Jan. 8, 1935. E. A. TERRELL 1,987,582

PORTABLE LINT CLEARER FOR TEXTILE MACHINERY

Filed Oct. 30. 1930 6 Sheets-Sheet 1

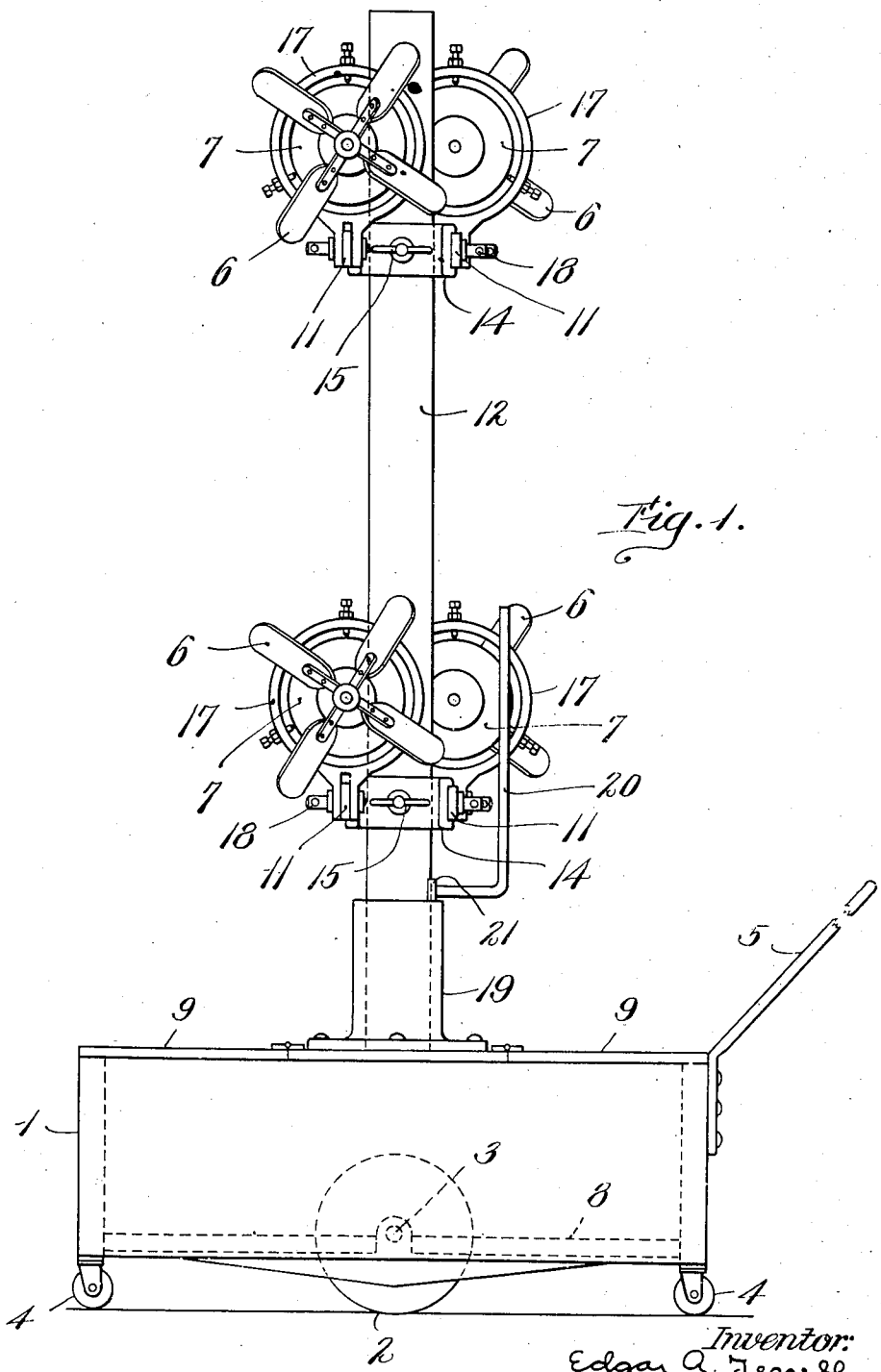


Fig. 1.

Inventor:
Edgar A. Terrell,
by Robert K. Randall
Atty.

