

(No Model.)

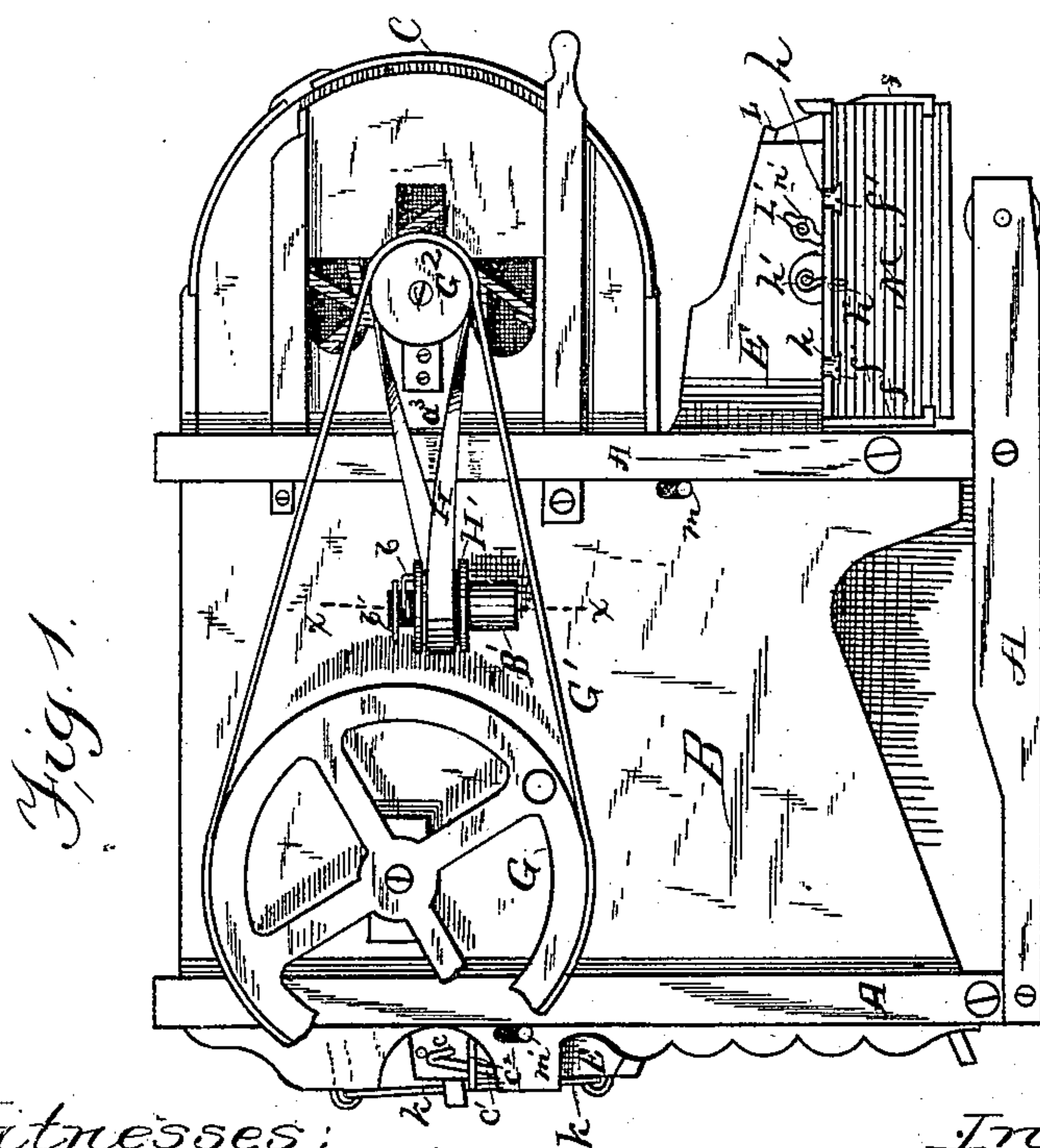
