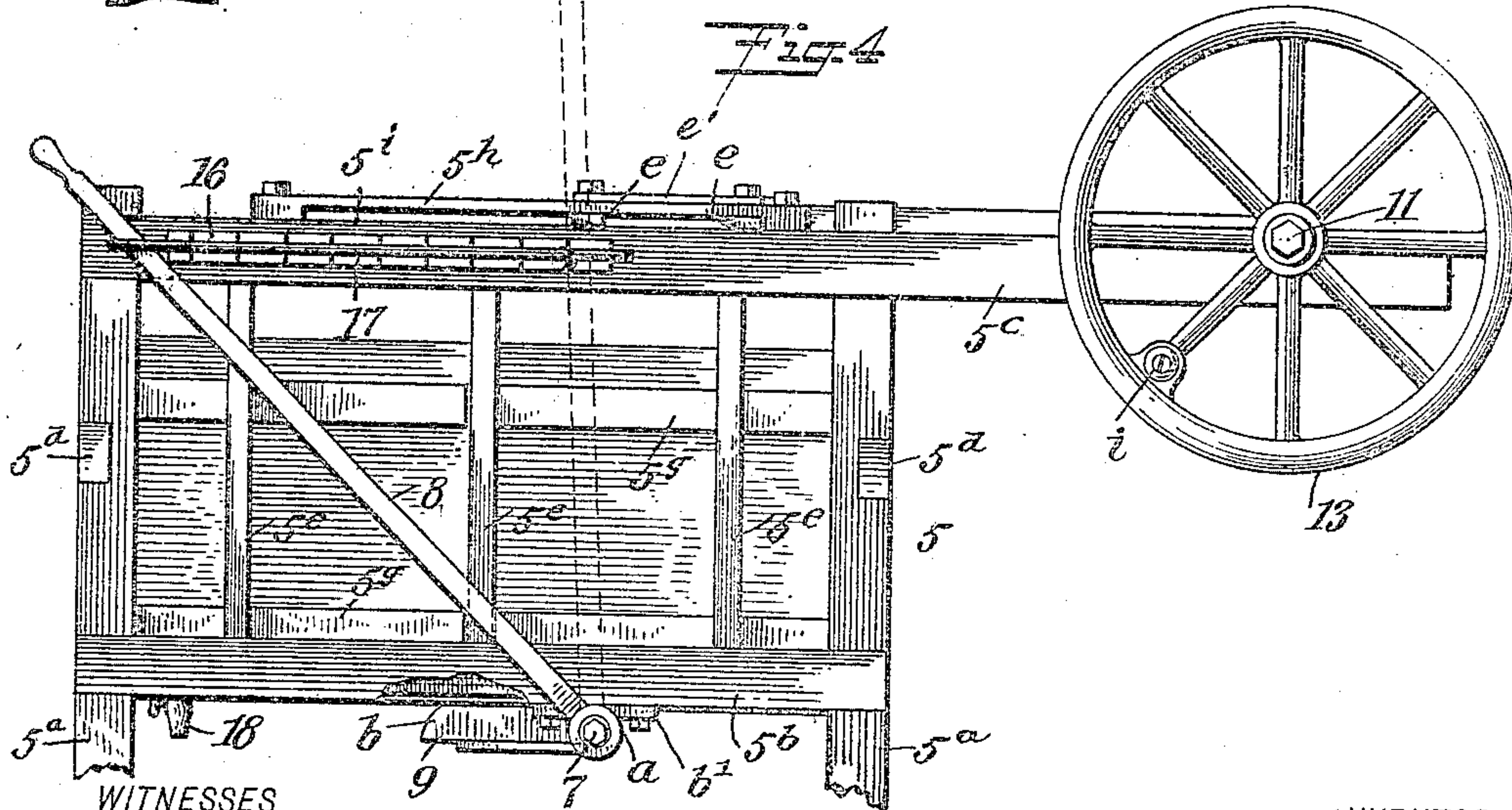
