No. 750,173. PATENTED JAN. 19, 1904.

C. W. DECKER.

WINDMILL PUMP COUPLING.

APPLICATION FILED JULY 8, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

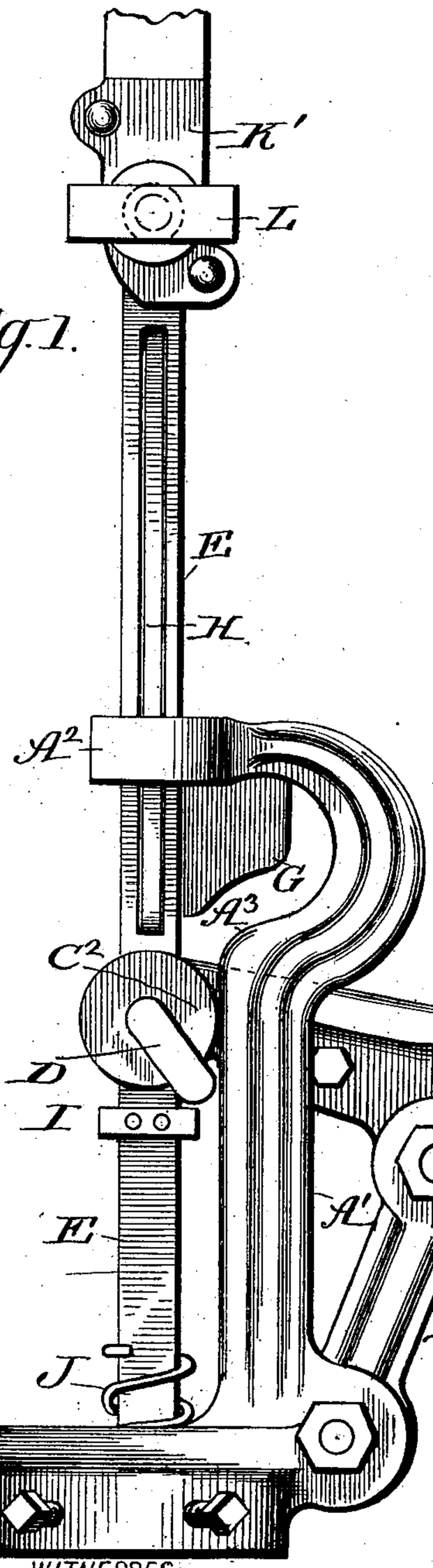


Fig. 2.

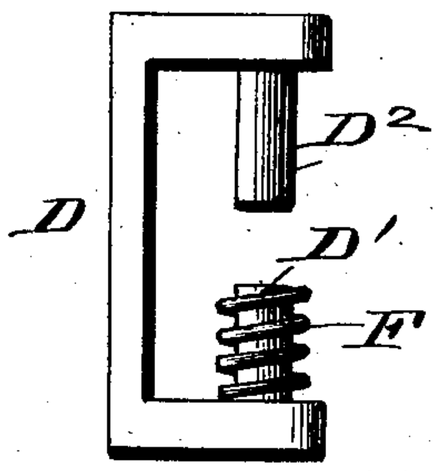


Fig. 3.

