

No. 610,533.

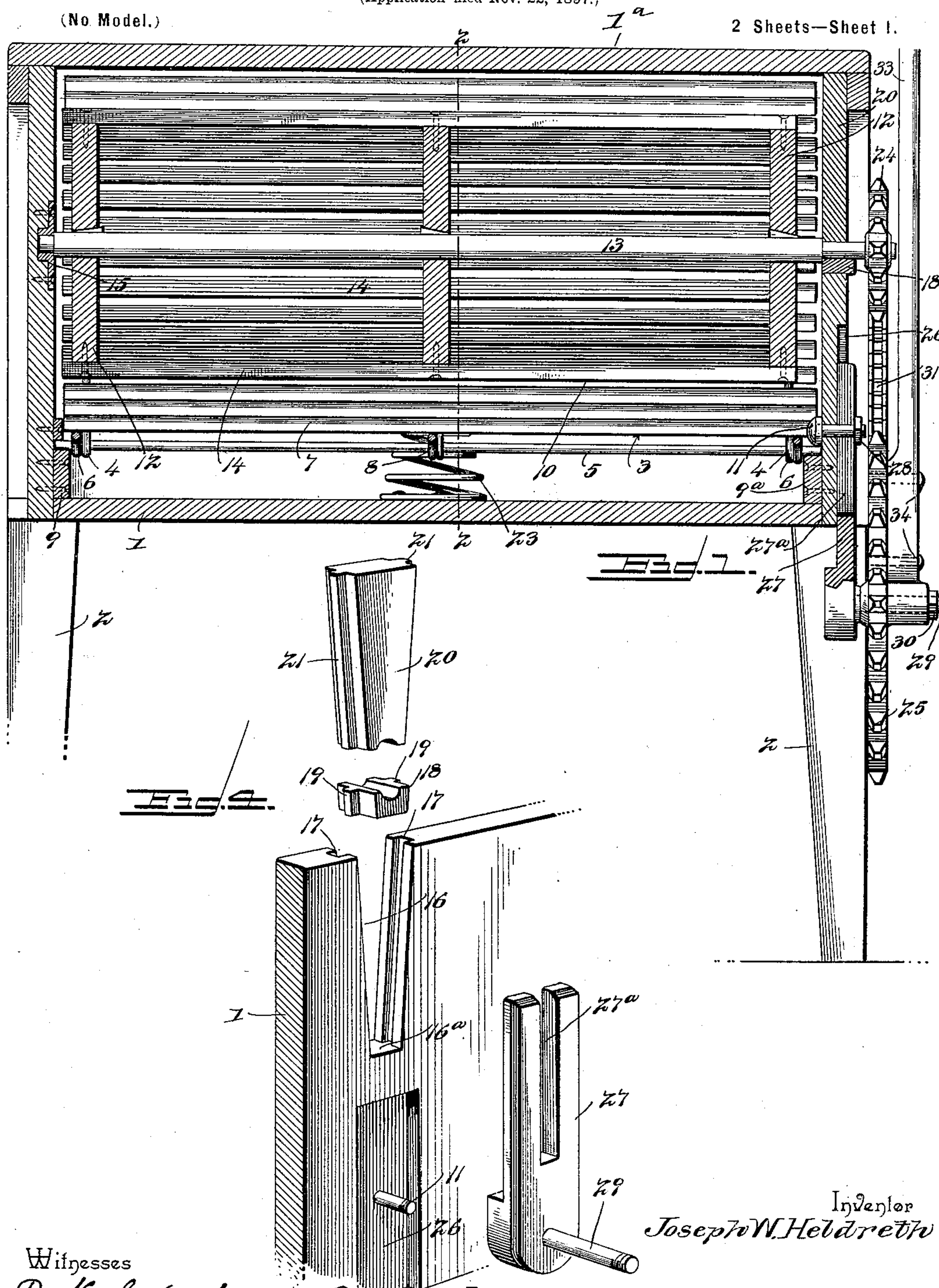
Patented Sept. 13, 1898.

