

No. 677,054.

Patented June 25, 1901.

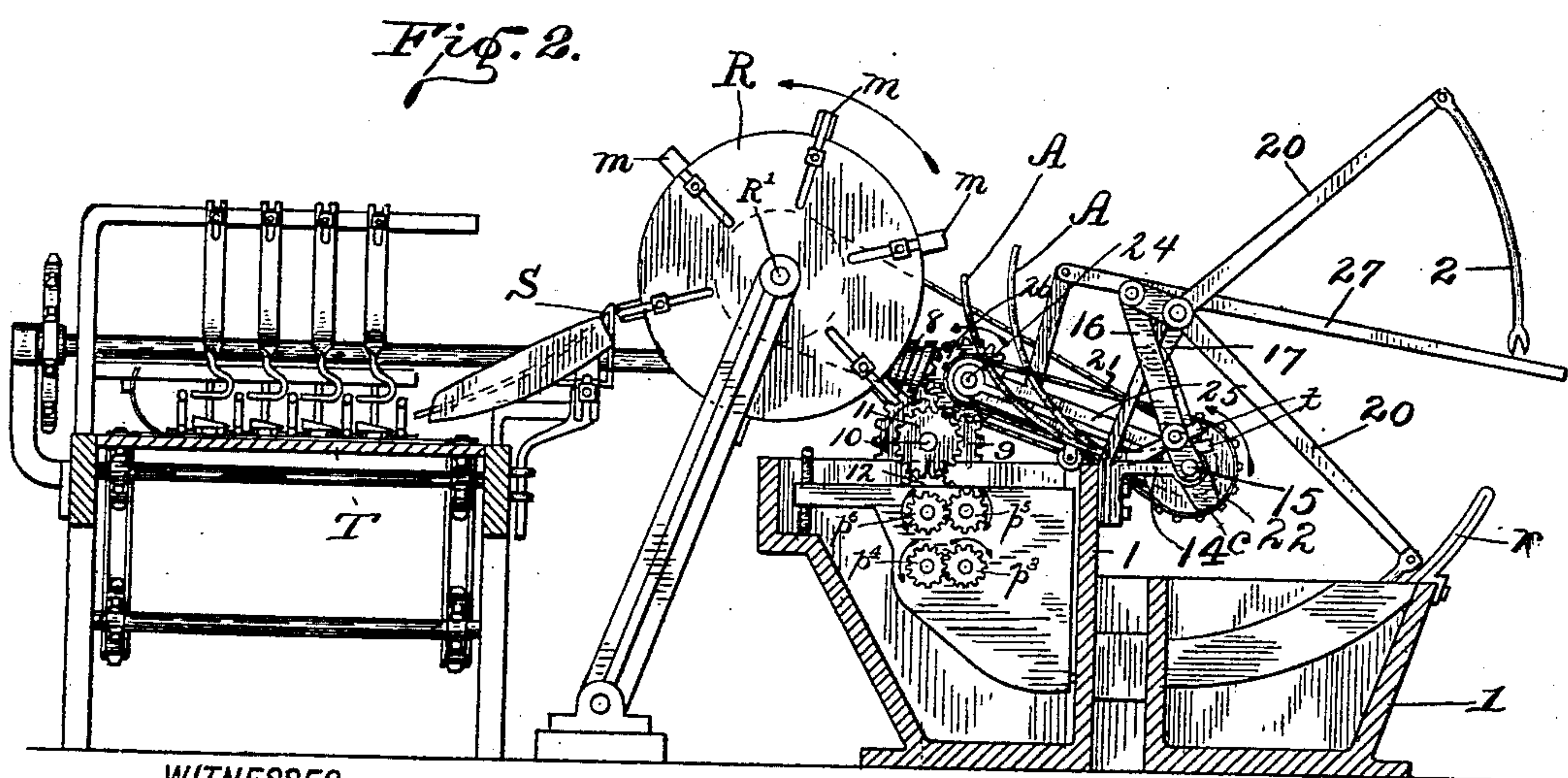
