

(No Model.)

2 Sheets—Sheet 1.

C. D. DOXFORD.

APPARATUS FOR BENDING OR SETTING METAL PLATES.

No. 565,535.

Patented Aug. 11, 1896.

Fig. 1.

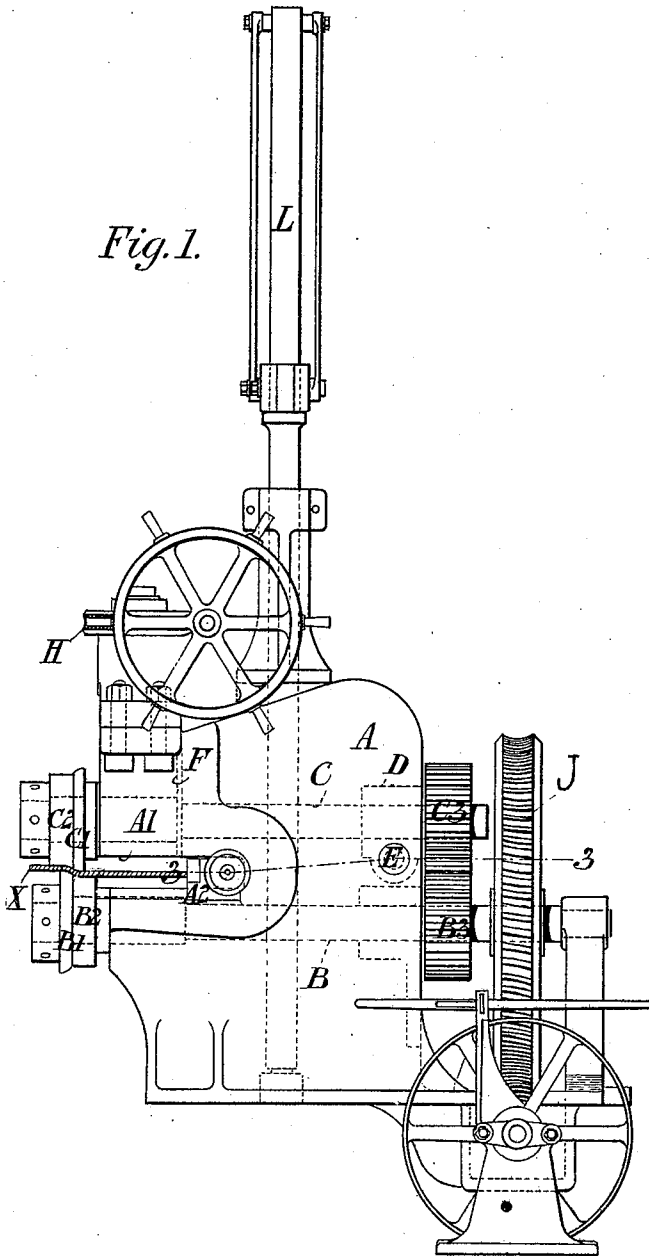
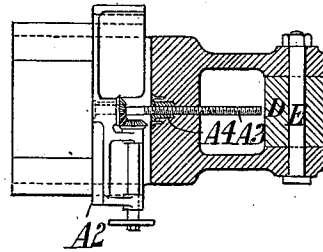


Fig. 3.



