No. 640,620. Patented Jan. 2, 1900.

P. ANDERSON.

MOTOR FOR CLIPPING MACHINES.

(Application filed May 20, 1898.)

(No Model.)

FIG. 1.

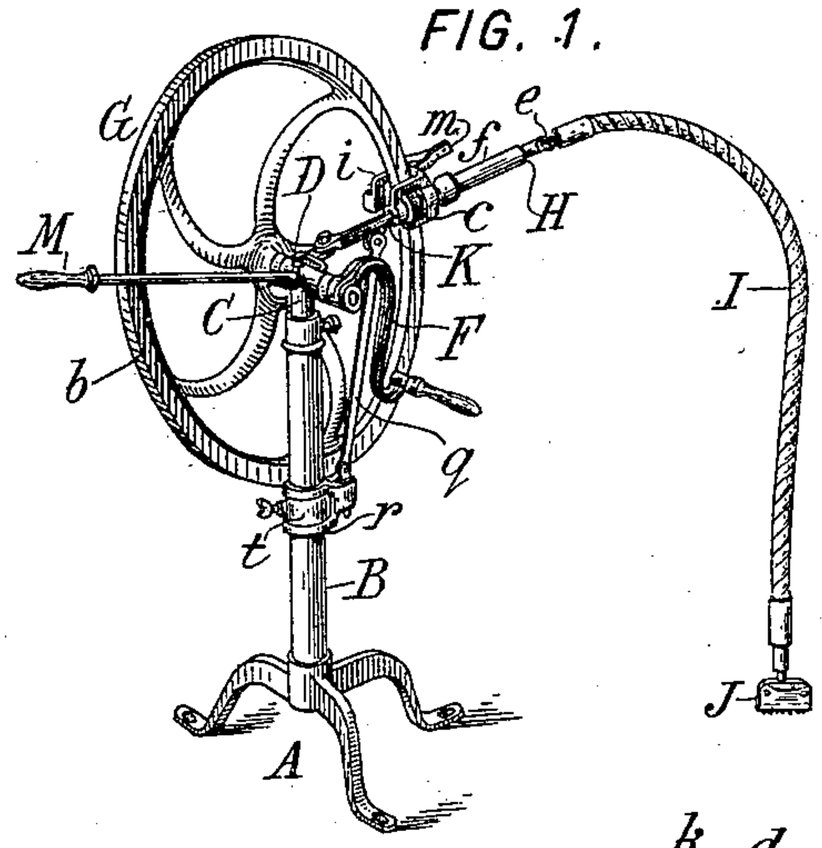

FIG. 5.

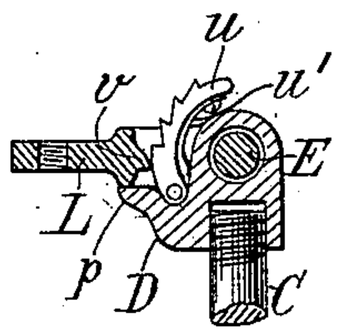

FIG. 2.

