

(No Model.)

3 Sheets—Sheet 1.

C. KELLER & J. CONLY.
MACHINE FOR CUTTING AND SPREADING GLUE.

No. 452,075.

Patented May 12, 1891.

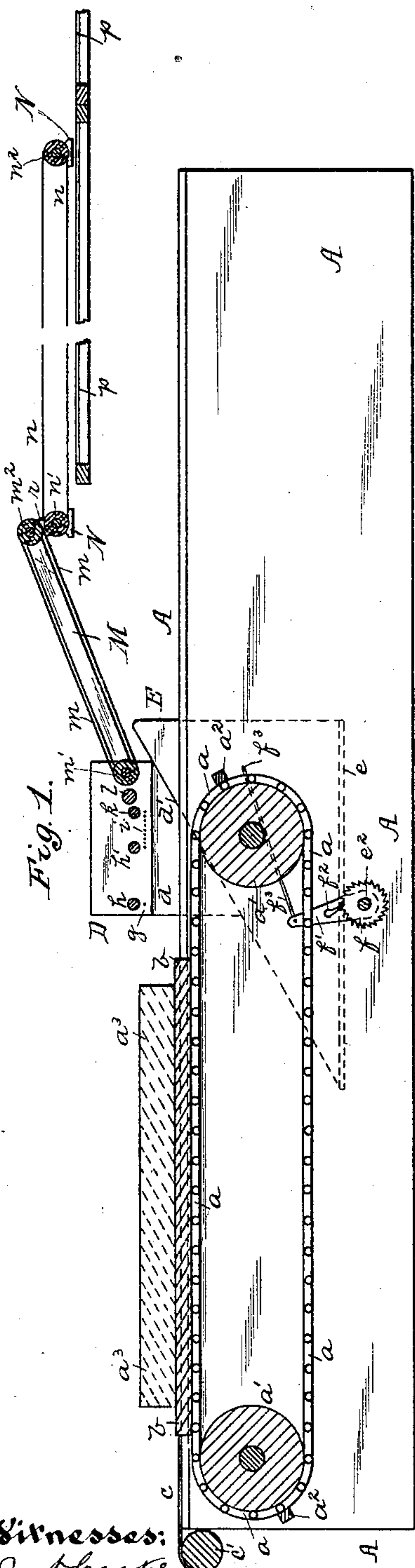


Fig. 1.

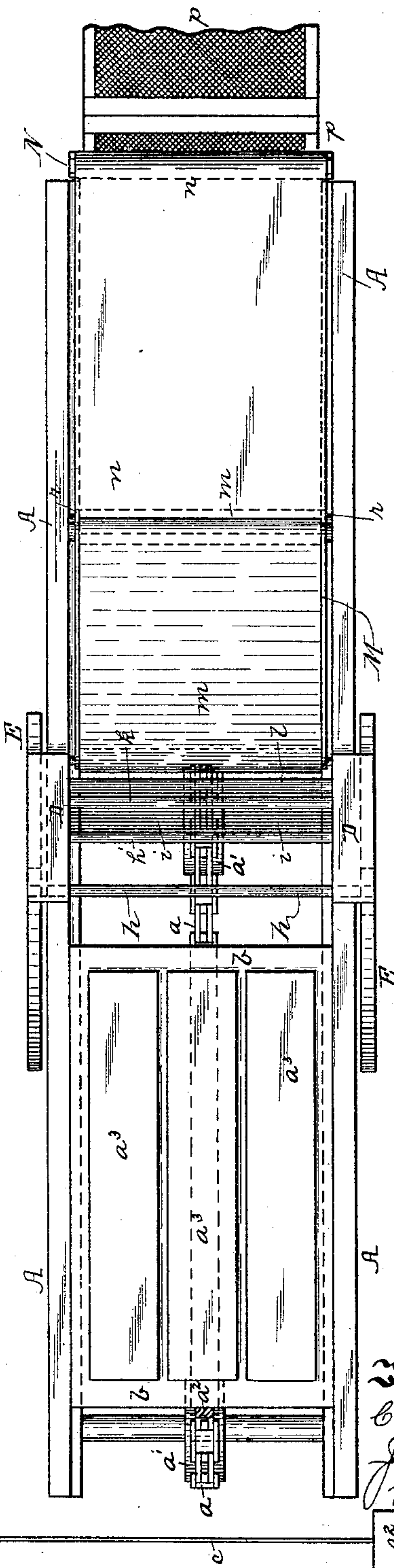


Fig. 2.

Witnesses:
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Robt. D. Lott.

Inventors:
Charles Keller
John Conly
By James D. Ray
Attorney

(No Model.)

