R. HÖNIGSBERG & G. EDELMANN.

APPARATUS FOR IMPREGNATING LAUNDRIED ARTICLES AND LIKE FABRICS WITH FLUID OR PASTY SUBSTANCES.

APPLICATION FILED AUG. 7, 1913.

1,166,687.

Patented Jan. 4, 1916.

3 SHEETS—SHEET 1.

Fig. 1

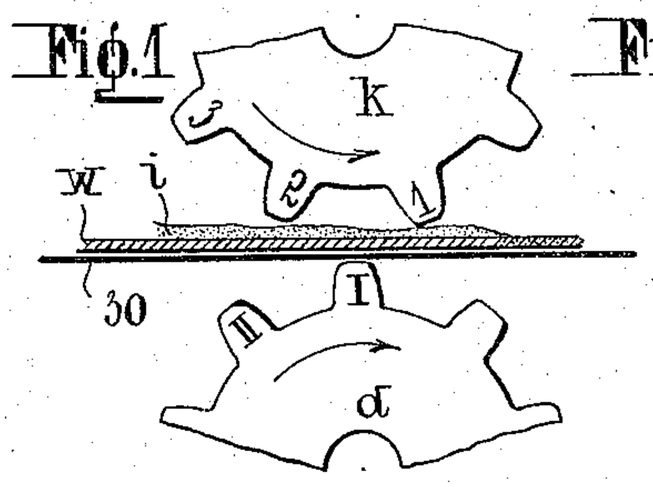

