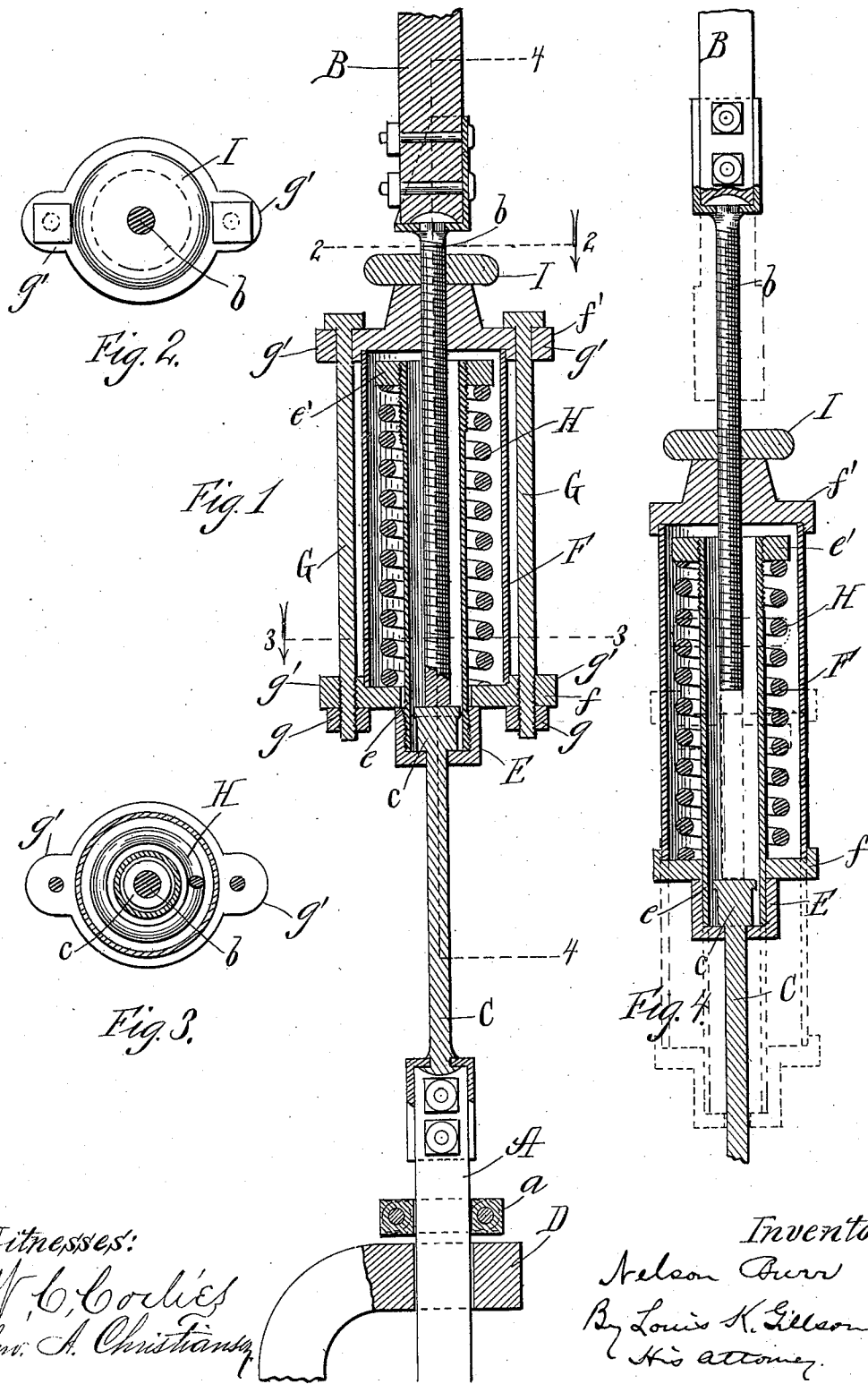


(No Model.)

N. BURR.
WINDMILL ATTACHMENT.

No. 576,543.

Patented Feb. 9, 1897.



Witnesses:

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UNITED STATES PATENT OFFICE.

NELSON BURR, OF BATAVIA, ILLINOIS.

WINDMILL ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 576,543, dated February 9, 1897.

Application filed February 10, 1894. Serial No. 499,726. (No model.)

To all whom it may concern:

Be it known that I, NELSON BURR, a citizen of the United States, residing at Batavia, in the county of Kane and State of Illinois, have
5 invented certain new and useful Improvements in Windmill Attachments; and I do declare the following to be a full, clear, and exact description of the invention, such as
10 it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

15 My invention relates to the means for attaching the power or connecting rod of a windmill to the rod of a pump, its object being to provide for the variation of the stroke of the pump-rod without changing that of the connecting-rod of the mill, so that the work to
20 be done may be suited to the power of the wind.

