

(No Model.)

J. W. BRITTON.

APPARATUS FOR STRAIGHTENING SHEET METAL.

No. 312,607.

Patented Feb. 24, 1885.

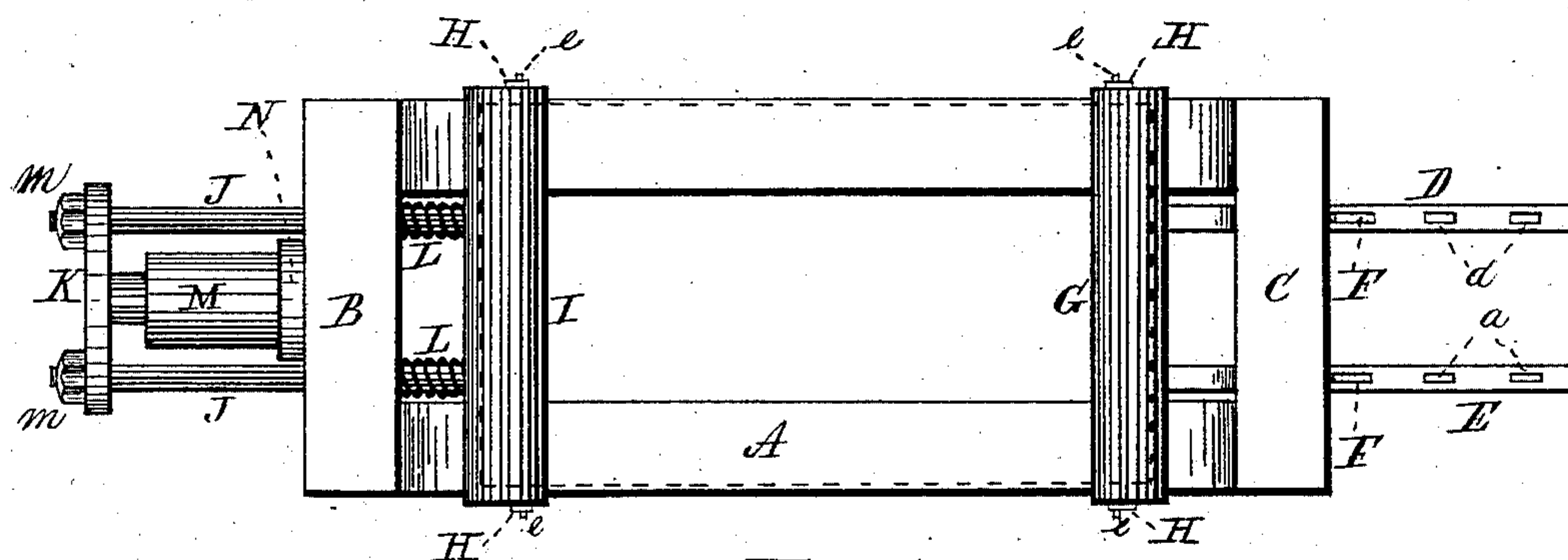


Fig. 1.

