M. B. HALLIDAY.

CLOTHES DRYING MACHINE.

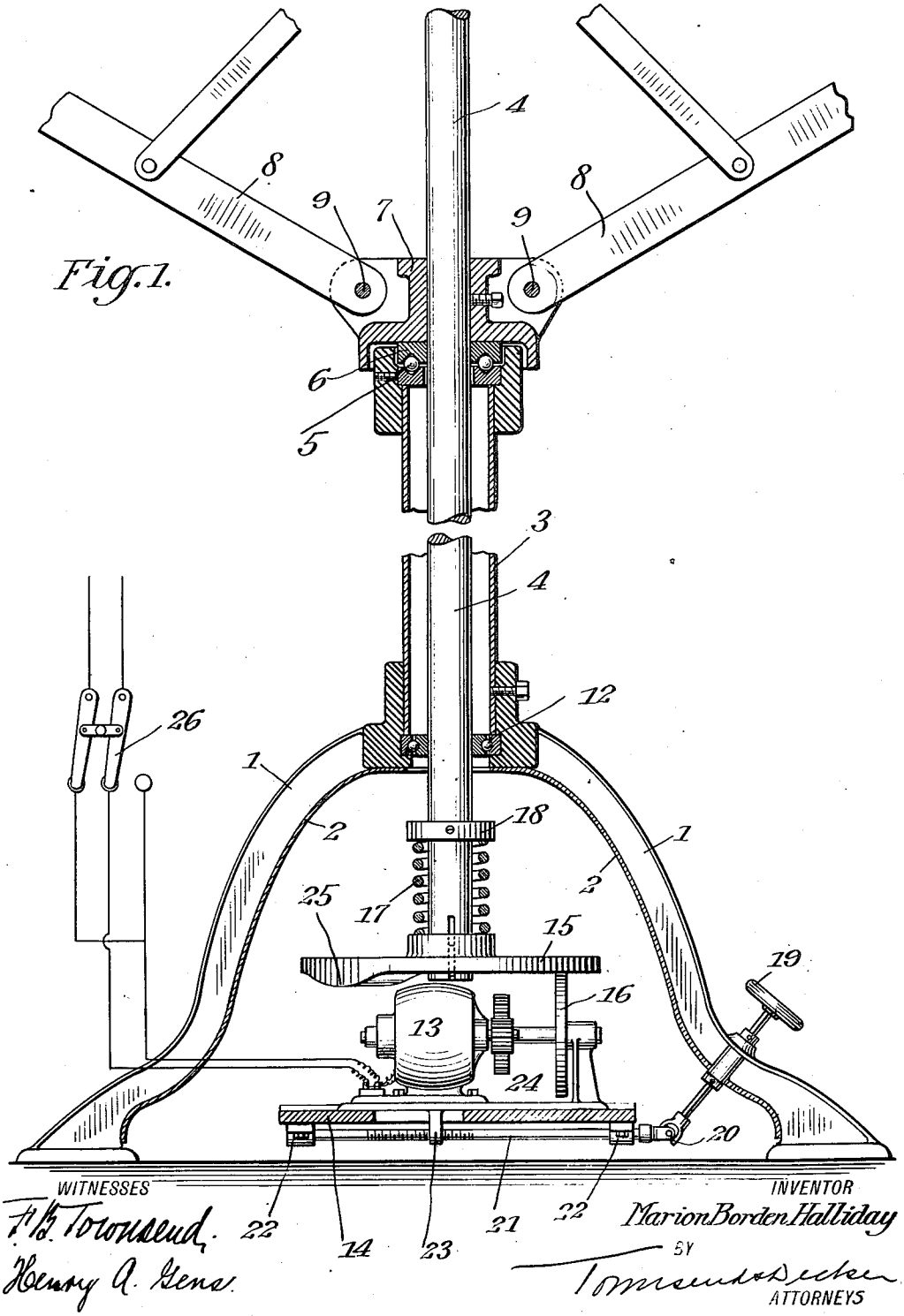
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3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2.