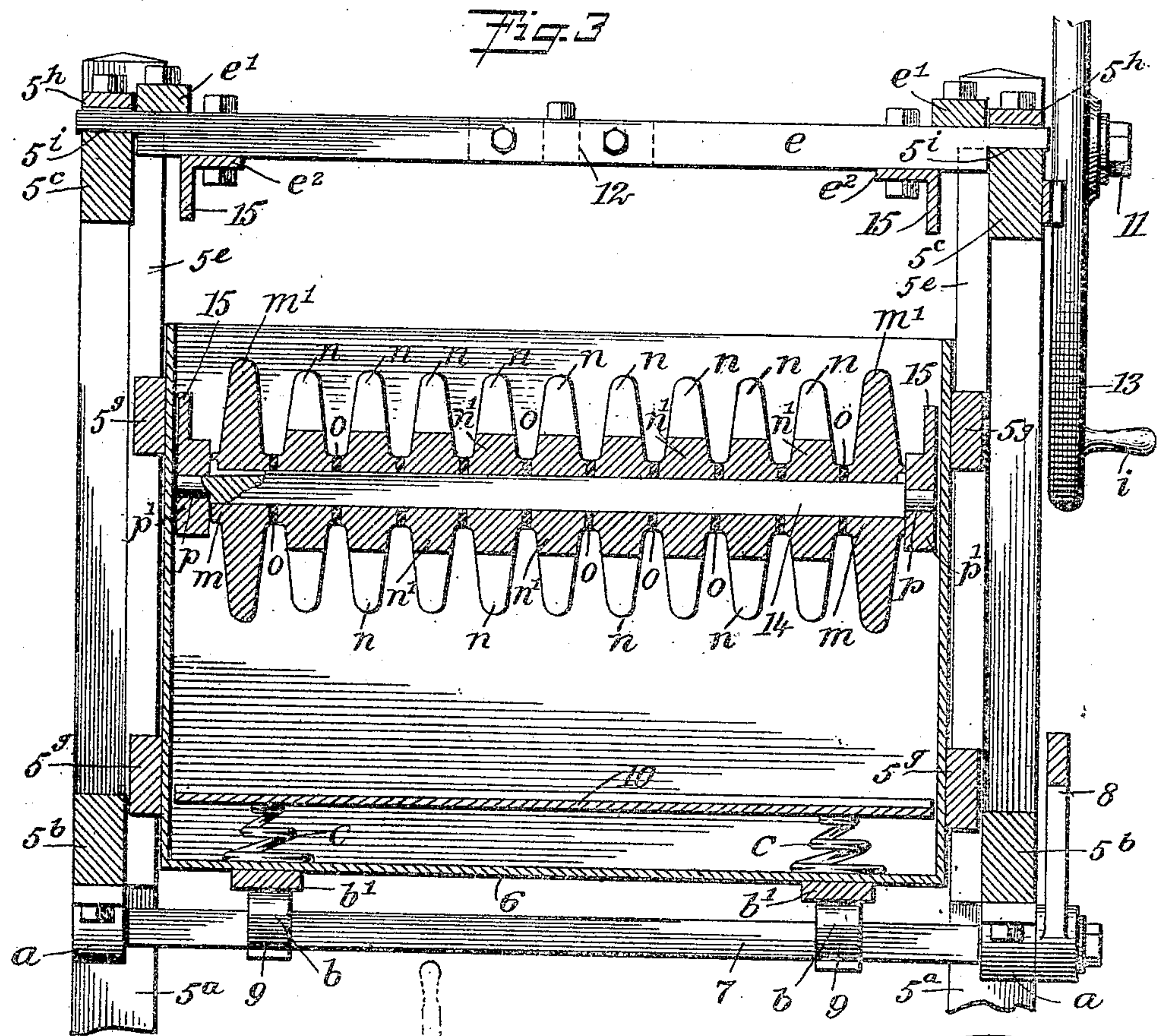


