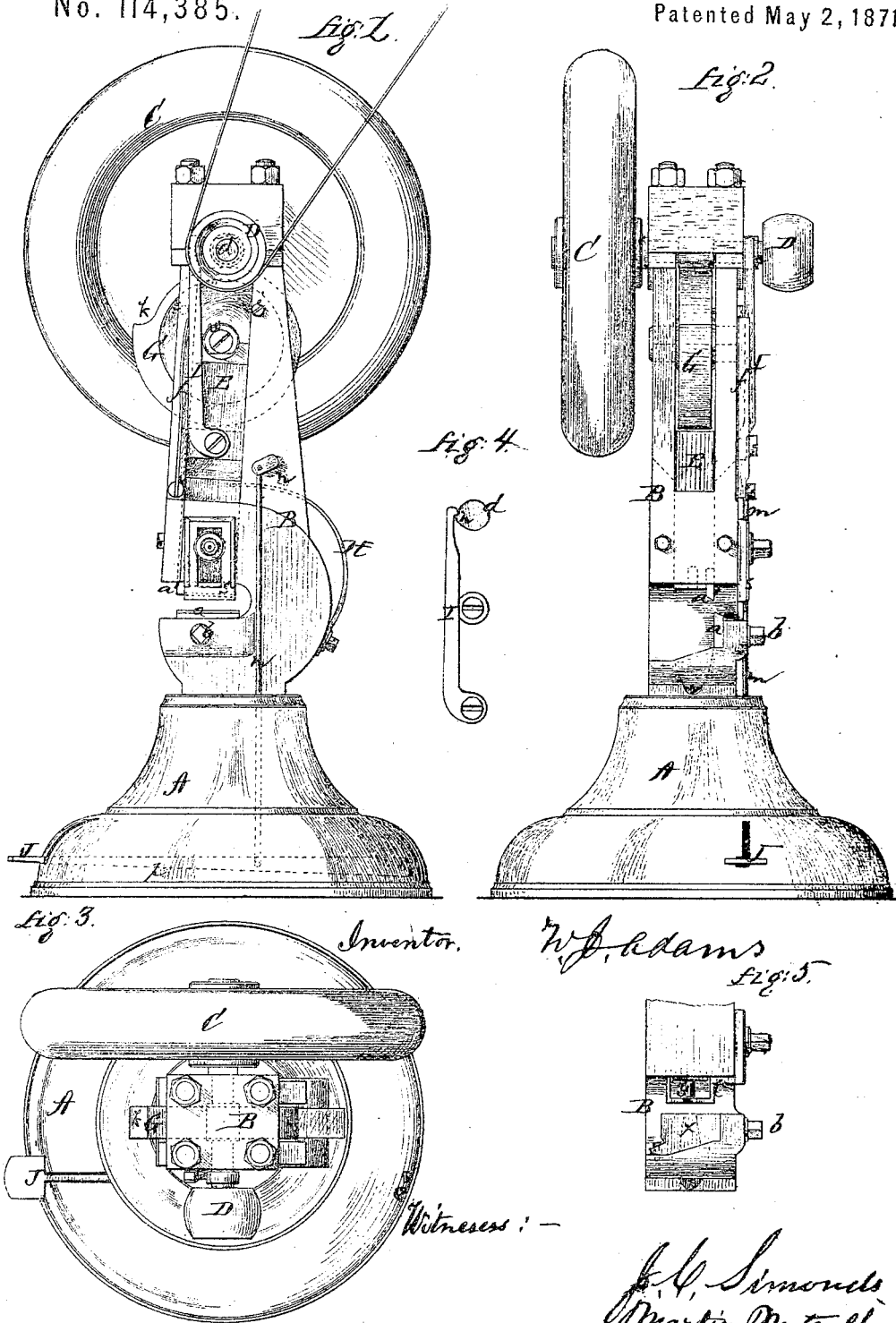


WILLIAM J. ADAMS.

Improvement in Machines for Shearing Metal.

No. 114,385.

Patented May 2, 1871.



# United States Patent Office

WILLIAM J. ADAMS, OF GRAND RAPIDS, MICHIGAN.

Letters Patent No. 114,385, dated May 2, 1871; antedated April 22, 1871.

## IMPROVEMENT IN MACHINES FOR SHEARING METALS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, WILLIAM J. ADAMS, of Grand Rapids, in the county of Kent and in the State of Michigan, have invented certain new and useful Improvements in Power Shearing-Machines; and do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in the construction and arrangement of a power shearing-machine, as will be hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing which forms a part of this specification, and in which—

Figure 1 is a side elevation;

Figure 2 is a front view; and

Figure 3 is a plan view.

