4 Sheets—Sheet 1.

J. S. KIRKS.

ROVING-TWISTER.

No. 186,851. Patented Jan. 30, 1877.

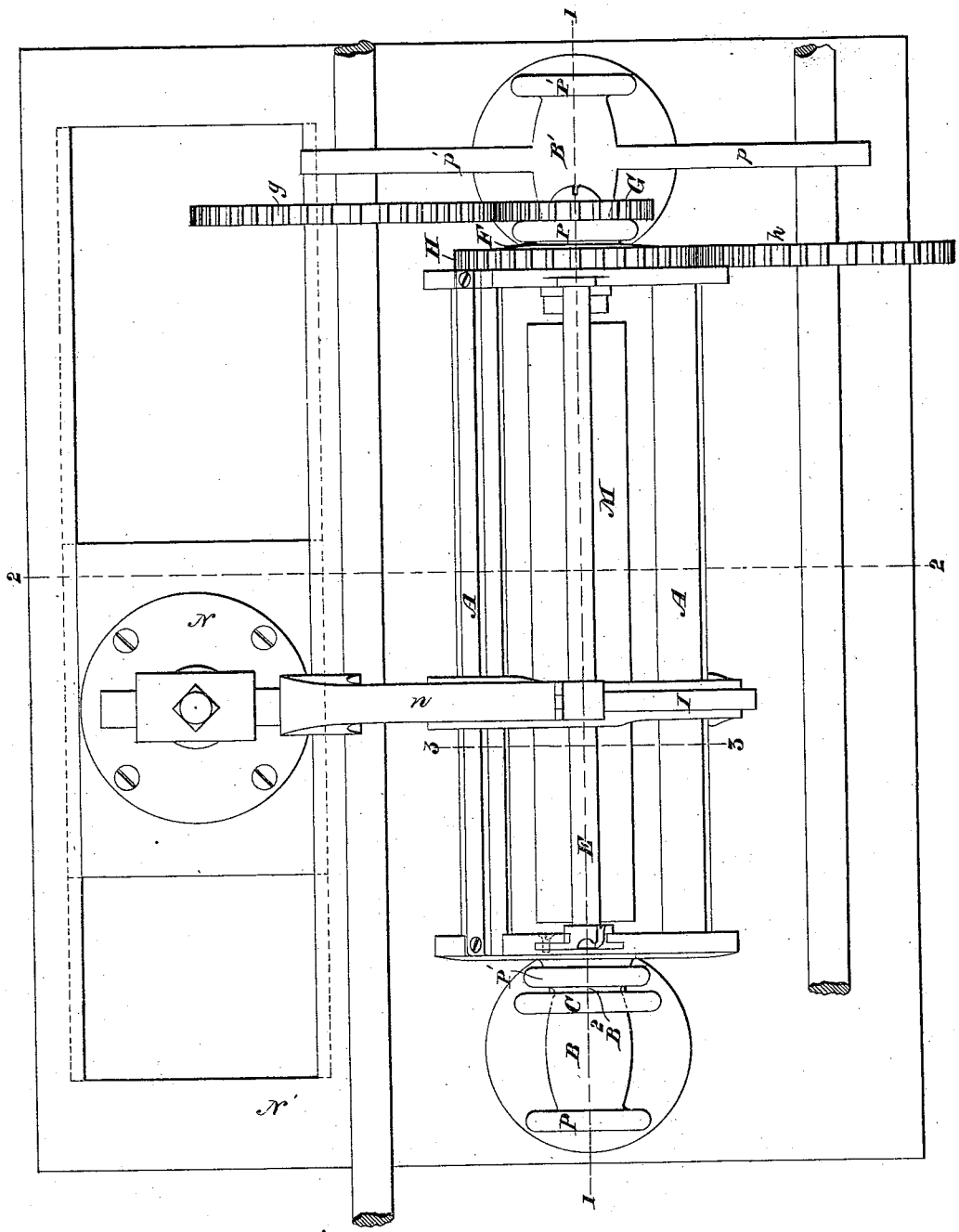

Fig 1.

WITNESSES

Wm A Skinkle

F. Stich

INVENTOR

John S Kirks.

