

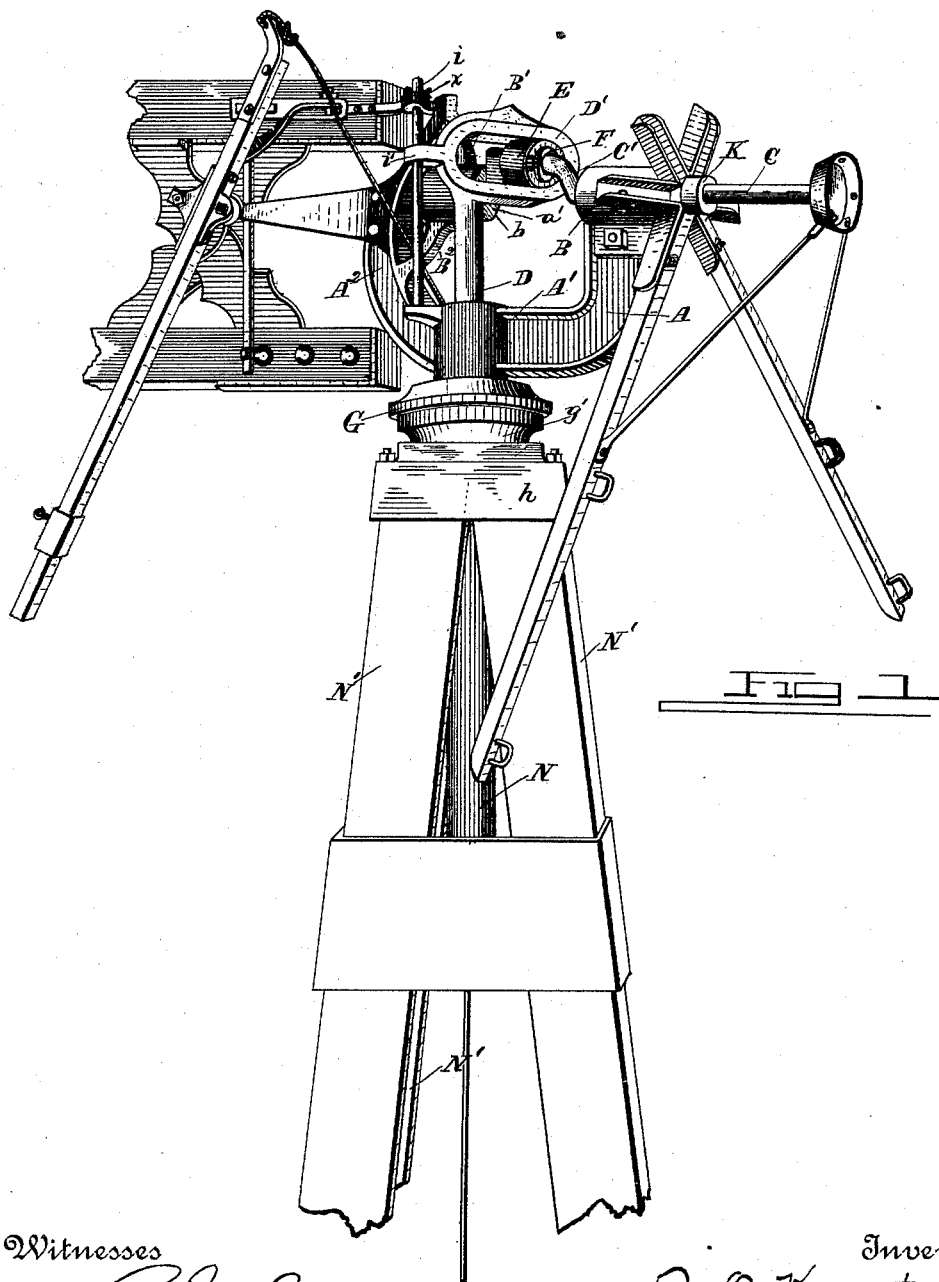
(No Model.)

2 Sheets—Sheet 1.

A. O. KOONTZ.
WINDMILL.

No. 489,080.

Patented Jan. 3, 1893.



