

(No Model.)

2 Sheets—Sheet 1.

C. H. IRWIN.
WINDMILL.

No. 547,954.

Patented Oct. 15, 1895.

Fig. 3.

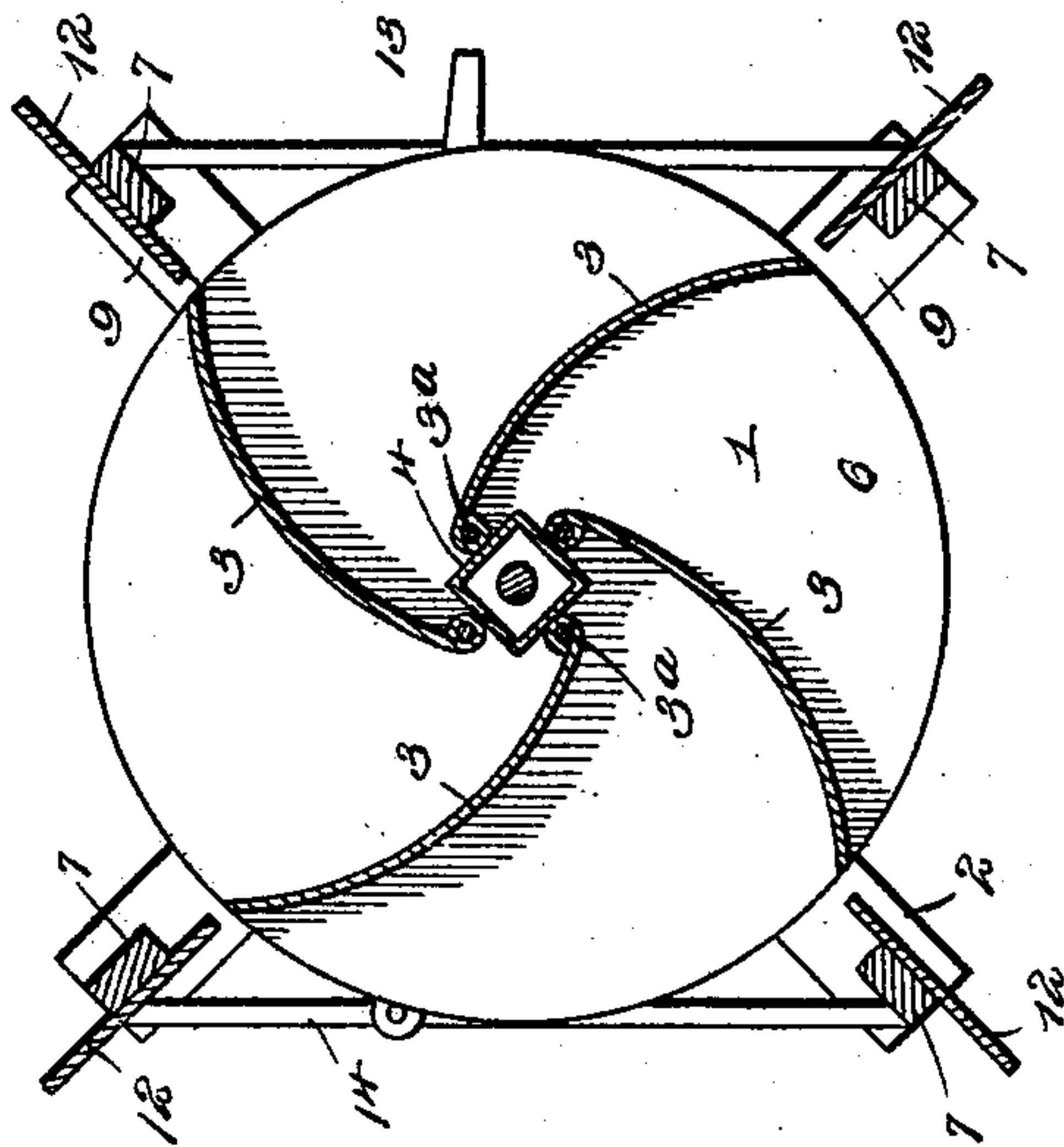


Fig. 5.

