

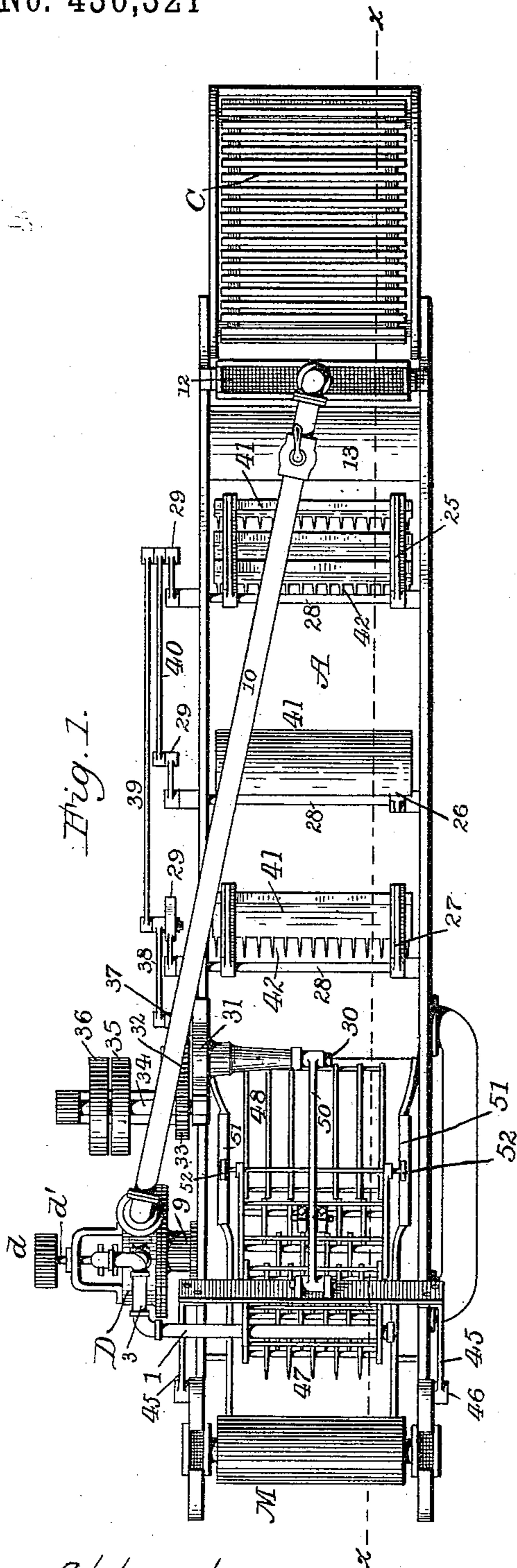
(No Model.)

2 Sheets—Sheet 1.

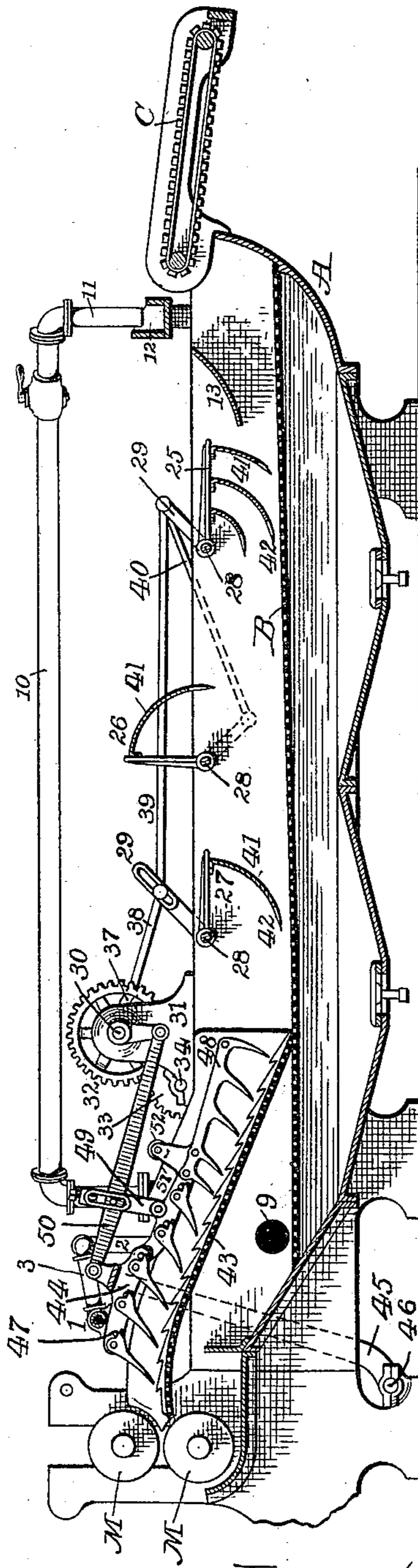
F. G. SARGENT.
WOOL WASHING MACHINE.