By his Attorneys,

Baldwin, Hopkins & Peyton

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Fig 2

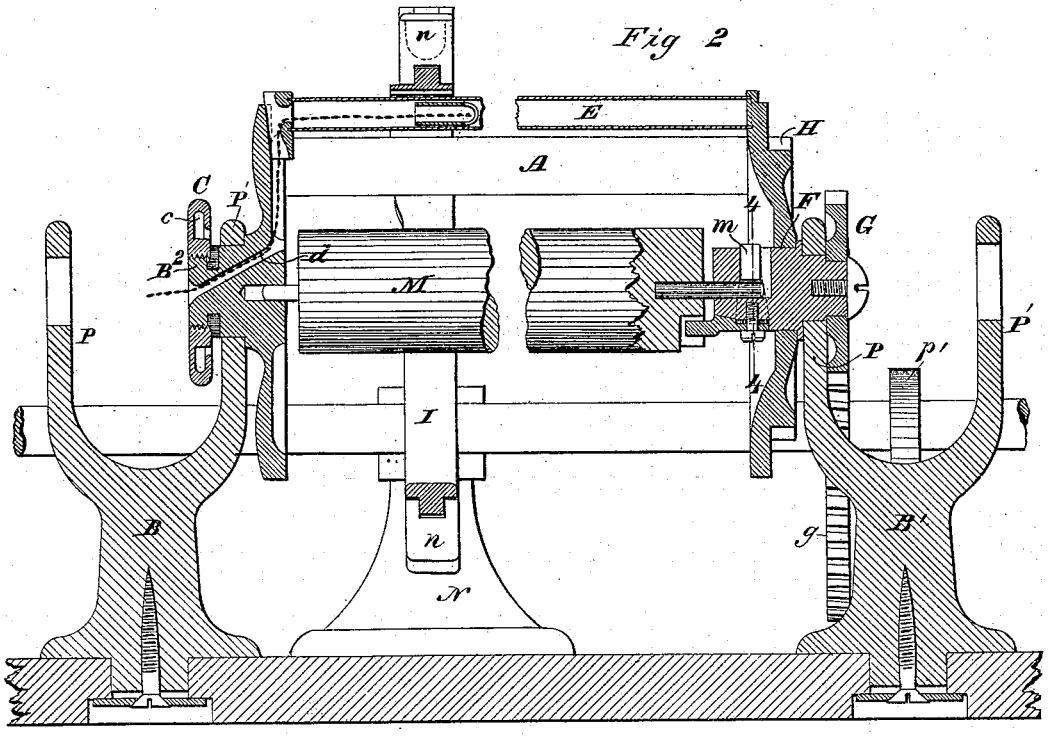

Fig 6.

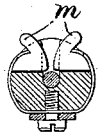

Fig 3.

WITNESSES

Wm a Skinkle

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Baldwin, Hopkins & Peyton

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J. S. KIRKS.

ROVING-TWISTER.

