

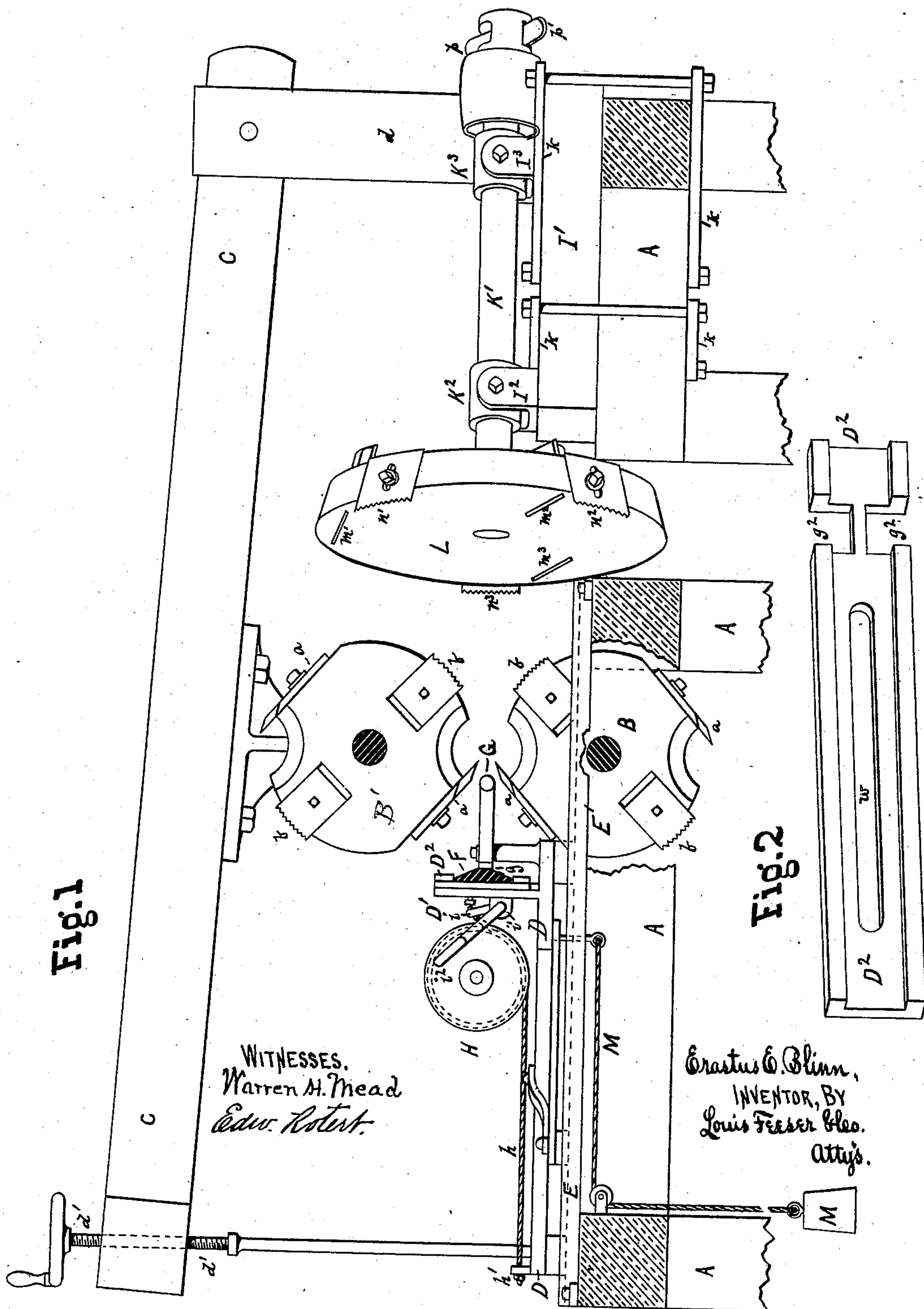
(No Model.)

2 Sheets—Sheet 1.

E. E. BLINN.
Machine for Making Conveyer Flights.

No. 231,892.

Patented Sept. 7, 1880.