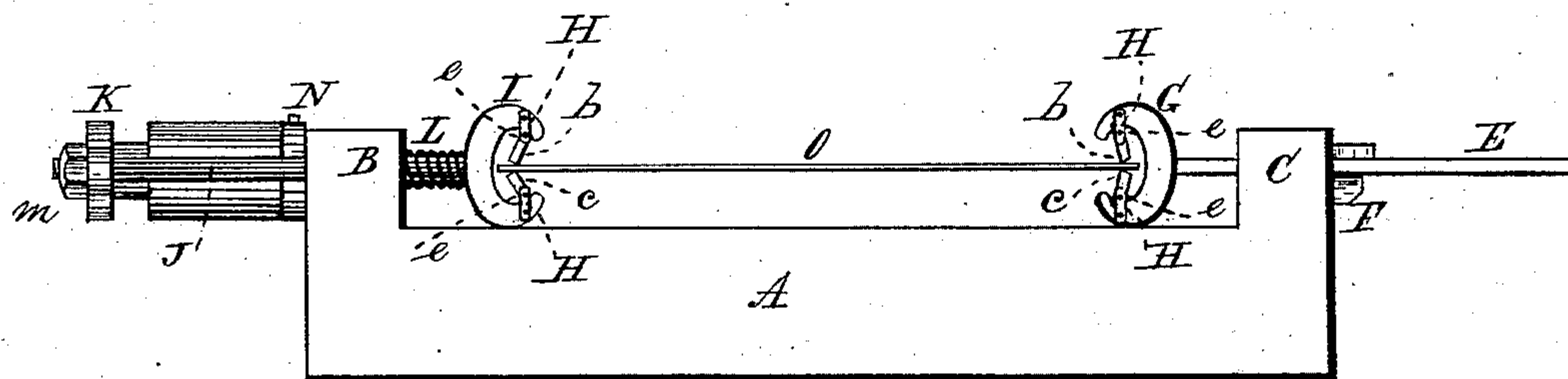
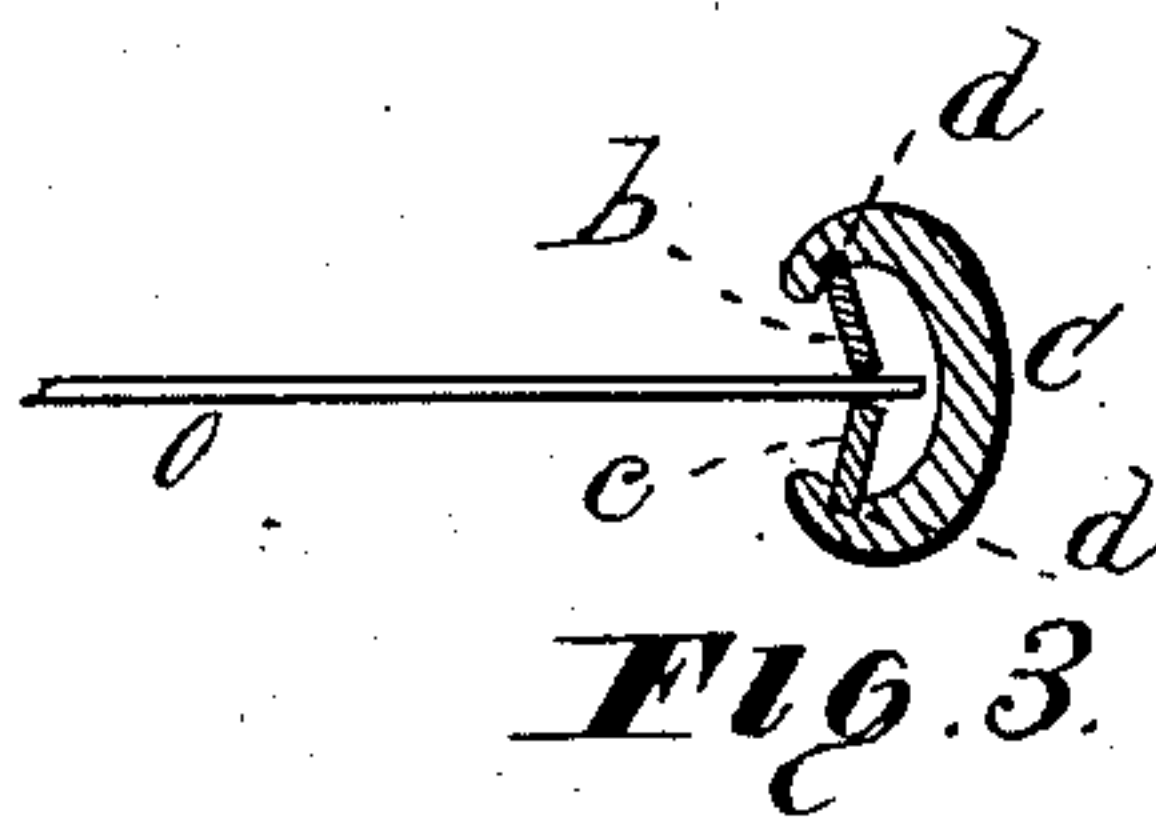


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOSEPH W. BRITTON, OF CLEVELAND, OHIO.

APPARATUS FOR STRAIGHTENING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 312,607, dated February 24, 1885.

Application filed October 31, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. BRITTON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Apparatus for Straightening Plate and Sheet Metal; and I do hereby declare that the following is a full, clear, and complete description thereof.

In the manufacture of sheet metal, said sheets on leaving the rolls are more or less warped or buckled, or otherwise affected by kinks, sometimes covering the entire surface of the sheet. In this condition they are unfit for use, and cannot be well packed or bundled for shipping, as their warped and irregular surfaces prevent them from lying evenly and smoothly when used, or upon each other in a package or bundle. Heretofore this defect in the sheets has been partially removed by the hammer, by which the short places in the sheet are stretched to equal the length of the swells or buckles. This manipulation of the sheet, although it smooths and flattens it out, tends to injure the fiber of the metal by overstraining it, in the event the kinks and warping are considerable or numerous, as is often the case; hence the hammering of the metal for the purpose specified weakens the character of the sheet. Rolls are also used for straightening and taking the kinks and buckle out of sheet metal, through which rolls the sheets or plates are passed. This does not fully accomplish the desired result. Cold-rolling galvanized plates or sheets is ordinarily impracticable. In case the iron is drawn or compressed in the operation the zinc coating is stripped or wrung off the sheet.