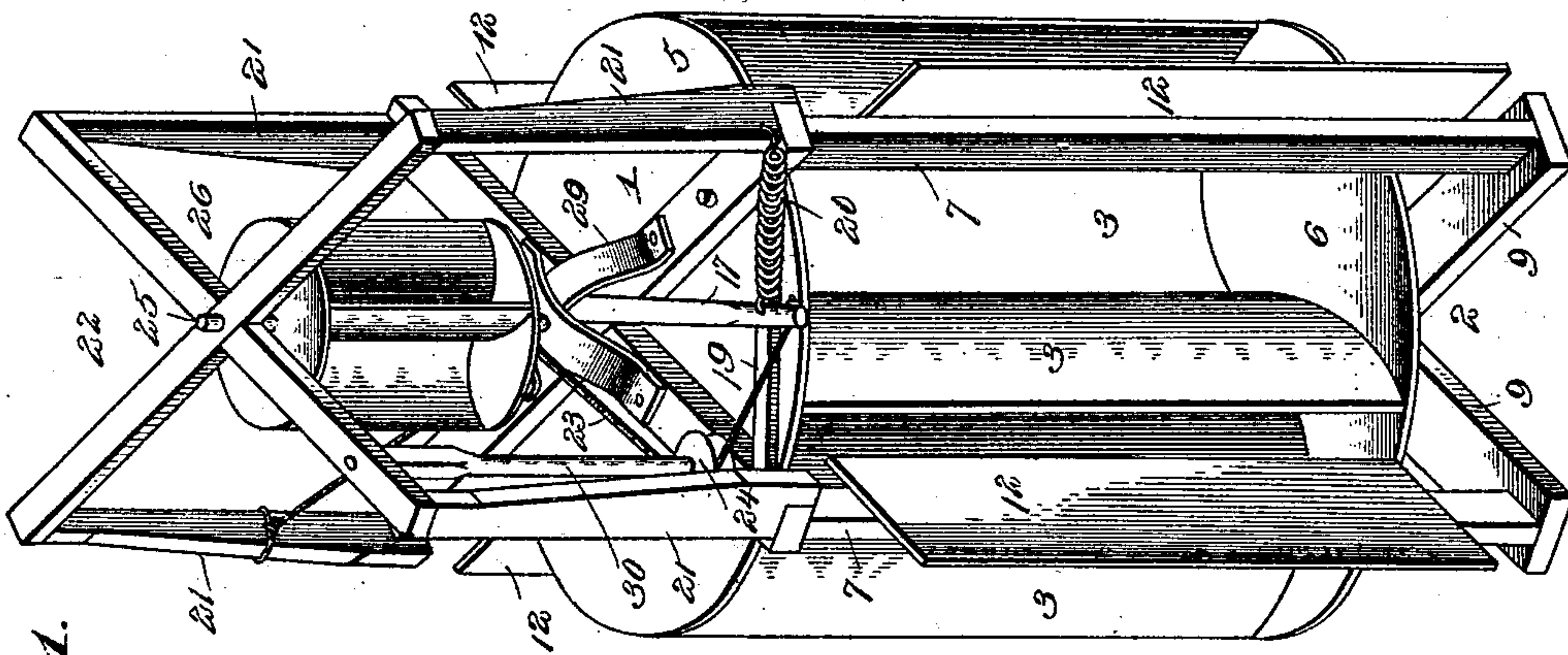
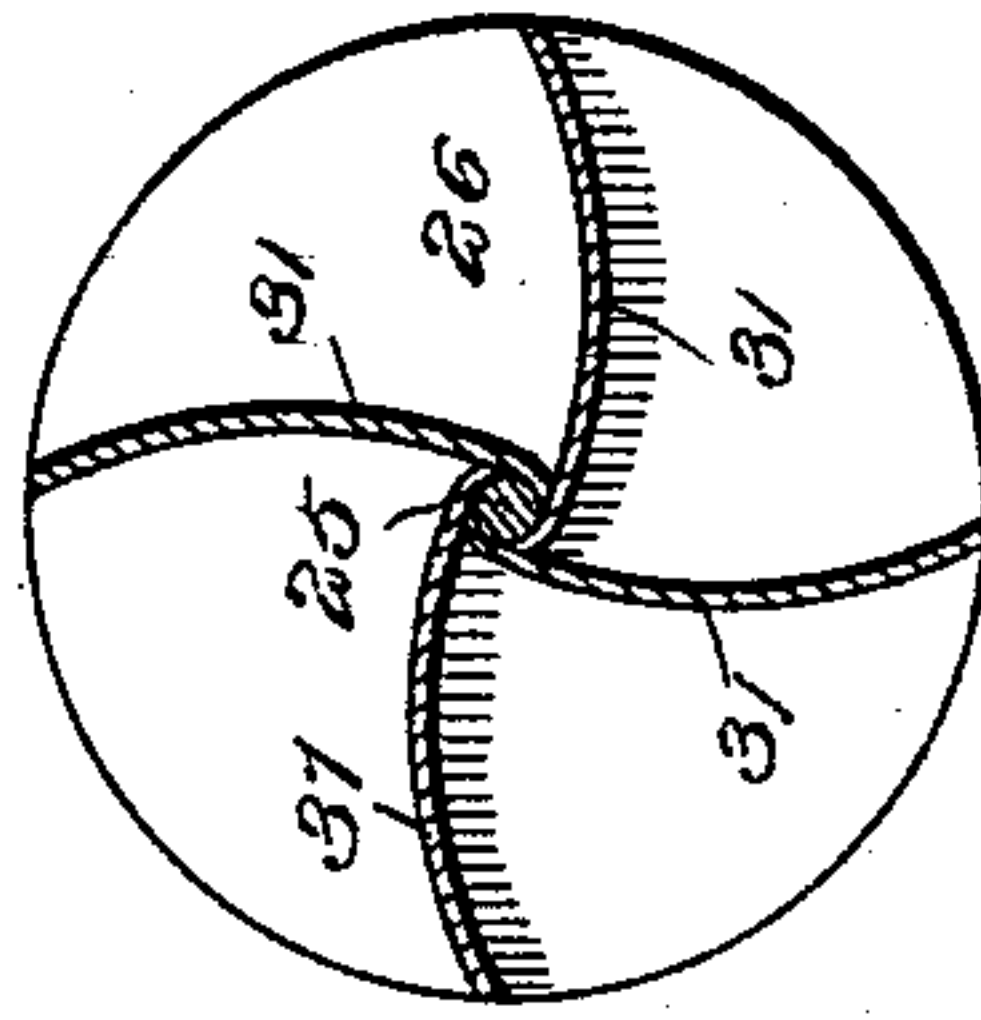


