L. BRIGHTMAN.

Machine for Drawing and Straightening Metal-Bars.

No. 200,251. Patented Feb. 12, 1878.

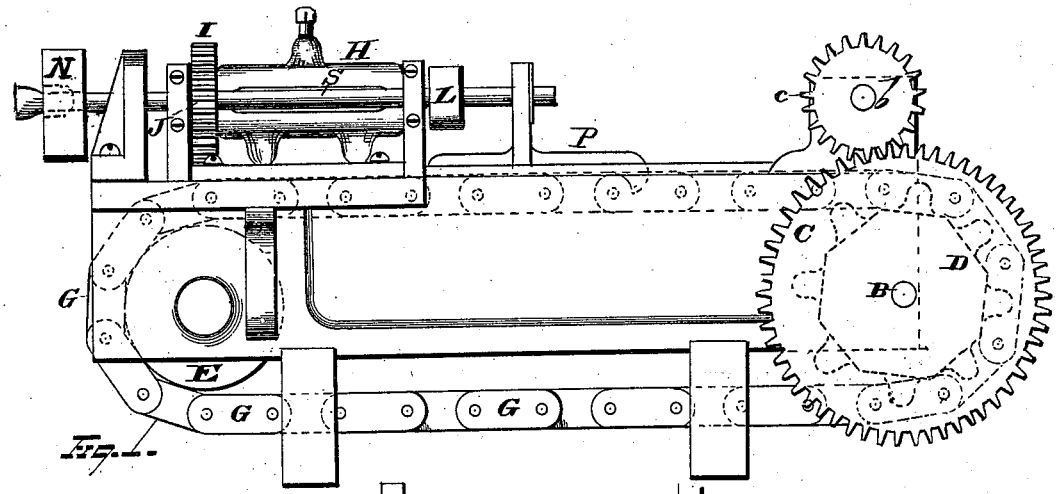
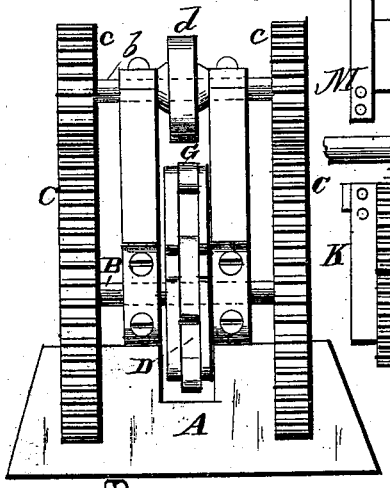


Fig. 1.



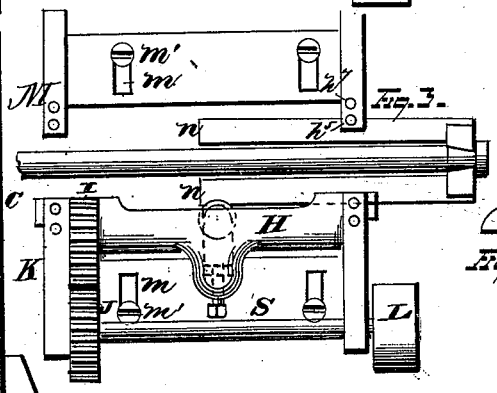


Fig. 3.

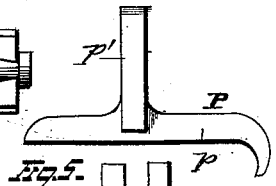


Fig. 5.

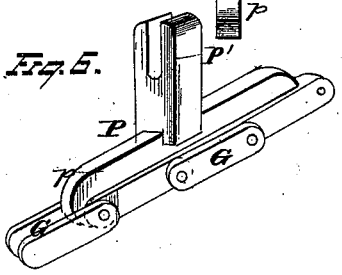


Fig. 6.

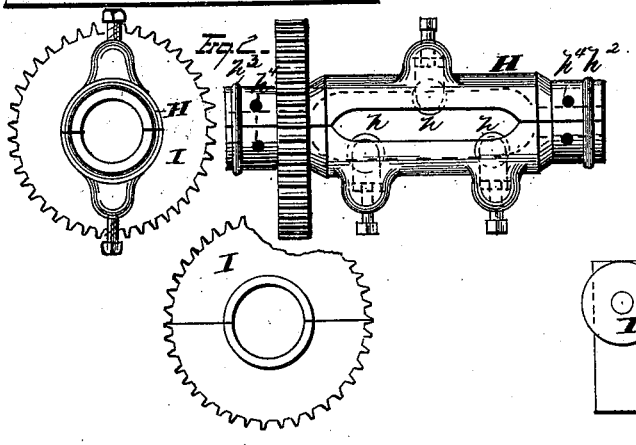


Fig. 2.

