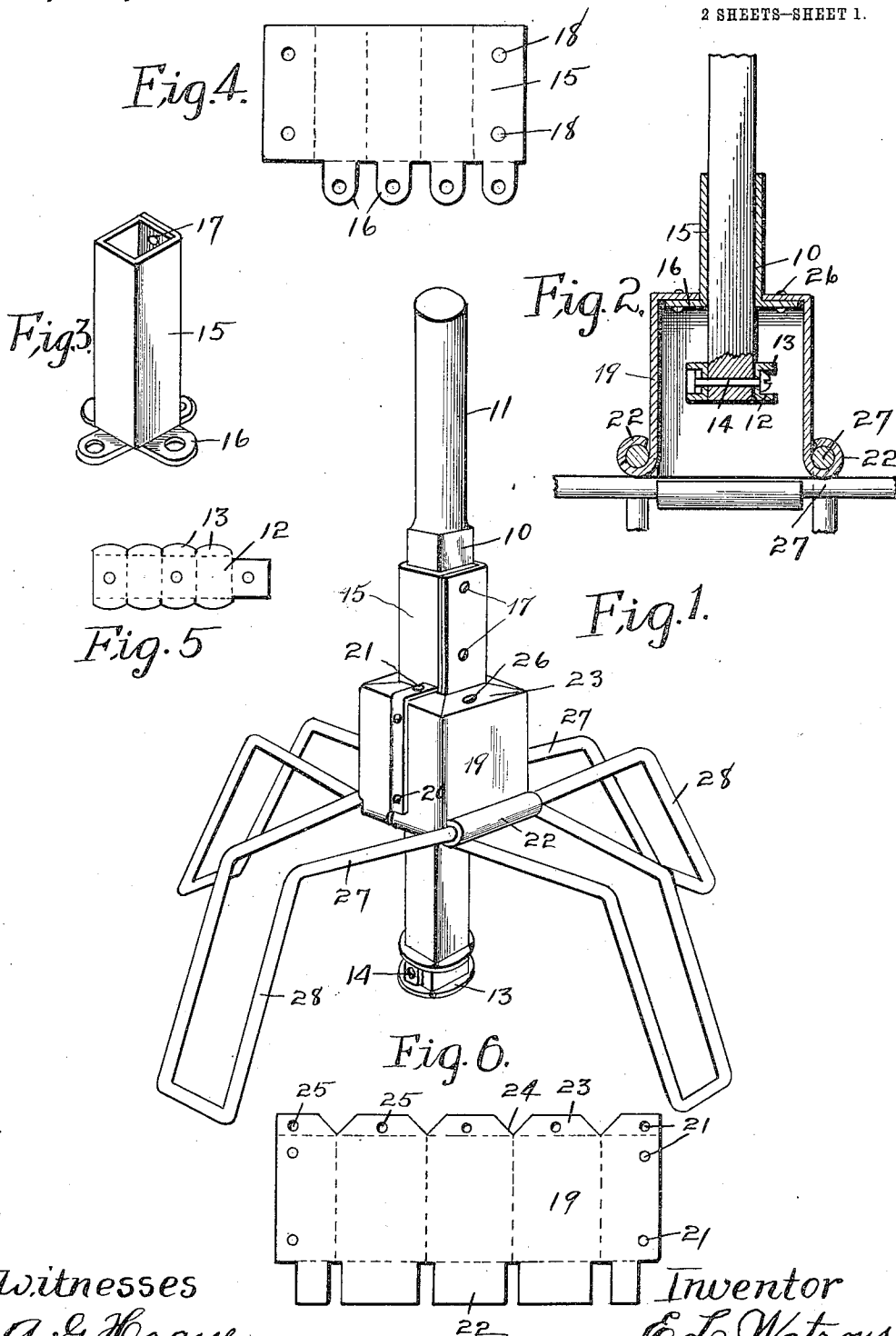


E. L. WATROUS.
 AGITATOR FOR WASHING MACHINES.
 APPLICATION FILED MAY 3, 1909.

1,069,504.

Patented Aug. 5, 1913.

2 SHEETS—SHEET 1.



Witnesses
 A. G. Hague
 W. A. Loftis.

