

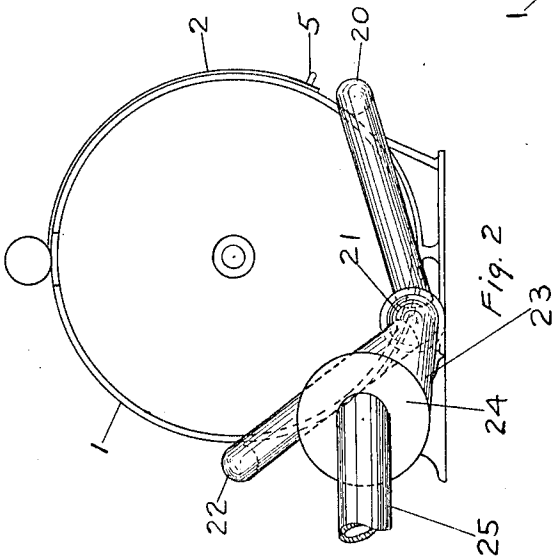
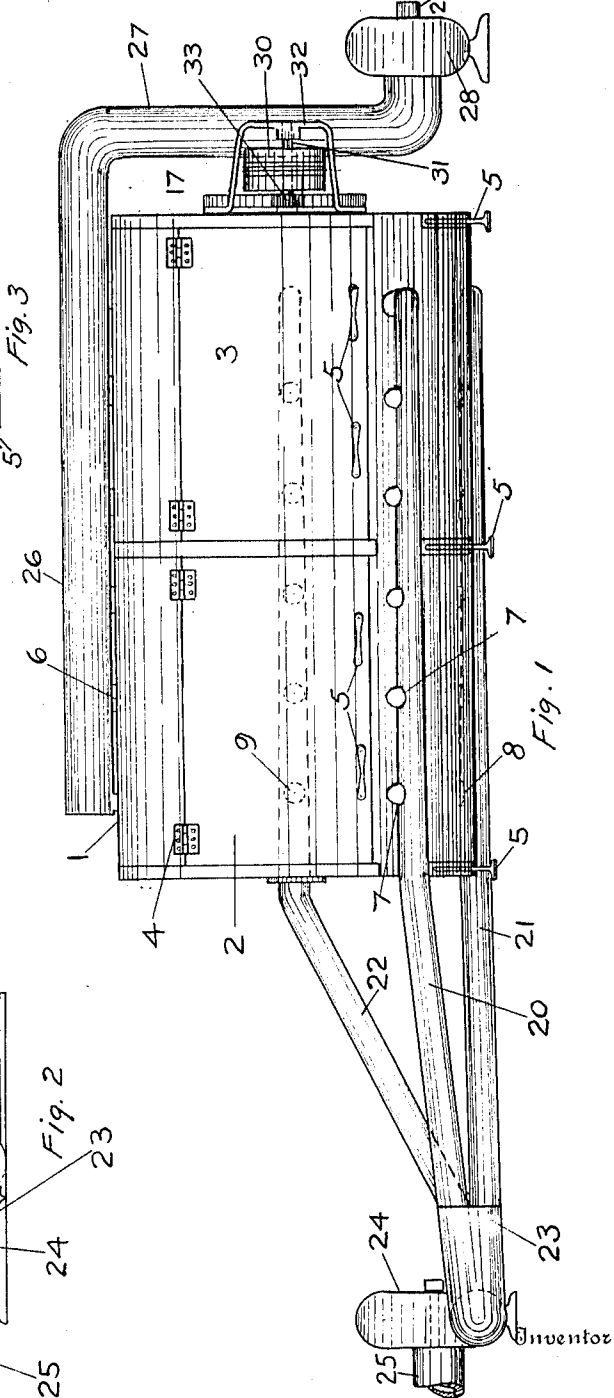
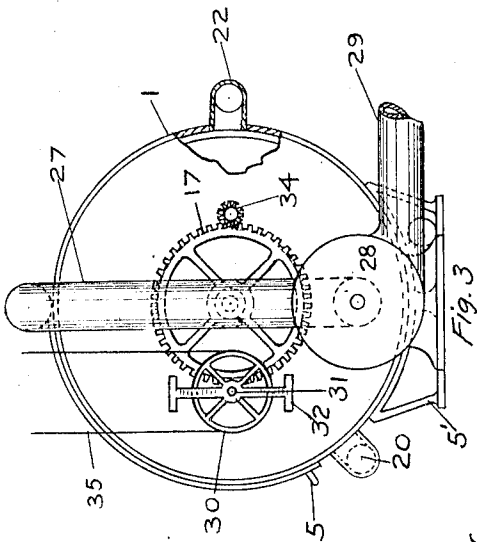
F. P. HESS.
DRIER.

