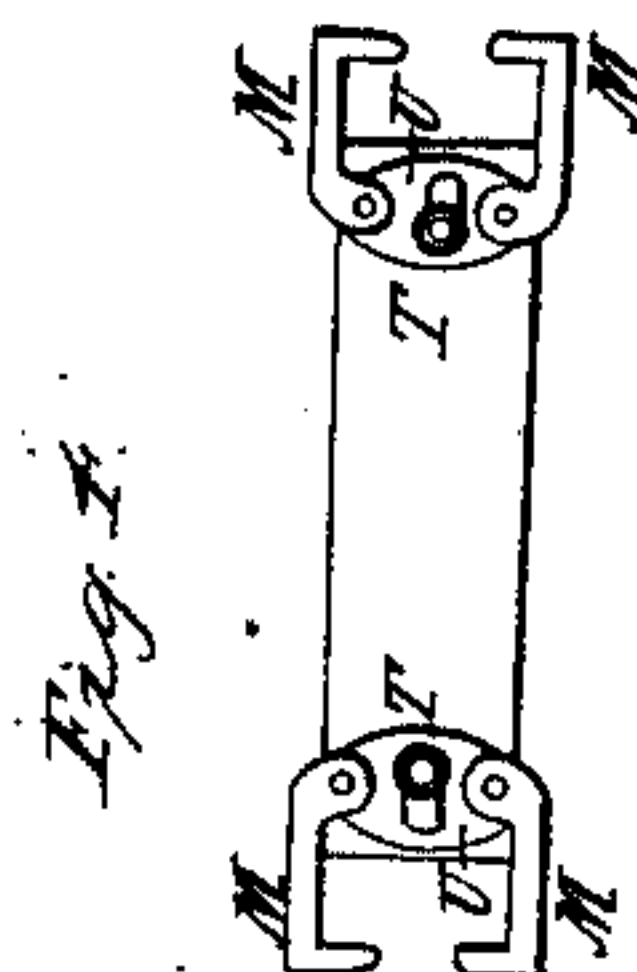
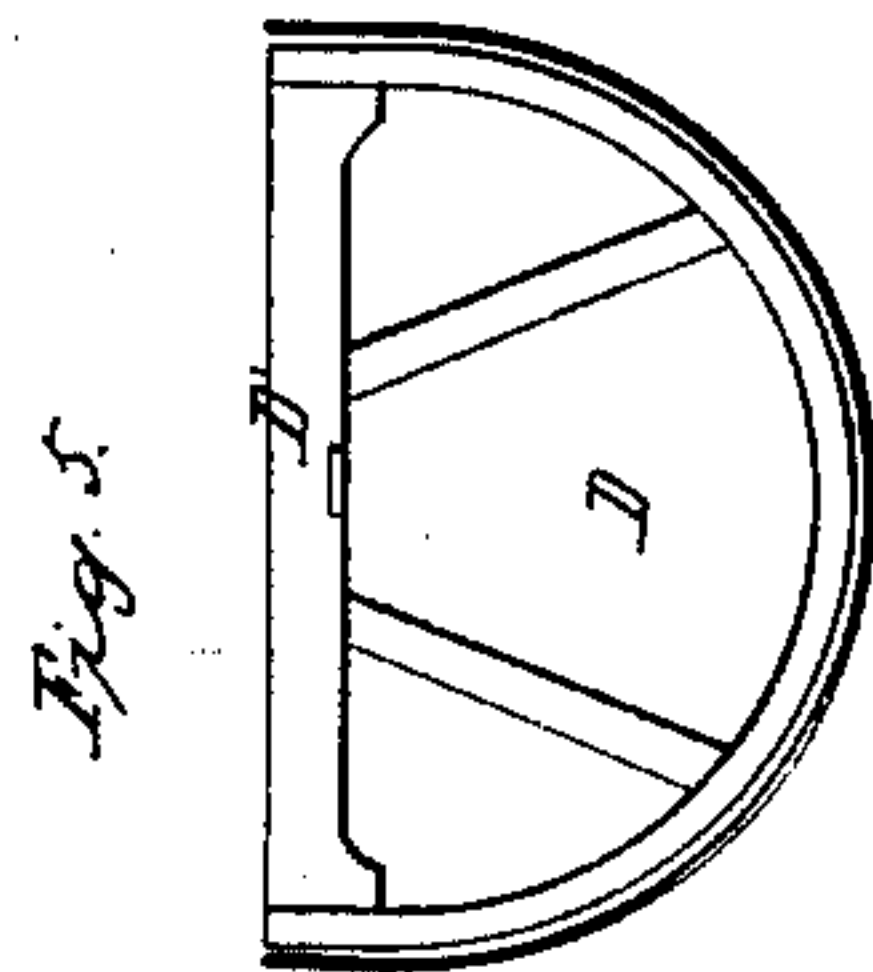
