

(No Model.)

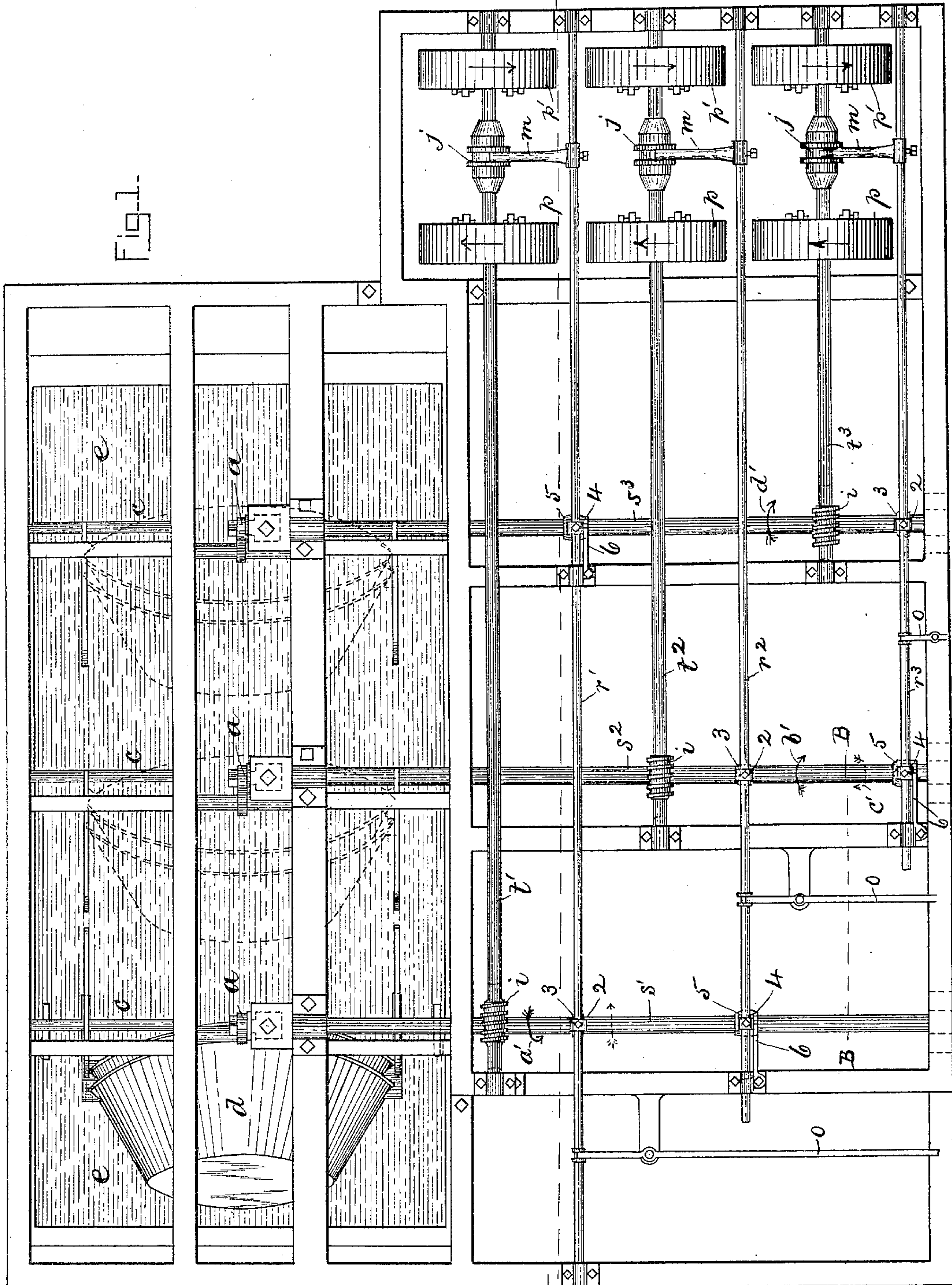
3 Sheets—Sheet 1.

J. MONTG.

# APPARATUS FOR IMMERSING TINNED ARTICLES IN GREASE.

No. 433,300.

Patented July 29, 1890.



WITNESSES.

Ewing W. Haule  
A. D. Harrison.

INVENTOR\_

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Atty.

(No Model.)