APPLICATION FILED MAY 6, 1909. RENEWED NOV. 17, 1911.

1,020,695.

Patented Mar. 19, 1912.

3 SHEETS—SHEET 1.



Witnesses
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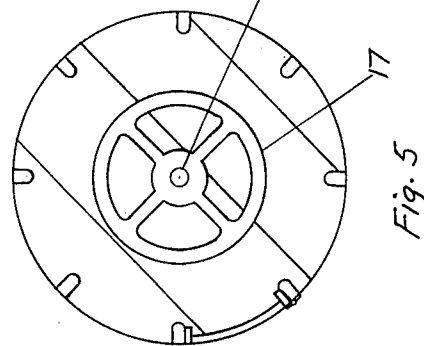
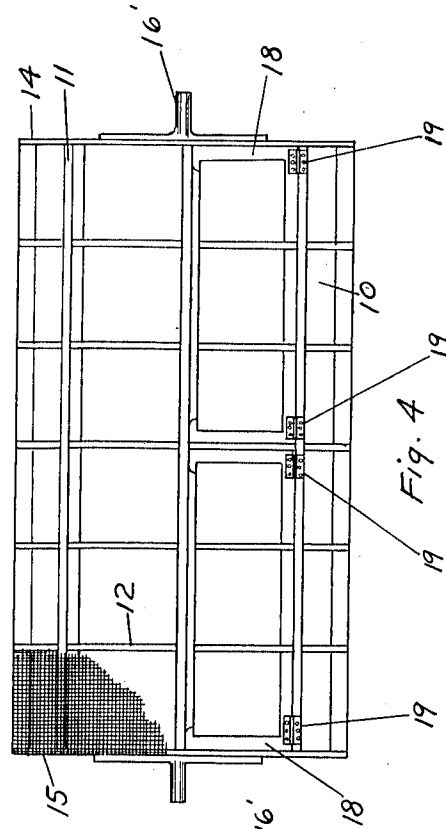
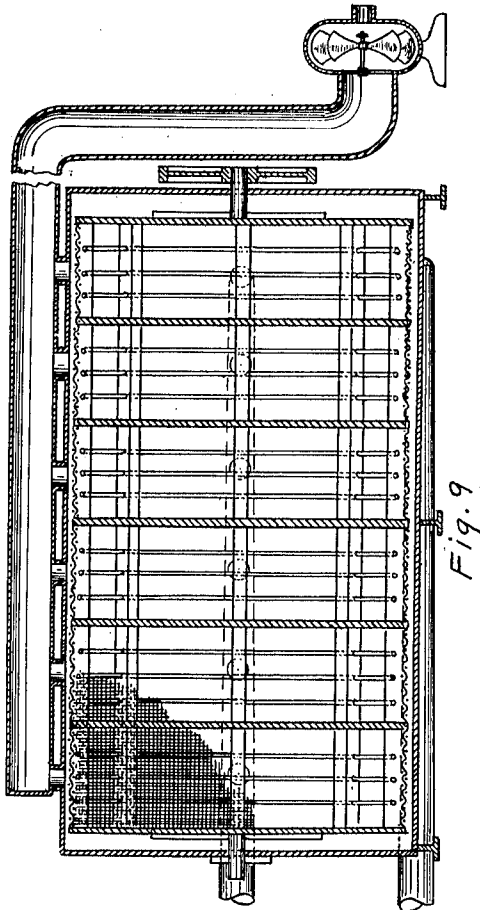
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3 SHEETS—SHEET 2.



