

A. RATHBONE.
WIRE DRAWING MACHINERY.
APPLICATION FILED DEC. 8, 1909.

957,093.

Patented May 3, 1910.

Fig. 1.

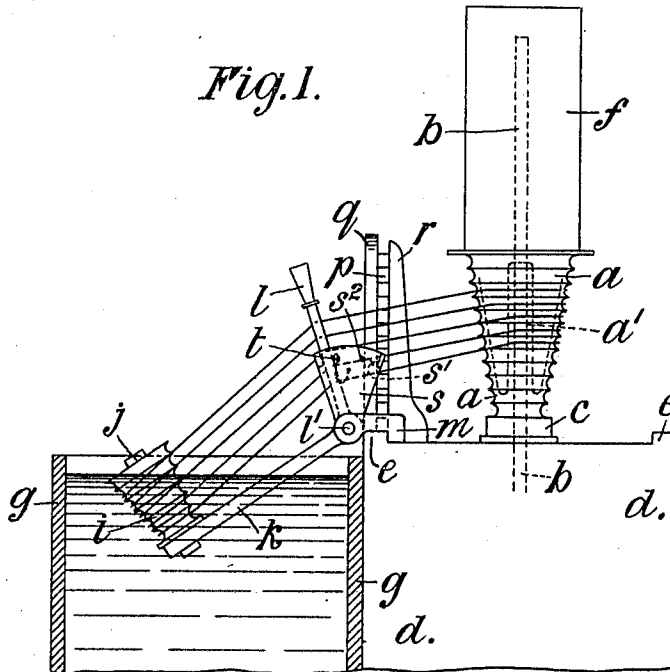


Fig. 2.

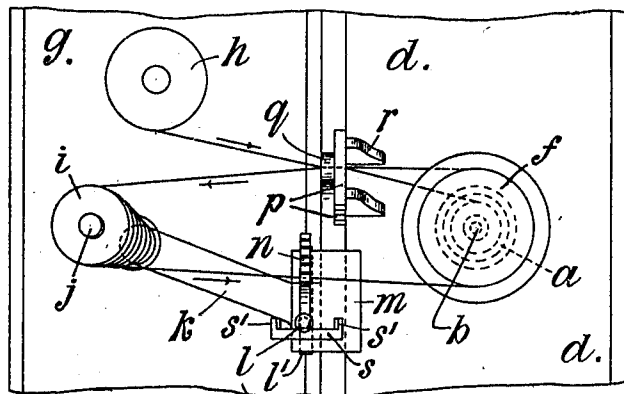


Fig. 4.

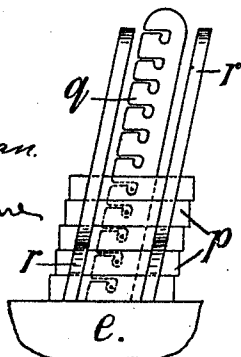
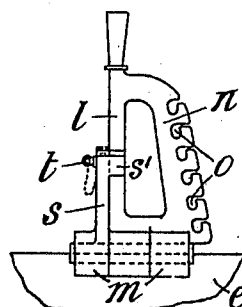


Fig. 3.



Witnesses
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ANDREW RATHBONE, OF WARRINGTON, ENGLAND.

WIRE-DRAWING MACHINERY.

957,093.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed December 8, 1909. Serial No. 531,982.

To all whom it may concern:

Be it known that I, ANDREW RATHBONE, a subject of the King of England, residing at Warrington, in the county of Lancaster, England, have invented new and useful Improvements in Wire-Drawing Machinery, of which the following is a specification.

This invention has reference to continuous wire drawing machinery, and more particularly to that type where the wire is drawn over multiple pulleys mounted on vertical spindles; and the chief object of the present invention, in addition to that of providing a machine which will give a large output, and occupy small space, is that of being able to utilize, largely, existing machinery for wire drawing, or to reduce the cost of new machinery; that is, to simplify the making, and also the working of such machines. The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the apparatus; and Fig. 2 is a plan of same; while Figs. 3 and 4 are views showing details.