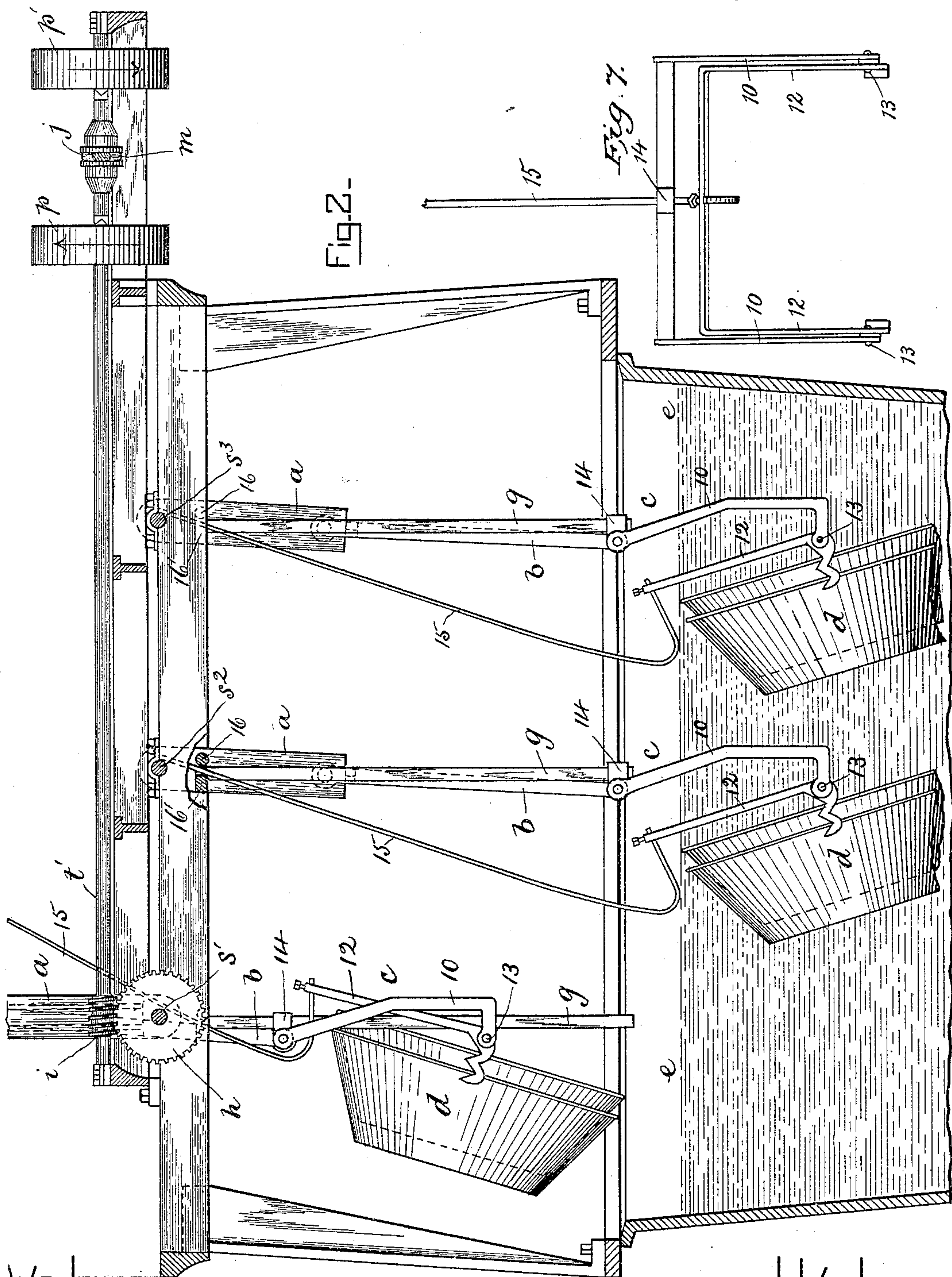
3 Sheets—Sheet 2.

J. MONTO.

APPARATUS FOR IMMERSING TINNED ARTICLES IN GREASE.

No. 433,300.

Patented July 29, 1890.



WITNESSES.

*Wm. H. Harrison*  
*A. D. Harrison*

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(No Model.)

3 Sheets—Sheet 3.

J. MONTO.

APPARATUS FOR IMMERSING TINNED ARTICLES IN GREASE.