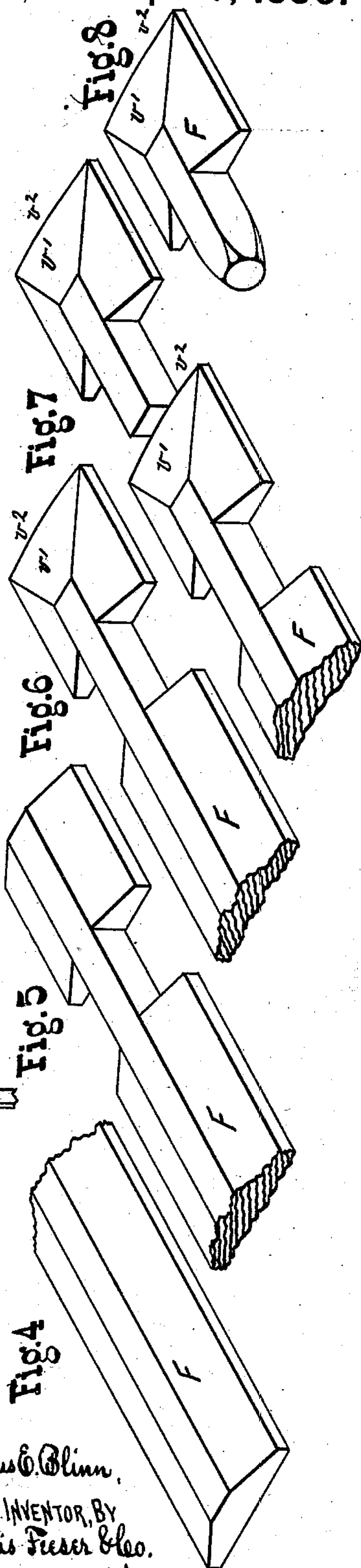
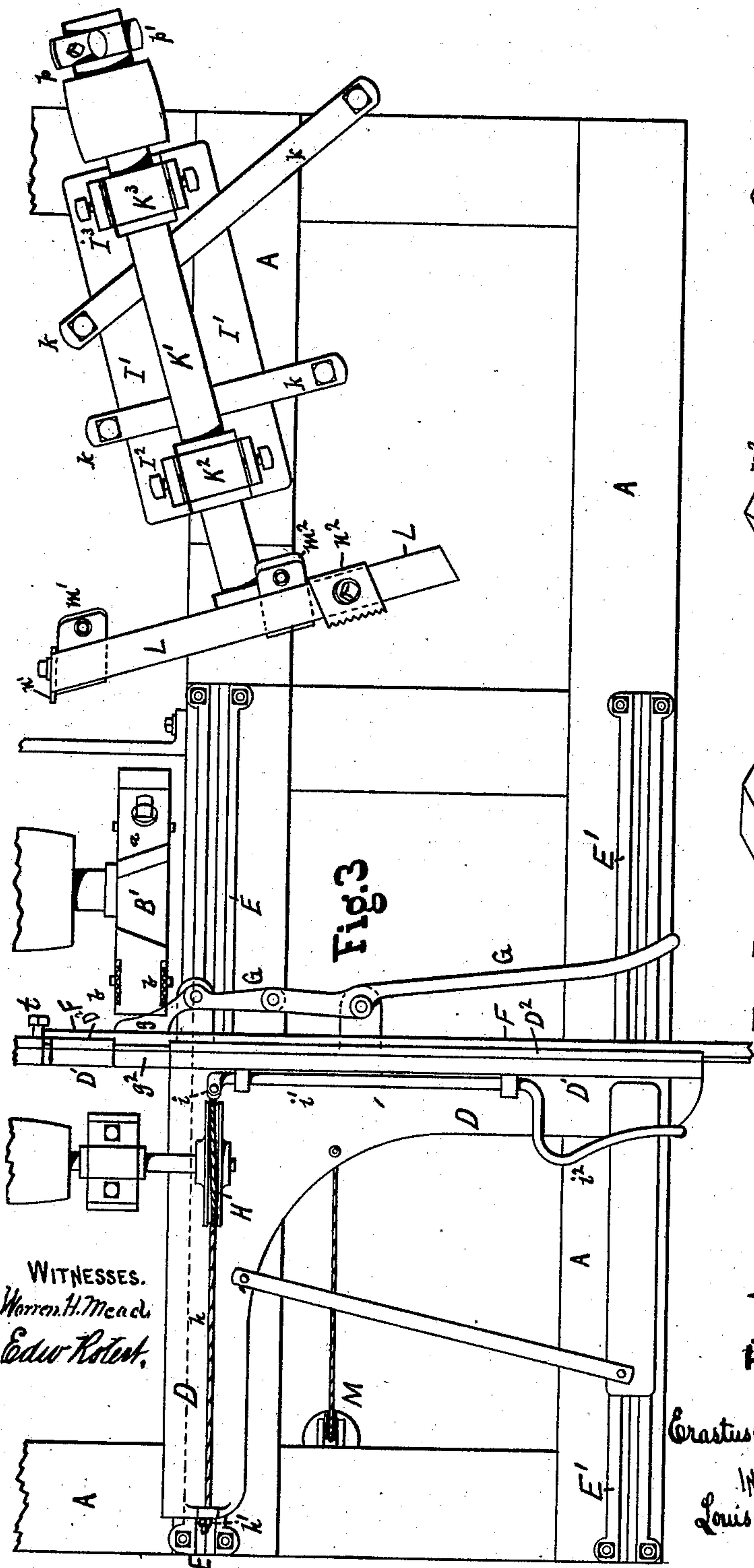
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WITNESSES.
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Attys.

