

(No Model.)

H. ROBERTS.

WIRE REEL.

No. 286,639.

Patented Oct. 16, 1883.

Fig. 1.

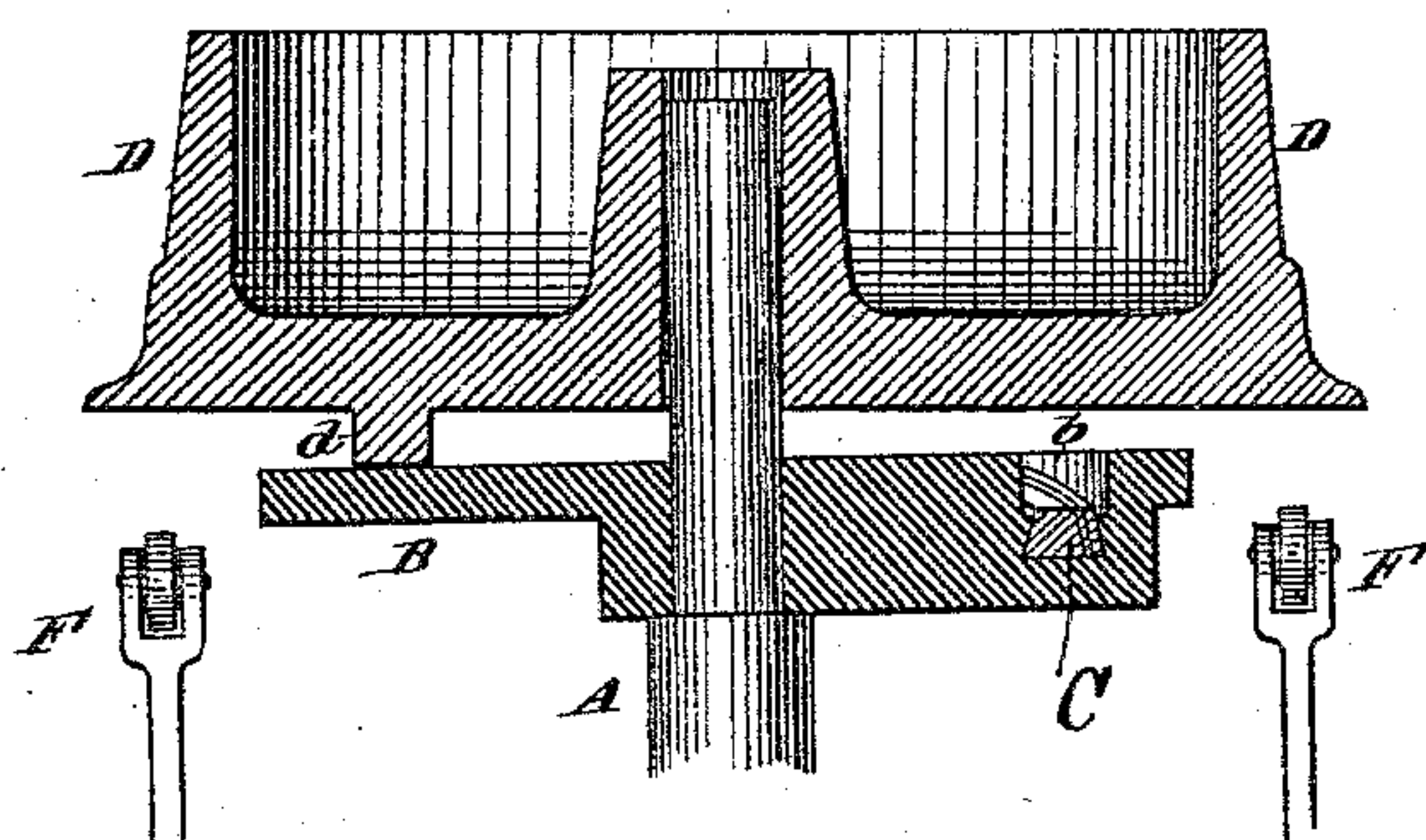


Fig. 2.

