

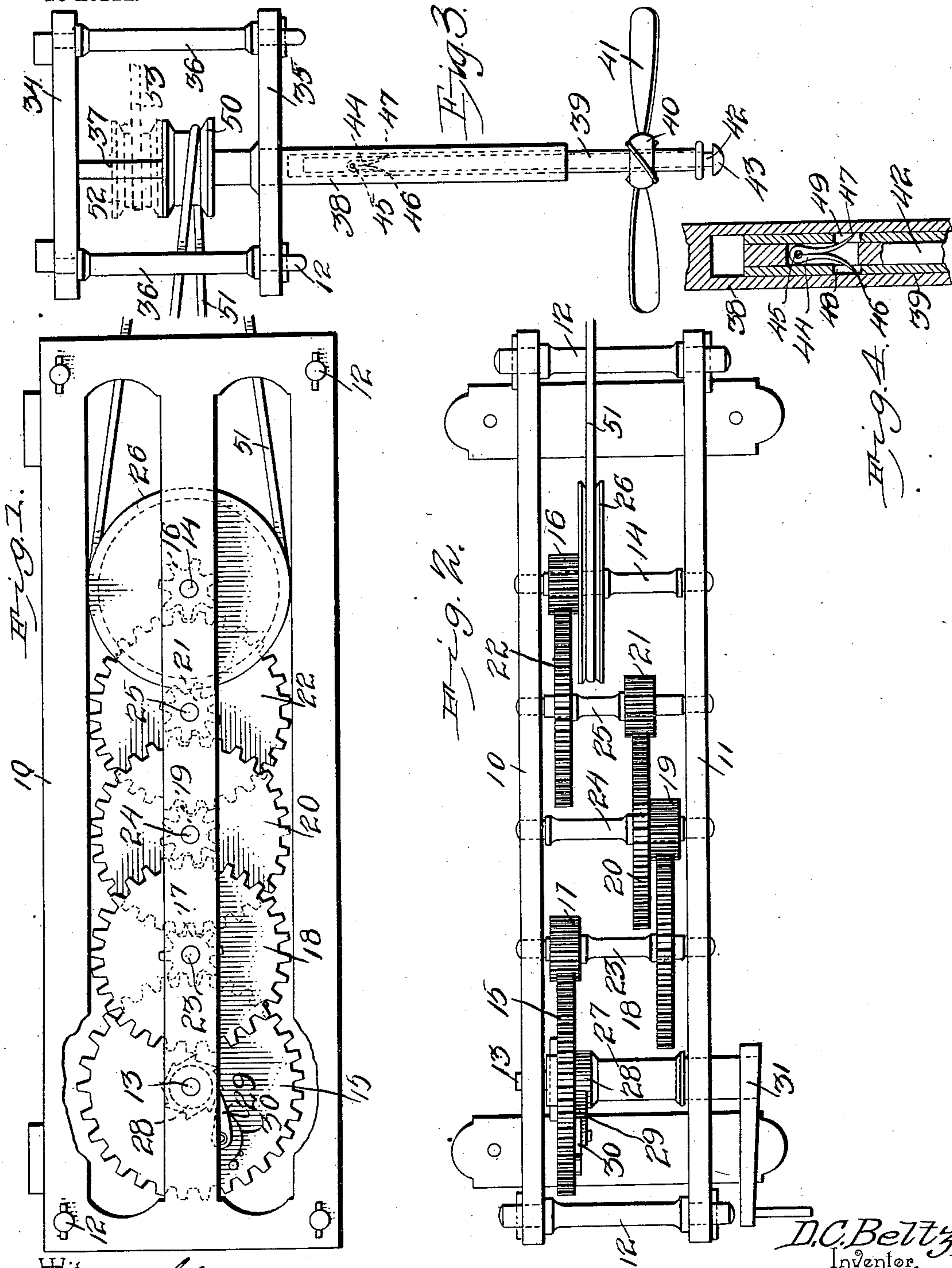
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D. C. BELTZ.  
AUTOMATIC FAN.

