(No Model.) 3 Sheets—Sheet 1.

C. M. MILLER.

DUPLEX STEAM PUMP.

No. 502,737. Patented Aug. 8, 1893.

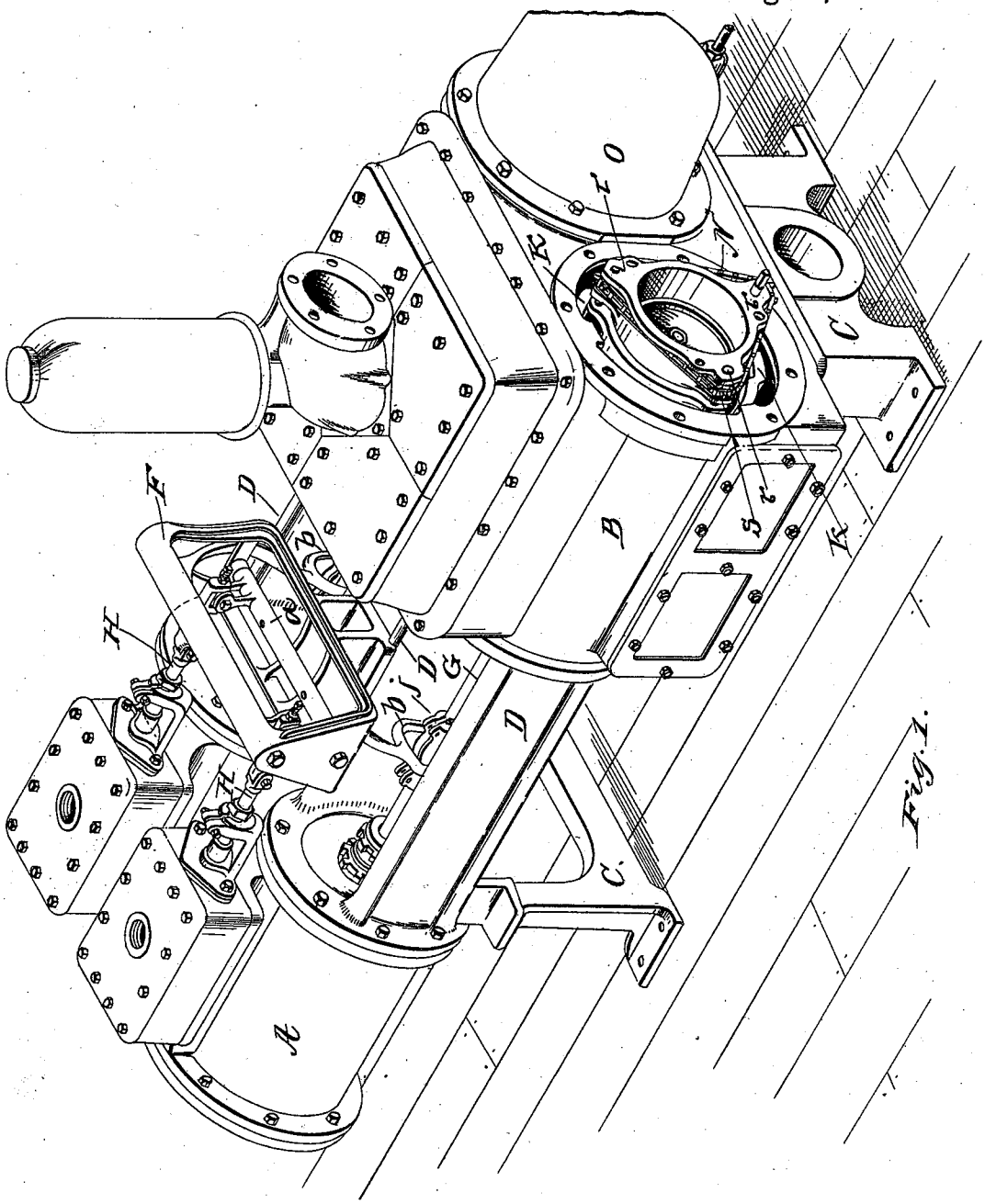

Fig. 1.

WITNESSES:

Ed. S. Lane,

Chas. R. Miller

INVENTOR

Cassius M. Miller

BY

W. K. Miller

ATTORNEY.

(No Model.) 3 Sheets—Sheet 2.

C. M. MILLER.

DUPLEX STEAM PUMP.

No. 502,737. Patented Aug. 8, 1893.

