

W. C. BOONE.

Flier for Spinning or Twisting Yarns or  
Strands of Cordage.

No. 231,471.

Patented Aug. 24, 1880.

Fig. 2.

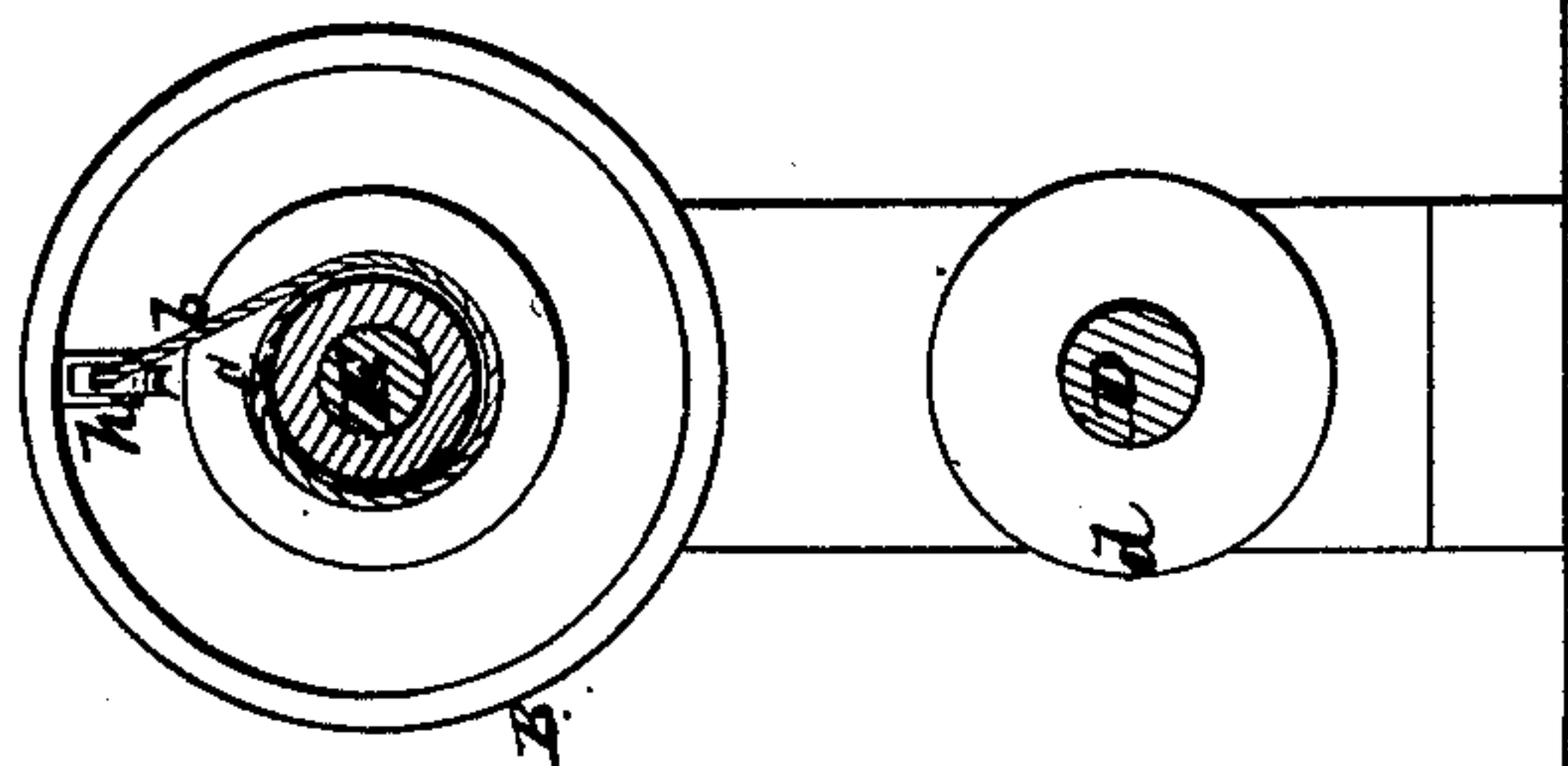
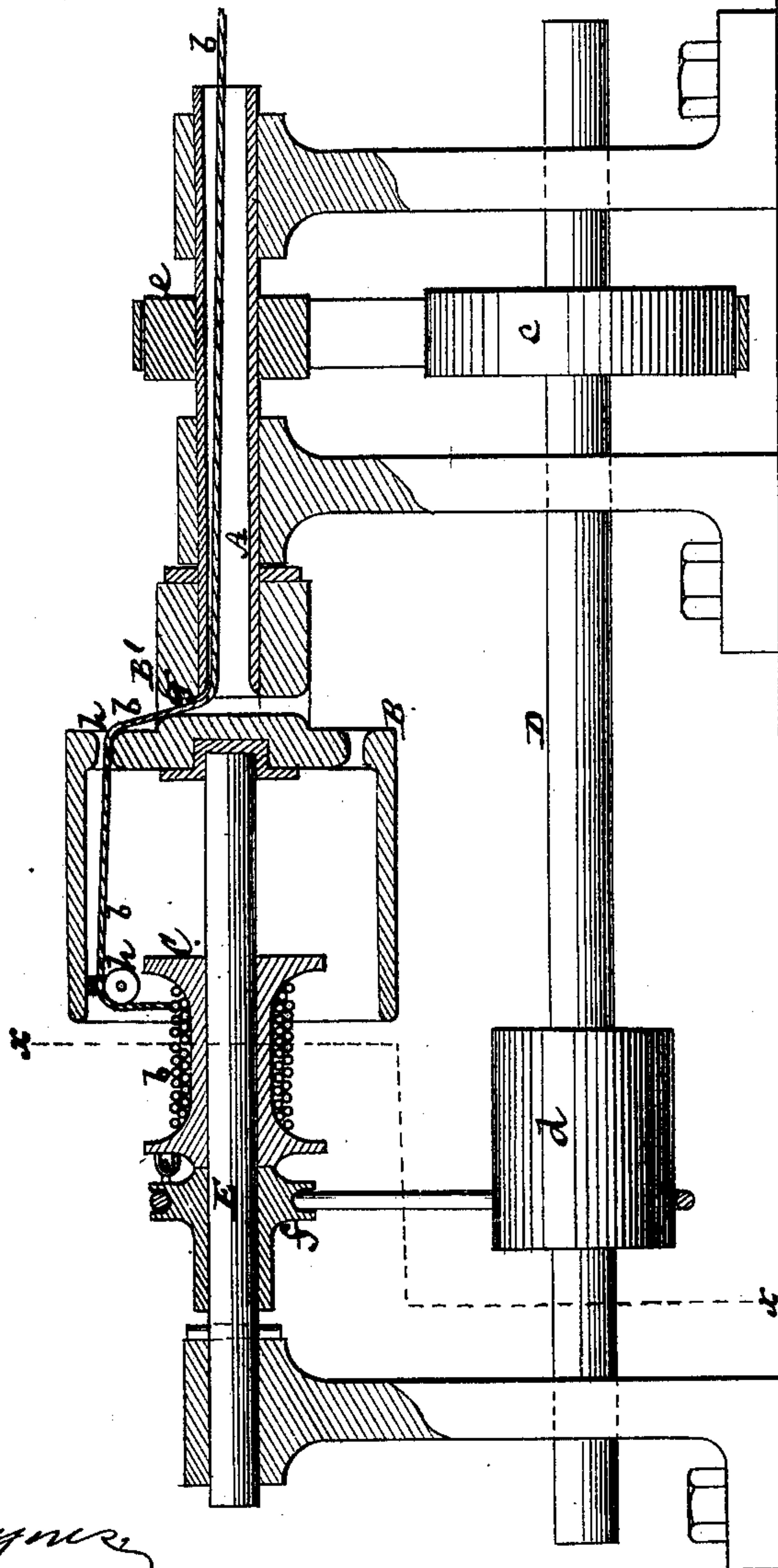