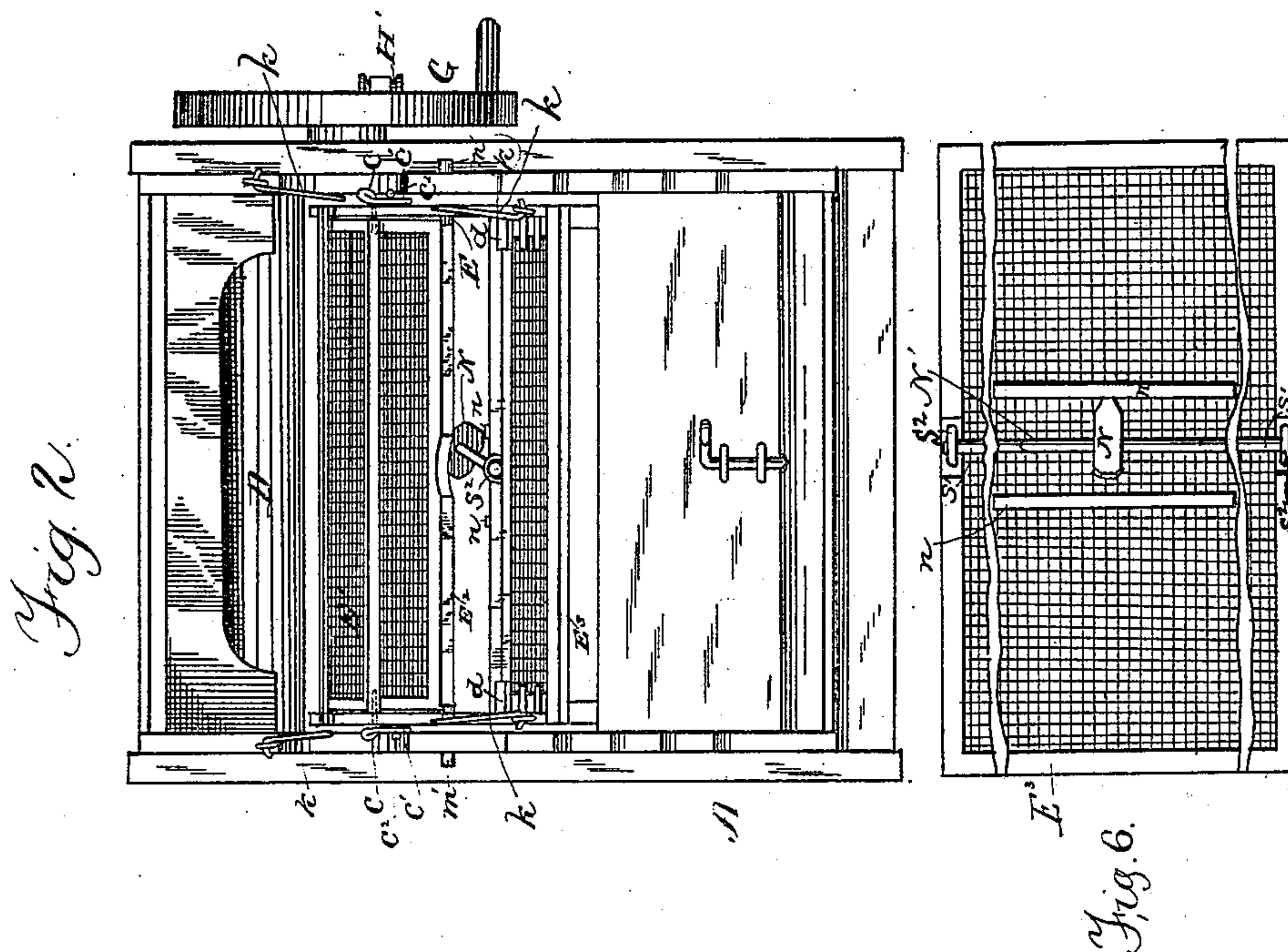
2 Sheets—Sheet 1.