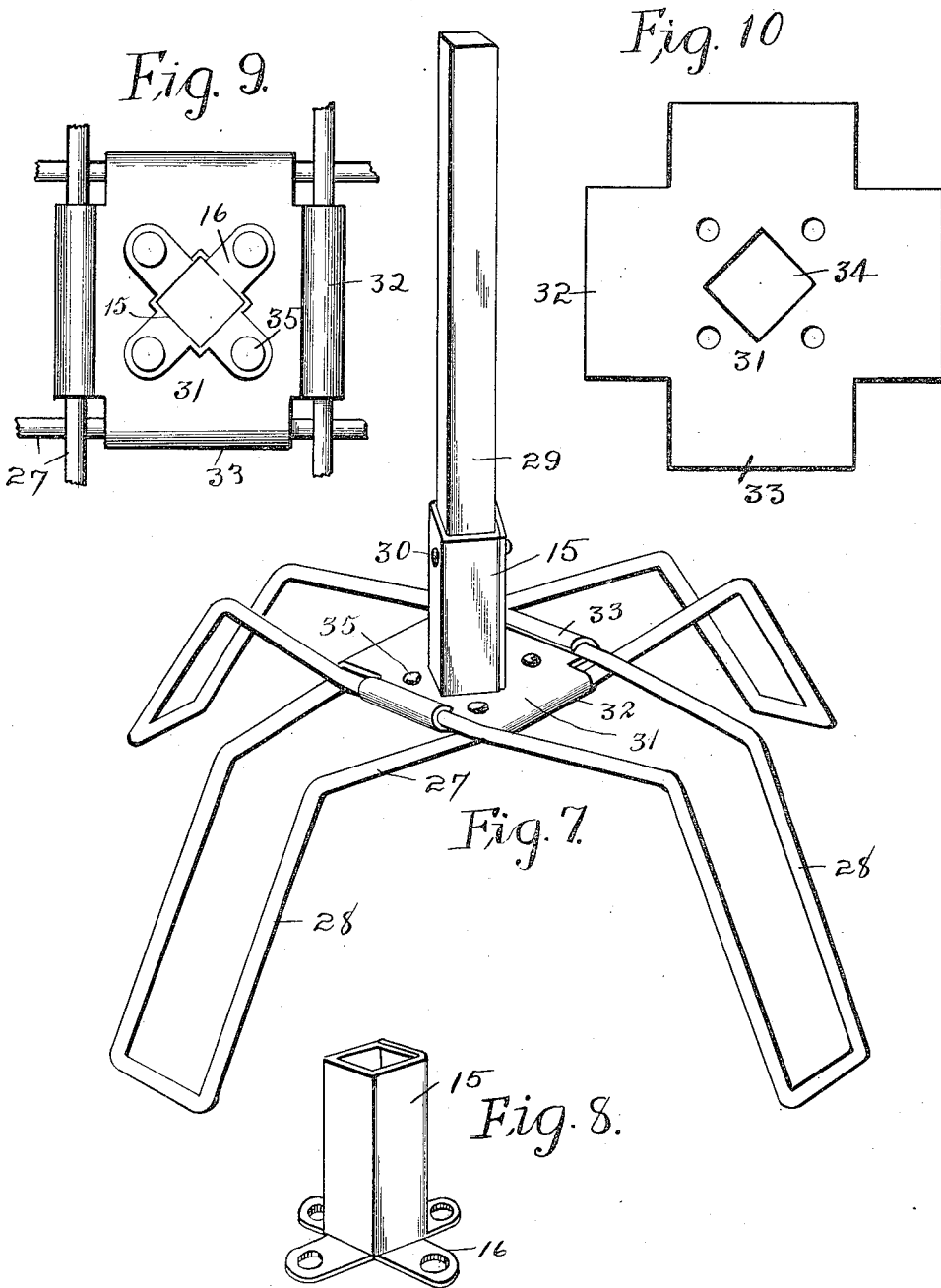
Inventor
 E. L. Watrous
 by Onvig Lane atty

E. L. WATROUS.
 AGITATOR FOR WASHING MACHINES.
 APPLICATION FILED MAY 3, 1909.

1,069,504.

Patented Aug. 5, 1913.

