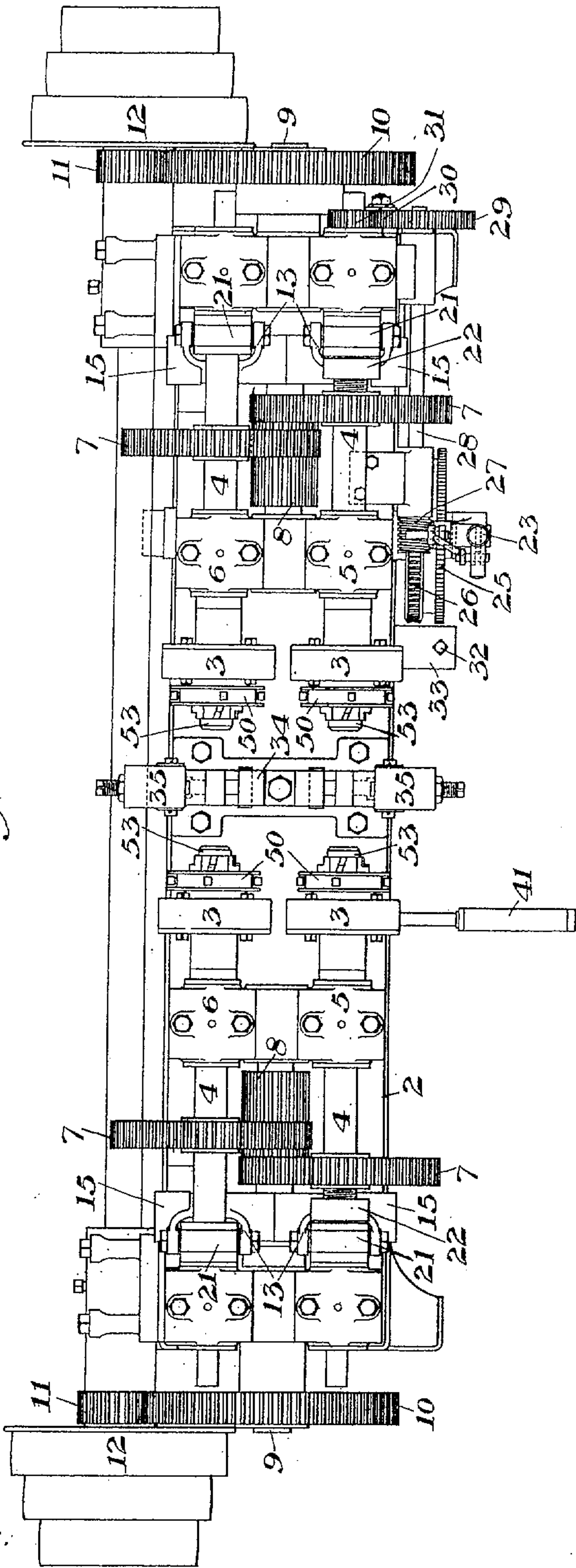


967,219.

O. M. MOWAT.  
RECESSING MACHINE.  
APPLICATION FILED JULY 30, 1906.

Patented Aug. 16, 1910.  
3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES  
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R. A. Balderson.

