Sheet 1-3 Sheets.

T. R. Markillie.

Excavator.

No. 26,601. Patented Dec. 27, 1859.

Fig 3.

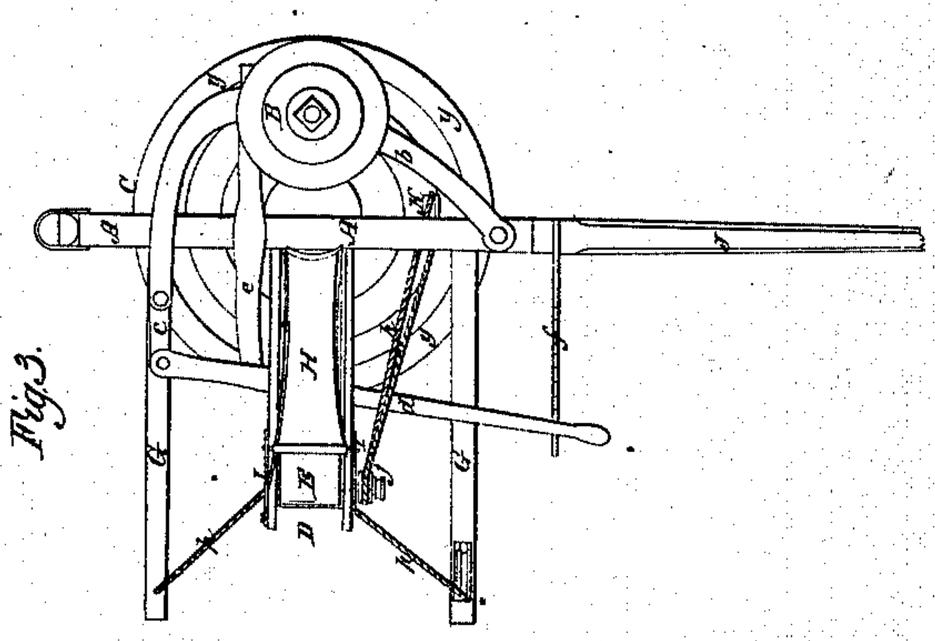
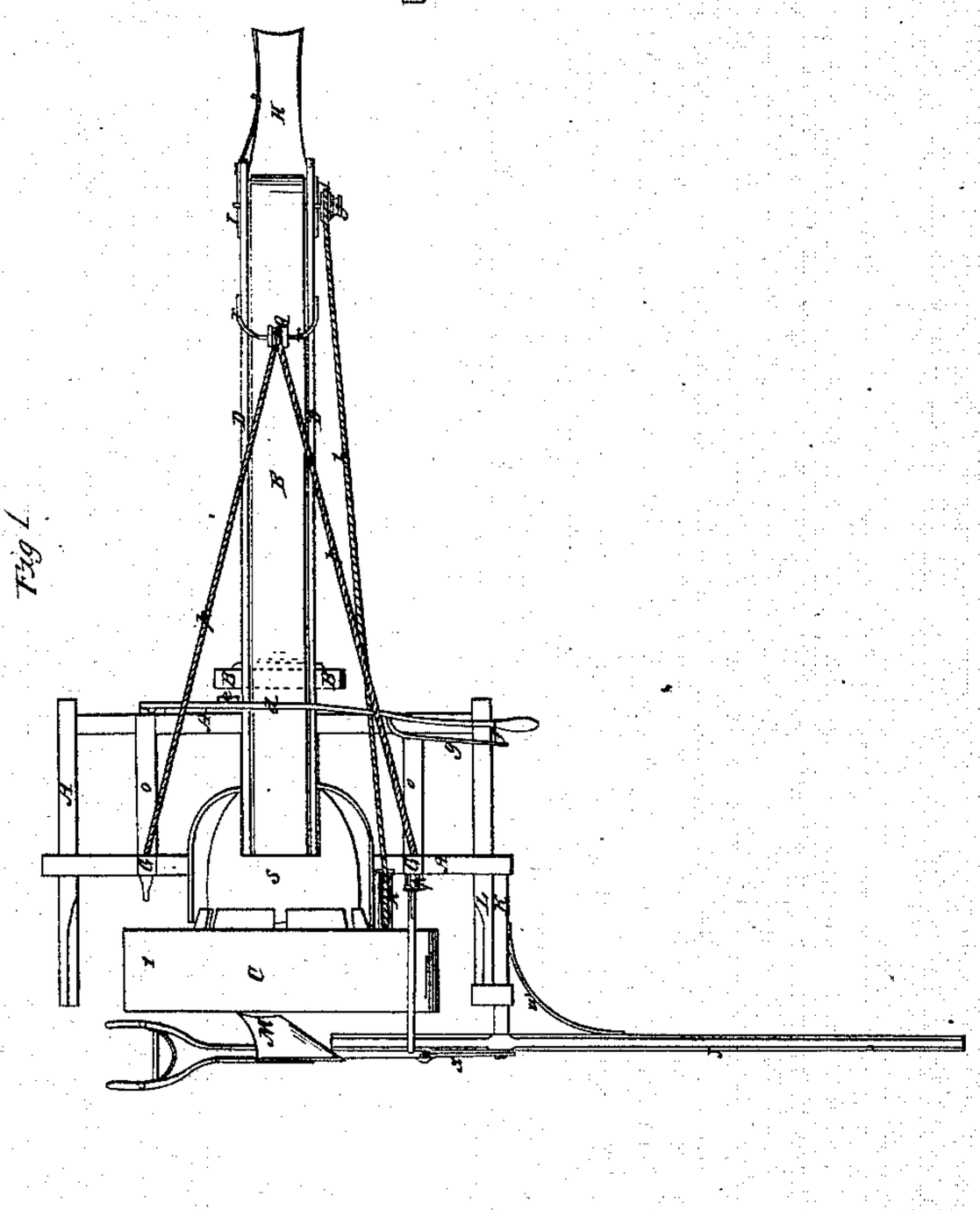