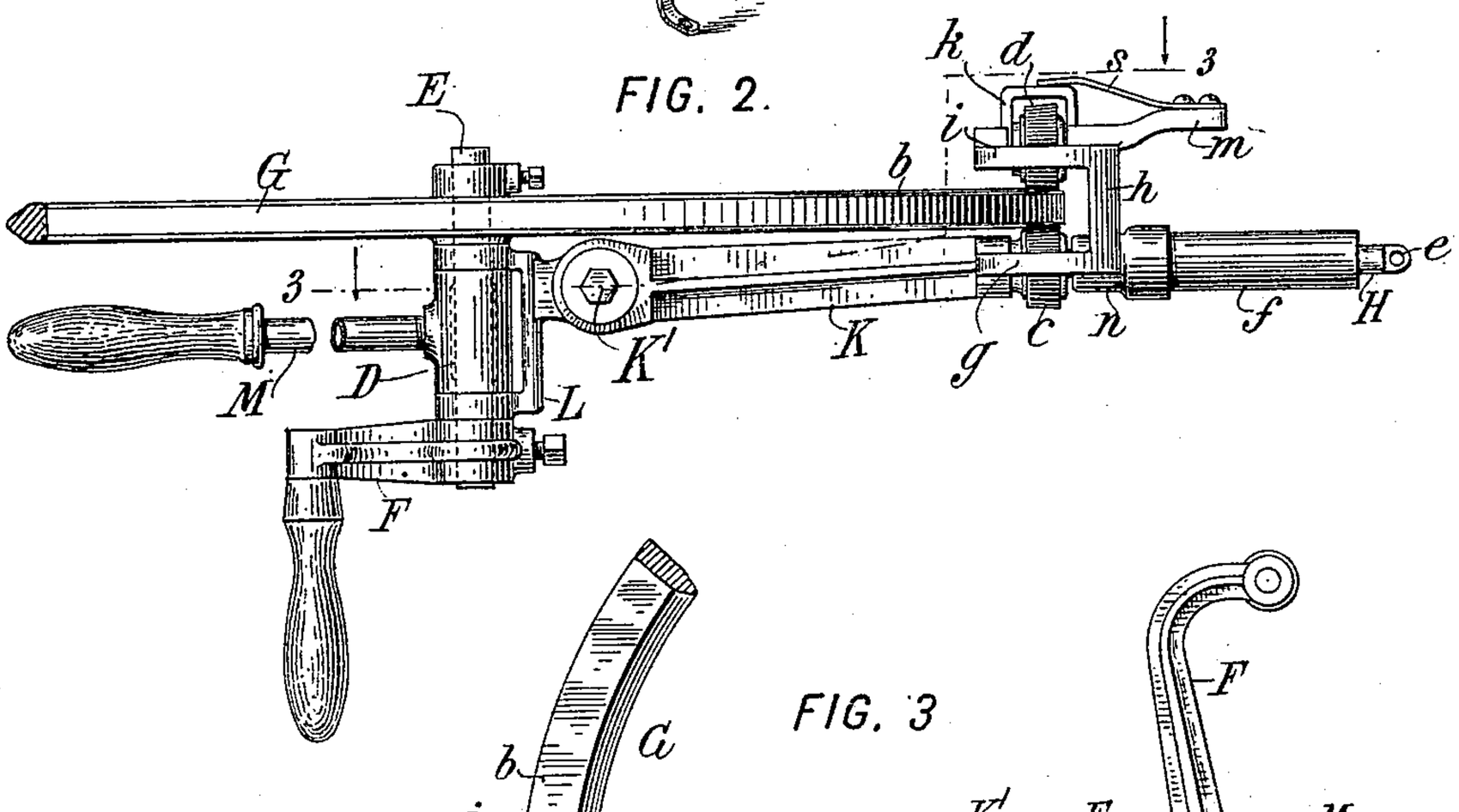

FIG. 3

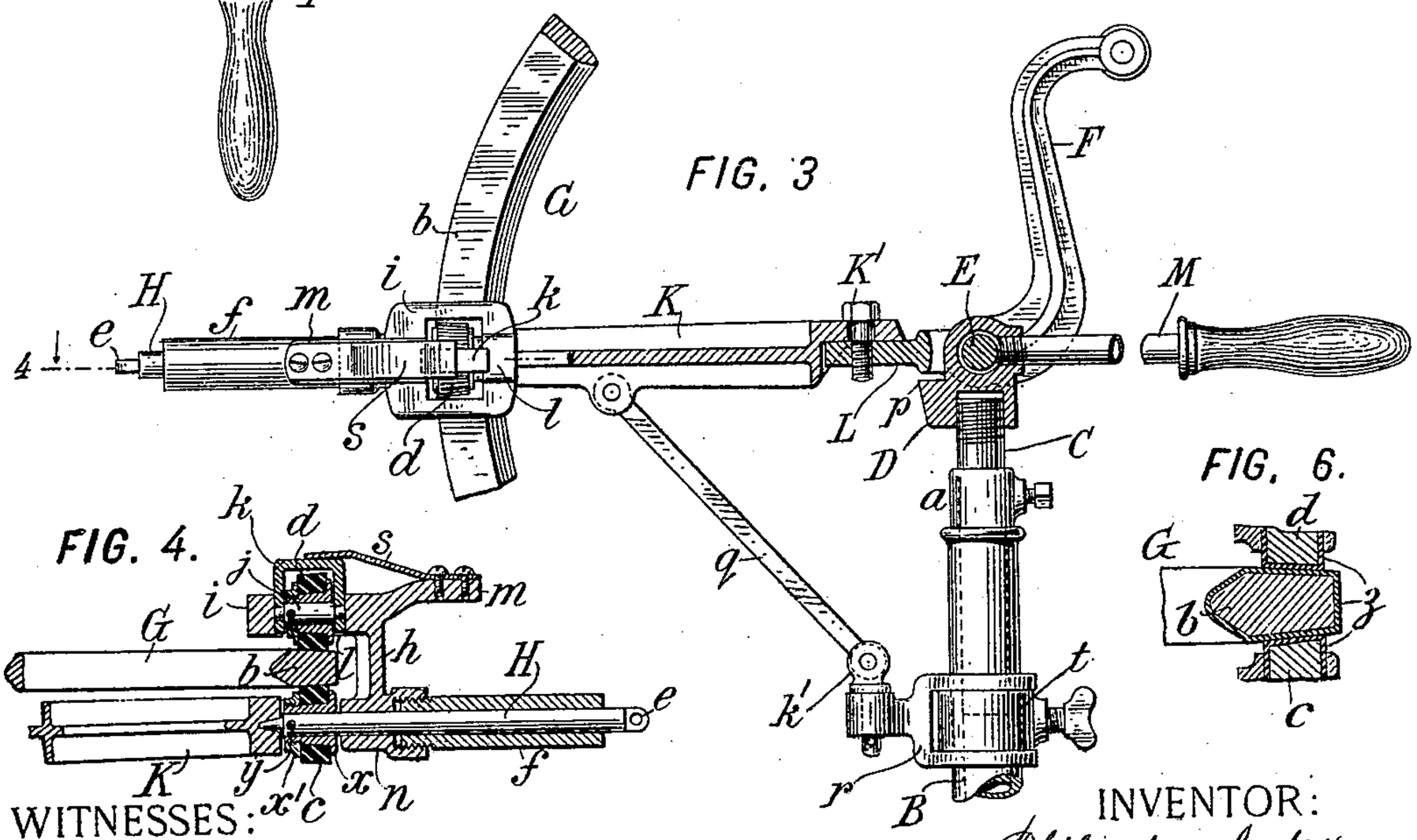

FIG. 4.

FIG. 6.

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MOTOR FOR CLIPPING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 640,620, dated January 2, 1900.

Application filed May 20, 1898. Serial No. 681,251. (No model.)

To all whom it may concern:

Be it known that I, PHILANDER ANDERSON, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Motors for Clipping-Machines, &c., of which the following is a specification.

It is usual to operate clippers for clipping or shearing horses through the medium of a flexible shaft driven from some suitable motor. Sometimes an electromotor is used; but more frequently the driving-motor is driven by hand or foot power. Such a hand or foot motor is required to transform the slow motion of the hand or foot into the rapid rotation required for driving the clipping-shears. It is customary to provide for this gearing by means of a belt passing from a large pulley or fly-wheel driven by the crank or treadle to a small pulley, which directly or indirectly drives the flexible shaft. Such use of a belt is subject to many disadvantages, which it is one object of my invention to overcome. My invention also provides other improvements in such motors, which will be hereinafter fully set forth.

According to my invention frictional gearing is substituted for the belt-gearing heretofore used. The fly-wheel, which is driven by the crank or treadle, has its rim shaped and adapted as the working face of a frictional bevel-gear, and a frictional bevel-pinion is pressed against this rim, so as to be driven frictionally thereby and is mounted on a short shaft, to which the flexible shaft is coupled.

Figure 1 is a perspective view of the entire machine. Fig. 2 is a plan of the motor mechanism. Fig. 3 is a sectional rear elevation thereof. Fig. 4 is a fragmentary horizontal section in the plane of the axis of the driven frictional gear or pinion. Fig. 5 is a fragmentary vertical section showing a modification of the frame-holder, and Fig. 6 is an enlarged fragmentary section of the rim and pinions.