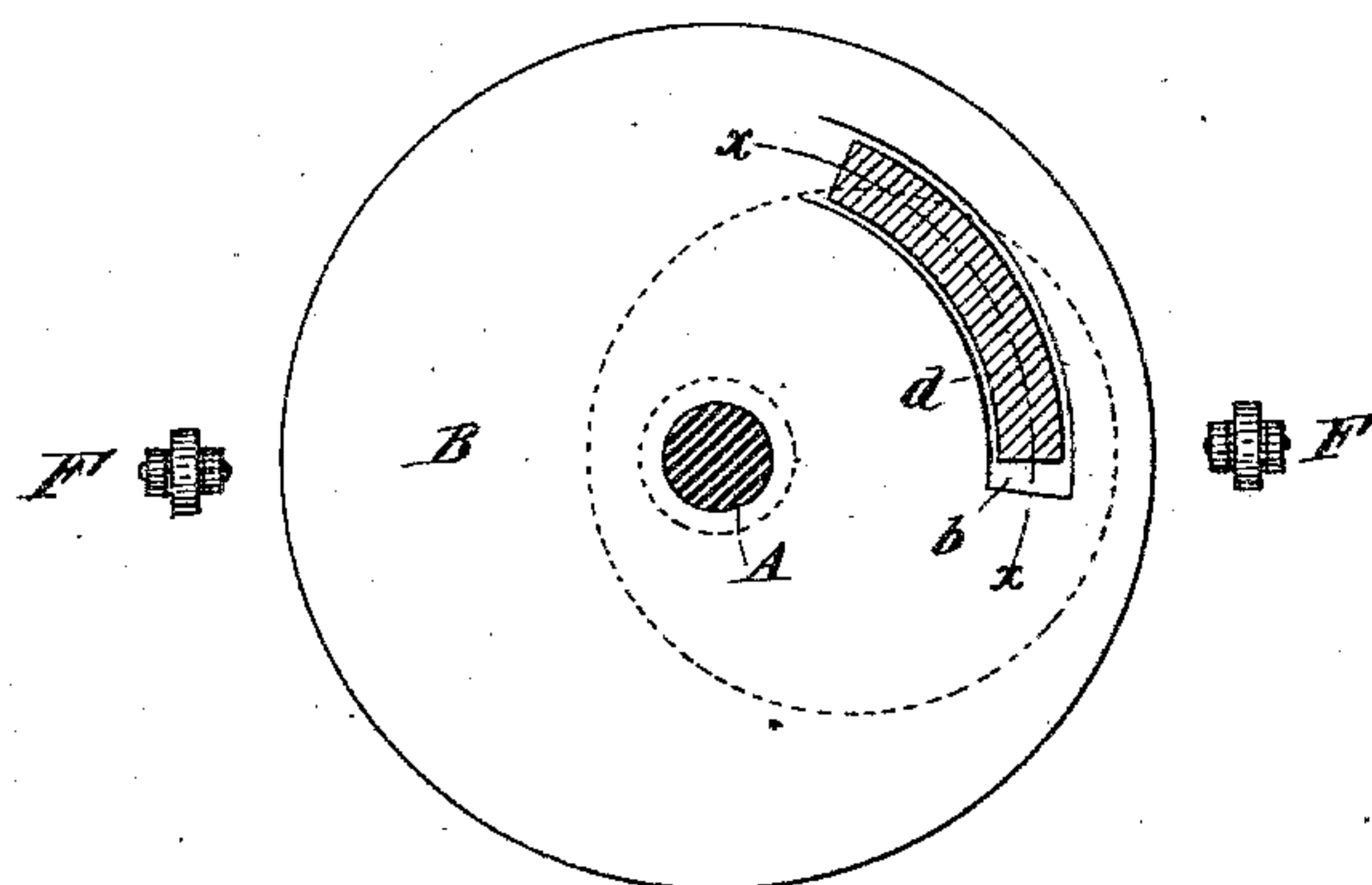


Fig. 3.

