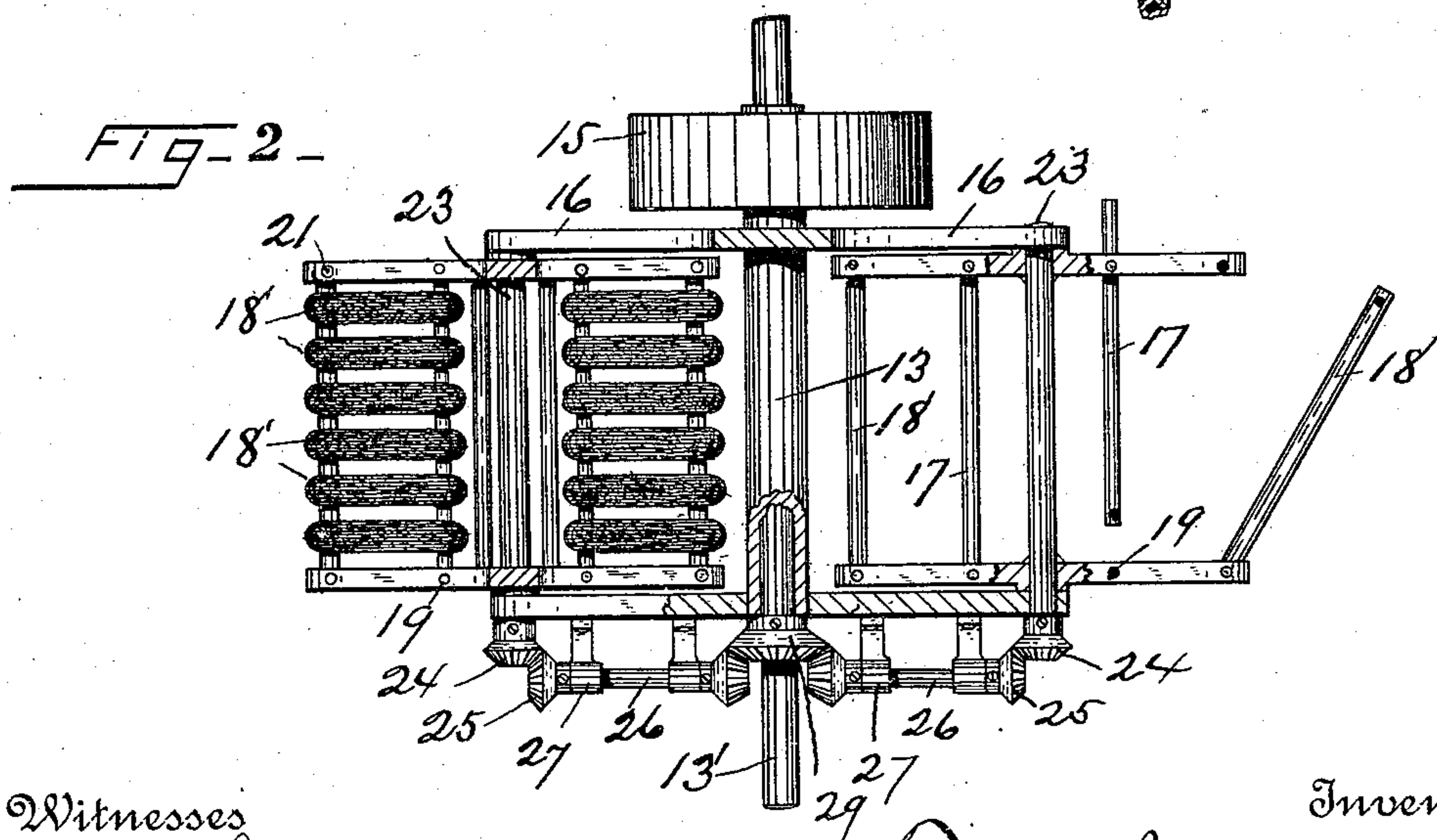