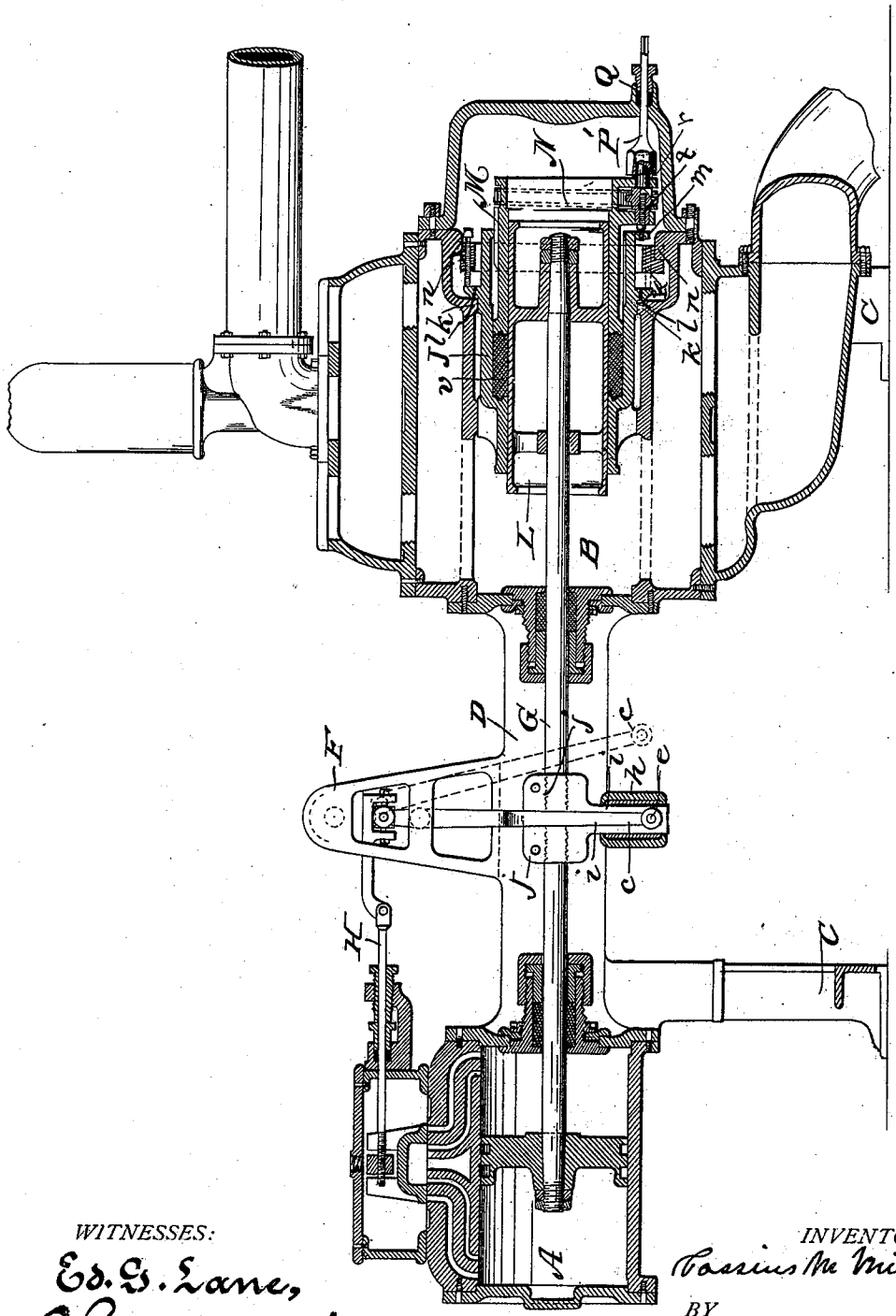

Fig. 2.

WITNESSES:

Ed. S. Lane,

Chas. A. Wellington

INVENTOR

Cassius M. Miller

BY

W. K. Miller

ATTORNEY.

(No Model.)

3 Sheets—Sheet 3.

C. M. MILLER.

DUPLEX STEAM PUMP.

No. 502,737. Patented Aug. 8, 1893.

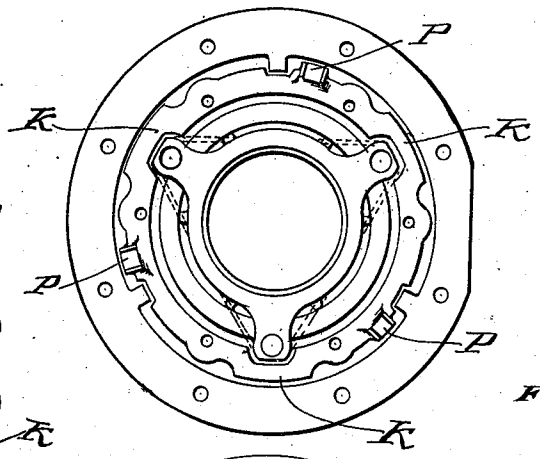

Fig. 3.

