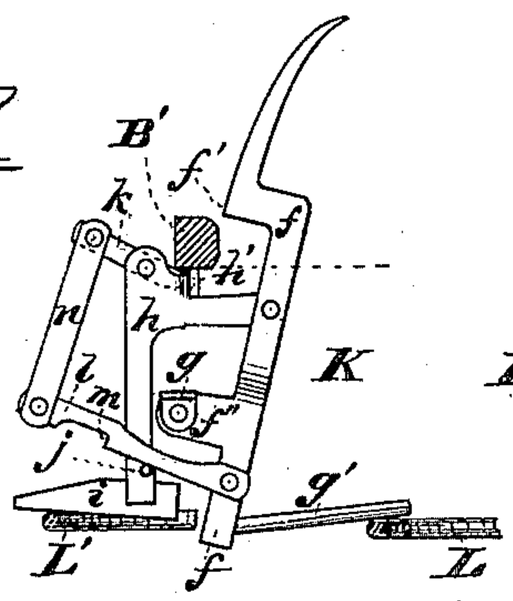


Fig. 8

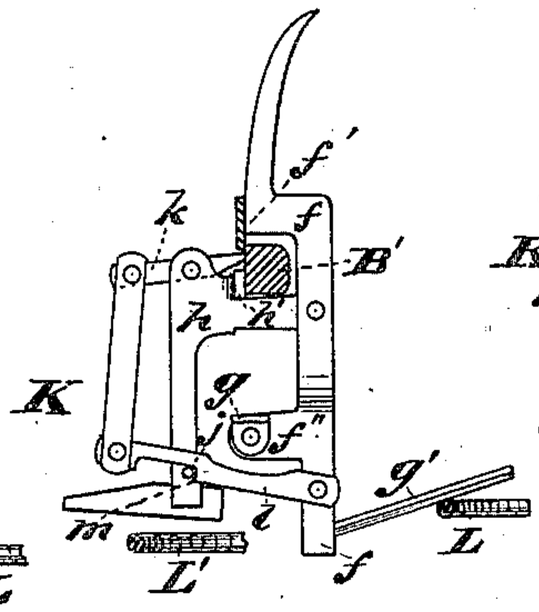


Fig. 9

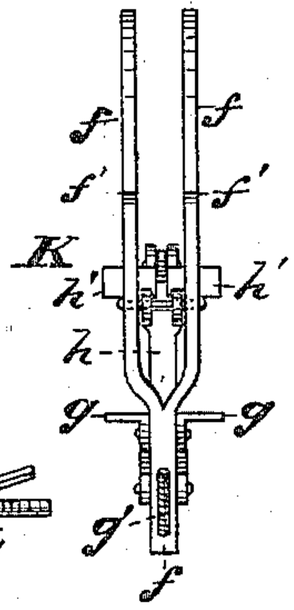


Fig. 10

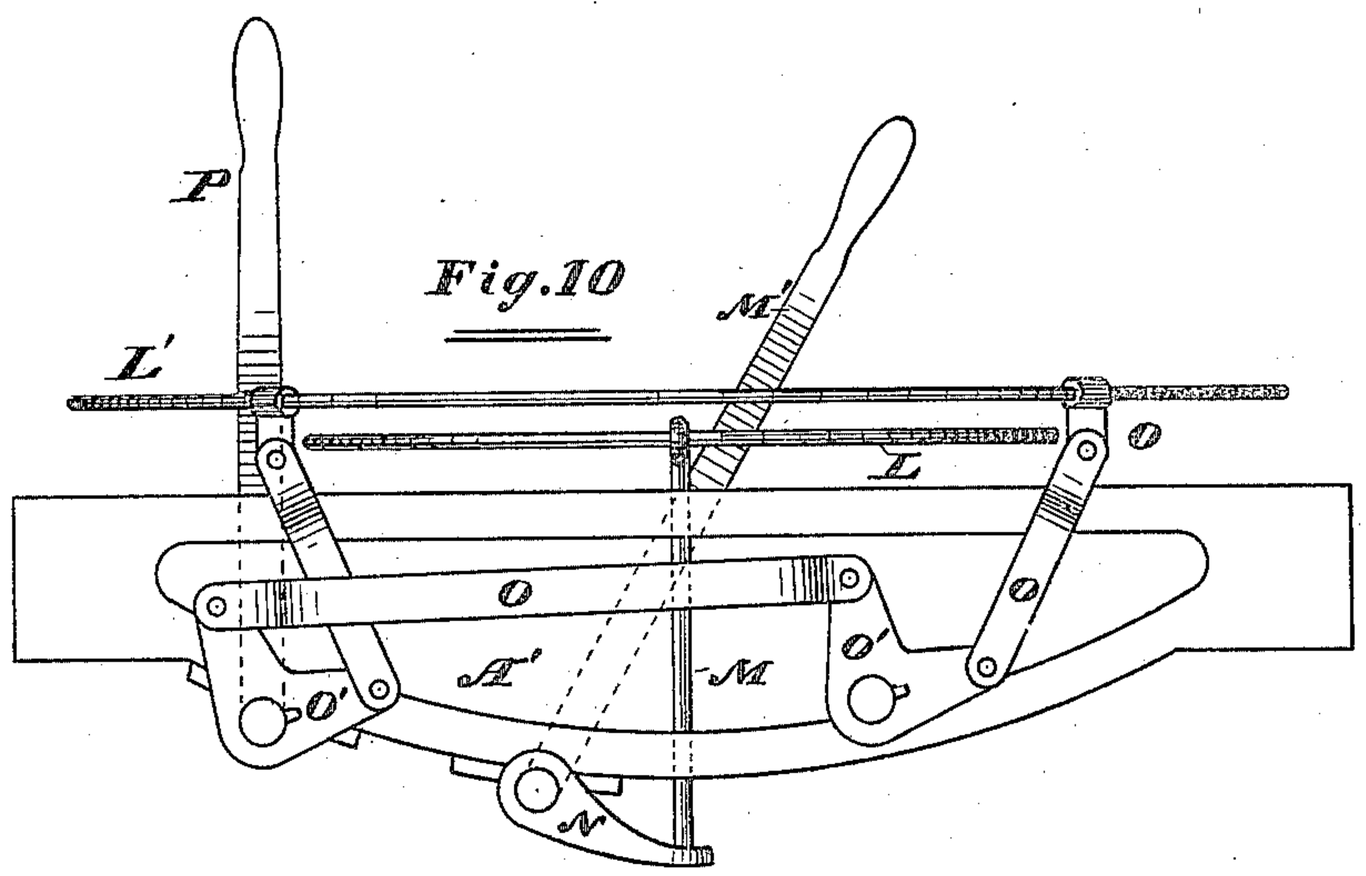
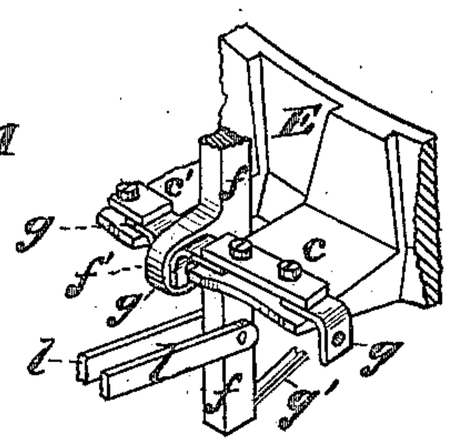


Fig. 11



Attest:

Charles A. Schoff

S. L. Schoff

INVENTORS:

Robert B. Parks

John R. Parks

By Coyne & Co. his

Attorneys.

UNITED STATES PATENT OFFICE.

ROBERT B. PARKS AND JOHN R. PARKS, OF PRINCETON, ILLINOIS.

IMPROVEMENT IN TIRE-SETTING MACHINES.

Specification forming part of Letters Patent No. **214,000**, dated April 8, 1879; application filed August 17, 1878.

To all whom it may concern:

Be it known that we, ROBERT B. PARKS and JOHN R. PARKS, both of Princeton, in the county of Bureau and State of Illinois, have jointly invented certain new and useful Improvements in Tire-Setting Machines, of which the following, in connection with the accompanying drawings, is a specification:

Figure 1 is a front elevation of a tire-setting machine embodying our invention; Fig. 2, an end view; Fig. 3, a top view; Fig. 4, a bottom view; Fig. 5, a horizontal section in the plane of the line *x x;* Fig. 6, a vertical section taken at the line *y y*. Figs. 7 and 8 are side elevations of the tire-guides and felly-gripers; Fig. 9, a rear elevation of same; Fig. 10, a rear view of the means employed to set and release the guides and gripers, and Fig. 11 a perspective of the means employed to suspend the guides and gripers removably.