Fig. 2

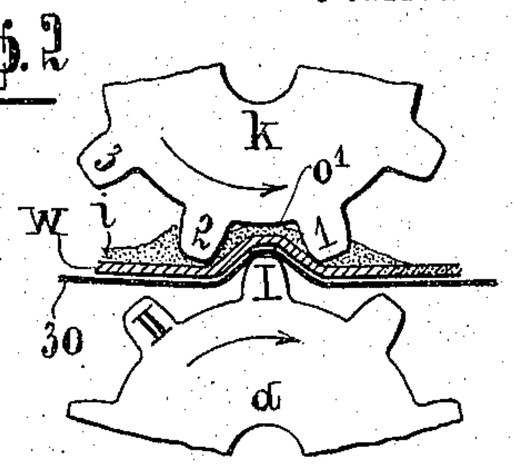

Fig. 3

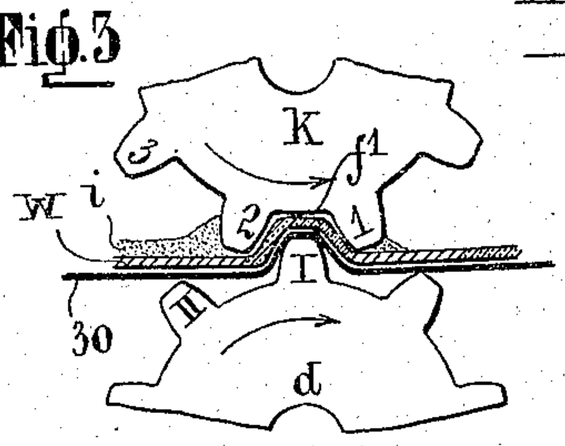

Fig. 4

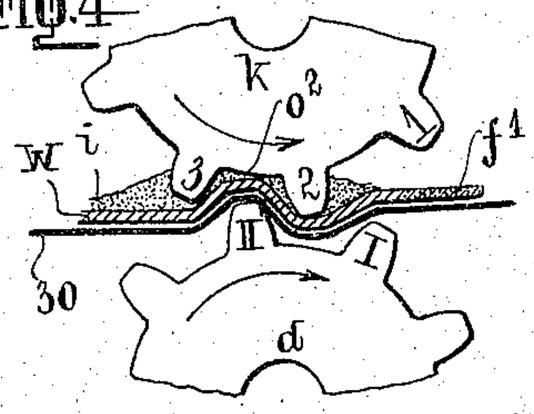

Fig. 5

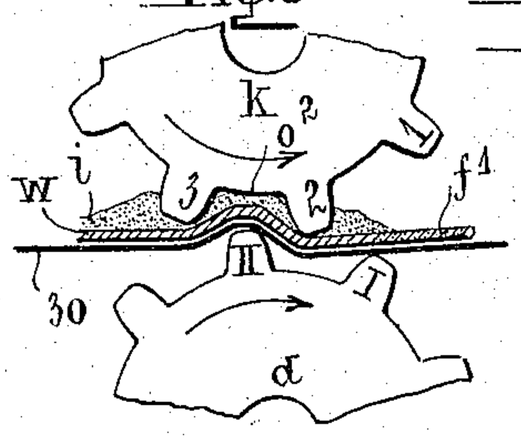

Fig. 6

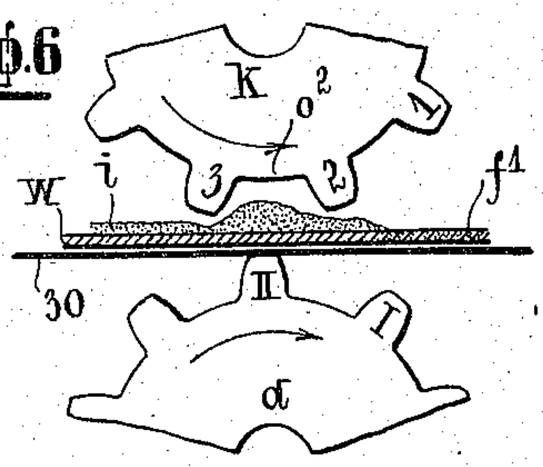