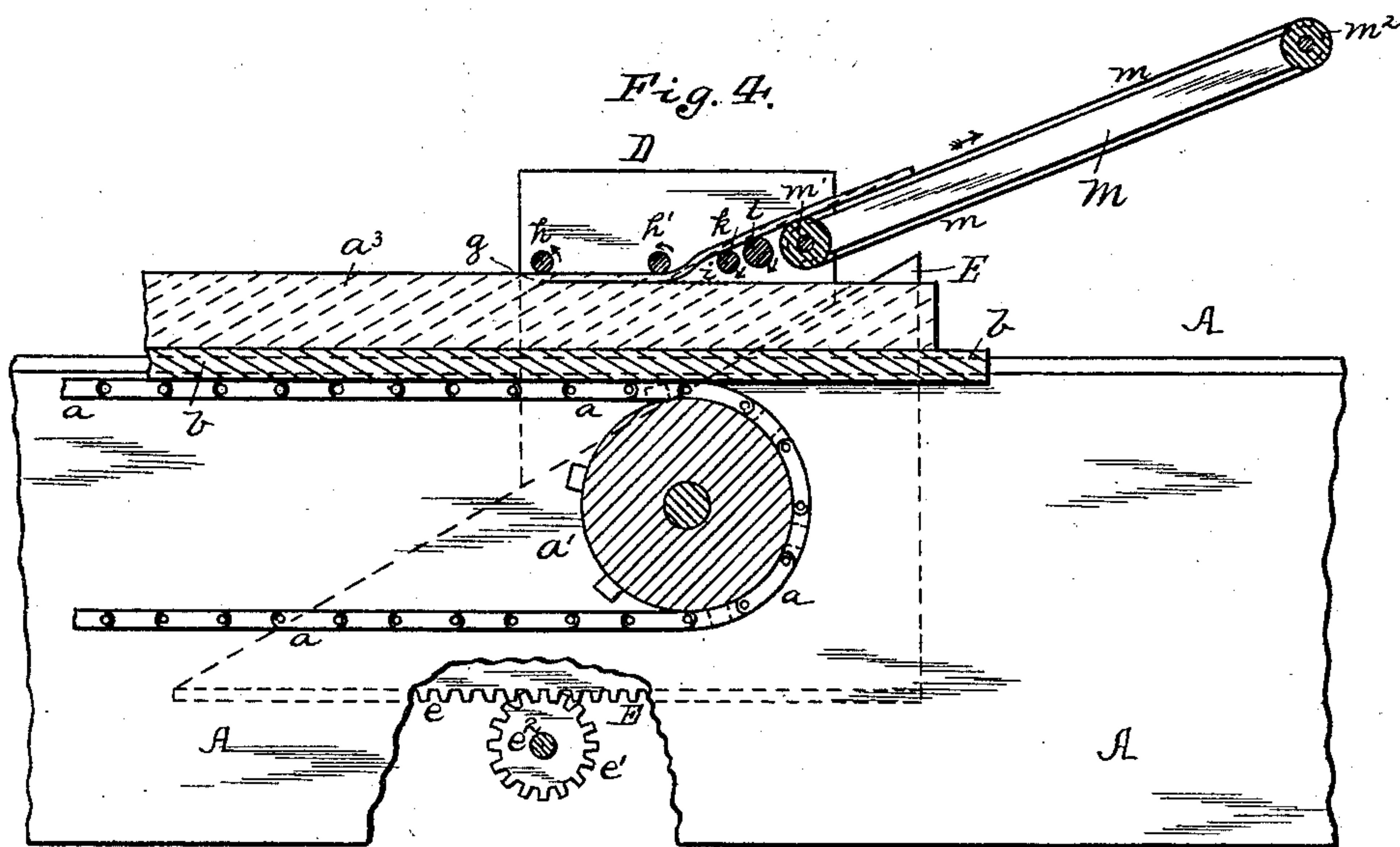
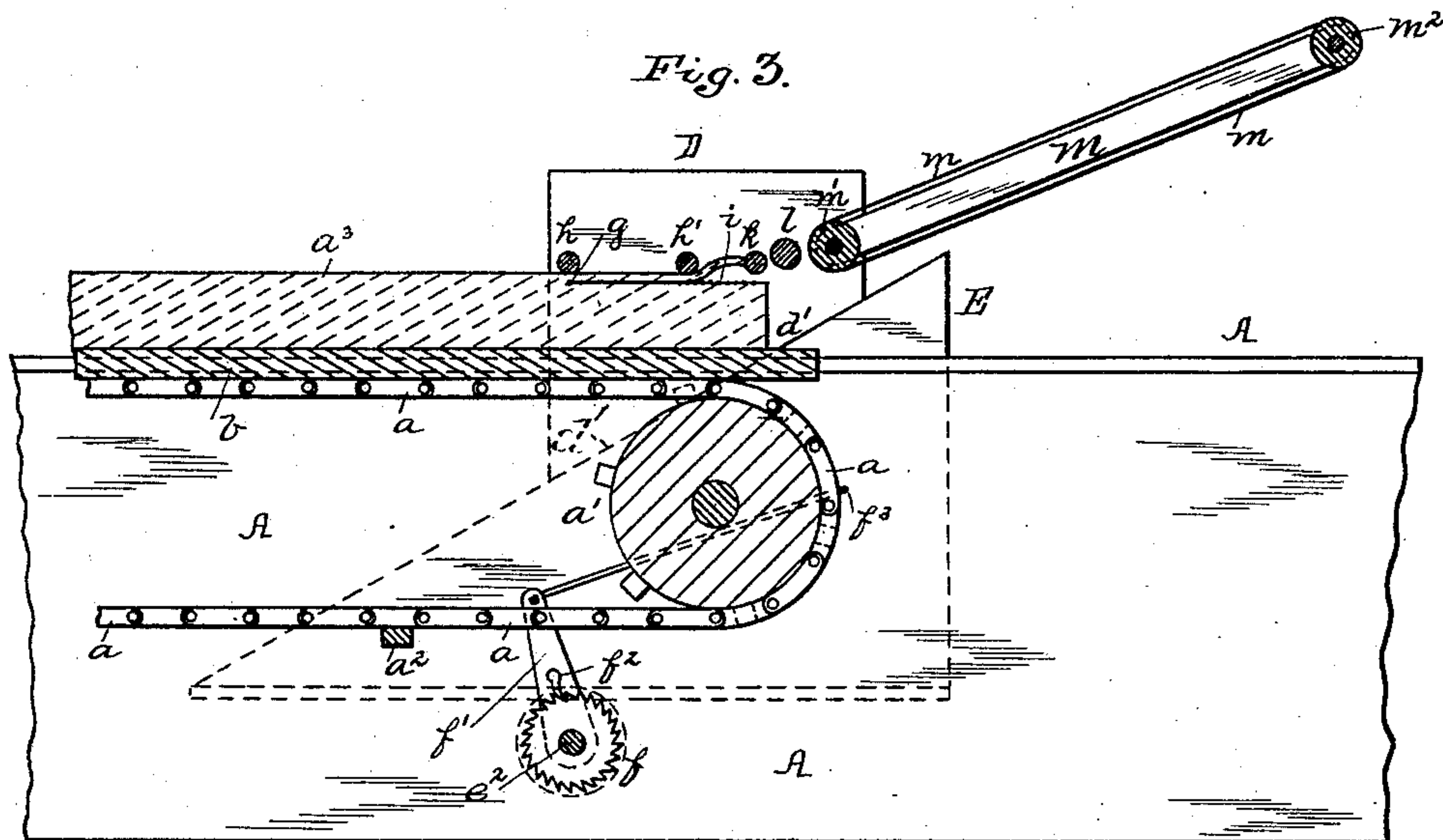
3 Sheets—Sheet 2.

