

B. MURPHY.
Socket-Bending Machines.

No. 157,693.

Patented Dec. 15, 1874.

Fig. 1

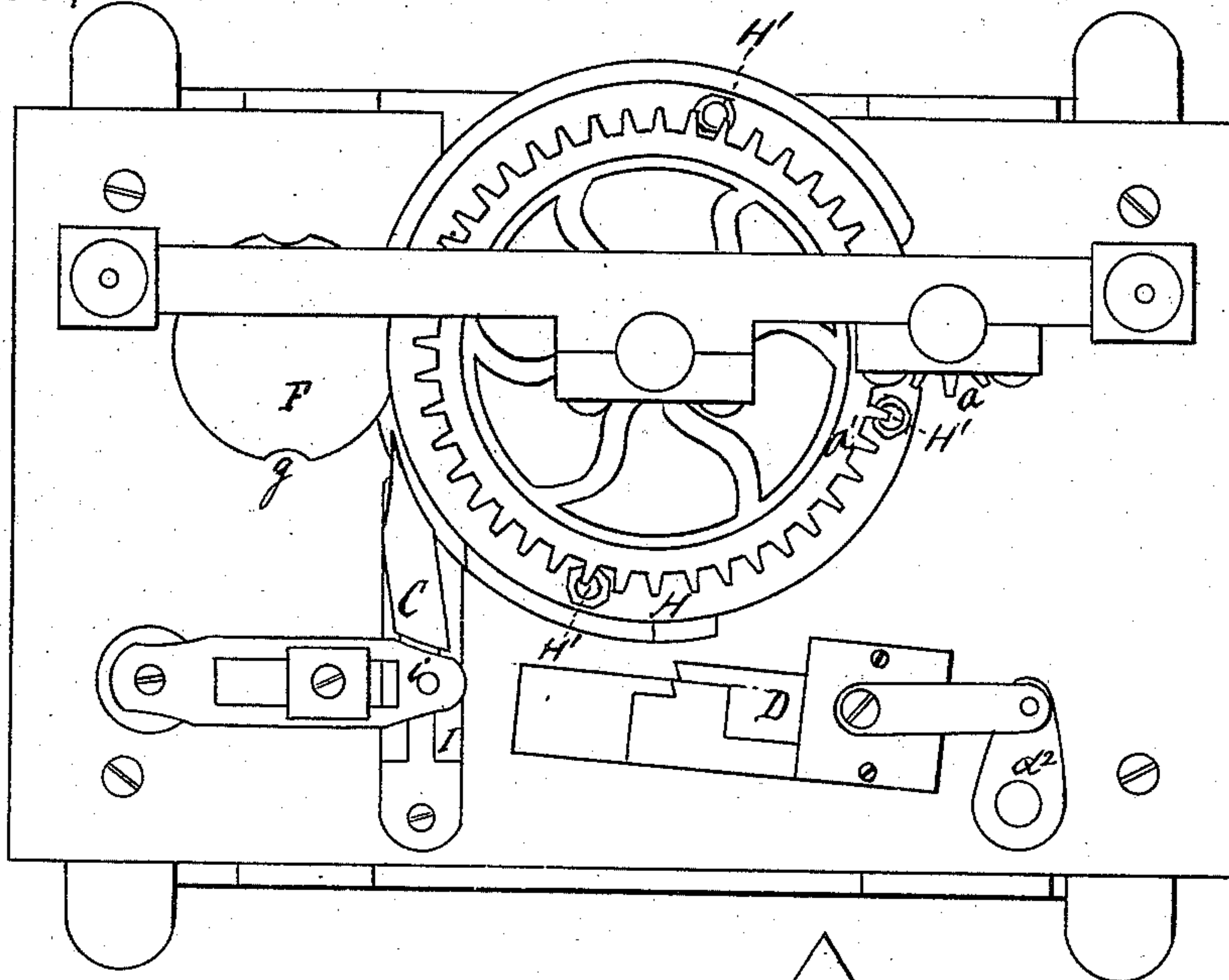
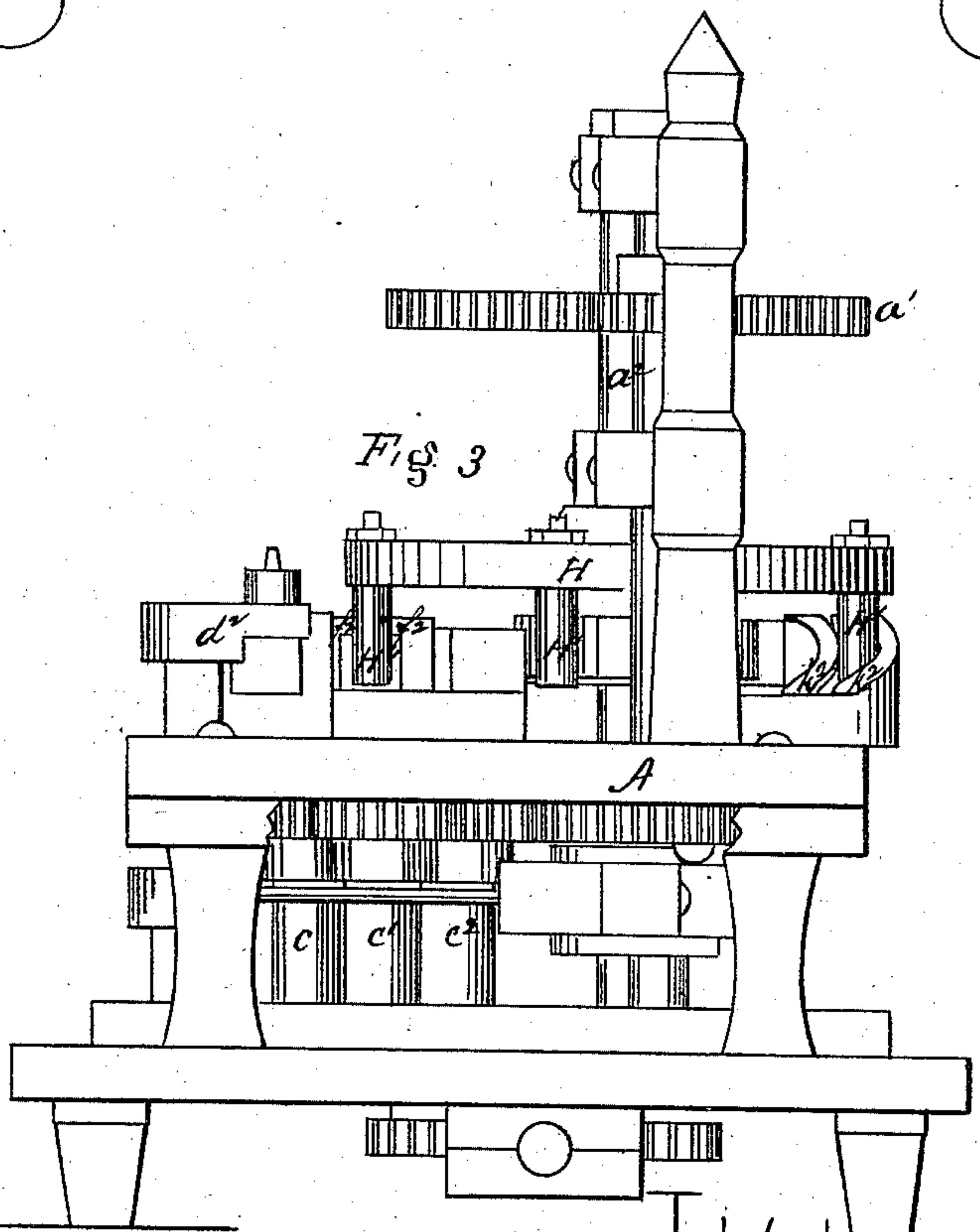


