J. F. BUSEY.

Machine for Bending Chain-Links.

No. 207,388 Patented Aug. 27, 1878.

Fig. 1

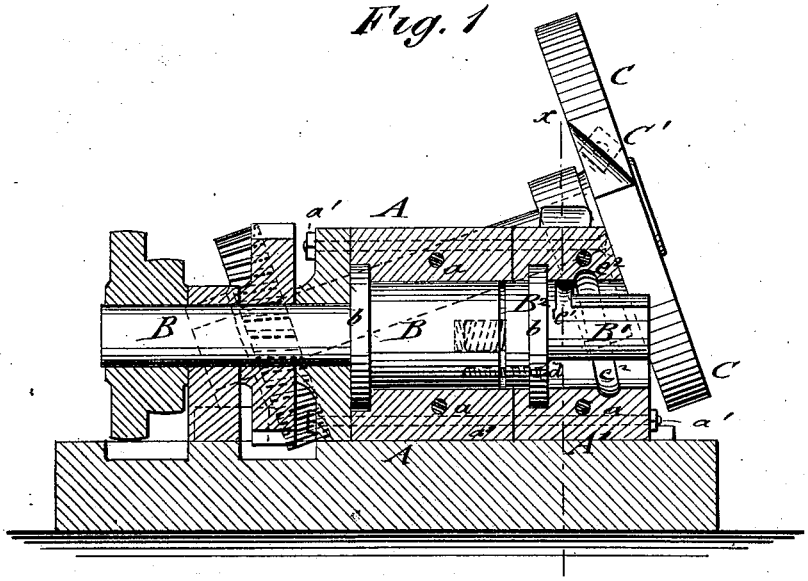


Fig. 2

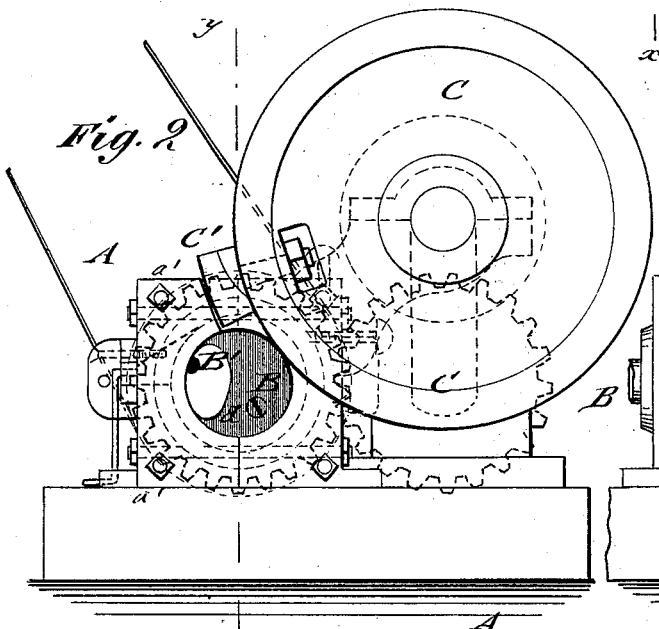


Fig. 3

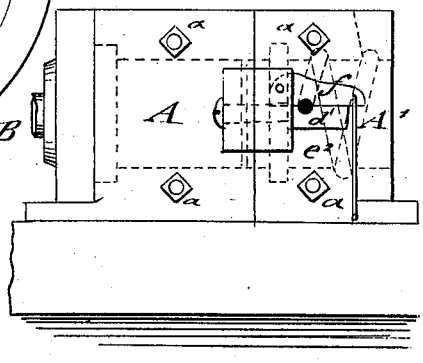
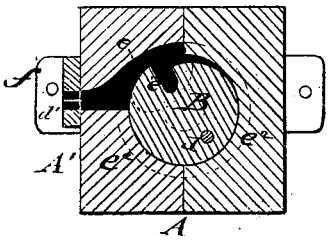


Fig. 4



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JEROME F. BUSEY, OF BECK'S MILLS, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR BENDING CHAIN-LINKS.

Specification forming part of Letters Patent No. **207,388**, dated August 27, 1878; application filed March 22, 1878.

To all whom it may concern:

Be it known that I, JEROME F. BUSEY, of Beck's Mills, in the county of Washington and State of Pennsylvania, have invented a new and Improved Machine for Bending Chain-Links, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical longitudinal section of my improved machine for bending chain-links on line *y y*, Fig. 2. Fig. 2 is a front elevation; Fig. 3, a side elevation, and Fig. 4 a vertical transverse section of the same on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention has reference to an improved machine for bending chain-links, which may be adjusted so as to produce links of different sizes and thicknesses of iron by one and the same machine, without necessitating the use of several machines for each size of link.