Jan. 8, 1935. E. A. TERRELL 1,987,582

PORTABLE LINT CLEARER FOR TEXTILE MACHINERY

Filed Oct. 30. 1930 6 Sheets-Sheet 2

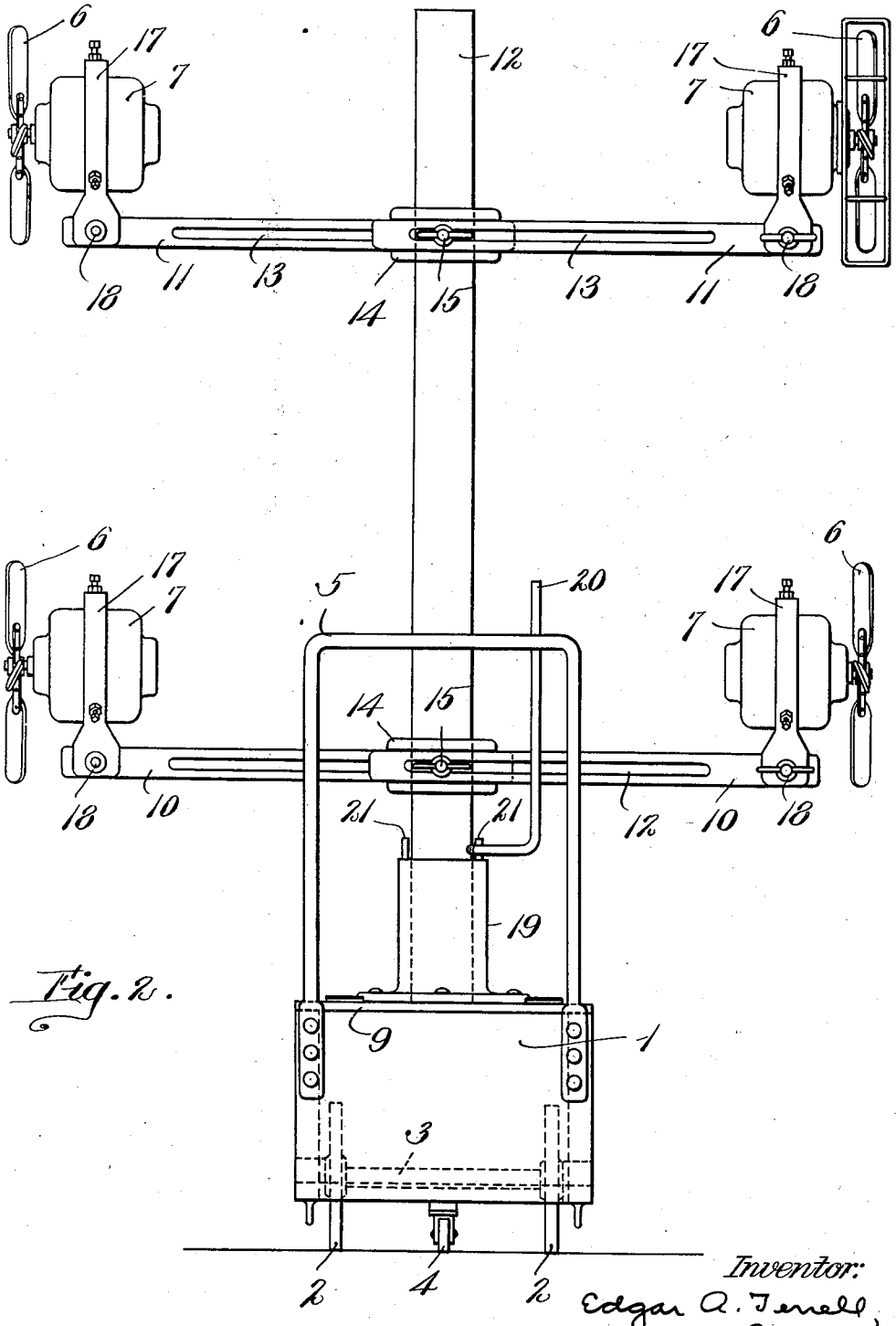


Fig. 2.

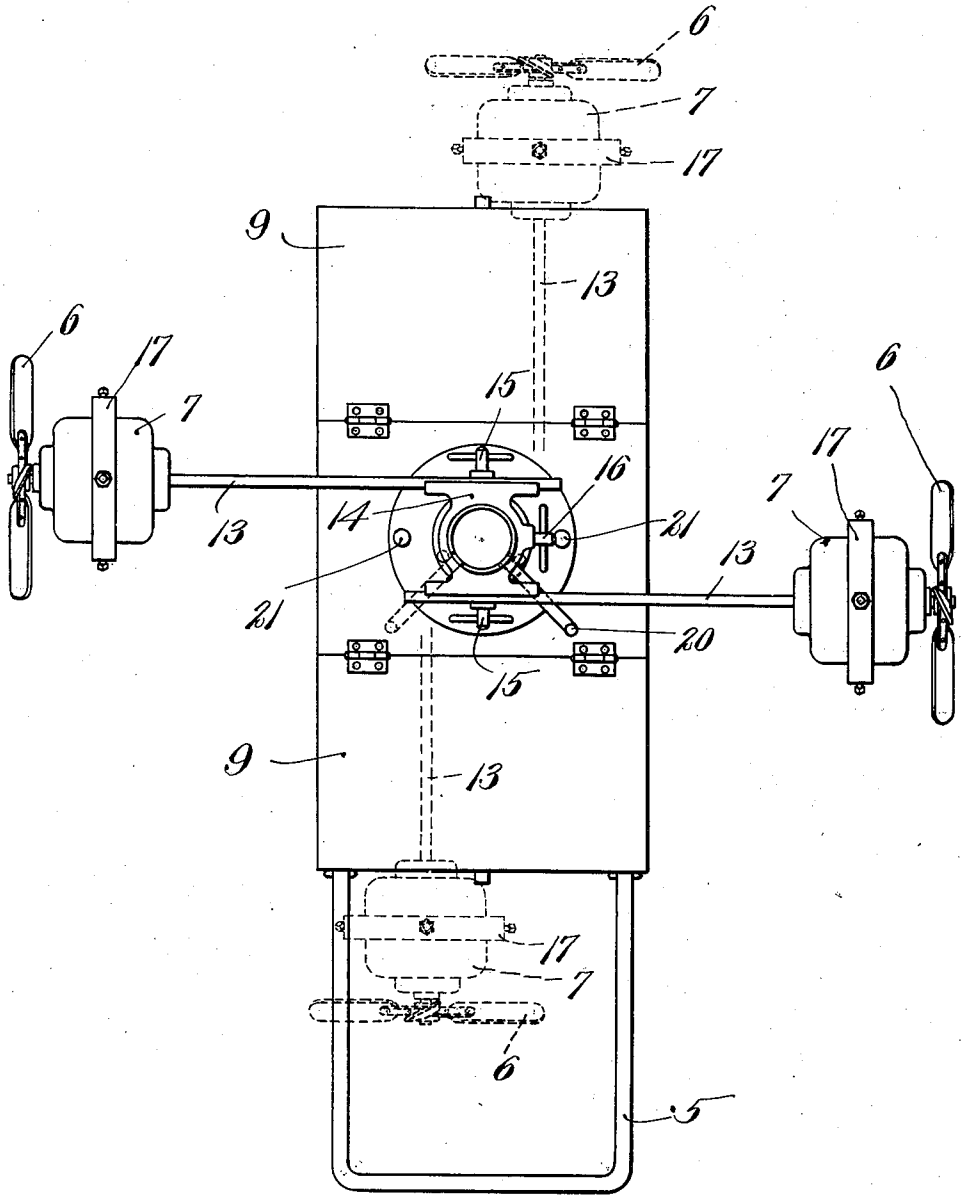
Inventor:
Edgar A. Terrell,
by Robert K. Randall,
Atty.