Fig. 3



WITNESSES
A. C. Johnston
James E. Kay

INVENTOR
Benjamin Murphy
By Bakewell & Kerr
Attys

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Fig 2

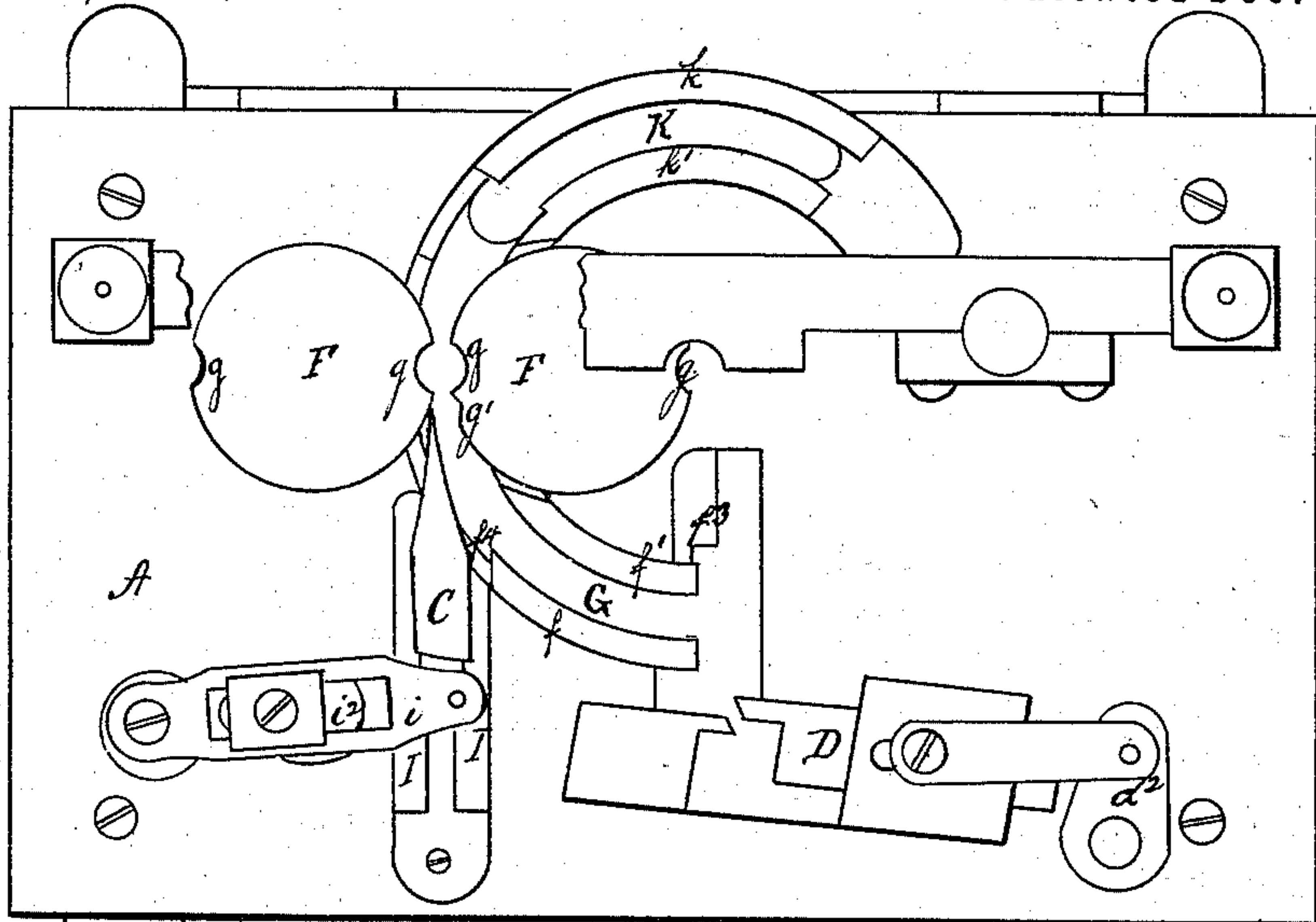
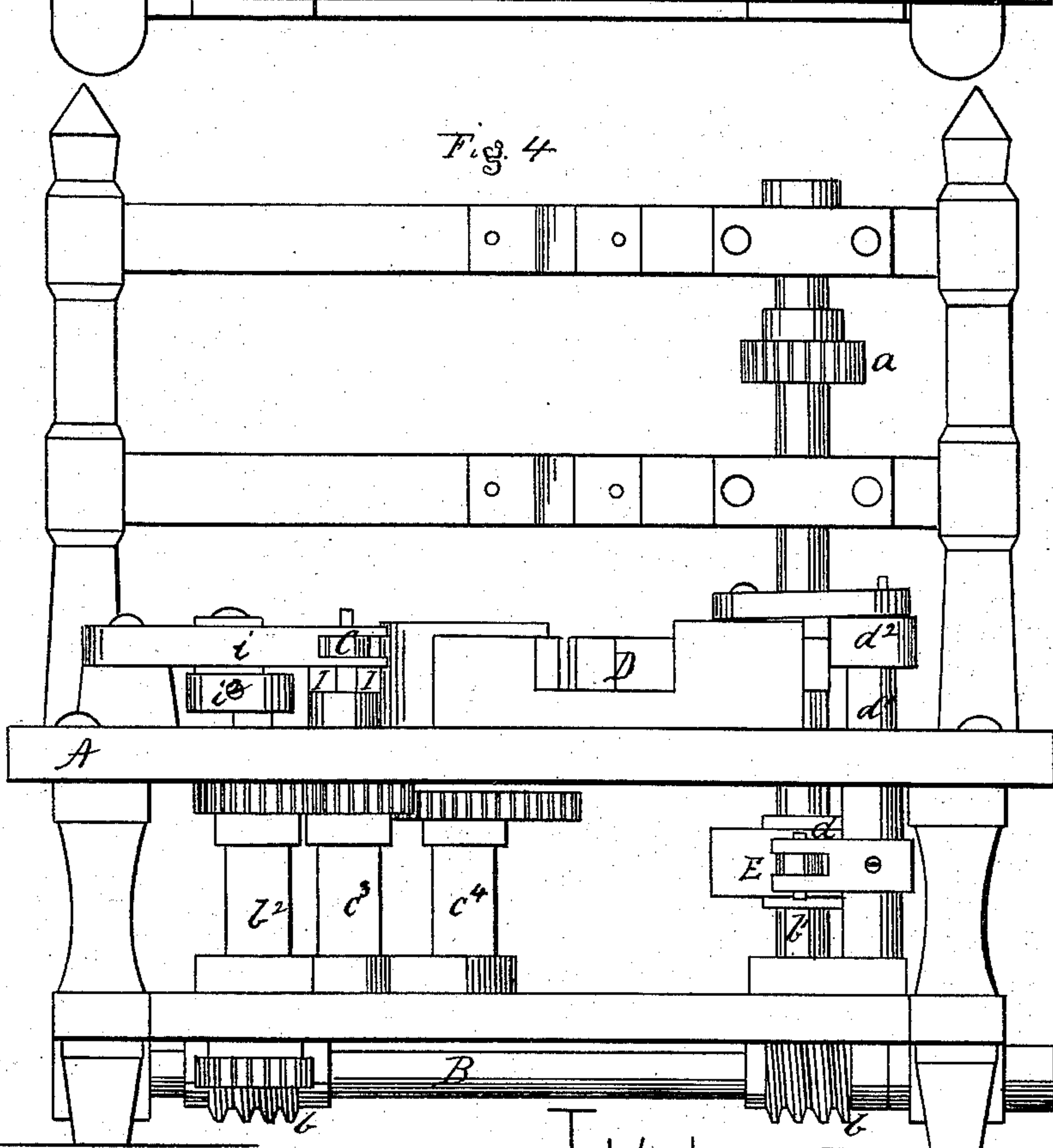


