

(No Model.)

2 Sheets—Sheet 1.

J. E. BRIGHT.
STARCHING MACHINE.

No. 579,662.

Patented Mar. 30, 1897.

Fig. I

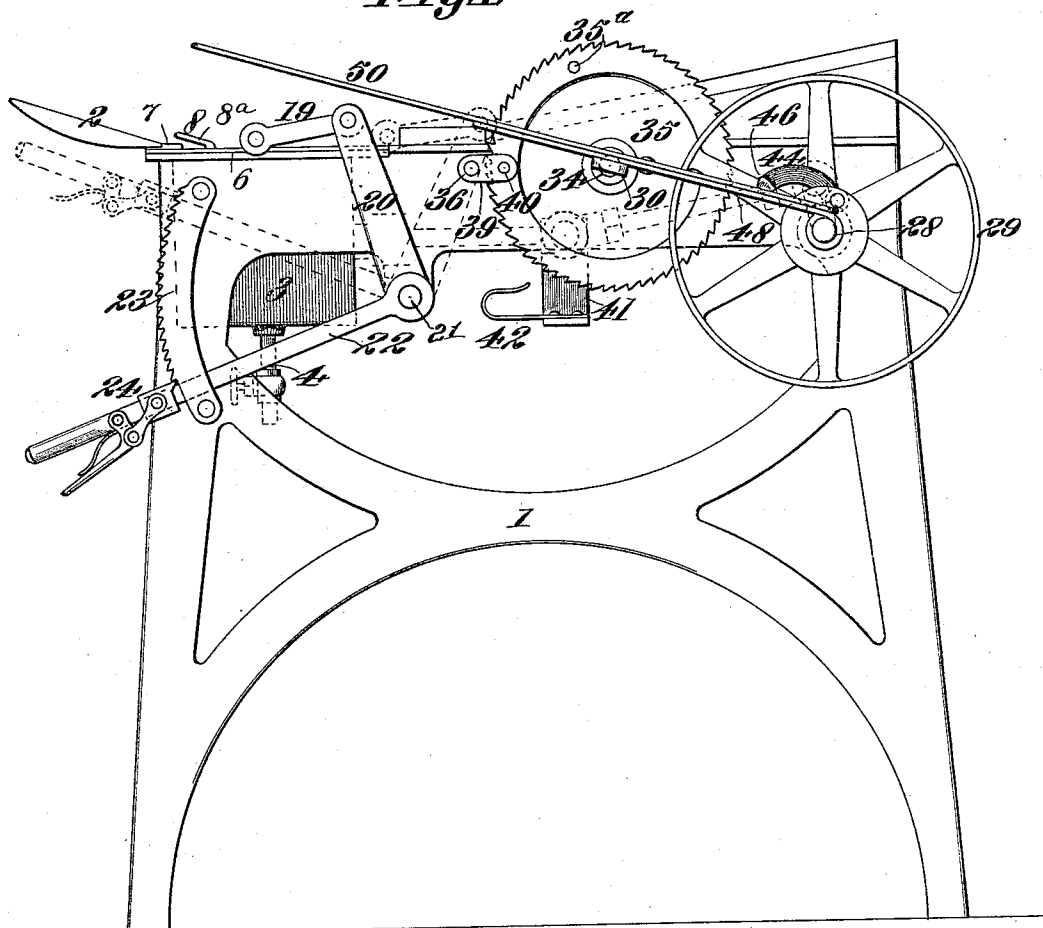
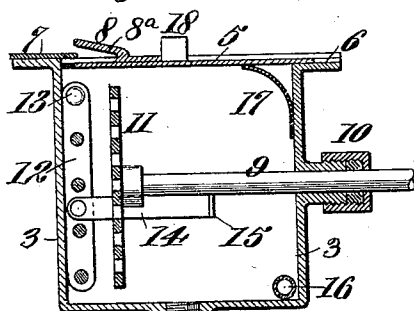
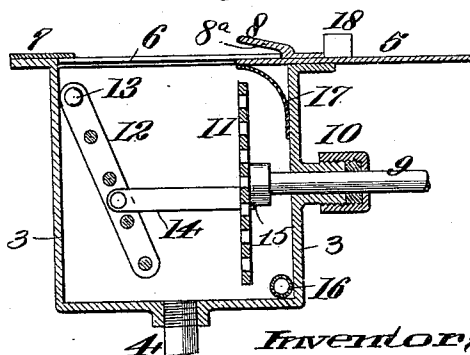