J. W. HELDRETH.
WASHING MACHINE.

(Application filed Nov. 22, 1897.)

(No. Model.)

2 Sheets—Sheet 1.



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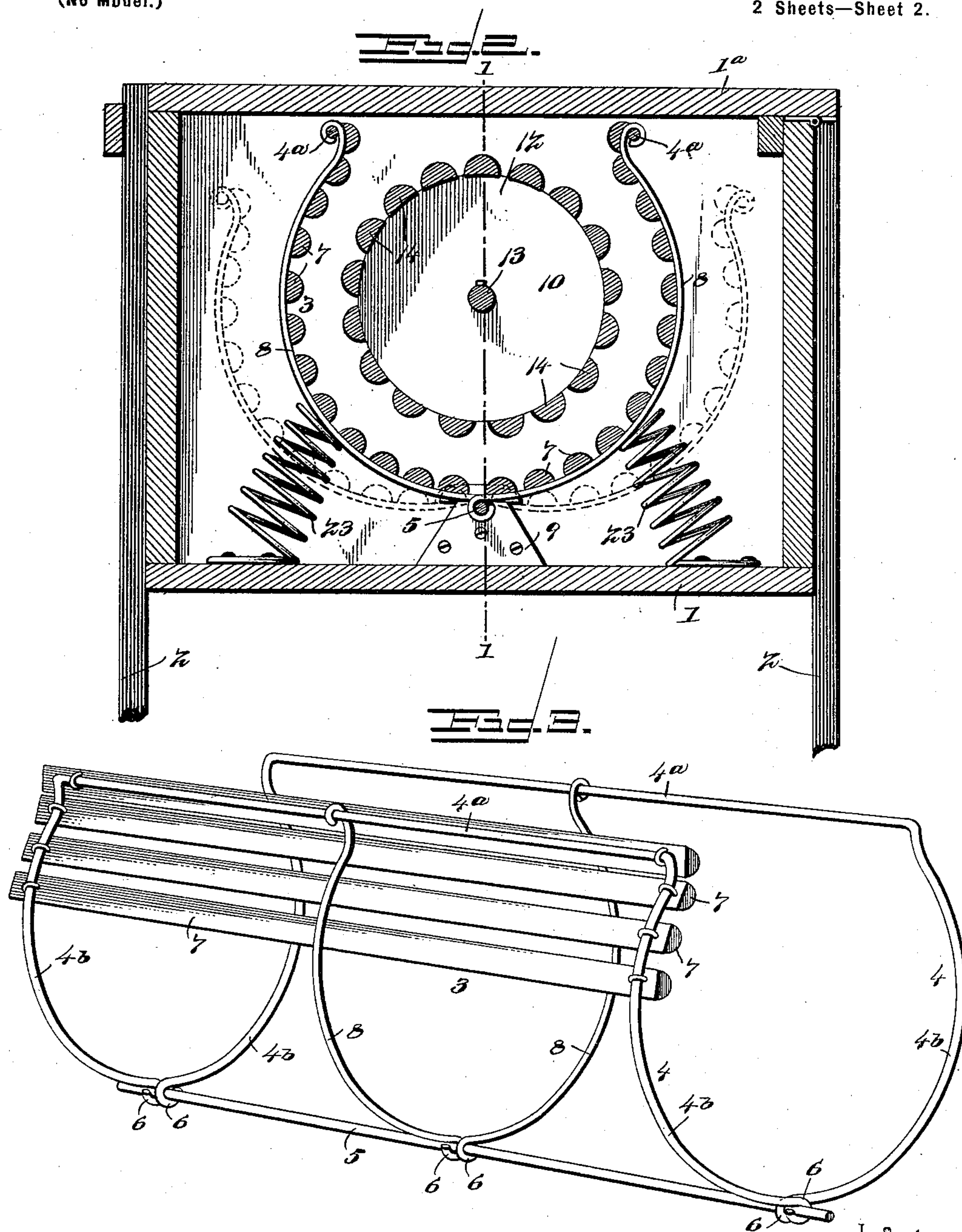
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UNITED STATES PATENT OFFICE.

