

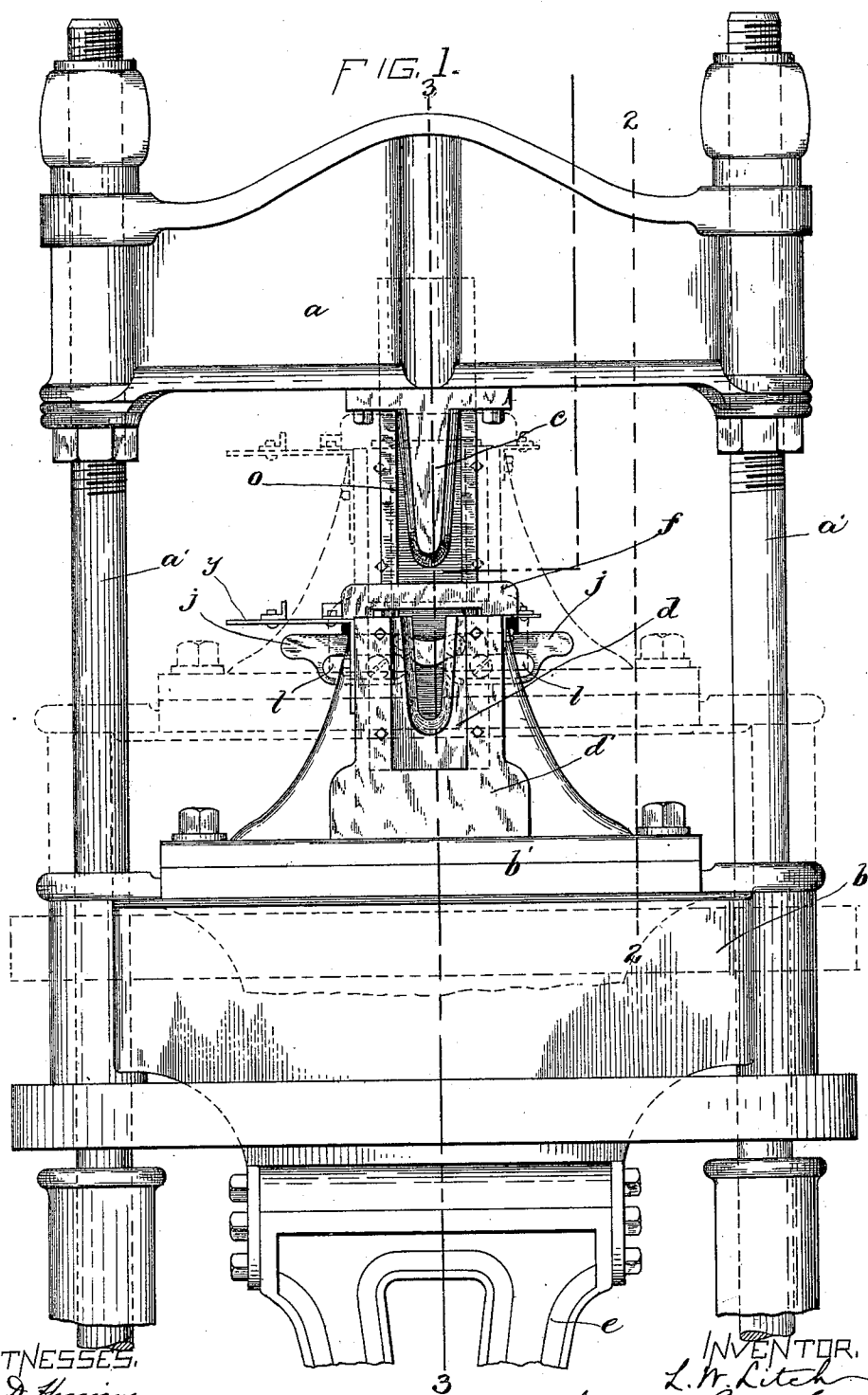
(No Model.)

6 Sheets—Sheet 1.

L. W. LITCH.
HEEL STIFFENER MACHINE.

No. 480,023.