Referring to the drawings, let A designate any suitable base or foot, and B a tubular upright or pillar supported thereby, into which is received a post C, which may turn or swing therein and to which is fastened a set-collar *a*, by means of which it may be supported at varying heights. On top of the post C is fixed a head D, which constitutes a bearing for the crank-shaft E. On one end of this shaft is fixed the crank F, by which it is driven, and on the other end is fixed the fly-wheel G. This fly-wheel has its rim *b* formed as the working face or faces of a frictional gear, the opposite faces being coned slightly, as shown, and the wheel being preferably cast with its rim left rough or unfinished to preserve the slight roughness or grain derived from the mold in casting. The rim *b* is received between two frictional bevel-pinions *c* and *d*, the former being the working pinion and the latter an idler. The pinion *c* is fixed on a short shaft H, the outer end of which is formed with an eye *e* or other coupling means for connection with the flexible shaft I, Fig. 1, at the opposite end of which is carried the clipper or shears J. The shaft H is carried in a bearing-sleeve *f*, forming part of or supported on a swing-frame K. This frame is pivoted at K′ to any suitable part on an axis perpendicular to the plane of the shafts E and H and as near as possible to the shaft E and located also as nearly as possible in line with the axis of the shaft H. The frame K might be pivoted directly to the head D if the shaft H were to project always in one invariable direction; but as in practice it is frequently desirable to swing the shaft H to varying angles I prefer to pivot the swing-frame K to a short arm or sleeve L, which is pivoted to swing around the axis of the crank-shaft E either by being mounted directly on the projecting ends of this shaft beyond the head D or by being mounted on the head D itself, as may be preferred. The swing-frame K is formed with an open portion or eye *g*, in the opening of which the pinion *c* turns, and is also extended backwardly at *h* and formed with a similar open frame *i* on the rear side of the fly-wheel, in the opening of which latter the pinion *d* turns. This pinion *d* is mounted on a short shaft *j*, the ends of which have bearings in a small frame *k*, which slides in ways *l*, formed in the open frame *i*, and receives the pressure of a spring *s*, which is shown as being a leaf-spring mounted on an arm *m*, forming part of the frame