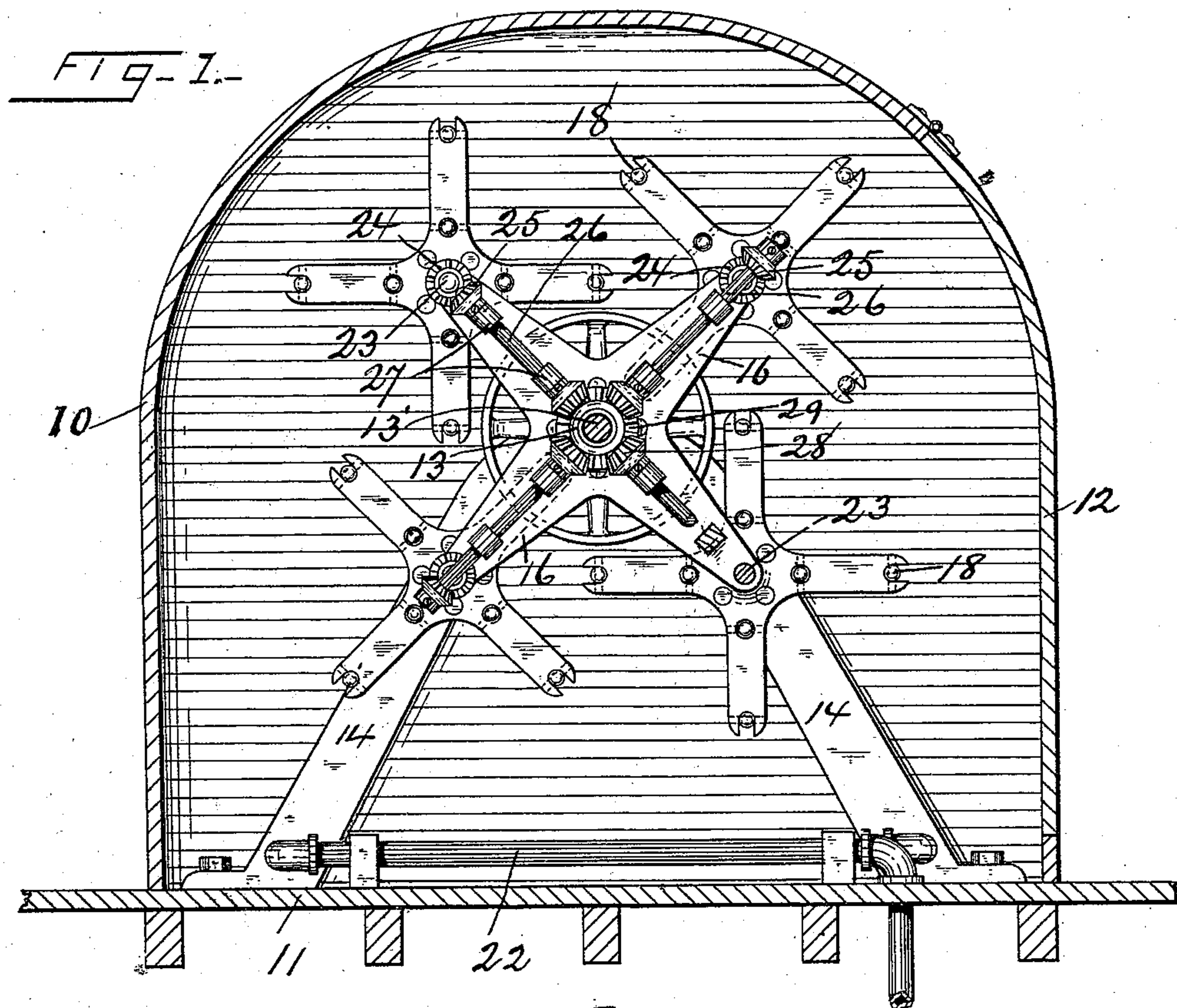