Fig. II.



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Fig. III.



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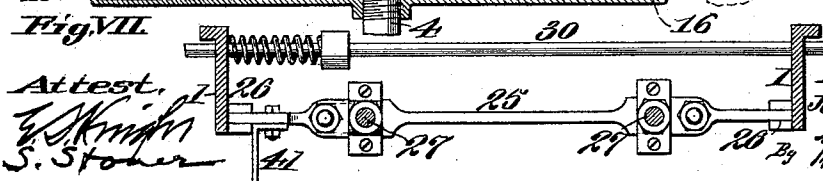
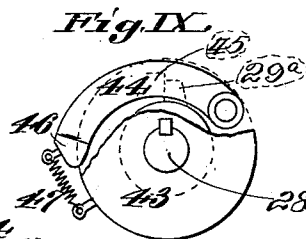
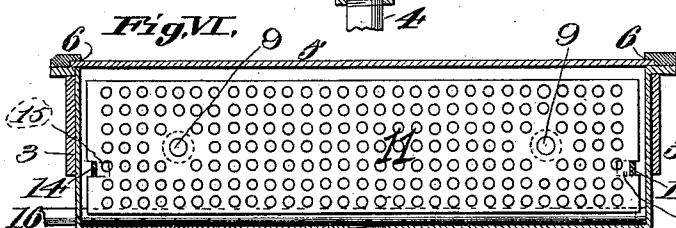
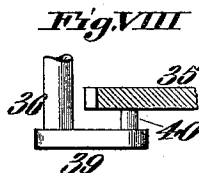
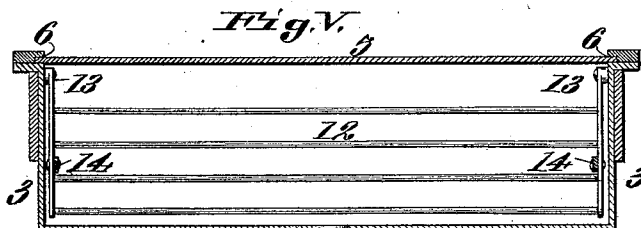
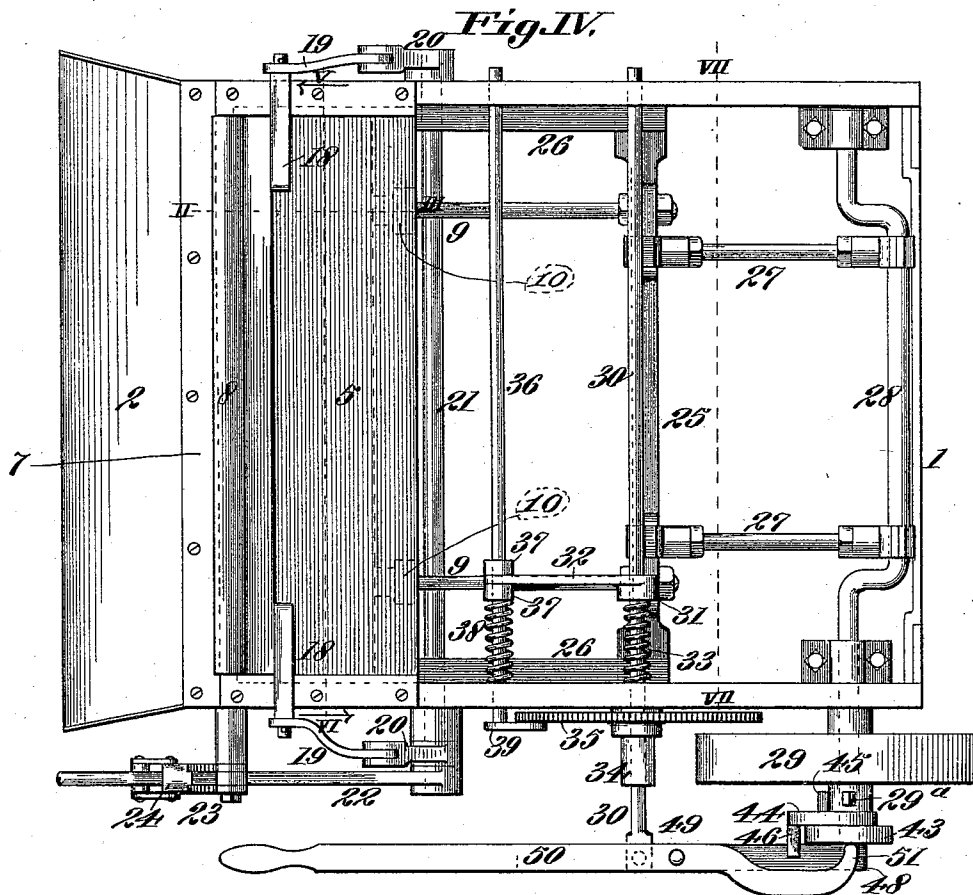
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Inventor,
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UNITED STATES PATENT OFFICE.