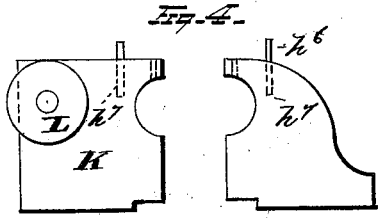


Fig. 4.

WITNESSES

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# UNITED STATES PATENT OFFICE.

LATHAM BRIGHTMAN, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO AUGUST BRANKMAN.

## IMPROVEMENT IN MACHINES FOR DRAWING AND STRAIGHTENING METAL BARS.

Specification forming part of Letters Patent No. **200,251**, dated February 12, 1878; application filed June 9, 1877.

*To all whom it may concern:*

Be it known that I, LATHAM BRIGHTMAN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Drawing and Straightening Metal Bars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to a machine for drawing and straightening metal bars, shafting, &c.

In the drawings, Figure 1 represents a side and end view of a machine embodying my invention. Fig. 2 represents a side view and end elevations of the roller-carrier. Fig. 3 shows a plan view of the adjustable frame in which the roller-carrier is journaled, representing one part or half of the roller-carrier in position. Fig. 4 represents an end view of Fig. 3 nearest the shaft-holding device. Fig. 5 is a side and end view of the grasping device for holding the metal bar or shaft operated upon. Fig. 6 represents the grasping device in position on the chain, which latter is operated by the mechanism hereinafter described.

A represents the frame of the machine. B is a shaft, which carries three wheels—two gear-wheels, C C, and a central wheel, D, provided with studs or projections on its periphery. E is a wheel, with a plain periphery, journaled in the opposite end of the frame. Over the wheels D and E passes the endless chain G. *b* is another shaft, which carries the pinions *c c* and pulley *d*. The pinions mesh with the gear-wheels C C, and are driven by a belt passing over the pulley *d*. Any suitable means for driving the machine may be employed.

H represents the roller-carrier, constructed in two parts, for the purpose of permitting the grasping device to advance as near as possible to the die. In this roller-carrier are placed the straightening rolls or rollers *h*, as many as may be found necessary, and located diagonally opposite each other, as shown. The construction, attachment, and adjustability of these rollers are the same as those described in the invention for which Letters Patent were granted to August Brankman and myself under date of May 22, 1877. This roller-carrier is suitably hollowed to permit of the passage through it of the shaft or bar to be drawn, and to afford room for the location of the said rollers. Said carrier may be cut away, as shown, so that a view of the interior may always be obtained; but that is not essential, and it may, therefore, be dispensed with, if desired.

To each half of the roller-carrier is secured the half of a gear-wheel, as represented in Fig. 3, which, when the two parts are brought together, form a complete gear-wheel. Instead of constructing the gear-wheel in two parts, as shown, it may be formed in one part, as usual, and be capable of being easily removed from and attached to the carrier, which may be accomplished in any well-known manner. The two parts of the carrier, when brought together, are held in position by the rings $h^2$ $h^3$, or by any other equivalent means. If the gear-wheel is formed in one part or piece, it would serve the purpose of a ring, and the ring $h^3$ could be dispensed with.

To prevent the halves or parts of the carrier from falling out when the rings are removed and the frame in which the carrier is held is separated, to permit of the passage of the grasping device, holes $h^4$, which are placed opposite similar holes or apertures $h^5$ in the frame, are formed in the carrier, through which pins or bolts are inserted for locking them in place. When the two parts are brought together again the pins or bolts $h^6$ are lifted and placed for convenience in the sockets $h^7$ adjoining the holes $h^5$, so that the roller-carrier can be revolved.

The gear-wheel I meshes with the pinion J, which is carried by a shaft journaled in the adjustable frame K, which shaft carries on its opposite end a pulley, L, over which a belt passes.