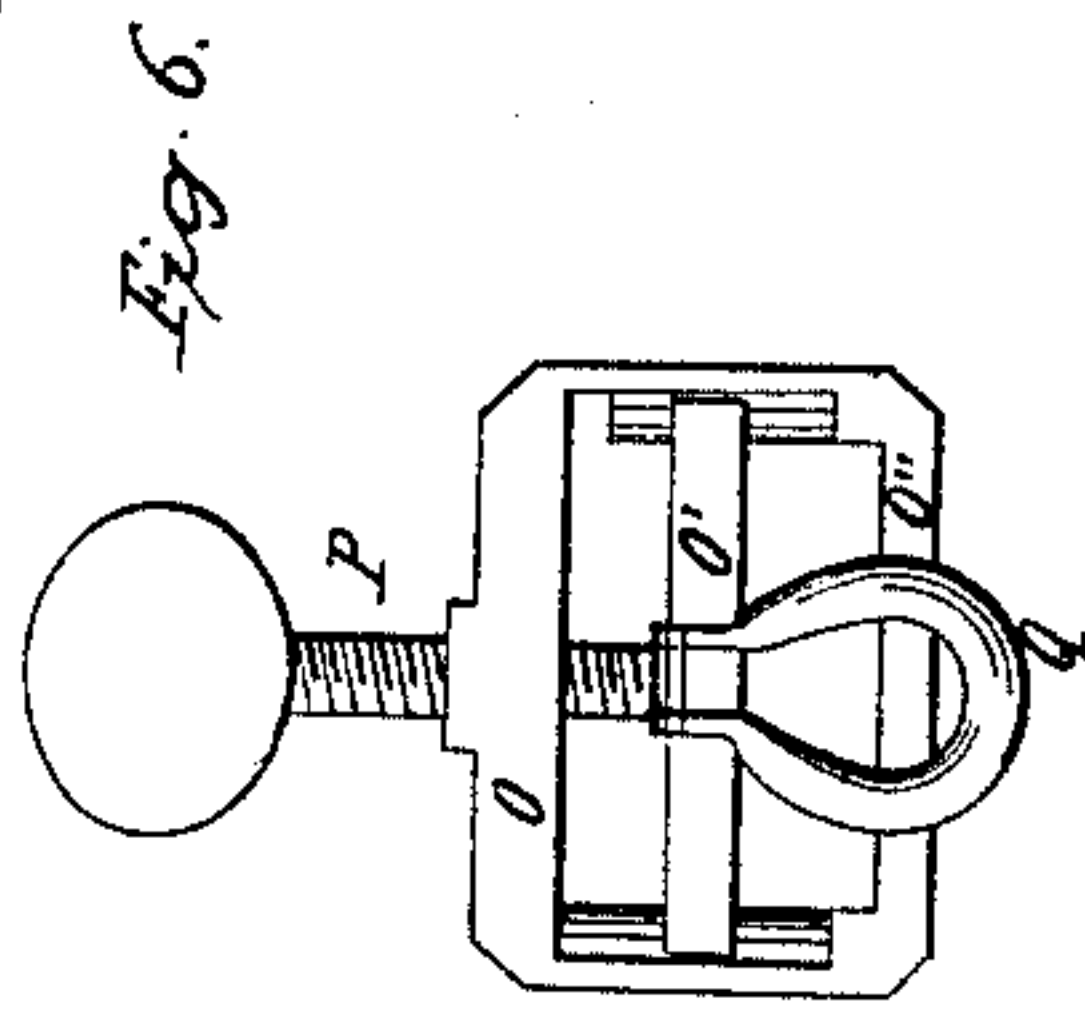