The arrows indicate the direction in which the parts represented in the sectional views are viewed, and like letters of reference indicate like parts.

The object of our invention is to provide means for properly setting tires with facility, without subjecting them, for that purpose, to the influence of heat.

In the drawings, A represents the frame of the machine. B is the tire presser or pusher, and C C are vertical guides or ways on which it rides. Radial arms *a a* extend outward from the presser B.

D is a support for the felly, and *a' a'* are radial arms extending outward therefrom. E is an annular piece or rest for the felly-support D. The presser B and support D are also annular, and both are arranged concentrically over the part E.

Radial leaves or shoulders *c c* project outward from the rest E, and the latter is rigidly supported, by means of the uprights *c' c'*, somewhat above the lower cross-bar, base-piece, or frame A', which is rigidly attached to the frame A, and supported somewhat above the floor by means of the feet of the frame A.

The support D is shouldered, as shown at *d*, to fit within the perimeter of the rest E, from which it may be removed.

A rotary movement of the part D on its rest may be prevented by means of dowels *d' d'* passing from one of the said parts into the other. The arms *a* and *a'* should be directly over the shoulders *c c*.

F is the hub receiver or support, and G is an upright stock or stem, to which it is rigidly attached. The stem G moves freely up and down in a bearing, H, supported by a cross-bar, I, of the frame A'.

J is a lever, pivoted to the stem G, and so connected to the frame A' that by moving the upper end or handle of the lever the stem, and consequently the receiver or support F, may be moved either up or down, according to the direction in which the handle of the lever is moved.

The support F, as represented, is arranged within the perimeter of the part E, and should extend to the center of the said annular part.

A small stem, *e*, attached to the support F, and passing freely through the bar I, may be employed to prevent the support F from being turned out of its proper position.

K K are the tire-guides and felly-gripers. These parts each consist of the several parts which we will now describe, and their construction and relative positions are best shown in Figs. 7, 8, and 9.

The part *f* is bent or shouldered, as shown at *f'*, and thence it extends upward, and is curved or bent rearward somewhat. Each part *f* is preferably pointed at the top, and each alternate part is forked at its upper end to receive the spokes of the wheel, as represented in Figs. 1, 5, 6, and 9, as will be more fully explained hereinafter.

An arm or projection, *f''*, extends forward from the lower part of the part *f*, and to each side of this arm are pivoted the ears or wings *g g*. Also, an arm, *g'*, extends rearward from the lower end of part *f*.

In order to apply the arm *f* to its proper place in the machine, the wings or ears *g g* are clamped upon the outer ends of the leaves or shoulders *c c* of the part E. The upper end of the part *f* will tend to fall rearward until the ring E prevents further movement in that direction, this tendency being produced by suspending the arm forward of its center of gravity.

Pivoted to the upper part of the arm *f*, at a point between the shoulder *f'* and the arm *f''*,

is the rectangular arm *h*, carrying on its upper end the lateral wings *h' h'*, extending in opposite directions, and on its lower end the shoe or lifting-arm *i* and the locking-pin *j*. The upper end of the arm *h* is split, and between the jaws or projections thus made is pivoted a trip-lever, *k*.

l is an arm, pivoted at its rear end to the lower part of the arm *f*, and resting on the pin *j*. The forward end of the arm *i* is notched or shouldered on its lower side or edge, as shown at *m*.

n is a connecting-arm, pivoted to the forward end of the arm *l*, and to the forward end of the lever or trip *k*.

It will be perceived, by reference to Figs. 1, 4, 5, 6, and 11, that a set of parts constituting a tire-guide and felly-griper, K, is arranged between each of the leaves or shoulders *c c*, and that a number of guides and gripers, K K, are thus arranged around the part E at regular intervals.

