

F. C. FLEMING & F. ROCK.  
DRIER.

989,594.

APPLICATION FILED OCT. 24, 1910.

Patented Apr. 18, 1911.

2 SHEETS-SHEET 1.

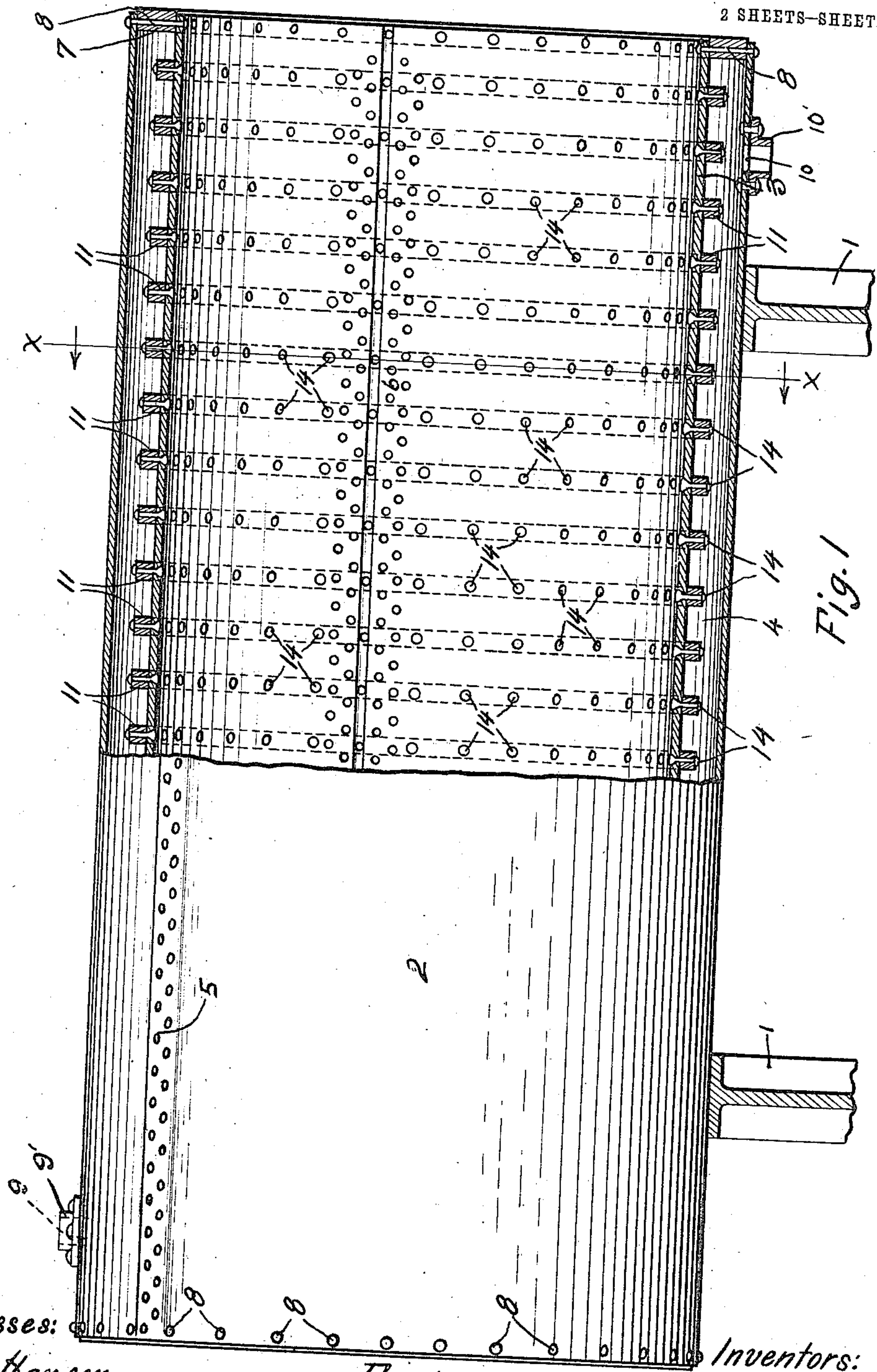


Fig. 1

Witnesses:  
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A. A. Olson

Inventors:  
Frederick C. Fleming and Frank Rock  
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their Attorney.