Referring now to the drawings, the driving block cone *a*, which is of the multiple pulley or groove type, has grooved pulley portions of different diameters, divided by flanges, they being of successively smaller diameter from the top to the bottom; and they are supported upon a spindle *b*, which is normally revolved, and extends up through a bottom bearing *c*, set on the draw bench or table *d* of the machine.

Upon the upper end of the block *a*, there is a cylindrical drum *f*, upon which the wire is wound.

The bench *d* has a flange at *e* at each side to retain and convey away the water or other liquid which may pass down into it from the blocks and wire. Behind this draw bench or table *d* there is a trough or vessel *g* containing lubricating liquid for wet-drawing, and in which the reel or swift *h* containing the wire to be drawn, is disposed and runs; being disposed preferably on the right-hand side of the block which is taking wire from it.

Immediately behind the block *a*, there is placed a coned multiple pulley, or cone *i*, adapted to revolve idly on a spindle *j* carried from an arm or support *k*. Connected

with this arm is a hand lever *l* which serves to move or operate it for moving the cone *i*. The arm and lever are hinged and mounted on a base block *m*, fixed on the bench or table *e* of the machine.

The lever *l* has connected with it—preferably formed in one with it—a guide bar *n*, with gaps in its edges, leading into holes, and through which the wires pass; and these serve as guides, and the bar *n* forms part of the lever *l*, see detail Fig. 3.

The drawing dies *p* are disposed between a notched guide bar *q*, provided with gaps and recesses similar to those marked *o* in the bar *n* of the lever *l*, and the upstanding horns *r*; and this guide bar *q*, and also the guide bar *n*, are set at an inclination to correspond with the inclination of the conical pulley *a*, and pulley *i*, so that the wires extending between the pulleys *i* and *a* would be in a line as far as possible, see detail Fig. 4.

The lever *l* is hinged at *l*¹ in the base *m*, and works between two stops *s*¹ on a plate *s*, formed and standing on the base *m*; and the lever *l* will be held in the position to which it has been moved, by a pin *t*, which passes through holes *s*² in the plate *s*, and stands behind or in front of the lever *l* after it is actuated.

The portions *a* and *f* of the block is cast in one, the lower part being hollow and provided with a central upstanding boss *a*¹, which extends or rises nearly to the top of the cone; and the space within the cone, between the boss and the outer part, is kept full of water or liquid, by supplying it in a constant stream into the top of the drum *f*, the surplus overflowing the top of the boss *a*¹, and passing through the space between it and the shaft, out onto the tray of the table or bench *d*, whence it is suitably conducted away. By this means, the wheels as well as the wire are kept cool.

When the piece of wire to be drawn is to be passed over the pulleys, and through the dies, the arm *k* will be raised up by pulling the lever *l* back, which raises the pulley *i* out of the bath of liquid; and when the wire has been guided around the various grooves of the pulleys *i* and *a*, through the dies *p*, and the guides *q* and *n*, in a continuous manner,

the block and apparatus are started; and then the pulley *i* is moved downward into the liquid in *g* by gradually pressing the lever *l* away, and when it is submerged, or
 5 practically submerged, the lever *l* and arm *k*, and pulley *i* are held in this position by inserting the pin *t* through the hole *s*¹, so holding these parts in position. The wire is generally passed several times around each of
 10 the pulley portions of the multiple pulley *a*; and the wire is first passed through the lowest die, and over the smallest grooves of the pulley.

It will be understood that a plurality of
 15 blocks *a* and *i*, guide plates *n* and *r*, and dies *p* may be employed in connection with one bath *g*; also that the machine described above is serviceable for dry-drawing as well as wet-drawing.

