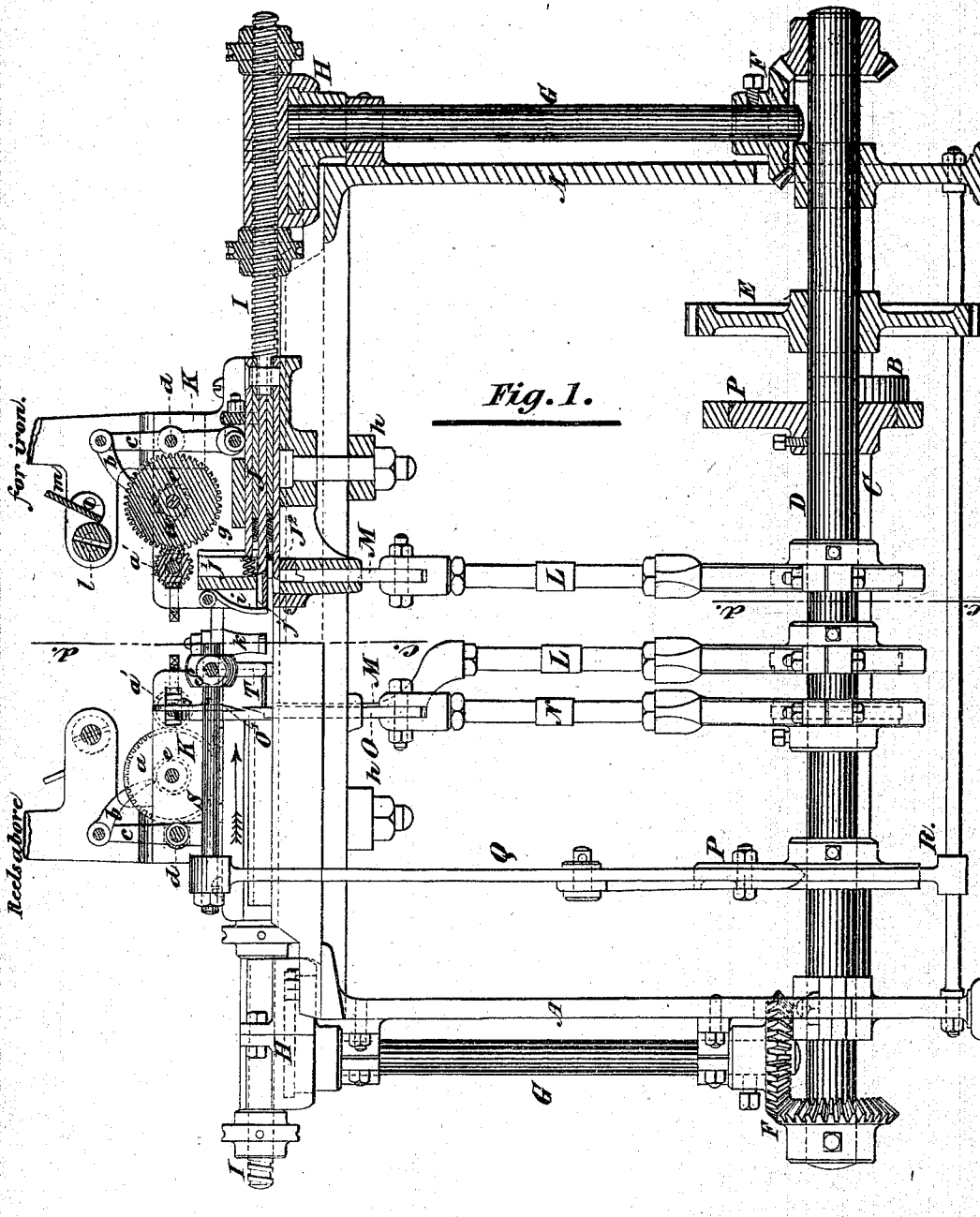


W. W. BYAM.
Making Blind-Slats.

No. 146,512.

Patented Jan. 20, 1874.



Witnesses

George Bird
Hugh Aird

Inventor

William Wallace Byam
per
Donald C. Ridout & Co.
Attys.