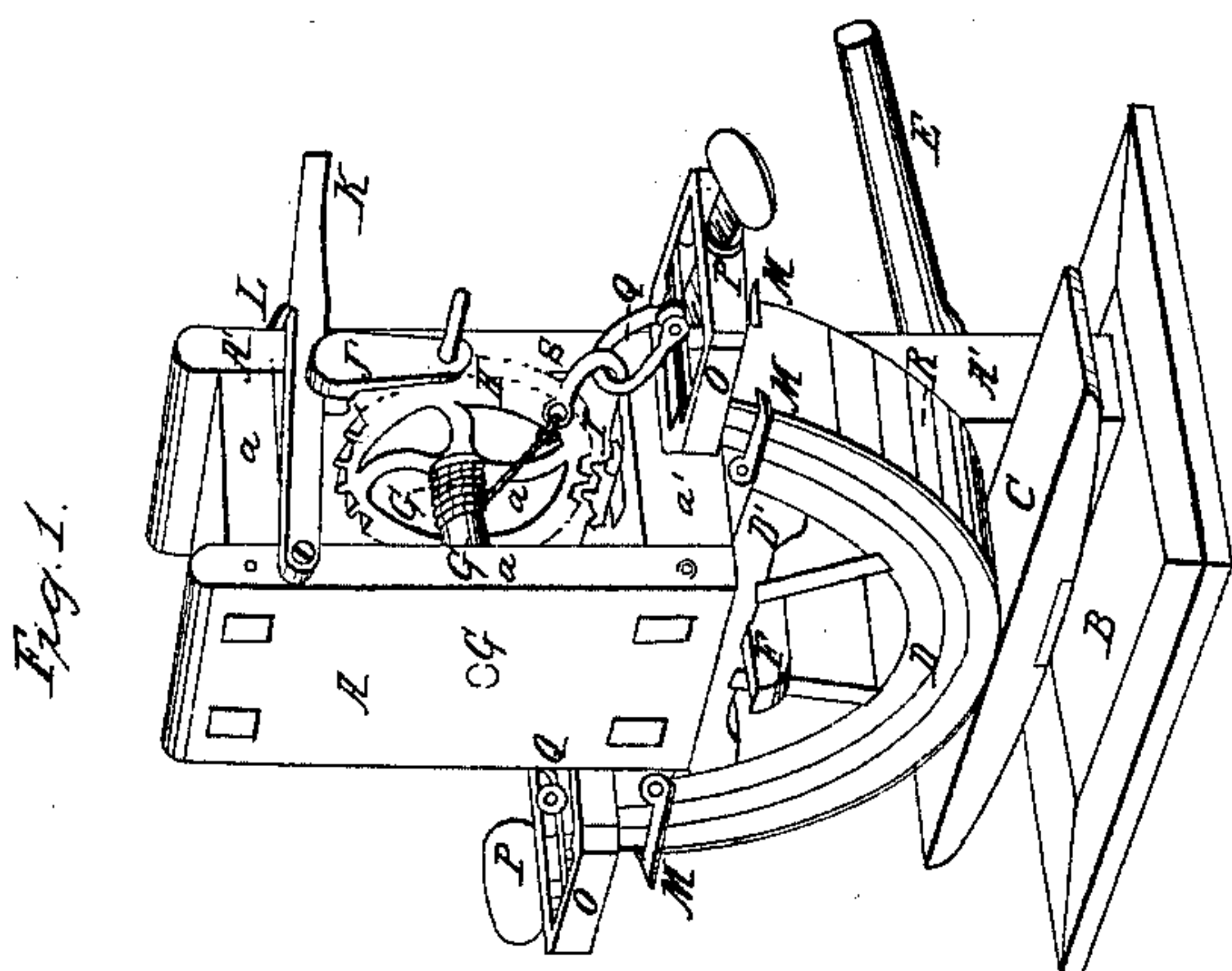
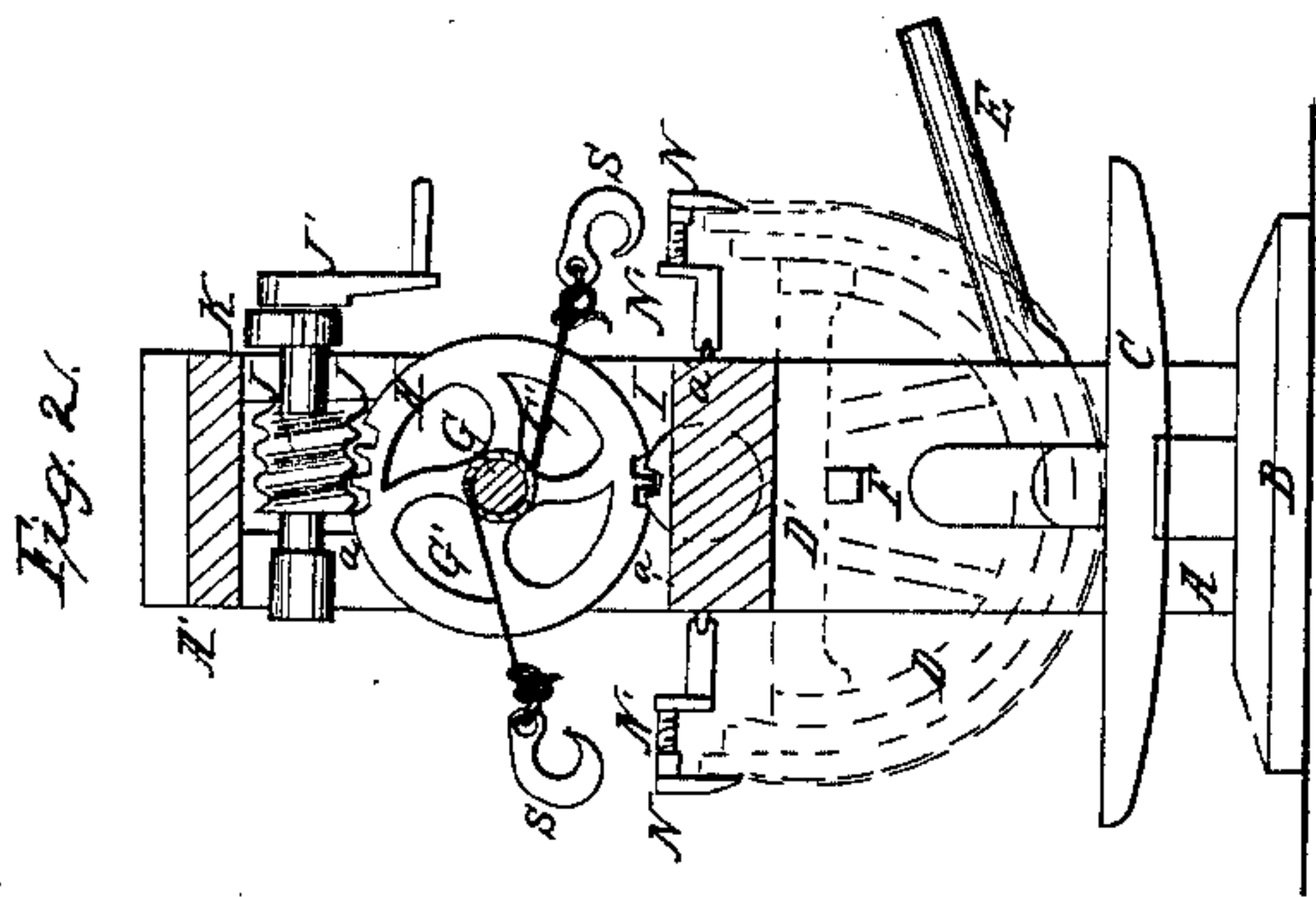
