

S. M. SHERMAN.

MACHINE FOR FORMING METALLIC END-PIECES FOR
BLIND-SLATS.

No. 171,535.

Patented Dec. 28, 1875.

Fig. 1.

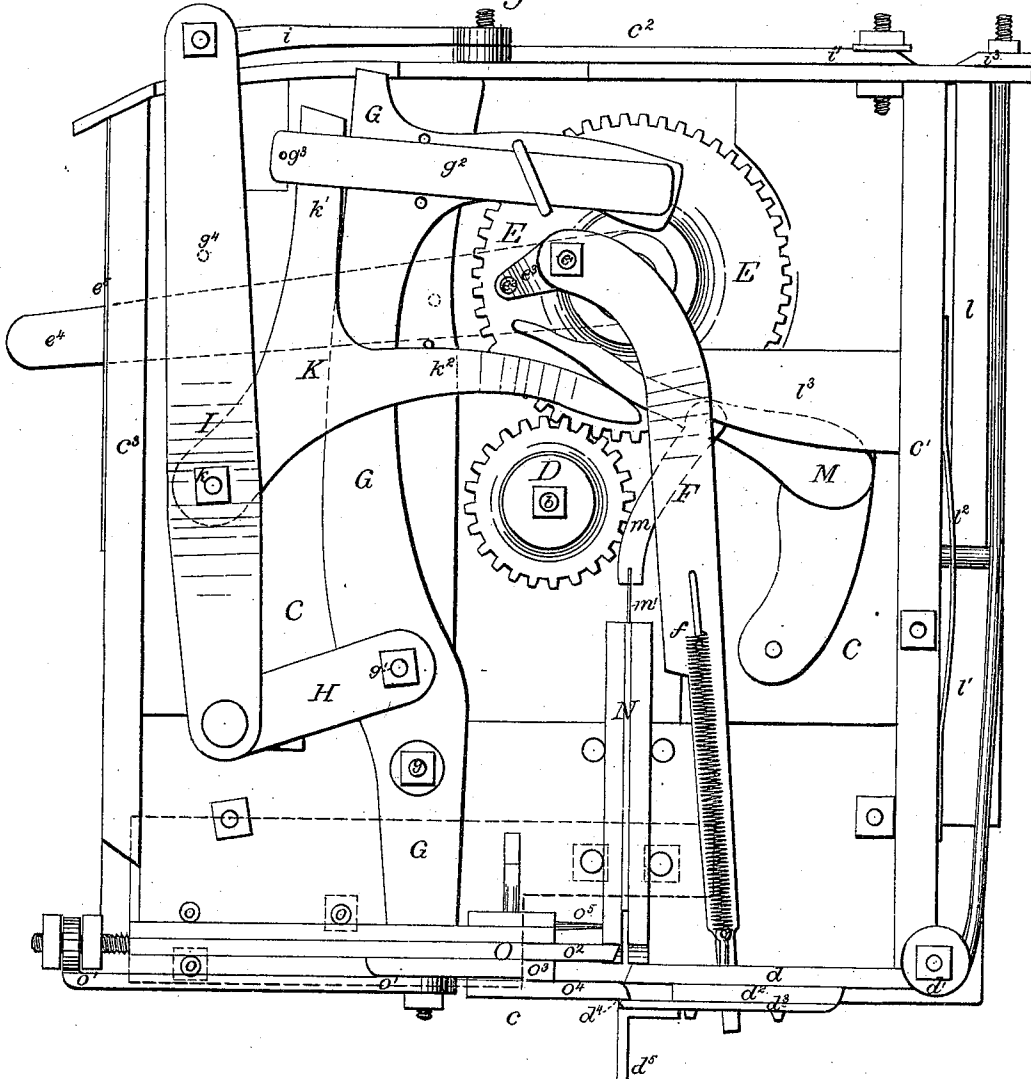
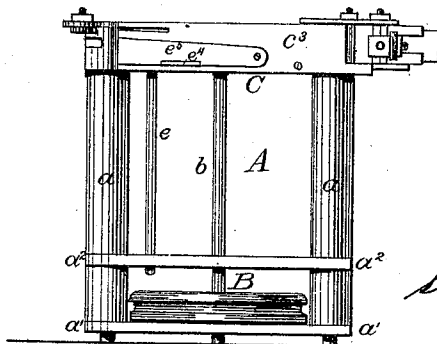


Fig. 2.



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Fig. 3.