Jan. 8, 1935. E. A. TERRELL 1,987,582

PORTABLE LINT CLEARER FOR TEXTILE MACHINERY

Filed Oct. 30, 1930 6 Sheets-Sheet 3

Fig. 3.



Inventor:
Edgar A. Terrell,
by Robert K. Randall,
Atty.

Jan. 8, 1935. E. A. TERRELL 1,987,582

PORTABLE LINT CLEARER FOR TEXTILE MACHINERY

Filed Oct. 30, 1930 6 Sheets-Sheet 4

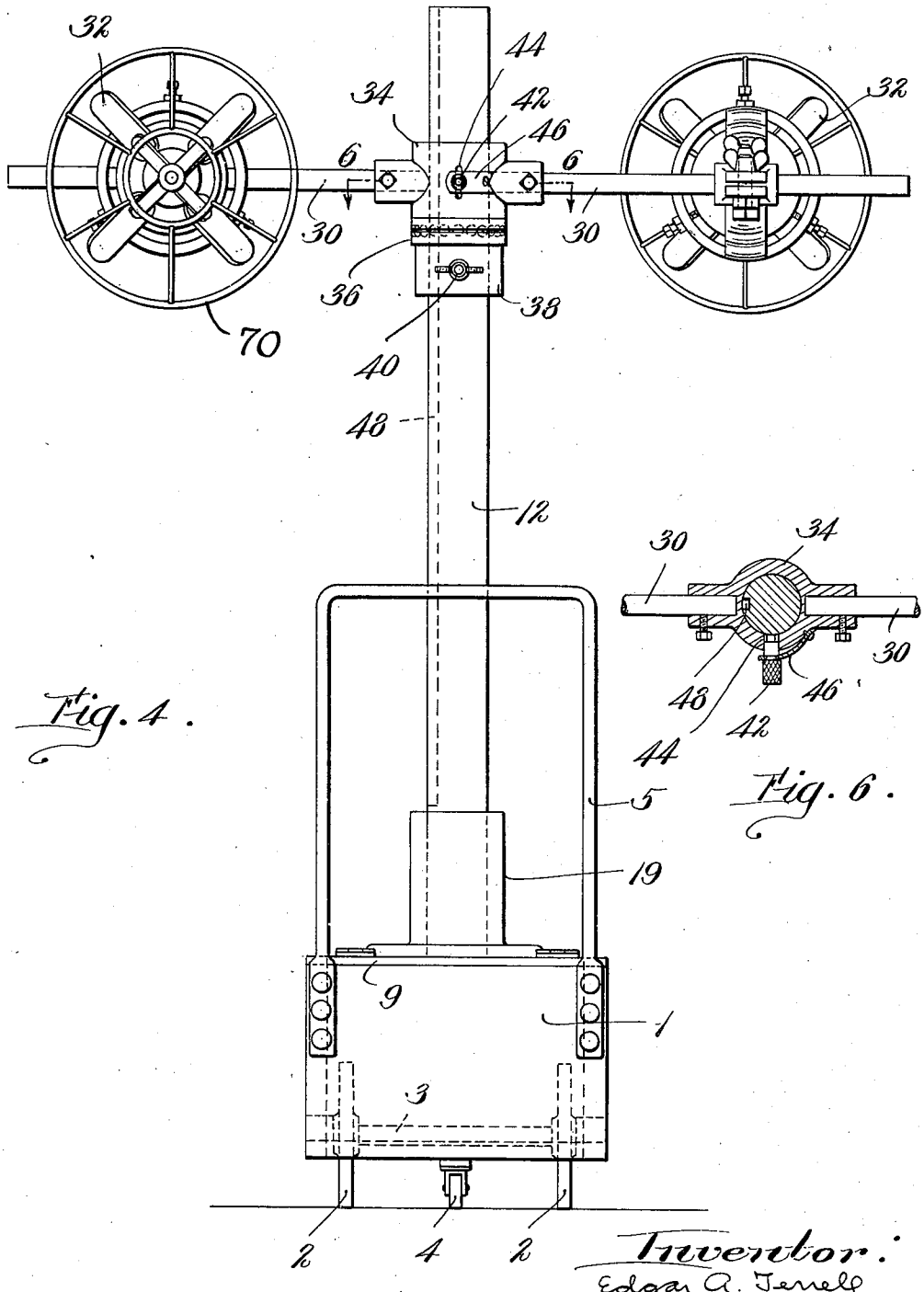


Fig. 4.

Fig. 6.

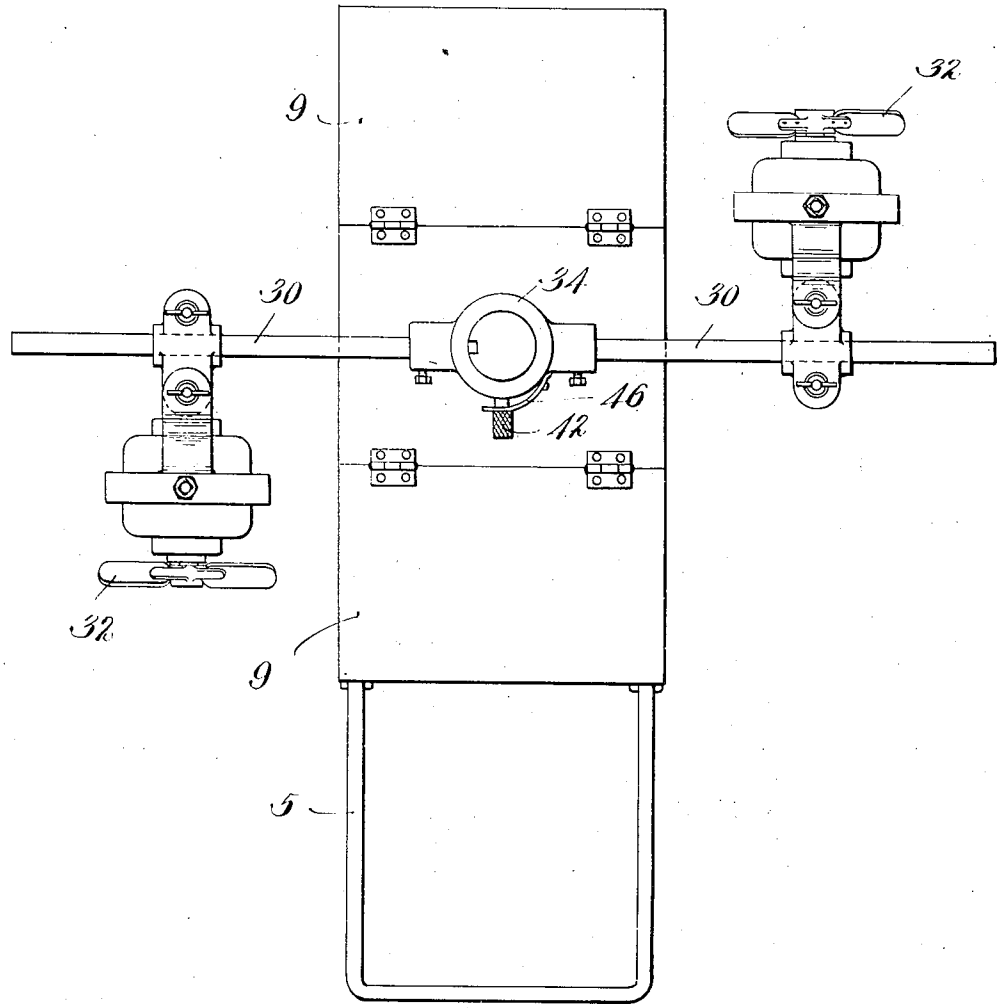
Inventor:
Edgar A. Terrell,
by Robert H. Randall
Atty.

Jan. 8, 1935. E. A. TERRELL 1,987,582

PORTABLE LINT CLEARER FOR TEXTILE MACHINERY

Filed Oct. 30. 1930 6 Sheets-Sheet 5

Fig. 5.



Inventor:
Edgar A. Terrell,
By Robert K. Randall
Atty.

Jan. 8, 1935. E. A. TERRELL 1,987,582

PORTABLE LINT CLEARER FOR TEXTILE MACHINERY

Filed Oct. 30, 1930 6 Sheets-Sheet 6

Fig. 7.