Fig. 11

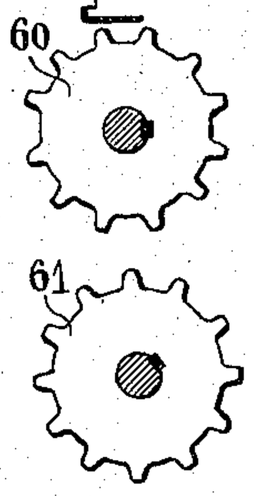

Fig. 7

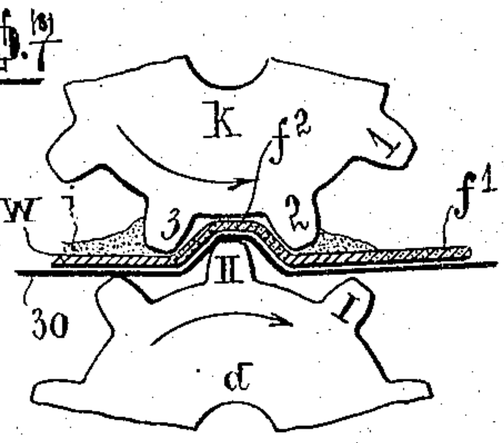

Fig. 10

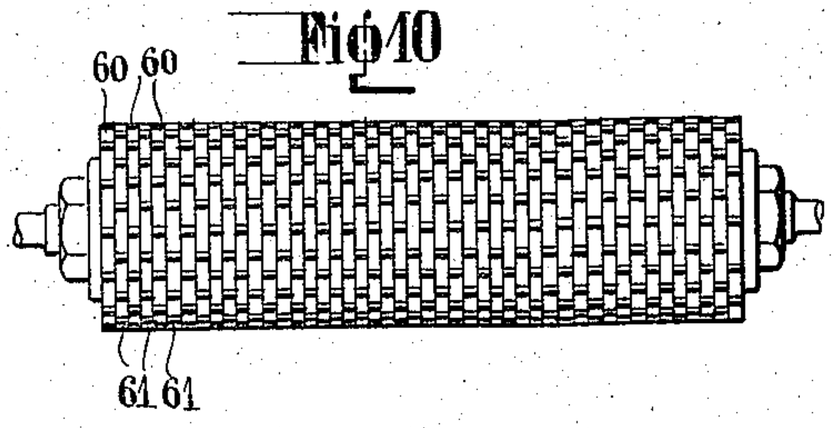

Fig. 8

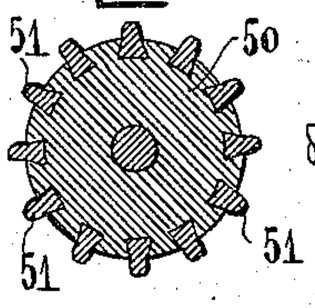

Fig. 9

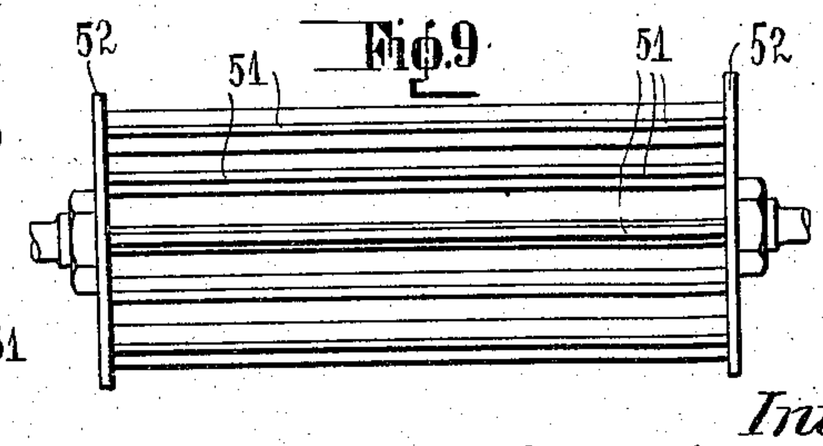

