No. 710,298. Patented Sept. 30, 1902.

J. L. PERKINS.

DISSECTIBLE FAN.

(Application filed Apr. 29, 1902.)

(No Model.) 3 Sheets—Sheet 1.

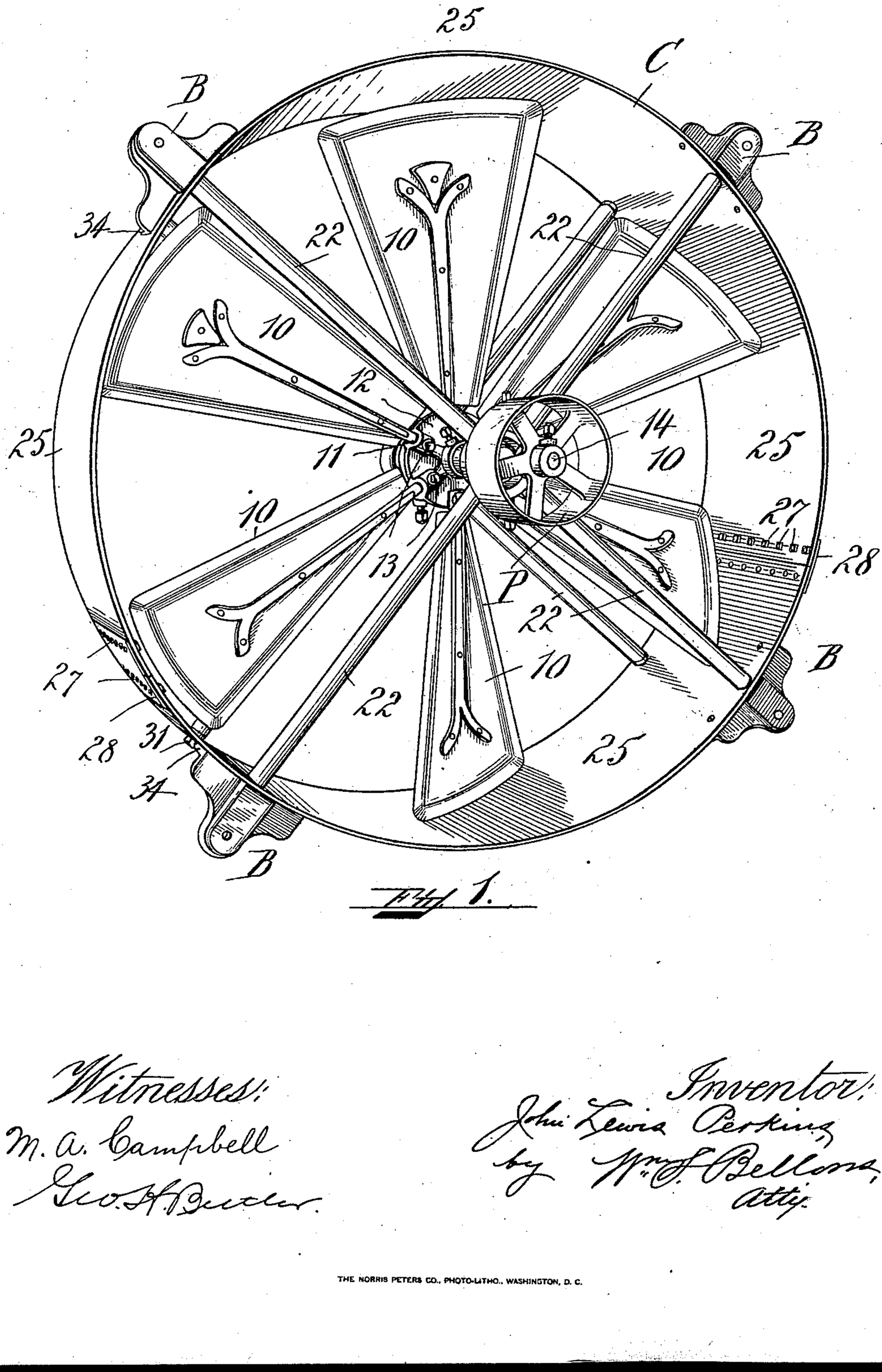

Fig. 1.