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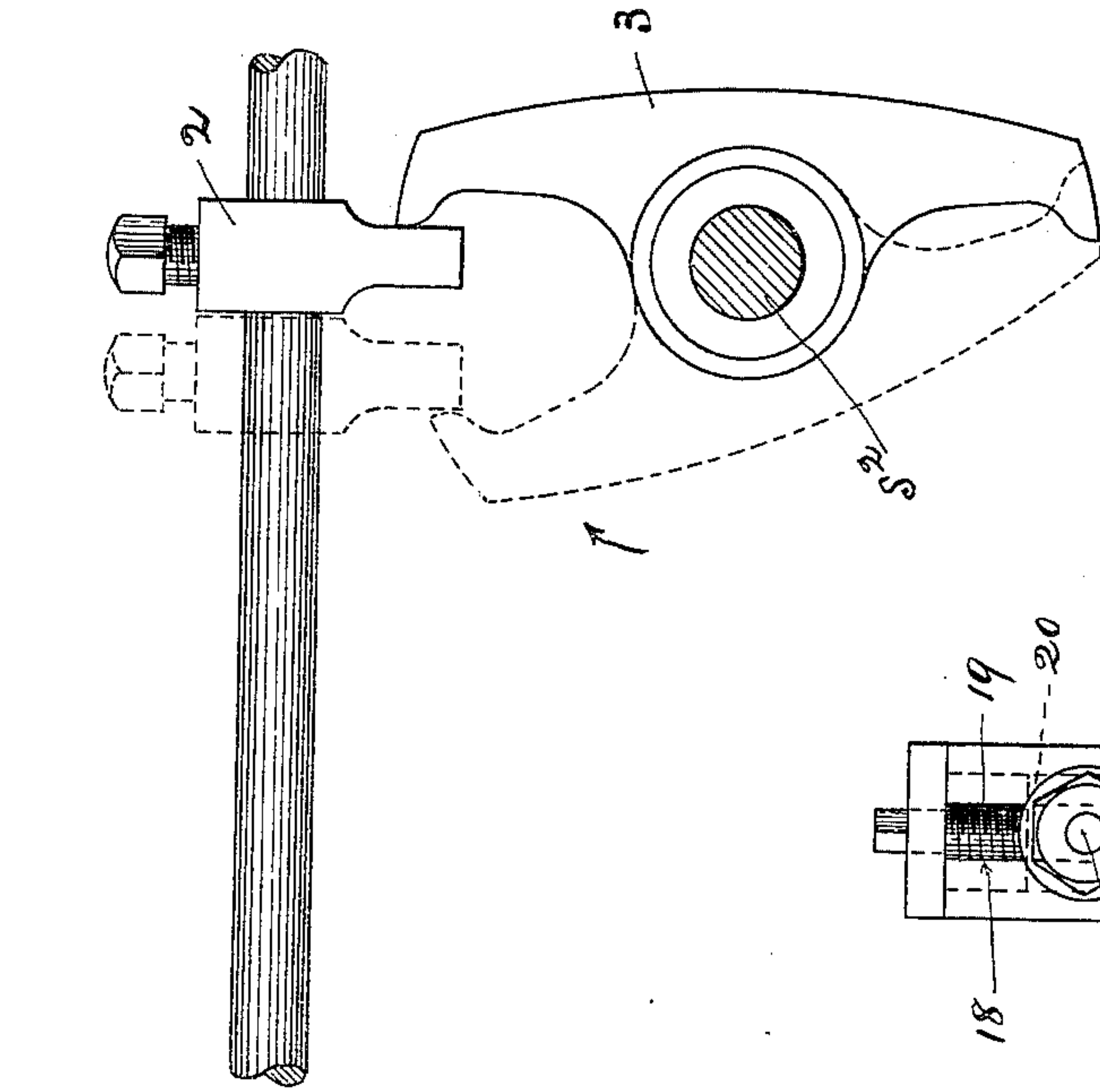


Fig-3.