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Fig. 12

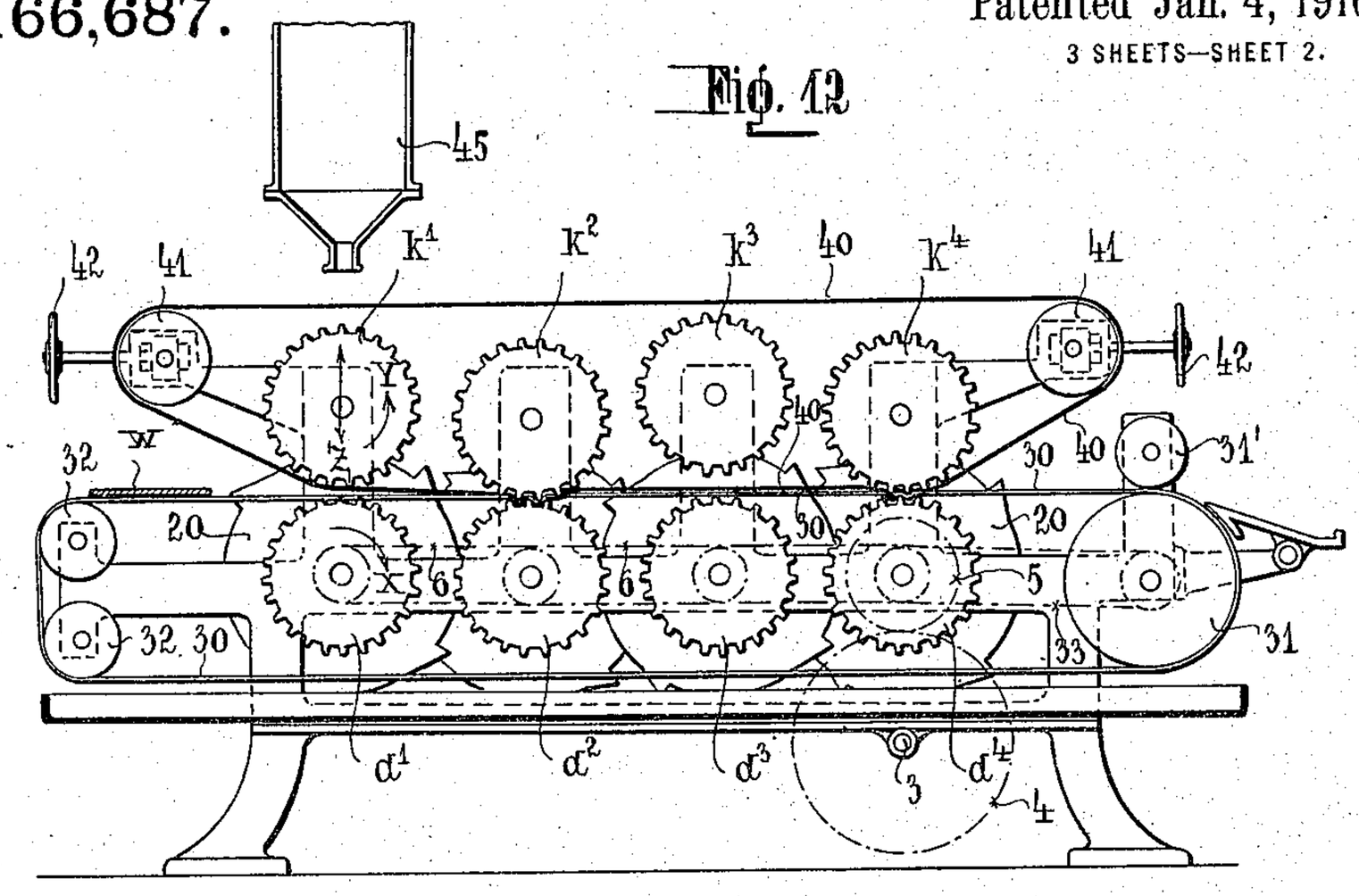
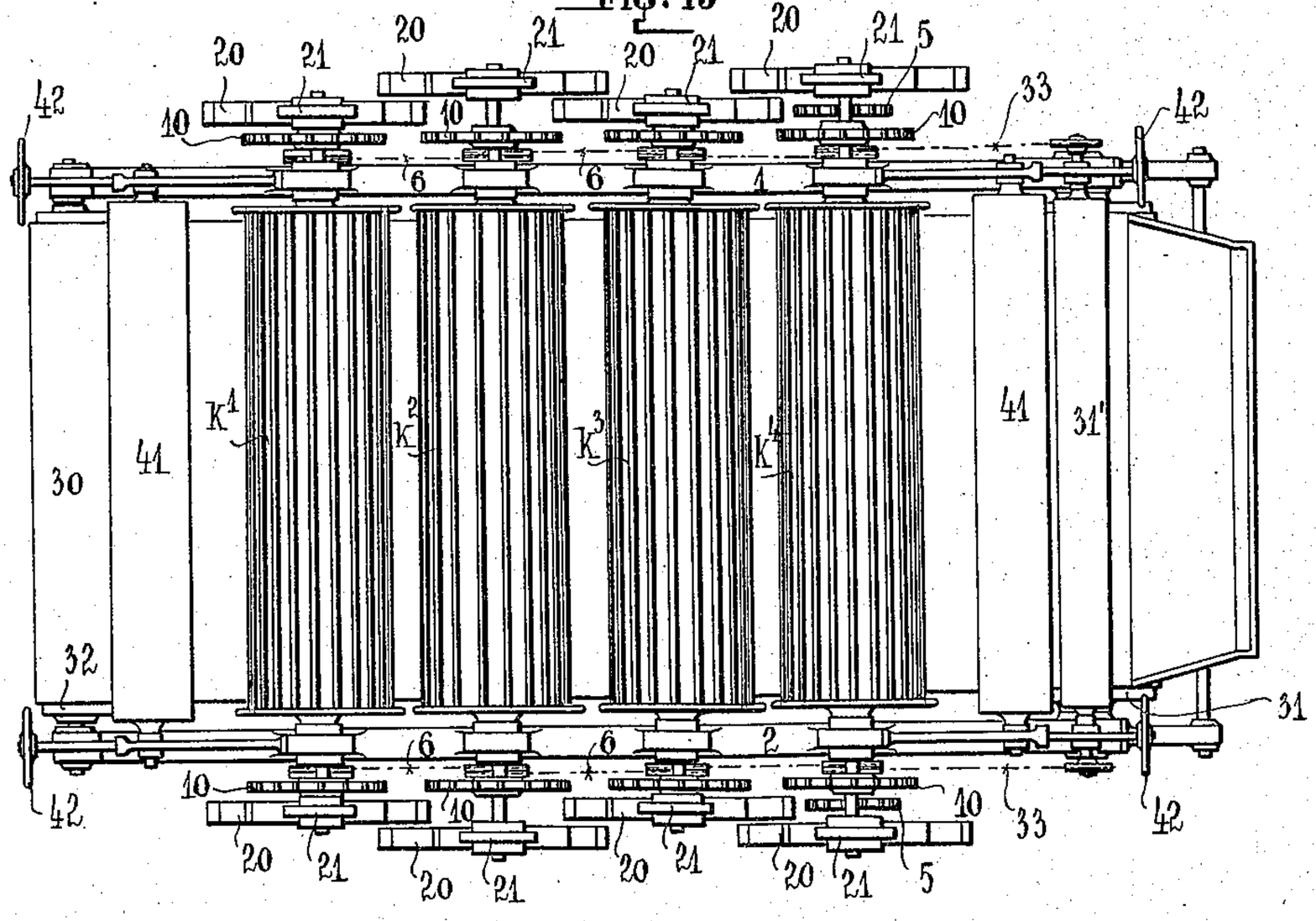


Fig. 13



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3 SHEETS—SHEET 3.