C. KELLER & J. CONLY.

MACHINE FOR CUTTING AND SPREADING GLUE.

No. 452,075.

Patented May 12, 1891.



Witnesses:

J. H. Cooney.
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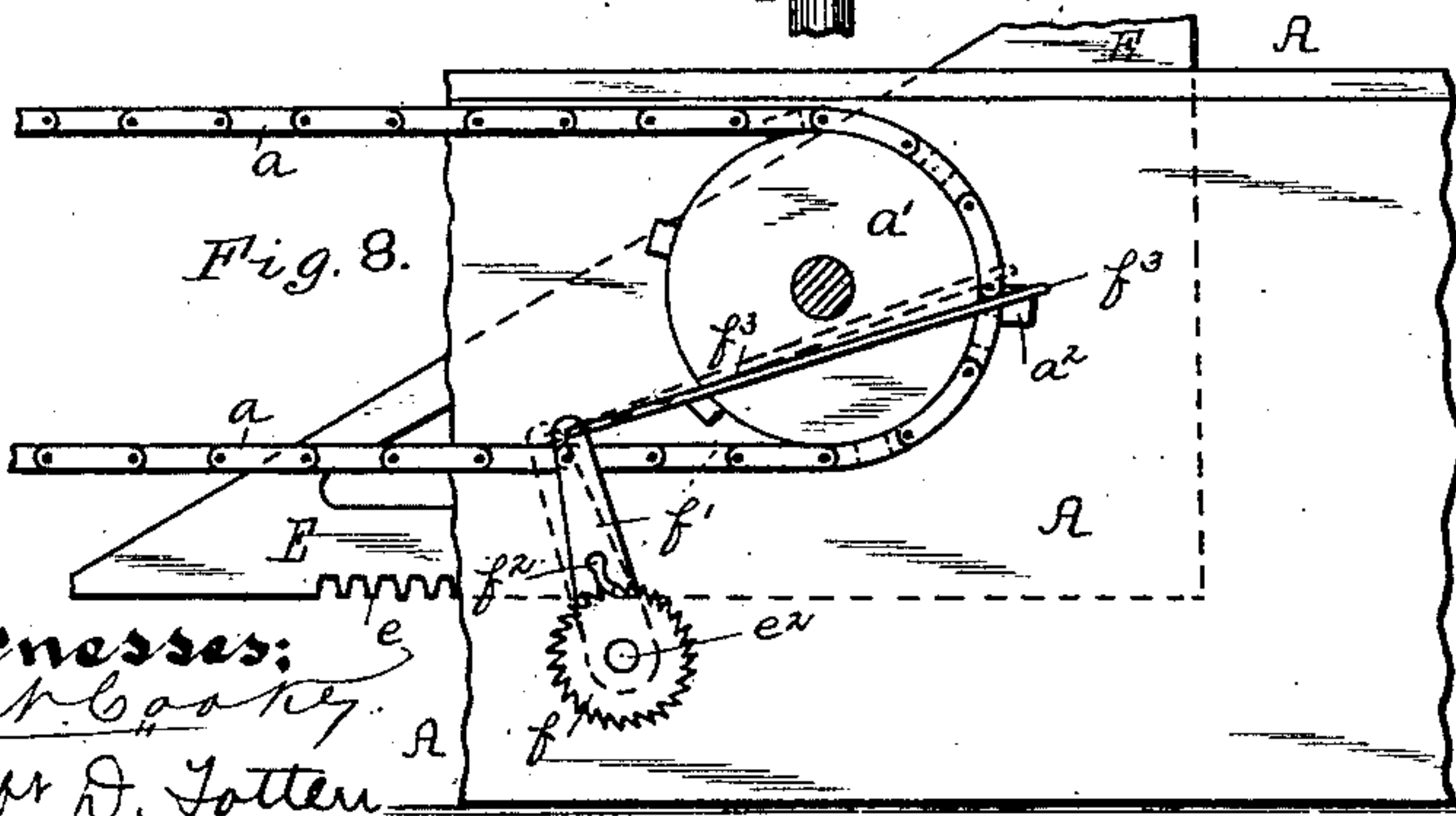
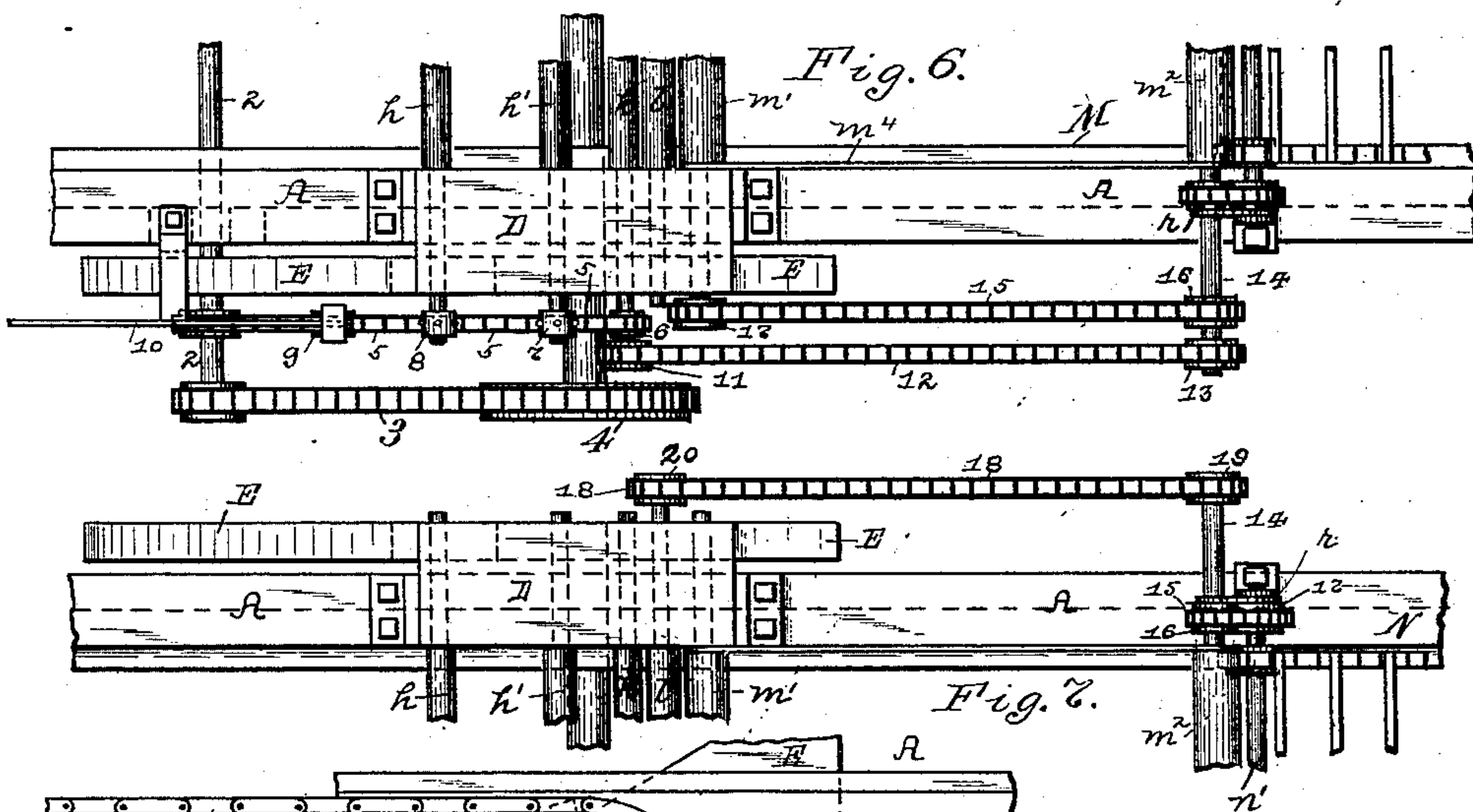
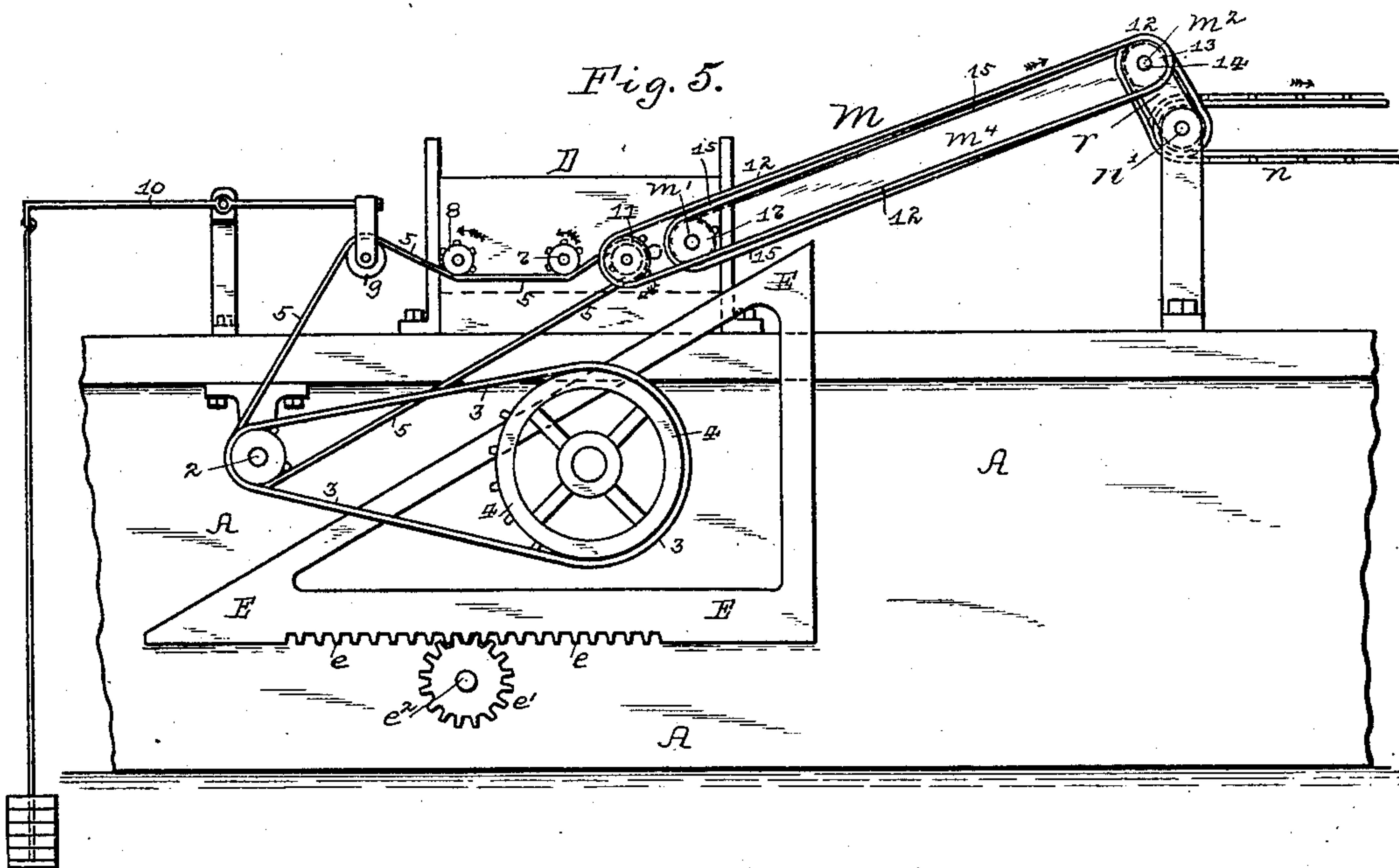
(No Model.)