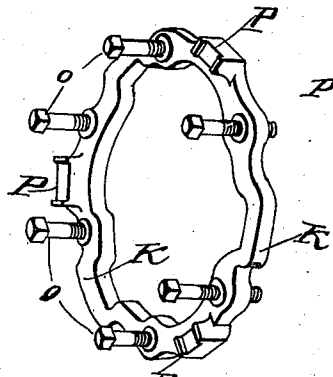

Fig. 5.

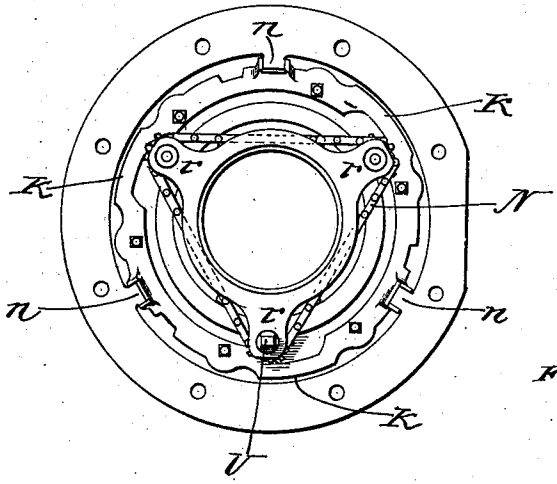

Fig. 4.

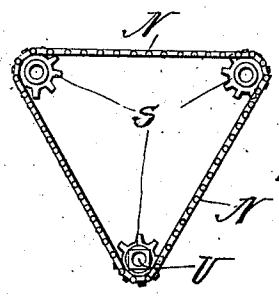

Fig. 7.

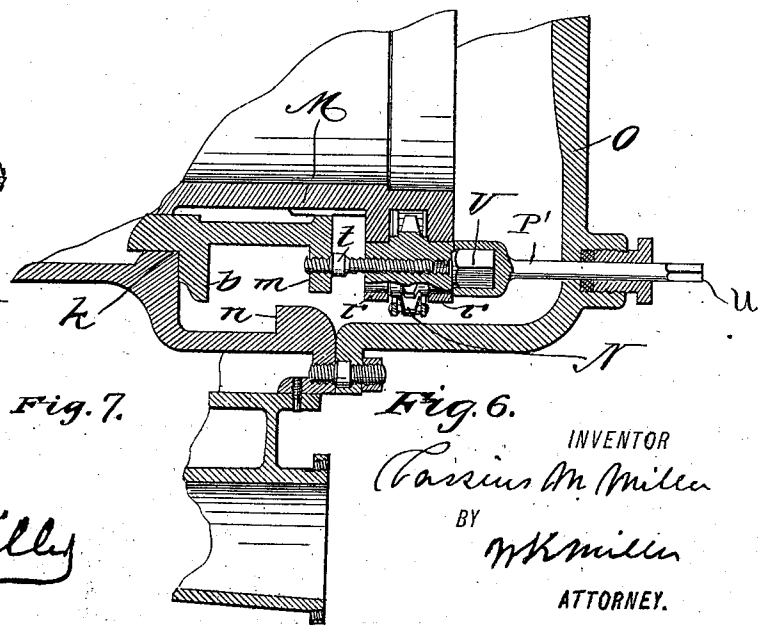

Fig. 6.

WITNESSES:

Ed. G. Lane

Chas. P. Mellis

INVENTOR

Cassius M. Miller

BY

W. K. Miller

ATTORNEY.

UNITED STATES PATENT OFFICE.

CASSIUS M. MILLER, OF CANTON, OHIO.

DUPLEX STEAM-PUMP.

SPECIFICATION forming part of Letters Patent No. 502,737, dated August 8, 1893.

Application filed June 13, 1892. Serial No. 436,471. (No model.)

To all whom it may concern:

Be it known that I, CASSIUS M. MILLER, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Duplex Steam-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in duplex steam pumps, and consists in certain features of construction and combination of parts as will be hereinafter described and pointed out in the claims.

Figure 1. of the accompanying drawings is a view in perspective of a duplex steam pump illustrating my invention; Fig. 2. a longitudinal section through the center of the steam and water ends. Fig. 3. is an end elevation of interior of pump showing the parts in position for removal from the inclosing casing. Fig. 4. is a similar view showing the parts in operative position and secured to the casing. Fig. 5. is a perspective of the ring by which the cylinder containing the packing box is secured in the casing. Fig. 6. is a section of a portion of the water end showing the sprocket nut and winding key, and Fig. 7. an end view of the sprocket nuts, and a side view of the winding chain.