Fig. 1.

Inventor

Witnesses

John C. Shaw.
J. F. Wiley

By *W. C. S.* Attorneys,

Cyrus H. Irwin,

C. H. Irwin & Co.

(No Model.)

2 Sheets—Sheet 2.

C. H. IRWIN.
WINDMILL.

No. 547,954.

Patented Oct. 15, 1895.

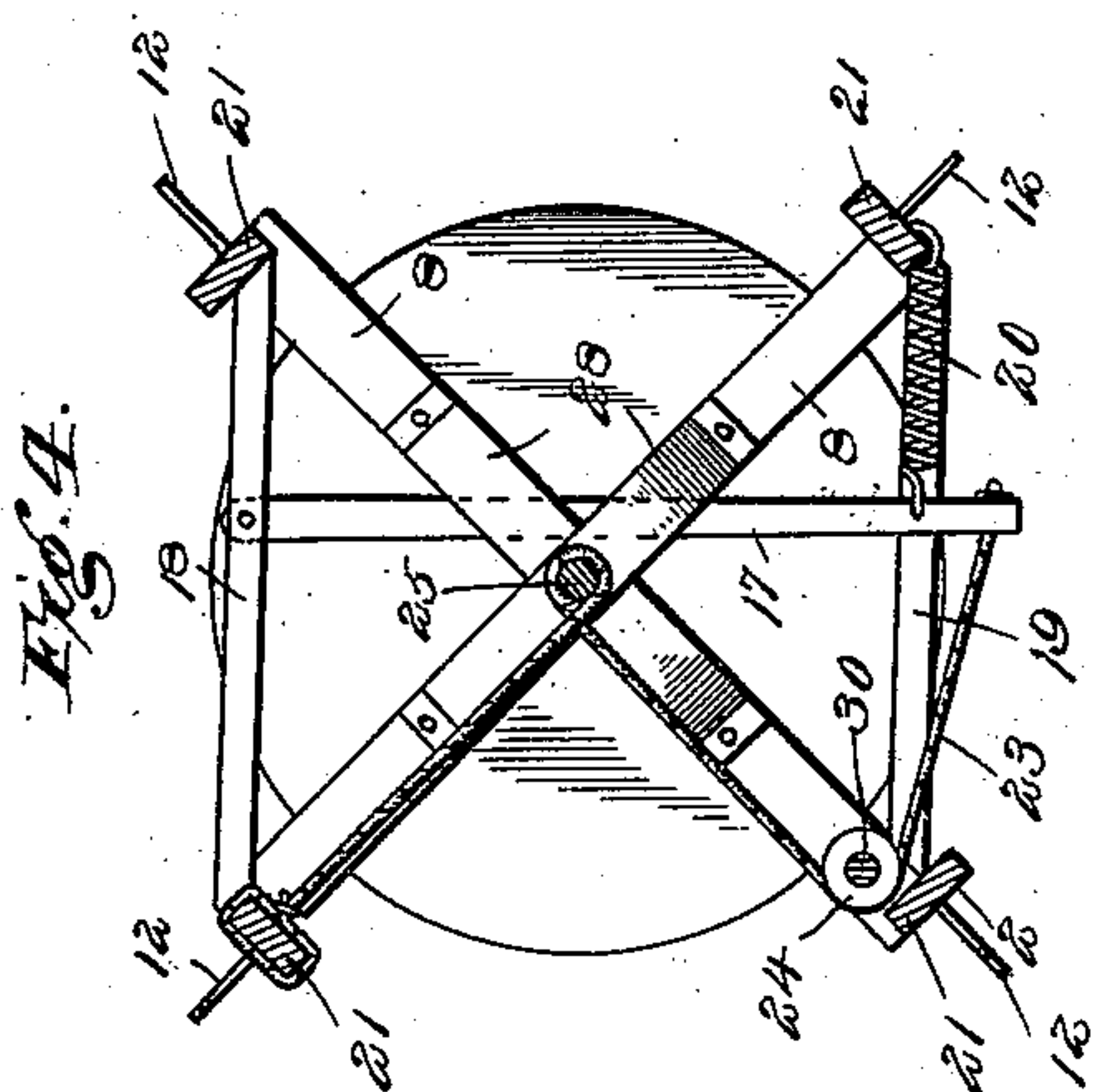


Fig. 6.