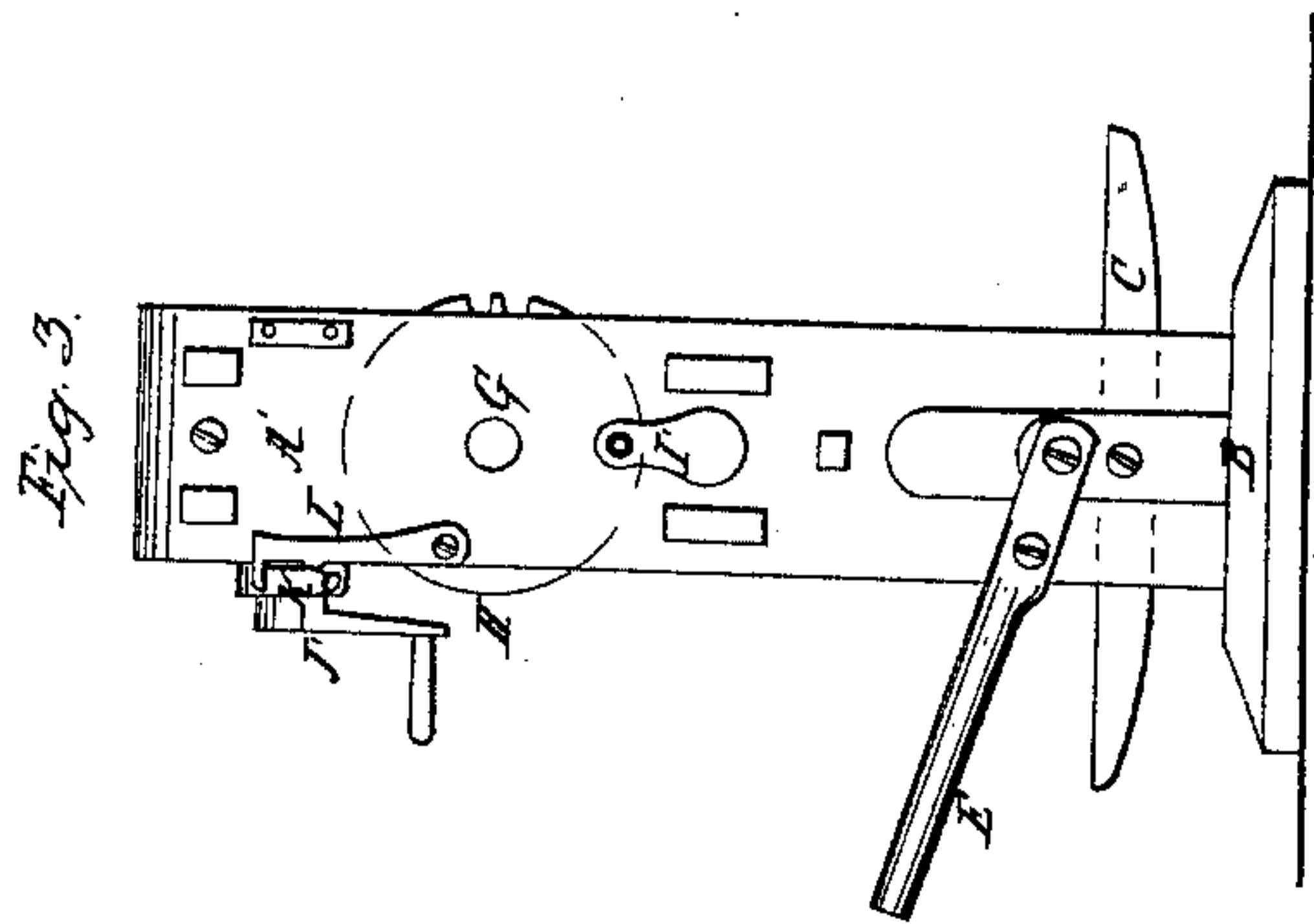