Fig 4



WITNESSES
A. C. Johnston
James B. Hay

INVENTOR
Benjamin Murphy
by Bakewell & Kern
Attys

UNITED STATES PATENT OFFICE.

BENJAMIN MURPHY, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN SOCKET-BENDING MACHINES.

Specification forming part of Letters Patent No. **157,693**, dated December 15, 1874; application filed October 26, 1874.

To all whom it may concern:

Be it known that I, BENJAMIN MURPHY, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Socket-Bending Machine; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a plan view of a machine embodying my improvements. Fig. 2 is a similar view, the rotating mandrels being removed. Fig. 3 is an end view, and Fig. 4 is a front view, the rotating mandrel being removed.

Like letters refer to like parts in the several figures.

This invention relates to improvements in bending-machines for bending sockets for wrought-iron tubing, links, split keys, and similar articles, and has for its object the formation of sockets and similar articles by a continuous operation, the bar being fed to the shear by the attendant, after which the bending, closing, and discharging of the socket are automatically performed by the several parts of the machine. It consists, first, in combining, with the mandrels, a bending-box having its sides shaped to correspond with the travel of the mandrels, said sides being capped or flanged, so as to preserve the parallelism of the edges of the blank; secondly, in a pair of closing-wheels, in combination with a closing-bar, which receives the bent blank from the bending-box, and closes the same around the mandrel; thirdly, in the combination of a series of mandrels moving around a center, a bending-box, closing-wheels, a closing-bar, and a stripper, arranged in a circle corresponding to the travel of the mandrels.

