2 Sheets--Sheet 1.

C. T. EDWARDS & G. H. HUNTOON.

Wind-Wheel.

No. 163,058. Patented May 11, 1875.

Fig. 1.

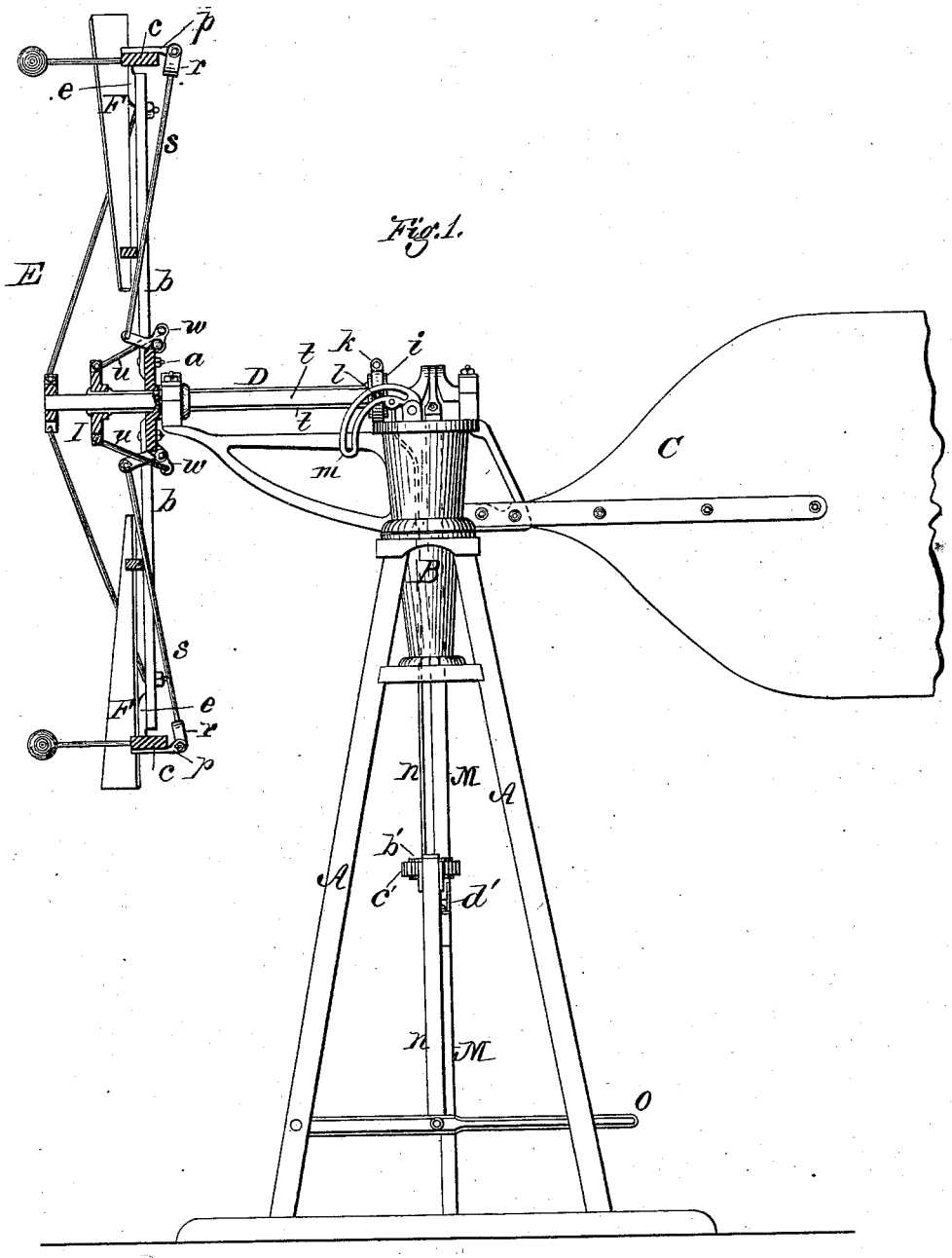

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Fig. 2.

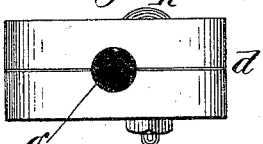


Fig. 3.

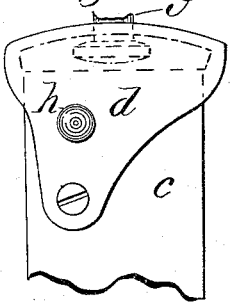


Fig. 4.