Patented Aug. 2, 1892.



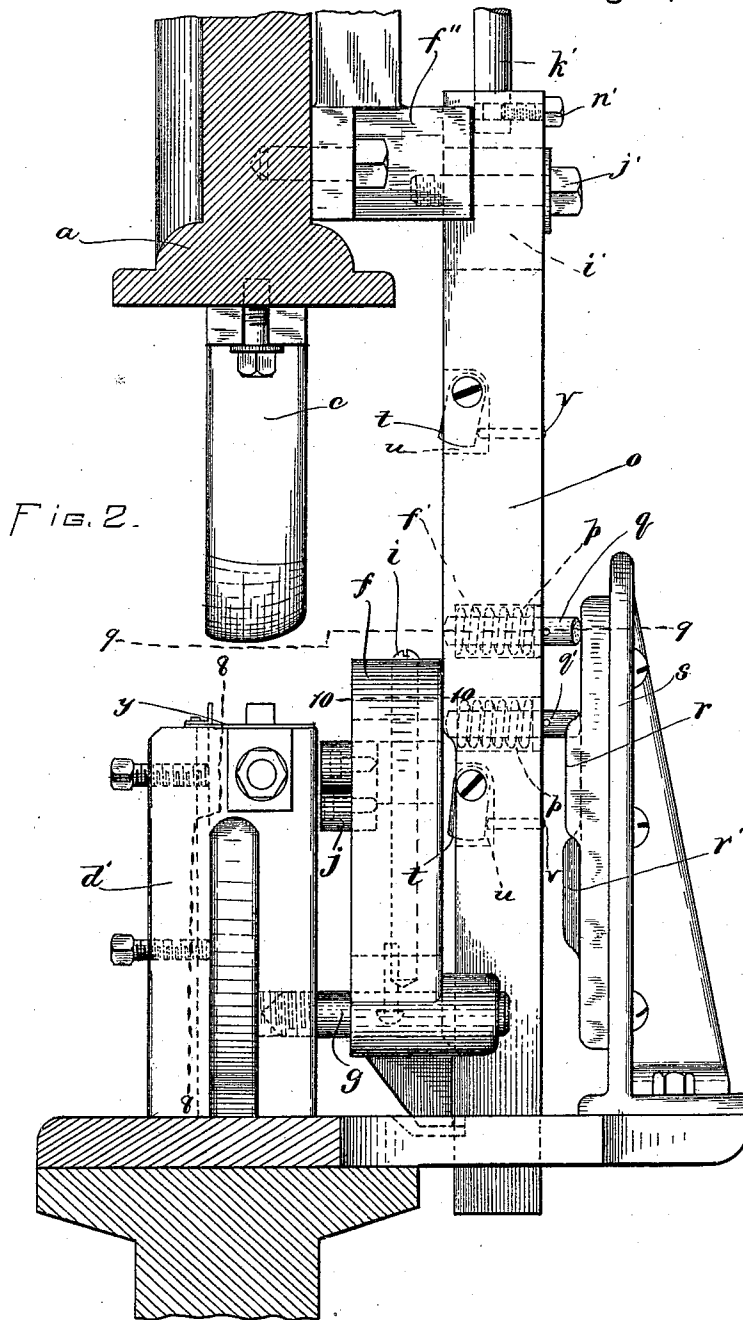
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