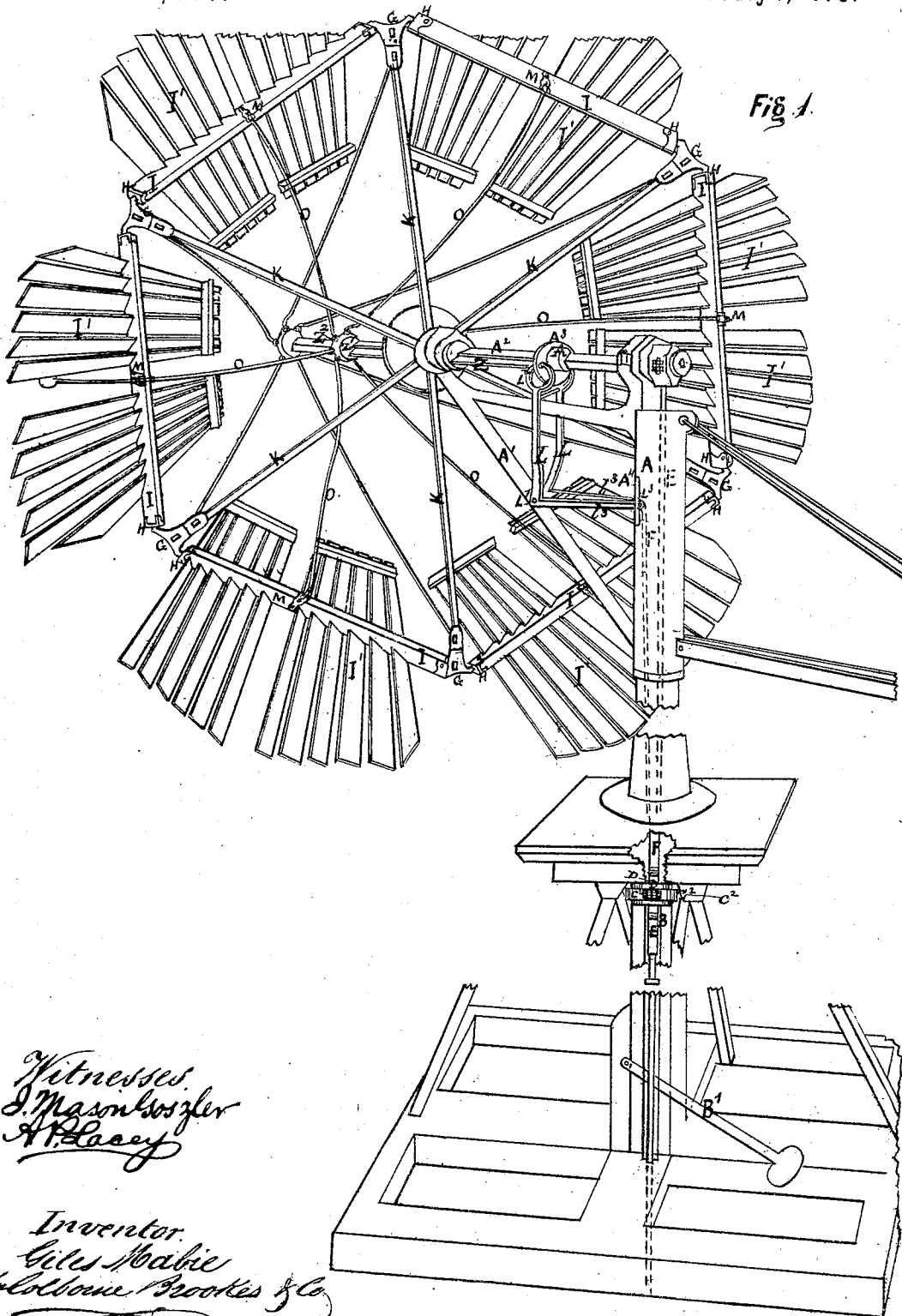


G. MABIE.
Wind-Mills.

No. 140,514.

Patented July 1, 1873.



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Fig. 7.

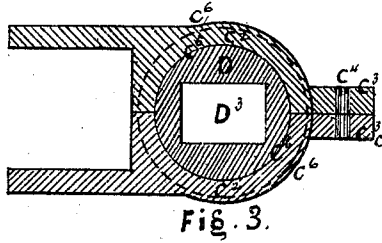
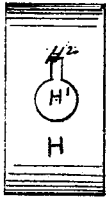


Fig. 3.

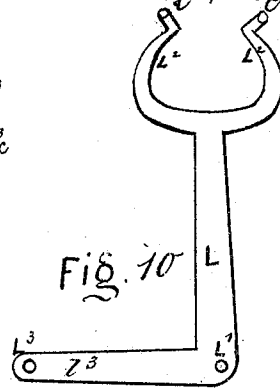


Fig. 10

Fig. 9.