The invention consists in the construction and arrangement of parts, as hereinafter described and claimed.

Referring to the drawing, A represents a square box or casing, that is divided centrally, either on a vertical or horizontal line, into two sections, which are firmly bolted together by cross-bolts *a*, so as to form a bearing for the revolving shaft B, which carries an elliptically-shaped bender, B^1, at its front end.

The power is applied by belt-and-pulley connection with a driving-shaft to the rear end of shaft B, and the shaft is retained against displacement in longitudinal direction by means of annular shoulders *b*, that revolve in corresponding grooves of the box A. The shaft B is provided with a removable front section, B^2, that carries the bender, and is secured to the main body of the shaft by a left-hand center-screw, that screws in reverse direction to the motion of the shaft, so that during the working of the machine the adjustable front section will tighten up by the said screw-connection with the main body of the shaft. The center-screw permits the front section to be adjusted closer to or farther from the main body of the shaft, and a set-screw, *d*, with countersunk head, that is applied eccentrically to the center-screw and passes through the front section into the body of the shaft, retains the front section in rigid position after it has been screwed into place. The front section, A′, of the square box A is also made adjustable, and is connected to the rear section by means of longitudinal bolts *a′*. The front section is provided with a side opening, *d′*, for receiving a rod of the required dimension to be bent in the machine.

The opening *d′* has an interior inclined groove, *e*, as shown in Fig. 4, along which the rod is drawn in by being taken hold of by the walls of a hooked recess e^1 of the revolving shaft B, so as to follow then a spiral groove, e^2, at the interior of the cylindrical front chamber encircling the bender B^1. The inclined portion *e* is about equal to one-quarter of the entire circumference of the chamber surrounding the bender, and connects then with the interior spiral thread e^2, that is continued to the end of the box or chamber, as shown by dotted lines in Fig. 3.

The solid portion of the shaft B extends to about the center of the opening *d′*, from which point starts the bender B^1, and is continued to the extreme end of the box A. The hook-shaped recess e^1 of shaft B is extended longitudinally along the bender to the outer end thereof.

When the machine is to be put into operation the driving-shaft is first turned by hand until the recess e^1 in the bender is brought opposite the opening *d′* in the box A. The iron rod from which the links are to be made, being previously heated, is then introduced through the opening *d′* into the recess e^1, and there held while the machine is set in motion. As the bender moves around in the box A it first bends upon the end of the rod a hook, which serves to hold and draw in the rod until it has made two complete wraps around the bender, the hook in the meantime being worked out along the recess in the bender by the incline and screw, and by the time it comes to the place where the knife cuts it off the wraps of the rod are sufficient to continue the feeding of the rod without the aid of the hook.

The pitch of the inclined and interior spiral grooves is governed by the diameter of the rod from which the links are to be made—that is to

say, the pitch should be at least one-sixteenth of an inch greater than the diameter of the rod, so that every link as it is severed from the rod will have an opening in it sufficient in size to allow another link to be inserted through it.

At the outside of the box A, in connection with the entrance-opening *d'* for the rod, is arranged a hinged and treadle-acted clamp, *f*, that binds on the rod when the same is inserted through the hole, so as to secure the reliable engaging by the recess of the bender and the drawing forward of the same through the machine.

The longitudinal groove of the bender that forms the extension of the recess of the main shaft may be dispensed with, and the rod guided directly along the bender during the process of forming the link.

In connection with the main box and bending device is used a large revolving wheel, C, that is supported by suitable bearings in an inclined position and revolved by suitable bevel-gearing from the shaft of the bender. This wheel is made from one to five times and even larger than the driving-wheel, so as to obtain the required speed for the knife C', secured to a point at the periphery of the wheel, so as not to allow the iron much chance to move or press against the knife while the iron is coming out of the box on the bender.

The wheel is set at an angle or inclination, and the knife at an angle to the face of the wheel for cutting the scarf into the rod at the required angle on the bender.

The knife is made adjustable in the wheel, and is provided with straight faces, that pass along a front recess of the box past the bender at the proper moment for cutting the link from the rod and scarfing it in the required manner for the welding process.

I am aware that the combination, in a chain-link machine, of an internally screw-threaded box with a side opening and an internally-revolving elliptical mandrel is not new, and I therefore make no broad claim thereto; but,

Having described my invention, what I do claim is—

1. The combination of a sectional supporting box or casing, having front chamber with side opening, exterior treadle-actuated clamp, and interior spiral groove, with recessed revolving shaft and bender, substantially as described.

2. The combination of a sectional box or casing, having front chamber with side opening and interior spiral connecting groove, with a revolving shaft and elliptical bender, and with an inclined adjustable cutting-knife and revolving wheel, substantially as and for the purpose specified.

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Witnesses:
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