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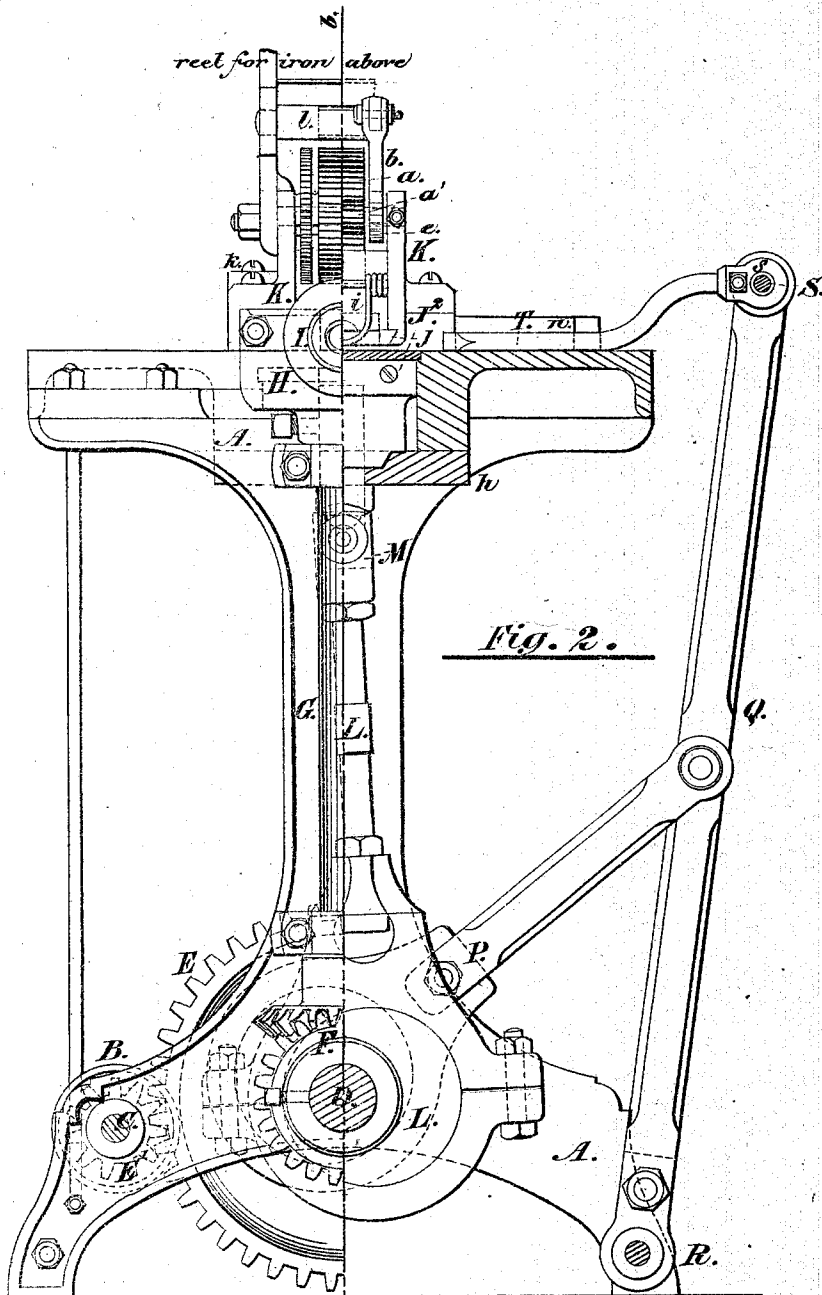


Fig. 2.

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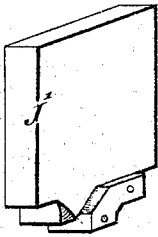


Fig. 3.

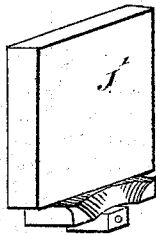
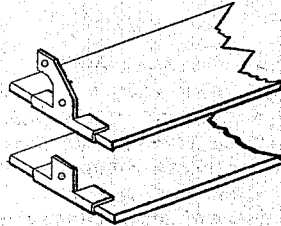


Fig. 4.



Figs. 5 & 6.

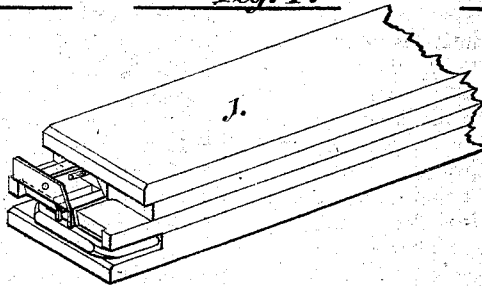


Fig. 7.

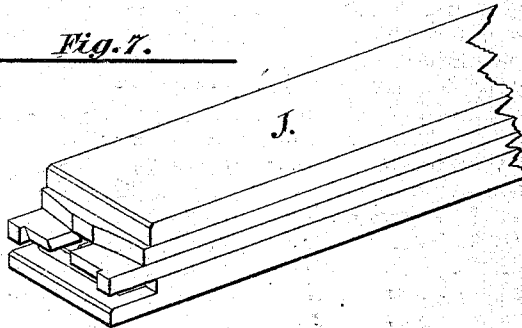


Fig. 8.