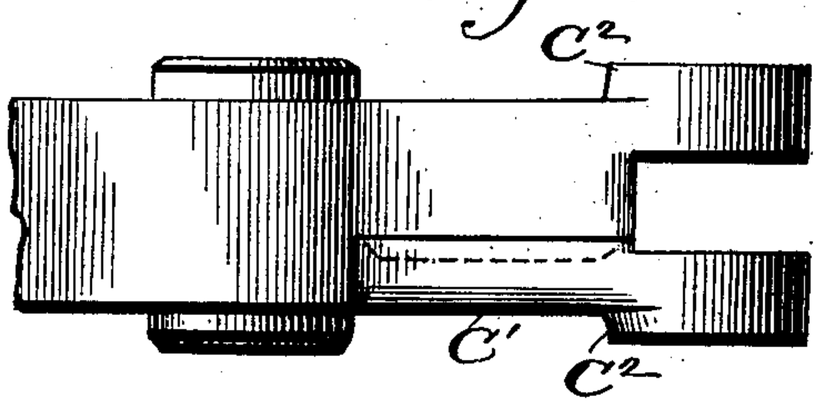
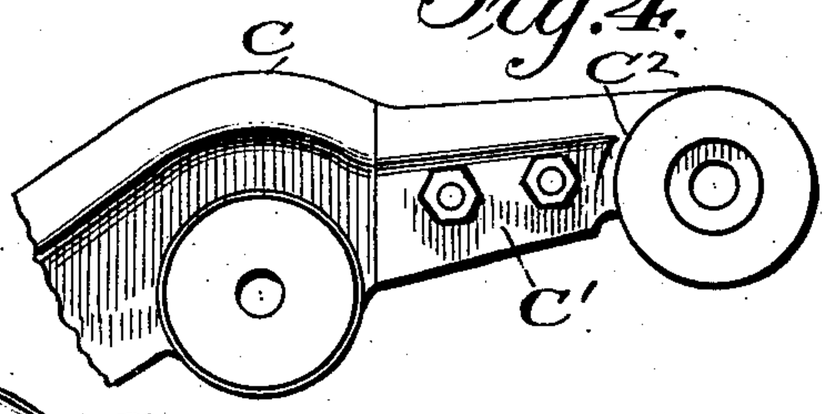


Fig. 4.



WITNESSES:
Jos. A. Ryan
Edw. W. Byrn

INVENTOR
Carl W. Decker.
BY Munn & Co.
ATTORNEYS.

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MODEL. 3 SHEETS—SHEET 2.

Fig. 5.

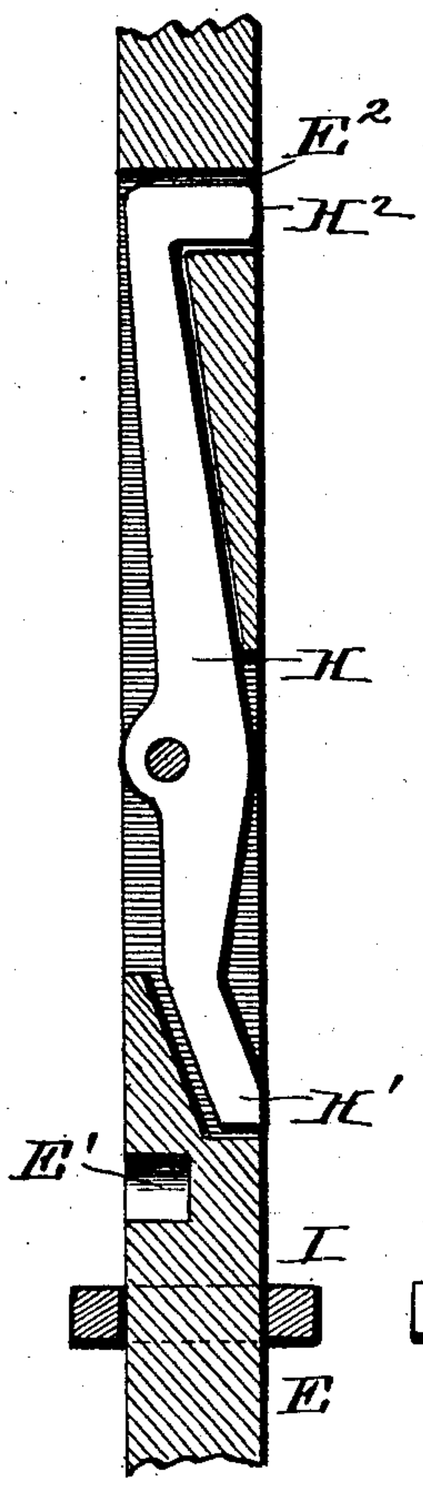


Fig. 6.

