(No Model.)

3 Sheets—Sheet 1.

# A. R. SELDEN.

## STARCHING MACHINE.

No. 605,751. Patented June 14, 1898.

Fig. 1

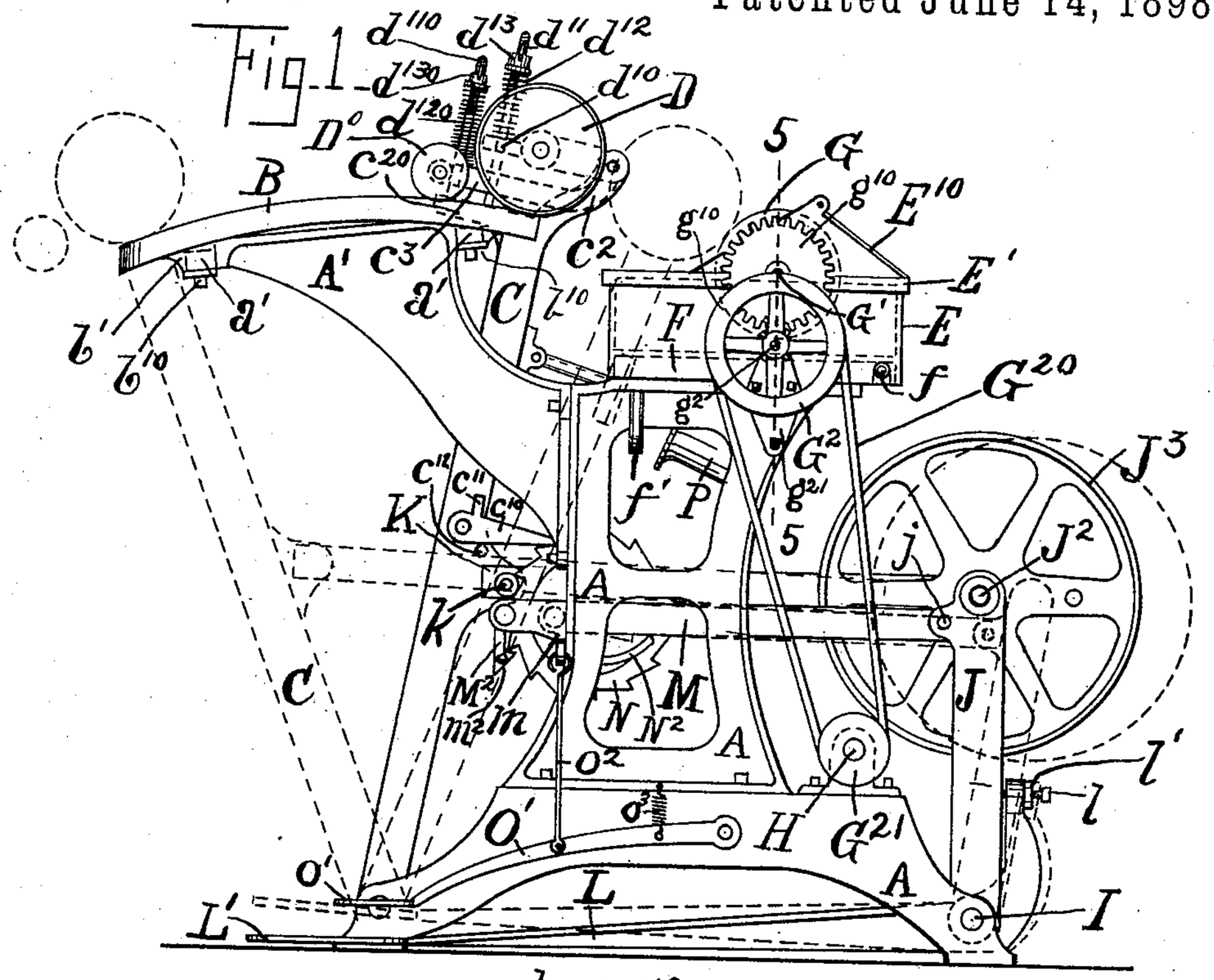



Fig. 2

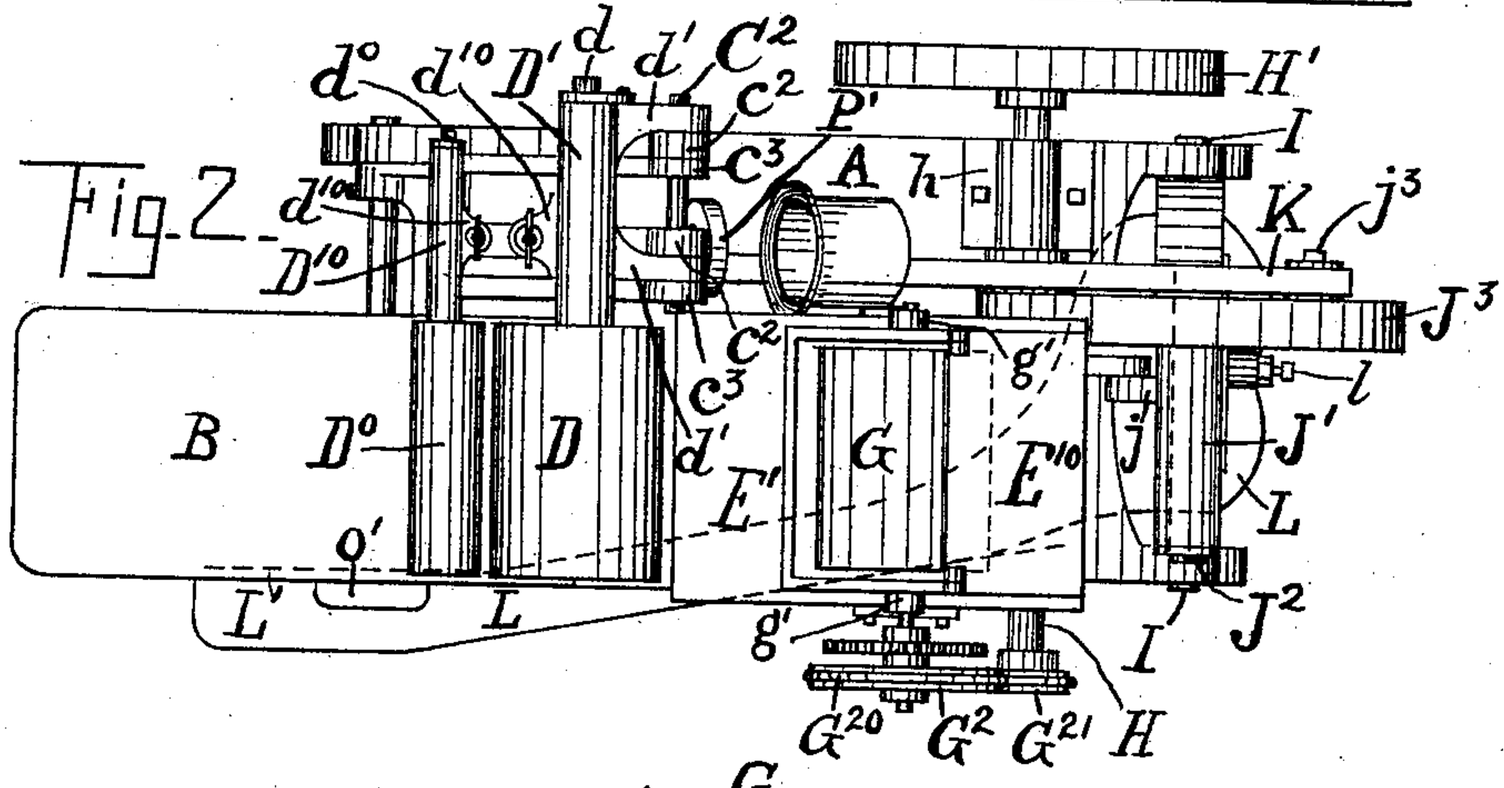
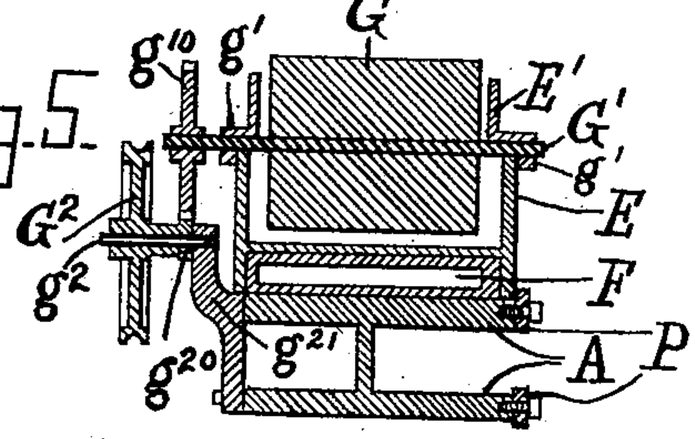