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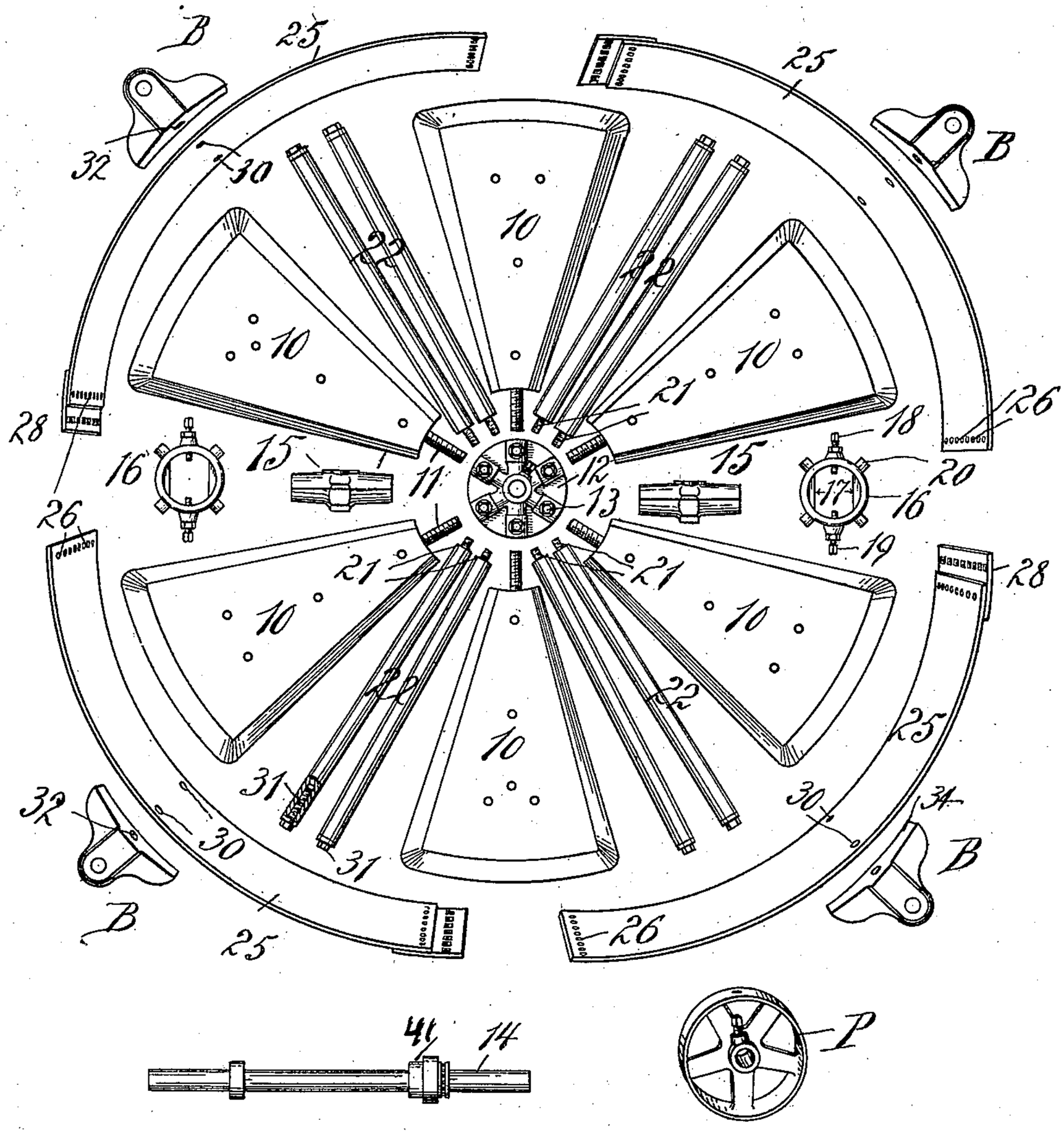

Fig. 2.