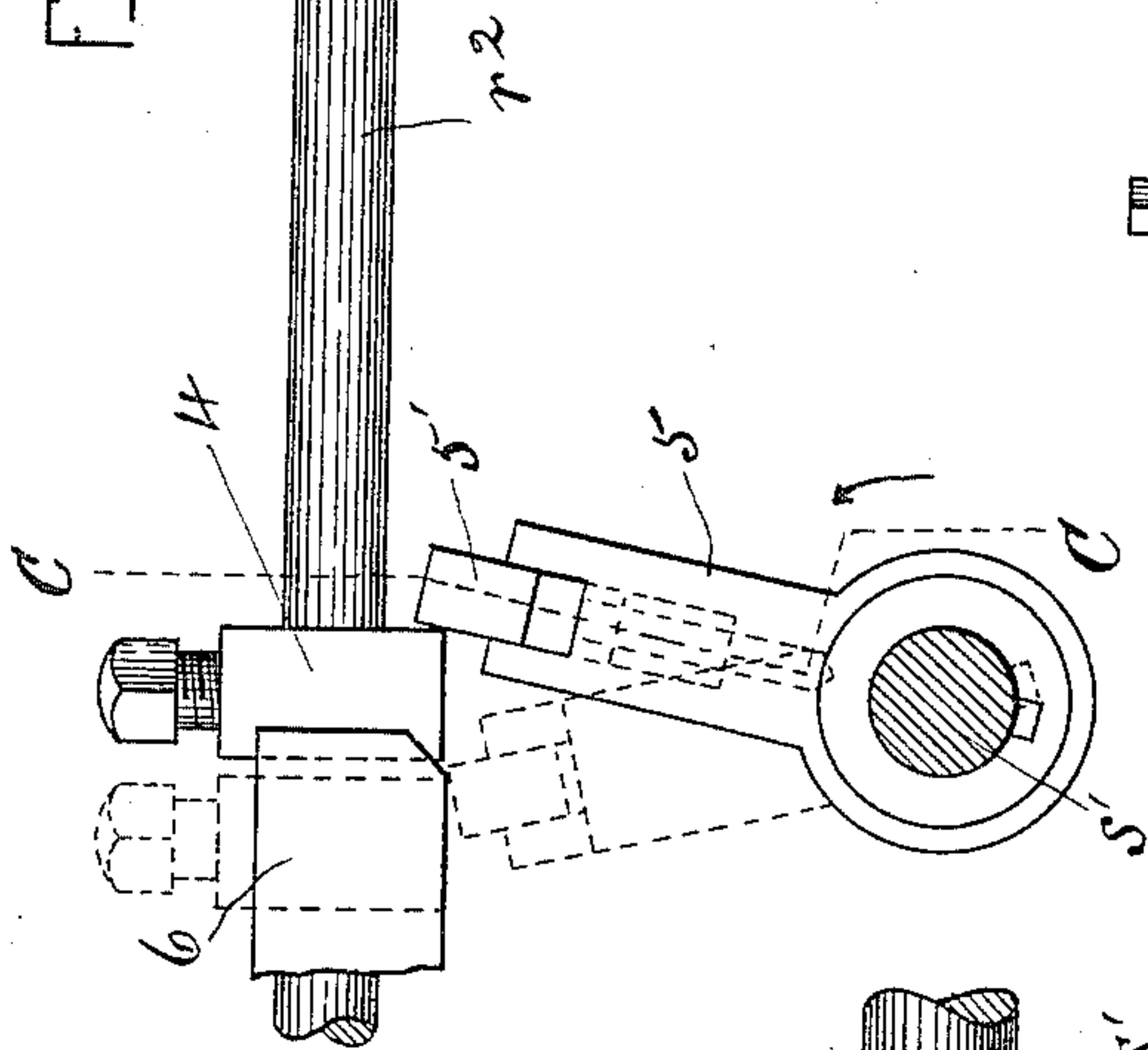


Fig-4.

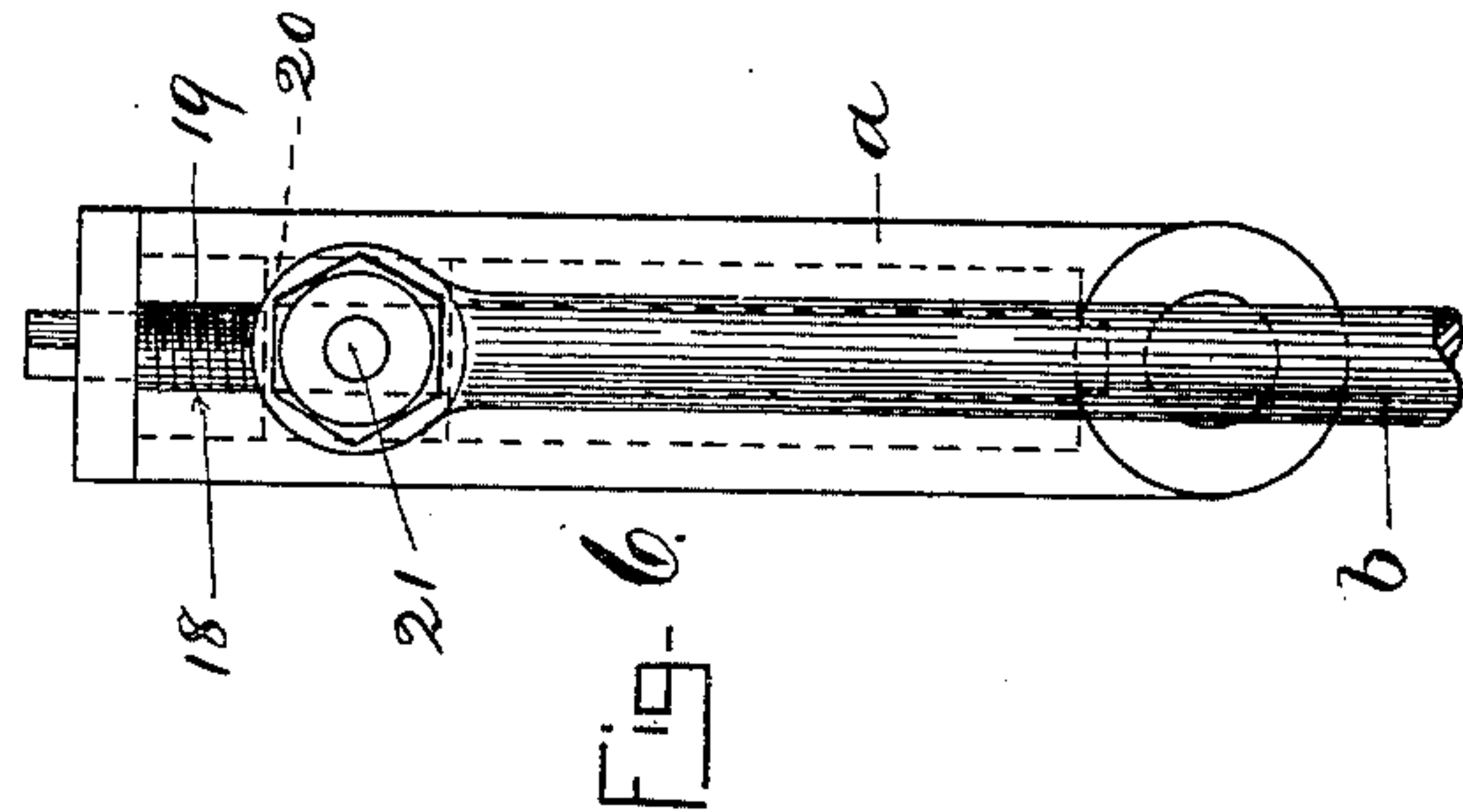


Fig-5.