A. Hemenway,

Bending Wood.

N^o 28,080.

Patented May 1, 1860.



Witnesses:
W. H. Hemenway,
Henry Voth

Inventor:
Arthur Hemenway

UNITED STATES PATENT OFFICE.

ARTHUR HEMENWAY, OF CLEVELAND, OHIO.

MACHINE FOR BENDING FELLIES.

Specification of Letters Patent No. 28,080, dated May 1, 1860.

To all whom it may concern:

Be it known that I, ARTHUR HEMENWAY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in a Machine for Bending Fellies; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view. Fig. 2 is a front view. Fig. 3 is an end view. Figs. 4, 5, and 6 are detached sections.

Like letters refer to like parts in the different views.

The nature of my invention relates to the herein described combination of devices, for bending fellies, by means of which broad pieces may be bent without danger of breaking, the same being confined at the ends by grips, and protected upon the convex surface by an iron band, as hereinafter described, while the bending power is being applied, which consists of a wheel and axle, driven first by a pinion, and afterward when an increase of power is required, by an endless screw, working in the cogs of the wheel.

In the several figures, A, A, represents the frame of the machine. This is formed of heavy plank, the piece A', being from six to seven feet high, and about two feet wide, and secured firmly to a foot piece, B.

Immediately above the foot piece B, is an adjustable table C, upon which is placed the timber to be bent. This table C, is elevated and depressed by means of the lever E.

The former D is a semicircular frame, D' being its diameter.

F, is an arm that projects from the front of the frame piece A, and upon which the former is placed, as seen in Figs. 1 and 2. The upper portion of the frame forms a kind of box, as seen at (a) Fig. 1. In the center of this and transversely, to the portion of the former D, is placed the windlass shaft G, around which the cable or G', is wound during the operation of bending.