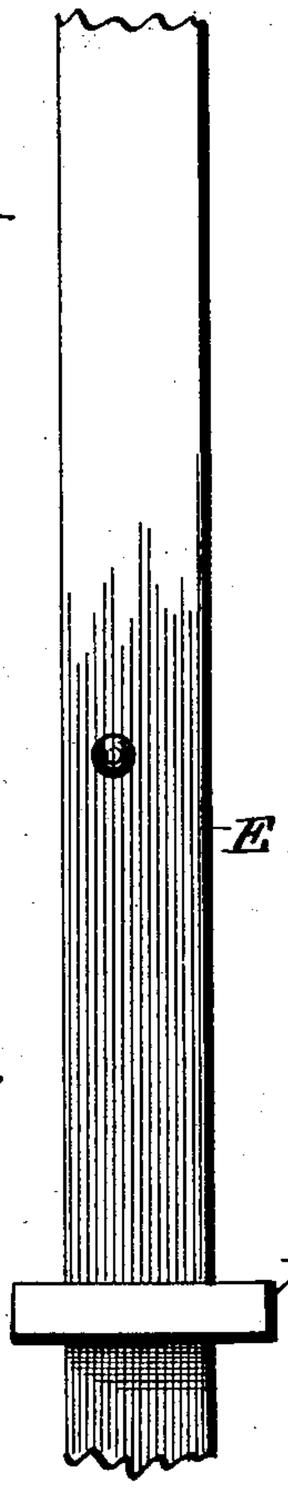


Fig. 7.

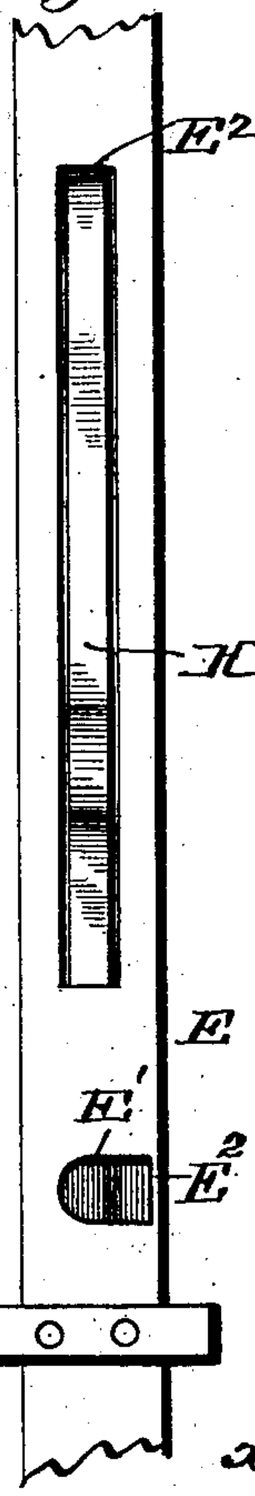


Fig. 12.

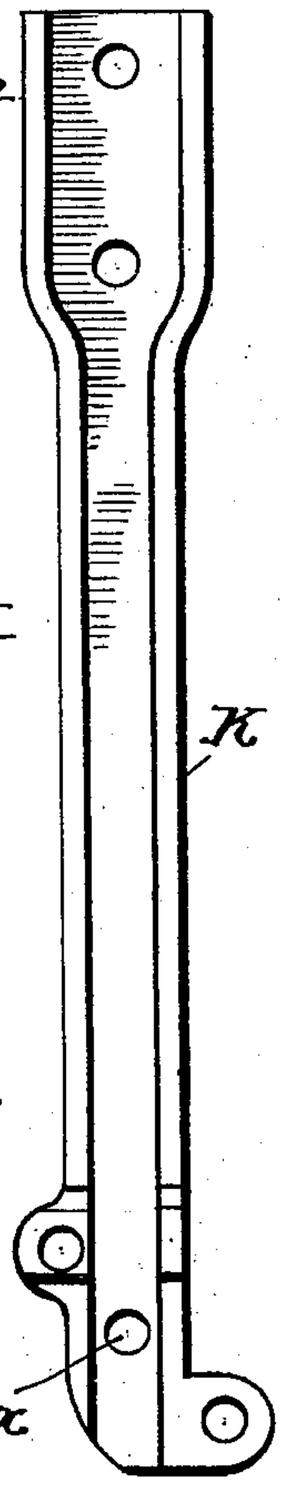


Fig. 13.