Fig. 1.



Witnesses:  
Fred. Wagner,  
Edw. P. Jessup.

Inventor:  
William C. Boone,  
by his Attorneys,  
Brown & Brown.



# UNITED STATES PATENT OFFICE.

WILLIAM C. BOONE, OF BROOKLYN, NEW YORK.

FLIER FOR SPINNING OR TWISTING YARNS OR STRANDS OF CORDAGE.

SPECIFICATION forming part of Letters Patent No. 231,471, dated August 24, 1880.

Application filed January 13, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM C. BOONE, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fliers for Spinning or Twisting Yarn or Strands of Cordage, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My improvement relates to fliers for spinning yarn, twine, &c.; and it consists in the combination of a horizontal open-ended cylindrical flier, a tubular supporting shaft or spindle extending radially from the closed end thereof, and a frame provided with bearings adapted to support said shaft or spindle without contact with the cylindrical portion of the flier, the objects being to protect the yarn from the injurious effects of the air while being spun and to avoid friction on the surface of the flier. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of a flier constructed in accordance with the invention and as applied to a frame for spinning or twisting yarn or strands or laying the strands of cordage. Fig. 2 is a sectional end view of the same, taken on the line  $x x$  in Fig. 1.

A indicates the hollow spindle which carries the flier B, and longitudinally through which the yarn  $b$  is delivered from the usual rollers or other devices of the jenny or spinning apparatus.

C is the bobbin on which the spun or twisted yarn is reeled; and D is a driving-shaft, having pulleys  $c d$  of different diameters, for communicating the requisite different velocities, by belts, a pulley,  $e$ , and whirl  $f$ , to the flier and its bobbin.

E is a dead-spindle on which the bobbin and its whirl rotates, and along which they are free to reciprocate longitudinally to secure the regular winding or reeling of the yarn on the bobbin, as in other spinning or twisting apparatus. This dead-spindle may be extended to enter the head end or a bush in the head end of the flier, to assist in steadying and supporting the latter.

The flier B is of a cylindrical or drum-like

construction, open at its one end for reception and removal of the bobbin, but closed at its opposite end, which is connected with or attached to the hollow spindle A through a flier-head, B'. This head B' is in concentric relation with the hollow spindle A, on which are the only journals of the flier, two journals and bearings being provided for the said spindle, in order that a bearing or bearings at the open end of the cylinder or drum may be dispensed with.

The yarn  $b$ , entering the hollow spindle A of the flier and passing longitudinally within and along it, is conducted radially or transversely outward through an aperture,  $g$ , in the head B', and from thence to the eccentrically-arranged guides or pulleys  $h$  on or in the flier B, for conducting the twisted yarn, or, in the case of two or more strands being worked, the cord to the bobbin C. These guides or pulleys are here represented as arranged within the drum-like flier, to conduct the yarn or cord to the bobbin under cover of the flier; but they might be arranged, by means of an external covered guide or way, to conduct the yarn or cord to the bobbin under cover of the flier on the exterior of the latter. By the passage of the yarn or cord to the bobbin under cover of the flier said yarn or cord is protected from being frayed or roughened by the fanning action of the air during rotation of the flier.

The cylindrical or drum-like construction of the flier, which is unsupported at its open end, prevents any spreading action of the flier due to centrifugal force. Such flier may consequently be driven at a high velocity without risk of its sides springing or spreading outward.

The flier, to be adapted for laying purposes, may have the bobbin arranged with its axis at right angles to the axis of the flier instead of in line therewith, as represented.

I am aware of a patent granted to W. Mason on the 4th May, 1838, No. 724, in which there is shown a cylindrical flier suspended in a bearing at its closed end, through which the yarn or thread passes, and which has another bearing near the open end of the cylinder, which bearing is necessarily as large as the outer diameter of the cylinder, owing to which fact a large amount of friction is caused when



the flier is running at a moderate rate of speed, and a high degree of speed is rendered practically impossible, on account of the heat and friction which would be generated in the bearing.

My device differs from the one shown in the patent of Mason, above alluded to, in that I dispense entirely with the bearing on the flier and support the same by a bearing or bearings formed upon the shaft which extends from the closed end of the flier. Another and a very important difference consists in the fact that in the device of Mason it is necessary to use the flier as a pulley for driving it, owing to which fact the friction on the large bearing is largely increased, and hence the power required to drive it is proportionately increased.

I am also aware that on the 6th of February, 1849, a patent was granted to Pedrick and Melvin which shows a hollow shaft with a flange upon one of its ends, to which arms are attached for conducting the yarn to the bobbin. In this case no provision is made for protecting the yarn from the action of the atmosphere while it is passing from the hollow shaft to

the bobbin, while in my case such provision is made and the fraying of the yarn is prevented.

I do not therefore claim the devices shown and described in either the patent of Mason or of Pedrick and Melvin. Neither do I claim, broadly, a flier of cylindrical or drum-like construction; but

What I do claim as my invention is—

The combination, with the open-ended horizontal cylindrical flier and the tubular supporting shaft or spindle extending axially from the closed end thereof, of the frame provided with bearings adapted to support said shaft or spindle without contact with the cylindrical portion of the flier, substantially as described, whereby the yarn is protected from the injurious effects of the air while being spun, and friction on the surface of the flier is avoided, as set forth.

WILLIAM C. BOONE.

Witnesses:

T. J. KEANE,  
FRED. HAYNES.