Witnesses

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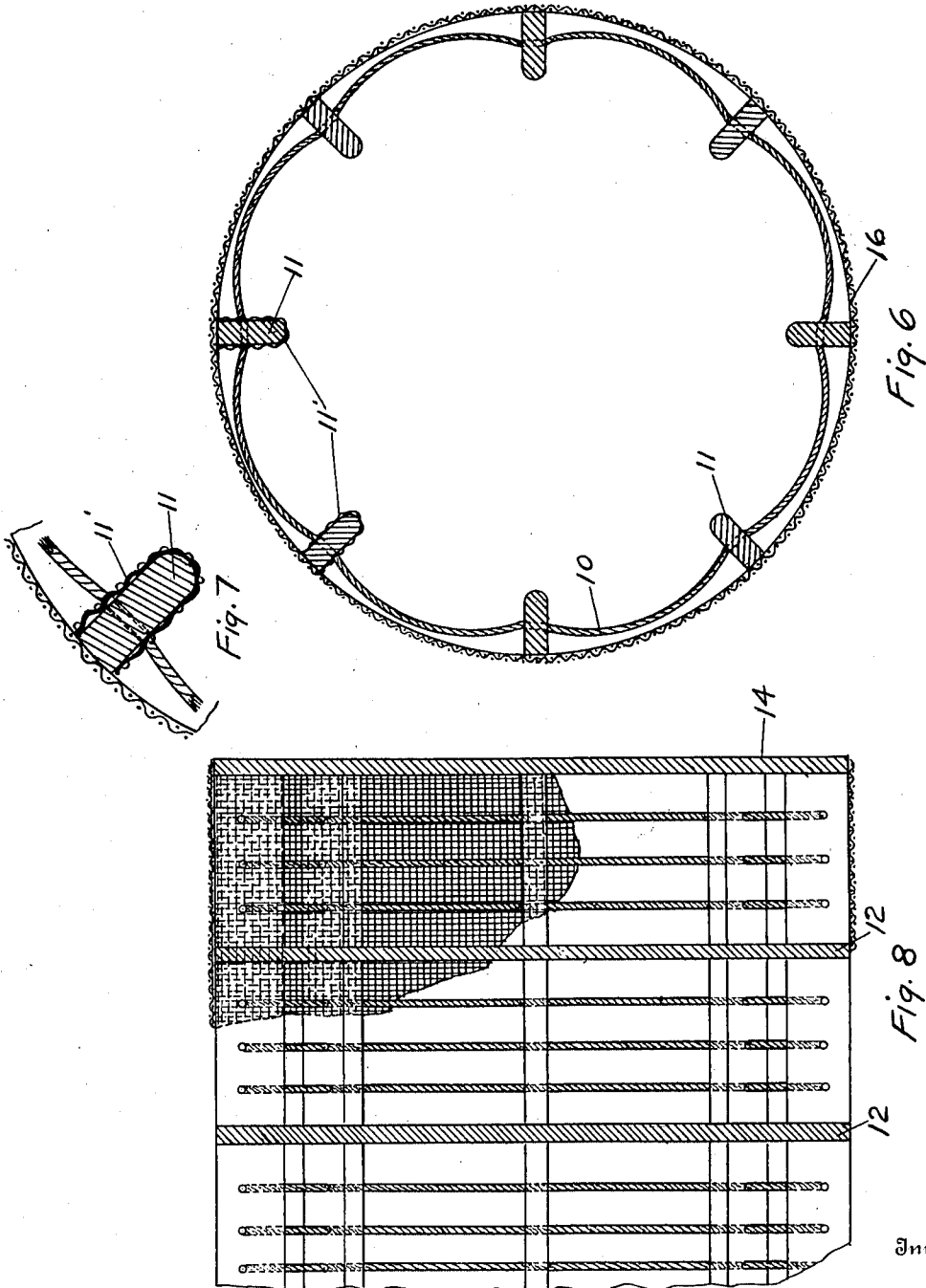
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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DRIER.

1,020,695.

Specification of Letters Patent. Patented Mar. 19, 1912.

Application filed May 6, 1909, Serial No. 494,390. Renewed November 17, 1911. Serial No. 661,421.

To all whom it may concern:

Be it known that I, FRANKLIN P. HESS, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Driers, of which the following is a specification.

This invention relates to clothes driers and has for its object the provision of an apparatus of this class which is adapted to rapidly dry the wet clothes of a washing without damaging the same, and at the same time withdraw the lint removed from the clothes during the process of drying.