Fig. 14

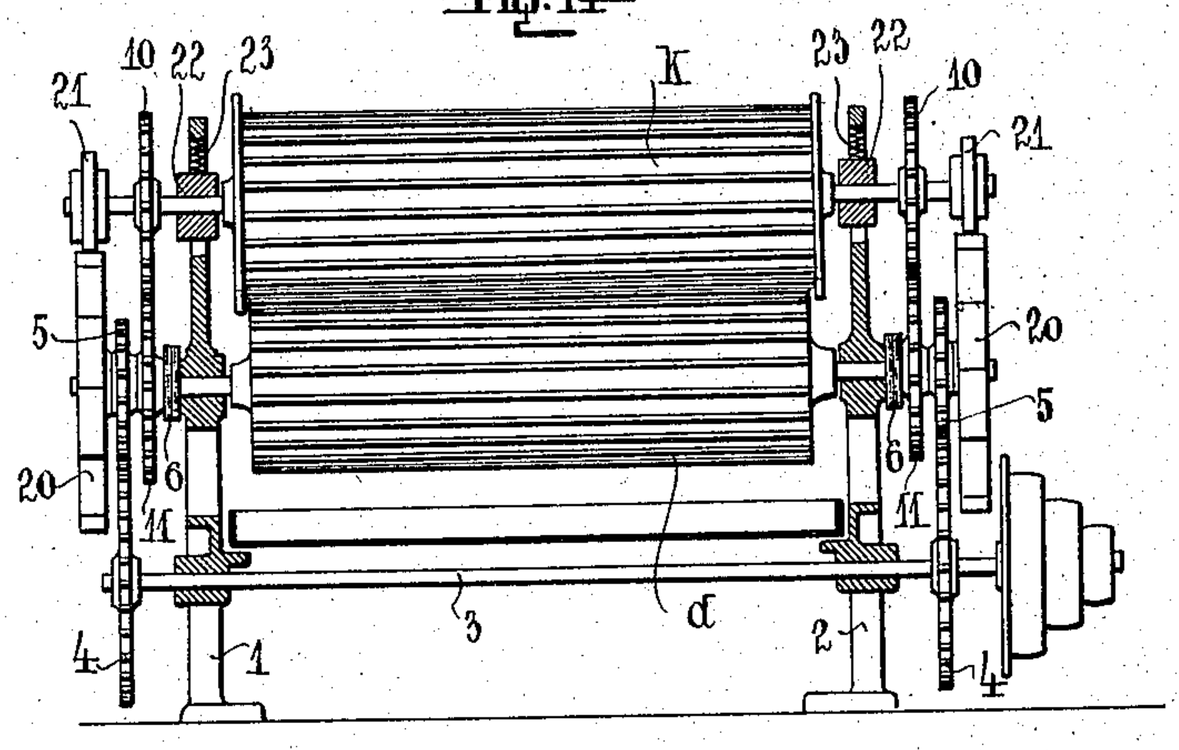


Fig. 15

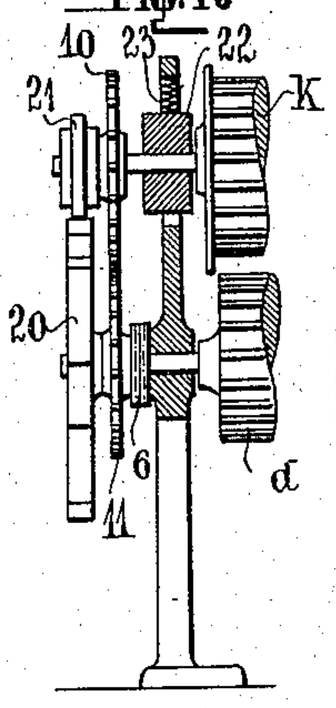
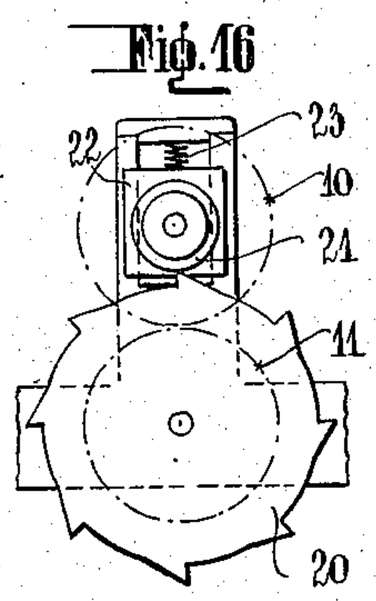