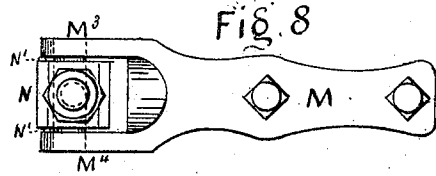
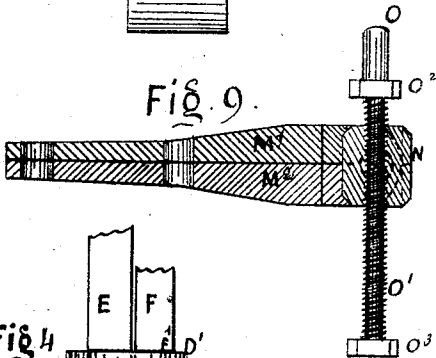


Fig. 8

Fig. 4

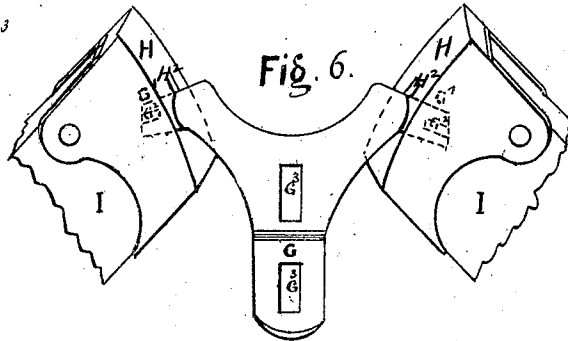
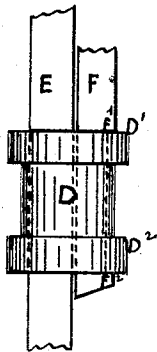


Fig. 6.

Fig. 2.

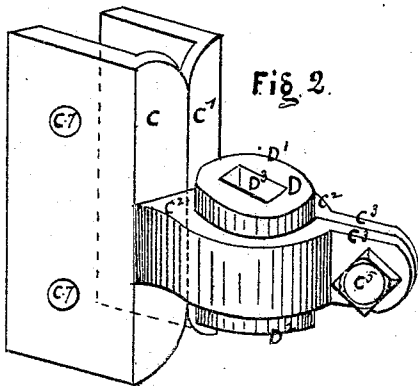
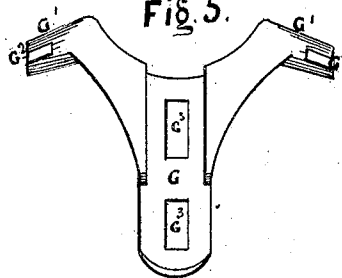


Fig. 5.



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UNITED STATES PATENT OFFICE.

GILES MABIE, OF DIXON, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **140,514**, dated July 1, 1873; application filed April 8, 1873.

To all whom it may concern:

Be it known that I, GILES MABIE, of Dixon, in the county of Lee and State of Illinois, have invented certain Improvements in Windmills, of which the following is a specification:

My invention consists, first, in the construction of a device for holding the shifting-rod and pitman or pumping-rod of a windmill. Said device is formed of three castings or forgings, as shown in Figs. 2 and 3. Each half of the principal casting or forging has a semi-circular projection, said projection having ears formed thereon, said ears being provided with a suitable bolt-hole; and when said halves of the principal casting or forging are bolted together, the projections form a circular aperture for the reception of the sleeve, which, in combination with the castings or forgings mentioned above, forms a swivel. Said sleeve has shoulders formed on its upper and under side, and fits into the circular aperture formed by the projections on the two halves of the principal castings or forgings, the upper shoulder resting on the upper side of the circular projection, and the lower shoulder against the under side of said projection, thus being held securely in position and turning freely in the apertures of the device, and forming a swivel. This sleeve has an oblong hole cut through its center to receive the pitman or pumping rod and the shifting-rod. Said shifting-rod has shoulders so formed thereon that the upper shoulder rests on the upper side of the sleeve, and the lower shoulder against the under side of said sleeve, and thus securely holding the pumping rod or pitman in position without the use of bolts or pins.