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NO MODEL.



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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC FAN.

SPECIFICATION forming part of Letters Patent No. 730,736, dated June 9, 1903.

Application filed August 15, 1902. Serial No. 119,777. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL C. BELTZ, a citizen of the United States, residing at Haleysville, in the county of Winston and State of Alabama, have invented a new and useful Automatic Fan, of which the following is a specification.

This invention relates to fans employed for the purpose of producing forced circulation of air, more particularly in restaurants, dining-rooms, and in similar localities, but which may be employed wherever this class of devices are required.

The principal object of the present invention is to improve the construction and means for operating fans of the class above referred to whereby they will be more easily operated and adjusted, their efficiency increased, and at the same time more cheaply constructed and easily installed.

The invention consists in a fan revolubly supported and adapted to be adjusted to change its elevation without interfering with the operating mechanism or necessarily stopping the motion of the fans.

The invention further consists in certain novel features of construction, as hereinafter shown and described, and specified in the claims.

In the drawings illustrative of the invention, Figure 1 is a side view of the power-transmitting mechanism, and Fig. 2 is a plan view of the same. Fig. 3 is a side view of the fan-operating mechanism. Fig. 4 is an enlarged detail illustrating the construction of the automatic coupling between the fan-shaft and drive-shaft.

In this device is comprised a power-transmitting mechanism for operating the fans, located at any convenient point, preferably in some obscure locality, where it will not interfere with other structures or articles of furniture or fittings and at the upper part of the room and one or more of the fan mechanisms located at any desired point or points in the room and operated by suitable connections from the power-transmitting mechanism.

The power-transmitting mechanism consists in a framework composed of spaced side members 10 11, connected by spacing-posts 12 at the corners and with a main drive-shaft 13, journaled between the side frames near

one end, and the main driven shaft 14, likewise journaled between the side frames near their opposite ends and provided with a main band-pulley 26, as shown. The shaft 13 is provided with a gear-wheel 15, and the shaft 14 is provided with a pinion 16, and between these is arranged a train of intermeshing gears and pinions 17 18 19 20 21 22 upon intermediate shafts 23 24 25, spaced apart and journaled by their ends in the frame members 10 11, as shown. By this arrangement, it will be readily understood, motion imparted to the shaft 13 will be transmitted through the train of gears and pinions to the shaft 14 and revolve the latter, with its band-pulley 26, at a greatly-accelerated speed by reason of the driver-wheels 15 18 20 22 being all larger than the driven pinions 17 19 21 16. The shaft 13 will be provided with means for forcibly revolving it, and this means may be a coiled spring, a cord and weight, a motor, or any other suitable power. The mechanism herein described is operated by a cord-and-weight power-transmitting mechanism, a portion only of which is shown, the shaft 13 being provided with a drum 27, loose thereon and adapted to support an operating-cord, with a weight (not shown) depending from its end in the ordinary manner. The drum 27 is provided with a ratchet-wheel 28, adapted to be engaged by a pawl 29, pivotally connected to the gear 15 and maintained normally in engagement with the ratchet by a spring 30. The drum 27 will be provided with an operating-crank, so that the cord may be wound upon the drum. By this means, it will be readily understood, the weight will exert a constant force upon the shaft 13 and its wheel 15 in one direction through the ratchet-and-pawl connection, and when the weight runs down the device can be readily rewound through the medium of the crank 31. By reason of the long train of gears between the shafts 13 14 the shaft 13 will revolve very slowly, so that the weight will cause the band-wheel 26 to revolve for a comparatively long period of time while the weight is moving downwardly through a relatively short distance. By this means, it will be understood, if the power-transmitting mechanism be located near the ceiling of an ordinary room it could be readily so proportioned that



the weight in moving downward to the floor would cause the fans to be operated during the period of time which the dining-room is ordinarily occupied.