A represents the bed of the machine, beneath which is the power-shaft B, provided with the worms *b*, gearing into pinions upon shaft *b*¹ and *b*². On the shaft *b*¹, beneath the bed, is an eccentric, E, which operates the shear D through the medium of a yoke, *d*, shaft *d*¹, and elbow-lever *d*². Above the bed this shaft is provided with a pinion, *a*, which meshes into gear-wheel *a*¹, attached to the shaft *a*², carrying the mandrel-wheel and mandrels. The shaft *b*², which also receives motion from shaft B, actuates the closing-bar C

through the shafts *c*, and the closing-wheels F through shafts *c*¹ *c*² *c*³ *c*⁴, all provided with suitable pinions. Upon the bed A, immediately in front of the bending-box, is the sliding shear D, for cutting the bar into blanks of suitable length as it is fed in front of the mandrel. G represents the bending-box, formed by the two sides *f f*¹, of curved form, and flanged above, as at *f*², to prevent the blank from escaping or riding up on the mandrel, and to preserve the parallelism of the edges of the blank. The sides *f*¹ are cut away at the points where the closing-wheels and closing-bar are located; but a slight flange, *f*⁴, is left to act as a guide for the blank, and the side *f*¹ is provided at *f*³ with a projection or stop, against which the bar abuts as it is fed between the shears and in front of the mandrel. The projection *f*³ may be made independent of the side *f*¹, and, together with the shears, adjusted to vary the length of the blank. F F are a pair of closing-wheels mounted on the shafts *c*³ *c*⁴, and notched on their peripheries, as shown at *g*, so that when, from the manner in which the wheels are geared, the notches come together, they form a circular or other shaped opening, corresponding to the mandrel used, causing a blank in passing between the wheels to assume the form of said opening. Upon one of the closing-wheels F, in rear of the notch *g*, is formed a second notch, *g*¹, to allow for clearance of the socket-lap. On the bed A, to one side of the shears D, and in front of the closing-wheels, is the closing-bar C, moving in guides I, and operated, through an elbow-lever, *i*, by a cam, *i*², attached to the end of shaft *c*. This bar moves forward at the time the blank is within the gripe of the closing-wheels, and folds or presses down the lap-edge of the socket. K is a discharging or stripping box placed in rear of the closing-wheels. It is an open-bottomed channel, formed with two sloping curved sides, *k k*¹, capped by flanges *k*², which take over the upper edge of the socket, and strip it from the mandrel. Instead of sloping the sides, a sloping ridge within the box could be made to perform the function of flanges *k*². H' H' are a series of mandrels pendent from the periphery of wheel H, said wheel being attached to and suspended by shaft *a*², and driven from the main power-

shaft B through suitable gearing. The bending-box G, peripheries of the closing-wheels F, and stripper-box K are arranged on a circle corresponding with the travel of the mandrels H' H', so that the operation of the several devices are successive and continuous.

The operation of these devices is as follows: The bar, being fed forward between the shears, abuts against the projection upon the bending-box in front of the advancing mandrel H'. Power being communicated to the shear D, a blank of the desired length is cut, and immediately forced into the box by the mandrel, which causes it to take the U shape, and carries it around to the closing-wheels F F. The revolving closing-wheels now receive the blank, bending it into a circular form, the loop being forced up by a blow from the closing-bar C, which should have a quick forward motion and slow return, so as to give a sharp stroke at the instant the closing-wheels F are in the position shown in Fig. 2. The mandrel then passes to the discharge-box or stripper K, carrying with it the formed socket or link, and, entering the box, the upper edge of the incline takes over the upper edge of the link or

socket, the forward motion of the mandrel causing the incline to strip the socket from the mandrel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the mandrels, the bending-box G, having the sides $f f^1$ flanged, as at f^2 , substantially as and for the purpose specified.

2. A traveling mandrel, H', in combination with closing wheels or rolls F F and a closing-bar, C, substantially as and for the purpose specified.

3. In combination with a series of mandrels moving around a center, a bending-box, closing-wheels, a closing-bar, and stripper, arranged in a circle corresponding to the travel of the mandrels, substantially as and for the purpose specified.

In testimony whereof I, the said BENJAMIN MURPHY, have hereunto set my hand.

BENJAMIN MURPHY.

Witnesses:

T. B. KERR,

F. W. RITTER, Jr.