No. 430,321

Patented June 17, 1890.



Attest:
Howell Barth
Alex. Scott



Inventor:
Frederick T. Sargent
By *Philip F. Larner*
Associate Attorney.

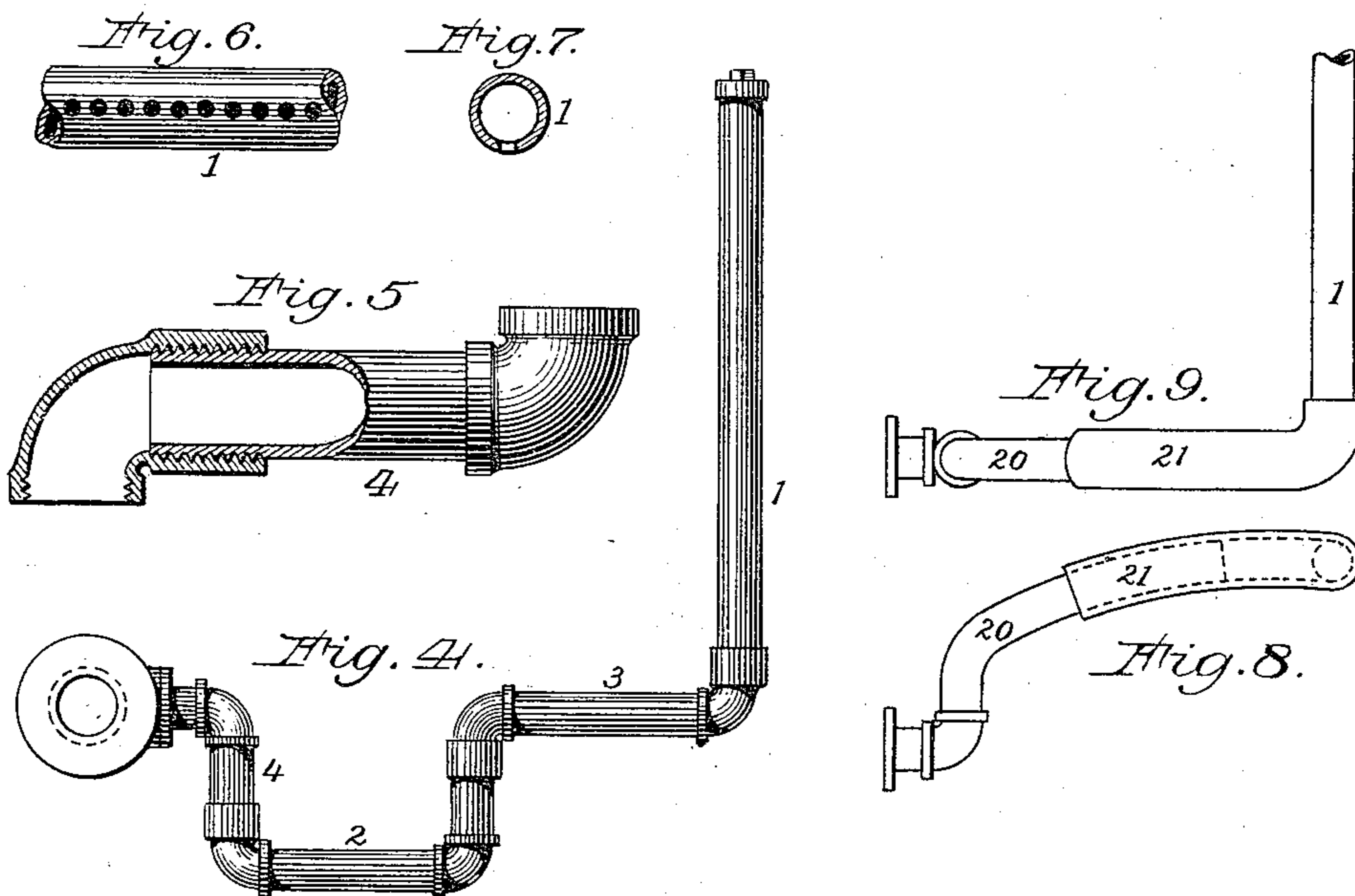
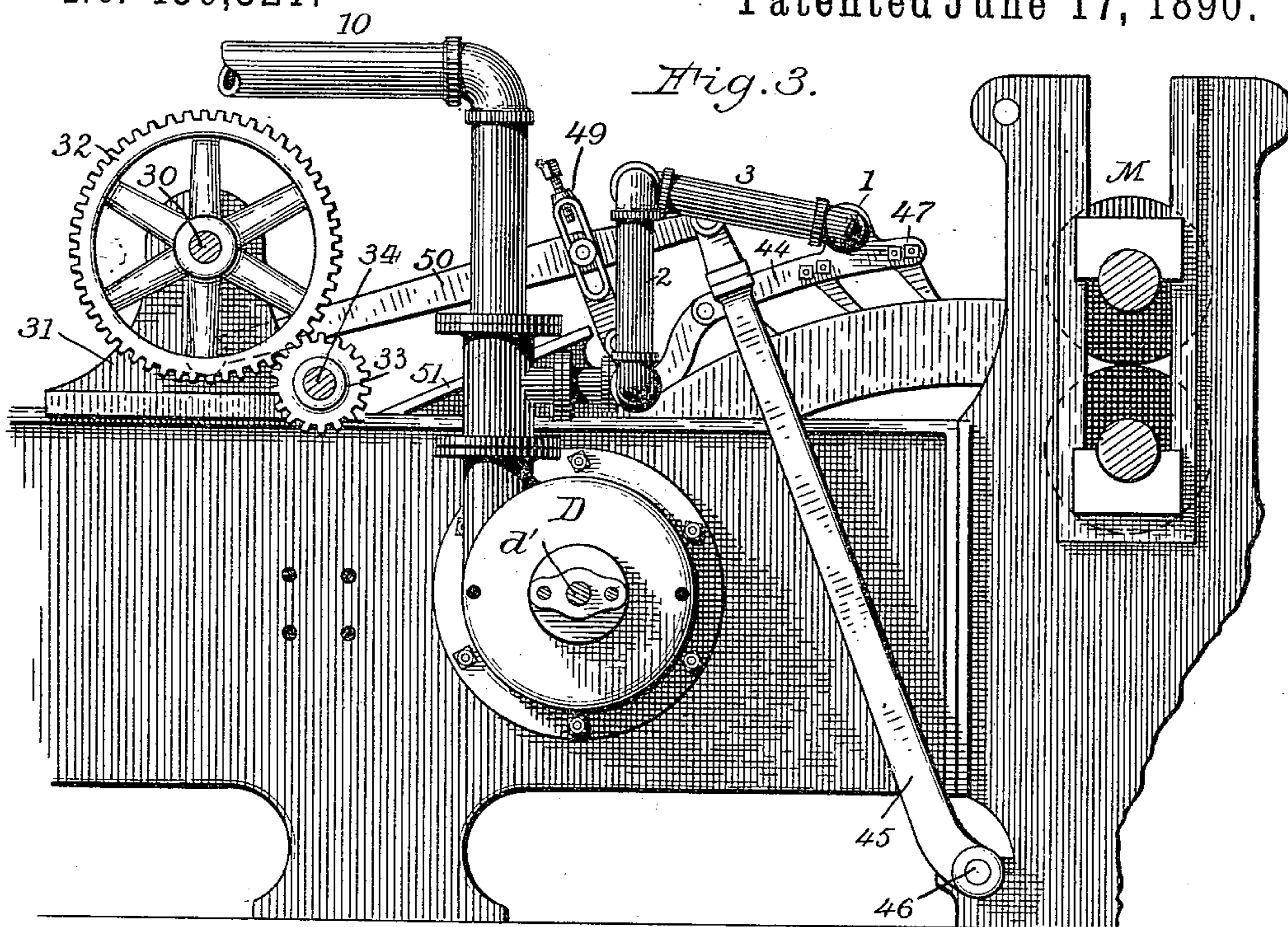
(No Model.)