JOSEPH E. BRIGHT, OF ST. LOUIS, MISSOURI.

STARCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 579,662, dated March 30, 1897.

Application filed September 14, 1896. Serial No. 605,765. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. BRIGHT, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Starching-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a machine for starching articles of wearing-apparel; and it consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is an end elevation of the machine.

Fig. II illustrates a vertical transverse section taken on line II III, Fig. IV, through the starch-box with its cover closed, the plunger-dasher being shown in forward position. Fig. III illustrates a section taken on line II III, the cover being open and the plunger-dasher being shown retracted. Fig. IV is a top view or plan of the machine. Fig. V illustrates a longitudinal section taken on line V VI, Fig. IV, through the starch-box, looking in the direction indicated by the arrow at the upper side of said Fig. IV. Fig. VI illustrates a section taken on line V VI, Fig. IV, looking in the direction indicated by the arrow at the lower side of said Fig. IV. Fig. VII illustrates a vertical section taken on line VII VII, Fig. IV. Fig. VIII is an enlarged detail view of the end of the automatic stop. A portion of the ratchet-wheel with which said stop engages is shown in cross-section. Fig. IX is an enlarged detail view of the automatic clutch carried by the driving-shaft of the machine.

In the drawings, 1 designates the stand or frame of the machine, and 2 the inclined table, located at one side of the stand or frame.

3 designates the starch-box, provided with an outlet-pipe 4 and a sliding cover 5. The cover 5 moves in guideways 6, and when closed its forward end passes beneath a bar 7 along the front edge of the starch-box. On the upper side of the cover 5 is a hood 8, that extends over the bar 7 when the cover is closed and between the inside of which and said bar a suitable packing, such as a piece of cloth 8^a, may be inserted to prevent the starch escaping from the starch-box.

In starching articles of which but a portion is desired to be starched, such as men's shirts, the portion of the article to be starched is introduced into the starch-box and the remainder lies upon the table 2, and the portions of the articles that lie against the bar 7 are crowded into compactness by the hood 8 when the cover is closed, and thus a packing between the cover and bar 7 is accomplished.

9 designates plungers working in stuffing-boxes 10. Connected to the plungers is a perforated dasher 11, that extends from end to end of the starch-box and is arranged to move backward and forward across the box upon the reciprocation of the plungers.

