(No Model.) 2 Sheets—Sheet 1.

H. W. MOORE.

COMBINED SHEARS, PUNCH, AND TIRE SHRINKER.

No. 543,809. Patented July 30, 1895.

Fig. 1.

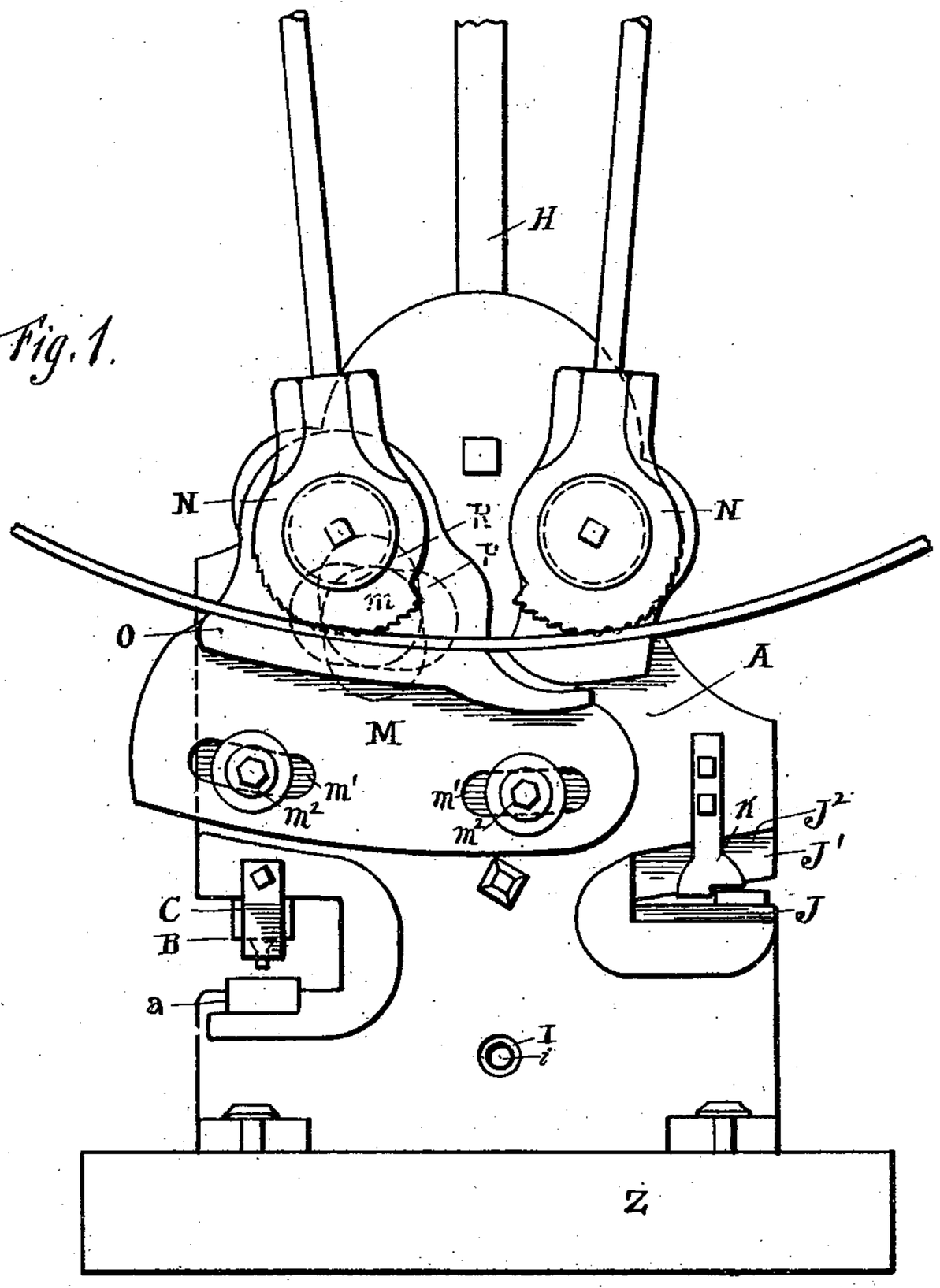


Fig. 6.