5 The framework supporting the transmitting mechanism will be suspended from the ceiling or otherwise supported in any suitable manner and may be constructed in the manner shown or modified and changed as re-  
10 quired without departing from the principle of the invention, and the proportionate sizes and number of the gears in the train may be altered as required to increase or decrease the power or speed.

15 The fan and its operating mechanism are illustrated in Figs. 3 and 4. As many of the fan mechanisms may be employed as required and arranged at suitable points in the room; but as the fans are all precisely alike one only  
20 is shown for illustration. The fan mechanism consists in a vertical shaft supported revolubly in a suitable framework preferably supported from the ceiling, the framework consisting of spaced top and bottom members  
25 34 35 and connecting-posts 36, the main drive-shaft 37, revolubly supported in the top and bottom members, as shown. Attached to the drive-shaft 37, preferably between the frame members 34 35, is a band-pulley 50, with which  
30 the operating - band 51, leading from the drive - pulley 26, engages, as shown. The first fan mechanism may be located at any desired distance from the transmitting mechanism and the band 51 of suitable length to  
35 connect the operating-wheels 26 50. Where one fan only is employed, only one of the band-pulleys 50 will be required upon the shaft 37; but where a series of the fans are arranged to be driven from one driving mechanism each of the shafts 37 will be pro-  
40 vided with a supplemental band-pulley 52, from which a band 53 will be conducted to the next band-pulley 50 of the next fan mechanism, and so on throughout the series to any  
45 required extent, as will be readily understood. The lower portion of the shaft 37 extends below the lower member 35 of the frame and is tubular in form, as shown at 38, and  
50 of any desired length, the length of this part of the shaft depending on the height of the ceiling of the room wherein the device is erected. Within the tubular section 38 is  
55 slidably arranged a tubular fan-shaft 39, having the hub 40 of the fan connected thereto near its lower end, as shown. The fan-blades are indicated at 41, of the usual form, and preferably inclined upwardly, as shown, to  
60 influence the column of air to a greater distance when operated. As many of the fan-blades may be employed as required; but generally four will be used, as shown, and they may be of any length and width and of any suitable material. Within the tubular  
65 section 39 is slidably arranged a rod 42, preferably with a button or enlargement 43 upon its lower end. The rod 42 extends upward

into the tubular fan-shaft 39 to a point near its upper end and will be provided near the upper end of the rod with a double spring-pawl 44, as shown more clearly in Fig. 4. 70  
The spring-pawl is formed bifurcated and is pivoted at 45 in the rod 42, the extremities 46 47 being chisel-edged and adapted to forcibly engage the inner sides of the tubular portion 38 of the drive-shaft through aper- 75  
tures 48 49 in the fan-shaft, as shown in Fig. 4. The pawl 44 being connected to the rod 42 by its pivot 45 and with its ends operating loosely through the apertures 48 49 is pre- 80  
vented thereby from revolving within the tubular fan-shaft, and the spring element in the pawl exerting a constant outward force maintains the chisel ends 46 47 normally in en- 85  
gagement with the interior of the tubular portion 39 of the drive-shaft, and thereby forms an automatic coupling means between the fan-shaft and the drive-shaft. It will be ob-  
vious that any downward movement of the rod 42 will permit the spring action of the pawl to project the chisel-shaped ends 46 47 90  
into engagement with the tubular portion 38, and thereby firmly couple all the parts together, so that the revolution of the drive-shaft 37 and its tubular extension 38 will operate the fan 40 41. It will also be obvious that 95  
any upward movement of the rod 42 by carrying the pawl 44 upward with it will cause the two parts of the pawl to be compressed by engagement with the upper ends of the apertures 48 49 and withdraw the points 46 47 from en- 100  
gagement with the shaft-section 38 and likewise release the tubular shaft 39, carrying the fan, and leaving the latter free to be readily adjusted to any desired point within the tubular section 38. Thus by merely pushing 105  
upward upon the button 43 until it engages the lower end of the fan-shaft 39 the fan-shaft will be released and left free to be moved upward and downward to any desired extent, and then when the desired location is 110  
reached the button will be released, when the spring action of the pawl will at once automatically couple the parts together again, and the motion will be continued at the new point of elevation. By this simple means the 115  
fan may be adjusted at any distance from the floor, which is a very desirable feature in devices of this character.