L is a ring extending underneath the arms *g'*, and L' is a ring extending underneath the arms *i*. The ring L is connected to and supported by the posts M M, which rest on the arms N N of the crank-lever M'. The ring L' is supported by and connected to the system of connecting-rods and bell-cranks O and O', connected to the crank-levers P P'.

Q is the driving-wheel, and Q' is a shaft on which it is rigidly mounted. R is a pinion, rigidly mounted on the shaft Q'. R' is a spur-wheel, loosely mounted on a crank-shaft, S, and engaged by the pinion R. The hub R'' of the wheel R' is serrated on one end, as shown at *o*.

T is a clutch, serrated on its inner end to correspond to the serrated end of the hub R'', and keyed to the shaft S, so as to be rotated therewith, and so as to be capable of being moved laterally thereon.

U is a lever, pivoted to the frame A, and having a forked arm, U', resting in the groove *p*. V is a hooked arm, pivoted to one end of the lever U, and resting in a depression on one of the boxes of the shaft S, so that the hooked end may be held to be engaged by the crank-arm of the said shaft during the rotation thereof in one direction, or in the direction of the said hooked end.

W is a pitman or connecting-rod, connecting the presser B to the crank-pin of the arm carried by the shaft S.

In order to use this machine for the purpose for which it is intended, the lever J should be moved in such a direction as to move the hub-support F upward until it is as high, or nearly as high, as the tips of the arms or levers *f f*. The wheel B should then be placed on the forward end of the support F, the hub of the wheel resting thereon, and the whole wheel being pushed back to the rear end of the support, when further movement of the wheel in that direction will be prevented by the upturned edge of the support indicated plainly in Fig. 6. The convexity of the wheel should then be upward. The wheel will be thus nearly centered, and while so supported may be easily so arranged that the felly, when the wheel is lowered, will pass outside of the arms or levers *f f*, and the spokes descend between the arms of such of those parts as are forked.

The support F may then be lowered, when the wheel will be caught and supported on the arms or levers *f f*, and may be easily pushed down thereon until it is supported on the part D, the form and position of the arms or levers *f f* being such as to admit of the easy descent of the wheel. After the wheel has been thus arranged on the part D, the lever M' should be so moved as to raise the ring L. The upward movement of this ring will cause the inner or rear ends of all arms *g' g'* to move upward, and the upper ends of the arms *f f* will thus be tilted forward, and the shoulders *f' f'* will pass over the upper face or side of the felly, as indicated in Figs. 1 and 8, thus holding it down firmly upon the part D. The lever P should then be so moved as to raise the ring L', by which means all the arms *i i* will be raised, and the wings *h' h'* will thus be carried upward and inward against the outer face or perimeter of the felly, as is clearly shown in Fig. 8, at which time the pins *j j* will move forward in front of the shoulders *m m*; or, in other words, the wings *h' h'* will not only then grasp the felly, but the position of the pins *j j* in the notches in the arms *l l*, in connection with the position of the felly, will lock this system of arms or levers, which constitute the tire-guides and felly-gripers K K, in the position indicated in Fig. 8, or in such a position that the felly will be seized or grasped thereby, even though the rings L and L' be lowered.

It will be perceived that as the arms *l l* fell upon the pins *j j*, when the latter reached the notches in the said arms, the forward ends of the arms or levers *k k* moved upward a little way above the wings *h' h'*. The wheel is thus centered and firmly held in position to receive the tire.

In order to set the tire C' it should be arranged upon the arms or levers *f f*, as indicated in Figs. 1 and 6, it being understood that the tire is somewhat smaller in diameter than the wheel, and that it will not therefore pass freely down upon the felly, but be supported above the shoulders *f' f'* and on the outwardly-curved parts of the arms *f f*. If the drive-wheel is not in motion, the driving-power should now be applied, and the lever U so moved as to carry the clutch T into engagement with the hub R''. As soon as this engagement takes place, the shaft S will begin to rotate and carry down the presser B until the arms *a a* strike and force down the tire. As the tire is forced down, the upper ends of the arms *f f* will be forced inward, and consequently all the wings *h' h'* will be drawn inward forcibly against the felly. This inward pressure upon the felly will spring the spokes somewhat, and the felly will be crowded in until it does not exceed the tire in diameter.