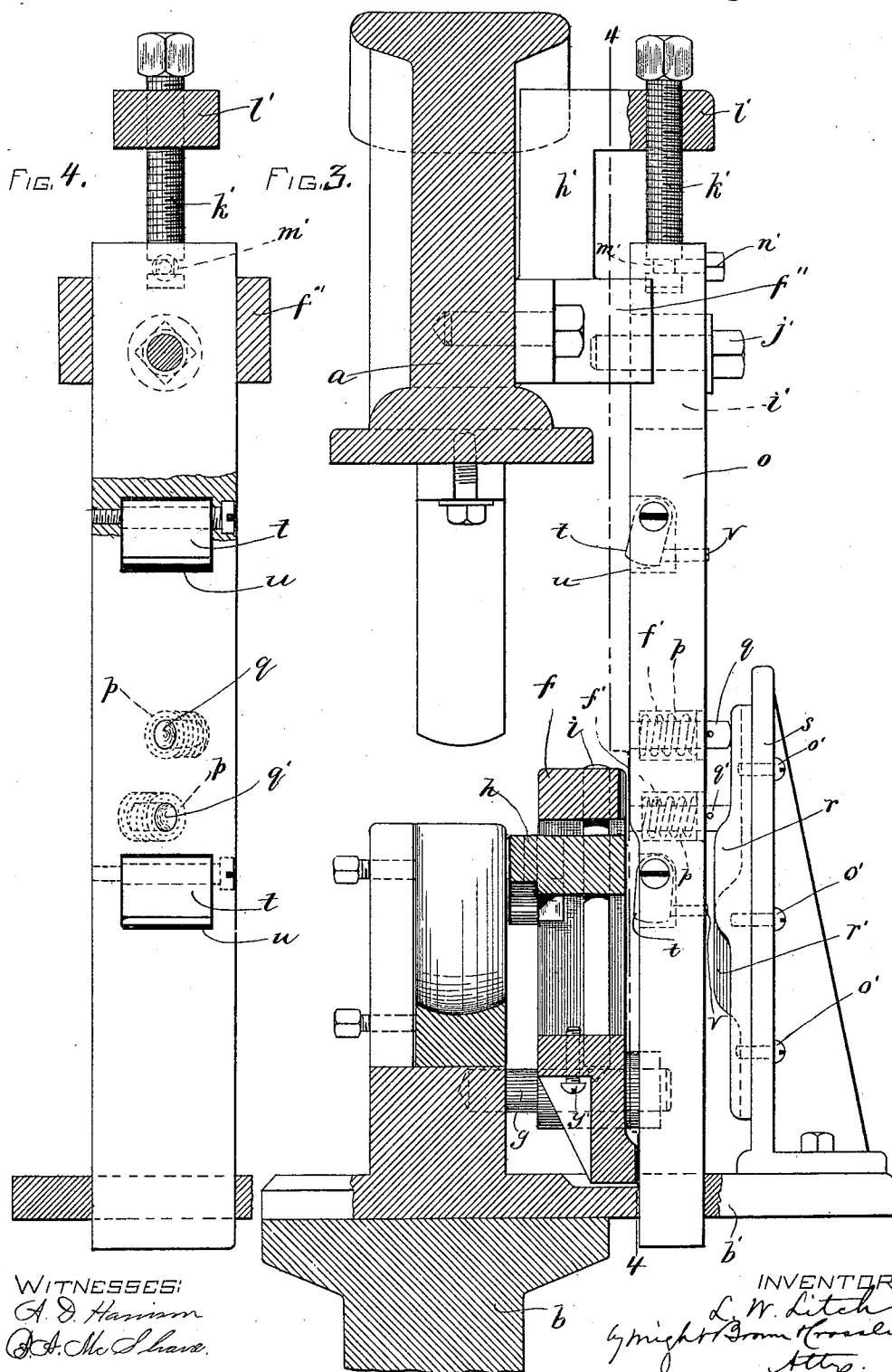
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6 Sheets—Sheet 4