W. H. KELLY.

FANNING MILL.

No. 297,411.

Patented Apr. 22, 1884.



Witnesses:
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G. B. Fowler.

Inventor:
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By W. Purvis Atty

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

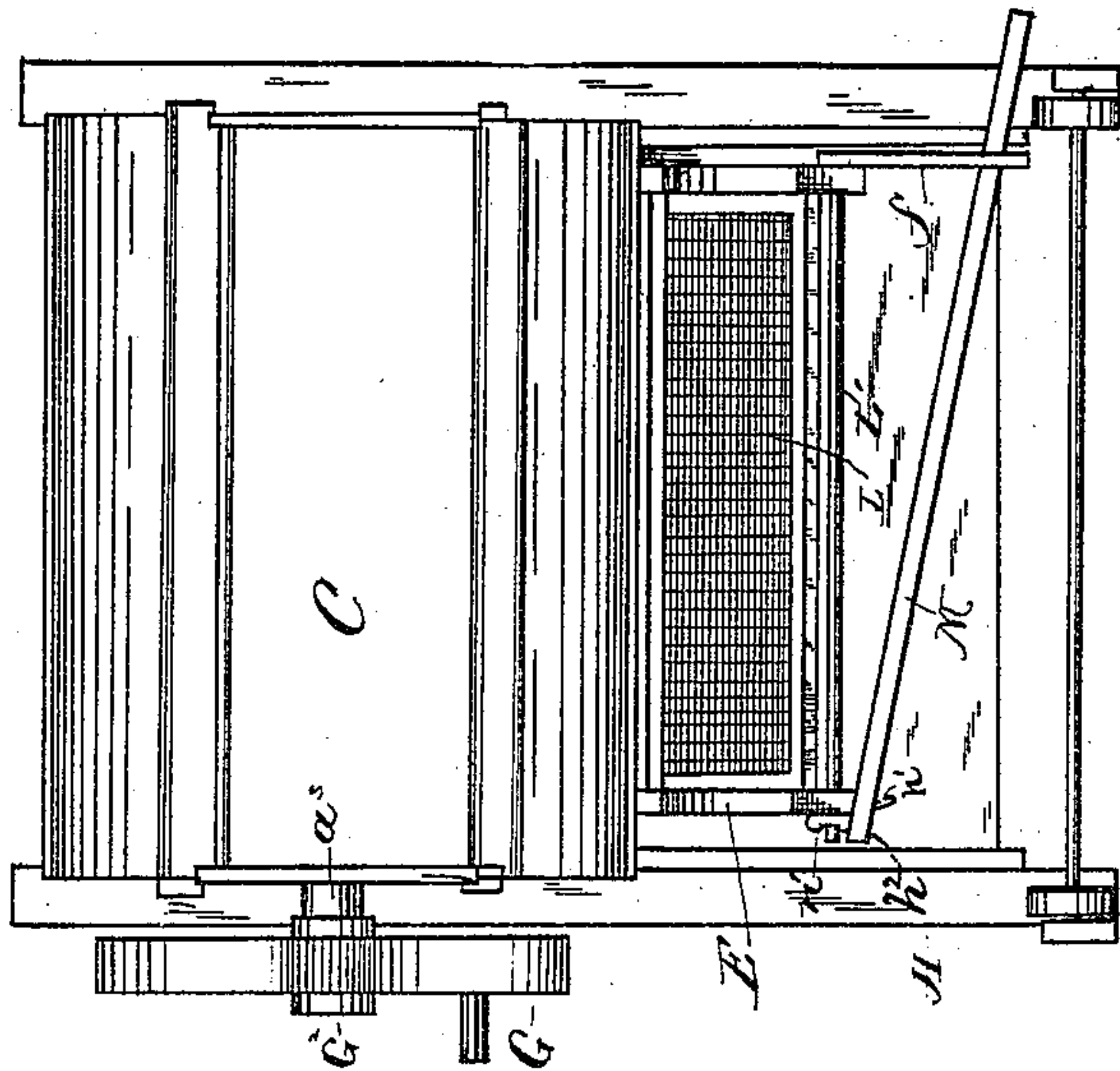


Fig. 3.