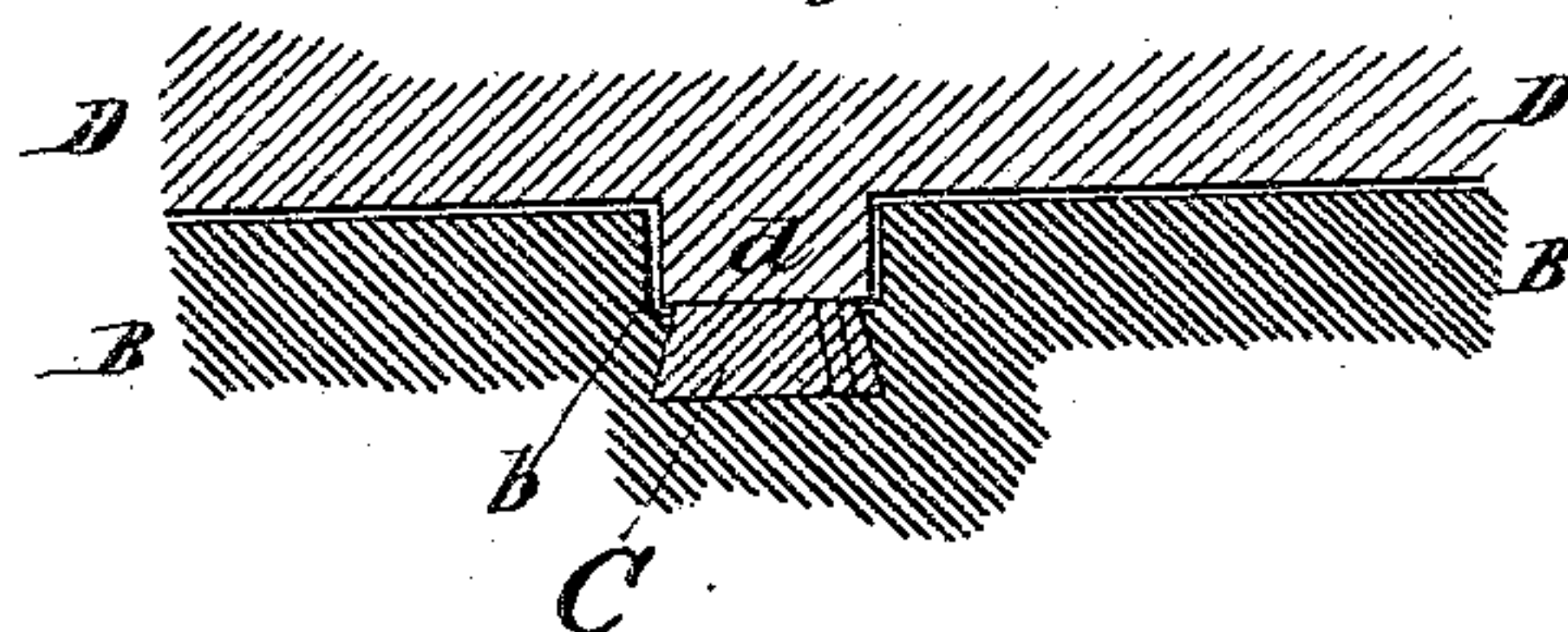
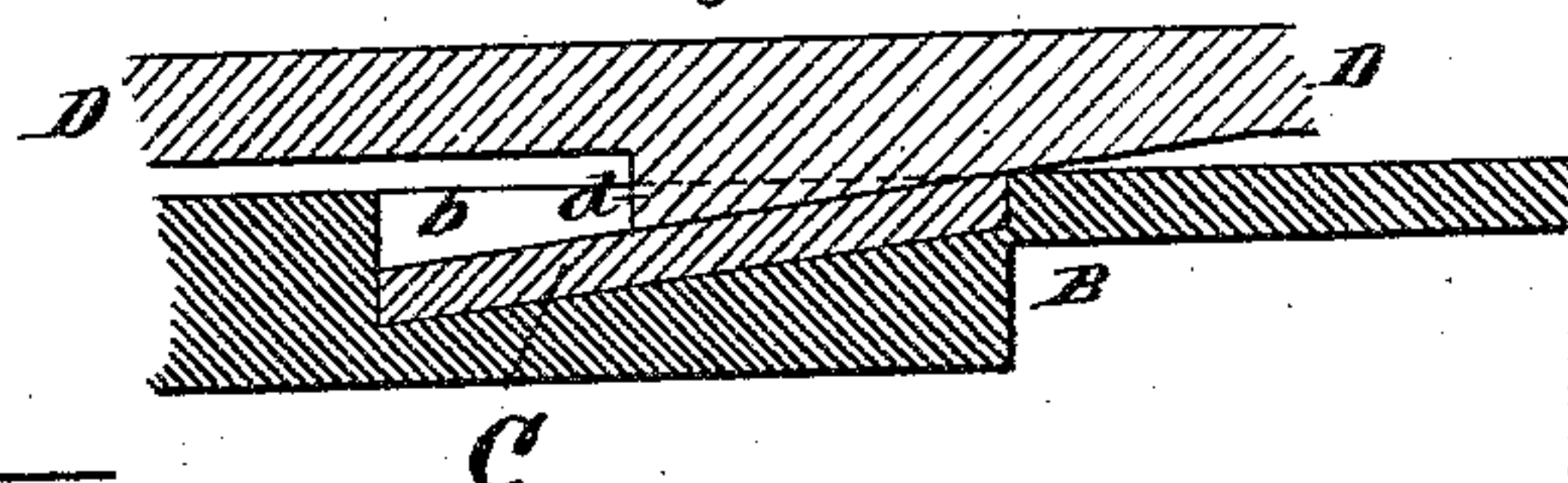