3 Sheets—Sheet 3.

C. KELLER & J. CONLY.
MACHINE FOR CUTTING AND SPREADING GLUE.

No. 452,075.

Patented May 12, 1891.



Witnesses:
J. H. Cooney
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UNITED STATES PATENT OFFICE.

CHARLES KELLER AND JOHN CONLY, OF SPRINGDALE, PENNSYLVANIA.

MACHINE FOR CUTTING AND SPREADING GLUE.

SPECIFICATION forming part of Letters Patent No. 452,075, dated May 12, 1891.

Application filed July 5, 1890. Serial No. 357,770. (No model.)

To all whom it may concern:

Be it known that we, CHARLES KELLER and JOHN CONLY, residents of Springdale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Cutting and Spreading Glue; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to apparatus for cutting and laying glue, gelatine, or like substance, the invention being in some respects an improvement on the invention set forth in Letters Patent No. 407,865, granted to us July 30, 1889.

The object of our present invention is to provide apparatus for automatically cutting the sheets from the glue block and carrying the cut sheets and laying or depositing them upon the drying-nets, ready to be placed within the drying-kilns, so saving a large amount of labor heretofore required for separating the sheets into which the block has been previously cut and laying them by hand upon the drying-nets. The glue when formed is cast within "molds" or "coolers," as they are termed, and when sufficiently cooled and congealed—that is, brought to a gelatinous state sufficiently stiff for handling—the glue blocks are removed from these molds or coolers and fed to the apparatus, which automatically cuts the sheets from the block and lays these sheets upon the drying-nets.

To these ends our invention consists, generally stated, in the combination of a traveling board, a carrier for the glue block, a cutting-wire in the course of the glue block, and a roller traveling in the opposite direction to the movement of the glue block and acting by its pressure on the sheet cut from the block to raise the sheet therefrom and feed it over the upper face of said roller, so that it may be carried to the drying-nets.

It also consists in placing the cutting-wire in front of said roller, hereinafter termed the "raising-roller," and a roller traveling in the same direction with the glue block above the cutting-wire.

It also consists in a series of separating-wires in line with the cutting-wire and under the raising-roller to hold down the glue block

and permit the raising-roller to act upon the sheet cut from the block.