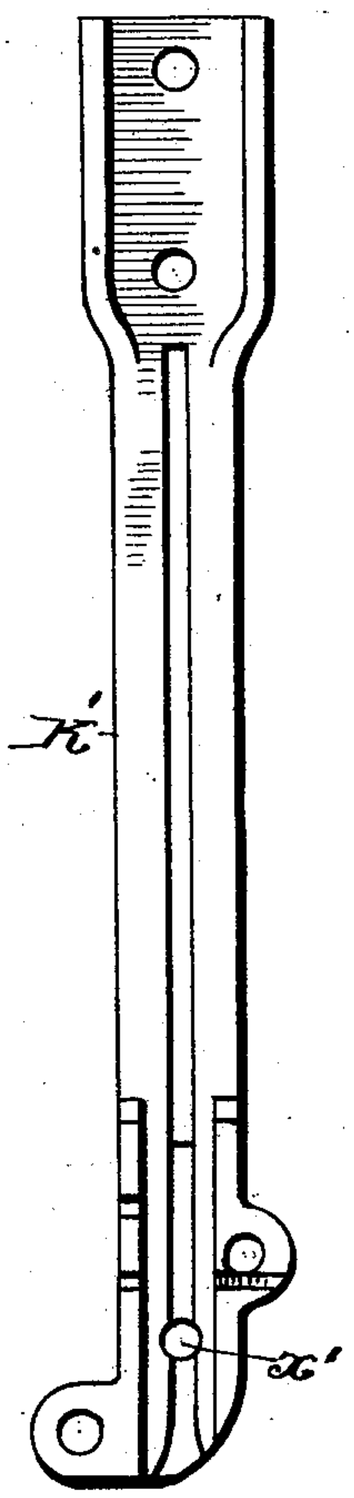


Fig. 12ª

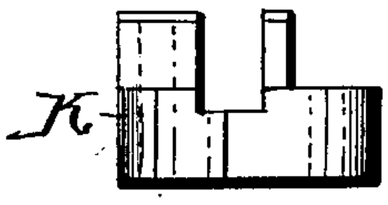
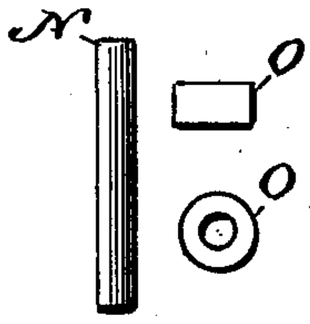


Fig. 13ª

Fig. 14.



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APPLICATION FILED JULY 8, 1903.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 8.

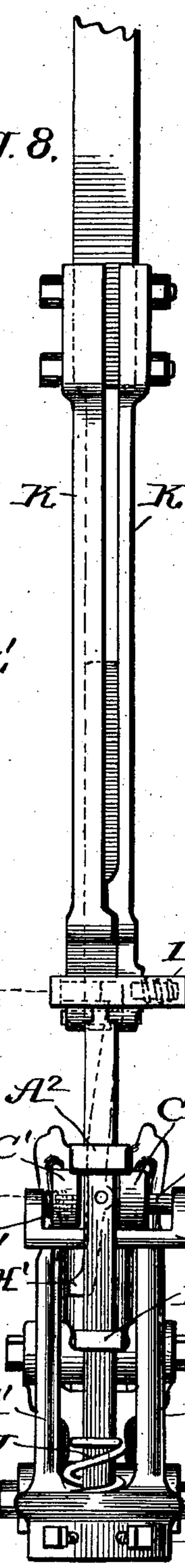


Fig. 10.