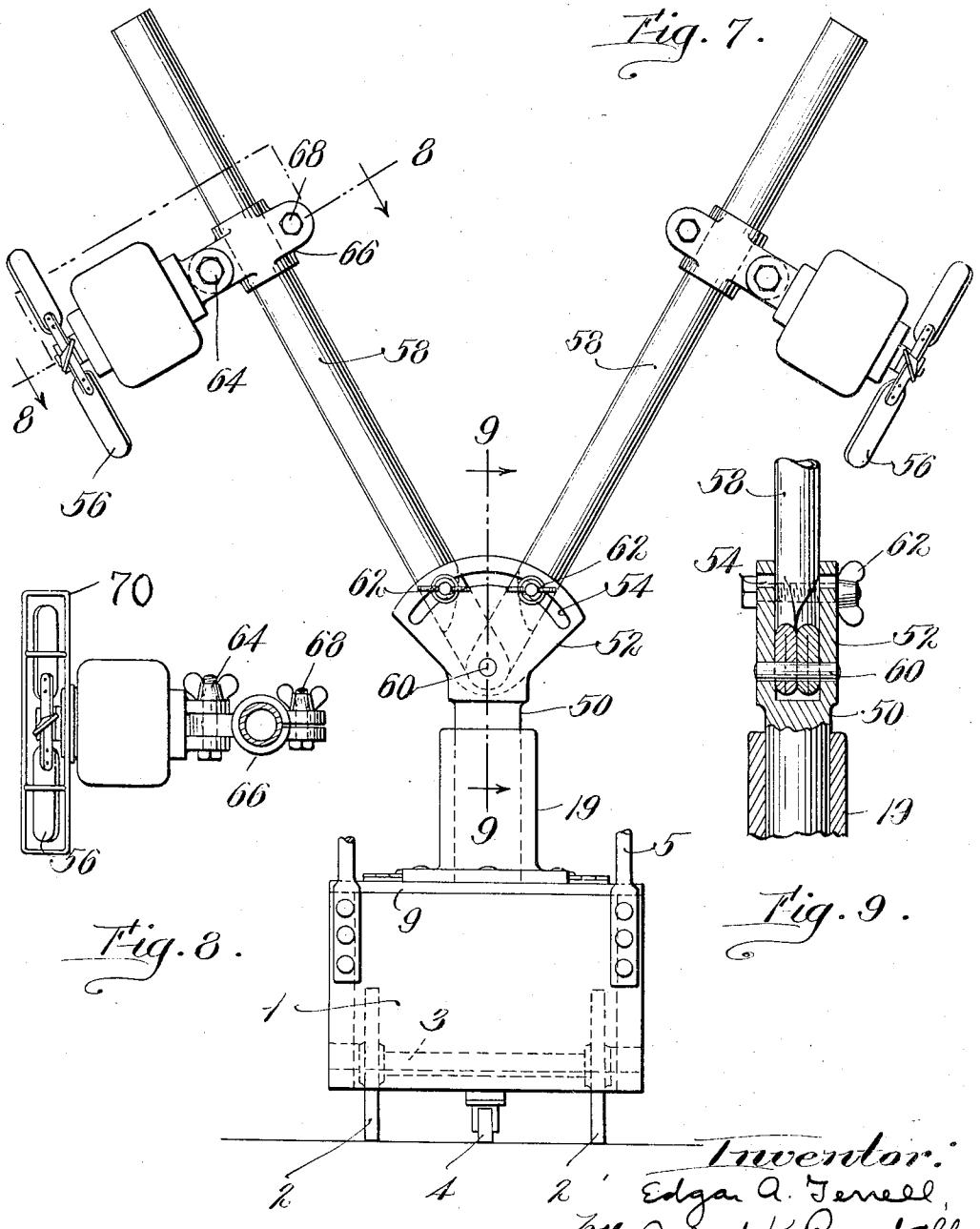


Fig. 8.

Fig. 9.

Inventor:
Edgar A. Terrell,
by Robert K. Randall
Atty.

Patented Jan. 8, 1935 1,987,582

UNITED STATES PATENT OFFICE

1,987,582

PORTABLE LINT CLEARER FOR TEXTILE MACHINERY

Edgar A. Terrell, Charlotte, N. C., assignor to The Terrell Machine Company, Charlotte, N. C., a corporation of North Carolina

Application October 30, 1930, Serial No. 492,245

9 Claims. (Cl. 15—20)

The invention has relation to lint clearing devices for use in removing lint and fly from spinning frames, slubbing and roving frames, twisters, and various other textile machines operating upon travelling yarns. The removal of lint and fly which rapidly accumulates on parts of the machine adjacent the running yarns becomes necessary periodically in order to prevent accumulated masses of fibers from becoming caught by the travelling yarns and carried forward thereby to become fixed in the yarns in the course of the step or process being performed on the latter, and resulting in the formation of slubs and bunches in the finished yarns which seriously impair their value.

The principal object of the present invention is to provide novel and improved pneumatic lint clearer devices having a high degree of efficiency in the removal of lint and fly and having capacity for being adapted to operate upon a relatively wide range of different textile machines and upon various parts and localities of such machines.

Special objects of the invention include the provision of means for cleaning two oppositely-located textile machines simultaneously, and for modifying the force and character of the cleaning action to the specific needs of the particular machine being cleaned. Further objects of the invention will become apparent from the following description.

The invention consists in the novel and improved constructions and combination of parts shown and described in the accompanying drawings and specification and particularly pointed out in the claims appended hereto.

Illustrative embodiments of the invention are shown in the accompanying drawings, in which,—

Fig. 1 is a side elevation of one embodiment of the invention.