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FIG. 6.

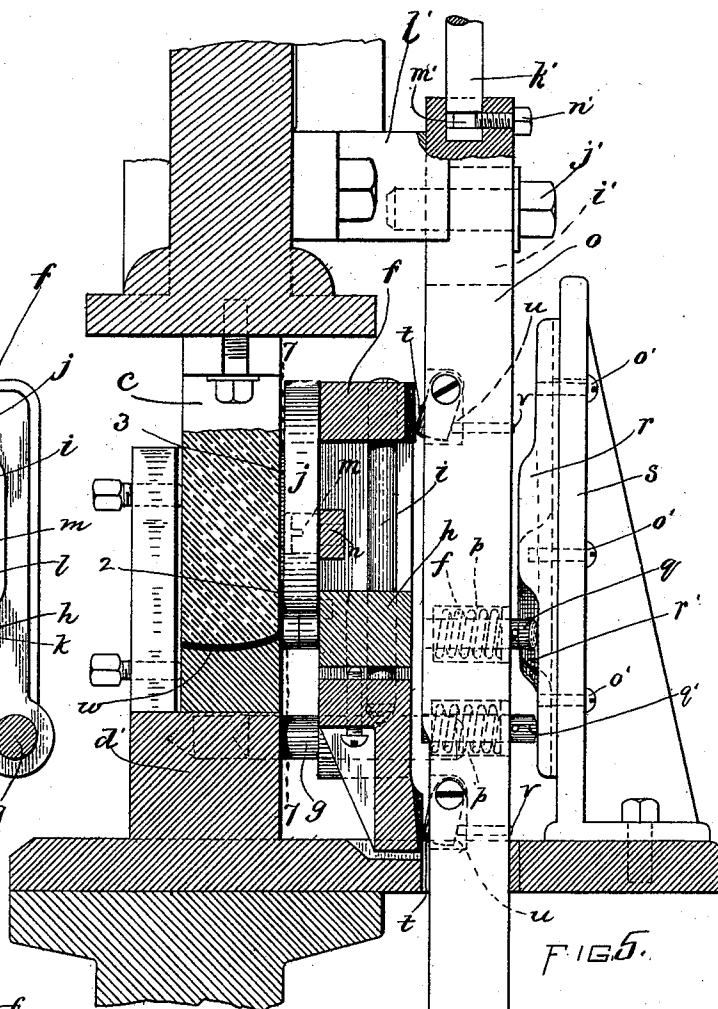
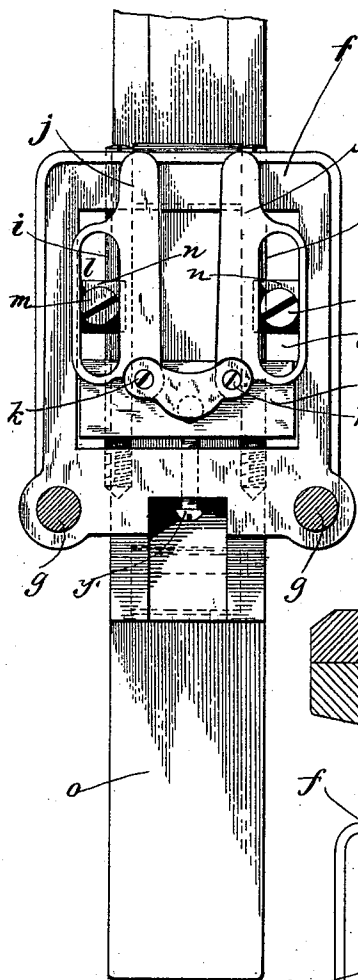


FIG. 5.

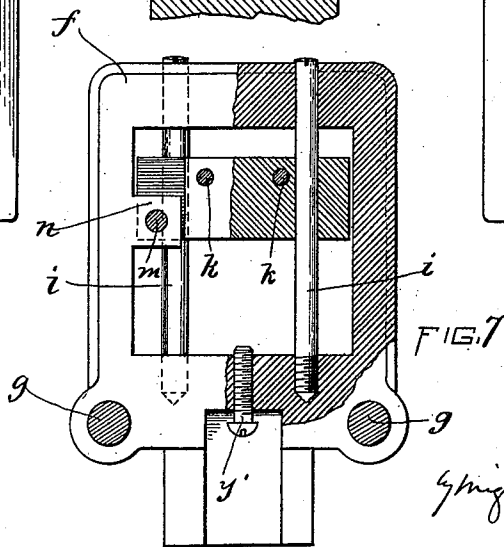


FIG. 7.