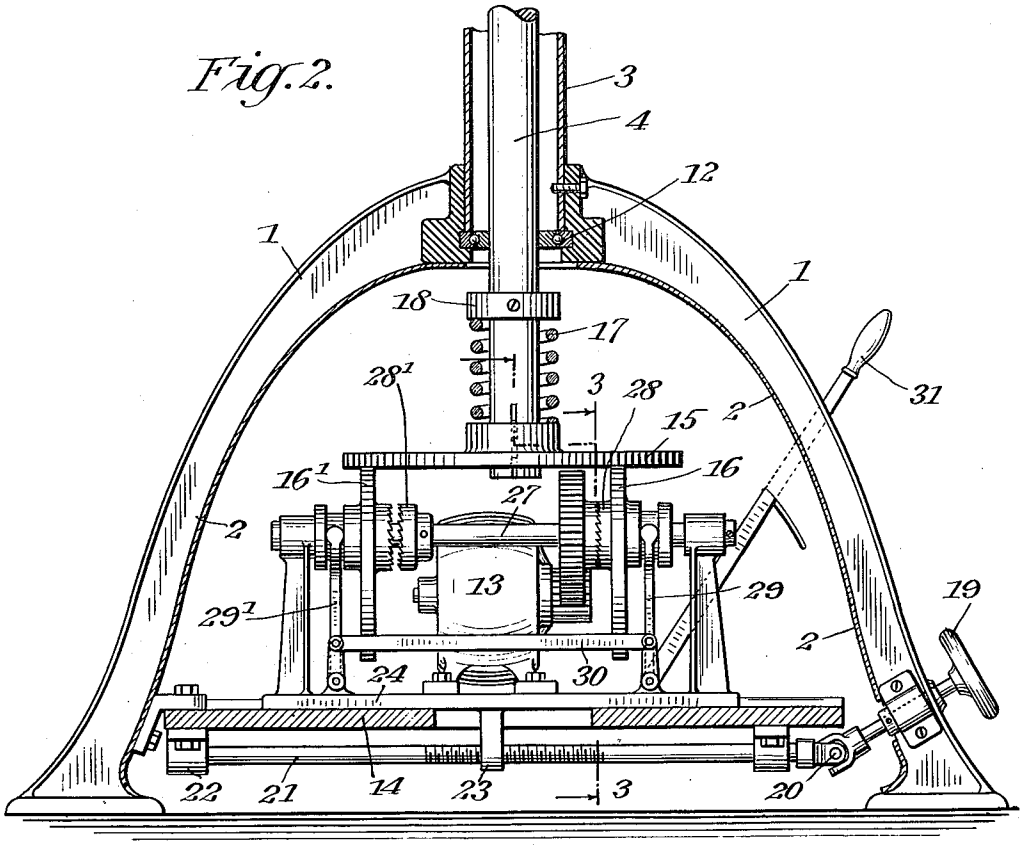
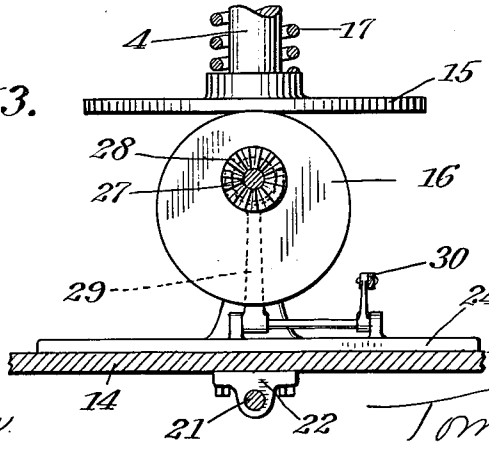


Fig. 3.