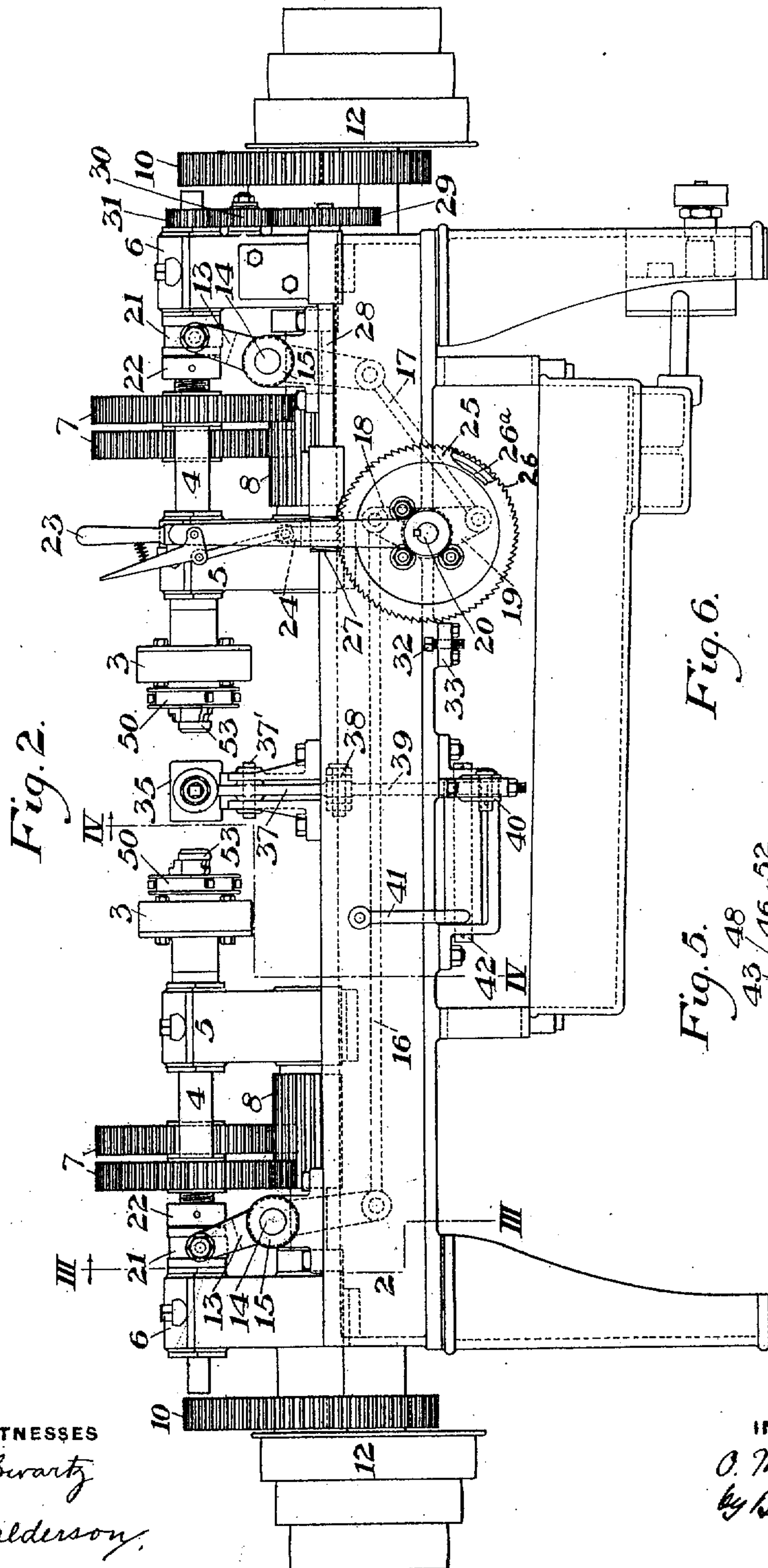
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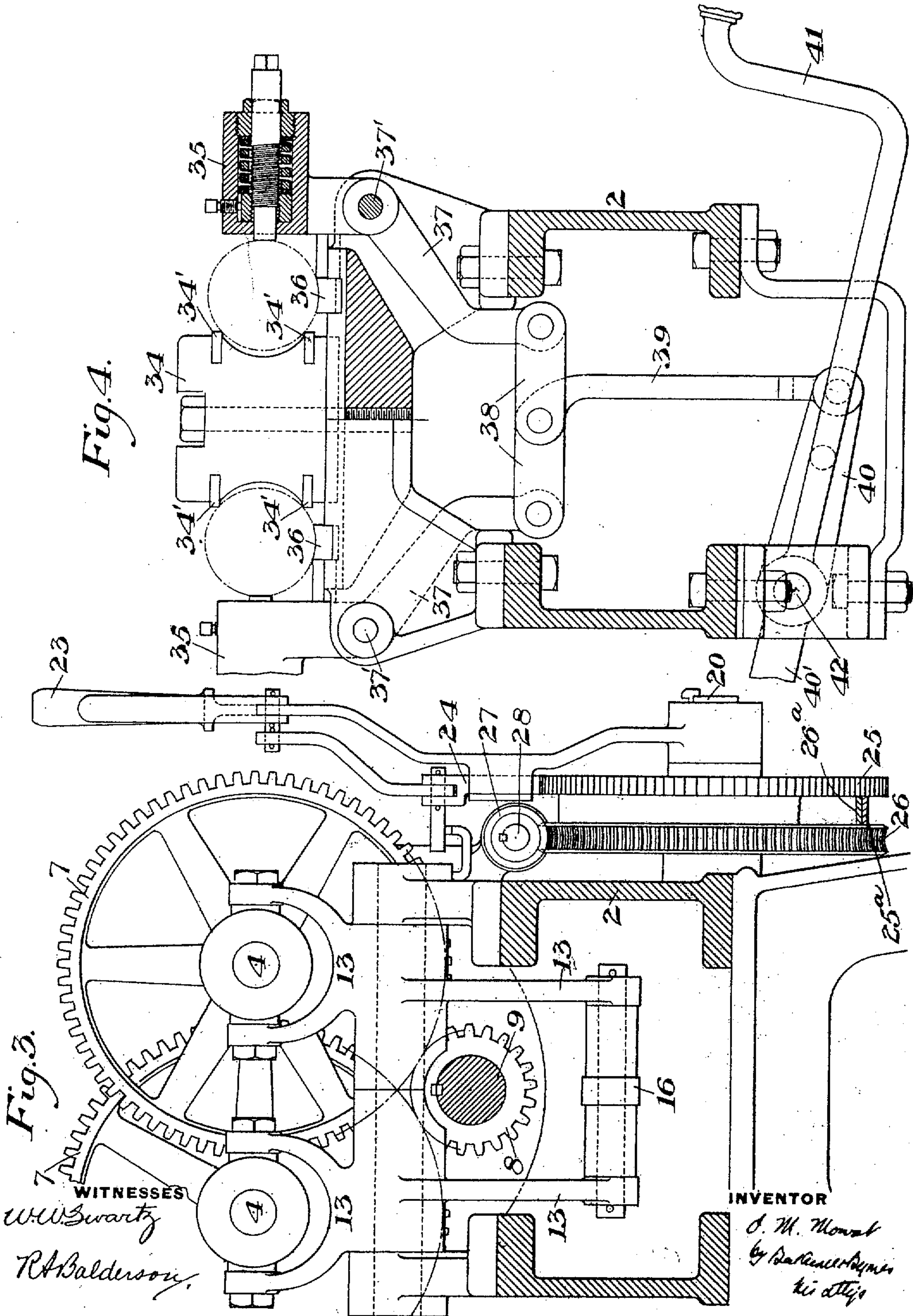
WITNESSES  
*W. A. Swartz*  
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Patented Aug. 16, 1910.