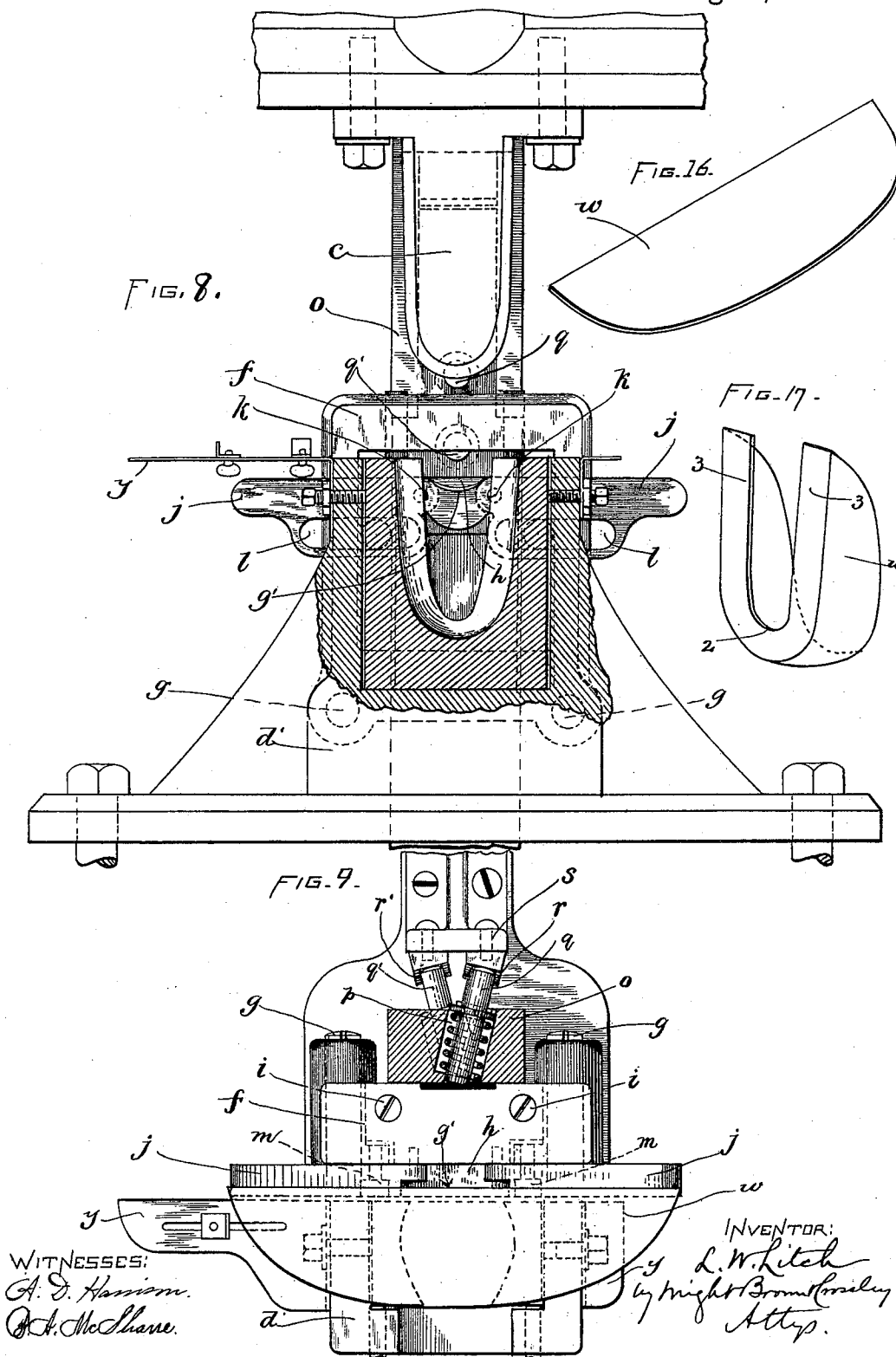
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UNITED STATES PATENT OFFICE.

LEMUEL W. LITCH, OF SWAMPSCOTT, MASSACHUSETTS.

HEEL-STIFFENER MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,023, dated August 2, 1892.

