Nettleton, Raymond & Hatch,

Turning Metal.

No. 18,661. Patented Nov. 17, 1857.

Fig 2.

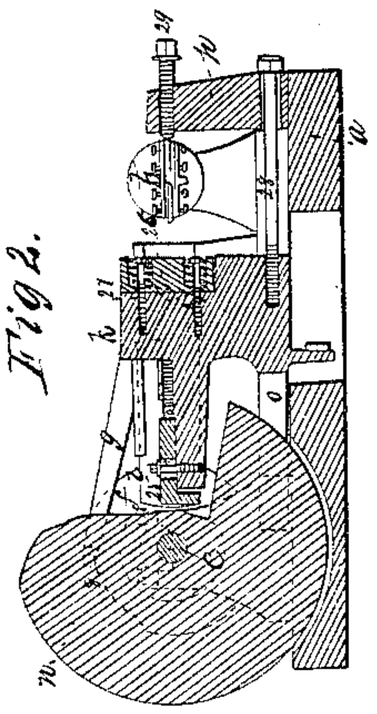


Fig 3.

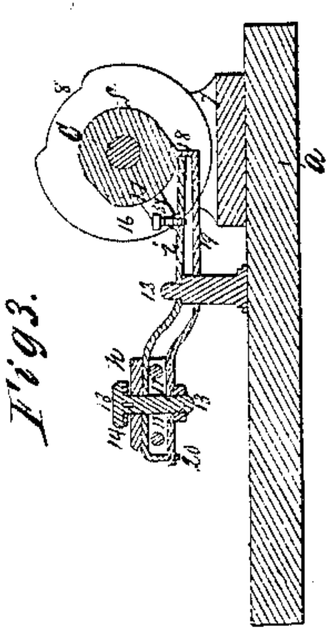


Fig 5.

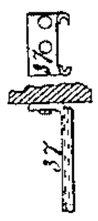
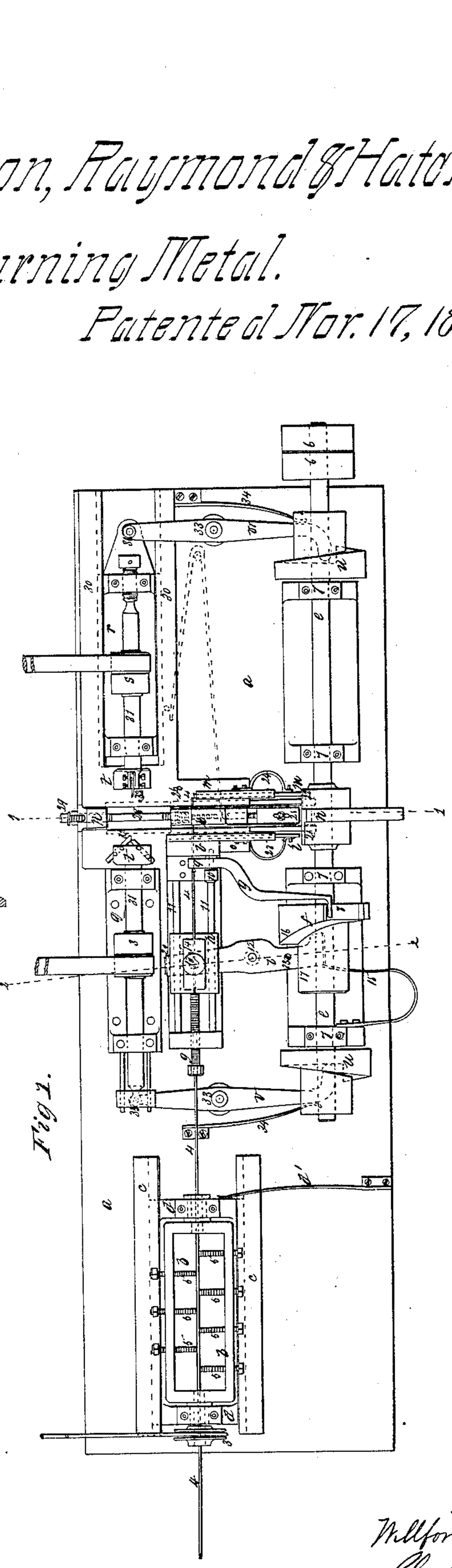


Fig 4.

Fig 1.



Witnesses.

Laporte H. Bissell

Levi Beach

Inventors.