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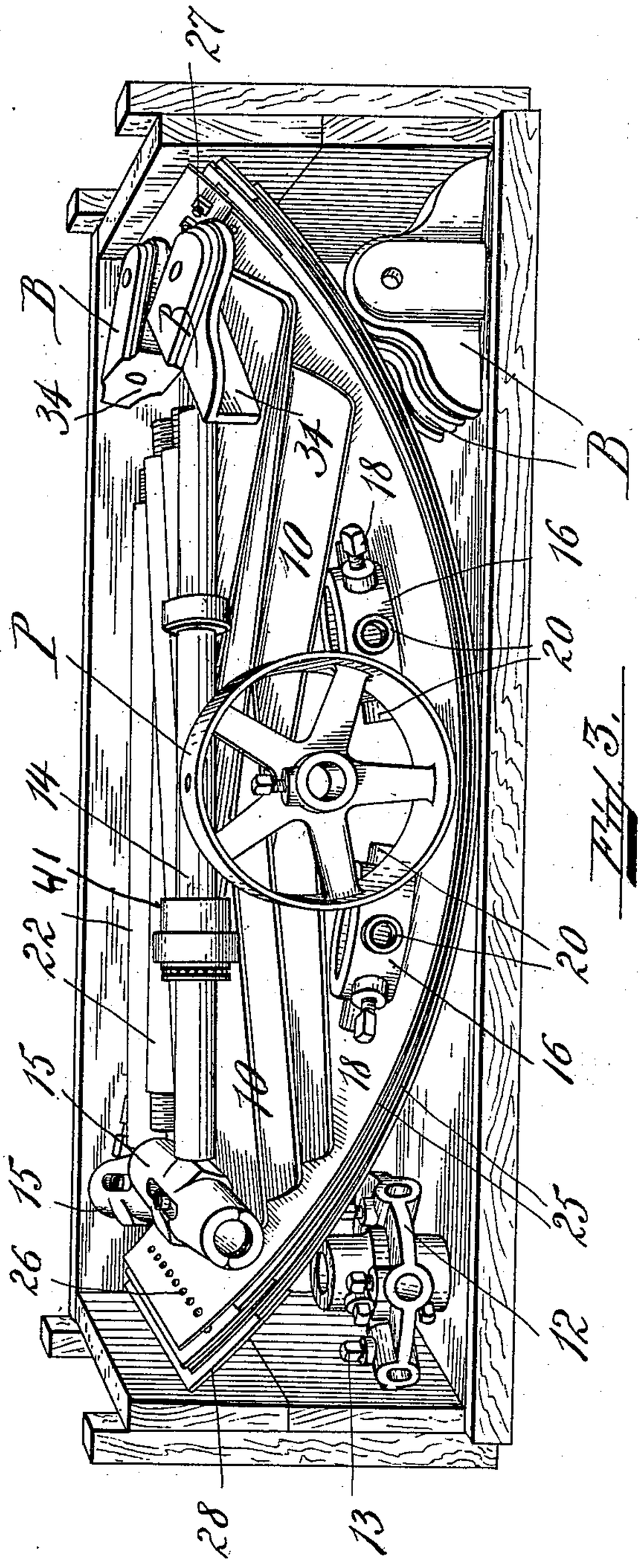

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UNITED STATES PATENT OFFICE.

JOHN LEWIS PERKINS, OF HOLYOKE, MASSACHUSETTS.

DISSECTIBLE FAN.

SPECIFICATION forming part of Letters Patent No. 710,298, dated September 30, 1902.

Application filed April 29, 1902. Serial No. 105,221. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEWIS PERKINS, a citizen of the United States of America, and a resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Dissectible Fans, of which the following is a full, clear, and exact description.

This invention relates to ventilator-fans; and it has for its object the provision of a device of this character which after having once been properly assembled and adjusted in the manufactory may be taken apart and conveniently packed in a small space for shipment and thereafter be susceptible of being set up as an operative entirety at the place of use with little trouble and without the requirement of a skilled mechanic.

My invention comprises for the composition or make-up of a dissectible fan of the character contemplated the combination of a central shaft, a central detachably-affixed member having detachably-connected fan-blades, a pair of shaft-bearings removably encircling the shaft at opposite sides of the central fan-carrying member, frames removably embracing the bearings and adjustable relatively thereto, brace-rods which have detachable supporting connections with the said frames, and casing-sections separately formed and detachably united to constitute a circular structure, with which the brace-rods by means of clamping-bolts have detachable connections, and, furthermore, combined with the foregoing appliances are brackets to support the fan in its place in an opening in a building, which brackets in their connections with the casing-sections have engagement therewith of certain of the brace-rod-connecting bolts, which perform the double duty of uniting both the brackets and the casing-sections detachably to the brace-rods, which latter constitute the mediums of connection and support for the bearings primarily with and from the brackets.