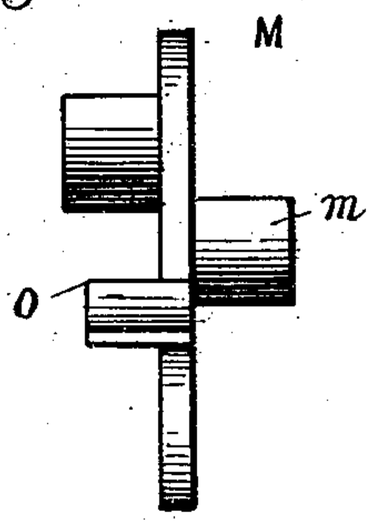


Fig. 7.

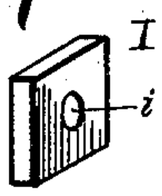
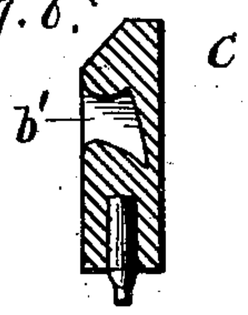


Fig. 8.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

H. W. MOORE.

COMBINED SHEARS, PUNCH, AND TIRE SHRINKER.

No. 543,809. Patented July 30, 1895.

Fig. 2.

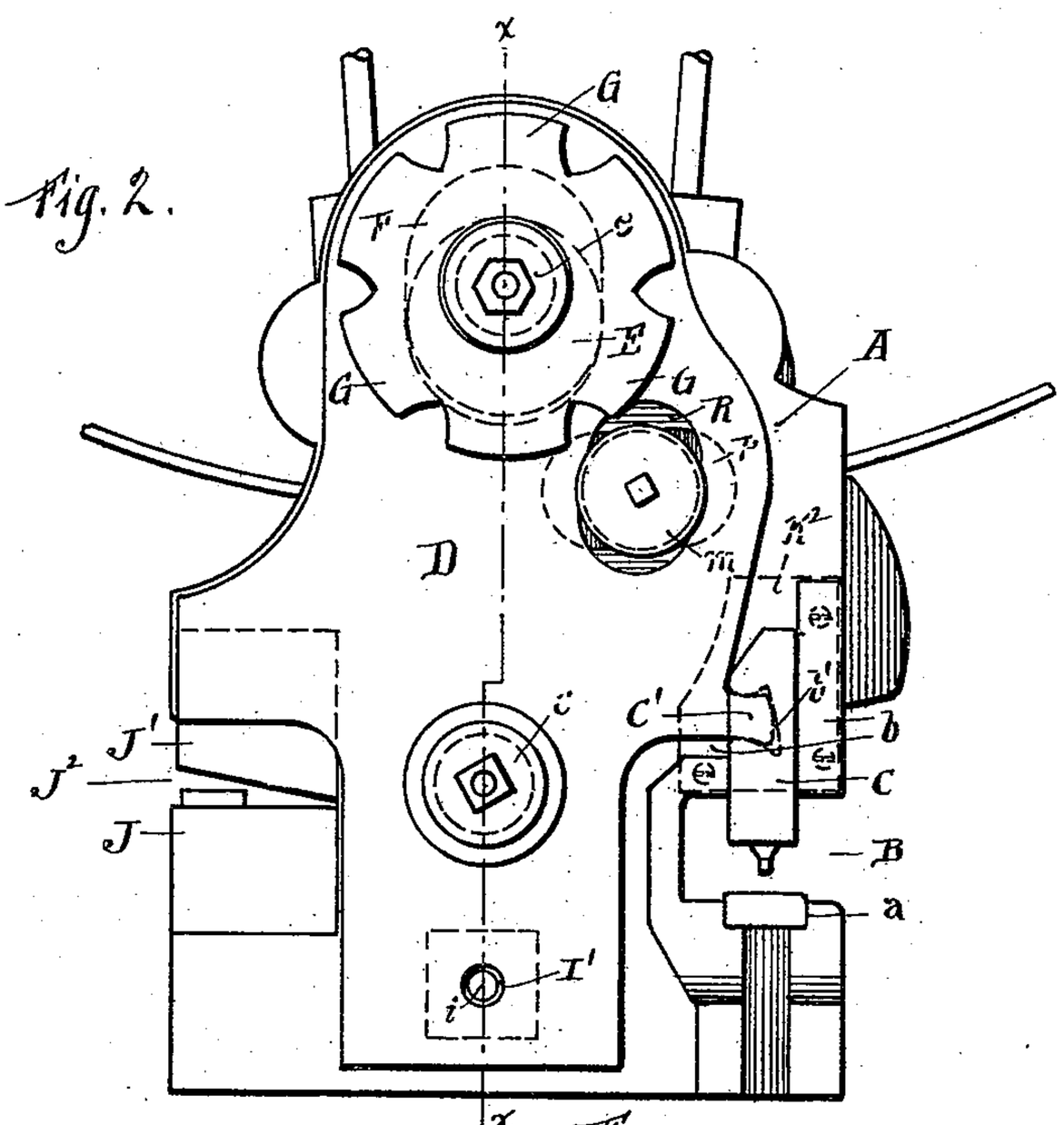


Fig. 4.