Application filed February 21, 1891. Renewed June 20, 1892. Serial No. 437,346. (No model.)

To all whom it may concern:

Be it known that I, LEMUEL W. LITCH, of Swampscott, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Heel-Stiffeners or Counters, of which the following is a specification.

This invention has for its object to provide a simple and rapidly-operating machine adapted to perform the first operation of forming a counter or heel-stiffener in making what is known as a "two-process counter"—viz., one in which the blank of material is molded to its approximate shape, but left with its sides substantially parallel by one machine and subsequently completed by curving its sides inwardly to give them the convergence required in a completed counter by another operation, the present invention relating entirely to the first operation.

The invention consists in the several improvements hereinafter described and claimed.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a counter-machine provided with my improvements. Fig. 2 represents a section on line 2 2, Fig. 1. Fig. 3 represents a section on line 3 3, Fig. 1. Fig. 4 represents a section on line 4 4, Fig. 3. Fig. 5 represents a similar view to Fig. 3, parts being shown in different positions. Fig. 6 represents a section on line 7 7, Fig. 5. Fig. 7 represents a detail view, hereinafter referred to. Fig. 8 represents a partial section on line 8 8, Fig. 2. Fig. 9 represents a section on line 9 9, Fig. 2. Fig. 10 represents a section on line 10 10, Fig. 2. Figs. 11, 12, 13, 14, and 15 represent detail views. Figs. 16 and 17 represent perspective views of the counter-blank and counter, respectively, as formed by my improved machine.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a fixed head or cross-bar secured rigidly to vertical standards *a'* *a'*, which form parts of the supporting-frame of the machine and also serve as guides, upon which the cross-head *b*, hereinafter referred to, reciprocates vertically. To the fixed head *a* is rigidly secured the male mold or former *c*, the lower portion of which

has the form which it is desired to impart to the interior of the counter.

d represents the female mold or former, which is secured to a holder *d'*, affixed to the cross-head *b*, and is formed to co-operate with the male mold in giving the desired shape to a counter-blank—viz., substantially the shape shown in Fig. 17. The cross-head *b* is reciprocated vertically by any suitable means, such as a toggle-joint, one of the members *e* of which is shown as connected to the lower portion of said cross-head. I do not deem it necessary, however, to show and describe the mechanism for reciprocating the cross-head, such mechanism being well known in machines of this class.

f represents a yoke rigidly secured to the mold holder or receptacle *d'* by studs or bolts *g g*, so that it will move therewith. The form and construction of said yoke will be best understood by reference to Figs. 2, 6, and 7. Within the opening of the yoke is placed a block *h*, secured in position by vertical guides *i i*, attached to the yoke (see Fig. 7) and upon which guides the block is adapted to slide.

j j represent plates, which I term "wipers," pivotally secured at *k k* to the block *h* and provided with slots *l l*.

m m represent pins secured to lugs *n* on the yoke *f* and adapted to fit the slots of the wipers *j*, the arrangement being such that the position of the wipers may be changed from a horizontal position, as seen in Figs. 1 and 8, to a vertical position, as seen in Fig. 6, as will be presently explained.

o represents what I term a "binding-bar." Said bar is adjustably secured to the rear side of the head or cross-bar *a* and has a sliding fit at its lower end in an aperture in the base-plate *b'*, attached to the cross-head *b*, said aperture preventing the binding-bar from moving laterally in any direction. (See Figs. 2 and 3.) Said binding-bar is provided with sockets *p p*, in which are placed spring-pressed pins *q q*, adapted to engage at one of their ends projections *r r'*, adjustably secured to a standard *f*, attached to the base-plate *b'*, Figs. 2, 8, and 13, whereby the pins may be moved toward and from the block *h* to engage and release the same, as hereinafter described.