It also consists in certain other improvements for regulating the thickness of the sheet to be cut from the block, for drawing back the block after the sheet is cut therefrom, and for carrying the cut sheet forward to and laying it upon the drying-net, as will be hereinafter more particularly described and claimed.

To enable others skilled in the art to make and use our invention, we will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side view, partly in section, illustrating the general plan of the apparatus. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged longitudinal section of the part of the apparatus carrying the cutting-wire and raising-roller and illustrating the operation of the same. Fig. 4 is a like view showing the glue sheet in another position. Fig. 5 is an enlarged side view showing the mechanism for driving the different parts of the mechanism. Figs. 6 and 7 are enlarged plan views showing such driving mechanism, and Fig. 8 is an enlarged detail view illustrating the operation of moving the wedge-frame to lower the vertically-moving frame carrying the cutting-wire and raising-rollers.

Like letters and figures of reference indicate like parts in each of the views.

The apparatus is supported in any suitable frame, and has the traveling belt or carrier *a* mounted on suitable pulleys or sprocket-wheels *a'*, which are driven by any suitable power-connection, the sprockets being mounted in the frame *A*, which is generally made about twice the length of the block of glue to be cut. The frame *A* has guideways in its side bars, in which the board *b* travels, the block of glue being placed on this board, so as to be carried thereby against the cutting-wire. The traveling belt *a* engages with the board *b* by means of the cross-bars *a²*, secured to the traveling belt and pressing against the rear end of the board, so as to force it along the guideways. There are generally two of these cross-bars *a²* on the traveling belt, one acting to force the board along its guideways and being freed therefrom as it passes

around the sprocket-wheel, and the other then acting to engage with the board, which is drawn back, as hereinafter described, as it passes upwardly over the forward sprocket-wheel, this cross-bar then again forcing the board forward in its guideways. Any suitable means for drawing back the board can be employed, that shown in the drawings being simply a rope c , connected to the board and passing over a pulley c' at the forward end of the frame, and carrying a weight c^2 , the weight being raised when the board is forced forward, and acting to draw the board back to the forward end of the frame, as shown, when it is released from the cross-bar a^2 . Mounted about midway above the frame A is the vertically-moving frame D, this frame moving in guideways d , and as it carries the cutting-wire g for cutting the sheet from the glue block a^3 it is necessary that this frame should move downward a distance corresponding to the thickness of the sheet to be cut after the glue block has returned to its position at the forward end of the table, ready for the next stroke. For imparting this motion to the frame D we employ any suitable mechanism, though we find the simplest form to be that shown in the drawings, the frame D having the inclined bases d' , which rest upon the longitudinally-moving wedge-frame E, mounted in suitable guideways on the frame A, under the vertically-moving frame D. The wedge-frame has formed thereon rack-faces, as at e , with which pinions e' on the shaft e^2 engage, these pinions acting to impart the necessary longitudinal movement to the wedge-frame in order to lower the frame D.

Any suitable construction for imparting longitudinal movement to the wedge-frame may be employed, a simple form being shown in the drawings, in which the shaft e has secured thereto a ratchet-wheel f and has mounted loosely thereon an arm f' , carrying a pawl f^2 , and rigidly secured to the arm f' is the bar f^3 , which passes back to the rear of the machine and is then bent back in such position as to engage with the cross-bar a^2 as it passes downwardly over the sprocket-wheel a' . As this cross-bar engages with the bar f^3 , it will depress the said bar and, as said bar is rigid with the arm f' , will cause the bar and its supporting-arm to swing forward on the shaft e^2 until the bar f^3 escapes from the bar a^2 , as shown in Fig. 8, the arm carrying with it the pawl f^2 and through the ratchet-and-pawl connection turning the shaft e' and the pinions thereon, causing the longitudinal movement of the wedge-frame E, a sufficient movement being imparted in this way to the wedge-frame to drop the vertically-moving frame D the proper distance after each movement of the apparatus, so as to bring the cutting-wire and the other parts of the apparatus in position for cutting and raising another sheet from the glue block.

The frame D carries at its forward end the cutting-wire g , and directly above that wire

is the feeding-roller h , this roller being driven in the same direction as the glue block and at practically the same speed, so that it acts in connection therewith as a feeding-roller and at the same time holds the glue block down to place during the cutting of the sheet therefrom. Back of the cutting-wire g and in line therewith we arrange a row or series of separating-wires, as at i , these wires entering between the sheet cut from the glue block and the block itself and acting to hold down the block during the operation of the other mechanism to raise the sheet. In order to feed forward the sheet, we also prefer to employ either just above the forward end of said row of wires or a little in advance thereof a second feeding-roller h' , this roller also turning in the same direction and at practically the same speed with the block of glue. At about the rear end of the row of separating-wires we place the roller k , which we have termed the "raising-roller," this roller turning in the opposite direction to the movement of the glue block and the sheet cut therefrom and acting upon the front edge or surface of the sheet of glue to raise it from the glue block—that is, when the sheet comes in contact with this roller as it is forced forward, and as this roller travels in the opposite direction to it, it will be first forced backwardly by this raising-roller, and its front edge will then pass around or be raised by the roller, and the sheet will then pass up over this raising-roller, which then engages with the under surface of the sheet, and as the upper face of the roller k is traveling in the same direction with the sheet after having raised the sheet it will force it forward, so acting to separate the sheet from the glue-block. During this operation the block itself has been held down by the row of separating-wires, so that even though there might be some adherence between the sheet and the glue block all tendency of the glue block to rise is overcome.