UNITED STATES PATENT OFFICE.

ERASTUS E. BLINN, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO
CLARENCE E. EASTMAN, OF SAME PLACE.

MACHINE FOR MAKING CONVEYER-FLIGHTS.

SPECIFICATION forming part of Letters Patent No. 231,892, dated September 7, 1880.

Application filed June 7, 1880. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS E. BLINN, of Minneapolis, in the county of Hennepin and State of Minnesota, have made certain new and useful Improvements in Machines for Making Conveyer-Flights, of which the following is a specification.

This invention relates to machines for making the wooden flights of conveyers used in mills, &c.; and it consists in a sliding frame in which a previously-formed strip of wood is held and adapted to be passed between cutter-heads or other suitable instruments, which cut notches out of the sides of the strip, and then continuing the movement of the frame and strip to bring the end of the latter which is outside the notches in contact with an angularly-mounted cutter-head in which a combination of saws and cutters form the beveled end of the blade of one flight and saw the tenon off the next flight, as set forth.

The invention further consists in a small chuck operating in connection with the cutter-heads, in which the ends of the tenons of the flights are rounded to facilitate their entrance into the shaft of the conveyer, as set forth.

I attain these objects by the mechanism illustrated by the drawings hereto annexed, in which—

Figure 1 is a front elevation. Fig. 2 is a detached perspective view of the strip-rest. Fig. 3 is a plan view; Figs. 4, 5, 6, 7, 8, perspective views, enlarged, of the flight-strip, illustrating the different stages of its manufacture.

A is the frame-work, which may be made of any desired form or material, and having mounted upon it a cutter-head, B, having beveled knives *a a* and saws *b b*, similar to ordinary tenon-cutter heads, as shown. Directly above this cutter-head is a second cutter-head, B', precisely like the first one, B, and mounted upon the lower side of a frame, C, pivoted to a standard, *d*, rising from the frame A, and provided at the other end with a screw, *d'*, by which the frame may be adjusted higher or lower to regulate the distance between the cutter-heads, and will also be adjustable side-

wise to bring both cutter-heads in line perpendicularly.

D is a table or frame adapted to slide back and forth at right angles to the axis of the cutter-heads B B' in ways E E' upon the frame A, and provided with a rest or support, D', on a line parallel with the axis of the cutter-heads, and adapted to receive a wooden strip, F, as shown in Fig. 4, being provided for that purpose with an auxiliary plate, D², (see Fig. 2,) having a groove in its face, in which the strip is held.

In front of the rest D' a compound pivoted lever, G, is arranged, and having a thin forward end, *g*, projecting between the cutter-heads B B', and adapted to hold the strip F pressed into the groove in the rest D². At the point *g*², opposite the cutter-heads B B', the rest D' and auxiliary strip D² are cut away (see Figs. 2 and 3) upon either side, leaving only a thin connecting-section, so that the rest may be run between the cutter-heads without touching them.

A short distance back from the rest D' a grooved pulley, H, is journaled on the frame A, and revolved continuously with the cutter-heads.

h is a cord attached to the extreme rear end of the frame D, at *h'*, and running underneath and around the pulley H, and ends in a short crank-arm, *i*, on a shaft, *i'*, journaled upon the back of the rest D'. The opposite end of this shaft *i'* is bent outward in the form of a handle, *i*², so that when turned the crank-arm *i* will draw the cord *h* upward in contact with the pulley H, so that when it is desired to move the table D the handle *i*² is turned up, which tightens the cord upon the pulley, having previously been unaffected by the revolving pulley, and the friction at once causes the cord to wind up, and being attached to the table D, the latter will be moved forward upon the ways E E'. A weight and cord, M, will return the table backward after the cord *h* is released.

I' is a frame or stand having two bearings or yokes, I² I³, in which a shaft, K', is journaled by pivoted collars K² K³. The frame I'

is secured to the frame A at an angle by straps or other suitable connections *k*, and will be arranged so that the center of the shaft K' will be precisely in line with the center between the cutter-heads B B'.

On the forward end of the shaft K' a disk, L, is secured, with its rim beveled, as shown, and with the frame I' so adjusted that the line of the angle of the rim of this disk will be at right angles to the axis of the cutter-heads B B'.

m' m² m³ are a number of bits or knives set at an angle through the face of the disk L, and *n' n² n³* a number of saw-tooth cutters secured to the beveled edge of the disk L, and projecting in front of the face of it, as shown.