My invention consists, secondly, in the peculiar construction of the forked casting or forging employed to connect the fan-shafts of a windmill, such casting or forging being grooved on its under side, and is provided with slot bolt-holes for the reception of the radial arms. This forked casting or forging has on each side of the fork a journal, and on this journal a knob or projection is formed, (see Figs. 5 and 6,) which knob or projection fits into a slot in the hole of a casting or forging affixed to the ends of each fan-shaft, more fully explained hereafter. By means of these knobs or projections and the slotted holes the

forked casting may be attached to the fan-shafts without the use of bolts or pins, and the journals have free play in the holes of the castings or forgings attached to the ends of the fan-shafts, and by means of the slot bolt-holes in these forked castings or forgings, by means of which the radial arms are bolted or fastened to said forked castings, such castings can be let in or out, thereby tightening or loosening the fan-shafts, and thus holding them securely in position, and enabling the operator to give more or less rigidity to the "wheel" formed by the fan-shafts, and also effectually preventing all noise in the revolution of said wheel. In castings or forgings affixed to each end of the fan-shafts, before referred to, has a circular hole drilled or formed in its front face, said hole having a slot to receive the knob or projection on the journals of the forked casting or forging, above described, and serving to connect said fan-shafts to said forked casting or forging and the radial arms, so that when the outer end of the fans are turned in, the slot in the hole is in position to receive the knob or projection on the journals of the forked casting or forging, and when the fans are turned back securely locks said forked casting, and thus bolts or pins are entirely dispensed with, and the fastening or locking is made more easy and more rapid.

My invention relates, thirdly, to the construction of the forked levers and to the manner in which they hold the flange on the horizontal shaft, and also the manner in which they are connected to the shifting-rod by means of an elbow entering through a mortise in the main hollow shaft, and thus protecting such connection from the action of storm and ice.

My invention relates, further, to the construction of the castings or forgings called ears affixed to and projecting from the center of the fan-shafts, such ears being made in two parts, and their upper ends form, when the two parts are bolted together, a fork, such fork being provided with holes for the reception of the journals formed on each side of a block, enabling such block to turn freely on its axis. This block has a hole perforated through its center for the reception of the ends of the connecting or brace-rods. The ends of these con-

necting-rods are provided with screw-threads and nuts, one above and the other below the block, by means of which nuts the fan-shafts can be placed in any desired position and the fans at any desired angle; but that my invention may be fully understood, I will proceed to describe the same by aid of the accompanying drawings.

Figure 1 is a perspective view of a wind-mill, showing my improvements. Figs. 2 and 3 represent a perspective and sectional plan view of the device for holding the shifting-rod and pitman or pumping-rod. Fig. 4 is a front elevation of the sleeve, holding the pitman or pumping-rod and the notched shifting-rod. Fig. 5 is an under-side view of my improved forked casting or forging employed to connect the fan-shafts. Fig. 6 is a plan view of my improved forked casting or forging fitted into the slotted holes of the casting or forging attached to the ends of the fan-shafts. Fig. 7 is a front view of the casting or forging attached to the ends of the fan-shafts. Figs. 8 and 9 are plan and sectional views of the ears attached to and projecting from the center of the fan-shafts and holding the block, by means of which and the connecting-rods the position of the fans can be regulated. Fig. 10 is a side view of the forked lever holding the flange on horizontal shaft and connecting with the shifting-rod.

A, Fig. 1, is the main hollow shaft, containing the pitman or pumping-rod E and the shifting-rod F. B is the rod, to which the swivel is attached. To the end of said rod B the lever B¹ is affixed, by means of which the shifting-rod F is operated. C C¹, Fig. 2, are two castings or forgings, having semicircular projections C² C² formed thereon, such projections being provided with ears C³ C³, such ears having a suitable bolt-hole, C⁴, Fig. 3, drilled through or otherwise formed therein for the passage of a bolt, C⁵, Fig. 2, by means of which they are fastened together, and forming, when so fastened or bolted together, a circular aperture, C⁶, Fig. 3, to receive the sleeve D, Figs. 2, 3, and 4. This sleeve has shoulders D¹ D² formed on its upper and under side, which rest on the upper and under side of the circular aperture C⁶ formed by the two castings or forgings C¹ C². The sleeve D has an oblong hole, D³, cut through its center to receive the pitman or pumping-rod E and the shifting-rod F. This shifting-rod has shoulders F¹ F² formed in such a manner that the shoulder F¹ rests on the upper side of the sleeve D, and the shoulder F² against the under side of said sleeve D, thus securely holding in position the pitman or pumping-rod E. The castings C C¹ are attached to the rod B by means of pins or bolts through suitable holes, as shown at C⁷, Fig. 2. The sleeve D, holding the pitman or pumping-rod E and the shifting-rod F when inserted into the circular aperture C⁶, as shown by Figs 2 and 3, formed by the projections C² C², and then bolted together by means of the bolt C⁵