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UNITED STATES PATENT OFFICE.

WILLIAM W. BYAM, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MAKING BLIND-SLATS.

Specification forming part of Letters Patent No. 146,512, dated January 20, 1874; application filed November 13, 1873.

To all whom it may concern:

Be it known that I, WILLIAM WALLACE BYAM, of the city of Chicago, State of Illinois, have invented a new and useful Machine for Making Blind-Slats, of which the following is a specification:

The object of my invention is to rapidly and economically produce window and door weather-blind rolling slats, with metal clip-bearings attached.

Figure 1, Sheet 1, is a half sectional side view of my invention. Fig. 2, Sheet 2, is a half end elevation of the same. Fig. 3, Sheet 3, is a perspective view of the die-block for one end of the slat. Fig. 4, Sheet 3, is a perspective view of the die-block for the other end of the slat. Fig. 7, Sheet 3, is the die fitting into Fig. 3. Fig. 8, Sheet 3, is the die fitting into Fig. 4. Fig. 5, Sheet 3, the clip-bearing produced by my machine for one end of the slat. Fig. 6, Sheet 3, the clip-bearing produced by my machine for the other end of the slat.

A is the frame of the machine, which frame is substantially constructed to resist all the strain of working. B is the driving-pulley keyed to the shaft C, from which shaft the driving motion is communicated to the shaft D by means of the pinion and spur wheels E E, keyed onto the shafts. F F represent the bevel-gearing, fastened to the horizontal shaft D and the upright shafts G. The shafts G have on their upper ends an eccentric, H, fastened securely, the throw of which eccentric communicates a reciprocating horizontal motion to the rods I. To these rods are attached, by a knuckle-joint, the cutters or dies J, working in slides in the head-blocks. K L are the eccentrics, straps, and rods fastened to the shaft D, the rods of which are connected by means of a knuckle-joint with the cleat-clamping dies M. The dies work in a slot cut through the lower part of the head-blocks K. The upper end of the die is cut to any shape required to suit the clip-bearings. N is an eccentric with rod, worked from the common shaft D in the usual way. To the upper end of N is attached a steel cutter, O, which cutter O is attached to N by a knuckle-joint, receiving an up-and-down motion as the shaft D revolves, the knife appearing and disappearing above the bed-plate at each revolution of D. O' is the up-

per stationary knife. P P are eccentrics, which are set in such a manner on the shaft D that the rods Q, working on the center or fulcrum R, attached to the frame, receive a vibratory motion at the upper ends. The upper ends are connected to a horizontal bar or rod, S. By means of this attachment the vibratory motion of P P is communicated to S, giving S a horizontal parallel motion. On S are keyed sockets s, into which the ends of the pushers T are inserted or fastened, which, being fastened to S, have the same backward and forward motion as S, pushing the slats, as they come from the cutter O, into the center of the machine opposite to the cutting-dies, and over the clamping-dies. In the head-block K are fastened the die-blocks J¹ J¹, which die-blocks are the female of the dies or cutters J J, which are attached to the rods I, as before mentioned, and which are shown in detail on Sheet No. 3. In the head-blocks K are also fitted the lower knives J². The dies and die-blocks at each end of the machine are shaped to cut the different forms of clip-bearing required for each end of the slat, the whole being interchangeable at will. a a' are iron feed-rollers, placed at any distance apart to suit the thickness of iron used, by means of adjusting bearing-boxes, as shown. b is the ratchet-pawl, worked from the lever c on the fulcrum d, which lever receives its motion by having the lower arm secured, by an adjustable attachment, to the cutter-head J, as shown in drawing. e is the ratchet-wheel fastened to the axle of a, communicating to a, at each stroke of the cutter-head J, a revolving motion. By this means the strap-iron, which is coiled on a reel above the machine, when inserted between the two rollers a a', (the rollers being brought close enough together by means of the adjusting-screws to grasp the broad surfaces of the iron firmly,) is fed by friction at each throw of the eccentrics H, which feed can be regulated as desired by the adjusting feed-screw attached to the lower part of the ratchet-lever. g is the die-block cleaner, which cleans the die-block, at each stroke of the die J, from the cuttings of the iron which adhere to the die, the cleaning of the die being obtained by the action of the spring, which is compressed by J during the cutting of the iron clip-bearing, and when J retires the spring re-