3 SHEETS—SHEET 3.





# UNITED STATES PATENT OFFICE.

OLIVER M. MOWAT, OF McKEESPORT, PENNSYLVANIA, ASSIGNOR TO NATIONAL TUBE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

## RECESSING-MACHINE.

967,219.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed July 30, 1906. Serial No. 328,313.

*To all whom it may concern:*

Be it known that I, OLIVER M. MOWAT, of McKeesport, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Recessing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my improved apparatus and Fig. 2 is a side elevation of the same, Fig. 3 is a sectional end view on the line III—III of Fig. 2 and Fig. 4 is a sectional end view on the line IV—IV of Fig. 2. Figs. 5 and 6 are sectional detail views showing the construction of the floating heads employed on the machine.

My invention relates to apparatus used in finishing pipe-couplings and similar articles, and the object of my invention is to provide improved mechanism by the use of which the time required in recessing such couplings is lessened, and the cost of finishing such couplings is greatly reduced.

The invention consists in the arrangement of the floating recessing heads and the coupling gripping mechanism so as to permit of both ends of each of a plurality of couplings to be simultaneously operated upon and in providing improved means by which the oppositely facing cutting heads are advanced and retracted toward and away from the couplings.

It also consists in providing novel means by which the recessing heads are automatically fed forward into engagement with the couplings and means by which the forward movement of these heads is limited.

It further consists in providing means for adjusting and varying the distance between the oppositely facing recessing heads and in providing means by which the annular recesses are cut concentric with the bore of the couplings.

In the ordinary recessing machines used for recessing couplings, it has been the usual practice to employ one end of the couplings being operated upon to hold and prevent it from rotating while its opposite end is brought into contact with the recessing tool. This renders it necessary to recess the opposite ends of the couplings in separate operations. By the use of my improved machine, these difficulties are overcome, and two couplings are recessed at one time, while both

ends of each of the couplings are recessed simultaneously.

In the drawings 2 represents the bed of my improved machine provided with the oppositely facing floating recessing-heads 3. The heads 3 are secured to and rotated by means of the shafts 4 which are mounted in suitable bearings 5—6. Each of the shafts 4 is adapted to be moved longitudinally so as to advance and retract its attached cutting-head 3.

The couplings being rigidly held between the clamping jaws, variations in their diameters would cause the recesses to be cut eccentric to the bore of the coupling, if the recessing heads were also held rigid. To overcome this difficulty and to insure the recesses being bored concentric with the coupling the recessing heads 3 are constructed so as to permit of them floating or traveling in a path slightly eccentric to the axis of the shafts 4.