2 SHEETS—SHEET 2.



Witnesses
A. S. Hague
W. A. Loftis

Inventor
E. L. Watrous
 by *Orwig & Lane Attys*

UNITED STATES PATENT OFFICE.

EDWARD L. WATROUS, OF DES MOINES, IOWA, ASSIGNOR TO DAVID B. GANN, OF CHICAGO, ILLINOIS.

AGITATOR FOR WASHING-MACHINES.

1,069,504.

Specification of Letters Patent.

Patented Aug. 5, 1913.

Application filed May 3, 1909. Serial No. 493,582.

To all whom it may concern:

Be it known that I, EDWARD L. WATROUS, a citizen of the United States, residing at Des Moines, in the county of Polk and State
5 of Iowa, have invented a certain new and useful Agitator for Washing-Machines, of which the following is a specification.

The object of my invention is to provide a device of the class described, that may be
10 formed complete of metal parts that may be readily and easily made and shaped by machinery with a minimum of hand-work to thereby produce an agitator at a minimum of expense.

A further object is to provide an agitator of this kind that will be strong and durable in construction and that will not become en-
15 tangled in the clothes upon which it is being used.

My invention consists in the construction, arrangement, and combination of the vari-
20 ous parts of the invention whereby the objects contemplated are attained as herein-after more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a perspective view of an agitator embodying my invention. Fig. 2 shows a vertical sectional view through the
30 central portion of the agitator to show certain details of construction. Fig. 3 shows a perspective view of the socket for providing a sliding connection between the agitator and its supporting shaft. Fig. 4 shows a
35 plan view of a sheet metal blank from which the said socket is made. Fig. 5 shows a plan view of a sheet metal blank from which the head at the lower end of the agitator shaft is formed. Fig. 6 shows a plan view of a
40 sheet metal blank from which the device that holds the agitator arms is formed. Fig. 7 shows a perspective view of a modified form of agitator in which the agitator is fixed to the supporting shaft. Fig. 8
45 shows a perspective view of the socket for connecting the arm supporting plate with the shaft. Fig. 9 shows a bottom plan view of the central portion of the agitator to illustrate the means for connecting the

socket with the arm supporting plate, and
50 Fig. 10 shows a plan view of the sheet metal blank from which the arm supporting plate is formed.

Referring to the accompanying drawings, I have used the reference numeral 10 to in-
55 dicate the body portion of the agitator shaft which is preferably square in cross section and which has a rounded upper end 11. At the lower end of the shaft is a head which is formed complete of a single piece of sheet
60 metal, indicated by the numeral 12, of a size to extend around the lower end of the agitator shaft and to have its ends overlap. Both edges of the part 12 are provided with
65 a series of lugs 13 rounded at their edges and extended outwardly at right-angles to the part 12. When assembled these rounded lugs extend outwardly at right-angles to the shaft and a rivet 14 is extended through the
70 overlapping edges of the part 12 and through the agitator shaft 10. In this way a strong and durable head is provided for the shaft which may be stamped out of sheet metal from a single piece and connected with the shaft by a single rivet.

In order to slidingly support the agitator on the shaft, I provide a socket which
75 socket is formed of a single piece of sheet metal comprising a body portion 15 having four perforated lugs 16 at its lower edge. 80 The said body portion is formed into a square tube with overlapping edges and the lugs 16 are bent outwardly at right-angles to the tube. The overlapping edges are connected by rivets 17 through the openings 18, 85 and said socket is arranged to loosely fit upon the rectangular portion of the agitator shaft.

For connecting the agitator arms with the socket, I have provided the following means: 90 The reference numeral 19 indicates a sheet metal body portion designed to be formed into a hollow rectangular shape with over-
lapping edges connected by rivets 20 through the openings 21, and having at its lower edge 95 the projections 22 and at its upper edge the lugs 23. Between the lugs 23 are the V-shaped openings 24 and each of said lugs is

