(No Model.) 2 Sheets—Sheet 1.

J. T. STORY.

SHEET METAL FOLDER.

No. 502,684. Patented Aug. 1, 1893.

FIG. 1.

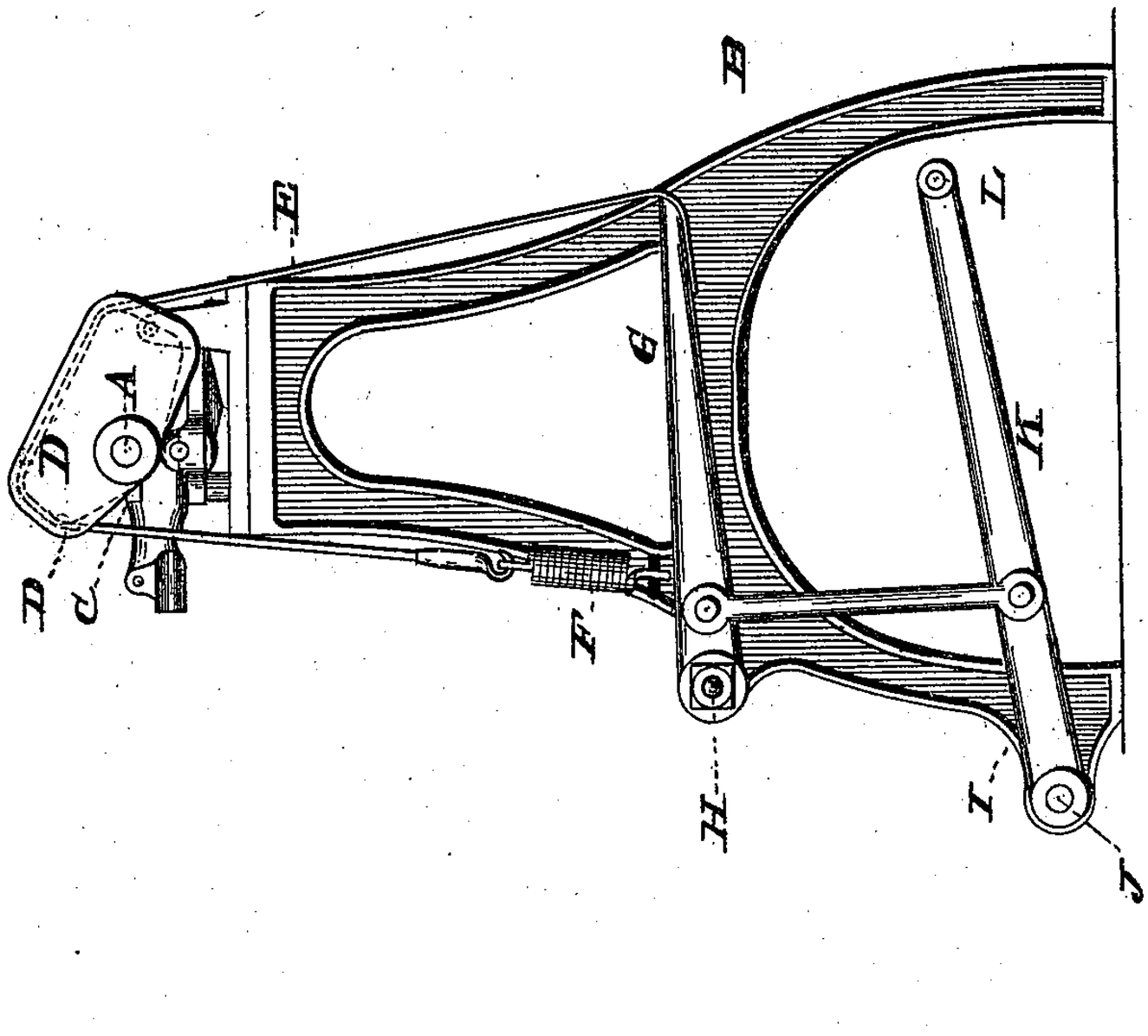
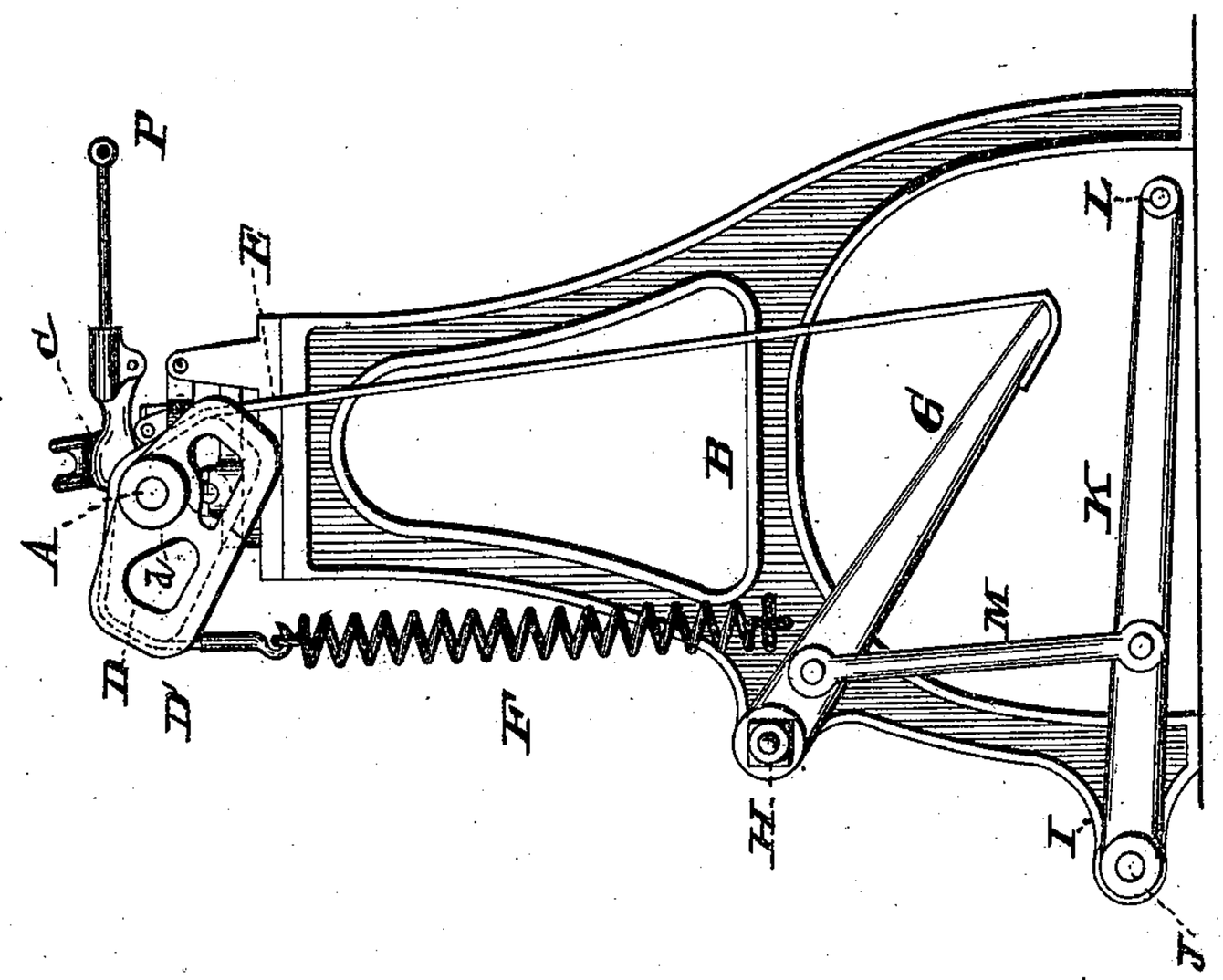