covers itself, cleaning the die-block from any adhering cuttings, as will readily be understood from the drawings. *h* is the clamp which secures the head *K* and all its attachments to the frame *A*. The movable head *K* is situated in a groove in the center of the top plate of *A*, running the whole length of the machine. *K* can be secured at any part of this groove to suit the different lengths of slats required, and all the working attachments on *D* can readily and easily be adjusted to suit any position that *K* may be placed in, and work with ease and celerity. *i* is a spring attached to the front end of *K*, for the purpose of causing the clamp-block, when displaced from its proper position by the cutter *J*, to return and clamp the upper cleats of the clip-bearing by the pressure of the clamp-dies *M* from below. *k* is a strong steel slat-holder fastened to the heads *K*. The holder is slightly turned up at the receiving end, and takes the slats as they come from the pushers *T*, and holds them firmly while the dies and clip-fasteners are operating at each end of the slat. *m* are projecting studs to guide the strap-iron when entering between the rollers *a a*. *l* are oil-sponge holders, for the purpose of slightly oiling the iron, which has the effect of causing the same to cut more cleanly, the strap-iron being coiled in any length on a reel above.

To operate my invention, the lumber is first made in strips, the proper width and thickness, of any length, by another machine distinct from this. It is then introduced, by hand or machinery, at the point indicated by the arrow, it being understood that the pulley *B* is connected, by belt or gearing, with the running shafting of shop, and that the whole machine is working by means of the gearing *F F*. The strip of wood is pushed between the cutters *O O'*, while they are apart, until the strip butts against the stop *n*. At this moment the lower cutter *O* is forced up by the eccentric *N*, revolving on the shaft *D*, and cuts the strip, the cut piece of which falls on the top of the frame. The pushers *T T*, then coming forward by means of the eccentrics *Q* and their connections, push the cut piece into the center of the machine under the strong steel spring *k*, which holds it firmly. The pushers then retire by means of the eccentrics *Q*, ready for another slat. During the time that the above operation has been progressing, the strap-iron, which is coiled on a reel above, is fed down by the rollers *a a*, as before explained. At the same time that the cut slat is pushed under the holder *k* the iron is immediately opposite and between the approaching dies *J* and the die-blocks *J¹* and lower knife *J²*. The dies or cutters *J* come forward, impelled by the rods *I*, working from the eccentrics *H* and connections, and cut the iron against the die-blocks to the shape required, and lap the cleats partially over the ends of the slat, as will readily be understood by an inspection of the drawings and details.

As the shaft *D* revolves, the dies retire, cleaning the upper edge of the die-block *J* by the cleaner *g*, and moving the lower arm of the lever *c* in a backward direction, and, by means of the upper arm and its connections, causing the roller feed-wheel *a* to revolve a suitable distance, and to feed down a proper quantity of iron for the next slat. As the dies *J* retire, the eccentrics *L L* force up the clasper or clamping-dies *M M*, which work immediately under the ends of the slats in grooves, and which press the cleats of iron which have been turned partially over by the dies *J* into the wood of the slat, firmly and securely fastening the iron to the wood. The upper cleat-clamping blocks *j*, as the dies *J* retire, are returned to their proper position in time to receive the thrust of the clamping cleat-dies *M* and form the shoulder, which presses the upper cleats into the wood when the pressure is applied from underneath by the dies *M*. This work is all done by one revolution of the shaft *D*. When the cleats have been pressed into the slat, as explained, the pushers *T T* come forward again with the next slat cut off, shoving the finished one out of the way, the second one taking its place under the holder *k*. Thus the work progresses. The heads *K K* can be adjusted to meet any length of slat required. The shaft *D* can be made to make any number of revolutions required, the whole machine doing its work perfectly.

What I claim as my invention is—

1. The combination of the revolving shaft *D*, eccentric and eccentric rod *N*, cutters *O O'*, and the stop *n*, arranged as described, for the purpose of cutting the slats the proper lengths, substantially as specified.
2. The combination of the revolving shaft *D*, eccentrics *P*, levers *Q*, working on the fulcrums *R*, rod or bar *S*, pusher *T*, and holder *k*, arranged as described, for the purpose of carrying the slats to the dies and clamps to receive the clip-bearings, substantially as specified.
3. The combination of revolving shaft *D*, gearing *F F*, shaft *G*, eccentric *H*, rod *I*, die or cutters *J*, die-blocks *J¹*, and lower knives *J²*, die-block cleaners *g*, feed-rollers *a a*, ratchet *b*, and ratchet-wheel *c*, and lever *c*, arranged as described, for the purpose of cutting the metal clip-bearings and feeding the iron to the same, substantially as specified.
4. The combination of the revolving shaft *D*, eccentrics and rods *L*, pressure and cleat-clamping dies *M*, blocks *j*, and spring *i*, arranged as described, for the purpose of affixing the metal clip-bearings, substantially as specified.
5. The combination of the adjustable heads *K*, the frame *A*, and the clamp *h*, arranged as described, for the purpose of enabling the machine to produce any required length of slat.

WM. W. BYAM.

Witnesses:

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CLAUD S. CAYLEY.