The continued downward movement of the presser B will thus cause the tire to be pushed off the arms *f f* and upon the felly. As soon as the tire strikes the inner ends of the arms or levers *k k*, they will be also pushed downward, and their downward movement will lift the arms *l l* off the pins *j j*, and the griping devices will be unlocked, and will fall into the position indicated in Fig. 7, thus releasing the wheel, excepting as it may be held down by the action of the presser B upon the tire. By the time the downward movement of the presser B ceases, the tire will have passed entirely upon the felly, and it will then be properly and firmly set. As soon as the continued movement of the shaft S carries the presser B sufficiently above the arms *f f*, the tired wheel may be removed. The down movement of the presser B should cease when the crank-arm of the shaft S hangs vertically, so that the greatest pressure will be exerted at the proper time, or when most needed.

It is obvious that to carry the presser B to its greatest height, the crank-arm should stand vertically, or its vibrating end be at its highest point. Just after this crank-arm has passed the hook or shoulder on the arm V, the latter should be pushed against the crank-arm, so that the crank-arm, when again resuming its standing position, will strike the said hook or shoulder. The result of this contact will be that the arm V will be so moved that the lever U will carry the clutch T from its engagement with the hub R″, and the movement of the presser B will be arrested at the extreme of its up movement.

The operation now described may be repeated very rapidly compared with the method of setting tires by heating them for that purpose, and neither the felly nor the wheel is in any way injured, or in danger of being injured.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as described, in a tire-setting machine, of a tire-depressor, of retractible tire-receivers, and of felly-compressors connected to the said receivers, for the purpose of thereby contracting the felly simultaneously with the descent of the tire.

2. The combination, substantially as specified, in a tire-setting machine, of retractible tire-receivers, of a tire-depressor, of felly-compressors, and of tripping arms or levers, the latter arranged for actuation by the tire after it is partly set upon the felly, for the purpose of thereby contracting the felly to receive the tire, and of automatically releasing the felly after it is encircled thereby.

3. The combination, substantially as described, in a tire-setting machine, of the pivoted, shouldered, and beveled levers or tire-receivers *f f*, and the felly-compressors *h′ h′*, connected to the said levers, and arranged substantially as specified with relation thereto, for the purposes set forth.

4. The combination, in a tire-setting machine, of the tire-receivers *f f*, the felly-compressors *h h*, pivoted to the said receivers, and having thereon the pins or projections *j j*, the trip-levers *k k*, pivoted to the said compressors, and connected to the receivers *f f* by means of the pivoted arms or links *n* and *l*, the latter having thereon the shoulders *m m*, substantially as and for the purposes specified.

5. The combination of the rock-levers M′ N, the supports M, the ring L, and the pivoted tire-supports *f f*, the latter being provided with the lifting-arms *g′ g′*, substantially as and for the purposes specified.

6. The combination of the lever P, its rock-shafts and connecting-arms, the ring L′, and pivoted felly-compressors *h h*, the latter being provided with the lifting-arms *i i*, substantially as and for the purposes specified.

7. In combination, the pivoted tire-supports *f f*, provided with the lifting-arms *g′ g′*, the felly-compressors *h h*, pivoted to the said supports, and provided with the lifting-arms *i i*, and levers and lifting-rings for carrying the said parts *f f* and *h h* to the felly independently, substantially as and for the purposes specified.

8. In combination, the pivoted tire-supports *f f*, provided with the lifting-arms *g′ g′*, the felly-compressors *h h*, pivoted to the said supports, and carrying the lifting-arms *i i* and the pins *j j*, the notched or shouldered trip device *k n l*, pivoted to the parts *f* and *h*, and the lifting-rings L and L′, and the levers for actuating the same, substantially as and for the purposes specified.

9. The combination, in a tire-setting machine, of the crank-shaft S, pitman W, tire-depressor B, felly-support D, and the vertically-adjustable hub-support F, substantially as and for the purposes specified.

10. The combination of the tire-depressor and its crank-shaft and pitman with the loose driver R, rigid clutch T, and clutch-lever U, the latter being connected to the stop-hook V, arranged to be engaged by the crank-arm just before the latter reaches the limit of its up-stroke, substantially as and for the purposes specified.

ROBERT B. PARKS.
JOHN R. PARKS.

Witnesses:
JAMES H. ELLIS,
CHARLES B. RICHMOND.