J. D. WILLIAMS.
 WASHING MACHINE.
 APPLICATION FILED NOV. 6, 1908.

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Patented Sept. 28, 1909.
 2 SHEETS—SHEET 2.



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JEHU D. WILLIAMS, OF CLAY CITY, KENTUCKY.

WASHING-MACHINE.

935,441.

Specification of Letters Patent. Patented Sept. 28, 1909.

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To all whom it may concern:

Be it known that I, JEHU D. WILLIAMS, a citizen of the United States, and a resident of Clay City, in the county of Powell and State of Kentucky, have invented a new and Improved Washing-Machine, of which the following is a full, clear, and exact description.

The purpose of this invention is to provide novel details of construction for a washing machine, which embody reciprocating rollers with a corrugated spring-pressed plate in the suds box, and other novel features that cooperate and together afford a simple, very effective and convenient washing machine.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side view of the improved washing machine, substantially on the line 1—1 in Fig. 2, the parts being changed in position from that shown in Fig. 2; Fig. 2 is a plan view of the same; Fig. 3 is an enlarged transverse sectional view, substantially on the line 3—3 in Fig. 2; and Fig. 4 is a side view of the machine, seen in the direction of the arrow in Fig. 2.

In the drawings, 5 indicates a main frame which supports all parts of the washing machine in position for service. The frame 5 is rectangular and embodies four vertical corner posts 5^a, connected together by transverse side bars 5^b, 5^c, the latter being disposed at the upper ends of the posts, and the lower side bars 5^b, at a suitable distance from the upper ones and parallel therewith. The corner posts 5^a are also spaced apart in pairs by cross bars 5^d that are secured thereto, said cross bars, two in number at each end of the frame, being disposed parallel in pairs as indicated in Figs. 1 and 3.

A preferably plate metal suds box 6, having a rectangular form, is supported laterally and loosely between the posts 5^a, by the vertical frame bars 5^c secured to the side bars 5^b and 5^c and the horizontal frame bars 5^e that are secured upon the posts 5^a, as shown in Fig. 4.

Upon the side bars 5^b, a bearing box *a*

is secured on each, in which is journaled a respective end portion of a transverse rock shaft 7, said shaft projecting at one end whereon a lever 8 is secured by one end, and thence extends upwardly. At suitable points on the rock shaft 7, a pair of rock arms 9 are mounted, and at their convexed free ends *b* are each adapted to have contact with a wear plate *b'* that is secured upon the lower surface of the bottom wall of the suds box 6.

A transverse corrugated rubber-plate 10, is loosely supported in the suds box 6 parallel with the fixed bottom thereof, by coniform springs *c* that are positioned over the wear plates *b'*. On a cross bar *d* that is secured in the suds box 6, near the rear end wall thereof, the lower edge of a corrugated metal buffer plate 10^a, is secured by lugs *d'*, and thence inclines upward and rearward into engagement at its upper edge with the rear wall of the suds box, as is clearly shown in Fig. 1.

The top side bars 5^c of the main frame are extended forward a distance from the front posts 5^a. Upon the side bars 5^c, similar upper guides 5^h are secured by their ends, and respectively spaced from the upper edges of the side bars 5^c, that afford lower guides 5ⁱ that are parallel with the respective upper guides. The pair of guides 5^h, 5ⁱ at the respective sides of the main frame, afford slideways wherein a cross head is slidably mounted and adapted to receive reciprocation. The cross head is preferably constructed of two transverse bars *e*, *e*, that are spaced apart and disposed parallel with each other by two pairs of strips *e'*, *e'*, which are bolted at their ends upon the upper and lower sides of the bars *e*, *e*. The strips *e'* are positioned a short distance from the ends of the transverse bars *e*, *e*, the projecting ends of the cross bars being inserted between the guides 5^h, 5ⁱ for slidable movement throughout their length.