The invention consists of the use of a joint for making the connection between the two
25 parts which may be adjusted so that one of them will slide upon the other during all or a part of its stroke.

When the full load of the pump is upon the wheel throughout its entire revolution,
30 the work is more than the wheel can accomplish if the wind be light. By so connecting the pump-rod and connecting-rod that the stroke of the former is less than the stroke of the latter the wheel is allowed to gather momentum during more than half of its revolution,
35 and the movement of the pump-rod through its restricted range of travel is accomplished with ease, though the wind may be very light. By so adjusting the parts that
40 the load is borne during the last part of the upstroke of the connecting-rod the strongest crank-leverage is secured.

In the accompanying drawings, Figure 1 is a longitudinal section of the connection, the connecting-rod and pump-rod being in elevation.
45 Fig. 2 is a plan view on the line 2 2 of Fig. 1. Fig. 3 is a plan section on the line 3 3 of Fig. 1. Fig. 4 is a longitudinal section on the line 4 4 of Fig. 1, the adjustment of the
50 parts differing from that of Fig. 1.

The pump-rod A is of the usual form and passes through the guide-loop D in common

use on windmill-pumps. Upon the upper end of the pump-rod is fitted a sliding extension piece or tube, which has at its lower end
55 an internal shoulder adapted to engage a cross-head at the end of the rod and at its outer or upper end an external annular shoulder. An apertured plate rides upon
60 this extension-tube, and a spiral cushion-spring is interposed between this plate and the external shoulder of the tube. The plate is rigidly connected with the connecting-rod of the windmill and in such manner that it
65 may be vertically adjusted with reference thereto, so that when lowered it allows the extension-tube of the pump-rod to slide down upon the rod, leaving the latter supported by the frame of the pump, a stop-piece being
70 placed upon the rod for contact therewith.

The pump-rod is lifted by the power of the mill being transmitted through the connecting-rod to the spring, and thence communicated to the extension-tube, which lifts upon
75 the cross-head of the pump-rod.

When the plate supporting the spring is lowered relatively to the connecting-rod, so that the lower end of the extension-tube slides down the pump-rod below the cross-head,
80 there is of course no movement of this rod until the upstroke of the connecting-rod of the mill brings the internal shoulder of the tube again into contact with the cross-head, when the pump-rod is lifted during the remainder of the stroke. Upon the downstroke,
85 as soon as the stop-piece upon the pump-rod comes into contact with the frame of the pump, the descent of the rod is of course stopped and the extension-tube slides down upon it.

Having described the general construction
90 and operation of the device, I will now set forth the details thereof.

The pump-rod A is provided with an upwardly-extending rod C of uniform diameter, upon which the extension-tube is adapted to
95 slide and which forms a part of the pump-rod. This rod C carries the cross-head c at its upper end.

The extension-tube is preferably a piece of gas-pipe e, whose internal diameter is greater
100 than the width of the cross-head c. Both ends of the pipe e are externally screw-threaded. Upon the lower end is fitted a centrally-apertured cap E, its aperture being of slightly

greater diameter than the rod C, which passes through it, but of less diameter than the width of the cross-head. Upon the upper end of the pipe *e* is screwed a collar *e'*, which forms an annular shoulder.

A larger pipe F incloses the pipe *e*, its ends being closed by a lower and an upper plate *f f'*, secured together by means of screw-threaded bolts G G, provided with nuts *g g* and passing through apertured wings *g' g'* of the plates.

The plate *f* is centrally apertured for the free passage therethrough of the body of the pipe *e*, but not so as to admit the cap E. A spiral spring H is fitted upon the pipe *e*, bearing between the inner side of the plate *f* and the lower side of the collar *e'*.

The lower end of the connecting-rod of the windmill is shown at B and has a rigidly-secured downwardly-projecting extension *b* in the form of a screw-threaded rod. The plate *f'* is centrally apertured and screw-threaded for the insertion of the rod *b*, which is of less diameter than the pipe *e*, so that after passing through the plate *f'* it enters the pipe *e* without contact. The preferable length of the pipe *e* is the same as the stroke of the connecting-rod, and the pipe F need not be of greater length. A jam-nut I is placed upon the rod *b* above the plate *f'*, so as to bind upon the latter and hold it securely upon the rod where adjusted.

It will be seen that upward strain upon the connecting-rod is communicated to the plate *f'*, thence to the plate *f*, thence through the spring H to the collar *e'*, thence by means of the cap E on the opposite end of the pipe *e* to the pump-rod.