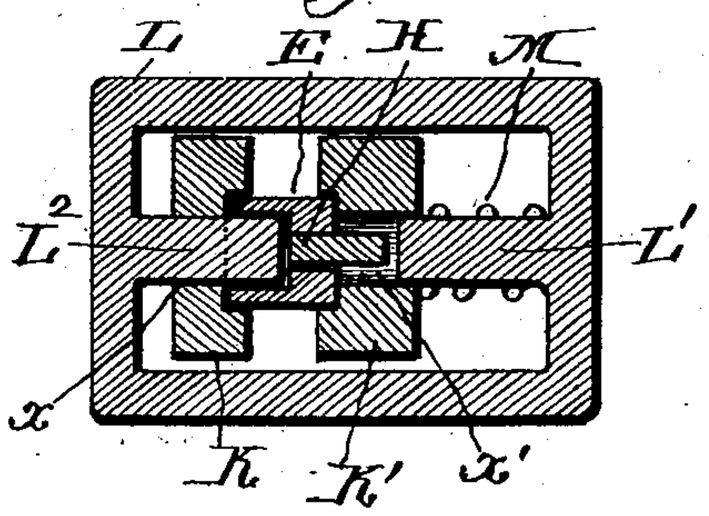


Fig. 9.

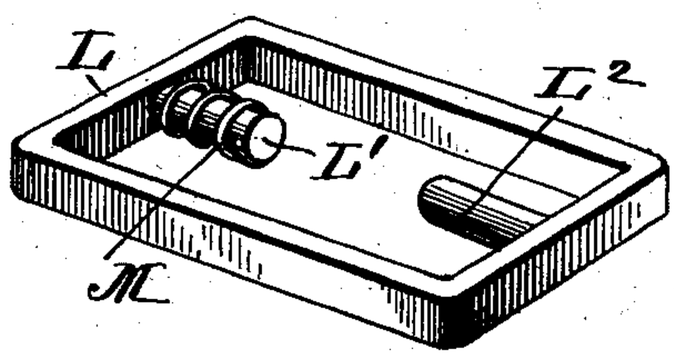
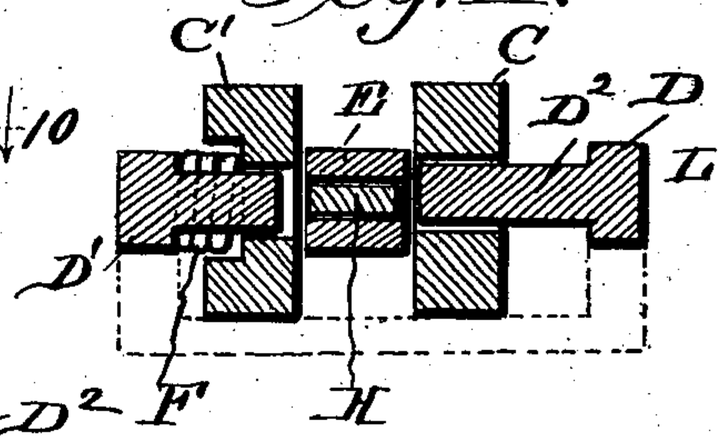


Fig. 11.



WITNESSES:

Jos. A. Ryan

Edw. W. Byrn.

INVENTOR

Carl W. Decker

BY Munn & Co.

ATTORNEYS.

No. 750,173. Patented January 19, 1904.

UNITED STATES PATENT OFFICE.

CARL WASHBURN DECKER, OF CHARLES CITY, IOWA, ASSIGNOR OF TWO-THIRDS TO FRANK E. HIRSCH AND GEORGE W. VON BERG, OF CHARLES CITY, IOWA.

WINDMILL-PUMP COUPLING.

SPECIFICATION forming part of Letters Patent No. 750,173, dated January 19, 1904.

Application filed July 8, 1903. Serial No. 164,717. (No model.)

To all whom it may concern:

Be it known that I, CARL WASHBURN DECKER, of Charles City, in the county of Floyd and State of Iowa, have invented a new and useful Improvement in Windmill-Pump Couplings, of which the following is a specification.

My invention relates to a windmill-pump coupling of that form in which the windmill-rod and the hand-lever may be alternately coupled to the pump-piston to allow the latter to be worked either by hand or by the windmill without interference with each other, the change being made by a mere adjustment of the hand-lever of the pump.

My invention comprises an upper coupling for the pump-rod and windmill-rod, a lower coupling for the hand-lever and pump-rod, and means for alternately connecting and disconnecting the same.