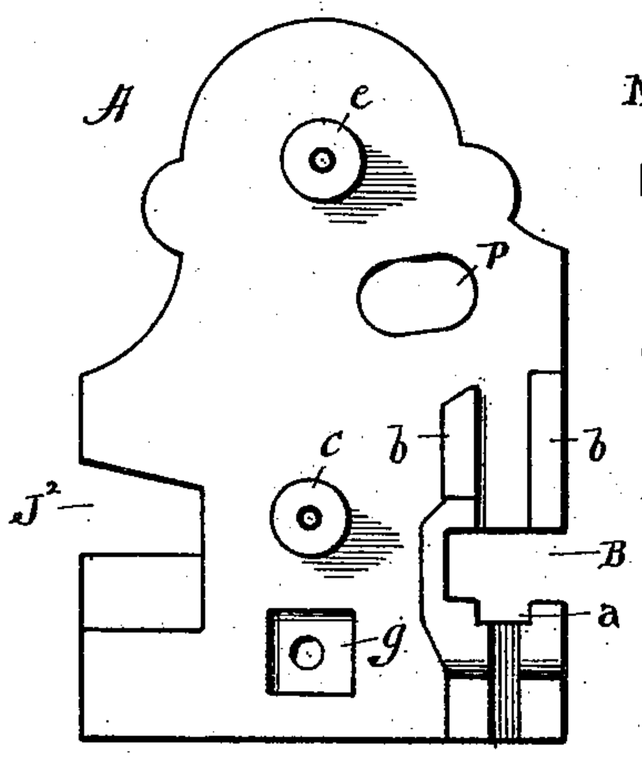


Fig. 3

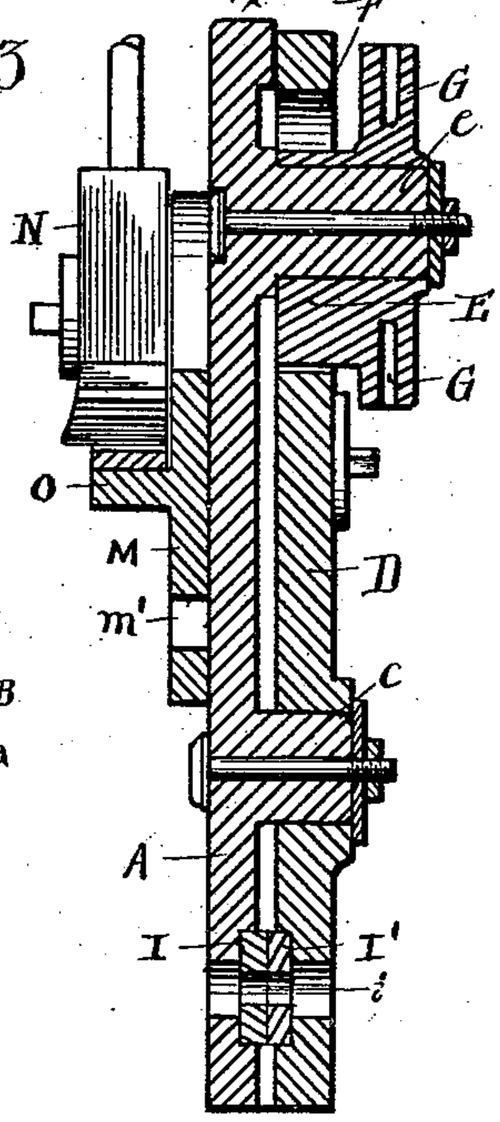
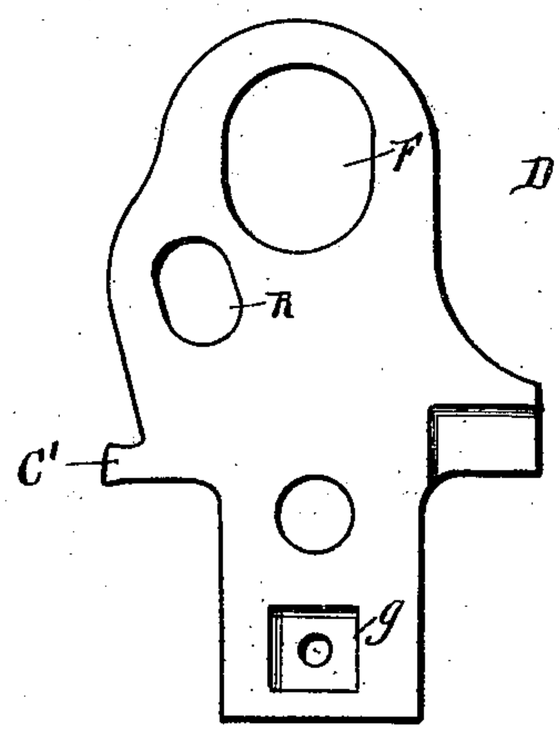


Fig. 5



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UNITED STATES PATENT OFFICE.

HOLLIS W. MOORE, OF OLEAN, NEW YORK, ASSIGNOR TO THE INTERNATIONAL STEAM POWER COMPANY, OF SAME PLACE.

COMBINED SHEARS, PUNCH, AND TIRE-SHRINKER.

SPECIFICATION forming part of Letters Patent No. 543,809, dated July 30, 1895.

Application filed October 10, 1894. Serial No. 525,500. (No model.)

To all whom it may concern:

Be it known that I, HOLLIS W. MOORE, a citizen of the United States, and a resident of Olean, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Combined Shears, Punch, and Tire-Shrinker; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a front elevation of the invention. Fig. 2 is a rear elevation with lever H removed. Fig. 3 is a section on line *x x*, Fig. 2. Fig. 4 is an inside view of plate H. Fig. 5 is an inside view of plate D. Fig. 6 is a side elevation of sliding jaw. Fig. 7 is a detail of die. Fig. 8 is a section through punch-carrier.