Witnesses

C. W. Seville.
Arthur E. Sowell

Inventor

A. O. Koontz.

By his

Attorney *W. Alexander*

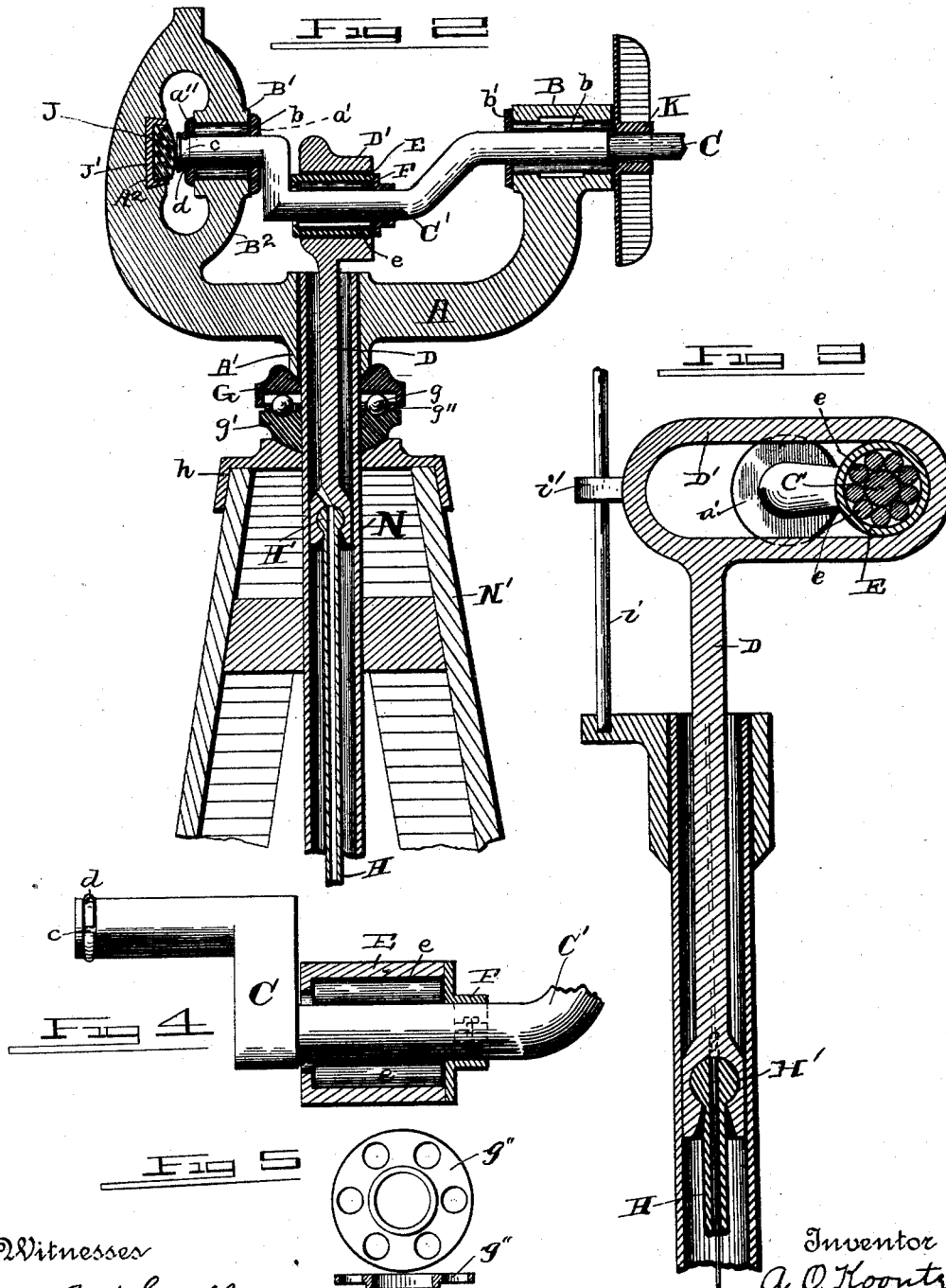
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C. W. Sewell.
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By his Attorney W. A. Alexander

UNITED STATES PATENT OFFICE.

AUGUSTUS O. KOONTZ, OF SOUTH BEND, INDIANA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 489,080, dated January 3, 1893.

Application filed October 12, 1891. Serial No. 408,487. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS O. KOONTZ, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain
5 new and useful Improvements in Windmills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked
10 thereon, which form part of this specification, in which—

Figure 1 is a detail perspective view of my improved wind-mill—the wheel and vane being broken. Fig. 2 is a vertical sectional elevation of the upper portion of a wind-mill,
15 showing the operative parts, the wheel and vane being broken away. Fig. 3 is a detail transverse sectional view showing the connections of the pitman rod to the pump rod.
20 Figs. 4 and 5 are details of various parts of the device.

This invention is an improvement in wind-wheel-mills, and its objects are to improve the mounting of the operative mechanism on the
25 supporting scaffolding; to reduce friction between and wear of the moving parts so that it will not be necessary to so frequently lubricate the parts, and to relieve the journals of the main wheel shaft from lateral thrust;
30 to these ends the invention consists first in making all the bearings in the mill, roller or anti-friction bearings; second in transferring the thrust of the main shaft directly against the frame independent of its journals there-
35 on; and lastly in certain other novel details of construction and combinations of parts as will be hereinafter specifically stated and claimed.

