

(No Model.)

S. W. HOLBROOK.
STARCHING MACHINE.

No. 345,137.

Patented July 6, 1886.

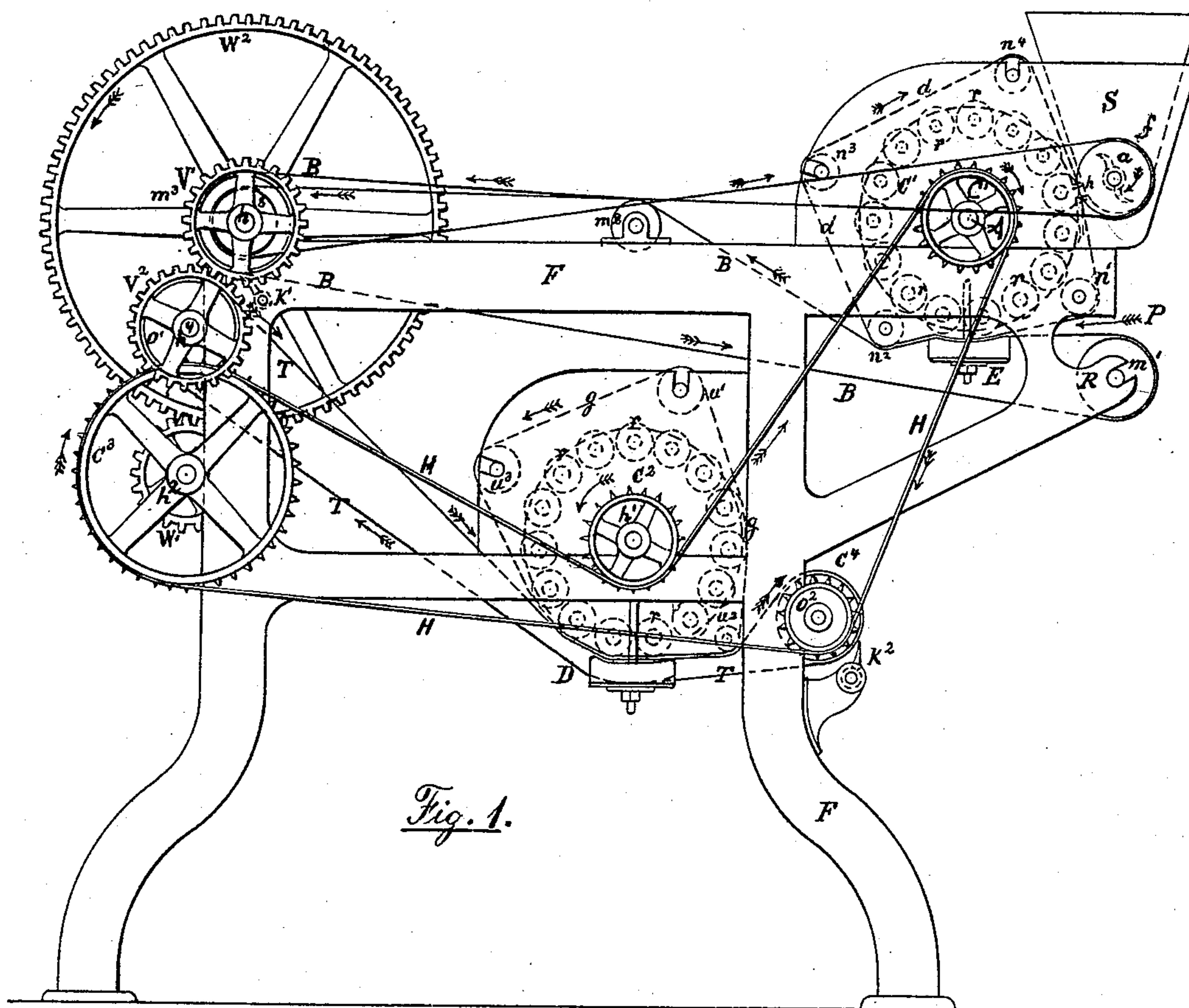


Fig. 1.