Millford H. Nettleton

Charles Raymond

Ansen Hatch

UNITED STATES PATENT OFFICE.

W. H. NETTLETON, CHAS. RAYMOND, AND A. HATCH, OF BRISTOL, CONNECTICUT,
ASSIGNORS TO W. H. NETTLETON, OF SAME PLACE.

MACHINE FOR TURNING PILLARS FOR CLOCK-MOVEMENTS.

Specification forming part of Letters Patent No. 18,661, dated November 17, 1857; Reissued June 8, 1869, No. 3,489.

To all whom it may concern:

Be it known that we, WILFORD H. NETTLETON, CHARLES RAYMOND, and ANSON HATCH, all of Bristol, in the county of Hartford and State of Connecticut, have invented, made, and applied to use certain new and useful Improvements in Means for Turning Pillars, Lockwork-Shafts, and Arbors for Clock-Movements; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is a plan of our machine complete, Fig. 2, is a cross section at the feeding and holding jaw on the line 1, 1, and Fig. 3, is a cross section at the line 2, 2, showing the compound feeding lever. Similar marks of reference denote corresponding parts.

In turning pillars for the frames of clock movements, lock-works shafts for the striking gear, or rounding the ends of arbors or pinion wires for insertion in the respective parts it is necessary to straighten, cut then hold the wire of which said parts are formed while the ends are being turned. The straightening is sometimes performed in a separate machine, the wire is then cut up into lengths and then turned; our machine is adapted to perform all the operations of straightening, cutting and turning the said lock work shafts or arbors and delivering the same in a finished state; or can be applied by a small attachment to feeding and turning blanks that may have been previously straightened and cut off into lengths, thereby effecting considerable saving in the cost of manufacturing such articles, and producing superior work.

In the drawing *a*, is the bed of the machine, *b*, is a straightener revolved by a band to the pulley 3, and formed with screws 5, operating on the wire 4, as the same passes through between the points of said screws 5, 5, and straightens said wire in the usual manner. If this straightener alone were applied to the wire, the same would not act uniformly because the wire is fed in suddenly to the machine and at such times said wire would draw through the straightener *b*, without being fully straightened. We therefore mount this straightener on a block or carriage *d*, set in slides *c*, *c*, and provide a spring *d'*, tending to force the said straightener away from the feeding apparatus hereafter described: The operation of this part of the apparatus is that when the feeding part of the machine draws the wire along, the straightener slides bodily with it, and then runs back gradually by the operation of the spring *d'*, straightening the wire as it moves.

e, is the main shaft of the machine supported in the bearings 7, 7, and driven by competent power applied to the pulleys 6, 6, or otherwise.

f is the cam that actuates the feeding apparatus as follows: *h*, is the feeding block set to move on slides 11, and moved back and forth by a compound lever *i*, set on a fulcrum 12, which lever is acted on to give the sidewise motion by the part 16, of the cam *f* and a spring 15, keeps said lever toward the cam 16.

g, is a hollow screw through which the wire 4, passes, and said screw taking the block *h*, determines the point to which said block is allowed to return by the spring 15, and consequently the amount or length of wire fed forward each motion. The wire 4, passes through a slot in the bolt 13, and beneath the ends of the friction spring clamp 14; this clamp is relieved as the block *h*, slides back, and clamps onto the wire to feed the same as the said block is moved forward, by a compound action of the lever *i*, as follows. The said lever *i*, is formed with a lower piece 19, that sets, with a slot, around the lower part of the fulcrum 12, and has a fulcrum 20, at the end of the said lever *i*, near the slide *h*, and the bolt 13, passes through this lever 19, and terminates with a nut; 17, is a can piece on the hub of cam *f* acting on the end 18, of the lever 19, which is turned up so as to be higher than the end of the lever *i*. It will now be seen, that the cams being properly shaped and timed, that the levers *i*, and 19, move on the fulcrum 12, horizontally and give motion to the block *h*, and at the same time the lever 19 is given a compound motion to clamp the wire by pressing down the end 18, and then the said wire is relieved as the block *h*, draws back; the said lever 19 acting to clamp the wire through the bolt 13, and spring clamp 14.