Fig. 4.



WITNESSES—

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by his attorney
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UNITED STATES PATENT OFFICE.

HENRY ROBERTS, OF PITTSBURG, PENNSYLVANIA.

WIRE-REEL.

SPECIFICATION forming part of Letters Patent No. 286,639, dated October 16, 1883.

Application filed November 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY ROBERTS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Wire-Drawing Machines, of which the following is a specification.

The invention relates to the provisions for engaging the drum with the driving-wheel immediately below.

In carrying out the invention I employ, as usual, a vertical continuous revolving shaft, to which power is applied in any convenient manner, and carrying a disk which is provided with devices which engage with other devices upon a vertical drum above when such drum is lowered upon it. The drum is provided with a clamp which grasps the end of the wire, and is thrown into or out of engagement at will by a pedal-lever and proper connections. In drawing large wire the weight of the winding-drums, which are ordinarily formed of cast metal, and the strain due to the tension required on the wire involve serious difficulties as ordinarily used. When, as usual, the revolving disk is provided with two projections on opposite sides of the center, which engage with two corresponding recesses upon the lower surface of the drum, the projections, by revolving continuously when the drum is elevated out of contact therewith, causes the wire to often become entangled in the revolving spurs, making much waste. The two projections or spurs have sometimes been formed upon the drum and the corresponding recesses formed in the disk; but in such construction there are several causes tending to delay and damage. The recesses, in order not to weaken the disk, are plain holes through it, and much care and experience are required to drop the drum at the right moment to have the spurs and recesses come immediately together, so that by the rapid sinking motion the engagement will be complete. The liability is that the engagement will occur before the drum has reached its seat, and the edges of the recesses or spurs, or both, by taking too slight a hold, will be chipped off until they become useless. By my invention I make the engagement sure by the contact of the entire abutting surfaces, and also relieve the suddenness of the concussion when the engagement occurs. I arrange

to commence the motion of the drum by friction, and afterward to engage the directly-abutting surfaces.

The following is a description of what I consider the best means of carrying out the invention:

The accompanying drawings form a part of this specification.

Figure 1 is a central vertical section. Fig. 2 is a plan view with the drum removed. Fig. 3 is a vertical section in a radial plane through the engaging parts, by which the driving-wheel imparts motion to the drum. Fig. 4 is a diagram. It is a section on the curved line *x x* in Fig. 2.

Similar letters of reference indicate like parts in all the figures.

A is an upright shaft or spindle turned strongly and continuously by a steam-engine or any suitable power, and B is the horizontal driving-wheel fixed thereon. The wheel B is formed with one long inclined or wedge-shaped recess, *b*, curved to conform to the motion of the wheel and extending around a considerable arc of the circle, being deep at one end and gradually becoming more shallow toward the other until it is lost in the general plane of the upper surface. The deep end of the recess is at the rear. The bottom of this recess *b* is formed by blocks of wood placed with the end of the grain presented upward, and secured by fitting in a recess of dovetail section provided for it.

D is the drum, fitted loosely on the spindle A, and adapted in the ordinary manner to receive the wire, and to effect the drawing of the wire through the die by its being powerfully rotated. The lower face of the drum D is provided with one projection, *d*, having its lower face inclined or wedge-shaped, corresponding in form and size to the recess *b* into which it matches when the parts are properly applied together.