Fig. 16



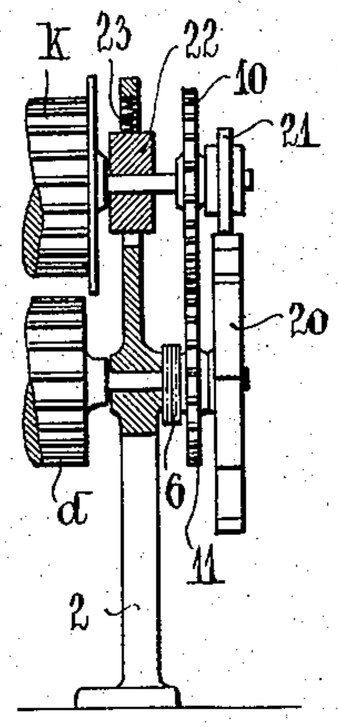


Fig. 17

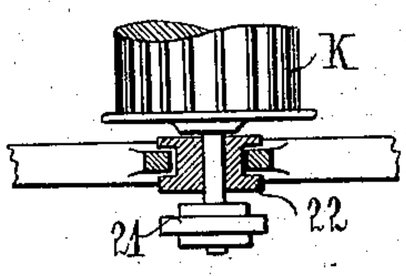


Fig. 18

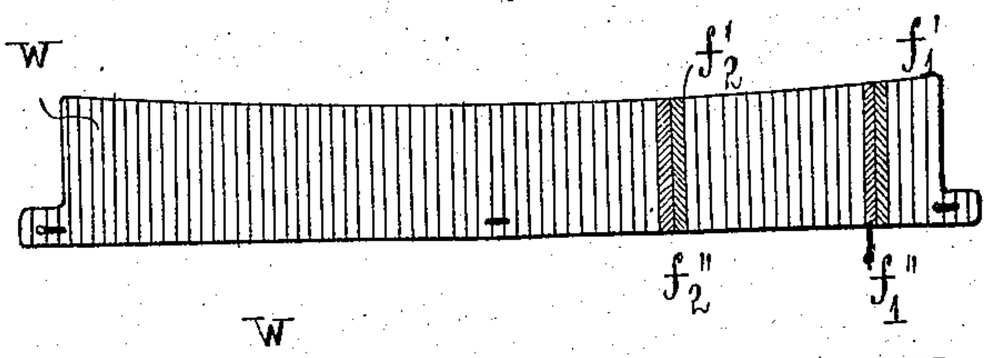
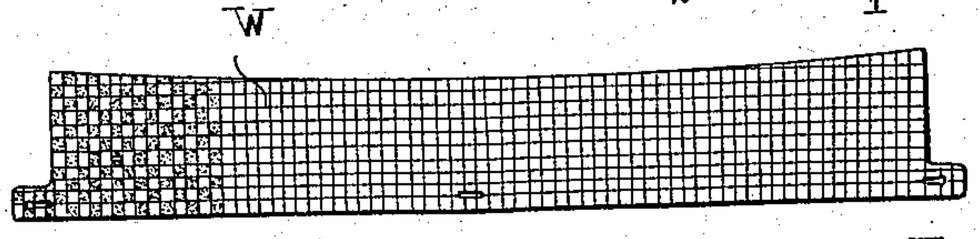


Fig. 19



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UNITED STATES PATENT OFFICE.

ROBERT HÖNIGSBERG AND GEORG EDELMANN, OF VIENNA, AUSTRIA-HUNGARY.

APPARATUS FOR IMPREGNATING LAUNDRIED ARTICLES AND LIKE FABRICS WITH FLUID OR PASTY SUBSTANCES.

1,166,687. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed August 7, 1913. Serial No. 783,455.

To all whom it may concern:

Be it known that we, ROBERT HÖNIGSBERG and GEORG EDELMANN, subjects of the Emperor of Austria-Hungary, residing at Nobilegasse 40, Vienna, Austria-Hungary, have invented certain new and useful Improvements in Apparatus for Impregnating Laundried Articles and like Fabrics with Fluid or Pasty Substances, of which the following is a specification.

The present invention relates to an apparatus for impregnating laundried articles and similar woven fabrics with fluids, particularly fluids of pasty consistency such as starch and the like.

The object of the invention is by subjecting the fabric during the impregnation to a special treatment to make it possible thoroughly and at the same time quickly to saturate a number of articles without affecting disadvantageously the shape of the goods. This object is attained according to the present invention by the impregnating mass being beaten into the articles to be treated by striking implements of peculiar construction which in addition to performing their striking action also perform a transporting movement while exercising at the same time a fulling action.