The adjustment of the fans can be made without affecting or interfering with any part 120  
of the operating mechanism and without necessarily stopping the motion of the fan, as the momentum will continue to revolve the fan during the short period of time it is uncoupled while the adjustment is being made. 125  
Thus the adjustment can practically be made without stopping the motion of the fan, which is a very desirable result. This makes a very simple, compact, easily-constructed and easily-operated apparatus which may be located 130  
at any desired point or points in the room and adjusted readily from the floor without



affecting or interfering with the operating mechanism or necessarily stopping the motion of the fan.

The parts may be modified and altered in 5 minor particulars without sacrificing any of the advantages or departing from the principle of the invention.

Having thus described my invention, what I claim is—

10 1. In a device of the character described, a supporting-framework, a tubular drive-shaft revolubly supported in said framework, a fan-shaft movably engaging said tubular drive-shaft, and means carried by said fan- 15 shaft for engaging the inner walls of the tubular drive-shaft and adjustably coupling said fan-shaft to said drive-shaft, substantially as described.

20 2. In a device of the character described, a supporting-framework, a tubular drive-shaft revolubly supported in said framework, a tubular fan-shaft movably mounted on said tubular drive-shaft, a rod within said tubular fan-shaft, and means carried by said rod for 25 adjustably coupling said fan-shaft to said drive-shaft, substantially as described.

30 3. In a device of the character described, a supporting-framework, a tubular drive-shaft revolubly supported in said framework, a tubular fan-shaft movably mounted on said tubular drive-shaft, a rod within said tubular fan-shaft, a pawl carried by said rod and adapted to forcibly engage said tubular drive-shaft and be disengaged therefrom by the 35 operation of said rod, substantially as described.

40 4. In a device of the character described, a supporting-framework, a tubular drive-shaft revolubly supported in said framework, a tubular fan-shaft movably engaging said tubular drive-shaft and having oppositely-disposed apertures therethrough, a rod within said tubular fan-shaft, a pawl carried by said rod and adapted to forcibly engage said tu- 45 bular drive-shaft through said apertures and

be disengaged therefrom by the operation of said rod, whereby said fan-shaft will be adjustably coupled to and uncoupled from said drive-shaft, substantially as described.

50 5. In a device of the character described, a tubular drive-shaft, means for revolving said drive-shaft, a tubular fan-shaft carrying a fan and movably engaging said tubular drive-shaft, a rod within said tubular fan-shaft, and a spring-pawl carried by said rod 55 and adapted to forcibly engage the interior of said drive-shaft and be disengaged therefrom by the operation of said rod, substantially as described.

60 6. In a device of the character described, a tubular drive-shaft, means for revolving said drive-shaft, a tubular fan-shaft carrying a fan and movably engaging said tubular drive-shaft and having oppositely-disposed apertures therethrough, a rod within said 65 tubular fan-shaft, a pawl carried by said rod and provided with diverging spring-arms having chisel-formed extremities and adapted to forcibly engage the interior of said drive-shaft through said apertures, and be disen- 70 gaged therefrom by the operation of said rod, substantially as described.

75 7. In a device of the character described, a supporting-framework, a tubular drive-shaft revolubly supported in said framework, a tubular fan-shaft movably engaging said drive-shaft, a rod within said tubular fan-shaft, means carried by said rod for adjust- 80 ably coupling said fan-shaft to said drive-shaft, and an enlargement upon the outer end of said rod, whereby the rod is operative from outside the fan-shaft and limited in its movement therein, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 85 the presence of two witnesses.

DANIEL C. BELTZ.

Witnesses:

J. L. WEST,

J. S. JONES.