This invention relates to combined shear, punch, and tire-shrinking machines, the object being to provide a strong, practical, and easy-working machine of this character; and the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the letter A designates the frame of the machine consisting of a heavy plate casting supported in upright position on a suitable bed-plate Z. At one side said frame is recessed or cut away at B for the operation of the punch, an anvil-seat being formed at *a* and vertical guides at *b* for a punch-carrier C. Said punch-carrier has therein a curved slot *b'* cut to the radius of the action, and is operated by the engagement therewith of a curved nose C' of an oscillating plate D. Said plate is pivoted on a boss or bearing *c* projecting from one side of the frame, and is arranged to oscillate in a plane parallel to the vertical plane of the frame, and is operated by a multiple socket-cam or eccentric E. This cam or eccentric is journaled on a boss or bearing *e* on the frame A near the upper end thereof and works in a slot F in the oscillating plate D, said slot having parallel sides and circular or elliptical ends. Carried by said eccentric is a series of radial socket-arms G, any one of which is designed to receive the oscillating power-lever H, Fig. 1, so that the said lever may be set to work at any height or position. Below the boss or bearing *c* the frame A is provided with an angular seat *g*, in which is secured a corresponding die-plate I, having a central circular hole *i* therethrough. On the inner face of the plate D is a similar seat *g* and die-plate I'. These two die-plates form a shear for round iron, a bar being inserted through the holes thereof and the lever operated, the shear being made by a process of slipping the grain of the metal.

J J' are the shear-plates for cutting flat bars, the plate J being seated in and secured to the frame A at the edge portion opposite the punch. The plate J' is similarly carried by the plate D, the relative position of the two plates being such that they produce the common shear cut. The frame is cut away at J^2 to form a way for the insertion of the work.

K is a clamp.

K^2 is a guard-plate for the punch-carrier, as shown in dotted lines, Fig. 2.

Upon the opposite face of the frame are the tire shrinking or upsetting devices consisting of a sliding jaw M and a pair of lever-operated corrugated grip-heads N N. The jaw M consists of a plate having at its upper portion a circular boss *m* and at its lower portion two arcuate slots *m' m'*. Between the boss and the slots is a curved tire supporting shelf or flange O. The said boss extends through an enlarged opening P of the frame and into engagement with a slotted opening R in the swinging plate D, whereby said jaw M is moved simultaneously with the operation of the shear and punch. The slots *m' m'* engage with guide-bolts m^2.

By placing the tire shrinking or upsetting devices upon one side of the frame, and the shear and punch-operating mechanism on the other side, the power-lever is rendered free to be pulled in either direction from the vertical central line of the machine and at any height.

It will be observed that the construction is such as to give the machine a very powerful

action, and that the character and connection of the parts reduce the danger of breakage to a minimum.

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

1. In a combined punch, shear, and tire shrinking machine, the combination with the frame of an oscillating plate pivoted upon one face of said frame, a lever operated cam or eccentric arranged to oscillate said plate, a vertically reciprocating punch carrier working in guides on said frame and engaged by a nose on said plate, and a movable tire shrinking jaw upon the opposite face of the frame, said jaw having a boss engaging a slot in said oscillating plate through an opening of the frame whereby said jaw is operated simultaneously with the punch, substantially as specified.

2. In a combined punch, shear and tire-shrinking machine, the combination of an upright frame, an oscillating plate pivoted upon one face thereof, a multiple socket cam or eccentric pivoted upon said frame and engaging a slot of said plate, a punch carrier working in guides of the frame and operated by said plate, shear plates carried by the frame, an oscillating plate at the end of the machine opposite the punch, and a movable tire shrinking jaw upon the opposite face of the frame, and having a boss engaged by a slot in said oscillating plate, substantially as specified.

3. In a combined punch, shear and tire shrinking machine, the combination of the frame A, punch carrier C, working in guides upon one face of the frame, the oscillating plate D, its nose C′ engaging a slot in the punch carrier, the cam or eccentric E, having a series of radial lever sockets, and engaging a slot of said plate, the operating shear plates J J′, the movable jaw M upon the opposite face of the frame, its boss engaging a slot in said plate D, a tire supporting shelf or flange upon said frame, and the grip heads N N, substantially as specified.

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

HOLLIS W. MOORE.

Witnesses:
FRED R. EATON,
S. L. FITCH.