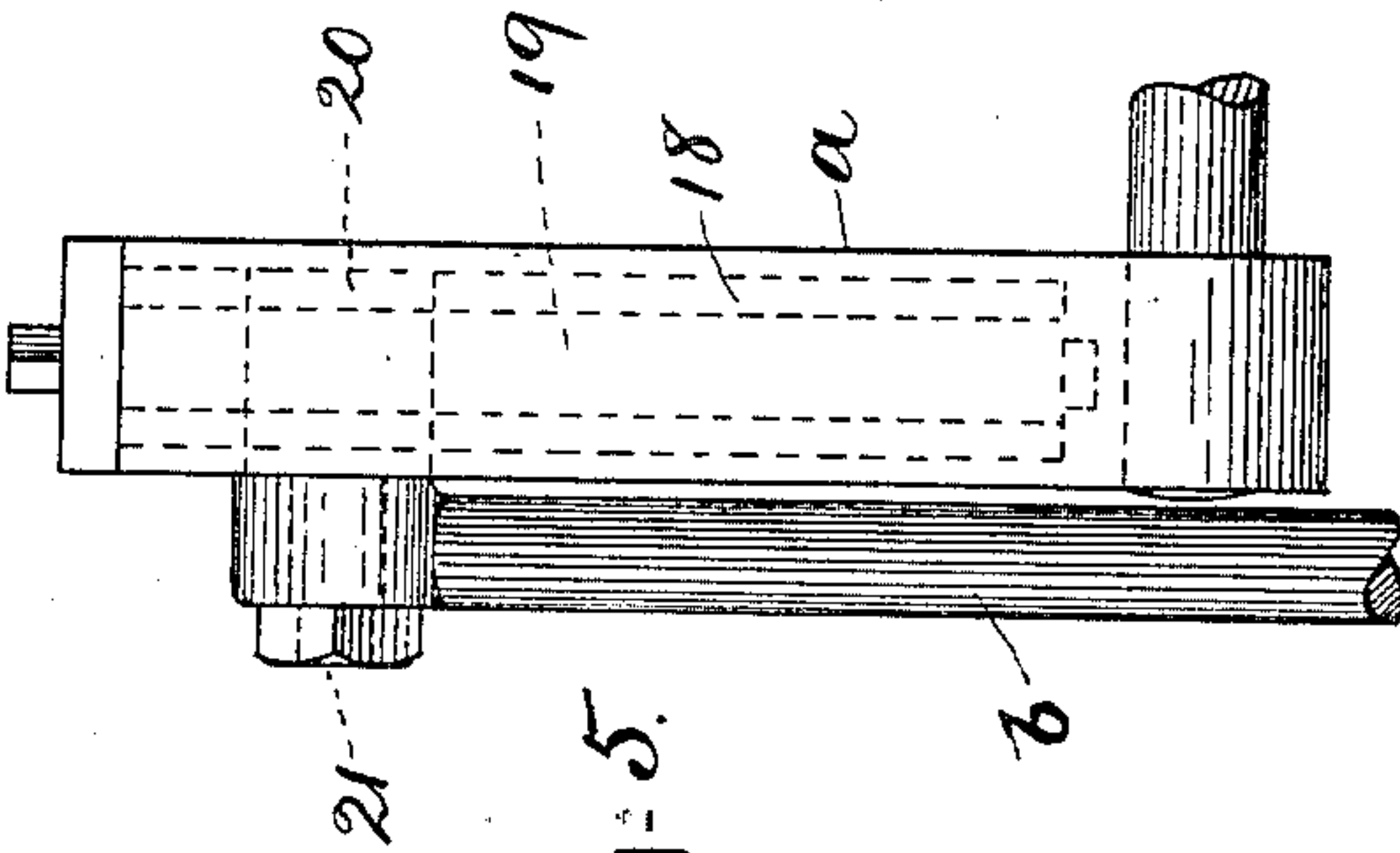


Fig-6.

WITNESSES.

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*G. Wright & Son, Attys.*



# UNITED STATES PATENT OFFICE.

JOSEPH MONTO, OF CHELSEA, ASSIGNOR TO THE STEEL EDGE STAMPING  
AND RETINNING COMPANY, OF BOSTON, MASSACHUSETTS.

## APPARATUS FOR IMMERSING TINNED ARTICLES IN GREASE.

SPECIFICATION forming part of Letters Patent No. 433,800, dated July 29, 1890.

Application filed March 21, 1890. Serial No. 344,747. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH MONTO, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain new  
5 and useful Improvements in Apparatus for Immersing Tinned Articles in the Grease-Pot, of which the following is a specification.