In the accompanying drawings, in which similar characters denote similar parts, Figure 1 is a perspective view of the fan mounted in its casing and ready to be attached to the flues or ventilator-conduits. Fig. 2 shows the fan and the casing dismembered, and Fig. 3 illustrates the several component parts of the fan and casing packed together in a box for shipment.

In the drawings, 10 10 denotes the fan-blades, provided with screw-threaded stems 11, adapted to enter correspondingly-threaded apertures in a central member 12, in which the fan-blades may be properly positioned so as to have the required pitch and may then be secured in position—as, for instance, by set-screws 13.

The central member 12 is mounted on a shaft 14, journaled in boxes 15, which are preferably two in number and are supported adjacent the central member 12 and at opposite sides thereof in bearing-frames 16, having faces 17 for guiding said boxes during any vertical movement which they may have to bring them into alinement with each other.

The boxes 15 may be properly alined with each other—as, for instance, by screws 18 19, disposed above and below said boxes, respectively.

Each of the frames 16 is provided in the present instance with radial hubs 20, adapted to receive the screw-threaded ends 21 of brace-rods 22, the outer ends of which are secured to the casing surrounding the entire fan and constituting a thimble therefor.

The casing, which is herein designated in a general way by C, comprises a plurality of sections 25, provided near their ends with apertures 26 to receive bolts 27, whereby the adjacent edges of the pairs of sections are united to a tie-plate 28, preferably disposed on the outside of said casing.

The brace-rods 22 are removably secured to the casing-sections 25, which are provided with apertures 30, through which bolts 31 may pass and enter into screw-threaded engagement with said brace-rods, two sets being preferably employed disposed adjacent the edges of said casing, the set disposed near one edge having connection at their outer ends with the flange-lugs 31 of brackets B, whereby the casing in its entirety and containing the fan may be secured to a partition or wall ready for work.

The outer end portions of one set of the brace-rods 22 are drilled and screw-threaded, and the bolts 31, which have at their outer ends the integral flanged and polygonal portions, are by their threaded shanks passed

through the perforations 32 in the flanges 34 of the brackets, through the perforations 30 in the sheet-metal sections 25, and with a confining screw engagement into the threaded sockets in the brace-rods, making clamping connections. The other set of the brace-rods similarly make clamping connections, though, as shown, they have no engagement with the lugs of the brackets B, which do not necessarily extend entirely across the outer face of the casing.

It is to be taken into account that the threaded attenuated inner end portions of the brace-rods which screw-engage in the radial hubs 20 are in the assemblage first screwed down to the shoulders to position the brace-rods, which latter, being of uniform length, insure that in the connection of the sections 25 therewith the inclosing fan-casing C will be, to all intents and purposes, truly cylindrical.

The driving-shaft 14, above referred to, carries a pulley P, and means are provided on said shaft whereby the end thrust exerted thereon by the revolving fan-blades may be taken up, these means consisting, substantially, of a thrust-collar 41, disposed between one of the bearings and the central fan-supporting member above described.

The organization of the several component parts of the fan will permit the same to be readily taken apart or assembled, provision being made for a close adjustment of the bearings relatively to each other after the device has been built up, substantially as shown in Fig. 1.

In Fig. 3 I have illustrated the manner in which the several pieces may be closely packed for shipment—a feature which is very important on account of the cost of transportation, more especially with railway and steamship lines, where the freight rates are in many cases based upon the space occupied rather than on the weight to be carried.

I am aware that it is not new in fans or blowers to construct these devices in such a manner that some, but not all, of the parts are detachable, and wish to acknowledge that I know it to be common to make fans wherein the blades are detachably connected with the central carrying member thereof and also wherein the shaft and its pulley are separable from each other and from the rest of the fan, and any such well-known contrivance it is not my intention to attempt to claim; but,

Having thus described my invention with reference to operative entireties, the components of which are detachably or removably united and dissectible in the manner and for the purpose substantially as described and shown, what I claim, and desire to secure by Letters Patent, is—

1. In a dissectible fan, the combination, with a rotatable shaft; and fan-blades detachably mounted on said shaft; of bearings for supporting said shaft; a substantially circular casing comprising a plurality of separately-formed sections; and brace-rods radially disposed for positioning said bearings and the casing relatively to each other, and having detachable connections with the bearings and said casing-sections.