The invention consists in providing a rotary cylinder having its periphery formed of perforated material or wire screen through which air may be forced during the rotation of said cylinder. Means are provided within the cylinder whereby it is divided into a plurality of compartments each adapted to receive the washing of a different family or individual. The periphery of the cylinder is provided with means whereby the clothes may be inserted in one or more of these compartments. Extending from end to end and projecting inwardly from the cylindrical wall thereof are a plurality of ribs or blades which are adapted to engage with the clothes contained within the cylinder, and as the cylinder is revolved about its axis, the clothes are lifted thereby and carried to the upper part of the cylinder where gravity will cause them to drop to the bottom of the cylinder again where they will be again engaged by the blades and again lifted, the operation being repeated until the clothes are thoroughly dried. Obviously as the clothes drop from the inwardly extending blades to the bottom of the cylinder, they will spread open. Opposite the lower part of the cylinder are one or more pipes each having nipples terminating in openings opposite each of said compartments, means being provided whereby heated air is forced through these pipes and from these openings into the interior of the various compartments in the path of the downwardly falling clothes. This inrush from these pipes assists the spreading of the clothes continually dropping from the upper part of the cylinder to the lower part thereof, this spreading out of the clothes effecting a more rapid drying of the same. Opposite the upper part of the cylinder is

another pipe provided with a plurality of nipples terminating in openings one of which at least is opposite each of the compartments in the rotary cylinder. This pipe is connected to a fan adapted to create a suction in this pipe and withdraw any lint which may chance to collect during the process of drying in the upper part of the rotary cylinder or the casing thereto.

The invention further consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and the claims hereinafter given.

Of the drawings: Figure 1 represents a side elevation of a drier embodying the features of the present invention. Fig. 2 represents an end elevation showing the devices for forcing air into said drier casing. Fig. 3 represents an end elevation showing the devices for exhausting the air from the drier casing, and the mechanism for driving the drier cylinder. Fig. 4 represents a side elevation of the drier cylinder with certain parts broken away. Fig. 5 represents an end elevation of the drier cylinder. Fig. 6 represents a vertical sectional view taken through the drier cylinder. Fig. 7 represents a detail sectional view of a portion of the drier cylinder. Fig. 8 represents an enlarged detail sectional view showing the construction of the drier cylinder, and Fig. 9 represents a longitudinal sectional view taken through the drier and its inclosing casing.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 1 represents a suitable casing preferably cylindrical, the cylindrical wall of which is provided with a plurality of doors 2 and 3 connected to the body portion of said casing by means of hinges 4, said doors being provided with a plurality of handles 5 by which they may be opened when it is desired to gain access to the interior of the casing. The casing 1 is supported on legs 5¹.

Each end of the casing 1 is provided with suitable bearings adapted to receive the trunnions 16¹ secured to the end plates 14 and 15 of the rotary cylinder 10 adapted to be revolved about the axis of said trunnions 16¹ within the casing 1. These end plates 14 and 15 are connected together by means

of a plurality of bars or blades 11, these bars or blades extending from one end plate 14 to the other 15 at the peripheries thereof.

Interposed between the end plates 14 and 15 are a plurality of partitions 12, these partitions dividing the cylinder into a plurality of compartments each adapted to receive the wash of a separate family or individual so that the various washings will not be mixed during the process of drying. The entire cylinder is inclosed by means of a perforated jacket 16 preferably made up of a wire screen extending from one end plate 14 to the other 15 and through which air may freely circulate through the various compartments formed within the cylinder 10.

The peripheral wall of the cylinder 10 is provided with the normally closed doors 18 connected thereto by hinges 19, these doors being covered with a wire screen or other perforated material and providing a means of insertion or removing the clothes from the various compartments.