It also comprises certain means for conveniently applying these couplings to the other parts in a simple, strong, and inexpensive way.

It also consists in other features and details of construction which will first be fully described with reference to the drawings, and then pointed out in the claims.

Figure 1 is a side view of the device with the hand-lever coupled to the pump-rod. Fig. 2 is a detail of the coupling-yoke for the hand-lever. Fig. 3 is a top plan view, and Fig. 4 a side view, of the upper end of the hand-lever. Fig. 5 is a longitudinal section through the pump-rod; Fig. 6, a side view of the same, and Fig. 7 a side view taken at right angles to Fig. 5 from the left-hand side of Fig. 5. Fig. 8 is a front view of the entire device with the lower end of hand-lever at its extreme limit of downward stroke. Fig. 9 is a detail in perspective of the upper coupling-yoke and spring. Fig. 10 is an enlarged cross-section through the upper coupling on line 10 10 of Fig. 8. Fig. 11 is an enlarged cross-section through the lower coupling-yoke on line 11 11 of Fig. 8. Figs. 12 and 13 are inside face views of the two-part connecting-bar for the windmill-rod. Figs. 12^a and 13^a are end views of the lower ends of the same, and Fig. 14 shows detail views of the rivet and collar for connecting the lower ends of the parts shown in Figs. 12 and 13.

Referring to Figs. 1 and 8, A is a special form of pump-head, the standards A′ of which carry at their upper ends the guide A^2 for the pump-rod and serve also as guides for the upper end of the hand-lever, keeping it in place on the pump-rod during the motion of the hand-lever while pumping and allowing this upper end of the hand-lever to slide off from pump-rod after the pumping stroke has been completed.

B is the ordinary type of rocker-support for the hand-lever.

C is the hand-lever itself, and C′, Figs. 3 and 4, is one side of the upper end of the hand-lever, which part C′ is detachable. The part C′ is attached to C by means of ordinary bolts and nuts, the adjacent surfaces of C and C′ being grooved or mortised longitudinally, as seen in dotted lines in Fig. 3, so that when C′ is attached to C they move as one piece. The object of this detachable part C′ is to make it possible to conveniently apply the lower coupling-yoke D to the parts C and C′. The yoke D (see Fig. 2) is a rectangular frame open on one side and having two inwardly-pointing pins D′ D^2, which fit in bearings of upper end of hand-lever on both sides of pump-rod E, making a coupling which is very strong for a given size and one which will not bind in its bearings. The spring F is coiled about the pin D′ of yoke D and tends to force the pin D^2 of said yoke through its bearing in hand-lever C into the pump-rod E.

G is a projection extending downwardly from the lower side of guide A^2 and having the same thickness as the pump-rod E, so that when the yoke D slides off of rod E said yoke rests on the surface of G and the hand-lever is kept from taking side motion by this projection G and is guided into place on the rod E when the lower end of the hand-lever is raised again. Pump-rod E is best shown in Figs. 5, 6, 7 and carries within it a lever H.

E′ is a mortise in the lower end of the rod

E a short distance above the buffer I, said mortise being beveled on one side, as shown in Fig. 7, so that the surface of the mortise at the edge or corner E^2 is flush with the surface of the rod, as shown in Fig. 7. The buffer I is riveted to the rod E and is designed to rest on the spring J above the pump-head, and thus support the weight of the pump-rod E when in its lowest position.

K and K′ are the two parts of an upper bar which is attached to the lower end of the windmill-rod and carry at their lower ends the upper coupling L. (Best shown in Fig. 9.) This coupling consists of a rectangular yoke with inwardly-pointing pins L′ L^2.

M is a coil-spring adapted to encircle the pin L′ of yoke L and tending to force pin L^2 into an opening in pump-rod E when yoke L is adjusted, with its pins, in the bearings x x' in the lower ends of bars K and K′. (See Figs. 10, 12, and 13.) N, Fig. 14, is one of the rivets used to fasten together the two parts K and K′, and O is a collar used on the lower rivet when in position to keep bars K and K′ a proper distance apart.