This invention has for its object to provide  
10 a simple and effective apparatus whereby a series of holders or carriers for tinned articles located over a grease-pot may be raised and lowered by power automatically stopped both when immersed in and when raised from  
15 the bath, and to provide such an arrangement of mechanism as will enable the operator to start each carrier on its downward movement and cause each carrier in moving downwardly to start the upward motion of another carrier,  
20 so that the operation will be automatic, excepting as to starting the carriers on their descent into the pot.

To these ends the invention consists in the improvements which I will now proceed to describe and claim.

25 In the accompanying drawings, forming a part of this specification, Figure 1 represents a top plan view of an apparatus embodying my invention. Fig. 2 represents a section on  
30 line A A, Fig. 1. Fig. 3 represents a section on line B B, Fig. 1. Fig. 4 represents a section on line C C, Fig. 3. Figs. 5 and 6 represent views of one of the carrier-operating cranks. Fig. 7 is a front elevation of one of the pan holders or carriers.

35 The same letters of reference indicate the same parts in all the figures.

In the drawings,  $s'$   $s^2$   $s^3$  represent a series of horizontal parallel shafts journaled in bearings on a suitable supporting-frame.  
40 Each shaft is provided at one end with a crank-arm  $a$ , and to said crank-arms are connected, by means of connecting-rods  $b$ , a series of holders  $c$  for the pans  $d$  or other articles to be immersed in the grease-pot  $e$ , the latter  
45 being located under the cranks  $a$ . Each holder is composed of a yoke or frame 10, connected by the rod  $b$  to the crank  $a$ , and a pair of arms 12 12, pivoted at 13 to said frame, and provided with notches to receive the  
50 edges of one or more of the articles  $d$ . The

frame 10 has a sleeve 14 affixed to it, said sleeve being fitted to slide on a fixed vertical guide-rod  $g$ . Each carrier-operating shaft is rotated by means presently described, and its rotation causes its crank  $a$  to alternately de-  
55 press and raise the holder  $c$ , thus immersing the articles  $d$  in and then withdrawing them from the grease-pot. To each pair of arms 12 is attached a bent rod 15, that extends upwardly between two guides 16 and 16'. The form of  
60 the rod 15 is such that as the holder rises and falls it will be given a tipping motion, as described in my patent, No. 372,555, dated November 1, 1887. Each crank  $a$  has a longitudinal  
65 slot or guide 18, which receives a screw 19 and a nut 20, engaged with said screw within the slot. The pivot or wrist pin 21, that connects the connecting-rod  $b$  to the crank  $a$ , is formed  
70 on said nut, and is therefore capable of adjustment by the rotation of the screw 19 to vary the extent of the upward and downward movement of the carrier.

Each of the above-named shafts has a worm-wheel  $h$ , and said worm-wheels mesh with  
75 worms  $i$  on counter-shafts  $t'$ ,  $t^2$ , and  $t^3$ , extending at right angles to the shafts  $s'$   $s^2$   $s^3$ . Each of said counter-shafts is provided with two  
80 loose pulleys  $p$   $p'$ , which are rotated in opposite directions by suitable connections with a driving-shaft. Between said pulleys  
85 are sliding clutches  $j$ , each adapted both to slide lengthwise on and to rotate with the shaft on which it is placed. Each clutch is adapted to engage a corresponding clutch on  
90 each pulley—that is to say, when the clutch is moved into contact with one pulley it engages that pulley with the shaft that supports it and causes the shaft to rotate with the engaged pulley, and when the same clutch is  
95 moved into contact with the other pulley it engages the latter with the shaft and disengages the other pulley—hence, each of the counter-shafts is adapted to be rotated in one  
100 direction by one pulley and in the opposite direction by the other pulley. The construction of the clutches on the pulleys and of the sliding clutches  $j$  may be the same as that described in my patent, No. 372,555, above referred to.

$t'$   $t^2$   $t^3$  represent longitudinally-movable



rods, which are adapted to slide in bearings on the supporting-frame, each having an arm  $m$ , which is engaged with a clutch  $j$ , as shown in Fig. 1, said rods being adapted to move the  
 5 clutches, so as to engage each clutch with either of the pulleys on the shaft which supports it. To enable the operator to move the clutch-rods lengthwise I provide pivoted levers  
 10  $o\ o\ o$ , there being one lever for each rod, each lever being pivoted to a fixed support and engaged at one end with collars affixed to the accompanying clutch-rod.

Each clutch-rod is provided with two collars or projections 2 4, Fig. 3, one located over one  
 15 carrier-operating shaft and the other over another of said shafts. Each carrier-operating shaft is provided with two arms 3 and 5. The arm 3 is of the double form shown in Fig. 3, and arranged to engage a collar 2 on one of  
 20 the clutch-rods, and thereby move said rod first in one direction and then in the opposite direction for the purpose of disengaging the clutch connected with said rod out of engagement with first one and then the other of the  
 25 two pulleys with which said clutch co-operates, as hereinafter described, the arm 3 being arranged to leave the corresponding clutch in the inoperative position shown in Figs. 2 and 3. The arm 5 is arranged to engage a collar 4 on  
 30 one of the clutch-rods, and thereby move said rod in the direction required to throw the clutch thereto connected into engagement with the pulley  $p$  on the corresponding counter-shaft, and thus cause the rotation of the  
 35 carrier-operating shaft connected with said counter-shaft and the automatic upward movement of the carrier thereon, as hereinafter described. The arm 5 has a yielding terminal or nose 5', which is pressed outwardly  
 40 by a spring 8, Fig. 4, into position to bear on the collar 4. A fixed arm or detent 6 is arranged near each arm 5 to press said terminal 5' inwardly, as shown in dotted lines in Fig. 3, when the clutch-rod has been moved far  
 45 enough in the direction indicated by the arrow in said figure.