K. The frame K has also a boss *n*, which forms part of the bearing for the shaft H, and which has a threaded portion into which the end of the bearing-sleeve *f* is screwed.

It will be perceived that by the mounting of the idler-pinion *d* in the sliding frame *k* this pinion is movable toward and from the pinion *c*, so as to allow for any variations that may occur in the thickness of the rim *b* of the fly-wheel. The tension of the spring *s* serves to press the pinion *d* firmly against this rim, and the reaction of the same spring against the frame K serves to draw the pinion *c* also into equally firm engagement with the rim. Thus the rim is elastically gripped between the two pinions, whereby the necessary degree of frictional adhesion or traction is generated for the transmission of rotary motion from the rim to the pinion *c*. The function of the swinging frame J, carrying both pinions *c d*, is to accommodate itself to any unevenness in the fly-wheel by which its rim is diverted from a true plane perpendicular to its rotative axis. The fly-wheel G being a casting is liable to some slight distortion or irregularity, so that its rim in revolving will present a certain waviness resulting in a wabbling motion which is fully compensated for by the frame K, which permits the friction-pinions or rollers *c d* to follow these irregularities of motion without diminution in the frictional propulsion.

In the use of this apparatus the entire motor may be swung at will around the vertical axis of the post C and upright B. To facilitate this swinging movement, I provide an arm M, projecting from the head D and provided, preferably, with a handle, so that the operator by holding this handle with one hand while he turns the crank with the other may resist any tendency of the machine to swing under the thrust of the crank, while at the same time he guides it accurately in any desired direction.

If it is desired that the shaft H shall project always horizontally or at any other desired angle, either the frame L and head D may be made in one piece or, preferably, being separate parts, as shown, the head D may be provided with a ledge *p*, Fig. 3, on which the frame L may rest when the shaft H is dropped to the horizontal or other desired lowest position. This admits of swinging the frame K from such lowest position upward to any higher angle desired. If it is desired to support it at any such higher angle, I employ an adjustable prop or brace, (shown in Figs. 1 and 3,) consisting of a link or strut *q*, pivoted at its upper end to the frame K and at its lower end to a swivel-pin *k'*, which is arranged beneath and in the same axial line with the pivot K', on which the frame K is mounted. The pin *k'* is socketed in a collar *r*, which surrounds the standard B and swivels therein. This collar may be variously constructed, so as to be supported at different heights; but I have shown it as being a forked collar embracing a set-collar *t*, which may be set by means of its set-screw at any height on the standard B.

A modified construction for holding the frame K at different elevations is shown in Fig. 5, where a ratchet-toothed dog or sector *u* engages a tooth *v* on the frame L, being pressed into engagement therewith by a spring *u'*. By swinging up the frames K L the dog catches the latter at different heights, according to the position of its tooth, and prevents the dropping back of the frame until the dog has been pressed out of engagement by the operator.

The frictional pinions *c d* are of the construction shown in Fig. 4. Each has a wearing face or tread of frictional composition, preferably vulcanized india-rubber. This is forced over a sleeve or hub *x*, which has a flange at one end and is screw-threaded at the other, and on this threaded end screws a flange *x'*, so that the rubber tread is confined between the two flanges. To prevent unscrewing of the latter, a pin *y* is driven through the flange, sleeve, and shaft, as shown. For the rubber tread I use a suitable quality of rubber tubing, cut in short lengths to form rings of the desired dimensions, the tube being made slightly smaller than the size of the pinion and being expanded in forcing it onto the sleeve *x*. To give the conical form to the pinion, this sleeve is made exteriorly conical, as shown, so that the rubber tube is expanded at one end more than at the other, and is thus forced into the conical form required for the bevel-pinion. This makes a very cheap, accurate, and durable pinion.

It will of course be understood that this motor can be operated either by hand or foot power or that any other means for driving the shaft may be substituted for the crank F.

Although especially adapted to the driving of clippers or shears, it is to be understood that my improved motor is applicable to other analogous uses.