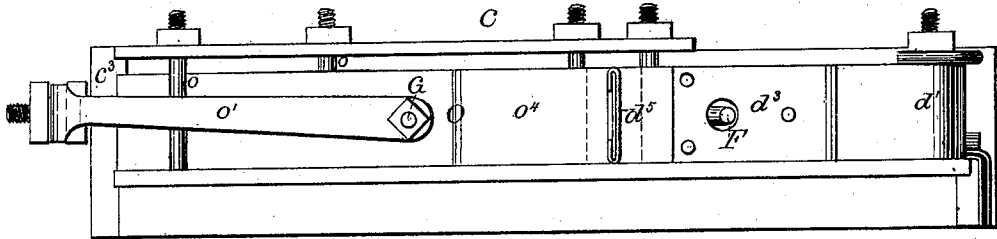


Fig. 4.

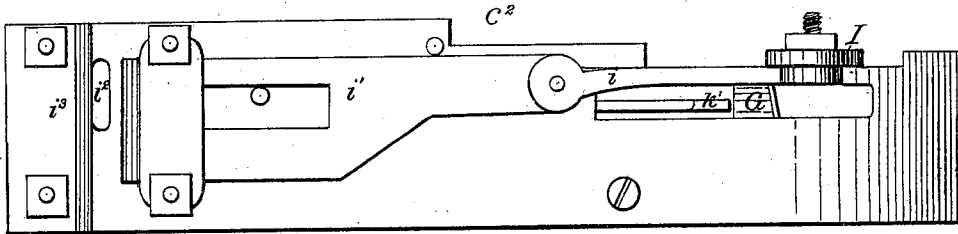


Fig. 5.

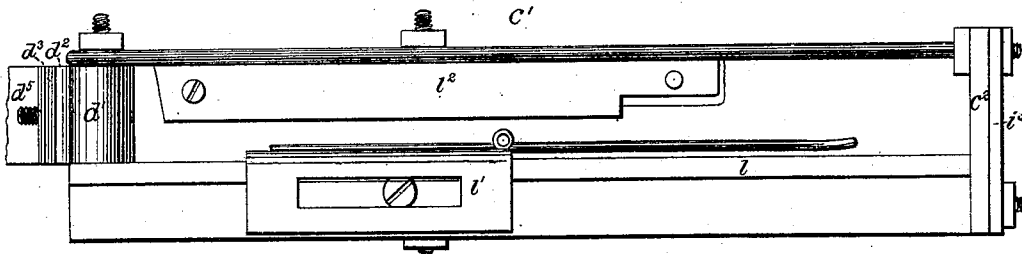


Fig. 6.

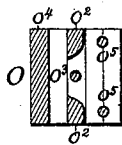


Fig. 7.

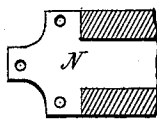


Fig. 8.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MACHINES FOR FORMING METALLIC END PIECES FOR BLIND-SLATS.

Specification forming part of Letters Patent No. **171,535**, dated December 28, 1875; application filed March 22, 1875.

To all whom it may concern:

Be it known that I, SEELEY M. SHERMAN, of Fort Dodge, in the county of Webster and State of Iowa, have invented a new and useful improvement in machines for cutting window-blind slats, and cutting and punching sheet-metal ends for the same; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is a machine for cutting window-blind slats, and for forming metallic ends for the same; and my invention therein consists, first, in the combination of a series of knives having a swinging motion, with a series of knives and punches having a reciprocating motion; second, in the combination of a stationary die with the foregoing parts; third, in the combination, with the stationary die, of an ejector; fourth, in the combination, with the swinging knives, of a guide-plate for the metal blank; fifth, in means for imparting motion to the swinging knives; sixth, in the means for imparting a forward motion to the reciprocating knives and punches; seventh, in the means for imparting a backward motion to the reciprocating knives and punches; eighth, in the means for operating the knife for cutting the slats; ninth, in the means for pushing forward the ejector; tenth, in the combination of the devices for cutting the slats and clearing them from the machine; eleventh, in the combination of the devices for forming the metallic ends and the guiding and ejecting devices.

To enable those skilled in the art to make and use my invention, I proceed to describe the same in connection with the drawings, in which—

Figure 1 represents a plan view of the top of my machine. Fig. 2 is a side elevation of the machine from the side c^3 . Figs. 3, 4, and 5 are, respectively, side elevations of the three sides c , c^1 , and c^2 . Fig. 6 is a cross-section of the knives and punches O; Fig. 7, a longitudinal section of the die N, and Fig. 8 a cross-section of the same.

Like letters denote similar parts in each figure.