2 Sheets—Sheet 2.

F. G. SARGENT.
WOOL WASHING MACHINE.

No. 430,321.

Patented June 17, 1890.



Attest:
Howell Battle
Ally. Scott

Inventor:
Frederick G. Sargent
By *Philip F. Larnier*
Associate Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK GRANDERSON SARGENT, OF GRANITEVILLE, MASSACHUSETTS.

WOOL-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 430,321, dated June 17, 1890.

Application filed October 20, 1888. Serial No. 288,724. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK GRANDERSON SARGENT, of Graniteville, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Wool-Washing Machines, of which the following is a specification.

My invention relates to machines for washing wool and similar fibers; and it consists in certain new and useful constructions and combinations of the several parts thereof, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of a wool-washing machine constructed according to my invention. Fig. 2 is a longitudinal central section of the same on the dotted line *xx*. Fig. 3 is an enlarged side elevation of one end of the machine to show the working parts. Fig. 4 illustrates the mode of connecting the spraying-pipe with the pump in detached view. Fig. 5, in detail, illustrates the swivel-joint employed in connecting the spraying-pipe to the pump. Fig. 6, in bottom view, illustrates a portion of the spraying-pipe. Fig. 7 is a cross-section of the same. Figs. 8 and 9 illustrate, respectively, in side and top views, a modification of the mode of connecting the spraying-pipe with the pump shown in Fig. 4.

A is the bowl of the machine, which contains the washing-fluid, and has a perforated false bottom B above its lower surface, extending horizontally through its length, through which dirt and impurities may descend when removed from the wool in the washing process.

C is a feed-apron, upon which the wool is spread by hand to be fed into the machine.

D is a rotary pump attached to the side of the machine and driven by the pulley *d* upon the pump-shaft *d'*, by which the washing-fluid is taken up and forced through pipes into the machine again, as hereinafter described, to rinse the wool and assist in carrying it forward toward the feed-out end of the bowl. From this pump the pipe 10 leads upward and over the top of the bowl, terminating in the downwardly-depending part 11, which extends into the trough 12, which is so constructed that the washing-fluid delivered to it through the pipe 10 overflows upon the

side next to the feed-apron C, and, falling upon the wool as it is delivered to the bowl by the feed-apron, gives it a preliminary rinsing and carries it forward under the curved shield 13 with the current of washing-fluid which is thus created toward the other end of the bowl. When the current of fluid carrying the wool has passed under the shield 13, it reaches the first rinsing or sousing fork 25, which agitates or souses the wool up and down in the fluid as it passes underneath it. It then passes on to the second sousing-fork 26, which repeats the operation of sousing, and thence to the third sousing-fork 27, which again repeats it.