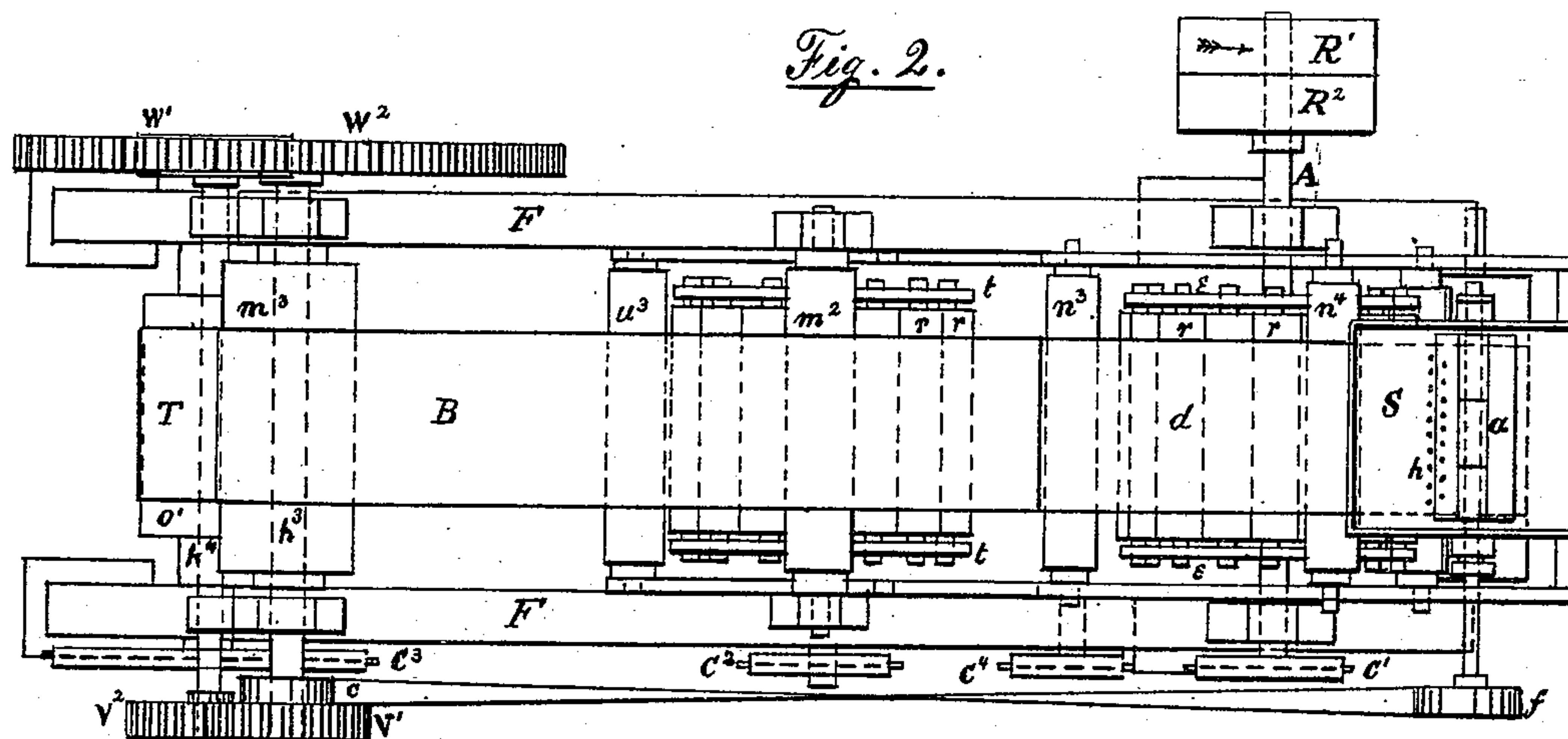


Fig. 2.