The invention is illustratively exemplified in the accompanying drawings, in which like letters of reference refer to like parts throughout the several views.

Figures 1 to 7 illustrate diagrammatically the operation of a machine in which the striking implement is shown in the form of a roller. Figs. 8 and 9 show in cross section and elevation respectively a special form of striking roller, Fig. 10 is an elevational view of a roller in which the ribs thereon are staggered; while in Fig. 11 are illustrated the disks of which the roller of Figs. 8 and 9 is made up. In Figs. 12, 13 and 14 is illustrated in side elevation (partly in section), plan and end elevation one construction of my improved machine. In Figs. 15, 16 and 17 is shown in side view, end view and plan respectively the operation and manner of mounting the striking rollers in this machine. Figs. 18 and 19 illustrate the treating or impregnating of a laundried article according to the present invention where the rollers employed are fluted straight and with flutings in staggered relation to one another respectively.

The machine illustrated in Figs. 12 to 17 consists of four pairs of fluted rollers k^1 d^1 to k^4 d^4 which are mounted in two frames 1 and 2 arranged at either side of the rollers. The upper roller k of each pair, which is hereafter called for short a striking roller, is mounted so as to rotate and at the same time to rise and fall in the frame of the machine while the lower roller, the transporting roller, is mounted so as only to rotate in the frame of the machine.

The rotating rollers d are driven in the direction of the arrow X from the driving shaft 3 by means of tooth gearing 4, 5 (Fig. 14) and chain drive 6.

The striking rollers k are coupled on the one hand with the rotating rollers d by means of gearing 10, 11 (Fig. 14) and are at the same time actuated by a mechanism of special construction driven by the rotating rollers. This mechanism may for example consist of cam disks 20 keyed on the shafts of the rotating rollers which coöperate in a manner to be described later with rollers 21 arranged on the shafts of the striking rollers. The shaft of each striking roller k is mounted in a sleeve 22 (Fig. 17) arranged to slide in the frame of the machine and constantly pressed downward by means of a spring 23. By means of the construction above described therefore each striking roller k is given on the one hand a rotary movement in the direction of the arrow Y and on the other hand an up and down striking movement in the direction of the arrow Z. Between the striking rollers and rotating rollers of the machine is stretched an endless cloth 30 which is passed over a driving roller 31 and one or more guiding rollers 32 in the manner shown in Fig. 12. The driving roller 31 is driven by a chain drive 33 from the driving shaft 3 of the machine.

Each of the above mentioned striking, rotating and guide rollers may consist of any suitable material. It is preferable to make the driving roller 31 of rubber or similar elastic material and to place a presser roller 31′ above it for purposes to be described later.

Above and below the striking rollers k there is arranged a guiding apron 40 which is led over guide rollers 41 in the manner shown in Fig. 12. The rollers 41 are mounted adjustably in the machine frame and can

be moved by means of adjusting devices 42 for the purpose of stretching the apron 40. Above the striking rollers are arranged one or more receptacles 45 for the impregnating fluid from which the impregnating fluid by means of the apron 40 is supplied to the goods *w* to be impregnated.

The goods to be impregnated are laid flat on the traveling cloth 30 side by side and simply passed one after another through the machine.

The following are the stages of the operation that is carried out: Assuming that a quantity of starch or the like *i* in the desired thickness is spread on the goods *w* on the cloth 30 and that the goods with the starch on them have passed between the striking and rotating rollers *k* and *d* and that the striking roller *k* is in the raised position shown in Fig. 1, then when the striking roller descends there will be caught in the space o^1 between the ribs 1 and 2 of the roller, a certain quantity of starch. During the last phase of the descent of the roller *k* the starch contained in the space o^1 will be forced thoroughly into the goods *w* so that at the end of the striking period (Fig. 3) the whole of the starch in the space o^1 will have been pressed into the goods. Thus a very thorough saturation of the section f^1 of the goods with starch is effected. After the first striking action is completed the goods *w* are moved forward with the apron 30 in the manner shown in Fig. 4 (compare the positions of the ribs *l* and I) and the saturated portion f^1 of the goods is moved beyond the range of the operating rollers. While this movement is taking place the surface of the goods is subjected to a peculiar fulling action, the goods being subjected momentarily to friction and the texture of the fabric being stretched. It has been found that this momentary stretching of the texture of the goods over interrupted fulling surfaces results in effecting the saturation of the goods even in the case of the closest linen fabrics. At the same time during this phase of the operation a further quantity of starch is being inclosed between the rollers 2 and 3 in the space o^2. When the rib II of the rotating roller *d* has just about reached the position shown in Fig. 5, the displacing mechanism 20, 21 above described raises the striking roller *k* from the position shown in Fig. 5 into that shown in Fig. 6, in which position the rib II of the rotating roller comes to rest exactly opposite a fluting in the striking roller. On the striking roller descending (Fig. 7) the starch inclosed in the space o^2 is completely pressed into the goods *w* and the section f^2 of the goods is thoroughly starched. The above described operation is repeated as the goods are moved on farther.