Just back of and a little above the roller k is the roller l , which is preferably made somewhat larger in diameter than the roller k and which travels in the same direction, and the glue sheet passes from the roller k onto the roller l , which feeds it forward until it passes onto the traveling belt m , which passes around the pulleys m' m^2 , mounted on the swinging frame M, this belt carrying the glue sheet upwardly and feeding it onto the belt n , from which it passes onto the drying-net p , which net is fed automatically along under the carrier-belt n in such way as to receive the glue sheet from the rear end of said carrier, the sheet being thus fed automatically to the drying-net. The frame M is skeleton in form, the pulleys m' m^2 being mounted in the side bars m^4 of the frame. Said carrier-belt m is employed to carry the sheet from the vertically-moving frame D to the carrier-belt n , which is mounted in the stationary frame N, having the pulleys n' n^2 at the ends thereof.

In order to connect the movable frame D with the stationary carrier n , we employ this swinging frame M, the upper end of which is mounted in the straps r , which are mounted on the shaft n' of the frame N and on the shaft m^2 of the carrier-frame M, these straps thus permitting the swinging of the frame M as the frame D is lowered, and said frame M swinging on the shaft m^2 through the straps r .

The several pulleys and sprocket-wheels and rollers employed in the apparatus may be driven by any suitable connections, the power-connections not being illustrated in Figs. 1 to 4 of the drawings, as it is not deemed necessary, the movement of the different wheels, pulleys, and rollers being indicated, however, by arrows, so as to make clear the operation of the apparatus.

In Figs. 5 to 8 the preferred form of driving mechanism is illustrated, though it is evident that the power may be applied in other ways. Mounted on the stationary frame A is the power-shaft 2, from which power is communicated by belt or sprocket-chain 3 to wheel 4 on the shaft carrying the wheel a' , by which the chain a is driven. Extending from the same shaft 2 is a drive-chain 5, which extends up to and around a sprocket 6, driving the roller k , thence under the sprocket 7, driving the roller h' , and under the sprocket 8, driving the roller h , the chain then passing over a pulley 9, carried on a weighted lever 10, and thence to the driving-shaft 2, the pulley g accommodating itself to the movement of the frame D and acting to take up any slack in the chain occasioned by the vertical movement of the frame. On the shaft carrying the sprocket 6 is another sprocket 11, from which a chain 12 extends to the sprocket 13 on the shaft 14, carrying the roller m^2 at the upper end of the frame M, and to insure the proper driving of the carrier-belt m a chain 15 extends from the sprocket 16 on the shaft 14 to the sprocket 17 on the shaft carrying the roller m' . To drive the roller l , we employ a chain 18, passing over a sprocket 19 at the other end of the shaft 14 and extending down to a sprocket 20 on the shaft carrying the roller l , this being shown in Fig. 7.

In cutting and laying the glue sheets by the employment of our invention after the glue has become sufficiently set it is withdrawn from the cooler or mold and placed upon the traveling-board b and is carried to the apparatus and placed in the guideways of the frame A. Upon movement of the board or carrier a one of the cross-bars a^2 engages with this board and carries it forward along the frame, and as it is so forced forward the upper edge of it comes into contact with the cutting-wire g , which cuts the sheet therefrom, this sheet being fed evenly forward by the roller h , and passing forward with the block under the roller h' and above the row of separating-wires i' , while the glue block passes below said wires. As the sheet is fed forward it comes in contact with the

raising-roller k , which travels in the opposite direction to its movement, and the operation of said roller is to force back the glue sheet sufficiently to cause the end thereof to pass around the forward face of said roller k and to pass upwardly over said roller, the roller then engaging with the under face of the glue sheet and acting to feed it forward above the raising-roller and over the roller l , which travels in the same direction and at the same surface speed as the roller k , and which acts to feed the glue sheet onto the carrier-belt m , which belt carries the sheet forward and feeds it onto the carrier-belt n , and it is fed from this carrier-belt onto the wire-net p , the drying-nets being fed forward by any suitable means from under the carrier n , so as to receive the sheets as they are fed therefrom. During this operation when the roller k raises the forward end of the sheet the wires i hold down the glue block, so that any tendency of its rising is overcome and at the same time form a firm support to the glue sheet to enable the raising-roller to act thereupon in the manner above described. When the sheet has been cut entirely from the glue block, the bar a^2 on the carrier a , by passing around the sprocket a' , is freed from engagement with the board b carrying the glue block, when the weight c^2 , secured to the rope c , will quickly draw the board back to its former position, ready to be again forced forward by the next cross-bar. At the same time, as the cross-bar a^2 comes in contact with the bar f^3 and draws the same down through the ratchet-and-pawl mechanism ff' , it causes the turning of the shaft e^2 , and through said shaft the slight forward movement of the wedge-frame E, which permits the vertically-moving frame D to drop the proper distance to bring the cutting-wire and the other mechanism into proper position for cutting another sheet from the glue block and separating it therefrom, and then the glue block is again forced forward and the operation repeated.