Fig. 5.




Witnesses.

C. R. Osgood

C. H. Marselles.

Inventor.

Arthur R. Selden

by Howard L. Osgood

his Attorney.

(No Model.)

3 Sheets—Sheet 2.

# A. R. SELDEN.

## STARCHING MACHINE.

No. 605,751. Patented June 14, 1898.

Fig. 3.

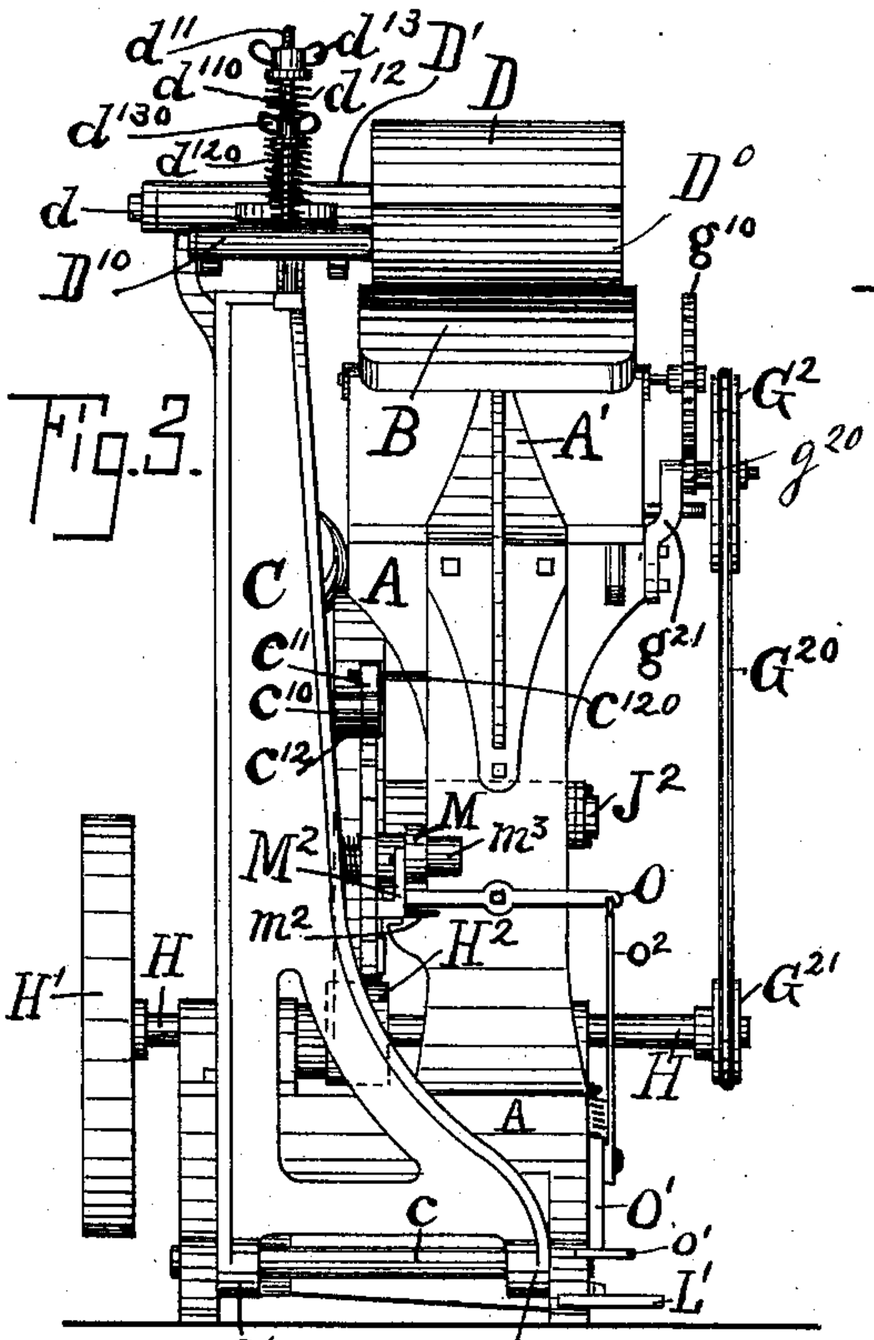



Fig. 4.