Referring to the drawings by letters, A designates the metallic, approximately U-shaped frame in which are the journals of the main shaft. This frame is set with its legs upright, and has at bottom and center a sleeve A' beveled on its lowest edge and fitted on the upper
45 end of a tubular swivel shaft or post N which is fixed in a vertical position in the upper end of the supporting scaffolding N' of the mill.

h is the metallic cap piece fitted on the scaffolding and through which tube N passes,
50 and this cap piece is concaved around the tube on top as shown, and upon it rests a bearing plate g' convexed on its under sur-

face to fit in the concavity of cap h. Above plate g' is a top plate G having a depending peripheral flange, and between plates G and
55 g' is interposed a ring g'' which is perforated at regular intervals to accommodate bearing balls g, g, which are thus kept between plates G, g' and support the former on the latter. The ring g'' prevents the balls g crowding
60 each other, and the concave convex surfaces of cap h and plate g' insure an equal bearing upon all the balls g as plate g' can, and will shift its position on cap h until the pressure of the balls on its surface is equal. The
65 beveled end of sleeve A' fits in a correspondingly beveled recess in the top of plate G, and thus frame A is centered and supported on the scaffolding N and is free to revolve thereon. The main shaft C is cranked as shown and
70 has bearings in journal boxes B, B' the former of which is formed on the shorter arm of frame A, and the latter in a bracket B² springing from the longer leg of the frame.

b, b, are friction rollers confined in boxes
75 B, B' and supporting the shaft C therein. The rollers in box B are confined between the hub K of the wind-wheel on one side and a collar b', on the shaft C, at the other side. The rollers b in box B' are confined between
80 an inner collar a' on the shaft and an outer collar a'' slipped on the end of the shaft and confined in position by a split ring d which is sprung into a groove c on the end of the shaft as indicated clearly in Fig. 4. By this con-
85 struction I avoid the use of bolts or screws which would be liable to work loose and fall out. The crank C' of the shaft C lies between the boxes B, B' and vertically above the tube N, and works in a horizontal loop D' in the
90 upper end of a pitman D. A sleeve E is slipped on the crank within the loop and in the sleeve around the crank is slipped a number of anti-friction rollers e which are confined between a flange on one end of sleeve
95 E, and a split collar F fastened on the crank at the opposite end of the sleeve, see Figs. 3 and 6. By this means a double anti-friction bearing is made between the shaft and pitman, as the rollers can revolve in the sleeve
100 and the sleeve in the loop as it moves back and forth therein, in operation. In order to prevent the loop vibrating laterally it is provided with an off-set perforated ear i' through

which passes a fixed vertical guide rod *i* secured to off-set arms or lugs on the frame, see Figs. 1 and 3. The pitman D enters and reciprocates within tube N and its lower end is connected by a ball and socket joint H' to the upper end of a pumprod H; the joint and rod being hollow for the passage of the governing or unshifting cord as usual. By this construction it will be observed that the frame can revolve without twisting or turning the rod H.

J designates a vitreous or non-frictional buffer block having a convex outer face and seated in a recess A² in the long arm of frame A directly opposite the inner end of shaft C, being confined in the recess by a suitable packing J' which may be of resilient or cushioning material to relieve the shock of impact of the shaft C against the buffer block. The inner end of shaft C is smoothly dressed and rests against, or so close to the face of block J, that any inward longitudinal movement of the shaft is prevented and the thrust thereof caused by the impact of the wind against the face of wheel, is transferred through block J to the frame direct, and the journals are thus relieved from strain, and friction between the collars and the ends of the journal boxes is prevented.

x, x, designate pins or lugs on the long arm of the frame upon which the vane is supported. The wheel may be of any suitable construction, and the vane be mounted and controlled by any desired means, neither vane or wheel forming part of the invention.

Having described my invention what I claim as new and desire to secure by Letters Patent thereon is;

1. The combination of the scaffolding, the metallic U shaped frame substantially as described, the vane thereon, the crank shaft journaled in roller bearings on said frame, the wind wheel thereon, the buffer, having a

convex outer face and seated in a recess in the frame opposite the rear end of the shaft, and the pitman having an anti-friction connection with the crank-shaft, substantially as described.

2. The combination in a wind mill of the main frame, the wheel shaft journaled thereon, the wind wheel on said shaft, the vane, and an impact or buffer secured in a recess in the frame opposite the inner end of the shaft and having a convex outer face, substantially as and for the purpose specified.

3. The combination of the U-shaped frame having a bracket attached to one leg, the wheel-carrying-shaft journaled in said frame substantially as described, the wind wheel, and the buffer seated in the arm of the frame opposite the bracket, all constructed and arranged to operate substantially as described.

4. In a wind mill the combination of the frame having a bracket attached to one leg, the crank shaft C, the wind wheel and vane, the anti-friction roller bearings for said shaft, and the anti-friction roller connections between the crank shaft and pitman; and the buffer block, all constructed and arranged to operate substantially as specified.

5. In a wind mill the combination of the frame A having bracket B² and bearings B, B' and the crank shaft C, and the wind wheel with the anti-friction rollers *b, b*, in said bearings, the confining plates *b' a' a''* and split ring *d*, and the anti-friction roller connections between the crank shaft and pitman, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

AUGUSTUS O. KOONTZ.

Witnesses:

JAMES DUSHANE,
WILL G. CRABILL.