By suitably setting the striking rollers k^1 to k^4 relatively to one another it is possible to set the machine so that the first striking roller k^1 starches the goods *w* along the strips $f^{1'}$ and $f^{2'}$ (compare Fig. 18), while the second striking roller starches it along the strips $f^{1''}$ and $f^{2''}$.

With a sufficient number of striking rollers it is therefore possible to retain completely the appearance of the goods while saturating them with starch. Any starch which may remain upon the surface of the goods after passing the last striking roller may be removed by suitable cleansing devices 31′ (pressure rolls or the like).

As mentioned above the implements employed in carrying out the process may be very considerably varied and may be made of the most varied materials. It has been found advantageous to make the ribbed rollers with straight ribs or with ribs displaced relatively to one another. For some goods with open texture it has been found desirable to use more or less smooth rollers with the striking and rotary motion above described.

In order to reduce the cost of making the ribbed operating rollers it is preferable to make these in the manner illustrated in Figs. 8 to 11, of a number of elements. In Figs. 8 and 9 the rollers are shown made with straight ribs the center piece 50 being furnished with a number of dove tail grooves in which are inserted interchangeable rib pieces 51. Disks 52 are secured at the ends of the rollers to lock the rib pieces 51 in place. It has been found particularly advantageous to employ ribbed rollers with the ribs arranged in staggered order as illustrated in Fig. 10. A roller of this construction can be produced cheaply by assembling a number of stamped disks 60, 61 (Fig. 11) provided with key grooves off set to one another. With this construction by simply arranging the disks 60, 61 side by side a sort of check effect can easily be obtained from the roller. With the apparatus above described it is possible, as experiments have proved, to saturate even thick fabrics very thoroughly with stiff and pasty impregnating material without adversely affecting the appearance of the goods.

A further considerable advantages of the invention is that the goods are impregnated separately in a flat condition and leave the machine flat, so that the impregnated goods can be handled at once without special pressing and sorting.

Having thus described my invention and explained the mode of operation thereof, I claim and desire to secure by Letters Patent:—

1. Apparatus for mechanically impregnating laundried articles and the like fabrics with fluid or pasty substances comprising a frame, one set of rollers being arranged

rotatably in said frame, another set of rollers mounted rotatably in said frame, means for causing said second set of rollers to rise and fall, two endless aprons arranged between said sets of rollers, means for driving the two sets of rollers and the two aprons and means for supplying the goods arranged between said aprons with the impregnating fluid.

2. Apparatus for mechanically impregnating laundried articles and the like fabrics with fluid or pasty substances comprising a frame, one set of rollers, being arranged rotatably in said frame, another set of rollers which is mounted in said frame so as to rotate and at the same time to rise and fall, two endless aprons arranged between said sets of rollers, means for driving the two sets of rollers and the two aprons and means acting upon the apron stretched over the transporting rollers, through which the goods impregnated are freed from any impregnating material still adhering.

3. Apparatus for mechanically impregnating laundried articles and the like fabrics with fluid or pasty substances comprising a frame, a set of striking rollers and a set of transporting rollers mounted in said frame, means for supplying impregnating fluids between the rollers, said rollers being provided with ribs.

4. Apparatus for mechanically impregnating laundried articles and the like fabrics with fluid or pasty substances comprising a frame, a set of striking rollers and a set of transporting rollers mounted in said frame, means for supplying impregnating fluids between the rollers, said rollers being provided with ribs circumferentially displaced with regard to one another.

5. Apparatus for mechanically impregnating laundried articles and the like fabrics with fluid or pasty substances comprising a frame, a set of striking rollers and a set of transporting rollers mounted in said frame, means for supplying impregnating fluids between the rollers, said rollers being composed of a number of ribbed disks, secured removably to the shafts of said rollers.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT HÖNIGSBERG.
GEORG EDELMANN.

Witnesses:
ANTON MAREK,
AUGUST FUGGER.