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Fig 7

Fig 5

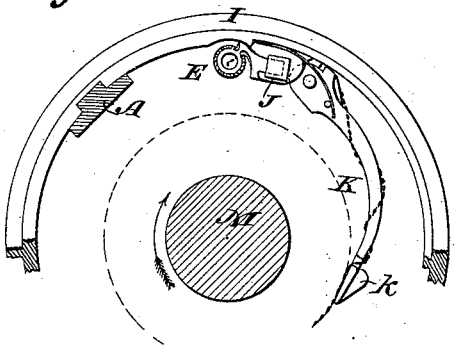


Fig 8

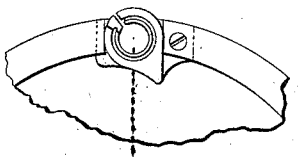
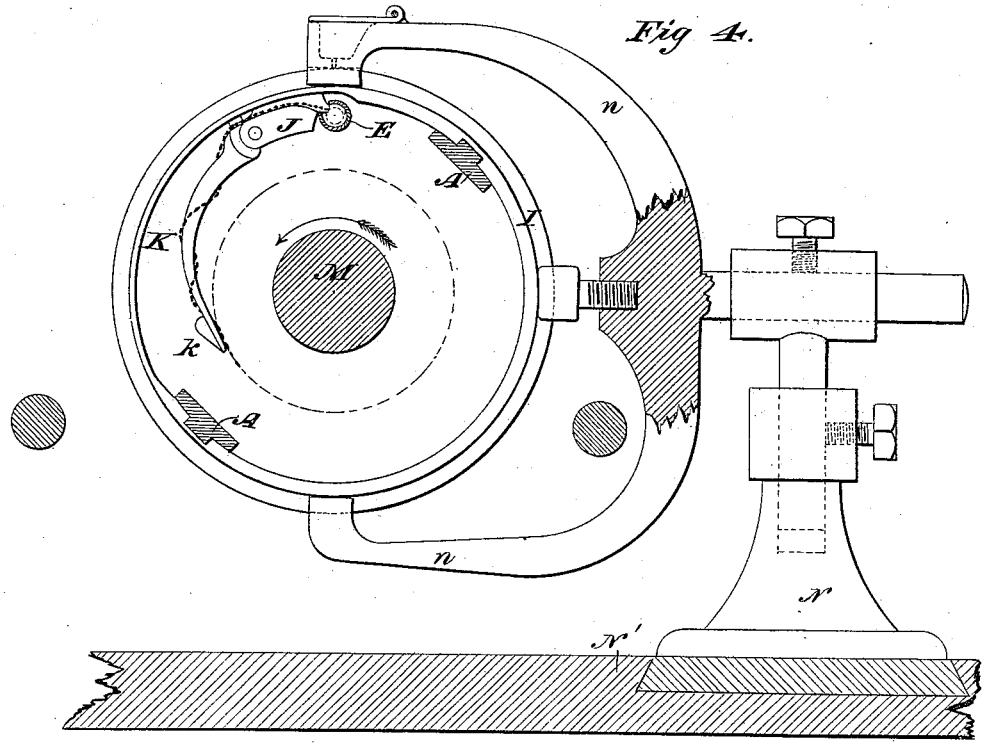


Fig 4.



WITNESSES

Wm A Stinkle

F. Gild

INVENTOR

John S Kirks

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J. S. KIRKS.

ROVING-TWISTER.

No. 186,851. Patented Jan. 30, 1877.

Fig 10

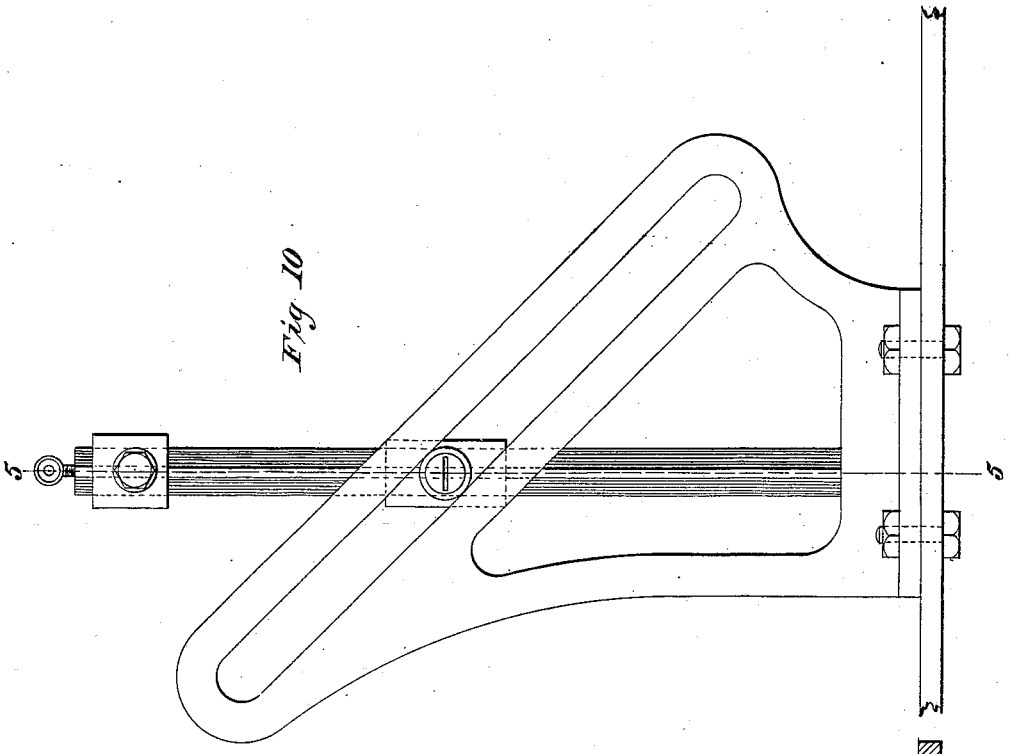
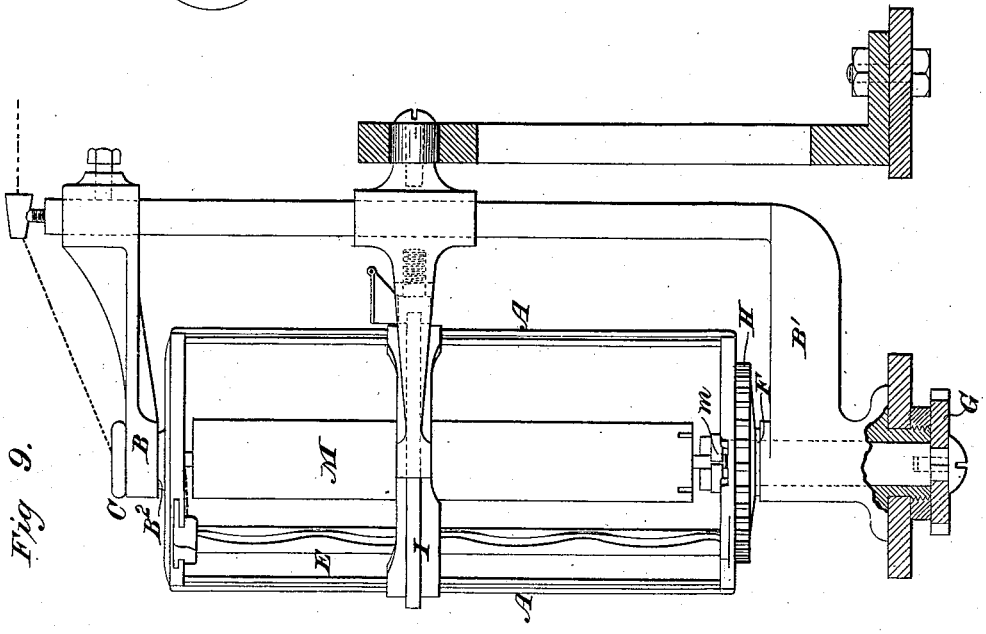