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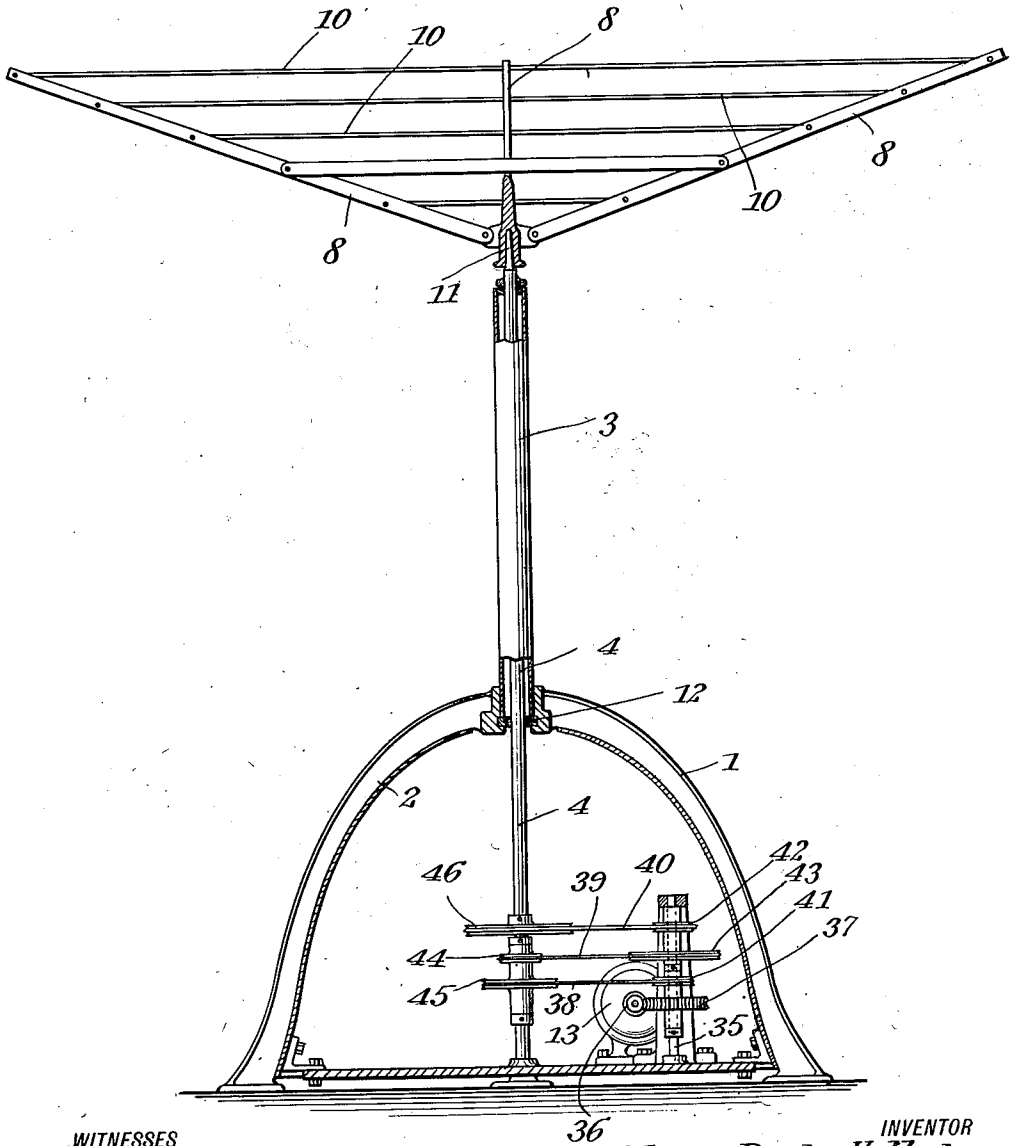
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3 SHEETS—SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

MARION BORDEN HALLIDAY, OF WALLKILL, NEW YORK.

CLOTHES-DRYING MACHINE.

1,169,954. Specification of Letters Patent. Patented Feb. 1, 1916.

Application filed December 2, 1913. Serial No. 804,138.

To all whom it may concern:

Be it known that I, MARION BORDEN HALLIDAY, a citizen of the United States, and a resident of Wallkill, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Clothes-Drying Machines, of which the following is a specification.

My invention relates to machines or apparatus for drying clothes for use in laundries, private homes and other places particularly where it is desired to dry laundry work in-doors.

The main object of the invention is to provide a simple, compact apparatus upon which the clothes are hung and by which the clothes may be dried in-doors in practically as efficient a manner as out-doors in a breeze, the apparatus being a unit in itself. In brief, the object is to quicken in-door drying in as simple and cheap a manner as possible.