A, represents the steam cylinder and B, the casing of the water end of the machine, which are supported on pedestals C, and secured together by a connecting frame D. On the upper portion of the frame D, is secured a frame F of the form shown in Fig. 1, in which is pivoted the valve actuating rock shafts *a*, which are provided with downwardly projected arms *b* having at their end portion prongs *c*, at the end portion of which are provided apertures in which are turned pins *e* having points that are adapted to engage the trunnions at the sides of the sliding box *h*, that embraces and slides on a downwardly projected pin or axle *i*, the pin *i* having integral therewith clamps *j*, by which it is secured to the piston rod G. The object of the features above described, is to convey motion from the piston rod G to the valve rod H, and to provide a sliding connection between the horizontal movement of the piston rod and the pin *i*, and the circular movement of the end of the arms *c*. The conically pointed pins *e* and sockets *f* are provided to take up wear and to adjust the arms to the slide.

Referring to Fig. 1, it will be noticed that the case B is provided with an inwardly projected annular flange *k*, adapted to receive and support central thereto, a packing box J, about which is provided an outwardly projected flange *l*, adapted to rest against the outer face of the flange *k*, and lugs *m* as shown in Figs. 2 and 6. To secure the packing box in operative position, there is provided about the inner face of the casing B, a series of lugs *n* and a ring K, having therein set screws *o* and sockets P, the latter to take under and embrace the ends of the lugs *n* on the inside of the case B, as shown in Figs. 2 and 4. The set screws are turned in against the flange *b* forcing the ring K out against the lugs *n*. To remove the ring K from the case B, the screws *o* are turned out to allow the sockets P to drop away from the lugs *n* when the ring may be turned to bring the sockets to one side of the lugs as shown in Fig. 3, when the ring may be withdrawn to allow of the removal of the packing box J or follower from the case. To compress the packing *v* about the plunger L, a sleeve or follower M, is provided having lugs *r* as shown in several of the figures of the drawings in which is placed a sprocket nut *s* as shown in Figs. 2 and 6.

Bolts as *t* are secured in the lugs *m* of the packing box, said bolt having a thread to correspond with the thread in the sprocket nut. One or more of the sprocket nuts may have an outwardly projected stem portion as *u* adapted to be turned by a wrench P′ as shown in Fig. 6. About the sprocket *s* is placed a driving chain N, by which they may be rotated simultaneously to draw the follower *m*, in to compact the packing *v* about the plunger L. A cap or cover O covering the end portion of the stuffing box and plunger is secured to the end of the case B as shown, having at its outer portion a packing box Q to receive the stem portion of the wrench P′, as shown in Figs. 2 and 6, thus providing a ready means for adjusting the packing while the machine is in operation.

Having described the nature and object of

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

1. In a duplex steam pump, the combination with the casing or cylinder B, having an inwardly projecting flange or rim *k*, and a series of inwardly extending lugs *n* at its outer end, a packing box cylinder J, located in said casing, having a peripheral flange *l* intermediate its ends, the ring K, embracing the packing box cylinder near its outer end, and the bolts *o*, passing through said ring and abutting against the flange *l*, for forcing the ring against the lugs *n*, substantially as described.

2. In a duplex steam pump, the combination with the casing or cylinder B, of the packing box cylinder J, located therein, having a series of lugs *m* at its outer end, the plunger L located and working in said packing box cylinder, the follower M, embracing the outer end of said plunger and provided with a series of lugs *r*, the sprocket nuts *s* journaled therein, the chain engaging with said nuts, and the screw bolts *t*, connected with the lugs *m*, and engaging with screw threaded apertures in the sprocket nuts, substantially as described.

3. In a duplex steam pump, the combination with the casing B of the packing box cylinder J located therein, the plunger L working in cylinder J, the follower M, embracing the outer end of said plunger, and provided with a series of lugs *r*, the sprocket nuts *s*, journaled in said lugs, the chain N engaging with said nuts, the screw bolts *t* engaging with said sprocket nuts and with lugs *m* on said follower, the cap O, secured to the casing or cylinder B, provided with a packing box Q, and the winding wrench passing through said box and connected with one of the sprocket nuts, substantially as described.

In testimony whereof I have hereunto set my hand this 23d day of February, A. D. 1892.

CASSIUS M. MILLER.

Witnesses:
W. K. MILLER,
CHAS. R. MILLER.