The inner ends of each of the blades 11 are rounded over so that they will not present any sharp corners that are liable to injure the clothes as they are tossed about while the cylinder is being rotated during the process of drying. These blades may extend inwardly from the peripheral wall of the cylinder 10 a greater or less distance without altering the principles of the present invention. Preferably the faces of the blades 11 are covered with rubber strips 11¹ secured thereto in any well-known manner as indicated in Fig. 7 of the drawings, these strips 11¹ serving as a cushion adapted to minimize the danger of injury to the clothes with which they contact. The strips 11¹ are secured to the blades 11 with their upper faces more or less corrugated or curved as indicated in said Fig. 7 so that the clothes resting thereon will be more or less in frictional contact therewith and consequently in the rotation of the cylinder or drum 10 these clothes will be carried nearer the center of the upper part of the cylinder before they drop by gravity into the lower part thereof, than would be the case if the faces of the blades 11 were perfectly smooth.

Through each of the blades 11 extends a plurality of cords or ropes 10¹, which cords or ropes pass through each of the blades 11 completely around the inner wall of the cylinder 10. The purpose of these cords or ropes is to prevent the clothes from becoming injured by impact with said perforated jacket or screen 16. These cords or ropes form a grating which performs the useful function of supporting the clothes and keeping them away from the wire screen, so that the buttons on the clothes will not be caught by the wire screen and be broken or torn off the clothes. If the machine be used with articles not having buttons such clothes sup-

porting means may be dispensed with without disadvantage.

Underneath the rotary cylinder or drum 10 extends one or more pipes 20, 21, and 22, each provided with a plurality of nipples, one of which is opposite each of the compartments within the rotary cylinder 10. As shown in the drawings, the pipes 20, 21, and 22 extend along the outer wall of the casing 1 and the nipples thereon extend through the walls of said casing, with their outlets 7, 8, and 9 opposite the various compartments and closely adjacent to the periphery of the cylinder 10 so that when air is forced through the pipes 20, 21, and 22, and therefrom through the outlets 7, 8, and 9, this heated air will pass upwardly in a transverse direction and will act upon the clothes being carried by the blades 11 during the rotation of the cylinder 10 to the upper part thereof and dropped by gravity into the path of the inrush of heated air from the nipples or openings 7, 8, and 9. The pipes 20, 21 and 22 are connected with a union or joint 23, the opposite end of which connects to a fan 24 having an inlet pipe 25. Heated air from any suitable source of supply is forced by means of the fan 24 through the various pipes 20, 21, and 22, and through the nipples or openings 7, 8, and 9 into the rotary cylinder 10.

Above the casing 1 is an exhaust pipe 26 provided with a plurality of nipples 6 extending through the walls of said casing 1, one of said nipples being opposite each of the compartments in said casing and provided with an opening through which the air is permitted to be exhausted from the casing.

In the drying of clothes, lint is removed therefrom and collects in the upper part of the cylinder or casing and is withdrawn through the pipe 26, a suction being created therein by means of a fan connected with the bent end 27 thereof and provided with an outlet 29.

The cylinder 10 is rotated by means of a gear 17 secured to one of the trunnions 16¹ and meshing with a pinion 33 fixed to a shaft 31 mounted in a suitable bracket 32 fastened to one end of the casing 1, said shaft 31 having also secured thereto the driving pulley 30 by which rotary motion is imparted to the pinion 33 by means of the belt 35 from any suitable source of power. Another pinion 34 also engages with the gear 17 diametrically opposite to the pinion 33, this pinion 34 providing a means whereby the gear 17 may be driven without danger of being forced out of alinement with the pinion 33. When motion is thus imparted to the drier cylinder 10, the clothes contained within the cylinder will be lifted by means of the blades 11 and carried to the upper part of the cylinder where they will

be permitted to drop by gravity into the lower part of the cylinder into the path of the heated air being forced in through the bottom of the cylinder and all of the clothes
 5 contained in the cylinder will successively come under the influence of the heated air from these feed pipes and at the same time come under the influence of the suction of the exhaust fan thereby carrying away any
 10 lint which may have been removed from the clothes during the drying process.