Fig. 2 is a rear elevation of the same.

Fig. 3 is a plan view of the same.

Fig. 4 is a view similar to Fig. 2, of an alternative embodiment.

Fig. 5 is a plan view similar to Fig. 3 of such alternative embodiment.

Fig. 6 is a horizontal section on line 6—6 of Fig. 4.

Fig. 7 is a view similar to Fig. 2 of still another embodiment.

Fig. 8 is a section on line 8—8 of Fig. 7, with the addition of a fan guard.

Fig. 9 is a section on line 9—9 of Fig. 7.

Referring to the drawings:

The improved clearer device of Figs. 1 to 3 comprises a wheeled carriage supporting a standard on which is mounted a plurality of individual blast-producing means, the organization being adapted to be passed down the aisle between rows of oppositely-located textile machines such as spinning frames and the like, and to clean and clear simultaneously the desired or selected parts of a pair of such machines, located face-to-face on opposite sides of such aisle.

The carriage for the improved clearer comprises a base 1 provided with a pair of large wheels 2 turning freely on a transverse shaft 3 fixed in position at midlength of the base, the wheels being capable of independent rotation to permit of the device being turned sharply in its course. Additional small wheels or casters 4 are provided at the ends of the base 1, which might be arranged in known manner so that the device may travel on the two large wheels with the casters 4 out of contact with the floor. A hand-rail 5 extends upwardly from the base 1 to provide the operator with convenient means for pushing the device about.

The means for effecting the pneumatic removal of the lint and fly comprise a plurality of fans or blowers or other devices for producing a blast of air, borne by the wheeled carriage and adjustable with respect thereto as to their height, direction and angular relation. In the preferred embodiment shown in the drawings the means are fans 6 of familiar propeller type, driven by individual electric motors 7 upon the respective shafts of which the fans are mounted, the motors being driven by electric current from a common source of power which may be the power lines of the mill, to which they may be connected by means of a flexible cable attached to such lines and leading to the wheeled carriage 1, or, in the event that greater mobility of the lint-clearer is desired, the power for driving the motors may be secured from storage batteries (not shown) carried within the compartment 8 in the base, to which access is had through the hinged covers 9 forming the top of the base or wheeled carriage 1.

The fans 6 are mounted on laterally extending arms 10, 11, supported by a central standard 12, in order that they may deliver their respective blasts in close proximity to the parts desired to be cleaned by the device as the latter is wheeled past the front of the spinning frame or other textile machine. The fans are arranged in pairs and oppositely directed relations, so that the device may be wheeled down the center of the aisle between oppositely-located spinning frames or other

machines, as stated, to clean simultaneously the corresponding parts on a pair of spinning frames or the like. To provide for the different widths of aisles adopted by different mills in locating spinning frames and other machines, provision is made for varying the position of the fans laterally with respect to the direction of movement of the wheeled carriage. Herein this is effected by slotting the transversely extending supporting arms 10, 11, as indicated at 13, and attaching them by means of hand-screws 15 passing through such slots, to collars 14, fixed upon the standard 12. The collars 14 are formed with recesses of a width adapted to receive within them the width of the supporting arms 10, 11, so that such arms will be held out at right angles to the vertical standard 12.

It is contemplated as shown to employ more than one fan to effect the cleaning of the desired portions of each machine as the cleaning device passes along in front thereof. Herein the device comprises two fans operating at different levels upon each of the two oppositely-located machines intended to be cleaned simultaneously. This illustrated form is particularly adapted for use in cleaning spinning frames, for which purpose the lower fan at each side of the standard 12 will be located at the proper height from the floor to direct its blast upon and thus clean the traverse rail and the other parts in the locality of such rail, while the upper fan at each side of the standard will be set at a proper height from the floor to operate upon the creel surmounting the spinning frame, and the other parts in the locality of the creel. To adapt the device to the specific type of spinning frame or other textile machine to be operated upon, means is provided for adjusting the height at which the fans are supported, this being accomplished by forming the collars 14 with capacity for free sliding movement up and down the standard 12, with a manually operable clamping screw 16 provided in each collar to bear against the surface of the standard 12 and to maintain the collar and its associated pair of fans at the proper level.

To provide for directing the blast of each fan at the proper angle to clean most effectively the particular type of machine upon which it is desired to operate, each fan and its motor is supported in a holder 17 which is secured to the ends of the arms 10, 11, by means of hand-screws 18 so that the inclination of the fan axis and consequently the direction of its blast may be adjusted in a vertical plane. Thus the blast of each fan may be directed obliquely downward or upward, or vertically downward, or by turning the fan and motor end-for-end in the holder 17, it may be made to blow vertically upward; or the blasts of both fans at one side of the standard may be made to converge from above and from below simultaneously upon a single locality in the machine which it is desired to clean. To provide for reduction of the lateral width of the device so as to facilitate its passage through narrow passageways and to clear other obstacles as it is transported about the mill, the standard 12 is mounted rotatably upon the base 1, so as to permit the arms and the fans at the ends thereof to be swung into line with the direction of movement of the device as wheeled about and to be brought within the width of the base 1, as indicated in dotted lines in Fig. 3. This is effected by stepping the standard 12 in freely rotatable relation within a socket 19 on the top surface of the base 1, and providing the standard 12 with a handle 20 projecting out radially and then carried upward parallel to the standard to provide means within reach of the operator in his position behind the hand-rail 5 whereby he may rotate the standard and the fans from their normal working relation into their fore-and-aft relation, and vice versa. Stops 21 are provided on the rim of the socket 19 to limit the turning to substantially a 90° angle.