The method of operation of the machine is as follows: When the machine is in the condition shown in Fig. 1, the carrier con-  
 50 nected with the shaft  $s'$  is raised, and the carriers connected with the other shafts  $s^2$  and  $s^3$  are depressed, and the articles held thereby are immersed in the bath, the clutches of the counter-shafts which transmit motion to said  
 55 shafts being all out of connection with the pulleys on said counter-shafts. After the elevated carrier has been charged with a fresh load of pans or other articles the operator, by moving the rod  $r'$  that operates the clutch  
 60 on the counter-shaft  $t^2$ , throws said clutch into engagement with the pulley  $p'$  on that shaft, thus causing the latter to transmit motion to the shaft  $s'$  in such direction as to cause the descent of the carrier thereon into  
 65 the bath, the direction being as indicated by the arrow  $a'$  in Fig. 1. When the said carrier has nearly reached the lowest point in

its movement, the rotation of the shaft  $s'$  brings the arm 5 thereon into contact with the collar 4 on the clutch-operating rod  $r^2$  70 and causes said rod to move the clutch  $j$  engaged therewith into engagement with the pulley  $p$  of the counter-shaft  $t^2$ , which is thereby rotated and caused to rotate the shaft  $s^2$ , thus causing the ascent of the carrier on 75 the last-named shaft. During the latter part of the downward movement of the carrier on the shaft  $s'$  and just as the said carrier is reaching its lowest point the arm 3 on said shaft  $s'$  strikes the collar 2 on the rod  $r'$  and 80 moves the clutch connected with said rod out of engagement with the pulley  $p'$  on the counter-shaft  $t'$ , leaving said clutch inoperative between the two pulleys. The carrier on the shaft  $s'$  is therefore stopped when immersed 85 in the bath. The shaft  $s'$  is now at rest, and the shaft  $s^2$  is rotating in the direction indicated by the arrow  $b'$  and raising the carrier on the shaft  $s^2$ . Just before said carrier reaches its highest point the arm 3 on the 90 shaft  $s^2$  strikes the arm 2 on the rod  $r^2$  and moves the clutch connected therewith out of engagement with the pulley  $p$  on the counter-shaft  $t^2$ , leaving said clutch in its inoperative position, and thus stopping the shaft 95  $s^2$  when its carrier is fully raised. The articles are now removed from said raised carrier, and the same is refilled and started on its downward motion into the grease-pot by the operator, who for this purpose moves the 100 rod  $r^2$  in the direction required to engage the clutch  $j$  on the counter-shaft  $t^2$  with the pulley  $p'$  on said shaft, the shaft  $s^2$  being now rotated in the direction indicated by the dotted arrow  $c'$  so that the arm 5 on said shaft 105 strikes the collar 4 on the clutch-rod  $r^3$  and moves said rod in the direction required to throw the clutch on the counter-shaft  $t^3$  into engagement with the pulley  $p$  on said shaft, thus causing said pulley, through the coun- 110 ter-shaft  $t^3$ , to rotate the shaft  $s^3$  in the direction indicated by the arrow  $d'$  and raise the immersed carrier on said shaft. Just after this and when the carrier on the shaft  $s^2$  has reached its lowest point the rotation of said shaft  $s^2$  is 115 stopped by the contact of its arm 3 on the collar 2 of the rod  $r^2$ , said contact moving said rod and the clutch  $j$  thereto connected so that the clutch becomes inoperative, thus leaving the carrier on the shaft  $s^2$  at rest in the bath. The 120 shafts  $s'$   $s^2$  are now at rest with their carriers depressed, and the shaft  $s^3$  is rotating and raising its carrier. When the carrier on the shaft  $s^3$  is at its highest point, said shaft  $s^3$  is stopped by the action of its arm 3 on the 125 collar 2 of the rod  $r^3$ , the latter being thereby moved to remove the clutch  $j$  on the counter-shaft  $t^3$  out of engagement with the pulley  $p$  and into an inoperative position. The operator then, after the raised carrier on the shaft 130  $s^3$  has been recharged, starts it on its downward course by moving the rod  $r^3$ , so as to throw the clutch  $j$  engaged therewith into engagement with the pulley  $p'$ , the shaft  $s^3$  be-