20 I claim:

1. Apparatus for continuously drawing wire, comprising in combination, a driven block, a pulley over which the wire is passed, a vessel adapted to contain liquid, and means
 25 for moving the pulley into and out of the liquid contained in said vessel and for holding the pulley in two positions, namely, when it is in the liquid, and when it is up and out of the liquid.

2. Apparatus for continuously drawing wire, comprising in combination, a driven block, a vessel adapted to contain liquid, a pulley over which the wire is passed, said pulley being adapted to be moved up and
 35 down and in and out of the liquid contained in said vessel, and means for holding the pulley in two positions, namely, when it is in the liquid, and when it is up and out of the liquid.

3. Apparatus for continuously drawing wire, comprising in combination, a driven block, a vessel adapted to contain liquid, a pulley over which the wire is passed, said pulley being adapted to be moved up and
 45 down and in and out of the liquid contained in said vessel, a pivotally mounted support for the pulley, and means for holding the pulley support in two positions, namely, when the pulley is in the liquid, and when
 50 it is up and out of the liquid.

4. Apparatus for continuously drawing wire, comprising in combination, a driven block, a vessel adapted to contain liquid, a pulley over which the wire is passed, a lever
 55 adapted to move said pulley up and down and in and out of the liquid contained in said vessel, and means for holding the lever in two positions, namely, when the pulley is in the liquid, and when it is up and out of
 60 the liquid.

5. Apparatus for continuously drawing wire, comprising in combination, a driven block, a vessel adapted to contain liquid, a pulley over which the wire is passed, a

pivotally mounted support for the pulley, a lever connected with the support for moving it, and means for holding the support in two positions, that is, when the pulley is in the liquid, and when it is out of the liquid.

6. Apparatus for continuously drawing wire, comprising in combination, a driven block, a vessel adapted to contain liquid, a pulley over which the wire is passed, a lever adapted to move said pulley up and down and in and out of the liquid, means for holding the lever in two positions, namely, when the pulley is in the liquid, and when it is up and out of the liquid, and a guide bar movable with said lever through which the wire passes.

7. Apparatus for continuously drawing wire, comprising in combination, a driven block, a vessel adapted to contain liquid, a pulley over which the wire is passed, a lever adapted to move said pulley up and down and in and out of the liquid, means for holding the lever in two positions, namely, when the pulley is in the liquid, and when it is up and out of the liquid, a guide bar movable with said lever through which the wire passes, drawing dies, and a guide bar associated with said drawing dies through which the wire also passes.

8. Apparatus for continuously drawing wire, comprising in combination, a driven block, a vessel adapted to contain liquid, a pulley over which the wire is passed, a lever adapted to move said pulley in and out of the liquid contained in said vessel, means for maintaining said lever in the desired position, a guide bar movable with said lever through which the wire passes, a stationary guide bar through which the wire also passes, and drawing dies associated with said stationary guide bar.

9. Apparatus for continuously drawing wire, comprising in combination, a driving block having grooved pulley portions of different diameters, a vessel adapted to contain liquid, a pulley over which the wire is passed, a support for moving the pulley into and out of the liquid, means for operating the support and for holding it in two positions, a guide bar through which the wire passes said guide bar being inclined to correspond with the inclination of one side of said driving block, drawing dies, and a second guide bar associated with said drawing dies and being inclined to correspond with the inclination of the other side of said driving block.

10. In apparatus for continuously drawing wire, the combination with a draw-bench, of a driven block mounted thereon, a vessel adapted to contain liquid, an idle multiple grooved pulley over which the wire is passed, an arm or lever having a horizontal axis on said draw bench, said pulley

being mounted on said arm or lever and adapted to be rocked about said axis into and out of the liquid contained in said vessel, and means for holding the arm in two
5 positions, namely, when the pulley is in the liquid, and when it is up and out of the liquid.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREW RATHBONE.

Witnesses:

WILLIAM PARSONS,
FRED A. BEELEY.