9, is a lever on a fulcrum 10, which holds the wire (4), passing beneath it, except when said wire is being fed along, at which time the end of said lever 9, dropping into

a depression 8 of the cam *f*, the hold of said lever on the wire is released. The wire 4, passes through a hole in the shears or cutting slide *l*, and also through the holding jaw *k*, and its exact length is determined by a gage slide *m*, which is moved by the cam 22. The cam *n*, is used to give a forward motion to the holding jaw *k*, and then retain the same stationary while the ends of the wire are being turned, and then allows the said jaw *k*, to return to the position shown in the drawing, and the parts are so timed that the wire 4, is fed along and forces out the turned pillar or arbor from the jaw *k*, the gage slide *m*, then comes up by the cam 22, to determine the length of the blank, and then the cutting slide or shear *l*, is moved by the cam 21, which separates the blank from the continuous wire, and the jaw *k*, is again projected forward and held by the cam *n*.

The holding jaw *k*, is set in slides *o*, *o*, and is provided with a movable tail piece (25,) that takes the cam *n*, and is adjustable to allow for any wear; and the jaw 26, forming one side of the holding jaw *k*, is fitted on screw bolts 27, around which are helical springs tending to keep the jaws closed, but not so strong as to prevent the wire 4, passing freely into the hole for its reception that is made between said jaws and formed conically at its end. In order to clamp the blank within these jaws while being turned, we use the screw 29, in the fixed head *p*, against which the moving jaw 26, is pressed by the cam *n*. 28, is a screw passing freely through the head *p*, into the jaw (*k*), by which screw the said jaw is adjusted to stand at the proper point for receiving the wire 4.

The turning of the ends of the blanks to form pillars, arbors, &c., is effected by chucks *t*, having proper tools (32) secured in them for forming the ends of the pillars into the shape shown in Fig. 4, or into any other desired form. These chucks *t*, are mounted on mandrels 31, and rotated by competent power applied to the pulleys *s*, *s*, and the mandrels are mounted in suitable heads (*q*, *r*,) one of which *q*, is fixed to the bed *a*, and the mandrel slides through it, the other (*r*,) is set in slides 30, so as to move bodily along. Endwise motion is given to the mandrels by means of cams *u*, *u*, 1, on the shaft *e*, acting on levers *v*, *v*, 1, set on fulcrums 33, with returning springs 34, and one lever *v*, is connected to the sliding mandrel 31, by a block 35, receiving a ball at the end of said mandrel, and the other lever *v′*, is connected to the sliding head *r*, at 36.

Having thus described the construction and operation of our machine we would remark that where it becomes necessary to fit our machine so as to use it with blanks already cut up into proper lengths we simply remove the lever 9, and attach the hopper or slide 37, shown in Fig. 5, into which the blanks are placed in a horizontal position and the lower blank is pushed out every vibration of the slide or feeding block *h*, by a stationary pusher attached in place of the wire 4; and to retain said pusher to the said feeding block we force the lever 19 down by a screw 38, that passes through the lever *i*.

The jaw *k*, might have an oscillating motion on a center, instead of a sliding motion, but we prefer that the jaw be fitted in the manner shown.

We do not claim herein the use of two chucks simultaneously brought up to turn the ends of a wire to form a pillar shaft or arbor, as the same has been in use and on sale for many years; neither do we claim any particular device for holding the turning tools into the chucks; neither do we claim any sliding mandrel or mandrel head as these are well known for other purposes; neither do we claim the straightener (*b*) as the same is well known, but

What we claim and desire to secure by Letters Patent is—

1. The feeding slide *h*, in combination with the straightener *b*, having an endwise movement and returning spring or its equivalent substantially as specified, whereby the straightener is drawn along as the wire is fed forward, and straightens the wire as it is forced back by the said spring or its equivalent as specified.

2. We also claim the compound levers (*i* and 19) made and acting, in connection with the feeding slide *h*, and clamp 14, substantially as, and for the purposes specified.

3. We also claim the holding jaws (*k* and 26) regulated in their action by the screws 28 and 29, and operating substantially as and for the purposes specified.

4. We also claim the sliding gage *m*, actuated by the cam 22, in combination with the holding jaw *k*, substantially as specified, whereby the gage (*m*) is withdrawn while the pillar or arbor is being forced out of said holding jaws, but comes up to determine the length or position of the wire or blank that passes into said jaws as set forth.

In witness whereof we have hereunto set our signatures this 7th day of September, 1857.

WILLFORD H. NETTLETON.
CHARLES RAYMOND.
ANSON HATCH.

Witnesses:
LAPORTE HUBBELL,
LEVI BEACH.

[FIRST PRINTED 1911.]