I wish to call special attention to the design of the lower coupling D and its bearings in C and C′ and also the upper coupling L with its bearings in the lower ends of K and K′. The shape of these parts is such that a coupling engaging the pump-rod from one side, but having bearings on both sides of the pump-rod, may be used, giving great strength for a given size of coupling and obviating any difficulty of the pins sticking or binding in the bearings, also providing a convenient means of attaching springs for moving these couplings in one direction.

The special features in regard to the shape of the bars K and K′ and the hand-levers C and C′ are designed to make the placing of the pins of yokes L and D in their respective bearings convenient.

In the case of the upper yoke L (see Fig. 10) it is placed in its bearings in K and K′ by first passing the lower end of K between the two pins L′ L^2 of L and slipping pin L^2 into the bearing x in K, then taking K′ in the same manner and passing it through L, and then slipping pin L′ into its bearing x' in lower part of K′. Before doing this, however, the spring M must be placed on pin L′ before L′ is forced into position in K′. One of the rivets N is now put in position in the openings just above the couplings, and the other rivet, with its collar, is placed in the lower openings, the collar serving to keep bars K and K′ a proper distance apart. If these rivets are now firmly riveted into place, bars K and K′ form a single rigid piece, with the coupling-yoke L in the proper position.

The lower coupling-yoke D (see Fig. 11) is placed in position in the hand-lever sections C and C′ by slipping pin D^2 of yoke D into its (D^2) bearing in C, then slipping D′ into its bearing in the detached part C′, first placing, however, spring F on pin D′. Coupling-yoke D now being in position, the detached part C′ is bolted to the lever C and the two pieces form practically one solid piece, which constitutes the hand-lever.

The operation of the device will best be understood from Figs. 1 and 8, Fig. 1 being a side view of the device with the upper end of hand-lever shown at a position slightly above the middle of stroke and the windmill-rod attachment K K′ uncoupled from the pump-rod E, while Fig. 8 is a front view of the device with the upper end of hand-lever at the extreme limit of upward stroke, leaving its upper end at the highest point, with coupling-yoke D disconnected from the pump-rod and the upper end of the hand-lever back of pump-rod E and embracing the projection G, while windmill connection K K′ is in such position that upper coupling-yoke L is coupled to pump-rod E.

The operation of the device is as follows: As the hand-lever is moved from its position shown in Fig. 1, so that its lower end moves downward and upper end moves upward, the flanges C^2 of the hand-lever slide on the front surfaces of standards A′, and finally reach the point A^3. As soon as this point A^3 is passed the lower surface C of the hand-lever strikes the lower end of rocker-arm B, and as the motion of the hand-lever is continued its upper end is thrown back, sliding off from pump-rod E onto projection G, the beveled mortise E′ in E forcing pin D^2 of the yoke D out of its position in E′ and bringing the inner end of D^2 out to a position even with the surface of the rod E, so that pin D^2 can slide onto the surface of G. As the motion of the hand-lever is continued, as soon as the inner surface of C′ of the hand-lever passes off from rod E onto projection G the end H′ (see Fig. 5) of lever H is left free to move out from rod E when the end H^2 is pressed upon by the inner end of pin L^2 of yoke L, the yoke L being carried to a position opposite the upper hole E^2 in rod E by the motion of the wind-mill, carrying the connection K K′ with the coupling-yoke L. When the above operation takes place, pin L^2 of yoke L moves into hole E^2 of rod E and the mill-rod is now coupled to the pump-rod, as shown in Fig. 8, while the hand-lever is uncoupled from E. If now, the windmill-rod being in motion and coupled to the pump-rod, the hand-lever be moved from its position as shown in Fig. 8, so that its lower end is raised, the flanges C^2 of the hand-lever will slide on the surfaces of the standards A′ and the upper end of the hand-lever will move toward pump-rod E. As this motion is continued, an inclined inner surface on the part C′ will move from the surface of G to the surface of E and the end H′ of lever H will be forced into the position shown in Fig. 5, causing the end H^2 to take the position shown in Fig. 5 and forc-

ing pin L^2 of yoke L out of hole E^2, thus uncoupling the mill-rod from the pump-rod. If the motion of the hand-lever is continued, its upper end C C′ will embrace the rod E and then be moved downward on this rod, being held in place by the surfaces of standards A′ and the flanges C^2 until a position is reached where pin D^2 of yoke D registers with notch E′ of rod E, when pin D^2 will be forced into said hole E′ by the spring F.