In the drawings, A represents the frame of

the machine, the general form of which is cubical. The frame consists of four standards, a , which rest on a plate or platform, a^1 . Another platform, a^2 , is placed a short distance above the lower plate a^1 , leaving a space between the two, in which revolves a wheel, B, which may be connected with any driving-shaft by a belt and pulley. An upper platform, C, rests on top of the standards, and contains within its raised edges c c^1 c^2 c^3 the principal parts of the machine. A spindle, b , (the axis of the wheel B, before mentioned,) passes vertically through the center of the machine, and forms the axis, also, of a cogged wheel, D, which revolves horizontally above the platform C. This wheel meshes with a larger cogged wheel, E, which has a spindle, e , passing through the upper and middle platform of the machine, said spindle serving to hold steadily the wheel, and revolving with it. Two small studs, e^1 and e^2 , rise from the upper surface of the wheel E, and are capped by a small plate, e^3 . One of the studs, e^1 , extends through this plate e^3 , and has a thread cut on its end. A lever, e^4 , connected with the spindle e , and pivoted to the platform C, passes out through the side c^3 , where there is a catch, e^5 , by which it is held. This lever is to move the cogged wheel E, throwing it in or out of gear with the wheel D. A long flat bar, F, slightly curved at one end, slips over the projection of the stud e^1 and is held down by a nut, which screws over it. The bar F extends across the top of the machine and through the side c , said bar being cut down at this end so as to have a shoulder a short distance from the end, and passing through a hole in the side c , in which it moves loosely. A spiral spring, f , (the use of which will be hereafter explained,) is connected with the bar F and the side c . About one-third of the length of the side c is composed of a plate, d , which is pivoted at one end at the corner d^1 of the machine. This plate has a shorter plate, d^2 , on its back, which does not extend to the end of the plate d . A third plate, d^3 , whose vertical edge d^4 , which is in the same plane as the vertical edge of the plate d , is a cutting-edge, is placed outside, and the three plates firmly secured together. It will be seen, therefore, the middle plate serves to divide the inner

and outer ones, and leaves a space between them for a short distance from their ends. A guide-plate, d^5 , is secured to the outside plate d^3 , so that it stands out at right angles with the side c , and is so placed that a metallic plate put between its flanges will be guided by the ends of the plates d and d^3 into a slot within the machine, hereafter to be described. A hole is made through the three plates d , d^2 , and d^3 , through which the end of the bar F passes freely.

When the cogged wheel E revolves the bar F will have a vibratory and lateral motion at the same time, the hole in the plates d , d^2 , and d^3 allowing for said motion.

It will be seen, therefore, these plates are pushed out and drawn in as the cogged wheel E revolves. The remainder of the side c is composed of a series of knives and punches rigidly held together and moved back and forth by an L-shaped lever, G, pivoted at g a short distance from the side c , and having its toe extend over the cogged wheel E, so that the stud e will press against said toe during a portion of its revolution, and thus cause the plates connected with its other end to move back and forth. A small lever, H, is pivoted on the lever G at a point, g^1 , just behind the pivot g . To the end of the lever H is pivoted a straight lever, I, which extends across the top of the machine near the side c^2 to the side c^1 . A V-shaped lever, K, is pivoted on a pin, k , which also passes through the lever I near its middle point. One arm k^1 of the lever K runs along the back of the lever G, and has its end turned down, so that when the lever G moves one way it will press against the arm k^1 and cause it to move with it. A flat strip, g^2 , is secured to the lever G on the toe-piece, and extends over the arm k^1 of the V-shaped lever K. A small pin, g^3 , extends downward from the end of the strip g^2 . The arm k^1 of the lever K is stopped in its backward motion by a pin, g^4 , which rises from the top plate of the machine. During a portion of the revolution of the cogged wheel E the stud e^2 strikes against the toe of the lever G and moves it back. The lever G carries the lever K with it, and leaves the arm k^2 in such a position that the stud e^2 will strike it when detached from the toe of the lever G and carry it with it during a portion of the revolution. By this means the toe of the lever G will be restored to its original position when the stud e^2 is finally detached from the arm k^2 . The lever I has pivoted on its end a short connecting-rod, i , which, in turn, connects with a knife, i^1 , which moves in guides on the face of the side c^2 . A vertical slot, i^2 , is cut in the side c^2 just outside the side c^1 , beyond which the side c^2 extends a short distance. A stationary knife, i^3 , is bolted on the side c^2 , with its edge partially covering the slot. The knife i^1 covers the remainder of the slot during a portion of its motion. The object of these knives and slot is to cut the window-blind slats at any desired length. It is accomplished by