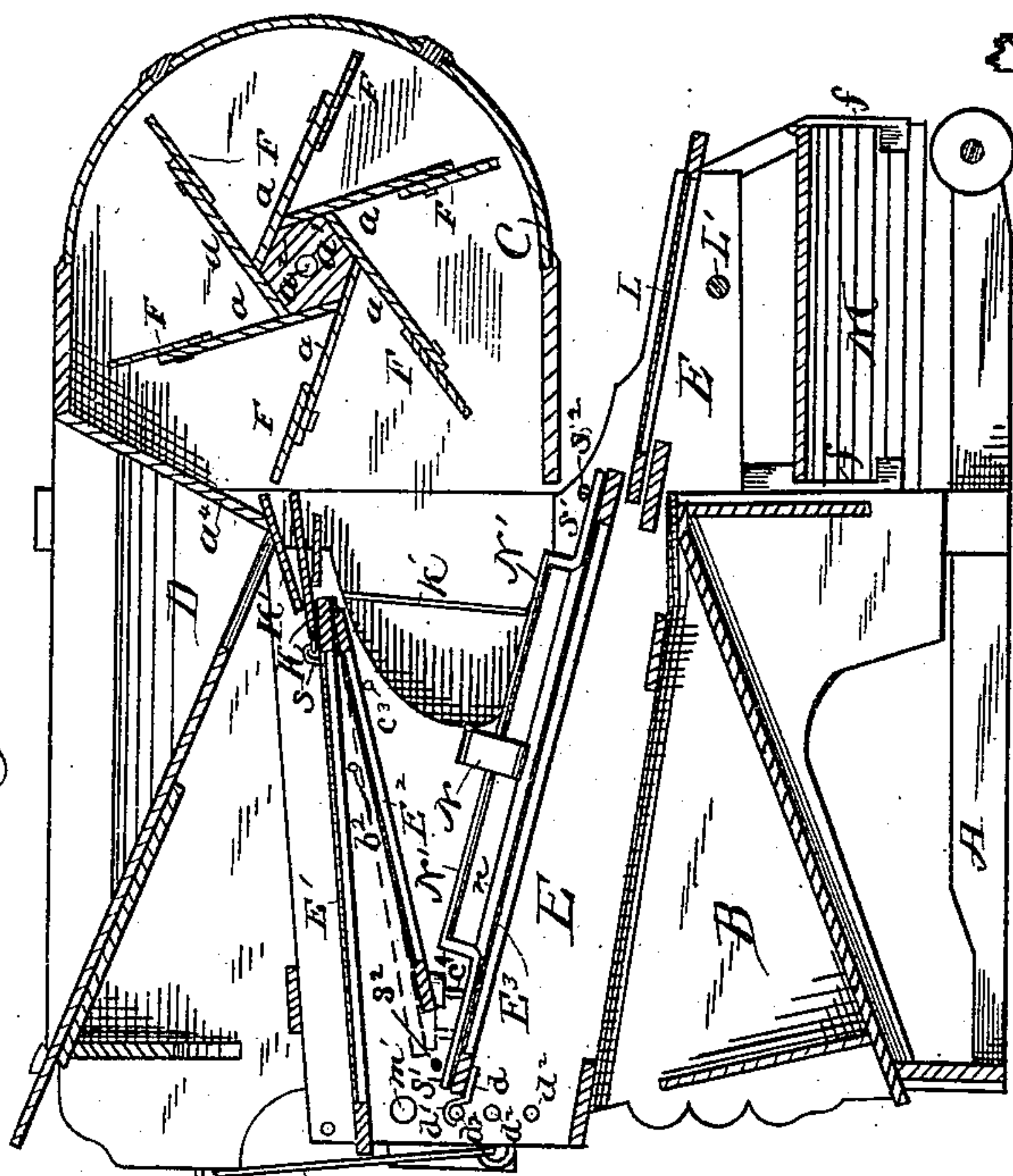


Fig. 5.