The stroke of the pump-rod is varied by the means and in the manner following: A stop-clip *a* is secured upon the rod A immediately above a fixed portion of the pump, as the guide-loop D, when the rod is at its lowest limit of travel. By turning the connecting-mechanism down upon the screw-threaded rod *b* it ceases to sustain the pump-rod, which is now supported by the frame of the pump, the clip *a* resting directly upon it. The connection assumes, with reference to the upward extension C of the pump-rod, the relation indicated by the dotted lines, Fig. 4. When the connecting-rod ascends, the connection is drawn up until the cap E comes into contact with the cross-head *c*, when the pump-rod is lifted through the remainder of the upstroke of the connecting-rod and lowered during a corresponding part of the return or down stroke, the connection sliding down upon it during the remainder of the downstroke.

It is obvious that the adjustment of the stroke of the pump-rod may by this means be varied throughout the entire range of the stroke of the connecting-rod from no movement whatever to a full stroke.

The spring H serves as a cushion to relieve the sudden strain at the beginning of the stroke. The use of such a spring is not origi-

nal with me for this purpose, though its service is more important in connection with my device for the reason that the connecting-rod and pump-rod do not commence the upward stroke together when their strokes are unequal.

The function of the outer pipe F is to supply a rigid body for the device and also to protect the parts from the weather.

When the wind is sufficiently strong to work the pump to its full capacity, the connection between the two rods is adjusted, as shown in Fig. 1, so that they move together continuously. When the wind is light, the stroke of the pump-rod may be shortened, so that the volume of water raised at each stroke is lessened, and consequently the work to be done is reduced to correspond with the force of the wind. This adjustment may be carried to such an extent that a wind sufficient to but little more than turn the mill may be utilized to draw a small quantity of water, a consideration of great importance upon stock-farms at certain seasons of the year.

I have described the preferred method of construction for securing the desired results, but it may be variously modified without departing from the essence of the invention, which consists of the use of a support for the pump-rod independent of the connecting-rod and such connection between the two rods that they may slide the one upon the other. I do not, therefore, desire to be limited to the precise construction shown.

What I claim as my invention is—

1. The combination with a pump-rod, of means for supporting the rod independent of the power mechanism, and a power-rod for actuating the pump-rod and having a sliding connection therewith, and means for adjustably limiting the movement of the one rod upon the other, substantially as described and for the purpose specified.

2. The combination with a plunger-pump, of a stop on the pump-rod for contact with a fixed part of the pump to limit its instroke, a power-rod, and an adjustable connection between the power-rod and pump-rod whereby the power-rod may, during a portion of its stroke, slide upon the pump-rod, substantially as described and for the purpose specified.

3. The combination with a pump, a pump-rod, and with a power-rod for actuating the pump-rod, of an apertured plate *f*, adjustably attached to the power-rod and adapted to receive and slide upon the pump-rod, a stop upon the pump-rod above and for contact with the plate, and a stop upon the pump-rod below the plate and adapted for contact with a fixed portion of the pump, substantially as described and for the purpose specified.

4. The combination with a pump and with the pump-rod, C, having a cross-head, of a stop, *a*, upon the rod for contact with a fixed portion of the pump, a sliding extension-piece mounted upon the rod and adapted to engage

the cross-head, a shoulder, *e'*, at the outer end of the sliding extension-piece, an apertured plate, *f*, sliding upon the sliding extension-piece, a spring interposed between the plate 5 and the shoulder, *e'*, a power-rod, B, and rigid connection between the rod, B, and the plate, *f*, substantially as described and for the purpose specified.

5. In a pump connection the combination 10 with the pump, and the pump-rod, C, having a cross-head, of a stop, *a*, upon the rod for contact with the fixed portion of the pump, a sliding extension-piece mounted upon the rod and adapted to engage the cross-head, a shoulder, *e'*, at the outer end of the sliding extension-piece, an apertured plate, *f*, sliding upon 15 the sliding extension-piece, a spring interposed between the plate and the shoulder, *e'*, a power-rod, B, and a longitudinally-adjustable connection between the rod, B, and the 20 plate, *f*, substantially as described and for the purpose specified.

6. The combination with a pump, of the

pump-rod, the stop, *a*, attached to the pump-rod for contact with a fixed portion of the 25 pump, the cross-head, *c*, at the end of the pump-rod, the sliding extension-tube mounted upon the pump-rod and engaging the cross-head, the shoulder, *e'*, at the outer end of the sliding tube, the apertured plate, *f*, adapted 30 to slide upon the sliding tube, the spring, H, interposed between the plate, *f*, and the shoulder, *e'*, the plate, *f'*, having a central screw-threaded aperture, rods, G, G, for rigidly uniting the plates, *f* and *f'*, the power-rod, B, 35 and the screw-threaded rod, *b*, extending from the rod, B, and engaging the aperture of the plate, *f'*, substantially as described and for the purpose specified.

In testimony whereof I affix my signature 40 in presence of two witnesses.

NELSON BURR.

Witnesses:

LOUIS K. GILLSON,
M. H. L. WING.