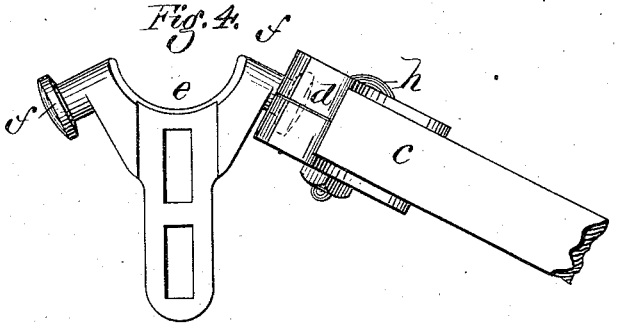


Fig. 5.

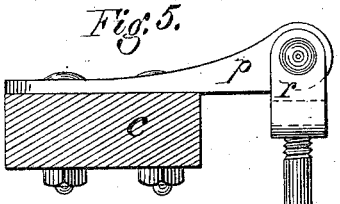


Fig. 6.

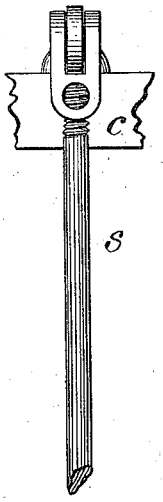


Fig. 7.

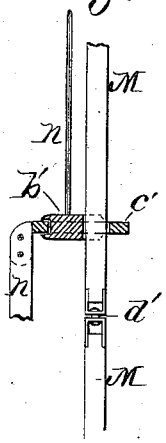
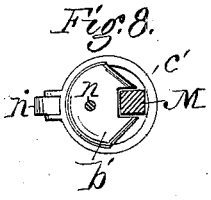


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES T. EDWARDS AND GEORGE H. HUNTOON, OF MOLINE, ILLINOIS; SAID HUNTOON ASSIGNOR TO SAID EDWARDS.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **163,058**, dated May 11, 1875; application filed February 15, 1875

To all whom it may concern:

Be it known that we, CHARLES T. EDWARDS and GEORGE H. HUNTOON, of Moline, in the county of Rock Island and State of Illinois, have invented certain Improvements in Wind-Wheels, of which the following is a specification:

Our improvements are intended more especially for application to what are commonly denominated "rosette wheels," in which the fans or sails tip back endwise; but certain of the features are also applicable to other classes of wheels.

The improvements consist in a fan-bar cap and a bracket of novel form and construction, to support the fans or sails; in the use of one or more eccentrics to operate the sliding collar through which the fans are controlled; in a peculiar manner of connecting the controlling rods or bars to the fans; in a peculiar arrangement of rods and levers, by which we are enabled to control the movement of the fans without slitting their inner ends to admit the rods, as usual.

Figure 1 represents a side elevation of our wheel, with the wheel proper in section; Figs. 2, 3, and 4, views showing the fan-bar cap and the bracket by which the cap is supported; Figs. 5 and 6, views showing the connection of the controlling-rods to the fan; Figs. 7 and 8, views showing the manner in which the pump and shifting rods are arranged.

A represents a frame or support, on the upper end of which there is mounted a rotating frame or turn-table, B, provided with the tail-vane C, and with bearings which support the main shaft D of the wheel E, the construction and arrangement of these parts being substantially the same as in the wheels now in common use. The wheel consists, as usual, of a central hub, *a*, provided with a series of rigid radial arms, *b*, to and between the ends of which the fans or sails F are pivoted. Each fan or sail is suspended between two of the radial arms, and provided with a cross-bar, *c*, the ends of which are provided with metal caps or sockets *d*, which fit upon and are supported by journals formed on brackets or end plates *e*, which latter are bolted to the ends of the radial arms *b*, as shown. As shown in Fig. 4, each bracket is provided, on opposite sides, with two journals, *f*, to support the two adjacent fans, and each journal is formed with an enlarged head or flange on its outer end. The fan-bar caps or sockets, which are made of such form as to completely cover and inclose the ends of the bars *c*, are each divided through the middle into two halves, and provided in the outer end, between the edges of the two halves with a hole, *g*, to receive the journal, *f*, of the bracket.

In applying the socket, the end of the fan-bar is brought in the proper relation to the journal, and then the two halves of the socket applied to opposite sides of the bar and journal, and clasped together around them, and then secured by passing a bolt, *h*, through them and the bar, as shown, or by inserting screws through them into the wood, or in any other suitable manner. The socket, clasping around the journal inside of the head or flange, and around the end of the fan-bar, to which it is firmly secured, forms a strong and solid support for the fan, prevents the arms of the wheel from separating and releasing the fans, and prevents the ends of the fan-bars from splitting. It is obvious that instead of dividing the cap *d* in the manner shown, it may be divided through the hole *g*, in any other direction, and that the two parts may be secured together in any suitable manner. It is also obvious that the end plates or brackets may be changed in form, and that the cap *d* may be used with journals or supports of different forms.