As shown in Figs. 5 and 6, the shell 43 is secured to and rotated by the shaft 4 and on the inside of this shell is a disk 44 having a tongue 45 and groove 46 at right angles to each other and on opposite sides of the disk. The tongue 45 fits into a groove 47 in the face of the shell 43 and a tongue 48 on the cutter sleeve 49 fits into the groove 46 which is in the disk 44. The disk 44 and the flange of the sleeve 49 are somewhat smaller in diameter than the inside diameter of the shell 43 to permit the eccentric movement of the sleeve 49. The sleeve 49 is provided with a number of slots corresponding to the number of cutting tools employed (usually three) and a collar 50 fits over the sleeve and over the inner end of the cutting tools 51 to hold the tools in place, each cutter being held by means of a set-screw 52. A longitudinally adjustable center 53 is also provided in the end of the sleeve 49, the center being adjustably held by means of a set screw 53' which extends through the collar 50 and sleeve 49.

A spur gear 7 is secured to each of the shafts 4 and meshing with the spur gears 7 are pinions 8, these pinions having faces of such length as to always be in mesh with the spur gears at any point of the longitudinal movement of the shafts 4. The pinions 8 are on shafts 9 which are also mounted in suitable bearings located on the bed 2 and the outer ends of the shafts 9 are provided



with spur gears 10 which mesh with the pinions 11. The apparatus is caused to rotate through the pinions 11 which are connected to the cone pulleys 12, the pulleys 12 being connected by means of a belt with any suitable source of power.

Each of the longitudinally movable shafts 4 is adjustably connected to yokes 13 which are pivotally mounted on the shafts 14, these shafts being carried in the bearings 15 on the bed 2 of the machine. The lower ends of each of the yokes 13 are connected through the links 16—17 with the lever arms 18—19 secured to the shafts 20. One of each of the opposing pairs of shafts 4 is provided with a threaded portion between its bearings 5—6 and on this threaded portion is a collar 21 to which the yoke 13 is yieldingly secured. By adjusting the position of this collar on the shaft 4 the distance between the opposite recessing heads 3 can be varied and when adjusted, the collar 21 is securely held in place on the shaft 4 by means of its jam-nut 22. Also keyed to the shaft 20 is a hand lever 23 which is provided with a hand operated pawl 24, the pawl engaging with the teeth of the ratchet wheel 25 forming a part of the friction clutch, the clutch being mounted so as to freely rotate on the shaft 20. The clutch consists of a ratchet wheel 25 having a friction ring 25<sup>a</sup> and a worm wheel 26 having a friction ring or flange 26<sup>a</sup> arranged to frictionally engage with the ring 25<sup>a</sup>, and the worm wheel is caused to constantly rotate by the worm 27 on the shaft 28, this shaft having a spur gear 29 on its outer end which is driven through the spur gear 30 by the spur gear 31 on the outer end of one of the shafts 4. An adjustable stop 32 in the lug 33 located on the side of the bed 2 of the machine, limits the forward movement of the hand-lever 23 and through the connecting mechanism, limits the distance that the oppositely facing recessing heads 3 can be advanced toward each other.

Located midway between the oppositely facing recessing heads 3 is the gripping mechanism, by which the couplings are held and prevented from rotating during the recessing operation. This gripping mechanism consists of a stationary jaw 34 and movable gripping jaws 35. Between the gripping jaws are removable supports 36, which are made removable to enable supports of different sizes to be placed between the gripping jaws, in order that the various sizes of couplings may be kept vertically central with the axes of the cutting heads 3. The stationary jaws are provided with removable hardened steel bits 34' which grip the couplings when the movable gripping jaws are moved into engagement with the couplings and prevent the couplings from rotating. The movable jaws 35 are

pivoted on the pins 37' to the bed of the machine, and these jaws are provided with lever arms 37 which are connected by toggle links 38, 38 and the links 39 to the lever arm 40 on the hand operating lever 41 which is carried on the bed 2 of the machine by the pivot 42. The lever arm 40 is provided with an oppositely extending arm 40' on which a suitable counterbalance weight is secured.