Fig 1



Witnesses.
James J. Dickins.
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Inventor.
Thos R. Markillie

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

Sheet 2-3 Sheets.

T. R. Markillie.

Excavator.

No. 26,601. Patented Dec. 27, 1859.

Fig 1.

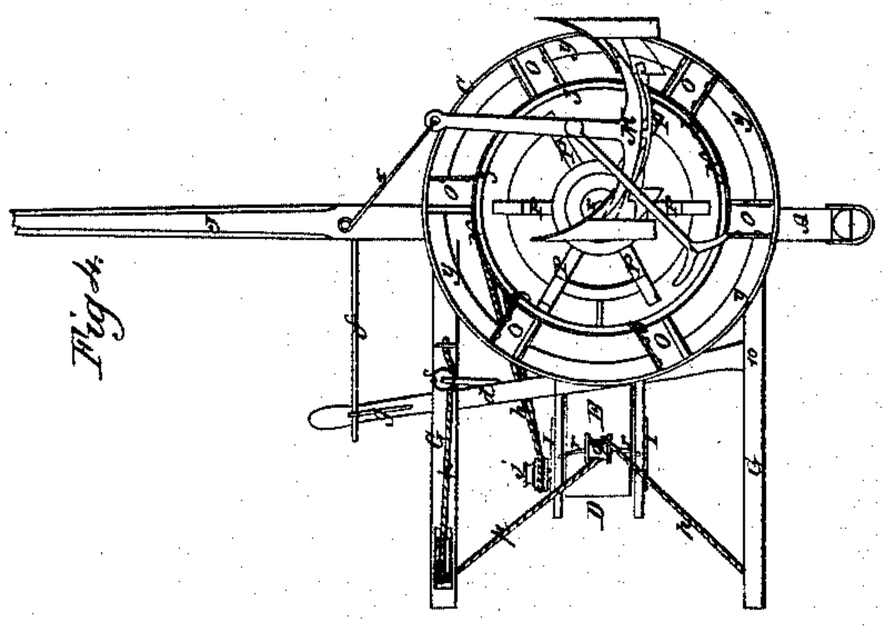
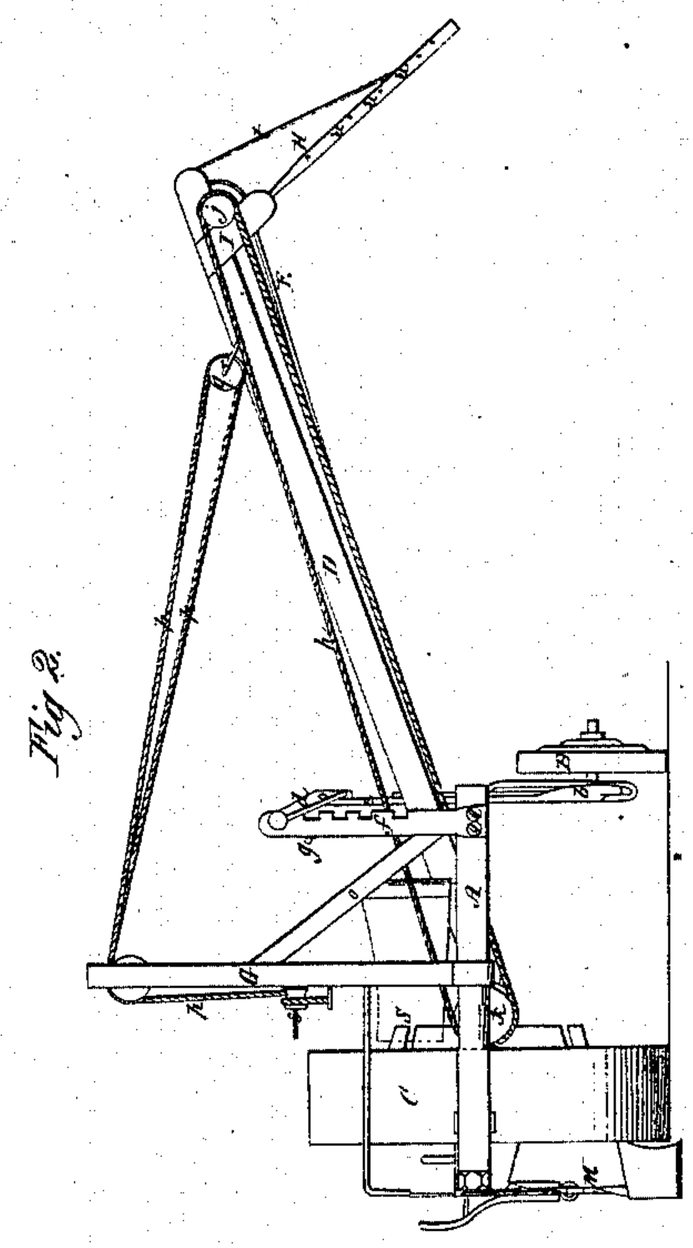


Fig 2.



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Sheet 3 - 3 Sheets.

T. R. Markillie.

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No. 26,601. Patented Dec. 27, 1859.

Fig. 1.