FIG. 2.



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(No Model.) 2 Sheets—Sheet 2.

J. T. STORY.

SHEET METAL FOLDER.

No. 502,684. Patented Aug. 1, 1893.

FIG. 3.

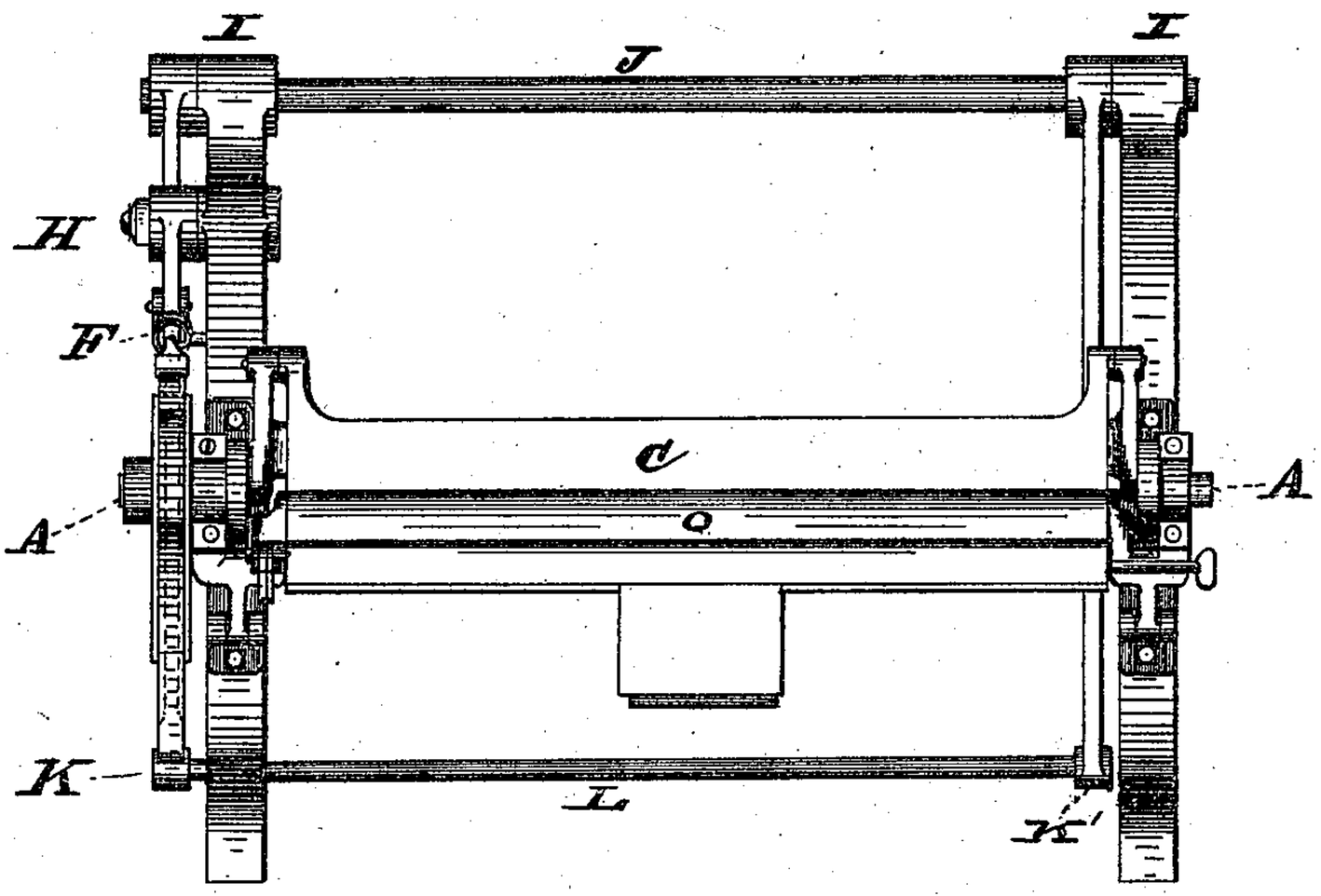
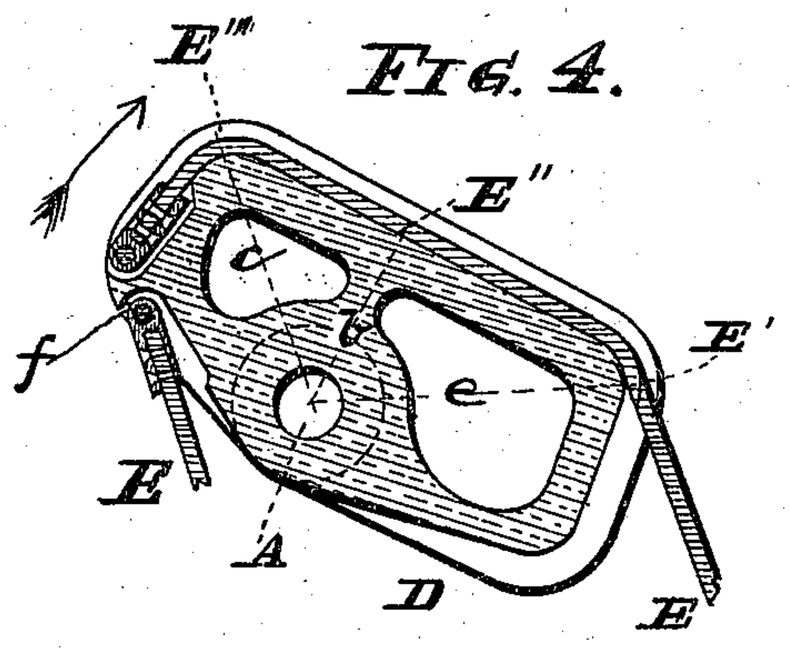


FIG. 4.



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UNITED STATES PATENT OFFICE.

JOHN T. STORY, OF BUFFALO, NEW YORK.

SHEET-METAL FOLDER.

SPECIFICATION forming part of Letters Patent No. 502,684, dated August 1, 1893.

Application filed July 25, 1891. Serial No. 400,693. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. STORY, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Sheet-Metal Folders; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in sheet metal folders; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate this invention more fully, Figure 1 is a side elevation of my improved folder. Fig. 2 is a similar view, showing the folder bar in its terminal position when in operation for folding sheet metal. Fig. 3 is a plan of the same. Fig. 4 is an elevation of the cam used in operating the folder.

Like parts are designated by corresponding letters of reference in all the figures.