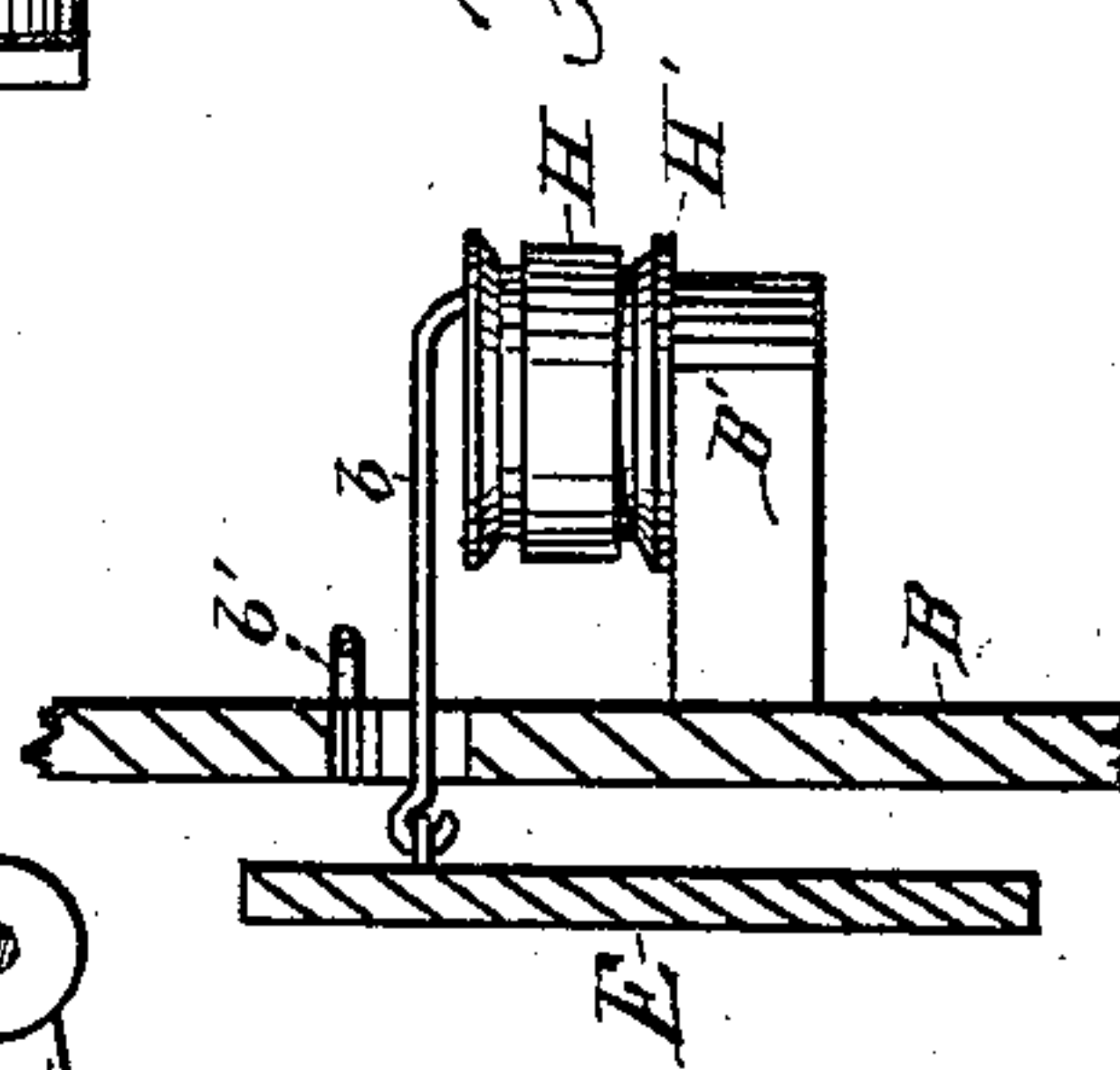
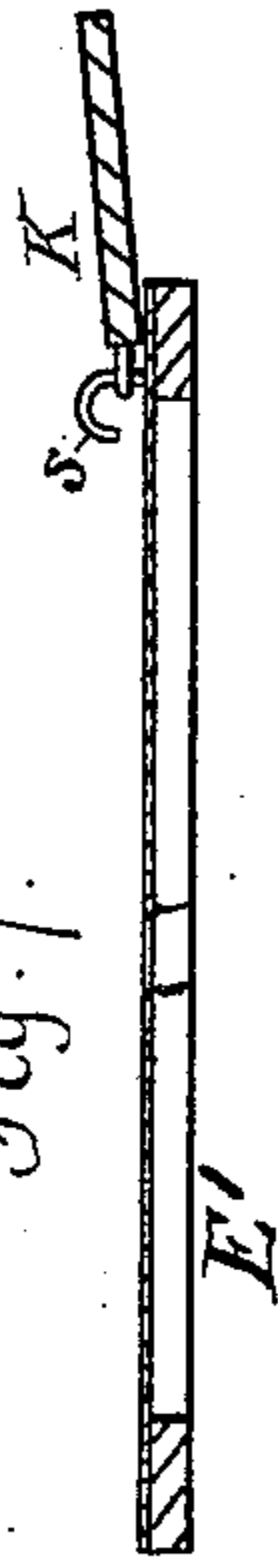