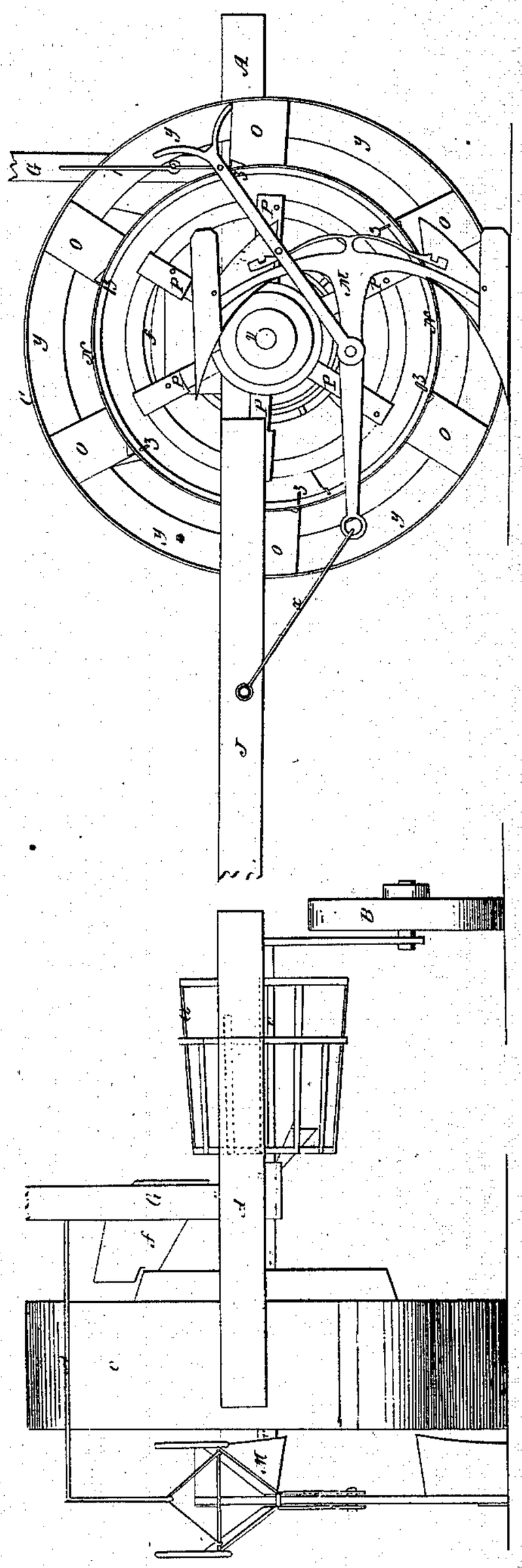

Fig. 2.

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UNITED STATES PATENT OFFICE.

THOMAS R. MARKILLIE, OF WINCHESTER, ILLINOIS.

EXCAVATING-MACHINE.

Specification of Letters Patent No. 26,601, dated December 27, 1859.

To all whom it may concern:

Be it known that I, THOMAS R. MARKILLIE, of Winchester, in the county of Scott and State of Illinois, have invented a certain new and useful Improvement in Machines for Elevating Dirt &c., of which the following is a full, clear and exact description, reference being had to the accompanying drawing of the same, making part of this specification, in which—

Figure 1, represents a plan of my improved machine; Fig. 2, an end view; Fig. 3, a side elevation of one side; Fig. 4, a similar view of the other.

In agricultural pursuits, it is an object of paramount importance that the machinery employed be simple of construction, light, cheap, strong and durable, and so far as is consistent with these prerequisites susceptible of application to the most varied uses.

Bearing these points in view, the object of my invention is to construct a machine which can be adapted to the digging of ditches, excavating of canals, raising embankments and formation of roads &c., and it consists first in the arrangement and combination of a plow with an elevating wheel of peculiar construction; and secondly in combining with these devices, a carrier for elevating and transporting the dirt to the place required, at which it is to be deposited.

In the accompanying drawing, the machine is represented as consisting of a frame work (A) mounted on two wheels (B and C), the smaller wheel (B) turning on a journal secured in a frame beam (*b*) hinged at one end to the main frame (A) and connected at its other end by a link (*c*) to the end of a lever (*d*), pivoted to the upper end of a slotted standard (*e*), secured to the main frame, through the slotted end of which the frame beam (*b*) of the wheel passes. The wheel thus mounted can be adjusted so as to suit the nature of the ground, and adapt the machine to it, a rack bar (*f*) being mounted on one of the cross beams into the notches of which the end of the lever is made to take, to maintain the wheel in the required position; a spring bar (*g*) being attached, at one end, to the side of the lever, in such manner as to embrace the rack bar (*f*) and thus retain the lever in whatever notch it may have been placed.

On the inner side of the rail of the main frame (A) next the large or carrying wheel (C) are formed or otherwise secured two lugs or projections (*i*), to which is hinged a carrier or elevator (D) made in any suitable manner, in this instance, consisting of two rails connected together by rods, on which are mounted friction rolls at proper distances apart around which a continuous belt or apron (E) is passed, motion being imparted to this belt, by means of a belt (*h*) passing around a pulley (*j*) mounted on the end of the spindle or shaft of the outer roll, and a driving pulley (*k*) secured to the end of the shaft (*l*) of a crown wheel (*m*) which meshes into the teeth of a driving wheel (*n*) secured to the shaft of the large wheel (C), which as the latter revolves, as it traverses over the ground, imparts motion to the endless apron or belt of the elevator (D) as before mentioned.