12 designates a rack pivoted at 13 within the starch-box and to the end pieces of which are connected the ends of links 14, having inturned lips 15 at their free ends. These lips 15 are designed to be engaged by the dasher 11 on each backward movement of the dasher, and the rack 12 is thereby drawn from the position shown in Fig. II to that shown in Fig. III.

In the forward movement of the dasher the articles being starched lying over the rack 12 are pressed forward by the dasher and the rack is likewise carried forward, but by reason of its open construction the starch on being pressed through the articles passes readily through the rack.

16 designates a perforated steam-conveying pipe, through means of which the starch is kept heated.

17 designates a deflector located at the rear of the starch-box, against which the starch strikes on the backward movement of the dasher and falls in front of the dasher again, ready to be again projected against the articles being starched.

18 designates blocks located on top of the cover 5, to the outer ends of which links 19 are pivotally connected. The opposite ends of said links are connected to arms 20, rigidly mounted upon a rod 21, extending across the machine. The rod 21 is journaled in the frame of the machine and has upon one end a lever 22. The lever 22 works within a toothed keeper 23, with which a trip-dog 24, carried by the lever, is adapted to engage to secure the lever in any desired position. By

the movement of the lever 22 the arm 20 is moved and the cover 5 is opened or closed and may be securely retained in either position.

25 designates a cross-head, the ends of which slide in guides 26. The outer ends of the plungers 9 are connected to this cross-head. Connected to the cross-head 25 are pitmen 27, whose opposite ends are journaled to a crank drive-shaft 28, and upon the drive-shaft 28 a pulley 29 is loosely mounted.

It is necessary to stop the operation of the machine when the starch-box is opened and the articles starched are being removed and other articles inserted in the box; otherwise the reciprocation of the dasher would cause the starch to be splashed from the box on the withdrawal of the cover. For this purpose I provide an automatic stop mechanism that throws the machine out of gear on the completion of a predetermined number of reciprocations of the plunger-dasher. This stop mechanism I will now describe.

30 designates a rod extending across the frame of the machine. On this rod is a collar 31, provided with an arm 32, and around the rod is a spring 33, one end of which bears against the frame of the machine and the other end against the collar 31.

On the outside of the machine-frame is a spindle 34, through which the rod 30 loosely passes, and loosely mounted upon the spindle 34 is a ratchet-wheel 35. In the ratchet-wheel 35, near its periphery, is a hole 35^a. 36 designates a rod lying parallel with the rod 30 and provided with collars 37, between which the arm 32 of the collar 31 has connection with the rod 36. Around the rod 36, between the collars 37 and the machine-frame, is a spring 38. The rod 36 extends through the machine-frame and carries upon its end an arm 39, in the free end of which is secured an inwardly-projecting pin 40. During the operation of the machine the pin 40 bears against the face of the ratchet-wheel and is held in such position by the spring 38 pressing inward against the collars 37 on the rod 36.

Depending from the cross-bar 25 is a bracket 41, that carries a spring-arm 42. This spring-arm 42 is arranged in proximity to the ratchet-wheel 35, and on each reciprocation of the cross-head 25 the point of the spring-arm is brought into contact with one of the teeth of the ratchet-wheel and moves the ratchet-wheel a distance corresponding to the length of a tooth, the spring-arm being so arranged that during the backward movement of the cross-head the arm will be carried only a sufficient distance to rotate the ratchet-wheel the amount mentioned.

As the operation of the machine goes on the ratchet-wheel is gradually turned until it completes a revolution, and then, the hole 35^a in the ratchet-wheel 35 having been brought opposite the pin 40 in the bar 39, said pin enters the hole 35^a, and the rods 36 and 30, connected by the arm 32, are carried inward by

reason of the expansion of the springs 38 and 33.