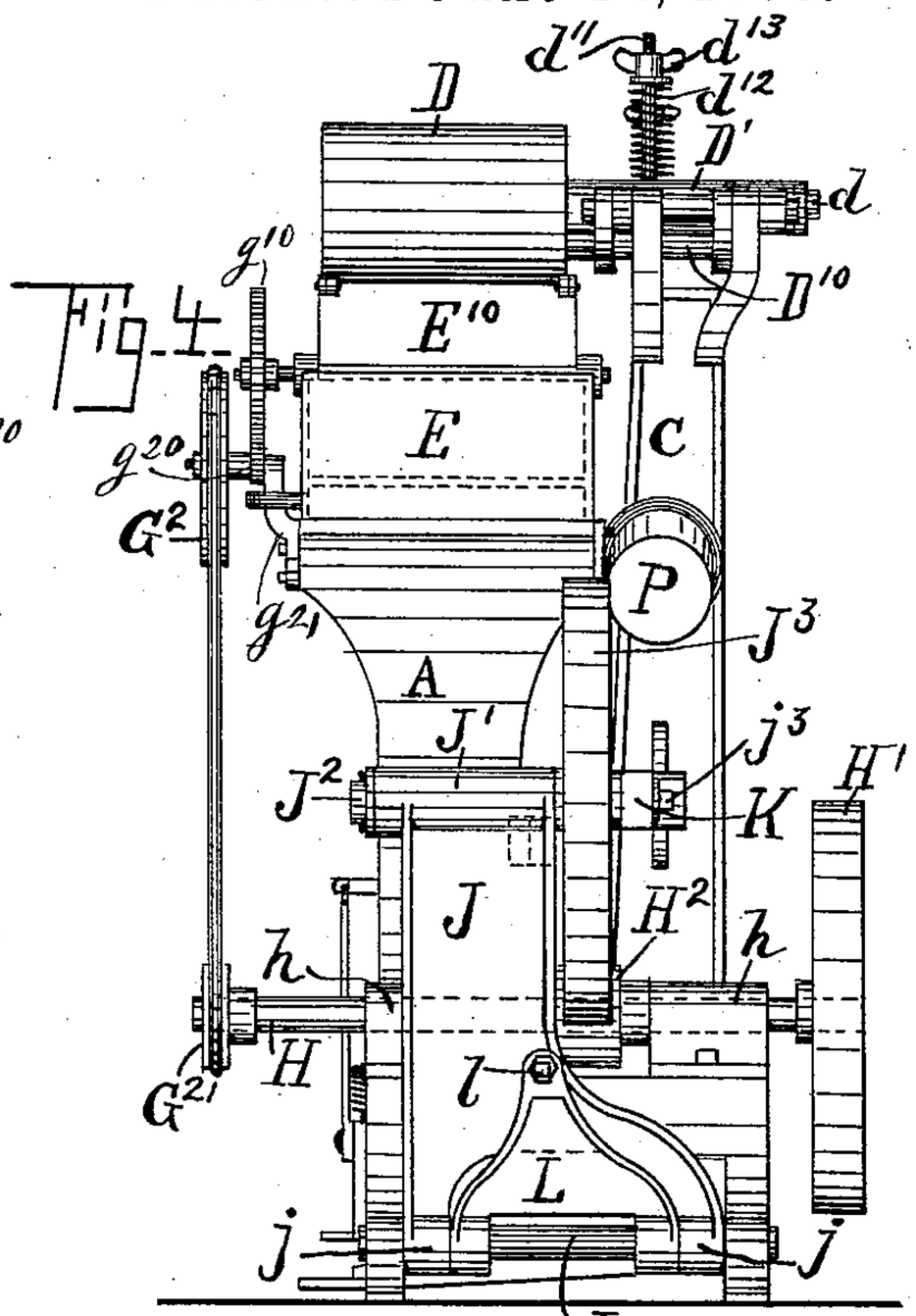



Fig. 6.

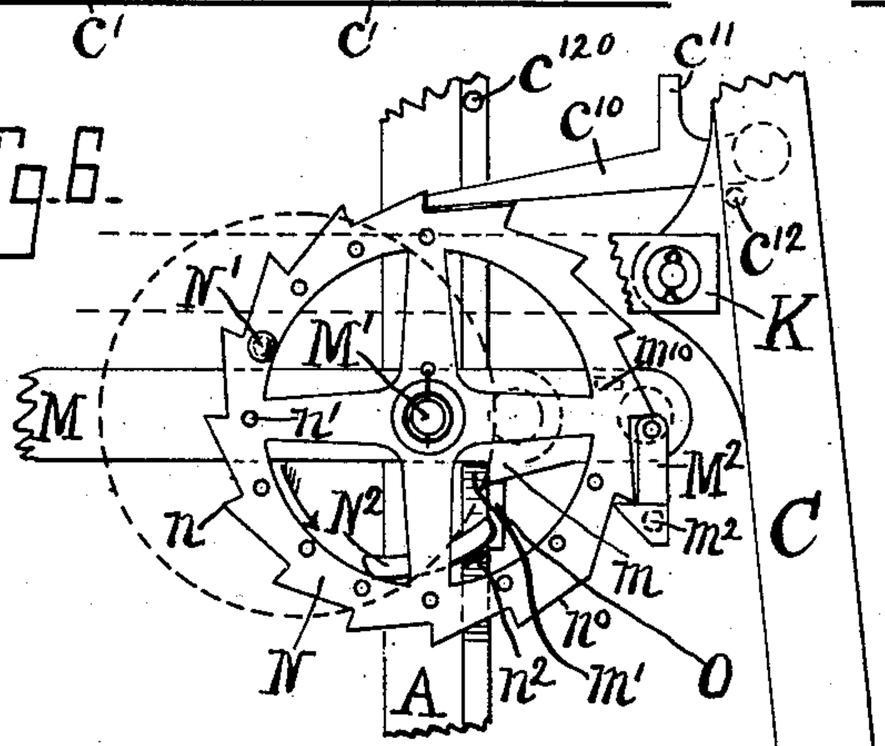
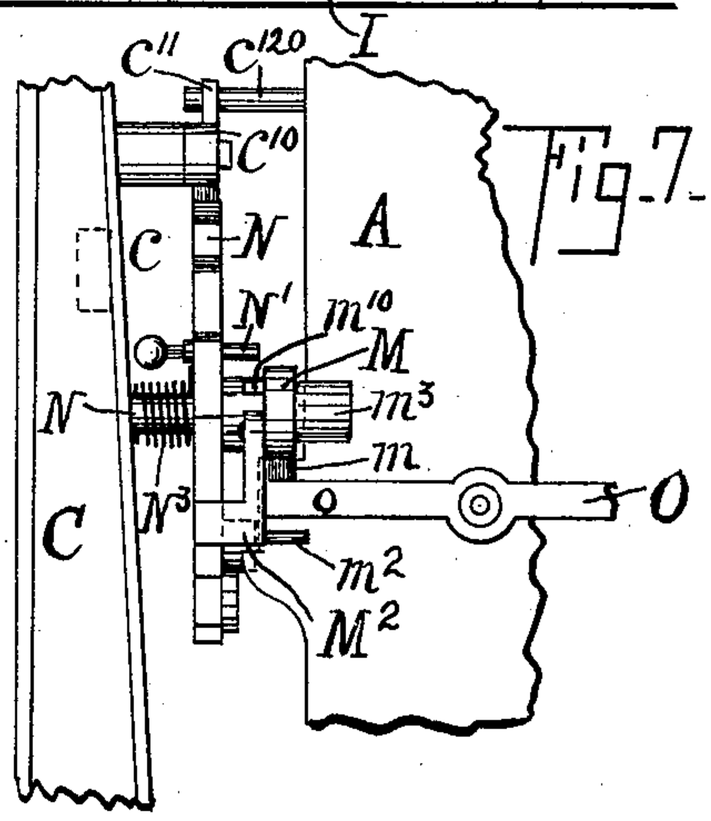