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM H. KELLY, OF LEXINGTON, VIRGINIA.

FANNING-MILL.

SPECIFICATION forming part of Letters Patent No. 297,411, dated April 22, 1884.

Application filed October 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. KELLY, a citizen of the United States of America, residing at Lexington, in the county of Rockbridge and State of Virginia, have invented certain new and useful Improvements in Fanning-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to fanning-mills; and it consists in the construction and combinations of the parts and devices which are embraced in the claims, and which are hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a back end view. Fig. 3 is a vertical longitudinal section. Fig. 4 is a front end view. Fig. 5 is a vertical section through a portion of the casing and shoe on line $x x$ of Fig. 1, showing in elevation the central pulley and connecting-rod used for vibrating the shoe. Fig. 6 is a plan of the screen detached provided with cleats and knocker. Fig. 7 is a vertical longitudinal section of the riddle and hinged board detached. Fig. 8 is a plan of the recessed pulley detached.

The mill-frame A, casing B, fan-drum C, hopper D, shoe E, riddle E', sieve E², and screen E³ are all constructed in the usual manner. The fan-wings F, preferably six in number, are fastened to the arms a , attached to the hubs a' , secured upon the fan-shaft a^2 , supported in the wooden bearings a^3 , attached to the casing of the mill.

G is a drive-band wheel, mounted on an axle attached in any well-known manner to the side of the mill.

G² is a pulley having recess a^5 , and mounted on an extension of the fan-shaft.

H' is a pulley mounted on a vertical shaft supported by the bearing B', attached to the casing B between the drive-wheel and the pulley G².

H is a belt, which runs over the pulley H' and over the recessed surface of the pulley G².

G' is a drive-belt, which runs over the drive-wheel and over the pulley G and the belt H. The depth of the recess a^5 of pulley G² is barely equal to or slightly less than the thickness of

the belt H, so that the drive-belt G', which is wider than the other belt, may have bearing upon it as well as upon the unrecessed portion of the pulley.