On the upper side of the inner rail of the main frame are erected two standards (G) strongly braced in the line of strain by braces (*o*) rising from the outer rail. Through the end of one of these standards is formed a hole through which one end of a cord or rope (*p*) is passed and secured, whence it is carried around a friction roll (*q*) mounted on a clamp (*r*) secured to the outer end of the elevator (D) and thence over another roll, secured in the upper end of the other standard (G) and thence around a winch (*s*) secured to and working in the same standard; by turning which in the required direction the outer end of the elevator may either be raised or lowered, as the circumstances of the case may dictate, that is to say, according to the height it is required to raise the dirt. To the outer end and under side of this elevator is hinged a chute or slide (H) by means of suitable pendants (I) firmly secured to its sides; and which is held at any required angle to the elevator, by means of a hook (*t*) attached to the extreme end of the elevator taking into holes (*u*) pierced at suitable intervals apart in the side of the chute, or instead of one hook two may be used, one at either side. By this arrangement it will be apparent that just as the height of the outer end of the chute is raised or lowered so will the distance at which the dirt is deposited from the machine be increased or diminished, care being had not to raise it to a horizontal plane, as, then, the dirt would only collect and not be deposited at all. Or instead of the chute being hinged to the elevator, it may be made to slide out and in for the

same purpose, but the former mode is preferred as being the more simple and efficacious of the two.

The elevating wheel is mounted upon and secured to an axis or shaft (*v*), which has its bearings in the rails of the main frame and travels between their cross beams, they being extended on one side beyond the rails, was to form the beams to which to attach the pole (J) to which the oxen are yoked, the pole, for this purpose, being provided with a side beam (K) which passes through metallic or other straps secured to the drag beam L of the frame; and stayed with a brace (*w*). To the outer side of the pole is hinged a reversible plow (M), by means of a drag link (*x*) the mold boards of the plow being so arranged and constructed as to throw the dirt, as raised, into the wheel; the plow being made reversible so that, when the machine is used, it need not be turned, when it comes to the end of the trench or ditch, but the pole simply unhitched and attached to the other end of the machine and the plow reversed to prepare it for operation again; previous to which however the parts of the wheel must also be reversed, the construction of which I will now describe.

The wheel is formed with a hub and heavy spokes as in other wheels but is provided with a very broad tread to the inner edge of which is secured a flange (*y*) to prevent the dirt as it is cast into it from the plow, running out at that side as the wheel revolves. Midway or thereabout between the hub and tread is secured a metallic conical ring (N) having its lesser diameter next the elevator, and its greater diameter on the outside. On the outer and inner side of this ring is arranged another of similar form, but narrower, into holes in which are passed rods (*z*) of wings (O) hinged to and in the line of the length of the spokes (P), so that by causing this ring to perform a partial revolution it will cause these wings to assume an angle to the spokes according to the direction in which the ring is turned. In operating the machine these wings being always inclined so as to prevent the dirt from slipping out in the outside of the wheel, as they are raised by its advance over the ground, and so as to incline it toward the chute (S) on the inside of the wheel so that the dirt, &c., may slide down from the wings on the latter, and thence by the inclination of the chute deposited on the endless apron or belt and by the latter elevated, carried and discharged at the point where it is intended to be dropped. This change of the inclination of the wings being always effected whenever the direction of the machine is changed.

The larger conical ring may either be made to revolve with the machine, or it may be made stationary, in which event the lower part may be dispensed with, and the spokes of the wheel changed to the outside instead of the inside as shown in the drawing, to admit of its working.

By the arrangement of the plow on the one side of the pole, and the carrying wheel on the other the drag of the former will compensate for that of the latter and thus equalize the strain upon the horses or oxen. When it is not desired to operate the machine, but simply to transport it from place to place, a hook (1) is secured to one of the standards on which the plow is suspended at a sufficient height above the ground to prevent it from throwing dirt into the wheel.

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

1. The combination of the carrying wheel (C) as constructed and operated with the reversible plow, as arranged for the purposes set forth.

2. In combination with the carrying wheel (C) and plow (M) I claim the elevator (D) as arranged and operated for the purposes described.

3. I claim the hinged wheel frame (*b*) as arranged and combined with the lever (*d*) and rack bar (*f*) for the purposes set forth.

In testimony whereof, I have hereunto set my hand to this specification.

THOS. R. MARKILLIE.

Witnesses:
N. M. KNAPP,
J. H. MARKILLIE.