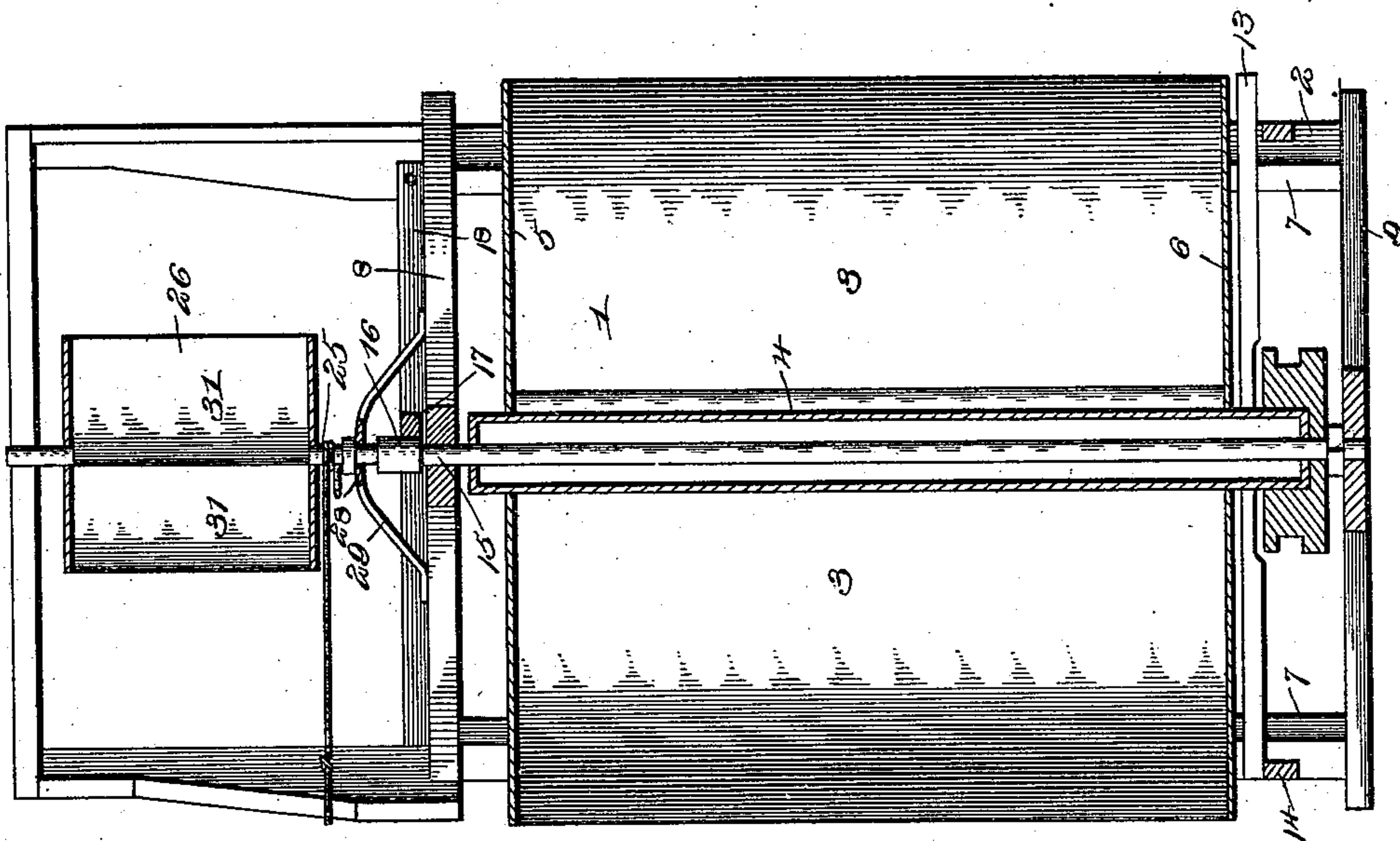