43 designates a disk rigidly carried upon the shaft 28, and pivoted to this disk is a dog 44. On the hub of the loose pulley 29 is a projection 29^a, and on the inner side of the dog 44 is a stud 45, that is capable of engagement with said projection. On the opposite side of the dog 44 is an arm 46. The free end of the dog 44 is connected to the disk 43 by means of a spring 47.

48 designates a bar, one end of which is loosely supported on the end of the shaft 28, while the opposite end is connected to the outer end of the rod 30. Fulcrumed on the bar 48 at 49 is a lever 50, the inner end of said lever 50 having a heel 51, that is capable of being thrown against the face of the disk 43.

The parts as shown in Figs. I and IV are in inoperative position, being shown in the positions they assume when all parts are at a standstill. Under this condition the pulley 29 is free to turn upon the shaft 28. To put the machine in operation, the handle of the lever 50 is grasped and drawn outward, and its heel 51, bearing against the disk 43, causes the bar 48 to be drawn outward, thus releasing the arm 46 of the dog 44 from contact with said bar, and the spring 47 draws the free end of the dog 44 inward and throws the stud 45 into engagement with the projection 29^a on the hub of the pulley 29. The disk 43, to which the dog 44 is pivoted, being rigid upon the shaft 28, when the stud carried by the dog engages with the projection 29^a on the hub of the driving-pulley the driving-pulley is made tight with relation to the shaft and the shaft must turn with it, and continues so until the dog is again raised, as will be presently referred to.

Upon moving the lever 50 to withdraw the bar 48 from engagement with the arm 46 the rod 30 is simultaneously drawn outward, and the rod 30 being connected with the rod 36 the latter rod is likewise drawn outward, and the pin 40 is retracted from the hole 35^a in the ratchet-wheel 35. The pin 40, bearing against the face of the ratchet-wheel, holds the parts in the position in which they have been placed by the movement of the lever 50 until the ratchet-wheel has completed a revolution, when the pin will again fall into the hole 35^a, and the rods 36 and 30 will be carried inward under tension of the springs 38 and 33, and the bar 48 is carried inward into the position to be struck by the arm 46, as before, when, the dog being raised by the arm 46 striking the bar 48, the stud 45 is removed from engagement with the projection 29^a, and the pulley 29 is again rendered loose upon the shaft, and the machine has again ceased to operate.

I claim as my invention—

1. A starching-machine comprising a starch-box having a suitable cover, and stuffing-

boxes, plungers working in the latter, a perforated dasher secured to the plungers, a swinging rack pivoted to the front upper corners of the starch-box, the links having in-
5 turned lips connected with the rack and sliding in the dasher; and means for operating the plungers; substantially as described.

2. In a starching-machine, the combination of a starch-box, a rack pivotally supported in
10 said box, a dasher arranged in said box, plungers by which said dasher is carried, a cross-head by which said plungers are carried, means for operating said cross-head, and automatic mechanism arranged to stop said
15 cross-head-operating means on the completion of a predetermined number of strokes of said dasher, substantially as described.

3. In a starching-machine, the combination of a starch-box, a dasher arranged in said box,
20 plungers by which said dasher is carried, a cross-head by which said plungers are carried,

means for operating said cross-head, and automatic mechanism arranged to stop said cross-head-operating means on the completion of a predetermined number of strokes of
25 said dasher, said stop mechanism consisting of a ratchet-wheel provided with a hole, an arm carried by said cross-head arranged to engage the teeth of said ratchet-wheel, a pair
30 of spring-controlled rods, one of said rods carrying an arm having a pin adapted to rest against the side of said ratchet-wheel, and to enter the hole in said ratchet-wheel on the
35 completion of the revolution of said wheel, and a clutch mechanism arranged to be disengaged from the driving mechanism of the machine on said pin entering the hole in said ratchet-wheel, substantially as described.

JOSEPH E. BRIGHT.

In presence of—

E. S. KNIGHT,

STANLEY STONER.