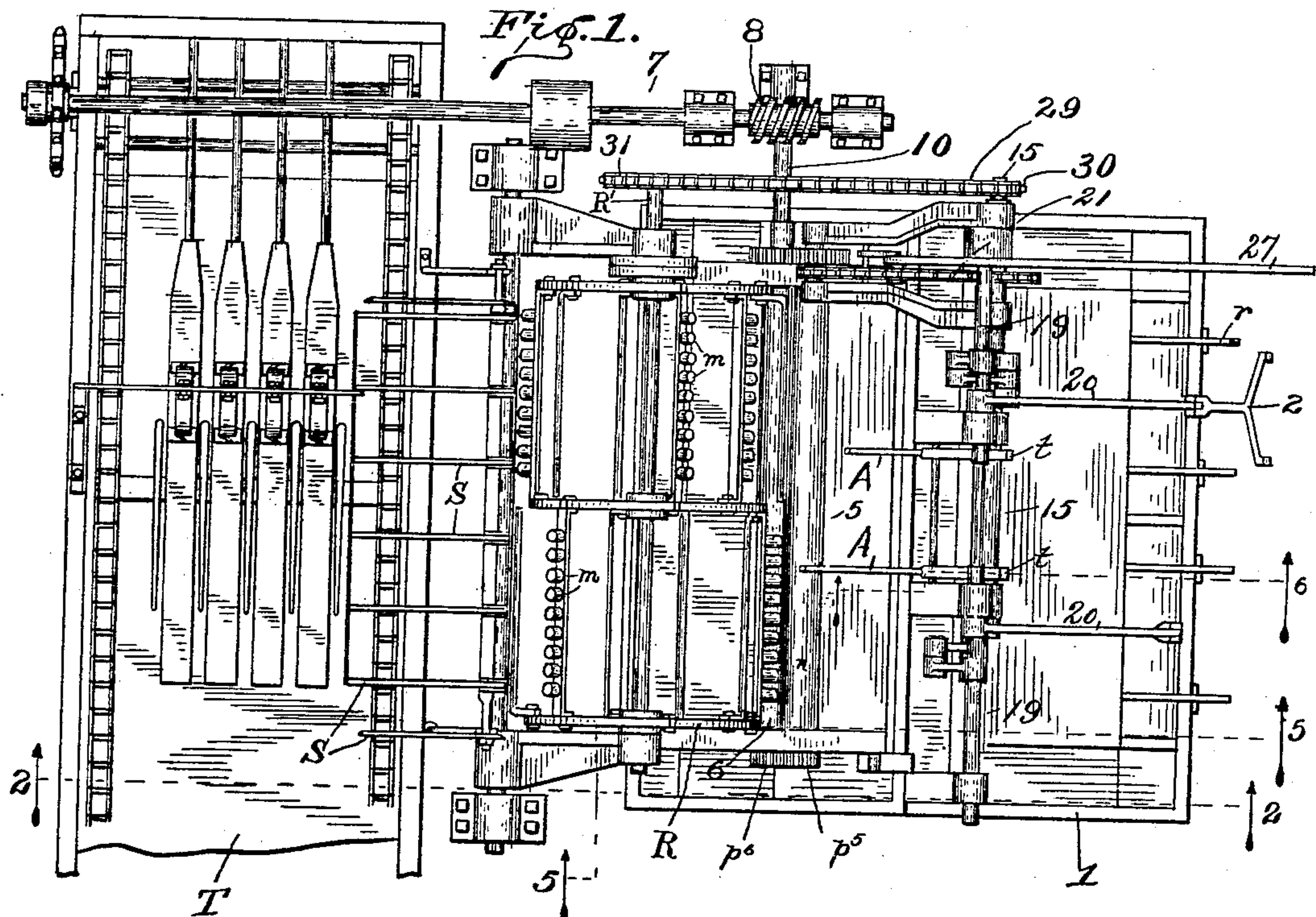
C. W. BENNETT.