In the binding-bar *o* I have shown what I

term a "take-up," composed of dogs *t t*, pivoted in recesses *u u*, Fig. 4, in said bar and arranged so that their lower ends may project from said recesses sufficiently to engage the rear side of the yoke *f*, said dogs being held in the position shown by adjusting-screws *v v*, extending through said bar and bearing against the dogs, as shown in Figs. 2, 3, and 5, the arrangement being such that when the flange-forming mechanism is brought into operative position the yoke *f* may be prevented from yielding in the direction of the binding-bar, as will be hereinafter explained.

The operation of the described devices is as follows: A blank *w*, Fig. 16, to be converted into a partially-completed counter or stiffener, Fig. 17, is placed upon a suitable gage *y*, attached to the holder *d'* in such position that the middle of its length is above the female mold, as shown in Fig. 9, and directly under the male mold *c*, the position of the machine being that shown in Figs. 1, 2, 3, and 8, in which the female mold and its attached devices are represented as in the depressed position necessary for the convenient insertion of the blank and its removal after being operated upon by the male mold. The blank being in the position described and power being applied in any suitable manner, the cross-head *b* moves upwardly, carrying with it the female mold and its attached devices to the position shown in Fig. 5, in which position it will be observed the female mold engages the male mold with the blank *w* therebetween. This operation forces the blank into said female mold to form the body of the stiffener by its contact with the male mold in the upward movement just described.

The flange *z* of the stiffener is formed simultaneously with the formation of the body by the following means: During the upward movement of the female mold, as hereinbefore described, the projection *r* on the standard *s* bears on the outer end of the pin *q* in the binding-bar *o*, causing said pin to project through the binding-bar sufficiently to engage the block *h*, as shown in Fig. 15. Said block has been carried upwardly with the yoke *f* to this point from the position shown in Fig. 3. The engagement of the pin *q* with said block arrests the upward movement of the block, and the continued upward movement of the yoke causes the pins *m m*, thereto attached, to operate to swing the wipers *j j* from the position shown in Figs. 8 and 9, which is the normal or open position, to that shown in Figs. 5, 6, and 14, which is the closed position, the wipers being thus given a swinging movement, which causes their inner edges to wipe or turn inwardly the projecting edge of the blank and convert the same into a flange. Just before the bottom portion of the yoke *f*, which contains an adjusting-screw *y'*, has reached the block *h* the projection *r* is carried above the pin *q'*, as shown in Fig. 5, and the latter is retracted by means of its spring *f'* and thus dis-

engaged from the block *h*, the adjusting-screw *j* being then brought into contact with the bottom of said block, so that it is carried upwardly with the yoke and female mold, which brings the projecting edge *q'* into contact with the stiffener and forming the lower portion 2 of the flange nearly simultaneously with the formation of the sides 3 3, as shown in Figs. 5 and 14. It will be seen that the entire flange is formed by the motion of a wiping device across the width of the flange, the side portions of the flange being formed by the wipers *j j*, which when in action move crosswise of said portions, while the rear portion of the flange connecting the side portions is formed by the portion of the block *h* that projects between said wipers, the block moving crosswise of the portion of the flange which it forms. I have found by practical experience that this method of forming the flange—viz., by wiping across the width of the flange along its entire length—is more rapid and produces a much better flange than the common method of forming the flange by a single wiper, which moves substantially parallel with or in the direction of the length of the sides of the counter and displaces or stretches the material of the flange in the direction of the length of its side portions. As the action of the wipers in forming the flange causes a considerable strain upon the yoke *f* toward the binding-bar, it will be seen by reference to Fig. 5 that the position of the yoke during said operation is such that the take-up pieces *t t* in the binding-bar are brought into contact with the rear, top, and bottom portions of the yoke *f*, so that it is impossible for the latter to yield or move away from the stiffener during the described operation. After the operation of forming the flange has been completed the head *b* descends and with it the attached devices. During the downward movement the pin *q'* is engaged with the projection *r'* on the standard *s* and said pin is projected through the bar and engages the lower or under side of the block *h*, as shown in Fig. 12. The downward movement of said block is thus arrested and the wipers are caused to open to their original position.