This machine is intended to so operate upon the wool in the washing-fluid as to derive the benefits from the sousing-forks which result from the use of forks which carry the wool positively through the washing-fluid, while at the same time the disadvantages of the wool being carried too rapidly through the washing-fluid by the forks delivering it positively from one to the other is avoided. It is a great advantage to have the wool remain a considerable length of time in the fluid in soak; but the rushing action of the water past it in removing the dirt after it has soaked is also of great advantage, and it is especially to combine these two advantages that this machine is constructed, as well as to obtain the peculiar rinsing functions of the spraying-pipes, as hereinafter described.

Each of the sousing-forks 25 26 27 is hung upon a rock-shaft 28, which is journaled in the opposite sides of the bowl, and, extending outward upon one side, has attached a crank 29. A shaft 30 is mounted in a horizontal sleeve attached to the standard 31 upon one side of the machine, and has a gear-wheel 32 attached near its outer end, which engages with the pinion 33 upon the shaft 34, which is driven by the tight and loose pulley 35 and 36, held in suitable standards and bearings upon the side of the machine. This construction enables the shaft 30 to be revolved by a belt from the pulley 35 36 to any suitable counter-shaft. On one end of the shaft 30 and outside of its gear 32 is attached the crank 37, the wrist-pin of which is connected to one end of the link 38, the other end of which link is connected to the wrist-pin of the crank

29 and sousing-fork 27. Attached to this same wrist-pin is the long link 39, which is attached at the other end to the wrist-pin of the crank 29 of the sousing-fork 25. To this same wrist-pin a link 40 is attached at one end and at the other end to the crank 29 of sousing-fork 26 in such a position that when the forks 25 and 27 are moving downward in the bowl the fork 26 is moving upward, and vice versa.

Each fork 25 26 27 consists of curved plates 41, bent in the arc of a circle of which the rock-shaft 28 is the center, so as to pass readily through the washing-fluid as the rock-shafts oscillate, and on the edge of each plate teeth 42 are formed, extending outward in the general direction of the curved plate. These teeth enter the wool slightly and keep it from slipping off of the edge of the plate as it comes in contact with the wool in its descent, causing the wool to be carried or soused rapidly through the liquid and bringing the consequent rushing and rinsing action of the liquid upon it in the very best manner without hurrying its progress through the bowl unduly. As the sousing-forks operate upon the wool, it is carried forward by the current of washing-fluid to the pipe 9, which leads to the pump D from the bowl, the washing-liquid, in order to reach said pipe, having to pass through the inclined bed or table 43, which is perforated for that purpose, as shown in section in Fig. 2. The wool is therefore left upon this bed 43 to be taken up by the carrier 44 and carried up the bed to the squeeze-rolls. This carrier is in its general construction and operation similar to the carrier shown in my Patent No. 175,258, granted to me March 28, 1876. Its main part 47 is supported by arms 45 upon the rock-shaft 46 in the manner described in said patent. The auxiliary part 48 of the carrier, pivoted to the main part, is lifted up and down by the link 49, which is connected to the pitman 50 by a slot in the link and a pin in the pitman extending through said slot, as described in said patent. Instead of governing the entire movement of the auxiliary part by this link, however, I provide guideways 51 51 on each side of the carrier-bed and attach rollers 52 52 upon a shaft passing through upright ears on the auxiliary part, as shown, so that they will come in contact with the guideways when the auxiliary part is dropped the proper distance and support it as it moves upward over the carrier-bed. The link 49 only lifts and controls the auxiliary part during its backward motion and while it is to be lifted to pass above the wool, and the guideways 51 and the rollers 52 control it during its forward movement. The teeth of the main part of the carrier are pivoted substantially as shown in the patent granted to Ackroyd, No. 143,603, as are the two rows of teeth in the auxiliary part 48 which are nearest to the main part 47 of the carrier. The carrier-bed is provided with inclined teeth to prevent the

wool which lies next the bed from rolling down. The effect of the rollers 52 and guideways 51 is to give the auxiliary part of the carrier a motion more nearly parallel to the bed from the instant that the carrier begins its forward movement.