Fig 9.



WITNESSES

Wm A Skinkle

F. Stith

INVENTOR

John S. Kirks

By his Attorneys

Baldwin Hopkins & Peyton

UNITED STATES PATENT OFFICE.

JOHN S. KIRKS, OF CHESTER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO EBENEZER BIRTWELL, OF SAME PLACE.

IMPROVEMENT IN ROVING-TWISTERS.

Specification forming part of Letters Patent No. **186,851**, dated January 30, 1877; application filed September 9, 1876.

To all whom it may concern:

Be it known that I, JOHN S. KIRKS, of Chester city, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Roving-Twisters, of which the following is a specification:

The object of my invention is to impart a slight twist to the roving as it is wound upon the bobbin; to which end my improvement consists in the combination of a roving twister-frame; a rotating ring-carrier revolving with and traversing endwise upon said frame; a standard reciprocated in a guide plate or way of the machine, as in the well-known Danforth machine, by which the ring-carrier is supported; and a bobbin revolving within the twister-frame, whereby the roving is taken direct from the draw-rollers, through which it passes immediately from the cans, twisted and wound upon the bobbin, as will hereinafter more fully be set forth.

My improvement further consists of certain novel constructions and combinations of parts, hereinafter to be specifically designated.

In the accompanying drawings, which represent so much of my improved apparatus as is necessary to illustrate the subject-matter herein claimed, Figures 1 and 10 represent a plan view; Fig. 2, a longitudinal section therethrough on the line 1 1 of Fig. 1; Fig. 3, an end elevation thereof, showing the arrangement of the gearing which drives the bobbin and twister-frame; Fig. 4, a section on the line 2 2 of Fig. 1; Fig. 5, a section on the line 3 3 of Fig. 1; Fig. 6, a section on the line 4 4 of Fig. 2; Fig. 7, a front view of the guide-tube for the roving, showing the curved slot therein; Fig. 8, a face view of the socket which carries the end of the tube; and Fig. 9 represents a view of a modification of my invention, showing its adaptation to a frame revolving on a vertical axis.

My improvement is readily adaptable to various soft-bobbin roving-frames now in use, but more especially to the well-known Danforth frame. It can be used with a twister-frame and bobbin revolving on either a vertical or horizontal axis.