The binding-bar is provided with an adjusting device whereby it may be readily changed vertically to bring the pins *q q'* into the proper position in relation to the projections *r r'* and the take-up pieces with relation to the yoke. Said devices include a bracket *h'*, rigidly secured to the rear side of the head *a*, the lower portion of the bracket being grooved to receive the upper end of the binding-bar. A slot *i'* is formed in said upper end of the bar for the reception of a bolt *j'*, which enters the bracket. The upper end of the bar *o* is bored to a suitable depth to receive the lower end of a screw *k'*, which screw is engaged with a threaded socket in the bracket *h'*. The lower end of said screw has a groove *m'*, into which is adapted to project a bolt *n'*, said bolt entering the groove so as to allow the screws

to turn freely. By loosening the bolt j' and turning the screw k' the binding-bar is adjustable to any desired degree. (See Figs. 3 and 4.) The projections $r r'$ are also adjustable on the standard s by means of screws o' entering said projections through slots p' in said standards. (See Fig. 11.)

I have shown the best mechanism at present known to me for operating the flange-forming wipers; but I do not desire to be understood as limiting myself to the exact details of construction and mechanical arrangement herein shown, but may vary somewhat the means for giving the wipers their movement across the sides of the flange by such changes in construction as fall within the spirit and scope of my invention.

I claim—

1. In a counter-machine, the combination of the fixed male former, the female former mounted on a reciprocating cross-head, the yoke affixed to said cross-head, the block h , adapted to move with said yoke and also independently thereof on vertical guides in the yoke, the side-wipers $j j$, pivoted to said block, studs affixed to the yoke and projecting into slot in said pivoted wipers, and means for arresting said block at a given point in the movement of the female mold, thereby causing the wipers to swing crosswise of the path in which the female former moves, as set forth.

2. In a counter-machine, the combination of the fixed male former, the female former mounted on a reciprocating cross-head, the yoke affixed to the cross-head and provided with vertical guides, the block h , movable on said guides and having the flange-wiper g' , the side wipers pivoted to said block at opposite ends of the wiper g' , and means, substantially as described, for swinging said side wipers to form the side portions of a counter-flange, the wiper g' forming the intermediate portion of said flange, as set forth.

3. In a counter-machine, the combination of the fixed male former, the female former mounted on a reciprocating cross-head, the yoke affixed to the cross-head and provided with vertical guides, the block h , movable on said guides and having the flange-wiper g' ,

the side wipers pivoted to said block at opposite ends of the wiper g' , the binding-bar o , secured to a fixed support and provided with the spring-retracted pins or bolts $q q'$, adapted to engage the block h , and the standards s , affixed to the reciprocating cross-head and provided with cams or projections $r r'$, adapted to project said pins, as set forth.

4. In a counter-machine, the combination of the fixed male former, the female former mounted on a reciprocating cross-head, the yoke affixed to the cross-head and provided with vertical guides, the block h , movable on said guides and having the flange-wiper g' , the side wipers pivoted to said block at opposite ends of the wiper g' , the binding-bar o , secured to a fixed support and provided with the spring-retracted pins or bolts $q q'$, adapted to engage the block h , the standards s , affixed to the reciprocating cross-head and provided with cams or projections $r r'$, adapted to project said pins, and means for vertically adjusting said binding-bar, as set forth.

5. In a counter-machine, the combination of the fixed male former, the female former mounted on a reciprocating cross-head, the yoke affixed to the cross-head and provided with vertical guides, the block h , movable on said guides and having the flange-wiper g' , the side wipers pivoted to said block at opposite ends of the wiper g' , the binding-bar o , secured to a fixed support and provided with the spring-retracted pins or bolts $q q'$, adapted to engage the block h , the standards s , affixed to the reciprocating cross-head and provided with cams or projections $r r'$, adapted to project said pins, and the take-up pieces $t t$, mounted on said binding-bar and arranged to rigidly support the yoke and flange-wipers during the flange-forming operation, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 14th day of February, A D. 1891.

LEMUEL W. LITCH.

Witnesses:

WILLIAM H. HOLBROOK,
JAMES L. LITTLEFIELD.