The object of this invention is to provide an ordinary bar folder so-called, with simple and improved mechanism for operating the same by foot power, thereby enabling the operator to manipulate the work with two hands, the result of which is an increase in the capacity of the machine. To accomplish this result, I provide one of the trunnions A of the folder bar C with a cam D, of peculiar contour and secure to this cam a strap, belt or chain E, one end of which is attached to a coil spring F secured to the frame B of the folder, and with its other end to a lever G; said lever being affixed to a stud H, fastened to the frame B near the point of attachment of the spiral spring F. The lower ends of one of the legs forming the frame B, have rearwardly-projecting lugs I, wherein is journaled a shaft J, the outer ends of which carry treadle-levers K K′, connected together at their outer ends by a foot-rod or board L, so that said levers may be actuated by the operator at any point in front of the machine. One of these levers—K—connects with the lever G by means of a link or connecting rod M, in such a manner that the movement of the extreme ends of the levers K K′ will be only about two-thirds of that of the end of the lever G, the entire movement of the extreme end of said lever G being in excess of that which an operator can conveniently perform with his or her pedal extremities when actuating a treadle in any machine.

The folder proper being a regular article of merchandise, I do not deem it necessary to describe its construction in detail, it being sufficient to say that the sheet or strip of metal to be folded on its edge is placed below the folder blade O and the bar C revolved around its trunnions A a distance necessary to bend the metal to the angle required. This has heretofore been done either by a hand lever P, attached to the folder bar C, or by a rack or segment and pinion movement operated by a foot treadle. The objections to such a device however are that the motion of the folder bar is uniform in speed and power while, to operate such a folder successfully and with the least expenditure of power it is required that a differentiating speed and power should be applied thereto. For instance, when the folder is in its normal position, as shown in Fig. 1, the folder bar to be moved has its weight as well as its inertia to be overcome, while when its face is vertical, its weight is carried upon the trunnions and, after the folder bar has moved beyond its vertical line, it will drop by its own weight until it has completed its full movement, usually about one half of a revolution. Now in returning the folder bar to its normal position a similar action takes place. First its inertia and then its weight have to be overcome and finally its own weight will return it to its normal position. Hence it follows that any mechanism acting with a uniform power and speed will not be suited to the requirements of the case. To overcome this objection and drawback, I provide this folder bar with the cam D which is shown in detail in Fig. 4. From this figure it will be seen that the point E′ where the belt E leaves the cam is farthest away from the center of the trunnion A, on the line *e*, so that when the treadle is being depressed the leverage of the cam will be the greatest. If now the cam be revolved in the direction of the arrow it will be seen that the leverage of the

cam rapidly decreases to the point E'' on the line *b*, which when in a horizontal position corresponds with the vertical position of the folder bar. At this point the folder commences to bend the metal. Hence an increase in power is required, which is compensated for by the cam increasing in leverage toward the point E''' on the radial line *c*, thereby differentiating the power in accordance with the requirements of the work to be performed. The point of attachment of the spring F is at *f*, or, when the belt is in one piece from the point of attachment of the spring to the point of attachment to the lever G, as shown in Figs. 1 and 2, the distance from the center of the trunnion A to the point of attachment or contact with the cam D at D' is greatest on the line *d* so that the spring F will act most powerfully at the start of the folder bar on its return and then gradually decreases as heretofore described.

It will be readily observed that the mechanism by which I accomplish the described result is very simple and cheap in construction and very effective in its operation.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. In a sheet metal folder, the combination, with a folder, and an operating treadle, of a differential cam, carried by one of the trunnions of said folder and connected with said treadle, said cam being approximately rectangular in shape and having its axis at one side of a central longitudinal plane; substantially as and for the purpose set forth.

2. In a sheet metal folder, the combination, with a folder, and an operating treadle, of a differential cam carried by one of the trunnions of said folder, said cam being approximately rectangular in shape and having its axis at one side of a central longitudinal plane, a belt connecting said cam and the treadle, and a spring adapted to return the cam to its normal position; substantially as set forth.

3. In a sheet metal folder, the combination, with a folder provided upon one of its trunnions with a cam, and an operating treadle, of a lever fulcrumed at one end, a belt connecting the opposite end of the lever with the cam, a connection between the treadle and the lever intermediate its ends, and means for returning the folder to its normal position; substantially as and for the purpose set forth.

4. In a sheet metal folder, the combination, with a folder provided upon one of its trunnions with a cam, substantially as described, and an operating treadle, of a lever fulcrumed at one end, a belt connecting the free end of said lever with the cam, a rod connecting the treadle with the lever and at a point upon the latter intermediate its ends, and a spring connected by a belt with the cam and adapted to return the folder to its normal position; substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have hereto set my hand in the presence of two subscribing witnesses.

JOHN T. STORY.

Attest:
MICHAEL J. STARK,
WM. A. STARK.