It is deemed unnecessary here to describe the mechanism for driving the bobbin and frame at different speeds, and for varying the speed of the bobbin to compensate for its increased diameter as the roving is wound upon it, these being well known to all skillful constructers of such machinery; neither is it deemed necessary to describe the gearing for changing the relative rates of speed at which the twister-frame and bobbin are revolved, so as to impart more or less twist to the roving, as desired. I therefore content myself with describing one twister, it being understood that any number of them may be employed in a common frame, geared together in various well-known ways.

The twister-frame A revolves in bearings in standards B B^1, suitably secured upon the frame of the machine. The bearing B^2 consists of a trunnion or journal revolving in the stand. A cap, C, on the end of the shaft B of the roving-frame, is provided with an annular cavity, *c*, into which the waste-oil of the bearing flows, and is prevented from being carried around on the roving. The end of this shaft is perforated diagonally, so as to form a tube, *d*, through which the roving enters in the axial line of the shaft, and is conducted outward to a slotted guide-tube, E, on the twister-frame.

The opposite end of the twister-frame is provided with a head perforated so as to revolve freely on a shaft or stud-axle, F, which carries the bobbin, so that the twister-frame and bobbin-shaft can be driven each independently of the other.

The bobbin-shaft is driven by a spur-gear, G, and the twister-frame by another spur-gear, H, both in usual well-known ways.

The bobbin M is provided with stud-axles, and with notches interlocking with a driving-pin on its driven shaft. One end of the bobbin-shaft is inserted in a bearing in the head of the twister-frame, while the other end drops into a slot in the driving-shaft of the bobbin, where it is securely held by spring-jaws *m*, as shown in Figs. 2 and 6. By this mode of construction the bobbin may readily be removed or replaced, and is securely held in place.

A guide-ring, I, is mounted upon, revolves with, and is free to move endwise upon, the

twisting-frame, but is compelled to turn with it, being provided for this purpose with grooves traversing on the bars of the twister-frame. The mode of mounting this ring in a holder, *n*, secured upon a standard, N, carried by and reciprocated in the ordinary guide-plate or slotted controlling-way N′ of the Danforth machine, is shown in Fig. 4, and will be readily understood from an inspection of that drawing without further description.

A saddle, J, secured upon the inner side of the traversing-ring, is provided at one end with an eye, which projects into the guide-tube, through which eye the roving passes. A spring-presser, K, pivoted to the forward end of the saddle, is provided near its forward end with a hook, and with a lug or nose, *k*, which abuts against the ring when the presser is forced outward, and protects the roving from rubbing against the ring.

From the eye in the guide-tube above mentioned the roving passes through a groove in the back of the saddle, is wound several times around the shank of the spring-presser, then passed through its eye, and is wound around the bobbin.

As a consequence of this organization, the revolution of the twister-frame imparts the requisite degree of twist to the roving, and as the bobbin revolves the roving is caused to wind upon the bobbin, retaining the twist.

The amount of twist imparted, it is obvious, will depend upon the relative speeds of rotation of the twister-frame and the bobbin, as the slower the bobbin is revolved relatively to the speed at which the twister-frame is driven, the greater will be the twist imparted to the roving as it is drawn from the draw-rolls and wound upon the bobbin. The speed at which these rolls are driven is varied to correspond with the changes in the rate of rotation of the bobbin, so as properly to feed the roving to the bobbin.

The supports or standards B B^1, in which the twister-frame and bobbin are mounted, are each constructed with forks P P′ and side arms *p p′*. (Clearly shown in Figs. 2 and 3.) By this construction it will be seen that the adjacent ends of two twister-frames and two bobbins are mounted in the forks of the same standard, and the arms *p p′* support the shafts of the gear-wheels *g h*, which drive the pinions G and H of the bobbin and twister-frame, respectively. A single casting is thus made to serve as a support for the adjacent ends of the twister-frame and bobbins, as well as afford bearings for gearing-shafts.

I claim as of my own invention—

1. The combination, as hereinbefore set forth, of the twister-frame, the guide-ring or carrier revolving therewith, the bobbin adapted to revolve within said frame, the supporting-standard, the guideway in which said supporting-standard is reciprocated, and mechanism for imparting to the bobbin a positive rotary motion independently of said twister-frame, as and for the purposes specified.

2. The combination of the forked and armed standards, the independently-revolving twister-frame and bobbin, supported in bearings in the forks of the standards, the gearing, and the gear-shafts, mounted in the arms of the standards, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

JOHN S. KIRKS.

Witnesses:
WM. J. PEYTON,
WM. D. BALDWIN.