I employ lifters F, operated by the ordinary treadle, (not represented,) which carry each a roller, *f*, presented under the drum D at two opposite points. When the attendant desires to raise the drum, he steps heavily on the treadle and lifts the lifters F, and with them the drum D. This movement lifts the projection *d* out of the recess *b* and allows the wheel B to turn freely, while the drum D stops.

When all is ready to start again, the attendant releases the treadle, and the drum sinks by its gravity. This sinking of the drum D is liable to occur while the wheel B is in any part of its revolution. The attendant should endeavor to lower it immediately after the deep end of the recess *b* has passed the projection *d*. Whatever the position of the wheel B at this moment, its rotation soon presents the shallow end of the recess *b* under the projection *d*, and the projection *d* commences to slide gradually down the incline formed by the groove *b*, and when it arrives at the bottom the perpendicular end of the projection abuts strongly and fairly against the deep end of the recess, and the parts are firmly engaged, ready to exert the strong pull required to draw the wire; but until this period arrives the supporting of the drum on one side alone by the bearing of the single projection *d* on the wheel below induces a tilting of the drum, which causes its loose bearing on the shaft A to bind at the upper and lower edges, as indicated, somewhat exaggerated, in Fig. 1. The friction thus induced is important in commencing the required rotary motion of the drum before the abutting surfaces engage. There is no strain of the wire in the commencement of the motion, and there is no resistance to overcome but the inertia of the heavy drum. When the lifters are lowered at the proper time, so as to allow a nearly complete revolution of the shaft before the recess *b* engages strongly with the projection *d*, the drum has already acquired nearly its full speed, and the concussion induced by the full engagement is reduced so as to be nearly inappreciable. The construction of the bottom of the recess *b* also contributes to this end after the projection has begun to slide down into the recess. The considerable friction induced by the wood bottom of the latter acting on the projection *d* aids to commence to revolve the drum D. When the complete engagement occurs, the direct abutting of the perpendicular end of the recess *b* against the perpendicular end of the projection *d* insures a strong engagement, and the wheel B is compelled to turn with its full proper velocity. Having only a single recess and a single projection not only induces a commencement of the required motion by the friction of the parts due to the twisting or tilting of the drum, but also gives a greater chance for a long frictional traverse of the parts upon each other before their full engagement. Providing the incline as shown gives a gradual descent to the drum,

and allows, by the wood surface C or other suitable provisions, for inducing sufficient friction to serve efficiently in commencing the motion of the drum D before the engagement of the parts is completed.

The wheel B has the ordinary eccentric for giving the required reciprocating motion to the ordinary lever, with its clamps or tongs, as outlined in the figures, adapted to perform the usual function of pulling the first end of the wire through the die.

Modifications may be made in the proportions. I propose in some cases to extend the recess *b* nearly or quite around the circle, so that there shall be no considerable flat portion on which the projection *d* can ride. Parts of the invention may be used without the whole. I can realize some of the advantages without the wood surfaces C. It may in some cases be expedient to shorten the bearing of the drum D on the shaft A by enlarging the hole at one end or both ends, so as to increase the frictional force induced by the twisting or tilting tendency of the drum; but my experiments do not indicate this to be necessary. The wear induced by friction brings about this result in a short time if the bearing is originally made of the full depth of the drum. I deem it desirable to not shorten the bearing, or to allow it to become shortened by wear to so great an extent as to induce destructive abrasion of the surfaces.

I claim as my invention—

1. In a wire-drawing machine, the drum D, provided with the single projection *d*, in combination with the spindle A and driving-wheel B, having the single recess *b*, the recess being extended around a considerable portion of the circle, and gradually increasing in depth from the front end to the back end, all adapted to serve substantially as and for the purposes herein specified.

2. In a wire-drawing machine, the wheel B, having the long inclined recess *b*, and the strip of wood C in said recess, in combination with the drum D, having a projection, *d*, as herein specified.

In testimony whereof I have hereunto set my hand, at Pittsburg, Pennsylvania, this 24th day of October, 1882, in the presence of two subscribing witnesses.

HENRY ROBERTS.

Witnesses:

JOHN W. GARLAND,
O. BERGMANN.