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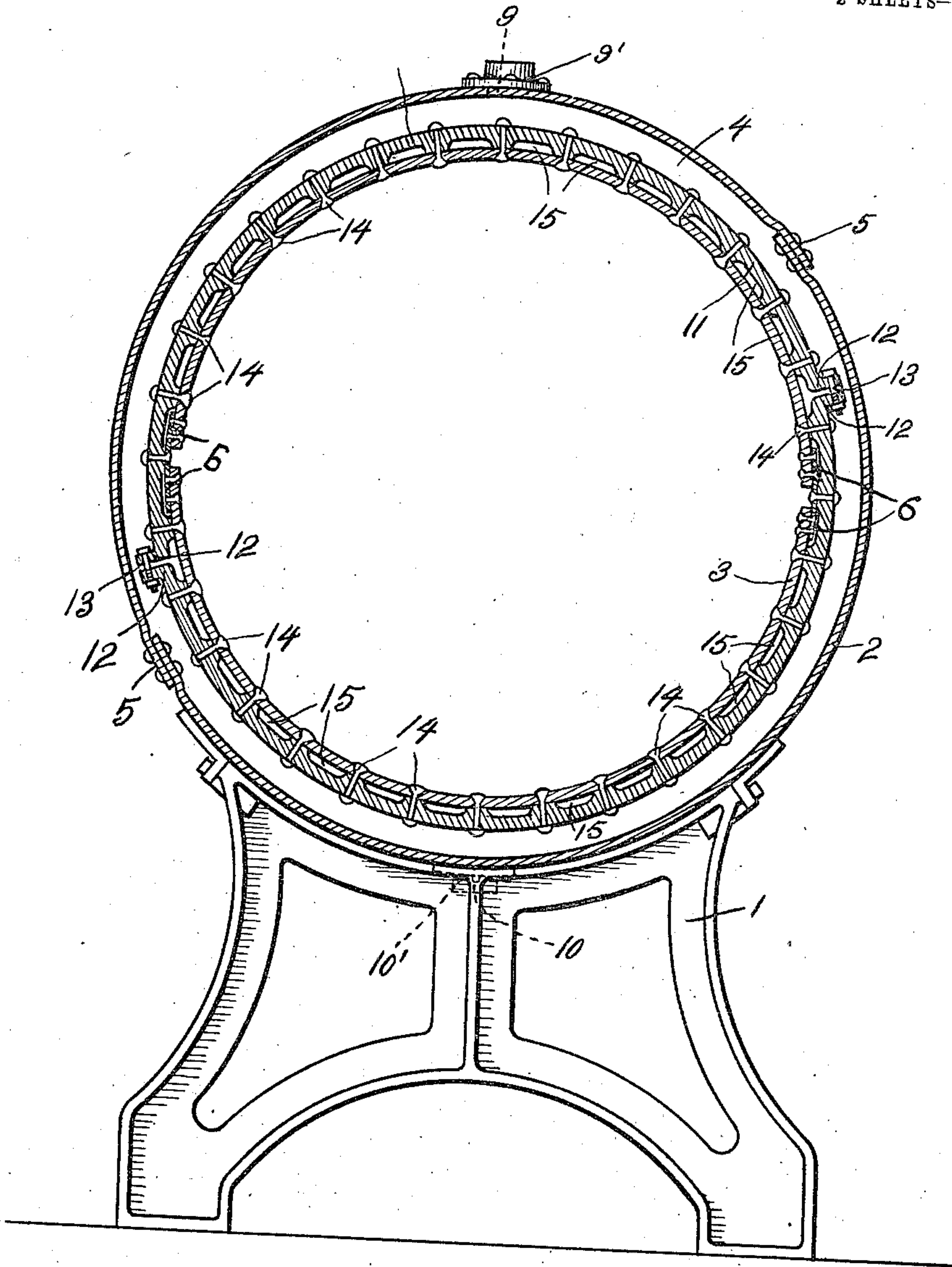


Fig. 2

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Frederick C. Fleming and Frank Rock,

By Joshua R. Stone

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# UNITED STATES PATENT OFFICE.

FREDERICK C. FLEMING AND FRANK ROCK, OF CHICAGO, ILLINOIS.

DRIER.

989,594.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed October 24, 1910. Serial No. 588,715.

*To all whom it may concern:*

Be it known that we, FREDERICK C. FLEMING and FRANK ROCK, citizens of the United States, and residents of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Driers, of which the following is a specification.

Our invention relates to driers employed in the draining of fertilizer, sand, etc.

The object of our invention is the provision of a drum or shell for a drier of the character mentioned which shall be of new and improved construction, which will conduce to strength and durability, and one which will be of highest efficiency in operation.

Other objects will appear hereinafter.

With these objects in view our invention consists in a drum for driers characterized as above mentioned and in certain details of construction and arrangement of parts all as will be hereinafter more fully described and particularly pointed out in the appended claims.

Our invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1 is a side elevation partially in section of a drier embodying our invention, and Fig. 2 is a transverse section taken on substantial line  $x-x$  of Fig. 1.