Across the main part 47 of the carrier the spraying-pipe 1 is attached horizontally. This spraying-pipe has its lower side perforated, as shown in Fig. 6, and by moving with the carrier it has the effect of subjecting the wool carried up by each movement of the latter to a longer spraying than if the wool merely passed underneath it while it was stationary. The form of carrier may of course be varied, the main feature of this part of the invention being to cause the spraying-pipe to move along with the wool in the direction in which it is being carried by the fork, rake, or carrier and spray the wool during such forward motion. Its attachment to the carrier in the present instance is a convenient method of accomplishing this effect.

In order to connect the spraying-pipe 1 with the pump D and supply it with spraying-fluid while it is moving to and fro, I construct it with the series of pipes and joints turning upon each other. (Shown in Figs. 3, 4, 5, 6, and 7.) The pipe 1 is connected to pipe 3 by such a joint, the pipe 3 is connected to the pipe 2 by a similar swivel-joint, and the pipe 2 is connected to the pipe 4 by another similar joint, the latter being also shown in section in Fig. 5 as an illustration of the construction of these joints. In this construction of joint the threaded parts (male and female) of the joint are made long enough to prevent leakage, while allowing the one to turn back and forth in the other by the looseness of the fit of the male and female threads uniting the parts together to accommodate the motion of the carrier, the amount of rotation being so small of one part upon the other and the pitch of the thread so slight as to allow its being done.

Another method of connecting spraying-pipe 1 to the pump D is shown in Figs. 8 and 9. The pipe 20 is attached to the pump and made of a shape longitudinally to conform to the path of the main part of the carrier to and fro, parallel to which it is mounted. A sleeve 21 is fitted over pipe 20, so as to slide or telescope thereon, substantially water-tight as the carrier moves to and fro, the sleeve being attached to one end of pipe 1. Any well-known form of packing may be used with sleeve 21, as desired, to aid in making the telescoping joint fluid-tight. As the pipe 1 moves to and fro, the pump D will force the spraying-fluid through it upon the wool, and each portion of the latter as it is advanced to the squeeze-rolls will be thoroughly rinsed by the spraying-pipe traveling in the same direction above it.

M M are the squeeze-rolls of the machine, through which the wool passes from the carrier-bed.

Instead of a pump, any other source of supply giving sufficient fluid-pressure may be used.

What I claim as new and of my invention is—

1. The combination, in a fiber-washing machine, of the bowl A, provided with a fluid-supply pipe 10 11 at its feed-in end and the fluid-escape pipe 9 near its feed-out end, arranged to create a current of fluid through the bowl from one end to the other, the inclined carrier-bed 43, the carrier 44, the squeeze-rolls M M, and sousing-forks 25 26, moving up and down reciprocally and adapted to souse the fiber up and down in the fluid as it is carried past them by the current thereof, substantially as described.

2. The combination, in a fiber-washing machine, of the bowl A, provided with a fluid-supply pipe 10 11 at its feed-in end and the fluid-escape pipe 9 near its feed-out end, arranged to create a current of fluid through the bowl from one end to the other, the inclined carrier-bed 43, the carrier 44, the squeeze-rolls M M, and sousing-forks formed with a web or plate 41 and teeth 42 on the

lower edge thereof and moving up and down reciprocally and adapted to souse the fiber up and down in the fluid as it is carried past them by the current thereof, substantially as described.

3. The combination of the carrier-bed, the carrier arranged to transport the wool over the same, the spraying-pipe attached to and moving with said carrier, and its supply-pipe connecting said spraying-pipe to its source of fluid-supply and arranged to accommodate itself to the varying distance between them, substantially as described.

4. The combination of the carrier-bed, the carrier arranged to transport the wool over the same, the spraying-pipe 1, attached to the carrier, and its fluid-supply pipe connecting it to its source of fluid-supply and formed of sections 3 2 4, jointed together by joints turning upon each other, substantially as described.

FREDERICK GRANDERSON SARGENT.

Witnesses:

ARTHUR B. PLIMPTON,
HERBERT V. HILDRETH.