As usual in wheels of this class, the fans are hung in such manner as to be tipped back when the speed of the wheel increases, and connected through a series of controlling-rods with a sliding collar, *i*, which is mounted on the main shaft, and connected in turn with a weight, which tends to resist the tipping motion of the fans. In order to give the operator control of the fans, we encircle the collar *i* by a band, *k*, having on opposite sides two studs, *l*, and mount on top of the turn-table a pair of slotted eccentrics, *m*, which engage with the studs *l*, and which are connected, by a forked rod, *n*, with a hand-

lever, *o*, pivoted to the frame or standard A near the earth, so that by moving the lever the rod is caused to operate the eccentrics, which in turn slide the collar *i* on the shaft and thereby tip the fans forward or back, as required. It is obvious that a single eccentric at one side of the collar may be used in place of the pair; but by employing the two on opposite sides of the collar side-strain is prevented, and the action of the parts rendered smooth and easy. The arrangement of parts for operating the eccentrics may be varied as desired; but the rod and lever are considered the best and most simple devices for the purpose. The band which encircles the collar may be made in one piece, or made in two halves, which will be screwed or bolted together. The collar may be provided with peripheral flanges, to retain the band in place thereon; or either part may be grooved to receive a flange on the other. Figs. 5 and 6 show the joint forming the connection between the controlling-rods and the fans. The device consists of a plate, *p*, secured to the cross-bar *c* of the fan, and extending out on one side of the same, and a block, *r*, pivoted over or astride the end of the plate, and provided with a hole into which the end of the controlling-rod *s* is screwed. By simply turning the rod it can be increased or diminished in length, as required, and the fan thus adjusted with great nicety. The joint or connection is an exceedingly cheap and simple one, is not liable to be deranged by ice or snow, and admits of all the sails being adjusted and kept in line with each other with little trouble. The manner in which the controlling-rods are connected with the sliding collar *i* is clearly shown in Fig. 1, in which it will be seen the collar is connected by two rods or bars, *t*, with a second sliding collar, I, mounted on the shaft in front of the wheel and connected by the rod *s* with the cross-bars of the fans. By arranging the parts in the manner shown, and bringing the controlling-rods behind the fans, we overcome the necessity which exists in the ordinary wheels of slitting, and thereby weakening, the inner ends of the fans in order to let them tip past the front controlling-rods. Our arrangement permits the use of fans or sails strengthened by a solid bar across their inner ends, and thus enables us to produce a stronger and more durable wheel than under the ordinary construction. Our arrangement of the shifting and pump rods is clearly represented in Figs. 1, 7, and 8, in which it will be seen that the shifting-rod *n* is divided at its middle, and its upper part provided with a circular flanged foot-piece, *b'*, which turns loosely within a horizontal ring, *c'*, attached to the upper end of the lower part or section of the rod. The pump-rod M, having its upper end connected by a pitman to the driving-crank, as usual, is passed loosely through the foot-piece of plate *b'*, and provided just below the same with a swivel-joint, *d'*.

By the above-described construction and arrangement of the parts, the upper ends of the two rods are permitted to rotate with the frame or turn-table without turning their lower ends, and at the same time they are guided and held in position.

Having thus described our invention, what we claim is—

1. The cap or socket *d*, inclosing the end of the fan-bar, made in two parts, having their inner edges notched to leave an opening between them for the admission of the supporting journal or pivot.

2. In combination with the flanged or headed journals *f*, the caps or sockets *d*, constructed and arranged substantially as shown.

3. In combination with the sliding collar *i* and band *k*, the eccentric *m*, arranged to hold and move the collar, substantially as shown.

4. In combination with the fan-bar *c*, the flat plate *p*, secured thereto, the block *r*, pivoted to the end of said plate, and the controlling-rod *s*, having its end threaded and screwed directly into the block *r*, as shown, the arrangement forming an adjustable hinge-connection of the rod to the fan, consisting of two pieces only, without nuts or extra parts.

5. The sliding collars I and *i*, mounted on the main shaft, and connected by rods *t*, in combination with the pivoted fans F and the elbow-levers *w*, with the connecting-rods *s* and *u*, all constructed and arranged to operate substantially as described.

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