JOSEPH W. HELDRETH, OF CAMP, VIRGINIA.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 610,533, dated September 13, 1898.

Application filed November 22, 1897. Serial No. 659,441. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. HELDRETH, a citizen of the United States, residing at Camp, in the county of Smyth and State of Virginia, have invented a new and useful Washing-Machine, of which the following is a specification.

My invention relates to improvements in washing-machines of that class wherein a cylinder is used in connection with a yieldable bed or cradle; and the object that I have in view is to provide an improved construction of the cradle which will be held snugly under yielding pressure in operative relation to the cylinder.

A further object of the invention is to provide an improved driving or power gear in which provision is made for taking up the wear and slack in the working parts.

A further object of the invention is to improve the machine in minor details, with a view to simplifying its construction, promoting the efficiency thereof in operation, and cheapening the manufacture of the machine.

With these ends in view the invention consists in the novel combination of devices and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a vertical longitudinal sectional elevation of a washing-machine constructed in accordance with my invention, the plane of the section being indicated by the dotted line 1 1 of Fig. 2. Fig. 2 is a vertical transverse sectional elevation on the plane indicated by the dotted line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of the cradle removed from the machine, a portion of the working surface thereof only being indicated in order to more clearly show the construction of the bails forming the foundation of the cradle. Fig. 4 is a fragmentary view showing in part one of the end walls of the receptacle, the shaft bearing for the cylinder, and the adjustable hanger for the driving-spocket.

Like numerals of reference denote like and

corresponding parts in all the figures of the drawings.

The suds-box 1 of the machine may be of any suitable or preferred construction. As shown, I have applied my improvements in connection with a rectangular suds-box having a hinged lid or cover 1^a, by which access may be had to the interior of the structure, and said box 1 is mounted upon suitable legs 2; but the detailed construction of the suds-box is not important and may be changed at pleasure.

Within the suds-box is arranged the cradle 3, which constitutes the working bed that operates in conjunction with the axially-turning cylinder, to be presently described. This cradle is bisected or divided longitudinally to form two halves or sections which are shaped to partially embrace the cylinder and provide a large area of rubbing or working surface for the fabrics. Each member of the bisected cradle is formed of a frame 4, and the two frames are loosely attached or fitted to a common hinge-rod 5. Each frame 4 consists of a straight rod 4^a and two curved arms 4^b, and said rod and arms are bent from a single piece of bar or rod metal. The free ends of the curved arms of each frame are bent to form the loops or eyes 6, and these loops of the two frames are fitted to the hinge-rod, so as to lie close to each other near the ends of the rod. The working surface of the cradle may be formed in either of two ways—that is to say, a slatted surface, as shown by the drawings, may be provided on the frames, forming the foundation of the cradle, or a corrugated metallic working surface may be attached to said frames. In the example shown the rubbing or working surface is formed by a series of longitudinal slats 7, which are fastened to the frames by means of staples or other suitable fasteners. The brace-rods 8 are arranged centrally with relation to the frames and to the working surfaces thereof to afford backings for the working surfaces at points intermediate of the ends of the frames, and said brace or stay rods 8 are provided with loops or eyes which are bent around the top bars of the frames and the hinge-rod 5, substantially as shown by Fig. 3 of the drawings.

The hinge-rod 5 is arranged centrally in the

suds-box, below the cylinder 10, and the ends of said rod are extended beyond the ends of the hinged frames 4 4 to form means for the attachment of the hinge-rod within the suds-box. At one end the hinge-rod 5 is fitted in an opening formed in a supporting-block 9, fastened within the bottom of the suds-box, at one end thereof, and centrally with relation to the cradle. The other protruding end of the hinge-rod is fitted in a notch or seat formed in another supporting-block 9^a, attached to the receptacle at the opposite end from the block 9, and this end of the hinge-rod is held in place in its notch or seat in the block 9^a by means of the bolt 11, which bolt passes through an end wall of the suds-box and has its head arranged to bear against the hinge-rod, as shown by Fig. 1.