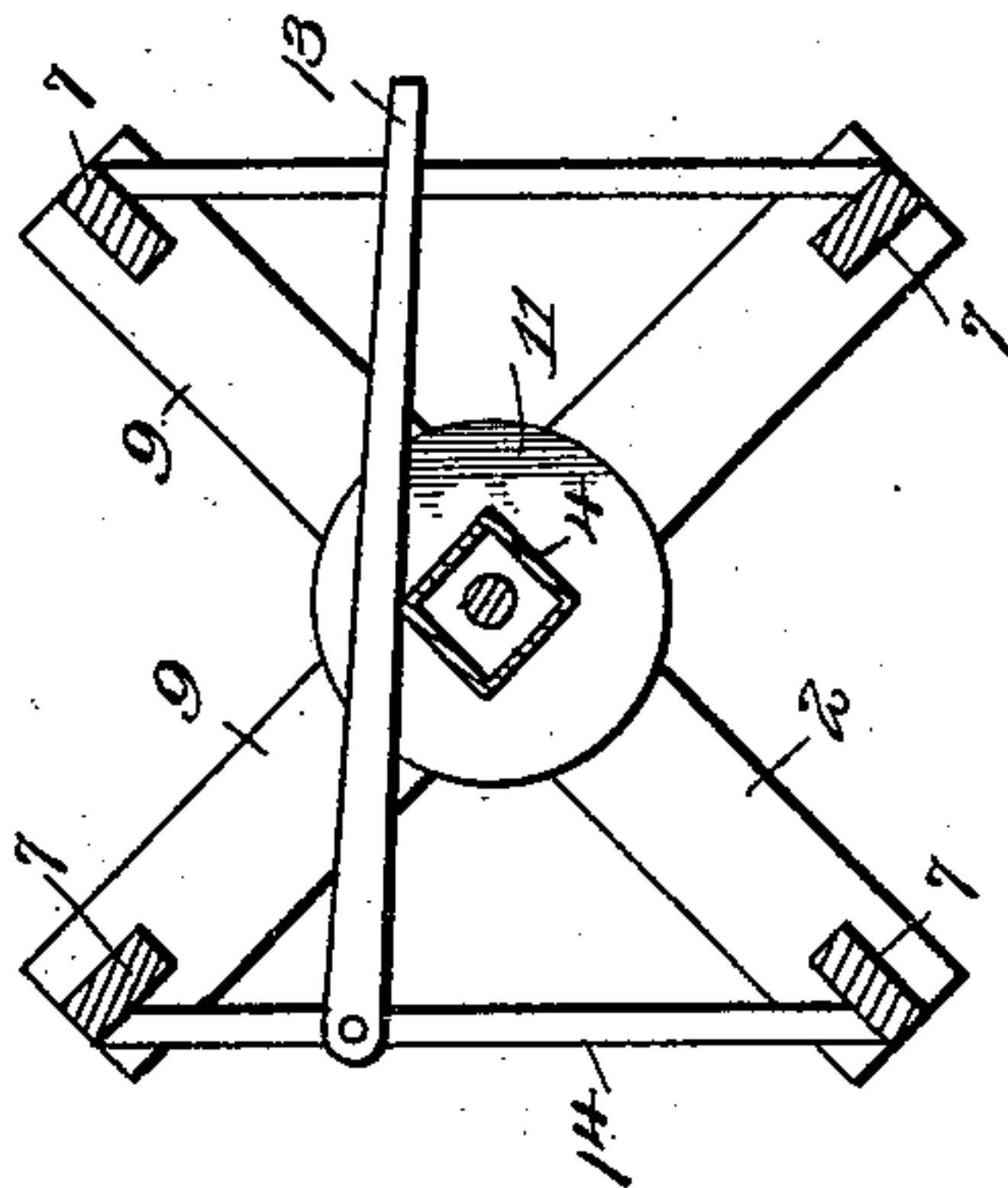