H, is a cog wheel upon the back end of the shaft G, by means of which the shaft is revolved.

I, is a pinion, placed below the wheel H, which pinion has a crank I', by which it and the windlass are revolved.

J, is a revolving screw, the thread of which meshes into the cogs of the wheel H.

This screw is turned by means of the crank J'. One of the boxes of the shaft of this screw is stationary, while the other at the crank end, is attached to a lever K, so that it can be thrown in and out of gear, at pleasure, in which position respectively it is held by the catch L. At the four corners of the frame of the former, a top view of which is given in Fig. 4, are hooks M, the use of which will be hereinafter explained.

N, represents adjustable hooks, which are secured to the piece a', and which serve to hold the bent fellies, in contact with the former D, while they are secured. N' forms a screw portion of said hooks.

Fig. 6, represents a clutch, which is attached, to each end of the piece to be bent. It consists of a rectangular piece of iron O, with a bar O', across the middle, which is moved by a screw P, and in this manner, the ends of the pieces to be bent can be confined between the braces O', and O'', as in a vise.

Q is a link in which the hook S, upon the end of the cord, or chain G, is placed while bending.

R, is a band of hoop iron, which is placed upon the outside of the piece to be bent, and both the wood and iron hoops are secured at their ends in the clutch.

In using this machine, a plank of suitable thickness, and length is taken and steamed in a box, as is usual in bending timber. It is then laid upon the iron strap R, and the clutches screwed on at both ends. They are then placed upon the table C, with the iron beneath the felly piece, and the table elevated until the steamed plank is pressed against the under side of the former D. The hooks S, upon the ends of the cables G', are hooked into the links Q. Now by turning the pinion I, the bending will proceed, but after a few turns of the wheel H, the resistance will be too great for the action of the pinion, the screw J, may now be brought into gear, and the bending completed, the screw at the same time forming a lock, so that the wheel H, cannot fly back. The hooks M, are now pressed over the edges of the felly, outside of the iron band, and the clutches removed. The adjustable hooks N, are then pressed between the iron band R, and the bent felly, which is thus held in place till the band R, can be removed, the hooks M, are then replaced, and the former D, with the fellies. The plank is set aside to season.

The advantage that this method has over the end pressure, is, it obviates the necessity of cutting the timber to an exact length before bending, thus dispensing with one item in the process of manufacturing fellies, as all of them in whatever manner bent are necessarily cut off at each end, in order to bring them into line when packing for market.

Another advantage, is that when the process of steaming, which is indispensable to every method of bending, develops cracks in the ends of the timber, not discoverable before steaming, this arrangement enables me, by placing the grips at a sufficient distance from the end, to avoid such defects, and to bend such pieces for a smaller circle, than that for which they were intended, by means of which much timber can be saved, which would unavoidably be wasted by the other method.

Another decided advantage that this lateral pressure has over the end pressure, is that it very much diminishes the liability of the timber to wind or twist during the process of bending. The superior force and easy gliding motion gained by this spiral pinion gives facility for bending plank of sufficient width to cut into four or more half circles, which very much diminishes their liability to spring or twist out of shape while drying, and being sawed into proper widths, when dry, insures a superior felly.

The platform, on which the strap and timber are placed, is adjustable, by means of which they are brought in contact with the former, on which the timber is bent. By the aid of this platform, sleigh runners

can also be bent, upon the same formers used for fellies, by leaving one hook and cable detached from the timber, and with the other hook, drawing one end of the timber upon the former in the usual manner. By attaching plates to the former provided with clasps, or hooks, M, M, which plates T, by means of slots and screw bolts V, are rendered adjustable, to circles of different diameters, thereby enabling me to bend consecutive half circles, one above another, thus giving to one former, the advantages of two or three formers of different diameters.

The screw hooks or clutches N, attached to the framework of the machine, the arms of which are lengthened or shortened by means of screws N', which hold the bent timber in place, while the strap is set at liberty, thus leaving the same strap to be used as many times over, as occasion may require. The former, on which the fellies are bent, is constructed in a particular way. The rim consists of a half circle, bent into form, and supported by two or more braces upon the inside.

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

The combination of the grip, Fig. 6, screw hooks N, and the adjusting plate T, provided with hooks M, when arranged in relation to the forming block, and acting conjointly, in the manner, and for the purpose set forth.

A. HEMENWAY.

Witnesses:

W. H. BURRIDGE,
HENRY VOTH.