The cylinder 10 may be of any suitable construction. As shown by the drawings, I may make the cylinder of a series of heads 12 12, a longitudinal shaft 13, and a slatted working surface 14, all united together in a substantial manner; but this slatted working surface of the cylinder is not essential, because I may use corrugated metal in lieu of the slats to form the working surface of the cylinder.

As corrugated metal is a well-known mechanical equivalent for the slats in the beds and cylinders of washing-machines, I have not deemed it necessary to illustrate the alternative construction herein described, because the corrugated metal can be readily supplied by a skilled mechanic.

The cylinder is arranged in central relation to the curved cradle, as shown by Fig. 2, and the ends of the shaft 13 are extended beyond the end heads of the cylinder in order that the shaft may be journaled in the suds-box for properly supporting the cylinder therein. One end of the shaft 13 is journaled in a bearing 15, set flush within one of the end walls of the suds-box, (see Fig. 1;) but the other end wall of the suds-box is peculiarly formed to provide for the ready insertion or withdrawal of the cylinder and its shaft. The end wall of the suds-box just referred to is formed with a vertical tapering notch or recess 16, in the edges of which are formed the grooves or channels 17. The notch or recess 16 extends quite a distance from the top edge downward into the wall, and the bottom of the recess terminates in a flat surface 16^a, constituting a seat for the lower half of a journal-bearing 18. This lower half of the journal-bearing is provided at its ends with the tongues 19, adapted to slide in the grooves or channels 17 and to assist in holding the bearing 18 in place within the recess or notch 16. After the bearing has been adjusted the cylinder is placed in position to have one end of its shaft occupy the bearing 15 and its other end rest in the bearing 18, and the space in the notch or recess 16 is then closed by the insertion of the slide 20 into the recess or notch 16. This slide fills

the notch or recess above the journal-bearing and the end of the cylinder-shaft, because the slide is made tapering to conform to the shape of the recess, and the slide is provided with the longitudinal central feathers 21 at the side edges thereof for the purpose of fitting in the channels or grooves 17 to assist in holding the slide in position. The slide is of a length to have its upper end lie flush with the top edge of the suds-box, and the lower end or foot of the slide is recessed or curved, as at 22, to enable it to fit upon the shaft 13 and assist in holding the cylinder in position. From this description it will be seen that I have provided a novel means for supporting the cylinder-shaft by which the cylinder is securely held in position within the suds-box, and at the same time the cylinder and its shaft can readily be removed simply by withdrawing the slide from the notch in the end wall of the suds-box, lifting the shaft out of the bearing 18, and withdrawing the other end of the shaft from the bearing 15.

The bisected cradle having its members hinged to the common hinge-rod is pressed normally toward and in operative relation to the cylinder by means of springs 23. As shown in the drawings, I have provided coiled springs which have their base-coils attached to the bottom of the suds-box and their upper coils fitted against the members of the cradle; but I do not strictly confine myself to this type of springs for holding the cradle in yielding relation to the cylinder.