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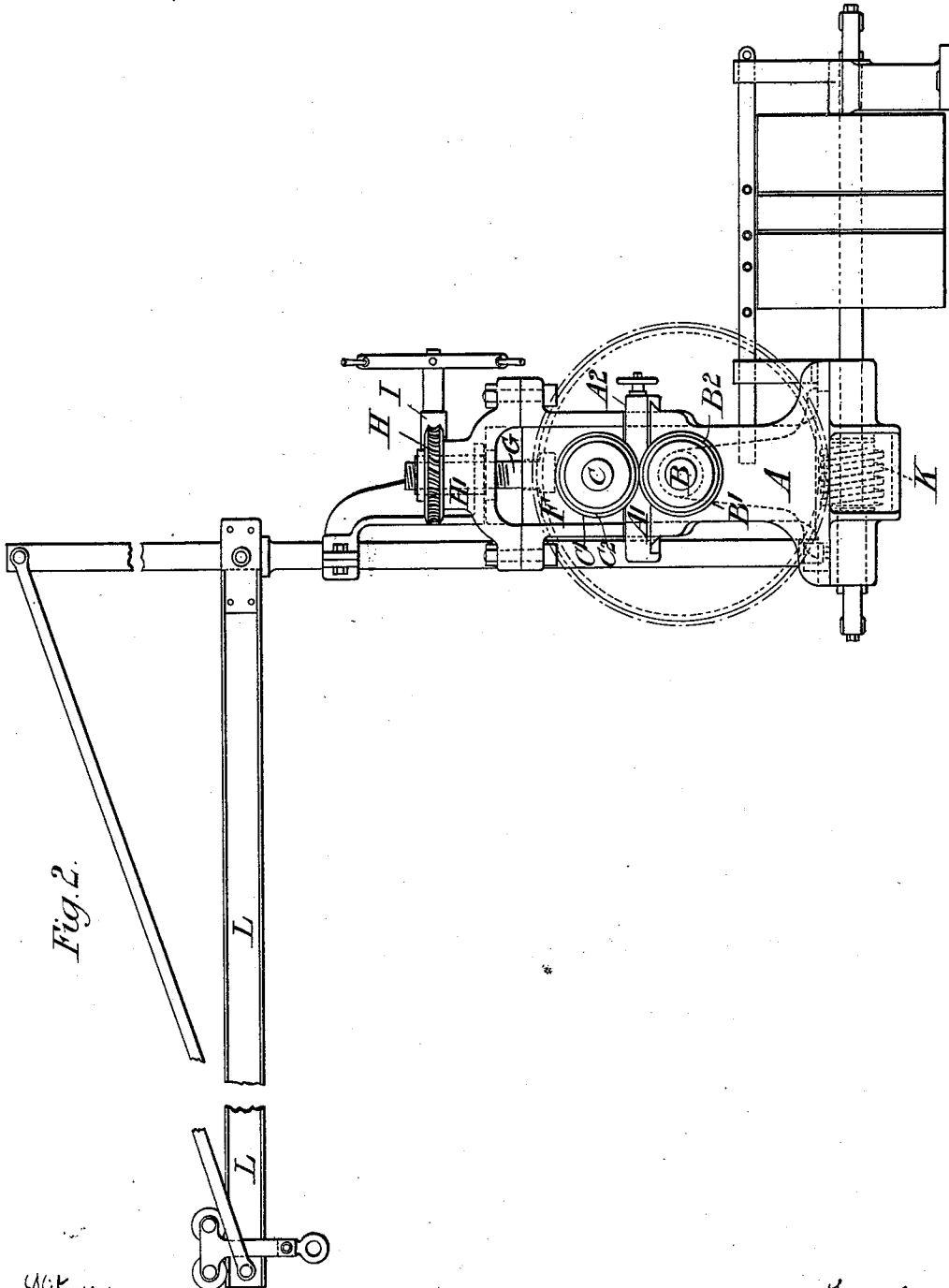
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

CHARLES DAVID DOXFORD, OF SUNDERLAND, ENGLAND.

APPARATUS FOR BENDING OR SETTING METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 565,535, dated August 11, 1896.

Application filed February 17, 1896. Serial No. 579,555. (No model.) Patented in England June 19, 1894, No. 11,836.

To all whom it may concern:

Be it known that I, CHARLES DAVID DOXFORD, a subject of the Queen of England, residing at Sunderland, in Durham, England, have invented certain new and useful Improvements in Apparatus for Bending or Setting Metal Plates, (for which I have obtained Letters Patent in Great Britain, No. 11,836, dated June 19, 1894,) of which the following is a specification.