Upon the forward extensions of the top side bars 5^c, bearing boxes *g*, *g*, are oppositely secured, said boxes receiving the journal ends of a driving shaft 11 at the center of which a double crank 11^a is formed or secured. A connecting rod 12 is pivoted at its ends *h*, *h'* respectively on the double crank 11^a and the front cross bar *e* of the cross head. One end of the driving shaft 11 is extended at a side of the main frame of

the machine, and a balance wheel 13 having a handle *i* thereon is secured upon said extension of the shaft.

An important detail of the invention consists of duplicate sets of stellated disks, each set being mounted upon a shaft 14 and together form a beater roller for rolling engagement with fabric that is being washed, as will be more fully explained. The body of each shaft 14 is preferably square in cross section, and the disks have central openings therein which are square in contour and receive the shaft that fits closely therein. Two of the disks on each shaft 14 that are located near the ends thereof, are circular, have central hubs *m* and from said hubs taper somewhat toward their peripheries *m'* that are rounded, as shown in Fig. 3.

A suitable number of beater disks are mounted on each shaft 14 between those described, said intervening disks each being notched in the edge, leaving a plurality of radial arms *n* remain intact with a central hub *n'*. The arms *n* on each beater disk, are laterally tapered from the central hub *n'* toward their ends, and the latter are rounded as shown in Fig. 3 for one set of disks. Between each pair of the beater disks on each shaft 14, a preferably elastic washer *o*, is mounted on said shaft and spaces the hubs *n'* of said disks apart evenly, this provision being made to permit the wooden disks to expand and contract when exposed to suds water and afterward dried out when the machine is not in use.

The shafts 14 for the duplicate sets of disks, extend beyond the outer disks having the hubs *m*, and are formed into journals *p* whereon the perforated lower end portions *p'* of hanger arms 15 are mounted. The hanger arms at the ends of each shaft 14, cross and lap upon the corresponding hanger arms on the other shaft 14 and are pivoted where they lap together, as indicated at *r* in Fig. 1. The arms 15 are of equal length and as shown are integral with the strips *e*² that are longitudinal members of the cross heads hereinbefore described, these strips being preferably formed or secured respectively on the crossed arms at each side of the machine.

It will be noted in Figs. 1 and 2 that the beater disks on one shaft 14 are located between the similar disks on the other shaft 14, and thus are compactly arranged for service.

At one side frame bar 5^c, to which the lever 8 is adjacent, a toothed rack 16 is longitudinally secured, and as shown in Fig. 2, the teeth of said rack hook forwardly and are thus adapted for successive engagement with the lever when it is moved forward. The normal position of the lever 8, as shown in Fig. 4, is inclined rearward, which dis-

poses the rock arms 9 horizontally and parallel with the bottom wall of the suds box 6.

A guard bar 17 is secured at its ends on the outer side of the frame bar 5^c, and is spaced from the rack 16 sufficiently to permit the lever 8 to have free movement therebetween.

A faucet 18 is secured in a perforation in the bottom wall of the suds box 6, and serves to control the escape of water therefrom.

In service, assuming that suds water and fibrous material have been placed in the box 6, the lever 8 being inclined as shown in Fig. 4, the goods to be washed may be evenly distributed on the bottom of the suds box 6, which has been lowered away from the pair of stellated rollers that are carried by the shafts 14. The crank handle *i* on the balance wheel 13, is now manipulated, and the balance wheel rotated therewith, which will reciprocate the connecting rod 12 and cross head that is loosely connected with said rod. As the pair of disk rollers that are mounted on the shafts 14 are hung from the cross head, and the latter is slidable in the guides on the top frame bars 5^c, it will be obvious that the rollers will be reciprocated along with the cross head, and will be rotated in engagement with the fibrous material in the suds box. It will be noted that the radial arms on each beater disk, will as said disks are rotated, and due to their contact with the goods beneath them, press forcibly on said goods and also move the same over the spring-pressed rubber-plate 10, and into engagement with the plate 10^a thus serving the dual purpose of a pounder and rubber. The rubber-plate 10 being supported on the springs *c*, will yield to compensate for inequalities in thickness of the layer of fibrous material upon which the beater rollers press. In order to produce a suitable pressure of the fabric upon the lower surfaces of the beater disks that compose the two rollers, the lever 8 is rocked toward the front end of the machine, which will correspondingly elevate the suds box 6, rubber-plate 10 and fabric on it.