Fig. 2.

Inventor

Witnesses

John C. Shaw
J. F. Riley

Cyrus H. Irwin,

By his Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE,

CYRUS H. IRWIN, OF BARTOW, FLORIDA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 547,954, dated October 15, 1895.

Application filed November 23, 1894. Serial No. 529,763. (No model.)

To all whom it may concern:

Be it known that I, CYRUS H. IRWIN, a citizen of the United States, residing at Bartow, in the county of Polk and State of Florida, have invented a new and useful Windmill, of which the following is a specification.

The invention relates to improvements in windmills.

The object of the present invention is to improve the construction of windmills, to provide one from which great power may be obtained, and to produce an effective storm-brake which will be automatically applied and which will serve to maintain the windmill at a given speed.

A further object of this invention is to prevent the wind from checking the rotation of the wheel by acting upon blades coming into the wind.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a windmill constructed in accordance with this invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a horizontal sectional view, the section being taken through the main wind-wheel. Fig. 4 is a similar view, the section being taken above the main wind-wheel to illustrate the construction of the automatic brake. Fig. 5 is a detail sectional view of the storm-brake wheel. Fig. 6 is a detail sectional view illustrating the construction of the hand-brake.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a horizontal wind-wheel journaled in a supporting-frame 2 and provided with vertically-disposed curved blades 3, secured by rods 3^a at their inner vertical edges to a vertically-disposed polygonal shaft 4, and connected at their tops and bottoms by upper and lower disks or plates 5 and 6. The shaft or post may be a hollow metallic one, as shown, with a solid shaft extending through it to form the journals, or it may be a solid shaft or post, and the inner edges of the blades are bent around the vertical rods 3^a. The vertically-disposed curved blades present

their concave faces to the wind, and the wind-wheel may be either built up from the ground or placed upon a suitable tower, and it will be readily apparent that by increasing the height and the diameter of the wheel the power obtained therefrom may be increased to any desired extent.

The supporting-frame has an upper and lower portion, and the latter is preferably composed of four uprights located at diametrically-opposite points and upper and lower cross-pieces 8 and 9, which connect the uprights 7, and these uprights have mounted upon them angularly-disposed blades or shields 12, which serve to collect and direct the wind to the wind-wheel, and to protect the blades coming into the wind to prevent the wind-wheel from being retarded. Motion is communicated from the wind-wheel to any suitable or desirable mechanism by means of ordinary gearing, the pulley being located at the bottom of the vertical shaft at a point below the wind-wheel; but instead of employing the pulley 11 any other form of gearing may be used. A space is formed between the pulley 11 and the lower disk of the wind-wheel and the shaft at that point is adapted to be engaged by a hand-lever 13, which is fulcrumed at one end on a horizontal bar 14, secured to two of the uprights 7. The lever 13 may be operated directly by hand, or any suitable means may be employed for throwing it at will into and out of engagement with the wind-wheel and for holding it in such engagement to stop the wind-wheel.