through the ears C³, forms what is called the swivel of a windmill, said sleeve D having free play in the circular aperture C⁶. G, Figs. 5 and 6, is a forked casting grooved on its under side, and provided with slot bolt-holes, by means of which the radial arms K are attached to such castings, as fully set forth by the specification of my Patent No. 124,499, dated March 12, 1872. Such castings or forgings have on each side of the fork journals G¹ formed thereon, such journals G¹ being provided with knobs or projections G² in such manner as to fit and pass through the slotted holes H¹, Figs. 6 and 7, formed in the face of the casting or forging H, such casting H being attached to the ends of the fan-shafts I, Figs. 1 and 6. By means of such journals G¹ and the knobs or projections G² formed thereon the forked casting G may be fastened to the casting or forging H at the ends of the fan-shafts I without the use of bolts or pins, and the operation is as follows: When the fans I' on the fan-shafts I, Figs. 1 and 6, are turned in the slots H² of the slotted holes H¹ are in position to receive the knobs or projections G² on the journals G¹ on each side of the forked casting G, and may then be inserted, and when so inserted the fans I' are turned back, turning the fan-shafts I and the castings H attached to each of their ends, and placing the slot-hole H¹ in a different position from the knob or projection G², thus securely locking or fastening the fan-shafts I and forked castings G together, dispensing with the usual pins or bolts, enabling the operator to connect or disconnect such fan-shafts more easily and more rapidly; and by means of the slot bolt-holes G³ formed in the castings G the radial arms K are fastened to said castings G, and may be let in or out, as required, causing the castings G, when let in, to press against the faces of the castings or forgings H attached to the ends of the fan-shafts I, thus tightening the wheel formed by such fan-shafts I, thus giving great strength and rigidity to such wheel, and effectually preventing all noise. L L, Figs. 1 and 10, are levers affixed with capability of turning on axes L¹ fixed in the main brace A¹ formed on or affixed to the main hollow shaft A. These levers L, at one end, are provided with forks L² L², which receive and hold the flange A³ formed on or affixed to the boss A* in such manner that the said flange A³ may revolve therein. This boss A* is formed with capability of sliding on the horizontal shaft A², and, by means of the connecting-rods Z, is connected with the boss Z¹, in which the bearings Z² for the brace or connecting rods O are formed. One end, L³, of each of the levers L passes through a mortise, A⁴, in the hollow shaft A, and, at L³, is connected to the shifting-rod F in order that such shifting-rod F, when desired, may operate the levers L, and, by means of their forked ends L², the flange A³ and boss A*, thereby giving motion, by means of the connecting-rods Z, to the boss Z¹, in which are formed the bearings for the brace or connecting rods O, and, in so

doing, altering the position of the fan-shafts I and fans I' from time to time, as may be required.

By this arrangement it will be readily seen that the levers L and the shifting-rod F are greatly protected from disarrangement or obstruction in working by reason of storms or ice.

The forks L² are provided with projections l in order to give such forks a better and more even hold on the flange A³, and to prevent the said forks from wearing grooves in the flange A³.

M, Figs. 8 and 9, is a casting or forging affixed to and projecting from the center of the fan-shafts I formed in two parts, M¹ M², and having projections M³ M⁴ forming a fork, each half having formed therein semicircular apertures, which, when the halves are placed in position, form circular bearings for the reception of journals N¹ of the block N. Said block N, turning freely on its axis, is perforated through its center for the passage of the threaded ends O¹ of the brace or connecting rods O, said threaded ends O¹ being provided with a pair of nuts, O² O³, one above, and the other below, the block, by means of which the relative position of the block N upon the brace or connecting rod O may be adjusted, thereby regulating the position or angle of the fans I'.

Having thus described my invention, I would have it understood that what I claim, and desire to secure by Letters Patent, is—

1. The castings C C¹, having semicircular projections C², ears C³, bolt-holes C⁴, and bolt combination with the sleeve D, having shoulders D¹ D², hole D³, forming a device for g the shifting-rod and pitman or pump-

ing rod of a windmill, substantially as described and set forth.

2. The sleeve D, provided with shoulders D¹ D², and a hole, D³, in combination with the shifting-rod F having shoulders F¹ F² formed thereon, and locking or holding in position the pitman or pumping rod E, substantially as described and set forth.

3. The forked castings G, formed with journals G¹, knobs or projections G², and bolt-holes G³, in combination with the fan-shafts I, provided with castings H, substantially as shown and described.

4. The casting M, formed in two parts M¹ M², projections M³ M⁴, forming a fork, and provided with bearings, in combination with the block N, journals N¹, and hole O¹ for the reception of the threaded ends O² of the brace or connecting-rods O, substantially as and for the purposes described and set forth.

5. In combination with the fan-shafts and connecting-rods and the bosses Z' A*, connected as described, the levers L, provided at one end with forks L² and projections l, the opposite ends l' of such levers L passing through a mortise, A⁴, in the hollow shaft A, and being connected, within such shaft A, with the upper end of the shifting-rod F, substantially as and for the purposes specified.

6. The combination of the boss A*, flange A³, levers L, forks L², main brace A¹, mortise A⁴, hollow shaft A, shifting-rod F, pitman E, sleeve D, castings C C¹, and projections C², substantially as shown and described.

GILES MABIE.

Witnesses:

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WEBSTER W. WYNN.