Fig. 7.




Witnesses.

C. R. Osgood.

E. H. Marcellus.

Inventor.

Arthur R. Selden

by Howard L. Osgood

his Attorney.

(No Model.)

3 Sheets—Sheet 3.

# A. R. SELDEN.

## STARCHING MACHINE.

No. 605,751. Patented June 14, 1898.

Fig. 8.

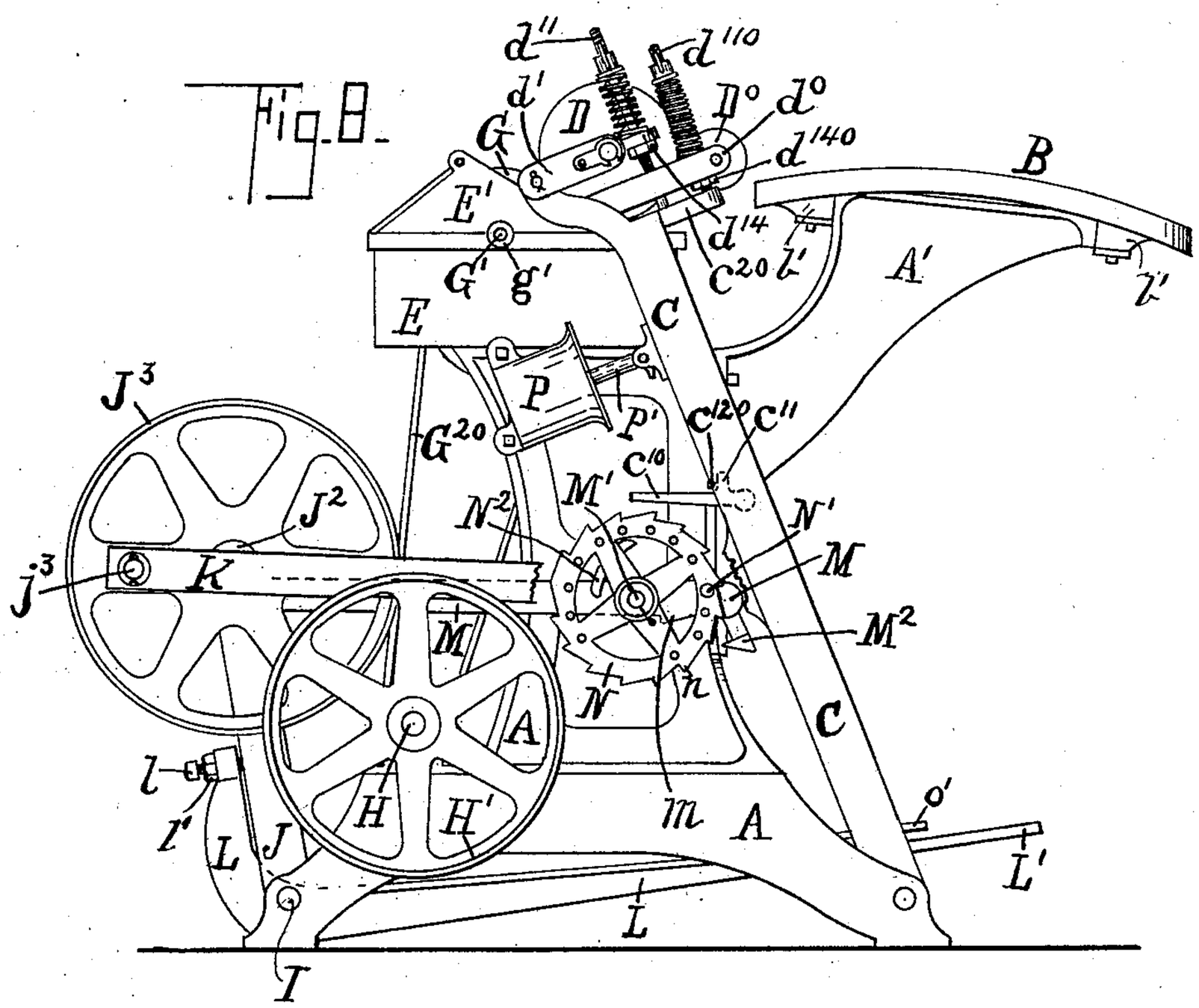



Fig. 9.

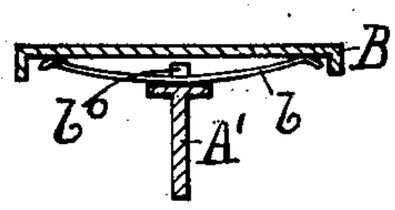
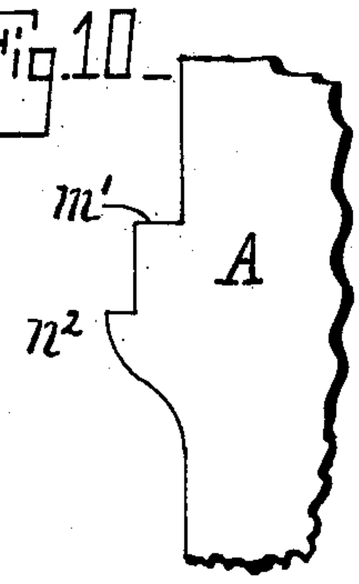



Fig. 10.




Witnesses.

C. R. Osgood

C. H. Marcellus.

Inventor.

Arthur R. Selden

by Howard L. Osgood

his Attorney.

# UNITED STATES PATENT OFFICE.

ARTHUR R. SELDEN, OF ROCHESTER, NEW YORK, ASSIGNOR TO FRANCIS S. MACOMBER, TRUSTEE, OF SAME PLACE.

## STARCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 605,751, dated June 14, 1898.

Application filed August 13, 1897. Serial No. 648,150. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR R. SELDEN, a citizen of the United States, and a resident of the city of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Starching-Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of one of my machines. Fig. 2 is a top plan view thereof. Fig. 3 is a front elevation thereof. Fig. 4 is a rear elevation thereof. Fig. 5 is a cross-section on the line 5 5 of Fig. 1. Fig. 6 is a side elevation of the stroke-counting mechanism somewhat enlarged. Fig. 7 is a front elevation of the same stroke-counting mechanism. Fig. 8 is a side elevation of my machine, taken from the opposite side of the machine from Fig. 1. Fig. 9 is a cross-section of the starching-bed, its spring, and supporting-arm. Fig. 10 is an elevation of the projections $m' n^2$ on the frame.

The object of my invention is to produce an efficient and automatic device for starching goods for laundry purposes, and is particularly adapted, in the form of mechanism shown, to the starching of shirts.

My invention consists in the mechanisms and arrangements of parts hereinafter described and claimed.

In the drawings, A is a frame of any suitable construction, to which is fastened an arm A′, upon which rests the starching-bed B. The arm A′, on its front and rear ends, has bearings $a'$, which rest in sockets $b'$ on the under side of the starching-bed. The sockets $b'$ are set in the middle line of said bed, and the bed therefore rocks freely within suitable limits upon the journals $a'$. In order to sustain the bed B in a horizontal position, a flat spring $b$, Fig. 9, is fastened at its middle by means of a set-screw $b^0$ or other suitable device to the arm A′, and the ends of the spring bending upward press against the outer portions of the under sides of the bed B, and therefore normally sustain it in a substantially horizontal position. If the bed B rocks upon the journals $a'$, the spring returns it to the normal position. The sockets $b'$ are provided with covers $b^{10}$, held on in any suitable manner, as by screws or bolts. It is covered with a sufficient thickness of a suitable absorbent material, such as several layers of cheese-cloth, which is adapted to retain the hot starch in order that the side of the goods next to the bed B may receive a suitable starching when the goods are pressed against it.

Underneath the table B and to a suitable point of the frame A is fastened a roller-frame C. This is pivoted to the frame, as by means of the long pin $c$, which passes through bearings $c'$, widely separated from each other for strength and rigidity. This roller-frame C oscillates in a vertical plane. On the upper end of the frame C is a starcher-roll D, which is also covered with a suitable thickness of absorbent material, such as several layers of cheese-cloth, in order to absorb, retain, and give off the starch upon the upper side of the goods upon the bed B and also to the absorbent upon the bed itself. The roller D has a shaft $d$, extending from one side thereof, which passes through a sleeve D′, (see Fig. 2,) which sleeve has arms $d'$, having bearings therein, through which passes a pin $C^2$. This pin passes also through bearing-holes in arms $c^2$ upon the upper end of the frame C. The sleeve D′ on the opposite side from its pivotal point has a lug $d^{10}$, through which freely passes a pin $d^{11}$, whose lower end is screwed or fastened into a lug $c^{20}$ upon the frame C. Around the pin $d^{11}$ is a coiled spring $d^{12}$, which presses upon the upper side of the lug $d^{10}$ and is held down by a nut $d^{13}$. The spring $d^{12}$ therefore tends to press the starcher-roll D downward in order to make a proper contact with and pressure upon the bed B or the goods thereon. Underneath the lug $d^{10}$ and upon the pin $d^{11}$ is a nut $d^{14}$, which serves to limit the motion of the starcher-roll in a downward direction. Upon the pin $C^2$ are also pivoted two arms $c^3$, which carry a sleeve $D^{10}$, bearing a roll $D^0$. This roll is nearer the front of the machine than the starcher-roll D, and this roller has a shaft $d^0$, passing through and capable of revolution in the sleeve $D^{10}$. The two shafts $d$ and $d^0$ are parallel, and the rollers D and $D^0$ are adjusted for rolling upon the bed B. The roller $D^0$ is smaller than the starcher-roll D and may be made of wood, brass, or other suitable mate-

rial and is without the absorbent surface. The purpose of this roller is to assist in spreading the starch which is given off from the roll D more uniformly over the goods and also for assisting in holding the goods upon the bed B at the front end of the table and also in front of the roll D.

The sleeve $D^{10}$ carries a lug $d^{100}$, having a perforation therethrough, through which passes a pin $d^{110}$, around which is a coiled spring $d^{120}$, which presses against the upper side of the lug $d^{100}$. The spring is held at its upper end by a nut $d^{130}$, and a nut $d^{140}$ underneath the lug $d^{100}$ serves to limit the downward motion of the sleeve $d^{10}$, while permitting a downward spring-pressure upon the roller $D^0$. It will be noticed that the rollers D and $D^0$ are journaled from only one side of the machine, so as to leave the other side entirely free for the various purposes of the operator, and that the starcher-roll frame C moves in a vertical plane parallel to the side of the bed B. The bed B has its upper surface curved to correspond to the radius of movement of the under sides of the rollers D and $D^0$.

Back of the bed B is the starch-box E, which rests upon the frame A. Underneath this starch-box is a steam-box F, having inlet and outlet steam-pipes $f$ and $f'$, whereby the starch is kept hot and in a suitable condition of fluidity. In the starch-box E runs the starch-roller G, which is of sufficient size to extend close to the bottom of the starch-box and is provided with a cover E', of suitable form, which is slotted or has an opening through which a portion of the roller G protrudes, said slot or opening being on the front side and in a position whereby the starcher-roll D may be brought against the roller G. The roller G is made of any suitable material, such as wood or metal, and is fastened upon a shaft G' and is journaled in boxes $g'$, Figs. 5 and 8, on the cover E', so that the cover E', the shaft G', and the roller G may be lifted from the starch-box E in order to clean the roller and its parts and for such other purpose as may be desired. On one end of the shaft G' is a gear $g^{10}$, which meshes with a pinion $g^{20}$, which is driven by a pulley $G^2$, running on a stud $g^2$, attached to a suitable portion of the frame of the machine, such as an arm $g^{21}$.

On the rear end of the cover E' is a supplementary cover $E^{10}$, hinged to the cover E', which supplementary cover may be raised at any time in order to renew the starch in the starch-box E or for such other purpose as may be desired. The pulley $G^2$ is driven by a belt $G^{20}$, running to a pulley $G^{21}$ upon one end of the driving-shaft H of the machine. On the other end of said driving-shaft H is the driving-pulley H'. The shaft H runs in boxes $h$ $h$ on opposite sides of the machine, and between said boxes and upon said shaft is a friction-roller $H^2$.