The purpose of this invention is to avoid these objections, and to render the sheets or plates of iron, steel, brass, copper, tin, &c., straight, smooth, and free from the kinks and bulges usually attendant upon the ordinary method of making sheet metal, which is objectionable in its use, and in working it up, for the above-specified purpose, there is employed the following-described mechanism and method, which is illustrated by the annexed drawings, making a part of this specification, in which—

Figure 1 represents a plan view of the machine for stretching the sheets. Fig. 2 is a side elevation. Fig. 3 is a detached sectional view.

Like letters of reference refer to like parts in the several views.

A represents a rectangular frame, which may consist of heavy timber or of metal, and of a suitable size for the sheets of metal to be placed therein for being stretched. The ends B C of the frame project above the sides thereof, as seen in the drawings. Through the end C pass freely the stay-rods D and E, in which are key-holes *a a*, to receive the keys F. To the inner ends of said rods is secured a retaining-head, G, extending transversely across the frame and resting upon the sides thereof, and whereon it slides. Longitudinally in the side of said head, and extending through its entire length, is a deep groove, forming a semi-tubular-like shell or head, as shown in the drawings. In said head is fitted a pair of clamping-jaws, *b c*, arranged to open toward the back of the head. Each jaw is of the length of the head, and the upper edge of the one and the lower edge of the other are adapted to fit in a groove, as seen at *d* in Fig. 3, forming an articulation of the jaws with the head, and which are retained in connection therewith by links H, respectively. One end of each link is secured, respectively, to the ends of the head, and in the opposite ends of the links are pivoted the ends of the jaws by means of studs *e*, projecting therefrom into the links in which the jaws vibrate for opening and closing the same. On the opposite end of the frame is a head, I, constructed substantially as the head G, and provided with a pair of jaws corresponding to the jaws in the head G. The two heads and jaws are duplicates, and co-operate for clamping a sheet of metal, as hereinafter shown.

To the jaw I are connected a pair of drag-rods, J J, passing through the end of the frame and terminating in a cross-head, K, to which they are made fast by the nuts *m*. On each of said rods, between the end B of the frame and the clamping-head I, is a spring, L, for a purpose presently made manifest. Between the drag-rods J and secured to the end of the frame A is arranged a cylinder, M, fitted with a piston, N, connected to the cross-head K. Said cylinder is attached to a hydrostatic pump for operating the machine. Other suitable and sufficient power may be used instead of a pump. A pump, however, is preferred. Said pump is not shown in the drawings, and there-

fore a particular description thereof is not essential in this place, as it forms no part of this invention, and is too well known in the arts to be further noticed in this connection.

5 The practical use of the above-described machine is as follows: A kinked or warped sheet of metal (indicated by the dotted lines in Fig. 1, an edge view, O, of which is shown in Figs. 2 and 3) is placed between the two
10 clamping-heads G and I, and the ends thereof, respectively, inserted in the clamping-jaws, as shown in Fig. 2. The head G is retained at its end of the frame by the keys F, while the power of the pump is applied to the
15 movable clamping-head I, which draws said head toward the B end of the frame, and causes a consequent stretching of the sheet O in that direction. The tensile strain thus exerted upon the sheet lengthens it just enough between the
20 kinks to take up the buckle or bulges therefrom, leaving the sheet, when taken from the machine, free of kinks or warpings, the buckle or kinks being entirely taken out, so that the sheet has an even and perfectly flat surface,
25 with the fiber of the metal uninjured, as the power applied to it has been steady and uniform over the entire sheet.

It will be observed that the clamping-jaws are so arranged that their hold upon the sheet
30 is all the more firm, as the power applied to it may be increased and free to release their hold when the strain is discontinued, at which

time the head I is moved back by the springs L, for relaxing the grip of the clamping-jaws, that the sheet may be removed therefrom to
35 be replaced by another, or others, as several sheets may be placed in the jaws together and operated upon for the purpose specified. The head G is made adjustable, to adapt it to sheets of different lengths, by shifting the keys to
40 the different holes as the length of the sheet may require. Other equivalent means may be used for retaining the head G while in use.

What I claim as my invention, and desire to secure by Letters Patent, is—

45 In a machine for taking the kinks or buckle out of sheet metal, the frame A, having arranged thereon a retaining-head, G, provided with a pair of clamping-jaws, stay-rods, and keys arranged in relation to and co-operating
50 with a movable clamping-head, I, and clamping-jaws corresponding to the clamping retaining-head G and its respective jaws, drag-rods J, springs, and cross-head, all constructed and arranged to operate in combination with
55 a hydrostatic force-pump or other suitable and sufficient power, substantially as herein described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH W. BRITTON.

Witnesses:

J. H. BURRIDGE,
W. H. BURRIDGE.