(No Model.)

F. E. BURLINGAME.  
DRYING MACHINE.

No. 522,646.

Patented July 10, 1894.



Witnesses

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# UNITED STATES PATENT OFFICE.

FRED E. BURLINGAME, OF WALPOLE, MASSACHUSETTS.

## DRYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 522,646, dated July 10, 1894.

Application filed January 9, 1893. Serial No. 457,717. (No model.)

*To all whom it may concern:*

Be it known that I, FRED E. BURLINGAME, a citizen of the United States, residing at Walpole, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Drying-Machines, which improvements are fully set forth and described in the following specification, reference being had to the accompanying two sheets of drawings.

My invention relates particularly to machinery for drying yarn in the skein, and seeks to provide simple mechanism by means of which much time may be saved in the process of drying, and which shall also enable one to do an increased amount of work of this class in comparatively small space.

My invention is especially valuable for use in dyeing and bleaching establishments where, as a rule, yarns, as well as other goods, are hung upon extensive frames to dry, the process of evaporation being in some instances hastened by raising the surrounding temperature abnormally. In such instances the moisture in skein yarns gradually passes downward by gravity and drips from the lowest point long after the highest point is perfectly dry and, in the case of dyed goods, the dye and any sediment contained therein are thus carried to the lower end of the skein. Such sediment remains after the entire skein is dry and there is often a perceptible difference in shade or cleanliness between the upper and lower ends of such skeins.

My invention, by reason of its peculiar action, dries the yarn uniformly and rapidly.

In order to explain said invention more clearly I have provided the annexed drawings, in which—

Figure 1 is an end elevation of a drying machine with one wall removed to expose the interior, operative, parts. Fig. 2 is a plan view of the machine illustrated in Fig. 1, with the casing removed and with the tubular shaft that bears the reel-supporting arms 16 broken away in part.

In the drawings 10 denotes the casing or inclosing shell of my machine, here shown of box form, built upon the floor 11 and provided with a door 12 which may be opened to enable the attendant to reach the interior of

the casing and which, when closed, renders the chamber within substantially air tight.

13 indicates a shaft journaled either in the end walls of the casing, or in stands 14. On one end of this shaft is a driving pulley 15 by means of which motion and power are communicated to shaft 13 and its connected parts. Secured to shaft 13, near opposite sides of the casing, are several radial arms 16, here shown as four in number, which, when the machine is in service, are carried around rapidly by said shaft.

In the free ends of each pair of arms 16 is journaled a shaft 23 upon which is mounted a reel. The shaft of each reel has secured thereto a bevel gear 24 which is engaged by a similar gear 25 on a shaft 26 journaled in bearings 27 secured to arms 16. The inner end of each shaft 26 bears a bevel gear 28 that meshes with a bevel gear 29 mounted fixedly on a small non-revoluble shaft 13' that is secured in the stands 14 and upon which the tubular main shaft 13 revolves. When the arms 16 are carried forward by the rotation of shaft 13 the bevel gears 28, as well as their connected shafts and gears 26, are set in revolution. Rotary movement is thus imparted to the gears 24 and the shafts of the several reels journaled in the ends of arms 16. Each of the several reels (with its load of yarn) is thus caused to revolve rapidly upon its own axis while at the same time all of the reels are carried around their common axis, the main shaft 13.

In order to bring the complete machine into the least possible space I prefer to cause the alternate reels to rotate in opposite directions upon their own axes, so that their arms may mesh with each other as they revolve. Otherwise the arms 16 would of necessity be long enough to enable the several reels to swing clear of each other. Assuming now that the several reels of the drying machine are "loaded" with wet skeins which it is desired to dry, the door of the casing is tightly closed, steam is admitted through the pipes 22 and the machine is set in rapid revolution. As the machine is speeded and the skeins of yarn carried rapidly through the heated air, the moisture at first is thrown off through centrifugal action, then as the amount of

moisture in the yarn becomes less the rapid "whipping" of the air by the revolving skeins causes the hot air to enter and pass through said skeins and thus quickly and thoroughly  
5 remove the moisture.

My machine as a whole is of simple and inexpensive construction and renders it possible to dry a great quantity of yarn in small space and more satisfactorily than heretofore.

10 Having described my invention, I claim as new and wish to secure by Letters Patent—

In a device of the class described, the combination with the tubular shaft bearing a driving pulley, a fixed shaft passing through

the tubular shaft, a reel-shaft journaled in 15 each pair of radial arms, and bearing a bevel gear, and a radial shaft bearing a bevel gear at each end and connecting the bevel gear of each reel shaft with the fixed gear on the fixed shaft; the outer gear of each radial shaft being oppositely disposed with respect to the 20 gear on the succeeding reel shaft, whereby adjacent reel shafts are caused to rotate in opposite directions for the purpose set forth.

FRED E. BURLINGAME.

Witnesses:

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W. A. JEPSON.