The upper journal 15 of the wind-wheel has a brake-drum 16 mounted upon it and adapted to be engaged by a horizontally-disposed lever 17, which is supported by upper horizontal bars 18 and 19, and which is normally held out of engagement with the drum by a spiral spring 20. The spiral spring 20 has one end attached to the lever 17 and its other end secured to a post 21 of the upper portion of the supporting-frame; but the posts 21 may be a continuation of the posts or uprights 7 of the lower portion of the frame 22. The brake-lever 17 is fulcrumed at one end on the upper horizontal bar 18, and its other end is connected with a belt 23 extending from it around a pulley 24 and connected with a vertical shaft 25 of a storm-brake wind-wheel 26.

The shaft 25 of the storm-brake wind-wheel is journaled at its upper end in the top of the upper portion of the supporting-frame, and its lower end is journaled in a bearing-opening 28 of crossed braces 29, arranged at right angles to each other and secured to the upper cross-bars 8 of the lower portion of the supporting-frame and arched over the brake-drum. The lower end of the shaft is supported upon the brake-drum, and it has the belt 23 wound around it, and when the storm-brake wind-wheel is rotated it will wind up the belt and apply the brake. The belt extends from the upper shaft and is attached to one of the posts 21 of the frame.

The spiral spring for holding the upper brake-lever out of engagement with the brake-drum may be of any desired strength, and it is adapted to prevent the application of the brake with a given force of wind; but as the wind increases in violence the upper wheel will be rotated and will apply the brake directly in proportion to the increase in the force of the wind.

The posts 21 are connected at their upper ends by top cross-pieces, and the pulley 24 is mounted on a vertical shaft 30, mounted between one of the top cross-pieces and one of the upper cross-bars 8 of the lower portion of the frame.

The storm-brake wheel is constructed similar to the main wind-wheel, but is much smaller, as shown, and its blades 31 are arranged the reverse of the blades 3 of the lower wind-wheel, whereby the upper storm-brake wheel will rotate in an opposite direction from the main wind-wheel.

It will be seen that the windmill is simple and comparatively inexpensive in construction, that it possesses great strength and durability, and that it may be readily constructed to impart the desired power. It will also be seen that the windmill may be readily connected with any desired mechanism and that it is automatically maintained at a given speed; also, it will be apparent that it is capable of receiving the wind from any quarter, and that the wind is directed to the wheel to the greatest advantage and is prevented from acting upon the blades as they approach the wind and of retarding the rotation of the wheel.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

1. In a wind mill, the combination of a supporting frame, a horizontal wind wheel having a vertical shaft carrying a drum located above the wind wheel, a horizontally disposed brake lever located above the wind wheel and having one end fulcrumed on the frame and arranged to engage the drum, a spring connected with the other end of the lever for holding the latter out of engagement with the drum and located at one side of the lever, a guide pulley located at the opposite side of the lever and mounted on the supporting frame, an upper storm brake wind wheel having a vertical shaft, and a belt connected with the brake and extending around the guide pulley and connected with the shaft of the storm brake wind wheel and arranged to be wound upon the same, substantially as described.

2. In a wind mill, the combination of a supporting frame having an upper portion, and provided with a lower portion having diametrically oppositely disposed uprights, angularly disposed shields secured to the uprights, the horizontal wind wheel having a vertical shaft journaled in the supporting frame and carrying a drum, arched braces arranged at right angles and mounted centrally at the top of the supporting frame and extending over the drum and provided with a bearing opening, an upper storm brake wind wheel mounted upon a vertical shaft journaled in the upper portion of the frame and having its lower end located in the bearing opening of said braces, a brake lever arranged to engage said drum, a belt secured to the lever and connected with the shaft of the upper storm brake wind wheel, and arranged to be wound on the same, and a lower hand brake, substantially as described.

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

CYRUS H. IRWIN.

Witnesses:

FRED GEMME,
JOHN I. HENDRY.