To this end the invention contemplates, in its preferred form, a clothes drier comprising a vertical shaft or post upon the upper end of which is mounted a clothes frame made up of radiating arms and cross pieces upon which the clothes to be dried are hung, this being a type of clothes drier now well known. With this drier I combine mechanism and devices whereby the frame may be rotated and thereby a breeze or change of air be presented to the clothes and at the same time, if desired, an up and down movement may be given to the frame or carrier to give a certain "whip" to the clothes as well as to provide them with an additional air impact.

Preferably I also embody means, by preference controlled at will, to reverse the direction of rotation of the frame or carrier and thereby prevent the clothes from adhering to each other or to cause them to separate should they cling in contact with each other.

I am aware that it has been proposed to equip a laundry or drying-room with apparatus for injecting or introducing hot air or a blast of air to impact with the clothes to be dried but this necessitates a permanent, expensive installation and cannot be transported from place to place as in the case of the self-contained unit contemplated by this invention.

To effectuate the above-mentioned objects the invention consists in the improved clothes drier and in the novel parts and combinations of parts hereinafter more particularly described and then specified in the claims.

In the accompanying drawings, Figure 1 is a vertical central section through a rotary clothes drier constructed in accordance with this invention in one of its forms, parts being shown in elevation and part of the drying frame being broken away. Fig. 2 is a vertical central section through the base of the drier illustrating a modification in the motor-driving arrangement. Fig. 3 is a transverse section taken on the line 3, 3 Fig. 2. Fig. 4 is a general side elevation and vertical cross-section of a clothes drier constructed in accordance with this invention in another of its forms.

The clothes drier as regards its main outer characteristics resembles a type of circular unit drier well known on the market as a "Hill clothes drier", that is, it preferably comprises a tripod base, a vertical shaft or post and a clothes or drying frame mounted at the top of the post or shaft.

The base or support for the drier is preferably made up of legs 1 arranged in the form of a tripod, the space between the legs being housed in with sheet iron or other material 2 to inclose the driving motor and other moving parts of the mechanism located within the housing.

3 indicates a pipe standard or sleeve secured to and rising from the legs 1.

4 indicates the driving shaft disposed longitudinally within the standard 3 and supported near its upper end by a fixed collar 6 and a ball-bearing 5 mounted upon the upper end of the standard 3.

The clothes or drying frame may be of any suitable construction and is carried by the shaft 4 it being, in one of its forms as shown in Fig. 1, secured positively to the driving shaft by a collar 7. The drying frame preferably is of the same construction as the frame in the type of drier above referred to and comprises a plurality of radiating arms 8, in the present form pivoted at 9 to the collar 7, around which the clothes sustaining lines 10 are passed (see Fig. 4). Instead of being rigidly secured to the shaft 4 the frame may be secured thereto by a friction bayonet connection 11 (see Fig. 4) whereby the frame after being folded up can be readily removed without the use of tools. The type and construction

of drying frame is preferably the same as that in the "Hill drier", which type is now so well known that further detailed description may it is thought be dispensed with.

The driving shaft 4 being suspended within the standard 3, any side thrust is taken by a ball bearing 12 mounted in the standard near the lower end thereof.

13 indicates an electric motor mounted on a platform 14 suitably supported within the housing formed in the base of the apparatus. The lower end of the shaft 4 is provided with a horizontal disk 15 keyed thereto but capable of longitudinal movement on said shaft. The motor 13 is suitably connected with a friction driving wheel 16 which in turn engages the lower face of the disk 15 so that the shaft 4, carrying with it the drying frame, is rotated by the motor 13 through the friction gear wheel 16 and disk 15, the latter being pressed into engagement with the wheel 16 by a spring 17 backing up said disk and adjustable on the shaft 4 by collar 18.

To permit variation of the speed of rotation of the drying frame the motor, carrying with it the friction wheel 16, may be mounted to slide in suitable guides formed on the platform 14 by means of an operating handle 19 manipulated from the outside of the base. The operating handle 19 is connected to the motor and its attendant driving parts through a universal joint 20, threaded shaft 21 mounted in bearings 22 and lug 23 depending from the auxiliary platform 24 upon which the motor and its associated parts are directly mounted. By rotating the handle 19 the driving wheel 16 may be caused to drive the disk 15 at any point between its outer periphery and its axis and thus control the speed of rotation of the shaft 4 in an obvious manner.