WITNESSES:

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STARCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,137, dated July 6, 1886.

Application filed March 5, 1885. Serial No. 157,774. (No model.)

To all whom it may concern:

Be it known that I, SILAS W. HOLBROOK, a citizen of the United States, residing at Newburg, in the county of Orange and State of New York, have invented a new and useful Starching-Machine for Starching Collars, Cuffs, or Similar Wearing-Apparel, of which the following is a specification.

The invention consists of a combination of two sets of rollers and pulleys, over which linen or canvas belts are stretched, and which are set in motion by belt or chain. To each set of rollers belong two belts, one being a carrier-belt, on which the collars are placed. The other one, being covered with starch, is putting starch on one side of the collar, at the same time holding it in position, while both belts with the collar between them are subjected to a pressure passing between a set of rollers and a press-block, when the starch is pressed into the meshes of the fabric. After this the collar is transferred from the first set of belts to the second set automatically, a scraping-knife taking the collar off when passing above and near to the second carrier-belt, which carries the collar toward a second belt covered with starch, exposing this time the other side of the collar to the supply of starch. This is done while both belts pass between a similar set of rollers and a press-block, like in the first instance, when the starch is pressed into the collar. After this the collar is taken off the belt by a knife, and it falls into a receptacle placed below the knife.

The carrier-belts only have a positive motion and move with the same speed. The other belts, which are covered with starch, are only carried along by the friction caused by passing with the carrier-belt between the press-block and the rollers. The collars are not subjected to any strain while passing between the belts; therefore all stretching and wear of the collars, cuffs, &c., is avoided. I attain these results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a top view of the same.

Similar letters refer to similar parts in the two views.

The side frames, F F, support all parts of the machine.

The main driving-shaft A, near the front end of the machine, is driven by the pulley R', the other one, R², being a loose pulley. The shaft A carries at the other end a chain-wheel, C', from which the other shafts, h' and h², are driven by means of an endless chain, H, which engages into the wheels C² and C³, and is carried back over the leading-wheel C⁴ to the wheel C'. The wheel C⁴ is loose on the shaft, so as not to give any motion to the shaft or to the roller o², which is on that shaft. The shaft h² carries a spur-pinion, W', which drives the large spur-wheel W², and by it the shaft h³, which in turn transmits its motion to the shaft h⁴ by a pair of equal wheels, V' and V², so that both shafts move with equal speed. These shafts h³ and h⁴ carry each a long roller, m³ and o', of equal diameters, and these rollers give motion to the two endless canvas belts B and T.

Belt B runs from roller m³; as indicated by arrows, over a leading-roller, m', at the front end of the machine, then over a press-block, E, around the leading-rollers n² and m², back to the driving-roller m³.

The belt T runs from the driving-roller o', as indicated by arrows, under a set of rollers, r r, and over a press-block, D, a leading-roller, u², around the roller o² at the front of the machine, returning under the press-block D to the driving-pulley o'.

To the shaft A are secured two round plates, e e, in which rest the ends of shafts of a number of small rollers, r r r, which are grouped between the plates e e in a circle around the shaft A, close together, but without touching each other, so that each roller can revolve on its axis, and all together can revolve with the shaft A, forming a hollow drum, the outside circumference of which is the rollers r r. Around these rollers r r are placed four other rollers, n' n² n³ n⁴, in stationary bearings fastened to the side frames, F F, and they are so arranged that a belt, d, stretched over these four rollers will bear against the rollers r r only at the front of the machine at h h, and at the lower side of the group, where the belt d runs between the rollers r r and the press-block E. This set of rollers r r has a positive motion, when the machine is running, by being fastened to the shaft A; but the belt d is moved only by the friction caused by coming in contact with the