Through the medium of the described mechanism the roller-carrier is caused to revolve when any suitable power is applied to the pulley L. The frame M, in which the roller-carrier is journaled or held, is also constructed in two parts, which parts are made adjustable to

and from each other by means of the slots $m$ and set-screws $m'$.

Guide-pieces $n$ $n$ are placed on the frame of the machine to guide the parts of the frame into the required position. Between and below the frame passes the chain which operates the grasping device.

P is the grasping device, which consists of the hooked base $p$ and slotted upright $p'$. The hook of the base is inserted in one of the links of the chain, and the metal rod or shafting, suitably notched, is placed in the slot of the upright post $p'$. The base of the grasping device is, preferably, constructed of considerable length, so that the pressure exerted by the operation of the machine shall be distributed over considerable area. By placing the upright post about centrally of the length of the base, the hook is effectually prevented from becoming disengaged from the chain, and the upright is kept steady.

Beyond the frame K is placed a suitable stop or abutment, beyond which is located the die N, through which the bar or shafting is drawn, similarly constructed to the device described in the patent before referred to.

The operation of the machine is as follows: When the prepared end of the shaft or rod has been or is about to be introduced through the die the set-screws $m'$ are loosened, the pins $h^6$ inserted in the holes $h^4$ $h^5$ to lock the frame to the carrier, the rings $h^2$ and $h^3$ are then removed, and the two parts of the frame K separated sufficiently to allow the grasping device P to advance in the opening thus formed, for the purpose of being connected with the prepared end of the shaft or rod to be drawn and straightened.

The diminished end of the shaft is prepared by being notched, as shown in Fig. 3, and is connected to the slotted upright $p'$, as there indicated.

Power is now applied to the pulley $d$, to operate the chain to which the grasping device is attached.

In place of the chain a rack and pinion could be employed, the pinion gearing with the rack on the under side, and the grasping device secured to the upper side of the same.

When the grasping device has been drawn beyond the sectional frame K M, the latter is closed up, the set-screws $m'$ are tightened, the collars or rings $h^2$ and $h^3$ are brought over the cylindrical ends of the roller-carrier, and the pins $h^6$ are removed from the operative position.

The rollers $h$ of the holder are now in contact with the shaft, and power is applied to both the pulleys, $d$ and L, so that, as the shaft or bar is drawn through the die the rollers shall revolve around the same, thus coming in contact with a greater surface of the bar or shaft than could otherwise be the case, and operating with more certainty to straighten the same. The carrier can be made to revolve faster or slower, as may be found necessary in particular cases.

In the patent referred to, the rollers do not revolve around the shaft operated upon, but it is evident that by making them movable around the shaft, as herein described, a much greater surface of the article drawn is operated upon, and the operation of straightening is therefore more certain in its results.

While the preferable arrangement of rollers in the sectional carrier is illustrated in the drawing, the same being arranged in alternately opposite succession along the line of the drawing action, it is evident that the relative arrangement of said rollers may be slightly varied without departing from the spirit of my invention.

What I claim is—

1. In a metal drawing and straightening machine, the combination, with a drawing-die and suitable means for grasping the bar, of a revolving sectional carrier, provided with rollers, the latter arranged to act on the surface of the metal bar, substantially as described.

2. In a metal drawing and straightening machine, the combination, with a drawing-die and suitable means for grasping the bar, of a revolving sectional carrier, provided with a series of straightening-rollers, arranged in alternately opposite succession along the line of the drawing action, substantially as described.

3. In a metal drawing and straightening machine, the combination, with a drawing-die and suitable means for grasping the bar, of a revolving sectional carrier, a counter-shaft, and suitable intermediate gearing to impart a rotary movement to said carrier, substantially as described.

4. In a metal drawing and straightening machine, the combination, with a drawing-die and suitable means for grasping the bar, of the revolving sectional carrier H, gear-wheel I, pinion J, shaft S, pulley L, and frame K, substantially as described.

5. The combination, with the sectional revolving roller-carrier, of a supporting-frame, constructed in two parts and adapted to be withdrawn from its operative position, so as to release the rollers from contact with the shaft, substantially as described.

6. The combination, with the sectional revolving roller-carrier, of collars or rings for securing the sections of the carrier together, substantially as described.

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

LATHAM BRIGHTMAN.

Witnesses:

FRANCIS TOUMEY,

W. E. DONNELLY.