The use of a plurality of individual blast-producing devices such as the several fans shown herein provides a device having extreme flexibility and adaptability to the specific uses to which it may be put. Each fan or unit can be controlled independently as for example to shut off the fans at one side of the standard where the fans at the other side are serving to clean and clear a single isolated spinning frame or machine. Or the upper pair of fans may be used alone, while the lower pair are shut off, or vice versa. Through the use of rheostats and the like well-known means for controlling the speed of electric fan motors, the force of the blast delivered by each fan may be modified to meet the needs in hand, as where certain surfaces and portions of the machine being cleaned require or can endure only a blast of limited force, as about the traverse rail of a spinning frame operating on fine counts of yarns, and where damage or breakage of the ends would result from a strong blast of air. Or adjustment of the relative force of the blasts from different fans may be effected by retracting the fan or fans toward the standard 12. Also, the device provides for varying the intensity or character of the blast through change of the type or shape of the fan-blast employed. By the choice of suitably shaped blades, it is possible to obtain either a narrow and concentrated blast of air therefrom, or a flaring or spray-like blast gentler in its action, to suit the character of the work desired to be performed by the device.

To assure the completeness of the cleaning action, the operator may if desired swing the standard 12 by means of the handle 20 as he propels the device past the spinning frames or other machines, so as to swing the fans about the axis of the standard throughout an arc of 90° or so. Thus the blasts of air will be enabled to clean the lint more thoroughly from behind projections on the machine. For this manner of use, the pin 21 and the handle 20 will be appropriately located. Or the oscillation of the various blasts may be accomplished automatically through the use of the familiar oscillating mountings for the fans themselves, operated through the rotation of the fan.

In the embodiment of the invention shown in Fig. 4, the arrangement of the carriage is the same as described hereinbefore, but the standard 12 is combined with the carriage in non-rotating relation, while the laterally extending arms 30 are adapted to rotate freely about the vertical standard 12 at the desired height. Thus, in this embodiment each fan while operating travels in a circle about the vertical axes of the standard 12, preferably through being set to direct its blast at an angle with the radial arm 30 on which it is mounted, so that the reaction of the fan 32, oppositely directed with respect to the blast which it produces, will produce a component of force tangential with respect to the orbit of the fan around the standard 12 and thus the fan will propel itself around such standard. In the form shown, the fan's blast is directly exactly tangentially to its orbit, a posi-

tion giving the maximum turning effect of the fan and its arm about the standard 12. Adjustment of the fan so that its blast is directed more or less radially outward will serve to retard the speed of rotation of the fan about its orbit to the desired extent, while with the blast directed exactly radially outward, there will be no reaction tending to revolve the fan about the standard 12. To provide for modifying the force of the blast delivered to the machine to be cleaned, the fans 32 are mounted on the arms 30 with capacity for adjustment of their nearness or remoteness from the standard 12, in order that each fan may approach more closely to the machine being cleaned and hence act more forcefully thereon as it sweeps by in its orbit, during the course of travel of the device along the front of the machine, or so that the effect of the blast may be weakened by having the fan nearer the standard 12, and consequently more remote from the machine.

To provide for free rotation of the fans about the axis of the standard 12, the arms 30 are combined with the standard 12 by means of collars 34 secured to the arms 30 and resting upon anti-friction bearings such as ball-thrust bearing 36. To provide for adjustably disposing the fans at the proper elevation to cooperate correctly with the portions of the machine which it is desired to clean, the collars 34 are supported at the desired height upon the standard 12 by means of slidable collars 38 adapted to be fixed at the proper height upon the standard by clamping screws 40, the anti-friction bearing being interposed between the collar 34 which rotates freely on the standard 12 and such clamping collar 38.

To arrest the rotation of the fans in their orbits promptly so that the device may be passed through a narrow space, as between belts descending from a common overhead shaft to opposite sides of the aisle along which the machine is being passed, or for other similar reasons, stop-means are provided in the form of a pin 42 disposed in a radial hole 44 of the rotating collar 34, the pin being pressed inward against the surface of the standard 12 by means of a flat spring 46 fixed on the collar, the standard 12 being formed with a way or channel 48 extending substantially throughout its length, into which the pin 42 may enter to arrest the rotation of the collar 34 when the arm 30 is disposed in the direction of movement of the carriage. To hold the pin 42 normally out of contact with the surface of the standard 12 and hence out of engagement with the way 48, the hole 44 is of key-hole shape, and the pin 42 has a corresponding key extending laterally therefrom near its outer end, so that when withdrawn a sufficient distance away from the surface of the standard 12, the pin 42 may be turned so that its key or lateral extension rests on the outer surface of the collar 34 and prevents it from entering the channel 48. Thus, in approaching a narrow passage, the operator checks the rotation of the fans in their orbit by grasping the arm 30 and then turns the pin 42 to permit it to enter the way 48 upon arrival thereat, so that further rotation of the fan about the standard 12 is suspended until the pin 42 is again withdrawn, without the necessity for shutting off the fans or otherwise waiting for the parts to come to rest.