rollers $r r$ at $h h$, and by passing with the belt B between the rollers $r r$ and the press-block E. The pressure brought on the belts B and d can be adjusted by the bolts and set-screws 5 by which the press-block E is held in position to the side frames, F F. While each roller r is passing over the press-block E it is revolving on its own axis, thereby avoiding all sliding or stretching motion, only each one is exercising a pressure by rolling inside the belt d 10 when passing along with the belt d over the press-block E. Another similar set of rollers $r r$ is fastened to the shaft h' , between the plates $t t$, and the rollers $u' u^2 u^3$ are placed 15 around them in stationary bearings in such a way that a belt, g , stretched over them will touch the rollers $r r$ only at the front and where it passes with the rollers over the press-block D. All that is said about the former 2 set of rollers applies also to these rollers.

The bearings carrying the rollers n^3 and u^3 are adjustable to take up the slackness of the belts d and g .

In front of the rollers $r r$ on the shaft A is 25 placed a hopper, S, containing prepared starch for starching the collars, cuffs, and other pieces which may have to be starched in a similar way. The place where the hopper touches or is nearest to the belt d is perforated by one or 30 more rows of fine holes, $h h$. Through the box runs a small shaft, which carries an agitator with two curved wings, the edges of which come close to these perforations. When the shaft revolves, the edges of the wings press 35 starch automatically through the holes $h h$, which is carried off by the belt d passing by the holes. The shaft, with the agitator, is revolved by a small belt, which runs from the pulley c behind the spur-wheel V' to the pulley 40 f .

Now, the machine being ready for operation, a collar is placed on the belt B at the place P near the front of the machine. The belt carries it along and passes it under the belt d , 45 which is on the outside covered with starch. Both belts B and d now pass with the collar between them over the press-block E, which is pressed against the revolving rollers $r r$. By this pressure the starch is being pressed into 50 the collar without any strain or tension on the fabric of the collar. The pressure can be adjusted by the bolts holding the press-block E in its place. The collar remains on the belt B and is carried over the rollers m^2 and m^3 , and 55 arriving where the two pulleys or rollers m^3 and o' come near together, a scraping-knife,

K', fastened to the side frames and stretching across the face of the belt, removes the collar and superfluous starch from the belt B and lets it drop on the belt T. This superfluous starch 60 constitutes the supply of starch for the belt T, which transfers a part of it to the outside of the belt g . The belt T carries the collar along toward the belt g , and the collar passes with and between the two belts T and g , over the 65 press-block D, where it receives a pressure from the rollers $r r$. This time the other side of the collar is starched and pressed, as the side of the collar which was next to the belt B is now on the outside next to the belt g . The 70 collar now passes with the belt T toward and over the roller o^2 , where a second scraping-knife, K², at the front of the roller takes the collar off the belt T.

All collars or any other suitable pieces to be 75 starched may be put in quick succession on the belt B at P, and the machine will starch them thoroughly.

What I claim as my invention, and desire to 80 secure by Letters Patent, is—

1. The rollers $r r$, arranged in a circle around the shafts A and h' , with which they revolve, in combination with the belts d and g , and with the rollers $n' n^2 n^3 n^4$ and $u' u^2 u^3$, respectively, 85 over which these belts are stretched, and in combination with the press-blocks E and D, for the purpose of pressing the starch through the collars, cuffs, &c., as specified.

2. The carrier-belts B and T, in combination with the starching-belts d and g , rollers r 90 r , press-blocks E and D, and scraping-knives K' and K², for the purpose of carrying the collars through the machine and transferring them automatically from one belt to the other with the reverse side up, so as to press starch 95 through from both sides, and taking the collars off when finished, substantially as specified.

3. A starching-machine consisting of the carrier-belts B and T and their roller-drums on shafts A and h' , starching-belts d and g , 100 with their rollers, press-blocks E and D, starch-hopper S, with shaft and agitator a , knives K' and K², driving-chain H, with chain-wheels C' C² C³ C⁴ and gearing, all combined to give the 105 purpose of starching collars, cuffs, &c., as specified.

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Witnesses:

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