Upon the opposite end of the shaft K' a chuck is mounted, provided with angularly-set blades or bits *p p'*, adapted to cut the corners off the tenons of the flights, as hereinafter set forth.

The auxiliary strips D² will be made removable, and others substituted having grooves of varying widths, so that the machine may be adapted to make flights of different sizes, as hereinafter set forth.

A set-screw, *t*, will be set in the frame A, opposite the end of the rest D', when the table D is back as far as it will go, to regulate the length of the blades of the flights, as hereinafter set forth.

The strip of wood F, having been previously formed in the shape shown in Fig. 4, is inserted into the rest D², with its inner end projecting beyond the notches *g²* in the rest D' D² a trifle more than the length of the blade of the flight, and held by the point *g* of the lever G. The handle *i²* is then pressed forward, which tightens the cord *h* upon the pulley H, and causes the table D to move forward, carrying the strip between the cutter-heads B B', which cut notches in either side, as shown in Fig. 5. The forward movement of the table is then continued until the end of the strip F projecting beyond the notches is brought in contact with the angular cutter-head L, whose knives *m* will cut the slanting end *v'*, (see Fig. 6,) and the saws *n* cut off the end *v²* in a curve in the radius of the disk L. The lever *i²* is then released, which slackens up the cord *h* and allows the weight M to run the table D back again, the strip F and rest D' D² passing harmlessly between the cutter-heads B B'. The lever G is then released and the strip F pushed endwise until the curved end *v²*, just cut off by the saws *n*, strikes the set-screw or stop *t*, which will be the distance of two blades and one tenon of the flights back of the rear edge of the cutter-heads B B', and thus bring the next tenon opposite the notches *g² g²*. The handle *i²* is then again pressed forward, and the table D' D² again run between the cutter-heads B B', and forming two new notches, and thence against the cutter-head L, and another angular cut, *v'*, made. The saws *n* then not only cut the curved end *v²* on this second flight, but cut the tenon off from

the flight formed by the first operation, and allow it to drop into a receptacle prepared for it, as shown in Fig. 7. The operation is then repeated, a flight being formed at every movement of the table D' D². The ends of the tenons are then inserted into the chuck *p p²*, and the corners rounded off, as shown in Fig. 8, to facilitate their easy insertion into the wooden shaft of the conveyer.

By this arrangement the flight is quickly formed, and the corners of its tenons rounded by only two operations.

The radius of the disk L will be the same as the trough in which the conveyer run—usually about twelve inches—so that the sweep of the curved ends *v²* of the flights will just fit the sides of the trough.

By providing a number of the auxiliary plates D² with grooves in their faces of different widths, strips F of varying widths may be held, so that different-sized flights may be made, and by adjusting the cutter-heads B B' L any size or form of flight may be made.

The cutter-head L under some circumstances may be arranged to operate from above or below the table D, or in any other suitable manner.

The table D may be vibrated by any suitable means other than the cord and pulley H and levers *i i' i²*, but I prefer the latter as being very simple and efficient.

Under some circumstances a system of saws may be substituted for the cutters B B' with good effect.

By reference to Fig. 2 it will be seen that the auxiliary rest D² is provided with a long slot, *w*, to allow the operator to grasp the strip F between his fingers and thumb in moving it forward against the stop *t*, the rest D' also having a similar slot, and thus facilitate the operation.

What I claim as new is—

1. In a machine for making conveyer-flights, the arrangement of a cutter-head, L, having an angular rim provided with saws *n*, and with inclined bits *m* inserted through its face, in combination with and set at an angle to a vibrating frame, D, adapted to hold a wood strip, F, and carry it forward to bring its end in contact with the said cutter-head, whereby the back of the flight is beveled and its end cut off in a curve the radius of the trough in which the conveyer is to run, substantially as set forth.

2. The combination and arrangement, with the cutter-heads B B', or equivalent devices, and vibrating table D, with its rests D' D², adapted to hold the strip F, of the adjustable angular cutter-head L, provided with the cutting-blades *m* and saws *n*, substantially as set forth.

3. The combination and arrangement of the table D, with its rests D' D², compound lever G *g*, feed-lever *i i' i²*, cord *h*, and pulley H, substantially as set forth.

4. The combination and arrangement of the

adjustable frame I', shaft K, cutter-head L, and vibrating frame D, substantially as set forth.

5 The combination, with the vibrating frame D and cutter-heads B B', of the angularly-journaled cutter-head L, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ERASTUS E. BLINN.

Witnesses:

CHAS. REEVE,
G. E. McMULLEN.