At the rear end of the machine is a transverse pivot-pin I, running across the same, upon which is journaled a frame J by means of widely-separated bearings $j$ $j$. (See Fig. 4.) The frame J carries a long bearing J', which contains a shaft $J^2$, freely revoluble therein, which shaft on one side carries a friction-wheel $J^3$. The wheel $J^3$ is therefore carried entirely on one side by the long journal-bearing J'. On its other side the wheel carries a crank-pin $j^3$. (See Figs. 4 and 8.) The crank-pin $j^3$ is connected to the starcher-roll frame C by a pitman K, which pitman is pivoted to said frame C by a pin $k$. (See Fig. 1.) Upon the transverse pin I is also pivoted a treadle-frame L, upon the front end of which is a foot-plate L'. The rear end of the treadle L turns upward and bears a set-screw $l$, provided with a lock-nut $l'$, which set-screw is adapted to press against the rear face of the frame J. (See Figs. 1 and 4.) When the foot-plate L' is depressed, the set-screw $l$ presses against the frame J and thus forces the wheel $J^3$ forward until its periphery comes in contact with the friction-wheel $H^2$, which, being driven by the driving-shaft H and by the pitman connection with the starcher-roll frame C, causes said starcher-roll frame to oscillate backward and forward over the bed B and to distribute the starch upon the starcher-roll D, upon the bed B if no goods are thereon and upon the upper surface of the goods if such are on the bed. The oscillations of the frame C will continue as long as the foot-plate L' remains depressed; but in order that the quantity of starch upon the starcher-roll D may be uniformly spread over and worked into the goods upon the table B, I provide a device which causes said starch-roll frame C to make a number of oscillations over the bed, which number may be predetermined.

Upon the front face of the frame J is a lug $j$, (see Figs. 1 and 2,) to which is pivoted a bar M and which therefore moves backward and forward with each oscillation of the foot-plate L'. Near the front end of said bar M is a hook $m$. (See Fig. 6.) This hook $m$ engages a projection $m'$ on the frame A, so that when the frame J is moved from the position shown in dotted lines in Fig. 1 to the position shown in the full lines in the same figure the hook $m$ engages over the projection $m'$ and the bar M and frame J are held in their extreme forward positions, thus locking the wheel $J^3$ against the friction-wheel $H^2$ and also placing the counting device in proper position to be operated and determine the number of oscillations of the starcher-roll D over the bed B.

Upon the frame C is pivoted a dog $c^{10}$, having an upwardly-projecting lug $c^{11}$. This dog normally drops against a pin $c^{12}$ when in its lowest position in order to be held in proper operative position for actuating the counting-wheel by engaging it on the upper side. The counting-wheel N is a ratchet-wheel having a number of equally-spaced ratchet-teeth $n$ around its periphery, but having the space which would make two of said teeth filled in to form a flat surface $n^0$. The said wheel

also has a number of holes $n'$ through its rim, in any one of which may be placed a pin N', which extends entirely through said rim and projects a proper distance on the inside thereof. The counting-wheel also bears a cam $N^2$, which in the revolution of said wheel and at a definite point in said revolution is adapted to come in contact with a projection $n^2$ on the frame A when the wheel revolves in the direction shown by the arrow in Fig. 6, and when said cam rides up upon said projection $n^2$ the wheel N is lifted thereby. The wheel N is carried by a stud M', fixed upon and extending from the side of the bar M, and the wheel N revolves freely upon said stud. A coiled spring $N^3$ is fastened at one end to said stud and at the other end to said wheel N and is so coiled around said stud as to tend to drive the wheel N in a direction opposite to the arrow in Fig. 6. Upon the bar M is hung a dog $M^2$, which is adapted to engage with the ratchet-teeth $n$ of the wheel N and to prevent rotation of said wheel in the direction of the propulsion thereof by the spring. Upon the bar M and in the path of movement of the end of the pin N' is a stop $m^{10}$. If now the dogs $c^{10}$ and $M^2$ are disengaged from the wheel N, the operation of the spring $N^3$ turns the wheel N until the pin N' rests against the stop $m^{10}$, and if the hook $m$ is hooked over the projection $m'$ and the starcher-roll frame C is oscillated the dog $c^{10}$ in its oscillations and by reason of the adjustment of the parts turns the wheel against the tension of the spring $N^3$ by the distance of one tooth at a time until the cam $N^2$ rides up upon the projection $n^2$, whereupon the wheel N, its stud M', and the bar M are lifted upward to an extent sufficient to disengage the hook $m$ from the projection $m'$, and thus to permit a movement of the bar M, carrying the wheel N and its accompanying parts, from the position shown in full lines in Fig. 6 to the position shown in dotted lines therein. This backward motion to said dotted-line position is permitted by allowing the foot-piece L' of the treadle L to rise, whereupon the spring $N^3$ throws the wheel N around to its zero position, with the pin N' against the stop $m^{10}$, because a pin $m^2$ upon the dog $M^2$ strikes against the frame of the machine at the end of the return stroke of the bar M and releases the ratchet-wheel N from the holding action of said dog. At about the same time the lug $c^{11}$ on the dog $c^{10}$ strikes against a pin $c^{120}$ upon the frame A and disengages the dog $C^{10}$ from the teeth of the wheel, thus freeing the wheel for the operation of the spring above described.

In order to cut out the operation of the counting-wheel N and its parts, I provide a lever O, pivoted to the frame A in a position so that one end, as $o$, of said lever (see Fig. 7) lies under the bar M, and in the arrangement of the parts herein shown it lies under the hook $m$, although it may act upon any part of said lever if it lifts said lever sufficiently to disengage the hook $m$ from the projection $m'$. This lever is operated by a treadle O', which has a foot-piece $o'$ preferably placed over the foot-piece L', but not covering the whole surface of the last-named foot-piece. Thus by depressing the foot-piece $o'$ the treadle L will be depressed at the same time with the treadle O'; but the treadle L may be independently operated by slight shifting of the foot of the operator. If both treadles are held down, the counting mechanism is cut out; but the starcher-roll continues to oscillate over the bed until the treadles are released. The treadle O' is normally raised by a spring $o^3$, fastened to the treadle and to the frame of the machine. Of course this treadle may equally well be counterweighted to accomplish the same result. A treadle-rod $o^2$ connects the treadle with the outer end of the lever O.