I have also provided a novel mechanism for imparting oscillating motion to the cylinder, and this mechanism has its elements so constructed and arranged as to provide for adjustment of the working parts thereof to compensate for the wear that may take place owing to friction between the parts. The end of the cylinder-shaft which passes through the bearing 18 of the suds-box is provided with a sprocket-pinion 24, which is fastened rigidly to the protruding end of the cylinder-shaft, and this sprocket-pinion is driven by a power sprocket-wheel 25, which is preferably arranged below the sprocket-pinion and the cylinder-shaft on the outside of the suds-box. The end wall of the suds-box through which the shaft 13 passes is provided with a channel or groove 26, which is formed in the lower central part of said end wall below the deep recess or slot 16, the lower end of said groove 26 opening through the lower edge of the end wall, while the upper end of said groove is closed by a solid abutment. In this groove or recess 26 is fitted a vertically-adjustable hanger 27, which is in the form of a flat plate arranged to occupy the recess 26 and to project below the suds-box. This hanger is provided with a longitudinal slot 27^a, through which passes the bolt 11, and on the end of this bolt is screwed a nut 28, which binds against the hanger and serves to clamp the latter securely in place against the end

wall of the suds-box. From the lower solid end of this hanger protrudes a journal pin or stud 29, on which is loosely fitted the hub of the driving or power sprocket-wheel 25, and on
 5 a threaded end of this journal-stud is screwed a nut 30, which serves to keep the sprocket-wheel 25 against endwise movement. The driving sprocket-wheel 25 and the driven sprocket-pinion 24 are operatively connected together
 10 by an endless sprocket-chain 31, which transmits the motion and power of the sprocket-wheel to the pinion, and thus to the cylinder. The sprocket-wheel 25 is operated by means of a lever 33, which has one end applied laterally
 15 against the exposed face of the sprocket-wheel, and this lever is united solidly to the sprocket-wheel by the bolts 34 or other equivalent fastenings. The lever 33 stands alongside of the driving mechanism, and it extends
 20 above the machine to be within convenient grasp of the operator.

This being the construction of my improved machine, the operation may be described briefly as follows: The cover is thrown open
 25 and the fabrics, with the water and soap, are introduced into the suds-box, the fabrics being placed upon the cradle and next to the cylinder. The cover is now closed, and the operator grasps and rocks the lever back and
 30 forth. Oscillating motion is thus imparted to the cylinder, and the springs press the cradle against the cylinder, thus subjecting the fabrics to pressure between the cradle and cylinder and to the rubbing action of the
 35 cylinder. The effect of this pressure and rubbing action of the cradle and cylinder is to thoroughly and expeditiously cleanse the fabrics of dirt, &c. The yieldable cradle is adapted to accommodate itself to the quan-
 40 tity of fabrics placed in the machine, and the springs hold the cradle and the fabrics pressed against the cylinder to insure maximum efficiency of the machine. In case the sprocket-chain becomes slack through service of the
 45 machine the hanger can be lowered to take up

the slack, after which the nut may be tightened on the clamping-bolt 11 to firmly clamp the hanger in place and keep the sprocket-chain taut and under the proper tension.

I am aware that changes in the form and
 50 proportion of parts and in the details of construction may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of my invention.

Having thus fully described my invention,
 55 what I claim as new, and desire to secure by Letters Patent, is—

1. In a washing-machine, the combination of a suds-box having a recess or channel, 26, a slotted hanger fitted in said recess, a clamp-
 60 ing-bolt for holding the hanger firmly in place on the suds-box, an oscillating cylinder, a sprocket-wheel journaled on the hanger for adjustment therewith and operatively con-
 65 nected to the cylinder-shaft, and an operating-lever clamped to the sprocket-wheel, substantially as described.

2. A washing-machine comprising a suds-box, the bearing-blocks secured at the ends of and within the suds-box and one block
 70 having a notch in the upper edge thereof, a hinge-rod fitted in both blocks and adapted to be readily lifted out of the notched block, a hanger fitted adjustably to the suds-box
 75 against the end thereof at which the notched block is arranged, a through-bolt passing through the hanger and suds-box and engaging with one end of the rod to hold the latter in place, a lever fulcrumed on the hanger, a
 80 gear actuated by the lever, and a cylinder journaled in the suds-box and operatively connected to said lever-actuated gear, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
 85 the presence of two witnesses.

JOSEPH W. HELDRETH.

Witnesses:

S. R. JENNINGS,
 D. E. ARNEY.