2. In a dissectible fan, the combination, with a rotatable shaft; a central member detachably secured thereon; a series of fan-blades; and means for positioning said blades detachably on said member; of bearings disposed at opposite sides of, and adjacent said central fan-carrying member; a circular casing comprising a plurality of separately-formed and detachably-united sections; brace-rods radially disposed around said shaft for positioning said bearings and the casing relatively to each other having detachable connections with the bearings, and said casing-sections, and detachably-applied means for alining said bearings with each other.

3. In a dissectible fan, the combination, with a rotatable shaft; a central member detachably secured thereon; a series of fan-blades; and means for positioning and detachably securing said blades on said member; of bearings disposed at opposite sides of, and adjacent said central fan-carrying member; a circular casing comprising a plurality of separately-formed detachably-united sections; brace-rods radially disposed around said shaft and for positioning said bearings and the casing relatively to each other and detachably connected with the bearings and the casing-sections; means for alining said bearings with each other; and a thrust-collar between one of said bearings and said central member.

4. In a dissectible fan, the combination, with a rotatable shaft; and detachable bearings therefor; of a casing comprising a plurality of separately-formed sheet-metal sections; means for uniting said sections into a unitary circular structure; and fan-blades detachably mounted for rotation with said shaft.

5. In a dissectible fan, the combination, with a rotatable shaft; and detachable bearings therefor; of a casing comprising a plurality of separately-formed sections; removably-applied bearing-frames for adjustably receiving said bearings; and brace-rods removably secured to said bearing-frames and said casing-sections.

6. A dissectible portable fan comprising a circular casing made in sections; detachable means for uniting said sections into a unitary structure; a shaft; a central member removably secured on said shaft; a plurality of fan-blades; removable bearings for said shaft; removable frames for adjustably receiving said bearings; and brace-rods removably secured to said bearing-frames and to said casing-sections, substantially as described.

7. In a dissectible portable fan, in combination, a shaft; the central member 12 detachably secured thereon, and having the radial screw-socketed hubs 13; the separately-formed fan-blades 10, having the screw-

threaded inner end stems 11; and the set-screws 13; the bearing members 15, 15, detachably encircling the shaft, and having positions at the opposite sides of the central member 12; the frames 16, detachably embracing the bearings 15, having the opposite faces 17 of their apertures vertical and parallel, having the penetrating adjustment-screws 18 and 19 centrally at their top and bottom, and having the radial socketed hubs 20; the sheet-metal casing-sections 25 separately formed and constructed with the perforations 30, and with the perforations 26, 26; the tie-plates 28 and the uniting-bolts 27; the brace-rods 22 having screw-stems at their inner ends detachably engaging in said hubs 20, and having their outer end portions constructed with screw-threaded sockets; and headed bolts 31, having their threaded shanks passed through the perforations 30 in the casing-sections, and with a screw engagement into the threaded sockets in the brace-rods; and operating by their heads to clamp the said casing-sections in position against the ends of the brace-rods.

8. In a dissectible portable fan, in combination, a shaft; the central member 12 detachably secured thereon, and having the radial screw-socketed hubs 13; the separately-formed fan-blades 10, having the screw-threaded inner end stems 11; and the set-screws 13; the bearing members 15, 15, detachably encircling the shaft, and having positions at the opposite sides of the central member 12; the frames 16, detachably embracing the bearings 15, having the opposite faces 17 of their apertures vertical and parallel, having the penetrating adjustment-screws 18 and 19 centrally at their top and bottom, and having the radial socketed hubs 20; the sheet-metal casing-sections 25 separately formed and constructed with the perforations 30 and with the perforations 26, 26; the tie-plates 28 and the uniting-bolts 27; the brace-rods 22 having screw-stems at their inner ends detachably engaging in said hubs 20, and having their outer end portions constructed with screw-threaded sockets; the brackets B having flanges 34 conforming to the contour of the casing, and each provided with an aperture 32; and two sets of headed bolts 31, one set having their threaded shanks passed through the perforations 32 and 30 of the bracket-flanges and casing-sections, and the other set passing through the perforations 30 of the casing-sections, and all with a screw-thread engagement into the socketed ends of the brace-rods, for the purposes set forth.

Signed by me at Springfield, Massachusetts, in the presence of two subscribing witnesses.

JOHN LEWIS PERKINS.

Witnesses:
M. A. CAMPBELL,
WM. S. BELLOWS.