If it is desired to cause the drying frame to be moved vertically as well as rotatively, to assist in the drying action, the disk 15 may be provided with a cam 25 or the disk may be of plane surface and the driving gear 16 eccentrically mounted as shown in Figs. 2 and 3, whereby during every revolution the drying frame will also be moved up and down.

By employing the friction drive 15—16 it will be seen that a slip connection between the drying frame and the motor is provided whereby should anything or anybody come in contact with the rotating frame the same will stop or be retarded and the motor continue to revolve without damage to the person or the mechanism of the apparatus, although with other types of drives the friction connection shown at 11 in Fig. 4 or other slip devices may be relied upon to take care of this feature.

To hasten or assist the drying action or to keep the clothes from sticking to each other, the direction of rotation of the drying frame may be reversed by providing a reversible motor controlled by a reversing switch 26 which may be located at the side of the room in which the drier is used so that the direction of rotation can be changed at will, or such reversal may be effected by mechanically operated means such for instance as is illustrated in Fig. 2. In this construction two driving gears 16, 16′ one on each side of the axis of the disk 15 are provided. Said gears are mounted on a shaft 27 supported on the auxiliary platform 24 and each is provided with a clutch 28 and 28′ respectively. The gears are loosely mounted on the shaft 27 and moved longitudinally thereof and into and out of engagement with the clutches 28 and 28′ by levers 29 and 29′. Said levers are coupled for movement together by a link 30 and are operated in unison by a handle 31 projecting through the wall of the housing. Upon reciprocation of the lever 31 either one or the other of the gears 16, 16′ is coupled to the driving power. Upon movement of the lever 31 in the reverse direction the gear formerly coupled is released and the other gear coupled, whereby the rotation of the frame is reversed.

Referring to the form illustrated in Fig. 4, a modification in the specific driving connection between the motor 13 and shaft 4 is shown. In this form the motor 13 drives the shaft 4 through a worm 36, gear 37 and belts 38, 39, 40 passing over suitable pulleys to get the proper speed reduction to the shaft 4. The various parts of this form of drive may be mounted in any suitable manner as for instance, the one set of pulleys and the gear 37 may be loosely mounted on a vertical shaft 35, the first pulley 41 rotating with the gear 37 and the other pulleys 42 and 43 rotating together but independent of the gear 37. The other pulleys 44 and 45 may be mounted to rotate together freely on a continuation of the driving shaft 4 while the pulley 46 is fast on said shaft and corresponds with the friction disk 15 in the form first described.

It will be understood that the invention may be carried into effect by employing modifications and equivalents of the various parts shown and described without departing from the spirit thereof as set forth in the appended claims.

What I claim as my invention is:—

1. In a clothes drier, the combination of a base provided with walls inclosing the space therein, a sleeve secured to and rising vertically from said base, a vertical clothes frame carrying shaft within said sleeve, a ball race secured to the upper part of said sleeve for supporting said shaft, a ball race secured to the lower end of said sleeve

adapted to take the side thrust of said shaft, a motor and driving mechanism between said motor and said shaft, said motor and driving mechanism being inclosed in said base.

2. In a clothes drier, the combination of a vertical shaft, a clothes frame secured to said shaft, means for rotating said frame and means for simultaneously moving said frame bodily in a vertical direction.

3. In a clothes drier, the combination of a vertical shaft, a clothes frame secured thereto, a motor adapted to rotate said frame through said shaft and means adapted to simultaneously and bodily raise and lower said frame as a unit.

4. In a clothes drier, the combination of a vertical shaft, a clothes frame secured thereto, a motor adapted to rotate said frame through said shaft and a cam adapted to periodically bodily raise said clothes frame as a unit.

5. In a clothes drier of the character described, the combination of a vertical clothes-frame carrying shaft and means for simultaneously rotating and longitudinally reciprocating said shaft.

Signed at Wallkill, in the county of Ulster and State of New York, this 28th day of Nov., A. D. 1913.

MARION BORDEN HALLIDAY.

Witnesses:

GEORGE E. HALLIDAY.

MARIE J. BORDEN.