provided with a perforation 25. In assembling this part of the device, the body portion is folded into a rectangular form and the overlapping edges are connected by rivets. Then the lugs 23 are folded inwardly in position overlapping the lugs 16 of the socket. Then rivets 26 are passed through the openings 21 and through the lugs 16. The projections 22 are then curved to form cylindrical supports, two opposite ones being curved outwardly and the remaining ones being curved inwardly, the outwardly curved ones being in a plane slightly above the inwardly curved ones, as clearly shown in Fig. 2. The agitator arms of which there are two are each formed of a single metal rod. This rod has its central portion and its ends inserted in two opposite sleeves 22. From said sleeves the rod extends outwardly in both directions at 27 and then downwardly and outwardly at 28, as clearly shown in Fig. 1, and said rods are connected with the sleeves 22 by being fitted therein and then after the agitator is completed it is treated to a coating of galvanizing material which has the effect of firmly securing the rods in position and hence no bolts, rivets, or other fastening devices are needed. The second agitator arm has its central portion and its ends inserted in the remaining sleeves 22 at right-angles to the first mentioned agitator arm. Each agitator arm has two extensions inclined downwardly and outwardly and each extension has a smooth, rounded lower end portion and two parallel sides and is therefore so shaped that it will not readily and easily become entangled in clothes when the agitator is being used in a washing machine.

In the construction of the device, I preferably treat each of the parts, after being formed, to a coating of galvanizing material and then, after the agitator is assembled, I preferably treat the entire device to another coating of galvanizing material to thereby prevent the parts from rusting. By the construction just described, it is obvious that the agitator is provided with parts that may be made by the use of dies and formers without hand-work, and that said parts may be readily and easily assembled. Furthermore, the complete article is strong and durable in construction and not liable to become broken.

In the preferred form of my invention just described, it is obvious that the agitator arms may freely move up and down upon the shaft.

In the modified form of the invention shown on Sheet 2 of the drawings, I have illustrated an agitator of a more simple construction in which the agitator is fixed to the shaft against vertical movement. This type of agitator is to be used in cases where

the machinery for operating the agitator shaft is so arranged that the shaft itself may move up and down. In said modified form, the agitator shaft is indicated by the numeral 29 and I provide a socket 15 having lugs 16 thereon similar to the one before described. This socket is permanently connected with the shaft 29 by a rivet 30. Secured to the lower end of the socket is a flat metal plate 31 having sleeves 32 and 33 formed at its edges similar to the sleeves 22 before described. The plate 31 is provided with a rectangular, central opening 34 through which the socket 15 is extended, and the socket and plate are connected by rivets 35. The agitator arms in this form of the invention are exactly the same as the ones before described. This form of the agitator is somewhat cheaper in construction and is equally strong and durable but is intended to be used in cases where the shaft 29 may be moved up and down.

I claim as my invention.

1. In a device of the class described, the combination with a plurality of agitator arms of an agitator body portion formed of sheet metal and having four sides, each side having its lower end formed into a sleeve designed to receive and support said agitator arms, two of said sleeves being extended outwardly from the body portion and two of them inwardly.

2. In a device of the class described, the combination with a plurality of agitator arms, a support for the arms formed of sheet metal and having four sides, each side having its lower end formed in a sleeve designed to receive and support said agitator arms, one pair of said sleeves lying in one plane, and the other pair lying in a different plane.

3. In a device of the class described, the combination of agitator arms, a socket formed of sheet metal with overlapping edges riveted together and with outwardly extended lugs at its lower end, an arm supporting device comprising a body portion having an opening therein through which the socket is extended and connected with the socket by rivets passed through said lugs, said arm supporting device having sleeves formed at its free end to receive the agitator arms.

4. In a device of the class described, the combination of agitator arms, a sheet metal socket formed with overlapping edges riveted together, outwardly extended lugs at the lower end thereof, an arm supporting device formed complete of a single piece of sheet metal formed into a hollow rectangular shape with overlapping edges riveted together, lugs at the upper edge thereof riveted to the lugs of the socket, and sleeves at the lower edges thereof to receive the agitator arms.

5 In a device of the class described, the combination of agitator arms, a sheet metal socket formed with overlapping edges riveted together, outwardly extended lugs at the lower end of said socket, a supporting device formed complete of a single piece of sheet metal and secured to the lugs of said

socket, and sleeves on said supporting device to receive the agitator arms.

Des Moines, Iowa, April 10, 1909.

EDWARD L. WATROUS.

Witnesses:

NELLIE M. TAYLOR,

MILDRED B. GOLDIZEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