I prefer to provide the surfaces of the wheel G and pinions *c d* with a smooth coating, preferably using a varnish coating for these surfaces, which is indicated by the letter *z* in Fig. 6. This coating fills the pores of the rim *b* and constitutes a flexible covering for the pinions and prevents access of oil to their rubber bodies. I find that this coating makes an excellent adhesive or traction surface, improves the face of the rim, and preserves the life of the pinions.

I claim as my invention the following-defined novel features, substantially as hereinbefore specified, namely:

1. The combination of a fly-wheel G with a friction driving-rim *b*, of a driven shaft H, a friction-pinion *c* thereon engaging tractively with one face of said rim, an idler-pinion engaging the other face thereof and movable toward or from the first-named pinion, a frame carrying both said pinions and movable axially of said wheel, and a spring tending to

press said pinions together to embrace said rim between them.

2. The combination of a fly-wheel G having a friction driving-rim *b*, of a driven shaft H, a friction-pinion *c* thereon engaging tractively with one face of said rim, an idler-pinion engaging the other face thereof and movable toward or from the first-named pinion, a spring tending to press said pinions together to embrace said rim between them, and a frame carrying said pinions pivoted on an axis parallel with the plane of said fly-wheel, and movable to adapt said pinions to irregularities in the rim thereof.

3. The combination with a fly-wheel G having friction-rim *b*, of swing-frame K, driven shaft H having a bearing in said frame, friction-pinion *c* fixed on said shaft and bearing tractively against one face of said rim, idler-pinion *d* bearing against the opposite face thereof and mounted in bearings carried by said frame, but movable relatively thereto, and a spring acting against said bearings for pressing said pinion toward the opposite pinion.

4. The combination with fly-wheel G and its shaft E, bearing-head D for the latter, frame L pivoted on the same axis as said shaft E, swing-frame K pivoted to said frame L on an axis parallel with the plane of said fly-wheel, shaft H carried by said frame, and pinion *c* on said shaft and bearing against the rim of said fly-wheel.

5. The combination of fly-wheel G and its shaft E, bearing-head D for the latter, post C on which said head is mounted, upright standard B in which said post may turn, and handle M connected to said post to control the turning thereof and steady the apparatus.

6. The combination with fly-wheel G and shaft E, of bearing-head D therefor, driven shaft H, frames K L carrying said shaft, the latter pivoted on the same axis as the shaft E so as to swing to varying angles around said axis, and said head provided with a ledge *p* serving as a stop for supporting said frame in its lowermost position.

7. The combination with fly-wheel G and shaft E, of bearing-head D therefor, driven shaft H, frames K L carrying said shaft, the latter pivoted on the same axis as the shaft E so as to swing to varying angles around said axis, and means for supporting said frames when swung upward to varying angles.

8. The combination with fly-wheel G and shaft E, of bearing-head D therefor, driven shaft H, frames K L carrying said shaft, the latter pivoted on the same axis as the shaft E so as to swing to varying angles around said axis, and means for supporting said frames when swung upward to varying angles, comprising a strut *q* pivoted at one end to said frame K, and an adjustable swiveled collar *r* to which the other end of said strut is pivoted.

9. The combination with a wheel and pinions engaging opposite sides thereof, of a frame supporting the pinions in engagement with the wheel, movable axially of the latter to compensate for irregularities of the wheel.

10. The combination with a wheel, of pinions engaging its opposite sides movable the one toward the other and rotating on axes angular to the axis of the wheel, means carrying the pinions and movable axially of said wheel, and means pressing the pinions against the opposite sides of the wheel.

11. The combination with a wheel having a driving-rim, of a frame extending across the edge of said wheel, and two pinions carried by said frame, movable the one relatively to the other thereon, and engaging said fly-wheel on opposite sides thereof.

12. The combination with a wheel having a driving-rim, of a movable frame extending around said rim, two pinions carried by said frame and movable therewith, engaging said rim on opposite sides thereof, and means holding said pinions toward each other.

13. The combination with a wheel having a driving-rim, of a pinion engaging with the side of said rim, and a frame carrying such pinion, said pinion movable axially of the wheel to compensate for irregularities in the rim, and said frame being movable to carry such pinion circumferentially of said wheel to different relative positions.

14. The combination with a fly-wheel having a driving-rim, of a swinging frame carrying a pinion for tractive engagement with said rim, said frame being movable horizontally axially of the wheel to conform to the inequalities of the rim, and vertically to shift the pinion to various heights.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PHILANDER ANDERSON.

Witnesses:
GEORGE H. FRASER,
RENÉ BRUINE.