pushing the strips to be cut through the slot when it will rest upon a small platform, l , the continuation of the platform C of the machine. A stop, l^1 , moves back and forth on this platform, and can be secured at any point to allow the slat to be pushed through to any desired length. A flat spring, l^2 , is secured to the side c^1 . An arm, l^3 , extends from the end of the spring into the machine and rests over the cogged wheel E. The stud e^2 strikes the arm l^3 during a portion of its revolution, and thus pushes the spring out at such a time that the slat will be thrown off as soon as cut. When the arm l^3 is disengaged from the stud e^1 the spring returns to its original position close to the side c^1 , and allows another strip to be pushed through the slot. An L-shaped lever, M, extends across the top of the cogged wheel E in an opposite direction from and beneath the arm k^2 of the lever K. The toe of this lever is pivoted to the platform C near the side c^1 . An arm, m , is connected with the middle point of the longer arm of the lever M. This arm has a long flat ejector, m' , on its end, which extends into a die, N, the use of which is hereinafter described.

The stud e^2 of the cogged wheel E strikes against the long arm of the lever M, which causes the ejector m' to be pushed into the die N. The ejector m' , being flat and elastic, will cause the lever M to resume its original position when disengaged from the stud e^1 . The die N consists of two plates, separated by intervening plates, which still allow the punch m' to pass between. This die is so placed that the metal sheet held in the guide-plate d^5 can be pushed into it, the plates of which it is formed being secured directly opposite to the ends of the plates d and d^3 . The die N is pierced with holes, the number requisite to have in the bearing usually three, and its end is shaped so that the knives which cut by it shall give the proper form to the bearing. In conjunction with the die N the plates d and d^3 is a series of knives and punches, O, secured rigidly together, which are worked back and forth between guides o by means of the lever G. The end of the lever G passes freely through a slot in the mass O. An iron strap, o^1 , passes over the end of this lever, and over the end of a projection on the rear end of the mass O. By means of nuts the end of the lever G can be adjusted in the slot so as to limit properly the motion of the knives and punches. The middle plate of the mass O has two knives, o^2 , which cut two ears in the plate, both knives being a part of said plate. Outside of this is placed a short dividing-plate, o^3 , and then a knife, o^4 , which passes between the knives d and d^3 . On the inside of the plate o^2 are secured two plates, from which the round punches o^5 protrude to correspond with the holes in die N.

It will be seen that the motion to all parts of this machine is communicated by means of the cogged wheel E, the stud e^2 striking the various levers, and disengaged from them at

such times that all parts work together harmoniously. A sheet of metal is placed in the guide-plate d^5 , while the knives o^2 and o^4 and punches o^5 are drawn back and pushed into the die N. The motion of the lever G then causes these knives and punches to advance, cut, and bend the bearing, as desired. When these knives and punches recede sufficiently the lever F pushes out the knives d and d^3 , while the ejector m' pushes the bearing out of the die N. It is thus pushed clear of the machine, and drops into a proper receptacle. The revolution of the wheel E carries the lever F back again, and the spring f restores the knives d and d^3 to their original position.

The machine may be worked by means of a treadle, the friction and resistance being so slight a boy can manage it.

Having thus described the construction and use of my machine, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine, substantially as described, the combination of a series of knives having a swinging motion, with a series of knives and punches having a reciprocating motion, substantially as described.

2. In a machine, substantially as described, the combination of a series of knives having a swinging motion, and a series of knives and punches having a reciprocating motion, with a stationary die, substantially as described.

3. The combination, with the stationary die, of the ejector m' , substantially as described and shown.

4. The combination, with the series of swing-

ing knives, of the guide d^5 , for the purpose set forth.

5. The combination, with the series of swinging knives and punches, pivoted at a point, d^1 , of the cog-wheel E, having a stud, e^1 , and a lever, F, for the purpose set forth.

6. The combination, with the reciprocating knives and punches O, of the cog-wheel E, having a stud, e^2 , and lever G, for the purpose set forth.

7. The combination, with the cog-wheel E, having a stud, e^2 , a V-shaped lever, K, and L-shaped lever G, and a strap, g^2 , for the purpose set forth.

8. The combination, with a lever, G, a lever, H, lever I, and rod i , for operating the knife i^1 , as described.

9. The combination with the cog-wheel E, having a stud, e^2 , a lever, M, having an arm, m , and an ejector, m' , for the purpose set forth.

10. The combination, with the side c^1 , of the knives, the platform l , having step l^1 and spring l^2 , having an arm, l^3 , operated as described.

11. The combination, with the swinging knives d d^2 d^3 , carrying the guide-plate d^5 , of the reciprocating knives O and die N, having the ejector m' , substantially as described and shown.

This specification signed and witnessed this 29th day of June, 1874.

SEELEY M. SHERMAN.

Witnesses:

WALTER W. JOHNSTON,
J. B. SCOTT.