It will be seen from the above description that the hand-lever is uncoupled from the pump-rod before the mill-rod can be coupled to the pump-rod, and vice versa, and as a consequence in these operations the pump-rod is at certain stages in the operation of the device left free to drop, tending to do so on account of its weight and that of the water supported by it. The pump-rod is, however, prevented from dropping too far by the buffer I and the spring J.

It follows from the above description that it is impossible for both upper and lower couplings to be in connection with the pump-rod at the same time, obviating accidents to the device or to the person operating it.

To insure the proper operation of the upper coupling, the bar connection K K′ is so attached to the windmill-rod that the position of the upper coupling at the highest point of stroke of windmill-rod registers with the upper hole in the pump-rod when the pump-rod is at the highest point of stroke, so when the pump-rod is released by lower coupling, it (the pump-rod) being then at the highest point of stroke, the upper hole in this rod either registers with the upper coupling or is above the upper coupling, (in case the mill-rod is not at highest point of stroke,) in which case either the dropping of the pump-rod or the upward motion of the mill-rod, or both these motions, cause the upper coupling to register with the upper hole in pump-rod.

This self-coupling windmill-pump is of a type conforming so nearly to the ordinary windmill-pump in design that it can be manufactured at a cost but very little above that of the ordinary type and is so constructed as to be very durable and convenient.

In the pump-coupling above described there is embodied a feature which has been incorporated and claimed in another copending application filed the same date and serially numbered 164,716. This feature consists of the combination, with the piston-rod and the hand-lever having a detachable connection with the piston-rod, of an upright guide for the upper end of said hand-lever and also for the piston-rod, said guide having a laterally-formed seat to receive the upper end of the hand-lever to allow it to fall back from and be disconnected from the piston-rod. This feature having been claimed in the other copending application is not claimed by me in the present case.

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

1. A windmill-pump coupling, comprising an upper yoke-coupling arranged to slide horizontally, a lower yoke-coupling arranged to slide horizontally, a vertical pump-rod having a lever embedded within the same, a hand-lever, and a windmill-rod connection, the embedded lever of the pump-rod being arranged to be operated on at its opposite ends to alternately couple and uncouple the pump-rod and the windmill-rod, and also the pump-rod and hand-lever as described.

2. In a windmill-pump coupling, the combination with the pump-rod; of a yoke-shaped coupling having inwardly-projecting pins or lugs and a spring, a longitudinally-divided two-part bar for connection with the windmill-rod, and means for connecting the two parts together, the said yoke-shaped coupling inclosing both the pump-rod and the lower ends of the longitudinally-divided windmill-rod connection substantially as shown and described and for the purpose set forth.

3. In a windmill-pump coupling, the combination with the pump-rod; of a yoke-shaped coupling having inwardly-projecting pins or lugs and a spring, a hand-lever having its upper end made in two longitudinal sections and means for connecting them together, the said yoke-shaped coupling inclosing both the pump-rod and the two-part end of the hand-lever substantially as shown and described and for the purpose set forth.

4. In a windmill-pump coupling, the combination of a pump-rod having a longitudinal lever embedded within the same and a beveled-face notch below it, a hand-lever recessed to receive the pump-rod, a horizontally-sliding and spring-seated yoke embracing both the end of the hand-lever and pump-rod and formed with inwardly-projecting pins, a windmill-rod connection, a horizontally-sliding and spring-seated yoke embracing both the windmill-rod connection and the pump-rod and having inwardly-pointing pins or lugs for engaging the pump-rod, and a stationary guide for the hand-lever mounted on the pump-head and having a downwardly-projecting yoke-retainer for holding the yoke after being disengaged from the pump-rod substantially as described.

CARL WASHBURN DECKER.

Witnesses:
V. A. LINDAMAN,
CARL F. BUNZE.