While only one fan-unit is shown with its appropriate collar 34 and bearing two fans, one upon each of the two arms 30 in connection with the rotating collar 34, it will be understood that two or more fan-units each with two or more of such fans may be employed upon the standard 12, as the utilization of the particular employment of the device may dictate.

In the form shown in Fig. 7, the movable support or carrier is identical or similar to that of the first embodiment, but the tall standard 12 is replaced by a short support 50 rotatably mounted on a vertical axis in connection with the carriage 1, and the support 50 has a firmly attached fan-shaped element 52 having an arcuate slot 54. The fans 56 are borne upon one or more arms 58 pivotally attached as at 60 to a horizontal pivot passing through the support 50 so that the arms 58 can swing in a vertical arc about the center of the pivot 60. To hold the arms in the desired angular widthwise extent needed to bring the fans 56 into proper proximity with the machine past which the device is being moved, the arms 58 are provided with clamping bolts 62 put through the arcuate slot 54 in the fan-shaped member 52 and provided with wing-nuts. To adjust the angular relation of the arms 58 and thus the distance of the fans 56 from the central axis of the support 50, the clamping screws 62 are loosened in obvious manner and the desired angular adjustment made, after which the parts are maintained in adjusted position through again tightening the screws 62. In this form the rotatable mounting of the support 50 in connection with the carriage 1 permits the fans to be swung into the line of travel of the carriage 1 through rotating the superstructure above the carriage a quarter turn from the position shown in Fig. 7.

The fans are mounted for adjustment of their vertical angle with respect to the arms 58 through adjustment of the fans about the axis of their clamping screws 64 by means of which latter they are connected to the straps 66 combining them with the arms 58. The straps 66 in turn are adjustable lengthwise of the arms 58, through manipulation of the clamping screws 68 which tighten the straps about the arms 58. In this form also, the fans may be set so as to produce continuous rotation of the superstructure about the axis of the standard 50 as a result of the reaction of the fans referred to, if desired.

It is desirable that all the fans in the various embodiments shown be provided with the customary guards 70 shown in Figs. 4 and 8.

While I have illustrated and described certain forms in which the invention may be embodied, I am aware that many modifications may be made therein by any person skilled in the art, without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to the particular forms shown, or to the details of construction thereof, but what I do claim is:

1. A portable lint clearer for spinning frames having in combination a carriage, and means thereon for creating a plurality of independent blasts of air, each of such blasts being created at a different point on the lint clearer and beyond the lateral extent of the carriage, the blast-creating means being so controlled as not to damage the strands.

2. A portable lint clearer having in combination a carriage, and a plurality of fans thereon to direct blasts of air in different directions, each fan being individually adjustable with respect to the carriage to vary the angular direction of its blast, and means to modify the force of one

blast independently of the force of another blast, the fan being so controlled as not to damage the strands.

3. A portable lint clearer having in combination a carriage, a plurality of fans thereon to direct blasts of air in different directions, each fan being individually adjustable with respect to the carriage to vary the angular direction of its blast, and means for variation of each fan's position widthwise of the carriage to modify the force of its blast on the object cleaned independently of the force of the other blasts the fans being so controlled as not to damage the strands.

4. A portable lint clearer for spinning frames having in combination a carriage, a plurality of fans thereon to create blasts of air at different points on the lint clearer, and means for variation of the elevation of the fans with respect to the carriage to correspond with the elevation of the locality to be cleaned, the fans being so controlled as not to damage the strands.

5. A portable lint clearer having in combination a carriage, a plurality of fans thereon to direct blasts of air in different directions, means for variation of the elevation of the fans with respect to the carriage, each fan being individually adjustable with respect to the others to vary the angular direction of its blast, and means for variation of a fan's position widthwise of the carriage to extend the fan more or less into regions inaccessible to the carriage, the fans being so controlled as not to damage the strands.

6. A portable lint clearer having in combination a carriage, fans, and means for extending the fans laterally of the carriage into proximity with the machine being operated upon and for withdrawing them within the width of the carriage, comprising outwardly extending arms supporting the fans, and a standard supporting the arms, the standard being rotatably mounted in connection with the carriage, the fans being so controlled as not to damage the strands.

7. A portable lint clearer for spinning frames having in combination a carriage, a fan thereon to direct its blast to the locality of the ring-rail of the spinning frame, and a fan thereon to direct its blast to the locality of the creel in connection with the spinning frame, the fans being so controlled as not to damage the strands, and means for independently controlling the intensity of the blasts.

8. A portable lint clearer for spinning frames having in combination, a carriage, a support in connection with the carriage, fans, means supporting the fans permitting the latter to move in a horizontal path with respect to the carriage, and means for varying the lateral extent of such path with respect to the carriage, the fans being so controlled as not to damage the strands.

9. A portable lint clearer for spinning frames having in combination, a carriage, a support in connection with the carriage, fans, means supporting the fans permitting the latter to move in a horizontal path with respect to the carriage, and means for varying the lateral extent and the elevation of such path with respect to the carriage, the fans being so controlled as not to damage the strands.

EDGAR A. TERRELL.