The operation of the apparatus is rapid, it taking but a few minutes to cut and lay the sheets formed from a large glue block, and, indeed, the glue block can be made of a length corresponding to the net, and the machine can operate upon three or more blocks arranged parallel with each other at the same time, so providing for the rapid cutting and laying of the glue and doing away with any hand labor, except the feeding of the glue blocks to the apparatus and the carrying away of the nets from the same.

Practical use of the apparatus has proven it efficient for the purpose and much more rapid in its operation than the ordinary hand labor.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, a cutting-wire in the course of the glue block, and a roller traveling in the

opposite direction to the movement of the block and acting to raise the sheet to be cut therefrom and feed it above said roller, thus separating it from the block, substantially as
5 and for the purposes set forth.

2. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, a cutting-wire in the course of the glue block, a feeding-roller above said
10 cutting-wire and traveling in the same direction with the glue-block, and a raising-roller traveling in the opposite direction to the movement of the glue block, substantially as and for the purposes set forth.

15 3. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, a cutting-wire in the course of the glue block, and a series of separating-wires in line with the cutting-wire, substantially as
20 and for the purposes set forth.

4. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, a cutting-wire in the course of the glue block, a series of separating-wires in
25 line with the cutting-wire, and a raising-roller above the separating-wires and traveling in the opposite direction to the movement of the glue block, substantially as and for the purposes set forth.

30 5. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, a cutting-wire in the course of the glue block, a series of separating-wires in line with the cutting-wire and back of the
35 same, and a feeding-roller at the forward end of said separating-wires traveling in the same direction with the glue block, substantially as and for the purposes set forth.

6. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, a cutting-wire in the course of the glue block, a series of separating-wires
40 in line with the cutting-wire and back of the same, and a feeding-roller at the forward end of said separating-wire traveling in the same direction with the glue block, and a raising-roller traveling in the opposite direction to the movement of the glue block, substantially
45 as and for the purposes set forth.

50 7. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, and a frame vertically movable above the same and carrying a cutting-wire, substantially as and for the purposes
55 set forth.

8. In apparatus for cutting glue, the combination of a traveling board or support for the glue-block, a frame vertically movable above the same and carrying a cutting-wire,
60 and a roller traveling in the opposite direction to the movement of the block, substantially as and for the purposes set forth.

9. In apparatus for cutting glue, the combination of a traveling board or support for the
65 glue block, a frame vertically movable above the same and carrying a cutting-wire, and a raising-roller traveling in the opposite direc-

tion to the movement of the block, and a traveling carrier having one end pivoted to said
70 vertically-movable frame, so as to receive the glue sheet and carry it from said frame, substantially as and for the purposes set forth.

10. In apparatus for cutting glue, the combination of a traveling board or support for the glue block, a frame vertically movable
75 above the same and carrying a cutting-wire, and raising-roller traveling in the opposite direction to the movement of the block, and a traveling carrier having one end pivoted to said vertically-movable frame, so as to receive
80 the glue sheet and carry it from said frame, a stationary carrier, and straps connecting the rear journals of the forward carrier and the front journals of the rear carrier, so as to provide for the swinging of the carrier according
85 to the movement of the vertically-moving frame, substantially as and for the purposes set forth.

11. In apparatus for cutting glue, the combination of the traveling board or support for
90 the glue block, the frame D, vertically movable above the same and having the cutting-wire *g*, the raising-roller *k*, traveling in opposite directions to the movement of the glue block, and roller *l*, traveling in the same direction
95 with the roller *k*, and the carrier *m*, traveling in the same direction with the roller *k*, whereby the glue sheet may be raised by the roller *k* and fed by the roller *l* to the carrier *m*, substantially as and for the purposes set forth. 100

12. In apparatus for cutting glue, the combination of the traveling board or support for the glue block, the vertically-movable frame
105 above the same carrying the cutting-wire and having an inclined base, and a longitudinally-movable wedge-frame regulating the vertical movement of the frame carrying the cutting-wire, substantially as and for the purposes set forth.

13. In apparatus for cutting glue, the combination of the frame A, the vertically-mov-
110 able frame D, carrying the cutting-wire and having an inclined base, the wedge-frame E on which said frame D rests, said frame being longitudinally movable and having racks
115 *e*, the pinions engaging with said racks, and mechanism for operating the pinions, substantially as and for the purposes set forth.

14. In apparatus for cutting glue, the combination of the frame A, having the traveling
120 carrier *a* mounted therein and provided with cross-bars *a*², the vertically-movable frame D, carrying the cutting-wire and having an inclined base, the wedge-frame E, supporting the frame D and having rack-faces thereon,
125 the shaft carrying pinions engaging with said rack-faces and carrying a ratchet-wheel, the arm mounted in said shaft and carrying a pawl engaging with the ratchet-wheel, and the bar extending from said arm in the course
130 of the cross-arm *a*² of the carrier *a*, substantially as and for the purposes set forth.

15. In apparatus for cutting glue, the combination of the frame A, having guideways

therein, the traveling carrier a mounted there-
in and provided with the cross-bars a^2 , the
board carrying the glue block a^3 , traveling in
said guideways and engaged by said cross-
5 bars, and the rope or weight or like retracting
mechanism connected to said board, substan-
tially as and for the purposes set forth.

In testimony whereof we, the said CHARLES

KELLER and JOHN CONLY, have hereunto set
our hands.

CHARLES KELLER.
JOHN CONLY.

Witnesses:

J. C. MILLER,
S. G. BARNES.