The operation of the invention is as follows: The doors 2 and 3 of the casing 1 are opened and then by opening the doors
 15 18 access is obtained to the various compartments of the rotary cylinder 10. Various washings are separated and each different washing is inserted in a different compartment within the cylinder 10. The
 20 doors 18, 2 and 3 are then closed and power is applied through the belt 35 to rotate the drier cylinder about the axis of the trunnions 16¹. As the cylinder 10 revolves about its axis the various inwardly extend-
 25 ing blades 11 will engage with the clothes and lift them to the upper part of the cylinder where they will be permitted to drop by gravity into the lower part. At the same time that rotary motion is imparted to the
 30 drier cylinder 10, the heated air forcing fan and the exhaust fan are rotated, the heated air being forced through the various pipes 20, 21 and 22 and from the openings 7, 8 and 9 transversely through the various com-
 35 partments of the rotary cylinder,—the various streams of heated air acting upon the clothes continually dropping from the top of the compartments, rapidly drying the same. This heated air laden with the mois-
 40 ture received from the wet clothes with which it has come into contact is sucked through the nipples 6 into the exhaust pipe 26 and through the exhaust fan into the delivery spout 29. As soon as the clothes in
 45 the different compartments have become thoroughly dried the rotary movement of the fans and drier cylinder 10 is stopped and the clothes are removed from the various compartments and a new batch in-
 50 serted within said compartment.

The drawings forming a part of the application are simply for illustrative purpose and are not drawn to a scale, and it is obvious that the mechanism may be varied
 55 therefrom without altering the principles of the present invention.

It is believed that from the foregoing the operation and many advantages of the invention will be fully apparent without any
 60 further description.

Having thus described my invention, I claim:

1. In a clothes drier, the combination of a casing; a drier cylinder rotatably sup-
 65 ported therein and provided with a plu-

rality of compartments each of which is provided with means for the admission of air thereto; an air supply pipe provided with a plurality of outlets therefrom, one oppo-
 70 site to each compartment; and means for expelling air from said drier.

2. In a clothes drier, the combination of a casing; a drier cylinder rotatably supported therein and provided with a plurality of
 75 compartments each of which is provided with means for the admission of air thereto; a series of air supply pipes each provided with a plurality of outlets therefrom, one opposite to each compartment; and
 80 means for expelling air from said drier.

3. In a clothes drier, the combination of a casing having a series of parallel openings in its wall; a series of air supply pipes communicating with said openings; a fan for
 85 forcing air through said pipes; a drier cylinder rotatable within said casing and provided with a perforated jacket; means for rotating said cylinder; and means for exhausting air from said casing.

4. In a clothes drier, the combination of a
 90 casing having a series of parallel openings in its wall; a series of air supply pipes communicating with said openings; a fan for forcing air through said pipes; a drier cylinder rotatable within said casing and pro-
 95 vided with a wire screen jacket; means for rotating said cylinder; and means for exhausting air from said casing.

5. In a clothes drier, the combination of a casing having a series of parallel openings
 100 in its wall; a series of air supply pipes communicating with said openings; a fan for forcing air through said pipes; a drier cylinder rotatable within said casing and provided with a wire screen jacket; means for
 105 rotating said cylinder; and an exhaust fan for exhausting air from said casing.

6. In a clothes drier, the combination of a casing having a series of openings in its
 110 wall; an air supply pipe communicating with said openings; means for forcing air through said pipe; a drier cylinder rotatable within said casing and provided with a perforated peripheral jacket; means for rotating said cylinder; and means for ex-
 115 hausting the air from said casing.

7. In a clothes drier, the combination of a casing having a series of openings in its
 120 wall; an air supply pipe communicating with said openings; means for forcing air through said pipe and transversely of said casing; a drier cylinder rotatable within said casing and provided with a perforated peripheral jacket; means for rotating said cylinder; and means for exhausting the air
 125 from said casing.

8. In a clothes drier, a casing having doors hinged to the wall thereof and pro-
 130 vided with a series of openings in its wall; a drier cylinder rotatable within said cas-

ing; and two pipes each communicating with series of openings through the wall of said casing through one of which pipes air is forced into the drier cylinder and through
5 the other of which pipes the air is withdrawn from said casing.

9. In a clothes drier, a casing having doors hinged to the wall thereof; a drier cylinder rotatable within said casing and
10 provided with a plurality of compartments therein; and a plurality of inwardly extending blades within said drier adapted to lift the clothes during the rotation of the drier cylinder to the upper part of said
15 cylinder and then permit them to drop by gravity.