In the normal position of rest the starcher-roll frame C is in the position shown in Fig. 8, with the starcher-roll D in contact with the starch-roll G. In this position the driving-shaft H is constantly revolving the roll G, which is constantly feeding starch from the box E to the starcher-roll D. It will also be noticed that a slight motion of the frame C is required before the starcher-roll D can come in contact with the table B, and it will also be noticed that if the parts are free to move the frame C may drop back by gravity from the position shown in full lines in Fig. 1, where it is at the back end of the table B, to a position shown in dotted lines in said figure, in which it is in contact with the roller G. This gravity motion carries the bar M, when unhooked from the frame, back to the normal position of rest, (shown in dotted lines in Fig. 6 and in full lines in Fig. 8,) and in order that this gravity movement may not be too severe and strain the machine I provide a pneumatic buffer arrangement consisting of the pneumatic cylinder P, fastened to the frame, and the piston P', attached to the starcher-roll frame C. Of course any other suitable buffer arrangement may be employed instead of the pneumatic device in my machine. In Fig. 8 the parts are shown in this normal position of rest while starch is being fed to the roller D. The dogs $c^{10}$ and $M^2$ are held disengaged from the counting-wheel N. On depressing the treadle L the upper end of the frame J moves forward, carrying with it the bar M and permitting the dogs $c^{10}$ and $M^2$ to rest upon and engage with the periphery of the wheel N. When the frame J moves forward to a sufficient degree, the hook $m$ engages the projection $m'$, and at or about the same moment the wheel $J^3$ is pressed against the friction-driver $H^2$, and because the center of movement of the crank-pin $J^3$ is thus shifted forward the frame C, even before the friction driving mechanism commences to operate, is carried forward until the roller D makes contact with the rear edge of the table B. It will be noticed in Fig. 8 that by the action of grav-

ity upon the starcher-roll frame C the pin $j^3$ on the wheel J is always carried to a dead-point position with reference to the pitman K, so that the wheel $J^3$ always starts from a definite position. As soon as the frame C has been carried far enough forward so as to have the starcher-roll D come in contact with the rear end of the table B the wheel $J^3$ commences to revolve and the frame C oscillates for the number of strokes permitted by the position of the pin N′ in one of the series of holes $n'$ in the wheel N, for it will be seen that the position of the pin in the hole selected determines the degree of revolution of said wheel when free to be revolved by the spring $N^3$, but that the degree of movement of said wheel in the opposite direction is determined by the position of the cam $N^2$, which is fixed and always the same.

The function of the flat portion $n^0$ of the ratchet-wheel N is as follows: This flat portion of the wheel comes in contact with the dog $M^2$ when the cam $N^2$ has raised the wheel N and the arm M, and if the frame C and the dog $c^{10}$ are oscillated by holding the treadle L′ down the dog $c^{10}$ will at the end of its backward stroke come in contact with a tooth of the ratchet-wheel and turn it against the force of the spring $N^3$, thus forcing the wheel to turn through an arc equal to the distance between two teeth of the wheel; but on the forward stroke of the frame C the wheel N will revolve under the impulse of the spring until the dog $M^2$ engages the first tooth from the flattened portion $n^0$, and this operation will continue as long as the treadle L is held down, and because the treadle is held down the bar M is held in its extreme forward position, so that the oscillation of the cam $N^2$ merely disengages the hook $m$ from the projection $m'$, but permits it immediately to drop back into engagement therewith, so that the bar M is during the operation just described constantly held forward in its extreme forward position, while the treadle is held down and the starcher-roll D is permitted to roll backward and forward over the table until the treadle L is permitted to rise, whereupon the backward movement of the frame C through the dog $c^{10}$ moves the wheel N far enough to permit the cam $N^2$ to ride up upon the projection $n^2$ and to release the hook $m$ from the projection $m'$, and thus to permit the bar M and the parts which it carries to travel back into the normal position of rest shown in Fig. 8, whereupon an india-rubber buffer $m^3$ on the bar M strikes against the frame A and both relieves the shock of stopping and sustains the bar in a definite position.

The form of the arm A′, it will be seen, is somewhat like a shoe-jack and permits a shirt to encircle the table and arm while the bosom of the shirt rests upon the table and the remainder of the shirt is out of the way of any of the moving parts of the machine. The overhanging of the starcher-roll from one side only of the bed permits the operator to handle the goods with great ease and to place collars, cuffs, &c., upon the bed. The oscillation of the bed B upon its pivots is obviously effective to accommodate the bed to the springing or bending of the starcher-roll frame C and the consequent movement of the roll-shafts out of their normal position of movement, and this oscillation of the bed also permits the parts to accommodate themselves to the goods which are upon the bed. In this last respect, for instance, if a shirt-bosom is being starched, this operation may be completed, and the collar and cuffs belonging to said shirt may be placed upon the shirt-bosom and the machine operated to carry the starch over said collars and cuffs, and the increased thickness of the goods would perhaps strain the machine; but if the bed oscillates this liability is overcome.

Of course it is obvious that the starcher-roll D may be heated by steam or otherwise in a manner well known in ironing-machines, and it is also obvious that the table B may be hollow and heated with steam or gas in an equally obvious manner.

In the following claims broad terms are used to describe mechanisms hereinbefore specifically described. For instance, the starcher-roll is properly named a "starch-distributer," and is so described in said claims. The starch-distributer, however, may consist of other devices than the starcher-roll and may consist of more than one device, for in the foregoing description the starch-distributer is composed not only of the starcher-roll, but also of the supplemental roll $D^0$. The movement of the starch-distributer from the rear end of the bed B to the position shown in Fig. 8 is called in some of the claims an "extra movement," which permits the distributing mechanism to move off from the table B in one direction—viz., toward the means for supplying starch thereto—and incidentally having the function of making an opening between the distributer and the table in order to permit goods to be inserted between the two. This is clearly shown in Fig. 8. The means for supplying starch to the distributer is, in the form shown, the starch-tank and the driven roller moving in the starch for carrying a volume or quantity of starch to the distributer when the latter is against the former; but it is obvious that the distributer itself might dip into the surface of the starch and take up a quantity directly from the tank. The means for supplying starch to the distributer is in the form of device shown operative only at the end of the extra movement of the starch-roll frame, which last is a means for oscillating or moving the distributer to and fro over the table.

The bar M, with its hook, constitutes a locking mechanism for retaining the connections between the driving mechanism and the mechanism which oscillates the starcher-roll in operative position, and, as will be seen from the foregoing description, the release of the hook

and permitting the bar M to move backward breaks contact between the wheel $J^3$ and the wheel $H^2$, thus disconnecting the driving mechanism of the machine from actuating the starcher-roll. The wheel N, with the parts which it carries and by which it is operated, constitutes a releasing means for the locking mechanism just mentioned. This releasing means is also an automatic counting mechanism for determining the period during which the locking mechanism remains locked, and the ability to move the pin N′ into any one of the holes in the rim of the wheel N is therefore an adjustable stop mechanism or device for determining the point whereat the counting-wheel may begin to turn. It will be seen that the movement of the starcher-roll frame-piece brings into operation the various devices for operating the counting-wheel and therefore for releasing the mechanism which locks in operative position the connections between the driving-pulley H′ and the starch-distributing mechanism.