To the upper end of the pulley H' is eccentrically attached the outer end of a rod, b , the inner end of which is extended through an opening in the casing B, and is hooked into an eye fastened to the side near the middle of the shoe, for imparting to it vibratory motion. A bent rod, b' , is attached to the casing in position to form a guard over the rod b . The inner end of the riddle E' is supported on pins b^2 , fastened in the sides of the shoe, and the outer end of the riddle is supported by bolts $c c$, extended through holes in the sides of the shoe into holes in the edges of the riddle-frame. The outer portions, $c' c'$, of these bolts are bent at right angles to their main portions, in position to be fastened in place by the holders $c^2 c^2$, which are formed of suitable-sized bent rods or wires, having one of their ends driven tightly into the sides of the shoe, and the other ends extended in position to receive and hold in place the ends c' of the bolts $c c$, as shown in the drawings. When it is desirable to change the position of the riddle, the ends $c' c'$ of the bolts are turned outward beyond the holders $c^2 c^2$, as shown by dotted lines in Fig. 2, and the bolts are then readily drawn out and the riddle removed, or its outer end raised or lowered, as required, by changing the bolts to the upper or lower holes in the shoe.

K' is a cant-board attached to the shoe, and extended under the front board, a^4 , of the hopper.

K is a board extended under the cant-board K', and is attached to the inner end of the riddle E' by any suitable hinges or by hooks and eyes $s s$, which render the riddle and board readily detachable for the purpose of substituting other riddles of different-sized meshes, as is often required in treating different kinds of grain in the same machine. These boards K K' receive the weight of the grain and conduct it from the hopper to the riddle.

Between the riddle E' and the screen E³ is adjusted a short sieve, E², the inner end of which extends under the inner end of the riddle

dle, and rests on pins c^3 , fastened in the sides of the shoe. The outer end of this sieve is extended to near the upper end of the screen E^3 , and is provided with feet $c^4 c^4$, which have their bearings on the frame of the screen. This sieve is arranged on a steep inclination, as shown, for the purpose of conveying rapidly the grain from the riddle to the upper part of the screen E^3 , to afford the longest possible screenage for the grain. This inclined sieve E^2 not only conveys the grain rapidly from the riddle to the screen, but it also carries it in the most favorable position to receive the currents of air from the fan; and it is well known that different kinds of grain—wheat and oats, for example—and grain in different conditions—wet and dry, for example—require to be run through the machine at different rates of speed; and hence it is desirable to adapt the sieve to be readily adjustable at different inclinations, so that it will convey the grain at a greater or less rate of speed, as required.

My sieve is very readily adjustable at any required inclination by shifting the position of the bearing-feet c^4 upward or downward on the inclined screen, as shown by dotted lines in Fig. 3 of the drawings. The upper end of the screen E^3 is adjustably supported by plates d , attached to the frame of the screen, and having formed on their ends the hooks $d' d'$, to catch and hold over the pins d^2 , a number of which are fastened to each side of the shoe—one above another—as shown in the drawings. The lower end of the screen extends over the upper end of the grading-screen L , the outer end of which extends over the chute M , which is removably attached to the shoe, the lower end being arranged loosely and supported in notches in the pendants $f f$, attached to one side of the shoe, and the upper end being attached to the other side of the shoe by means of screws $f' f'$ in slots $h h$, and held in place longitudinally by the key h' , inserted through a hole in the projecting end h^2 of the chute. By removing this key the chute may be readily slid downward and removed, and a screen may be inserted in its place. The shoe is supported by the front and rear rods, $k k'$, and is provided with the guide-pins $m m'$, fastened to the sides of the shoe and extended through slots in the casing B , for the purpose of steadying the shoe. The screen E^3 is provided with distributing cleats or strips $n n$, and with a knocker consisting of a block, N , of required size, shape, and weight, attached to the middle portion of a rod, N' . This rod is bent downward and outward near its ends, to form the bearing portions $s' s'$, which have their bearings upon the frame of the screen, and are held loosely in place by the staples $s^2 s^2$ midway between the cleats $n n$, attached to the screen in position to be struck by the ends of the block N as the knocker is caused to oscillate upon its bearings by the vibratory motion of the shoe. It is readily seen that the block N , when it strikes the cleats, is inclined from a right angle to the