This invention relates to apparatus for bending or setting metal plates, and is especially applicable for producing what are known as "joggling-plates" for ship-building and other purposes, that is to say, plates each having one or more edges or ends so "set" as to enable two such plates, while riveted or otherwise secured together by means of the said edge, (forming a lap-joint,) to be in the same plane.

Figure 1 is a side elevation, and Fig. 2 an end elevation, of a machine constructed according to my invention, Fig. 3 being a part sectional plan of a part of the machine in section on the line 3 3 of Fig. 1.

Like letters indicate like parts throughout the drawings.

A is the frame of the machine. B is a rotatable shaft journaled therein below the gap A'. C is another rotatable shaft above the gap.

On the shaft B is a set of "fast" and "loose" rollers B' B², and on the shaft C is a set of similar rollers C' C². The larger rollers B' C' are the fast rollers, that is to say, are secured to the shafts B and C and rotate therewith. The smaller rollers B² C² are the loose rollers, that is to say, they are free to rotate independently of the shafts B and C. The larger roller in each set is arranged to be opposite the smaller roller in the other set, and the shafts B and C are geared together in the manner hereinafter described. The gearing is provided so that the adjacent surfaces of the rollers B' C' shall be moved in the same direction, and the above-named arrangement of the larger and smaller rollers is adopted in order that the edge of a plate passed between the two sets of rollers shall by their combined action be given some such

form as is indicated in the section of a plate X, shown in process of treatment in Fig. 1.

A² is a slide movable toward or away from the rollers to vary the depth of the gap by means of hand-operated bevel-gear, which, as shown, is mounted on the guide and actuates a screw A³, the latter being engaged with a screwed bush A⁴, fixed in the frame. The sets of rollers are adjustable and are retained at any desired distance apart to suit the thickness of metal to be operated upon. One end of the shaft C turns in a block D, pivoted within the frame A on the pin E, the other end turning in a block F, which is adjustable vertically between the side walls of the frame A by a screwed rod G, which engages at its lower end with the block F.

H is a worm-wheel rotatable in a bearing in the frame A and provided with a long internally-threaded boss H', which constitutes a nut for the screwed rod G.

I is a hand-operated worm geared with the worm-wheel H, by turning which the block F and shaft C and its rollers C' C² can be raised or lowered, as desired.

The shafts B and C are geared together by pinions B³ C³, secured thereon, and are driven by worm-wheel J, secured on the shaft B, and rotated by a worm K, which is turned by any convenient means, such as the well-known arrangement indicated in the drawings. The larger rollers B' C', which are preferably rounded, as shown, at their adjacent sides, may be regarded as those by which the actual setting of the plate is effected, the smaller rollers B² C² serving to support the plate against the pressure of the larger rollers. Being loose on the shafts, the rollers B² C² act on the plate without undue friction, seeing that they are free to be revolved by it. The means whereby the rollers are secured in place are such that other rollers can be readily substituted therefor to suit different plates and different bends.

If desired, I may use, instead of the rollers B² C², fixed supports, but with less satisfactory results. Moreover, the fast and loose rollers need not be concentric, nor need each set be borne by a single shaft.

L is a crane with a traveler, forming a con-

venient appurtenance to the machine for handling the plates on which it works.

I claim—

5 In an apparatus for cross-bending metal plates, the combination of a suitable frame provided at one side with a gap, a rotatable shaft above the gap, a similar shaft below the gap, and a set of fast and loose rollers carried by each shaft, the said fast rollers being
10 of greater diameter than the loose rollers, and

the fast roller of each set being arranged opposite the loose roller of the other set, substantially as shown and described.

In testimony whereof I have hereto set my hand in the presence of two subscribing witnesses. 15

CHARLES DAVID DOXFORD.

Witnesses:

ALFRED OCT. NEDLEY,
THOS. A. HORAN.