I do not intend to limit the construction of my claims to the devices herein specifically shown and described, nor that they shall be narrowed more than the state of the art requires.

What I claim is—

1. The combination of a table, a starch-distributer, means for supplying starch to said distributer, devices for moving said distributer to and fro over said table, and mechanism for moving said distributer from said table and to and from said means for supplying starch.

2. The combination of a table, a starch-distributer, means for supplying starch to said distributer, devices for moving said distributer to and fro over said table, mechanism for moving said distributer to and from said means for supplying starch, and locking mechanism for retaining said devices for moving said distributer to and fro over said table in operating position.

3. The combination of a table, a starch-distributer, means for supplying starch to said distributer, devices for moving said distributer to and fro over said table, mechanism for moving said distributer to and from said means for supplying starch, locking mechanism for retaining said devices for moving said distributer to and fro over said table in operating position, and automatic mechanism for releasing said locking mechanism.

4. The combination of a table, a starch-distributer, means for supplying starch to said distributer, devices for moving said distributer to and fro over said table mechanism for moving said distributer to and from said means for supplying starch, locking mechanism for retaining said devices for moving said distributer to and fro over said table in operating position, and automatic releasing mechanism comprising a counting apparatus for releasing said locking mechanism after a predetermined number of movements of said devices.

5. The combination of a table, a starch-distributer, means for moving said distributer to and fro over said table, mechanism for producing an extra movement of said distributer in one direction for moving the same off said table, and means for supplying starch to said distributer at the end of said extra movement.

6. The combination of a table, a starch-distributer, means for moving said distributer to and fro over said table, mechanism for producing an extra movement of said distributer in one direction for moving the same off said table, means for supplying starch to said distributer at the end of said extra movement, and locking mechanism for retaining said means for moving said distributer to and fro over said table in operating position.

7. The combination of a table, a starch-distributer, means for moving said distributer to and fro over said table, mechanism for producing an extra movement of said distributer in one direction for moving the same off said table, means for supplying starch to said distributer at the end of said extra movement, locking mechanism for retaining said means for moving said distributer to and fro over said table in operating position, and automatic releasing mechanism for releasing said locking mechanism.

8. The combination of a table, a starch-distributer, means for moving said distributer to and fro over said table, mechanism for producing an extra movement of said distributer in one direction for moving the same off said table, means for supplying starch to said distributer at the end of said extra movement, locking mechanism for retaining said means for moving said distributer to and fro over said table in operating position, and automatic releasing mechanism involving a counting device for releasing said locking mechanism after a predetermined number of operations of said means for moving said distributer.

9. The combination of a table, a starch-distributer, means for moving said distributer to and fro over said table, a starch-box, a starch-feeding mechanism for delivering starch from said box to said distributer, and mechanism for moving said distributer to and from said table and to and from said starch-feeding mechanism.

10. The combination of a table, a starch-distributer, means for moving said distributer to and fro over said table, a starch-box, a starch-feeding mechanism for delivering starch from said box to said distributer, mechanism for moving said distributer to and from said table and to and from said starch-feeding mechanism, and locking mechanism for retaining said devices for moving said distributer to and fro over said table in operating position.

11. The combination of a table, a starcher-

roll, devices for moving said roll to and fro over said table, means for supplying starch to said roll, and mechanism for moving said roll from said table and to and from said means for supplying starch.

12. The combination of a table, a starcher-roll, devices for moving said roll to and fro over said table, mechanism for producing an extra movement of said roll in one direction off said table, and means for supplying starch to said roll at the end of said extra movement.

13. The combination of a table, a starcher-roll, devices for moving said roll to and fro over said table, mechanism for producing an extra movement of said roll in one direction off said table, means for supplying starch to said roll at the end of said extra movement, and locking mechanism for retaining the said devices for moving said roll to and fro over said table in operating position.

14. The combination of a table, a starcher-roll, devices for moving said roll to and fro over said table, mechanism for producing an extra movement of said roll in one direction off said table, and means for supplying starch to said roll at the end of said extra movement, locking mechanism for retaining said devices for moving said roll to and fro over said table in operating position, and automatic releasing mechanism for releasing said locking mechanism.

15. The combination of a table, a starch-distributer, a movable frame for carrying said starch-distributer to and fro over said table, a driving mechanism, connections between said driving mechanism and said movable frame, a locking mechanism for retaining said connections in operating position, and a releasing mechanism actuated by said movable frame.

16. The combination of a table, a starch-distributer, a movable frame for moving said distributer to and fro over said table, a driving mechanism, connections between said driving mechanism and said frame, locking mechanism for retaining said connections in operating position, and a cam device actuated by said connections for releasing said locking mechanism.

17. The combination of a table, a starch-distributer, a movable frame for moving said distributer to and fro over said table, a driving mechanism, connections between said driving mechanism and said frame, locking mechanism for retaining said connections in operating position, and a wheel actuated by movement of said connections and provided with a cam device for releasing said locking mechanism.

18. The combination of a table, a starch-distributer, a movable frame for moving said distributer to and fro over said table, a driving mechanism, connections between said driving mechanism and said frame, locking mechanism for retaining said connections in operating position, a ratchet-wheel having a cam for releasing said locking mechanism, a dog carried by said frame for moving said wheel step by step to release said locking mechanism after a predetermined number of movements of said frame.

19. The combination of a table, a starch-distributer, a movable frame for moving said distributer to and fro over said table, a driving mechanism, connections between said driving mechanism and said frame, locking mechanism for retaining said connections in operating position, a ratchet-wheel provided with adjustable stop mechanism for determining the point whereat said wheel may commence to turn, a stationary cam device upon said wheel for releasing said locking mechanism, and a dog carried by said frame for moving said ratchet-wheel step by step to release said locking mechanism after a predetermined number of movements of said frame.

20. The combination of a table, a starch-distributer, a movable frame for moving said distributer to and fro over said table, a driving mechanism, connections between said driving mechanism and said frame, locking mechanism for retaining said connections in operating position, a wheel provided with adjustable stop mechanism for determining the point whereat said wheel may commence to turn, a stationary cam device upon said wheel for releasing said locking mechanism, means normally tending to move said wheel in one direction, and mechanism actuated by said connections for turning said wheel step by step in the other direction.

21. The combination of a bed, a starcher-roll frame oscillating along one side of said bed, a starcher-roll carried by said frame and projecting over said bed, and pivoted means for said bed adapted to permit said bed to oscillate transversely with reference to the oscillations of the said frame, and spring for retaining said bed in normal position.

ARTHUR R. SELDEN.

Witnesses:
W. C. KOHLMETZ,
C. R. OSGOOD.