Figure 4 is a side view of the device by which the movable part of the shears is drawn up out of the metal.

A represents the base or bed-piece of my machine, from which rises the frame B, constructed in the peculiar form shown in the drawing, having an opening near its lower end through which the bar of iron to be cut is inserted.

In the frame B, and projecting upward in this opening, is secured the stationary knife *a* by means of the set-screw *b*.

In the upper end of the frame B is placed a horizontal shaft, *d*, which, at one end, is provided with a large and heavy fly-wheel, C, and at the other end by a pulley, D, around which latter a belt is passed to communicate motion from any other suitable machine or engine to said shaft and wheel.

Within the frame B is placed a post, E, which moves vertically up and down in slots in the sides of the frame.

The upper end of this post E is slotted, and in the same the journals of a cam-wheel, G, have their bearings. This cam-wheel is constructed as shown in fig. 1, and might be called a spiral wheel.

The post E is pressed upward by means of a spring, H, so that the wheel G will bear against the shaft *d* and be revolved by friction.

At the lower end of the post E is secured the knife or cutter *a'*.

The shaft *d*, being revolving, revolves at the same time the cam-wheel G, which forces the post E downward until the cutters *a' a* have cut the bar of iron inserted between them. At this point a pin, *e*, in the side of said wheel, strikes a pin or lug, *i*, on the

inside of the frame B, when the cam-wheel, of course, must stop until it and the post are lifted up to clear the pin *e* from the lug *i*.

The spring H not being strong enough to accomplish this object, as the cutter *a'* will invariably stick more or less in the metal, I have provided the following device:

On the side of the post is pivoted a lever, I, with a hook at its upper end. This lever is, by a spring, *f*, pressed against the journal *w* of the cam-wheel G, which is squared off on one side; and on the shaft *d* above is formed a catch or tooth, *h*, as shown in fig. 4. The post E having been forced down to its lowest point and the wheel G stopped by the lug *i*, which happens just as the offset *h* on the circumference of the cam-wheel has cleared the shaft *d*, and when the square portion of the journal *w* is against the lever I, then the catch *h* on the shaft will engage with said hooked lever I and forcibly draw the post up, removing the cutter from the metal. The spring H then would, if not prevented from doing so, resume its function to throw the cam-wheel against the shaft, and the same operation would be continued.

But if the machine is continually in operation the power it exerts would not be so great as if it only operated at intervals, the shaft *d* being, however, kept in continual motion, because in this case the power is, so to say, stored up for use when required.

The impetus of the wheel C, which it has obtained while the cam G is not in contact with the shaft, adds largely to the power of the machine when said cam is suddenly brought into such contact.

As above described, it is by means of the spring H that the post B is thrown upward to bring the surfaces of the cam-wheel and shaft together. To prevent this spring from exercising this power I provide, in the base A, a foot-lever, J, connected by a rod, *m*, with a pivoted cam or lug, *n*, within the frame B, above said spring.

A spring, *p*, arranged under the foot-lever J, throws the same up and causes the cam *n* to bear down upon the spring H, and, consequently, said spring does not exert any influence on the post E.

When the foot-lever J is pressed down the cam *n* is turned away from the spring H, which is then allowed to raise the post up.

On the side of the frame B, at the opening where the bar of iron is introduced, is placed a slotted adjustable guide-plate, *s*, as shown in fig. 1.

This machine may be readily altered and adapted to the punching of metal by removing the guide *s* and the cutters *a a'*, and substituting therefor the guide-plate *t* and punch and die *y x*, represented in fig. 5.

Having thus fully described my invention,

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

1. The combination of the revolving shaft *d* and fly-wheel *C* with the cam-wheel *G*, post *E*, and spring *H*, constructed and arranged as described, to operate substantially as and for the purposes herein set forth.

2. The hooked lever *I*, pivoted on the post *E*, and operating in combination with the spring *f*, the flat-surfaced rotating journal *w*, and the tooth *h* on the shaft *d*, substantially as and for the purposes herein set forth.

3. The foot-lever *J*, spring *p*, rod *m*, and cam *n*, arranged and operating with the spring *H* and post *E*, substantially as and for the purposes herein set forth.

4. The combination of the base *A*, frame *B*, shaft *d*, fly-wheel *C*, post *E*, cam-wheel *G*, springs *f* and *H*, lever *I*, the flattened journal *w*, and foot-lever *J* with the spring cam *n*, all constructed and arranged with their several connections, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of September, A. D. 1870.

WILLIAM J. ADAMS.

Witnesses:

THOMPSON SINCLAIR,  
A. P. SINCLAIR.