The operation of the apparatus is as follows:—The machine is started so as to cause the parts to rotate. A coupling is then placed by the operator between each set of the gripping jaws and by means of the hand lever 41 and its connecting mechanism closes the gripping mechanism so as to grasp and hold the couplings in place. When the recessing heads are started, the worm wheel 26 of the friction clutch is also started to rotate and, through the engaging friction faces 25<sup>a</sup>, 26<sup>a</sup>, of the clutch causes the ratchet wheel 25 to rotate. In the meantime the operator has held the pawl 24 on the lever 23 raised out of engagement with the teeth of the ratchet wheel 25 so as to permit the ratchet wheel 25 to rotate freely with the worm wheel 26 on the shaft 20. After the couplings have been grasped by the gripping mechanism the operator permits the pawl 24 to engage with the teeth of the ratchet wheel 25. This causes the lever 23 to advance with the ratchet wheel and through the shaft 20 to which the lever is keyed, the arms 18, 19 and links 16, 17 to advance the oppositely facing recessing heads 3 until the cutting bits of these heads are in engagement with the ends of the couplings. When the heads come into engagement with the ends of the couplings and the cutting operation is started, the speed of forward movement of the heads is lessened, and as the worm wheel on the friction clutch is rotated at a constant speed, the friction faces of the clutch slip upon one another, in this way permitting the positively driven part of the clutch to rotate and at the same time to feed forward the cutting head at the desired speed depending upon the friction between the slipping faces of the clutch, the clutch being constructed so as to vary the amount of friction as is desired. After the couplings have been recessed to the desired amount and the couplings faced to the required length, the lever 23 has been advanced until it is in engagement with the adjustable stop which limits the forward travel of this lever. The hand lever is then raised to a vertical position, to retract the recessing heads and the gripping mechanism is operated, by the hand lever 41 to release the completed couplings. The recessed couplings are then removed and other couplings placed in the gripping mechanism when the operations described are again repeated.

The advantages of my invention will be



apparent to those skilled in the art. By the use of my improved apparatus the recesses are made concentric with the bore of the couplings, the length of the couplings and the depth of the recesses are made uniform, and couplings of different sizes can be recessed. The output of the machine is very largely increased and the cost of recessing the couplings is reduced.

Variations in the construction and arrangement of the parts may be made within the scope of the claims without departing from my invention.

I claim:—

1. In a coupling recessing machine, the combination with coupling gripping mechanism having means for opening and closing said mechanism, and longitudinally movable shafts having oppositely facing recessing heads mounted thereon, of means for rotating said shafts and heads, means for reciprocating the shafts to bring the heads into engagement with the opposite ends of said coupling and means on said shafts for adjusting the distance between said heads when in their forward position; substantially as described.

2. In a coupling recessing machine, the combination with coupling gripping mechanism having means for opening and closing said mechanism, and longitudinally movable shafts having oppositely facing recessing heads mounted thereon, of means for rotating said shafts and heads, mechanism for reciprocating the shafts to bring the heads into engagement with opposite ends of said coupling, means on said shafts for adjusting the distance between said heads when in their forward position, and an adjustable stop arranged to contact with the shaft reciprocating mechanism, and limit the forward movement of said heads; substantially as described.

3. In a coupling recessing machine, the combination with coupling gripping mechanism having means for opening and closing said mechanism, of longitudinally movable shafts having oppositely facing recessing heads mounted thereon, a second set of longitudinally movable shafts having oppositely facing heads parallel with the first set, means for rotating said shafts and heads, means for simultaneously re-

ciprocating said shafts and heads and bring the heads into engagement with opposite ends of the couplings, and means on the shafts arranged to adjust the oppositely facing heads toward and away from each other to vary the distance between said heads when in their forward position; substantially as described.

4. In a coupling recessing machine, the combination with coupling gripping mechanism having means for opening and closing said mechanism, and a plurality of sets of oppositely facing recessing heads, of means for rotating said heads, connections arranged to simultaneously reciprocate said heads and bring them into engagement with opposite ends of the couplings, means for adjusting the oppositely facing heads toward and away from each other and vary the distance between said heads when in their forward position, and an adjustable stop by which the forward movement of said heads is limited; substantially as described.

5. In a coupling recessing machine, the combination with coupling gripping mechanism having means for opening and closing said mechanism, of oppositely facing longitudinally movable recessing heads, positive means for simultaneously moving the oppositely facing heads toward and away from each other and frictional means for automatically feeding said heads in their forward movement; substantially as described.

6. In a coupling recessing machine, the combination with coupling gripping mechanism having means for opening and closing said mechanism, of oppositely facing longitudinally movable recessing heads, and means for simultaneously moving the oppositely facing heads toward and away from each other, said head-moving means being adapted to be positively moved forwardly and backwardly and to be frictionally moved forwardly to feed the heads into contact with the couplings being recessed.

In testimony whereof, I have hereunto set my hand.

OLIVER M. MOWAT.

Witnesses:

W. B. FELL,

RICHARD D. JAMES.