It will be seen from the foregoing description, that a considerable amount of goods may be placed in the machine, and by a reciprocation of the stellated rollers be beaten and rubbed, while they are saturated with a suitable suds water, which will quickly renovate the goods.

It should be explained that the enforced pressure of the goods toward the rollers and the yielding action of the rubber-plate 10, may be graduated to suit the nature of the fabric, so that the machine will work with equal efficiency whether the material is coarse or fine in texture, as a cambric handkerchief may be washed equally as well as a heavy blanket.

Of course when a large quantity of clothing or the like, is placed in the machine, it will expedite the thorough cleansing of the goods if the latter is turned in the suds box, so as to expose what was below to the direct action of the beater rollers.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

10 1. In a washing machine, the combination with a supported suds box, of a beater roller formed of stellated disks secured in series on a shaft, and means for reciprocating the roller.

15 2. In a washing machine, the combination with a supported suds box, of two similar beater rollers, each composed of a rotatably supported shaft and stellated disks secured on the shaft, the disks of one shaft being arranged to project between two disks of the other shaft, and means for reciprocating the rollers simultaneously.

20 3. In a washing machine, the combination with a frame, of a suds box, a corrugated rubber-plate terminating short of one end of the suds box, springs supporting said rubber-plate from the bottom of the suds box, an inclined corrugated end plate in the suds box, said corrugated plate extending from the end of the rubber-plate which is spaced from one end of the box up into engagement with the wall of said box and reciprocating rollers in the suds box.

25 4. In a washing machine of the character described, the beater roller, comprising a central shaft, a series of stellated disks mounted upon the shaft, and elastic washers interposed between said disks.

30 5. In a washing machine of the character described, the pair of beater rollers each comprising an angular shaft, a series of notched disks mounted upon said shaft, the sides of said disks being sloped toward their peripheries, and a series of elastic washers interposed between the hubs of the disks.

35 6. In a washing machine of the character described, the combination with a rectangular frame and a suds box loosely fitted in the frame, of a transverse shaft journaled on the frame below the suds box, arms on

said shaft rounded on their ends for contact with the lower side of the suds box, a rockable lever on one end of the shaft, and a rack on the frame with which the lever may engage when rocked.

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7. In a washing machine, a frame, a suds box slidably mounted in the frame, a rock shaft mounted in the frame below the suds box and provided with spaced arms engaging the bottom of the suds box, and a lever on one end of the shaft for operating it.

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8. In a washing machine, a supporting frame having guide-ways, a suds box supported in the frame, a cross head sliding in said guide-ways, means for reciprocating the cross head, a pair of hanger arms carried by the cross head at each end thereof, the hanger arms of each pair being crossed and secured together at the point of crossing, and beater rollers mounted to turn in the hanger arms.

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9. In a washing machine, a supporting frame having its upper side bars extended and provided with guide-ways, a suds box supported in the frame, a cross head having end members projecting into the guide-ways, a pair of hanger arms at each end of the cross head, the hanger arms of each pair being crossed and secured together at the point of crossing, beater rollers mounted in the lower ends of the hanger arms, and means on the extension of the frame for reciprocating the cross head.

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10. In a washing machine, a supporting frame having its upper side bars extended, guide-ways on the said upper side bars, a suds box supported in the frame, a cross head mounted to slide in the guide-ways, a pair of hanger arms depending from the cross head at each end thereof, beater rollers mounted in the said arms, a crank shaft mounted in the extension of the frame, and a rod connecting the crank of said shaft with the cross head.

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In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEHU D. WILLIAMS.

Witnesses:

A. T. WHITE,
J. V. RASH.