10. In a clothes drier, a casing provided with a series of openings in its wall; a drier cylinder rotatable within said casing;
20 and two pipes each communicating with series of openings through the wall of said casing through one of which pipes air is forced into the drier cylinder and through the other of which pipes the air is with-
25 drawn from said casing.

11. In a clothes drier, a casing; a drier cylinder rotatable within said casing provided with a plurality of air supply openings, and provided with a plurality of com-
30 partments one opposite each of said openings; a feed pipe communicating with said openings; a fan adapted to force air through said pipe and openings; an exhaust pipe from said casing; and a suction fan com-
35 municating therewith.

12. In a clothes drier, a casing having a plurality of openings through the wall thereof; means for forcing air through a
40 portion of said openings into the interior of said casing; means for withdrawing air through the other openings; a drier cylinder rotatable within said casing and provided with a perforated jacket; and a plu-
45 rality of clothes supporting members within said jacket in close proximity thereto.

13. In a clothes drier, a casing having a plurality of openings through the wall thereof; means for forcing air through a
50 portion of said openings into the interior of said casing; a drier cylinder rotatable within said casing and provided with a perforated jacket; and a plurality of ropes positioned within said jacket and extending
55 over the inner wall of said jacket and in close proximity thereto.

14. In a clothes drier, a casing having a plurality of openings through the wall thereof; means for forcing air through a
60 portion of said openings into the interior of said casing; a drier cylinder rotatable within said casing and provided with a perforated jacket; a plurality of lifting blades extending longitudinally of the inner wall of said jacket; and a plurality of
65 clothes supporting members secured thereto

and forming a grating over the inner wall of said jacket and in close proximity thereto.

15. In a clothes drier, a casing having a plurality of openings through the wall thereof; means for forcing air through a
70 portion of said openings into the interior of said casing; a drier cylinder rotatable within said casing and provided with a perforated jacket; and a clothes supporting grating extending over the inner wall of
75 said jacket.

16. In a clothes drier, an outer cylinder having a series of parallel openings in its body wall; a series of feed pipes for supplying air connected with the cylinder through the openings; an air forcing fan having connection with the feed pipes; a
80 drier cylinder having a wire mesh jacket located rotatably within the outer cylinder; means for rotating the drier cylinder; an exhaust fan connected with the outer cylinders; and doors arranged in the outer cylinder.
85

17. In a clothes drier, an outer cylinder having doors hinged to its body wall; a
90 drier cylinder rotatable within the outer cylinder, said drier cylinder being provided with a series of clothes compartments and said outer cylinder being formed with a series of feed openings and a series of exhaust
95 openings communicating with the compartments; a series of feed pipes communicating with the feed openings; an exhaust pipe connecting with the exhaust openings; an air forcing fan located on the feed pipes; and an air exhaust fan located on the ex-
100 haust pipe.

18. In a clothes drier, an outer casing having doors hinged thereto and a series
105 of air feed openings arranged in parallel rows and a series of educt openings arranged in a row spaced apart from the feed openings; a series of connected feed pipes communicating with the feed openings; an exhaust pipe connected with the exhaust
110 openings; an air fan connected with the exhaust pipe; an air fan connected with the feed pipes; a drier cylinder movable within the outer cylinder having partitioned compartments communicating with the feed and
115 exhaust openings of the outer cylinder; a wire mesh jacket formed on the drier cylinder; and a series of spacing ropes mounted on the drier cylinder adjacent to the wire mesh jacket.
120

19. A clothes drier, comprising a rotary drum divided transversely into individual compartments provided with means for continually lifting and dropping the clothes in
125 said compartments, and having a screen-like periphery through which hot air may be driven, combined with means for introducing hot air transversely through said periphery into each compartment separately as the drum rotates; and means for collect-
130

ing and withdrawing the lint and moisture-laden air after it has passed through the clothes.

20. A clothes drier, comprising a rotary drum having a peripheral screen through which hot air may be driven; lifters set radially lengthwise of said drum for carrying the clothes up from the bottom approximately to the top as the drum is rotated and permitting the clothes to open out and drop by gravity; air-confining means located adjacent the lower side of said drum for delivering hot air under pressure at a single restricted region transversely through said peripheral screen underneath said falling clothes for removing the moisture from the clothes as they fall; a housing inclosing said drum for collecting the moisture-laden air as it escapes from the drum; and outlet means for withdrawing the air and lint from said housing.