ing set in rotation. During the rotation, causing the downward motion of the carrier on the shaft  $s^3$ , the arm 5 on said shaft strikes the collar 4 on the rod  $r'$ , and thereby moves the clutch on the shaft  $t'$  into engagement with the pulley  $p$ , the shaft  $s'$  being thus set in motion and caused to raise its carrier. Directly after this the shaft  $s^3$  is stopped with its carrier in the bath by the action of its arm 3 on the rod  $r^3$ , moving the clutch on the shaft  $t^3$  out of engagement with the pulley  $p'$ . The shaft  $s'$  continues to rotate until the carrier thereon is raised, and is then automatically stopped by its arm 3 moving the rod  $r'$ , and thus throwing the clutch  $j$  on the shaft  $t'$  out of engagement with the pulley  $p$  on that shaft, the carrier of the shaft  $s^4$  being thereby stopped in a raised position so that the machine is in the same condition as at the commencement of the operation. This completes one round of the operation of the machine, the next round being a repetition of the foregoing, and so on.

It will be seen that each carrier is automatically stopped both when raised and when depressed, and that when one carrier is raised the others are depressed. It will also be seen that after the elevation of any carrier the machine is stopped and its operation cannot be resumed until the operator moves one of the clutches to start the raised carrier downwardly, and that the descent of each carrier causes the ascent of the next in the series without action of the attendant. Time is therefore afforded for the unloading and loading of each carrier, and as the carriers always await the action of the attendant when raised and require no further attention until they are again raised, it follows that one operator can conveniently attend to a number of carriers without liability of any carrier descending and immersing the same charge a second time in the bath.

The mechanism is extremely simple as compared with that shown in my patent above mentioned and can be constructed and operated at much less cost.

The vertical movements of the carriers being caused by the rotation of the cranks, it will be seen that each carrier, when rising from its depressed position, moves slowly at first, while the crank is moving in an approximately-horizontal direction and more rapidly thereafter, the tinned articles being thus caused in rising to break slowly through the surface of the grease-bath and then to rise at a more rapid rate, the object of this varying movement being to prevent the adherence of the scum on the surface of the bath to the tinned surface, as described in my later patent, No. 421,599, dated February 18, 1890.

It is obvious that the number of carriers and their operating-shafts may be varied, and that two or any desired larger number may be employed. I find it more convenient, however, to employ three, as by the employment of that number a sufficient period of immer-

sion of each carrier in the bath is obtained without liability of a too protracted immersion and the consequent removal of too much of the tin coating by the hot grease.

I do not limit myself to the particular clutch-and-pulley mechanism here shown and described for reversely rotating the carrier-operating shafts. The clutch-rods  $t'$   $t^2$   $t^3$  may be used with any other suitable means adapted to be controlled by said rods to produce the described results.

I claim—

1. The combination of a bath or reservoir, a series of shafts, a series of carriers connected with said shafts and adapted to be lowered into and raised from the bath by the rotation of said shafts, each shaft having two transverse arms, a corresponding series of counter-shafts geared to the said carrier-operating shafts, and a series of clutch-rods and devices co-operating therewith whereby rotation may be imparted to the counter-shafts and from the latter to the operating-shafts in either direction, each rod having two collars or projections, the one arranged to co-operate with one of said transverse arms on one operating-shaft and the other with the other transverse arm on another operating-shaft, as set forth, whereby each shaft is automatically stopped after a half-rotation, the arrangement being such that the rotation of each shaft to depress its carrier causes the rotation of another shaft to raise the carrier thereon.

2. The combination of a bath or reservoir, a series of shafts, a series of carriers connected with said shafts and adapted to be lowered into and raised from the bath by the rotation of said shafts, each shaft having two transverse arms, a corresponding series of counter-shafts geared to the said carrier-operating shafts and each provided with two loose pulleys driven by power in opposite directions, clutches on said counter-shafts whereby each shaft may be connected with either pulley thereon, a series of clutch-rods engaged with said clutches, and collars or projections on each clutch-rod, the collars or projections of each rod being arranged to co-operate, respectively, with a transverse arm 3 on one carrier-operating shaft and with an arm on another carrier-operating shaft, as set forth.

3. The combination of the carrier-operating shafts, the carriers connected thereto, the double arm 3 and the single arm 5 on each shaft, the counter-shafts geared to the carrier-shafts and the clutch-operating rods, each provided with the collars or projections, the former 2 arranged to engage the double arm 3 of one carrier-shaft and the latter 4 the single arm 5 of the other carrier-shaft, and the pulleys and the movable clutches between said pulleys, as set forth.

4. The combination of the carrier-operating shafts, the arms 5 on said shafts, each having a yielding spring-pressed terminal, the



clutch-operating rods having collars or projections 4 and the fixed stops or detents 6 whereby the terminals of said arms 5 are pressed inwardly and disengaged from the 5 collars or projections 4, the shafts  $t'$   $t^2$   $t^3$ , engaged with said carrier-operating shafts, the pulleys secured on said former shafts, and the clutches between said pulleys, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 11th day of March, A. D. 1890.

JOSEPH MONTA.

Witnesses:

C. F. BROWN,

A. D. HARRISON.