Referring now to the drawings 1 indicates a suitable base member or mounting upon which is supported a horizontally disposed cylindrical drum or shell, the latter being rigidly secured to said base member since in operation the same is designed to remain stationary. In operation, the ends of said frame are provided with heads suitably secured thereto, agitating devices having bearings in said heads being rotated within said drum to effect the agitation of the contents of the latter and so as to facilitate a more thorough desiccation thereof. Said agitating devices and heads are however not shown, since the invention is embodied entirely in the construction of the drum of the drier and which drum is shown in detail in the drawings. As illustrated in the drawings said drum comprises an outer metallic wall or cylinder 2 and an inner coaxially arranged wall or cylinder 3, said inner cylinder being of less diameter than said outer cylinder so that an annular steam jacket 4 is formed be-

tween the same. Said cylinders are each of a sectional nature, the cylinder 2 being formed of two semi-cylindrical sections having overlapping edges which are rigidly secured together as at 5 preferably by riveting. The cylinder 3 is also formed preferably of two small cylindrical sections the contiguous longitudinal edges of which are rigidly secured together by means of longitudinally extending plates which are rigidly secured to said edges as at 6 preferably by means of rivets. Said cylinders are held in coaxial or spaced relation by means of metallic rings 7 which are arranged at the ends and between the adjacent surfaces thereof, said rings being secured in position by means of rivets 8 which pass therethrough and through the adjacent ends of said cylinders, as clearly shown in Fig. 1. At the upper side of the cylinder 2 adjacent the respective extremities thereof are provided steam inlet ports 9 and at the under side of said cylinder also adjacent the extremities thereof are provided steam outlet ports 10, said ports 9 and 10 communicating with the steam jacket 4. In order to provide for the connection of steam supply outlet pipe flanges 9' and 10' are arranged as indicated at the ports 9 and 10 respectively.

Arranged upon the outer side of the inner cylinder 3 are spaced circumferentially metallic reinforcing rings 11. Said rings are, as clearly shown in Fig. 2, of a sectional nature each being comprised of two semi-circular sections the contiguous angularly projecting ends 12 of which are adjustably secured together by means of bolts and nuts 13, such provision being made in order that said rings will be adapted to adjust themselves to changes in the circumference of the cylinder 3 because of the varying diameters thereof when in operation. Said rings 11 are secured at intervals to the cylinder 3 by means of rivets 14, the inner heads of the latter being counter-sunk in the inner surfaces of said cylinder so that the same will not be exposed to undue or excessive wear. The portion of said ring between adjacent rivets 14 are cut away as at 15 adjacent the upper surfaces of said cylinder 3 so that a maximum extent of surface will be exposed to the action of the steam.

A drum for driers of the construction as set forth is of great strength and durability and is of economical construction.

While we have shown what we deem to be



the preferred form of our drum we do not wish to be limited thereto as there might be various changes made in the details of construction and arrangement of parts described without departing from the spirit of the invention as comprehended within the scope of the appended claims.

Having described our invention what we claim as new and desire to secure by Letters Patent is:

1. In a drier of the class described, a drum comprising spaced inner and outer walls forming a steam jacket about said inner wall, the inner wall being formed of two semi-cylindrical sections and spaced reinforcing rings secured to and surrounding said inner wall, substantially as described.

2. In a drier of the class described, a drum comprising spaced inner and outer walls forming a steam jacket about said inner wall, and spaced reinforcing rings surrounding said inner wall and secured at intervals thereto by means of securing devices extending through said rings and said inner wall, the inner ends of said securing devices being upset and counter-sunk in said inner wall, substantially as described.

3. In a drier of the class described, a drum comprising coaxial inner and outer cylinders of different diameters forming a steam jacket about said inner cylinder, spacing rings at the ends of said cylinders to which the latter are rigidly secured and circumferentially extending reinforcing rings upon the outer surface of said inner cylinder and securely riveted to the latter, the securing rivets extending through said rings and said inner cylinder, the inner heads of said rivets being counter-sunk in the inner surfaces of said inner cylinder, substantially as described.

4. In a drier of the class described, a drum

comprising coaxial inner and outer cylinders of different diameters forming a steam jacket about said inner cylinder, spacing rings at the ends of said cylinders to which the latter are rigidly secured, circumferentially extending reinforcing rings upon the outer surface of said inner cylinder and securing rivets to the latter, the securing rivets of said rings extending through the latter and said inner cylinder, the inner heads of said rivets being counter-sunk in the inner surfaces of said inner cylinder, the portion of said rings intermediate adjacent rivets and adjacent the outer surface of said cylinder being cut away, substantially as described.

5. In a drier of the class described, a drum comprising two coaxial cylinders of different diameters forming a steam jacket around the inner cylinder, metallic spacing rings at the ends of said cylinders to which the latter are rigidly secured, circumferentially extending sectional metallic rings upon the outer surface of said inner cylinder and securely riveted to the latter, said last mentioned rings being of less width than said steam jacket, the securing rivets of said rings extending through the latter and said inner cylinder, the inner heads of said rivets being counter-sunk in the inner surface of said inner cylinder, and the portion of said rings intermediate adjacent rivets and adjacent the outer surfaces of said inner cylinder being cut away, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FREDERICK C. FLEMING.  
FRANK ROCK.

Witnesses:

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