21. A clothes drier, comprising a rotary drum having a peripheral screen through which hot air may be driven; transverse partitions separating said drum into a series of individual compartments; lifters set radially lengthwise of said drum for carrying the clothes up from the bottom approximately to the top as the drum is rotated and permitting the cloths to open out and drop by gravity; means for delivering a separate jet of hot air transversely through said screen into each compartment for removing the moisture from the clothes as they fall; a housing inclosing said drum for collecting the moisture-laden air as it escapes from the drum; and outlet means for withdrawing the air and lint from said housing and discharging said air and lint from the apparatus.

22. In a clothes drier, a casing having openings therein; means for supplying hot air to said openings; a chambered drier cylinder rotatably supported in the outer cylinder; means for forcing air separately to each compartment of said chambered cylinder; and means for exhausting air from said drier.

23. A clothes drying machine having in combination a casing, a horizontal cylinder having a screen-like periphery mounted to rotate within said casing, clothes lifting devices extending inwardly from said periphery, air conducting means having openings adjacent to the bottom of the periphery of said cylinder to inject air through the same, and an air outlet in said casing.

24. A clothes drying machine having in combination a casing, a horizontal cylinder having a screen-like periphery mounted to rotate within said casing, partitions dividing said cylinder vertically into a plurality of compartments, air inlets adjacent to said periphery and located opposite to said compartments, and an air outlet in said casing.

25. A clothes drying machine having in combination a casing, a horizontal cylinder having a screen-like periphery mounted to rotate within said casing, clothes lifting devices within said cylinder, partitions dividing said cylinder vertically into compartments, air conducting means having openings adjacent to said periphery and opposite said compartments.

26. A clothes drying machine having in combination a casing, a horizontal cylinder having a screen-like periphery mounted to rotate in said casing, ropes arranged circumferentially within said cylinder and means for offsetting said ropes from said periphery.

27. A clothes drying machine having in combination a casing, a horizontal cylinder having a screen-like periphery mounted to rotate in said casing, air conducting devices having openings adjacent to the bottom of said cylinder, a clothes supporting grating offset from the inside of said periphery, and an air outlet in said casing.

28. A clothes drying machine having in combination a casing, a horizontal cylinder having a screen-like periphery mounted to rotate within said casing, air inlets closely adjacent to the bottom of said cylinder and exterior to its periphery to inject a current of air into and across said cylinder, devices on the inside of the circumference of said cylinder to lift the clothes as the cylinder rotates and drop them through the current of air.

29. A clothes drying machine having in combination a rotatably mounted horizontal cylinder having screen-like walls and a clothes supporting grating offset from said walls whereby the clothes are kept away from said walls.

30. A clothes drying machine having in combination a casing, a horizontal cylinder mounted to rotate within said casing and having screen-like walls, and clothes supporting means offset from said walls whereby the clothes are kept away from said walls.

31. A clothes drying machine having in combination a rotatably mounted horizontal cylinder having a screen-like periphery and a clothes supporting grating offset from the inside of said periphery whereby the clothes are kept away from said periphery.

32. A clothes drying machine having in combination a casing, a horizontal cylinder mounted to rotate within said casing and having a screen-like periphery and a clothes supporting grating offset from the inside of said periphery whereby the clothes are kept away from said periphery.

33. A clothes drying machine having in combination a casing, a horizontal cylinder mounted to rotate within the said casing and having a screen-like periphery, clothes

supporting means offset from said periphery, and clothes lifting devices in said cylinder whereby the clothes are lifted and dropped onto said clothes supporting means.

- 5 34. A clothes drying machine having in combination a casing, a horizontal cylinder mounted to rotate within the said casing and having a screen-like periphery, clothes supporting means offset from said periphery,
10 air inlets closely adjacent to the exterior of said periphery to inject a current of air into

and across said cylinder, and devices on the inside of the circumference of said cylinder to lift the clothes as the cylinder rotates and drop them through the current of air and onto said clothes supporting means. 15

In testimony whereof I affix my signature, in presence of two witnesses.

FRANKLIN P. HESS.

Witnesses:

ARTHUR W. WITNEY,
ARTHUR E. SANTRY.