plane of the screen, and therefore the jar produced upon the screen is partly vertical and partly lateral, which tends to free the meshes of the screen from obstructions more readily than a jar produced by a stroke either entirely vertical or lateral.

It is well known that the longer the sieves and screens over which the grain is required to pass the better will the mill perform its work. In the construction of my mill I have had this fact especially in view, and by means of the intermediate steep sieve, E^2 , and the removable chute, allowing a screen to be inserted in its place, the length of the screenage is greatly increased. By means of the devices set forth, the outer ends of the riddle and screen are readily adjustable vertically.

L' is a rod inserted through holes in the sides of the lower portion of the shoe, and provided at one end with a burr or head, (not seen in the drawings,) to hold against one side of the shoe, and the other end is provided with screw-threads and a thumb-nut, n' , for the purpose of clamping and holding the lower end of the grading-screen at any required position vertically.

I am aware that fans and shoes of grain-separators and fanning-mills have been actuated partly by pulleys and belts, combined with cog-gearing, bell-cranks, and other devices, located partly on each side, or partly outside and inside of the machine. My actuating devices are all located on one side of the machine where they may all be directly under the eye of the operator, and by the novel combination of my devices, I am enabled to dispense with all cog-gearing, bell-cranks, and long connecting-rods, and thus drive my fans and vibrate my shoe with a less number of devices, and hence at less cost and with less friction, than has been done heretofore. The location of the pulley H' nearly opposite the middle of the machine enables me to attach the connecting-rod b near the middle of the side of the shoe, which, being suspended at both ends upon the hangers $k k'$, is vibrated along its entire length, and not merely at the outer end, as is the case where the devices for vibrating the shoe are connected with its rear or outer portion.

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

1. The combination, with the fan-shaft a^2 , the shoe E , and the hangers $k k'$, of the actuating devices, all arranged on one side of the machine, and consisting of the band-wheel G , the recessed pulley G^2 , the central pulley, H' , the bands $G' H$, and the rod b , eccentrically attached to the central pulley and connected to the middle portion of the side of the shoe, substantially as and for the purposes described.

2. The combination, with the riddle E' and the screen E^3 , of the sieve E^2 , having its lower end provided with feet c^4 , supported upon the inclined screen, and the fixed pins c^3 , for supporting its upper end, the sieve being thus ad-

justable at any required inclination, substantially as and for the purposes set forth.

3. The combination, with the riddle E' and the cant-board K', of the board K, removably
5 attached to the inner end of the riddle, and extended under the cant-board, substantially as and for the purposes described.

4. The combination, with the shoe E and the riddle E', of the holders $c^2 c^2$, and the bolts
10 $c c$, having the locking ends $c' c'$, substantially as and for the purposes set forth.

5. The combination, with the shoe E, of the chute M, removably attached to the lower end of the shoe, the notched pendants $f f$, the key
15 h' , and the screws $f' f'$, inserted through the slots $h h$, substantially as and for the purposes set forth.

6. The combination, with a vibrating shoe, E, and a screen, E³, provided with the cleats $n n$, of the knocker N, the rod N', attached to
20 the screen between the cleats, said knocker adapted to be oscillated and caused, by the vibratory motion of the shoe, to strike the cleats and produce both lateral and vertical jarring motions upon the screen, substantially as and
25 for the purposes described.

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

WILLIAM H. KELLY.

Witnesses:

R. R. WITT,
JOHN T. WILSON.