AUTOMATIC FEEDING APPARATUS FOR TINNING MACHINES.

(No Model.)

(Application filed Oct. 3, 1900.)

3 Sheets—Sheet 1.



WITNESSES:

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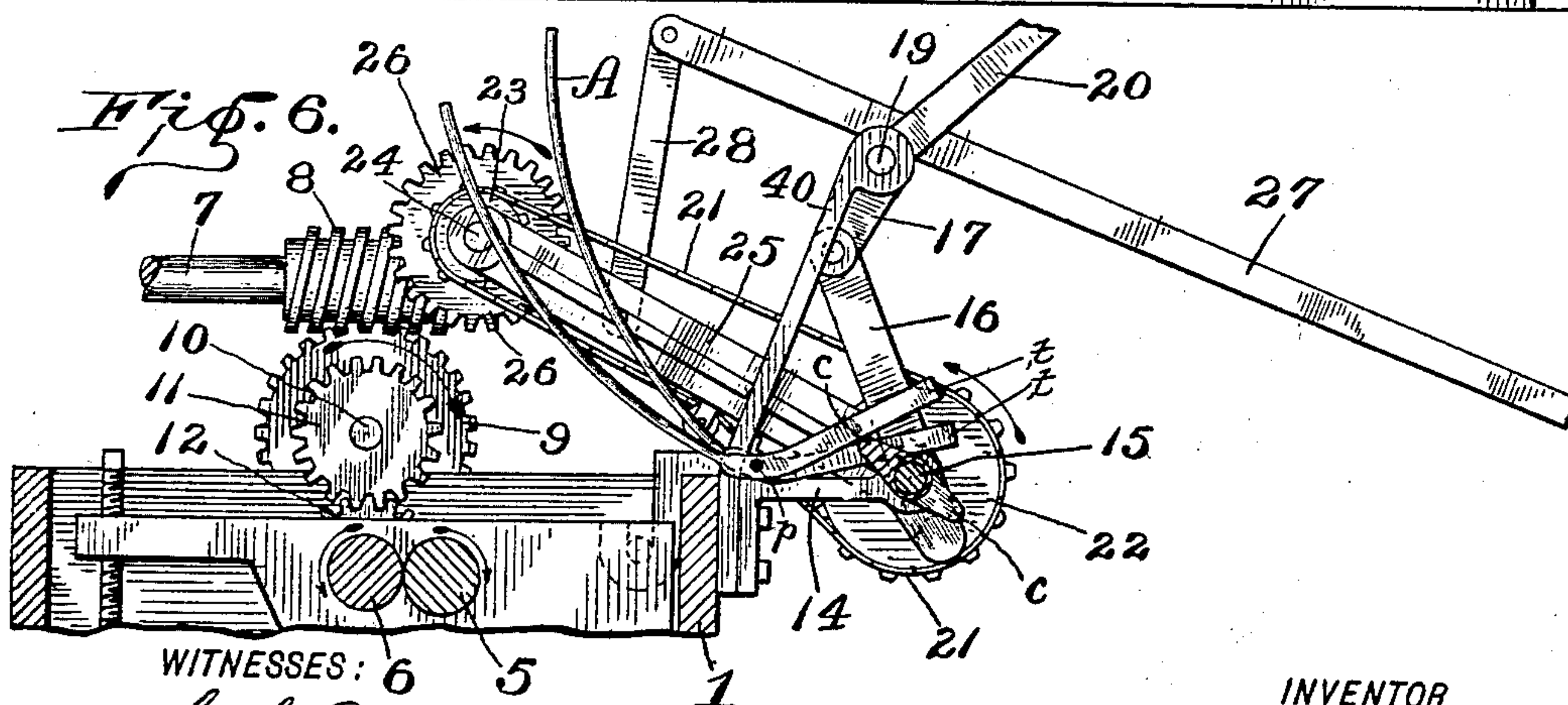
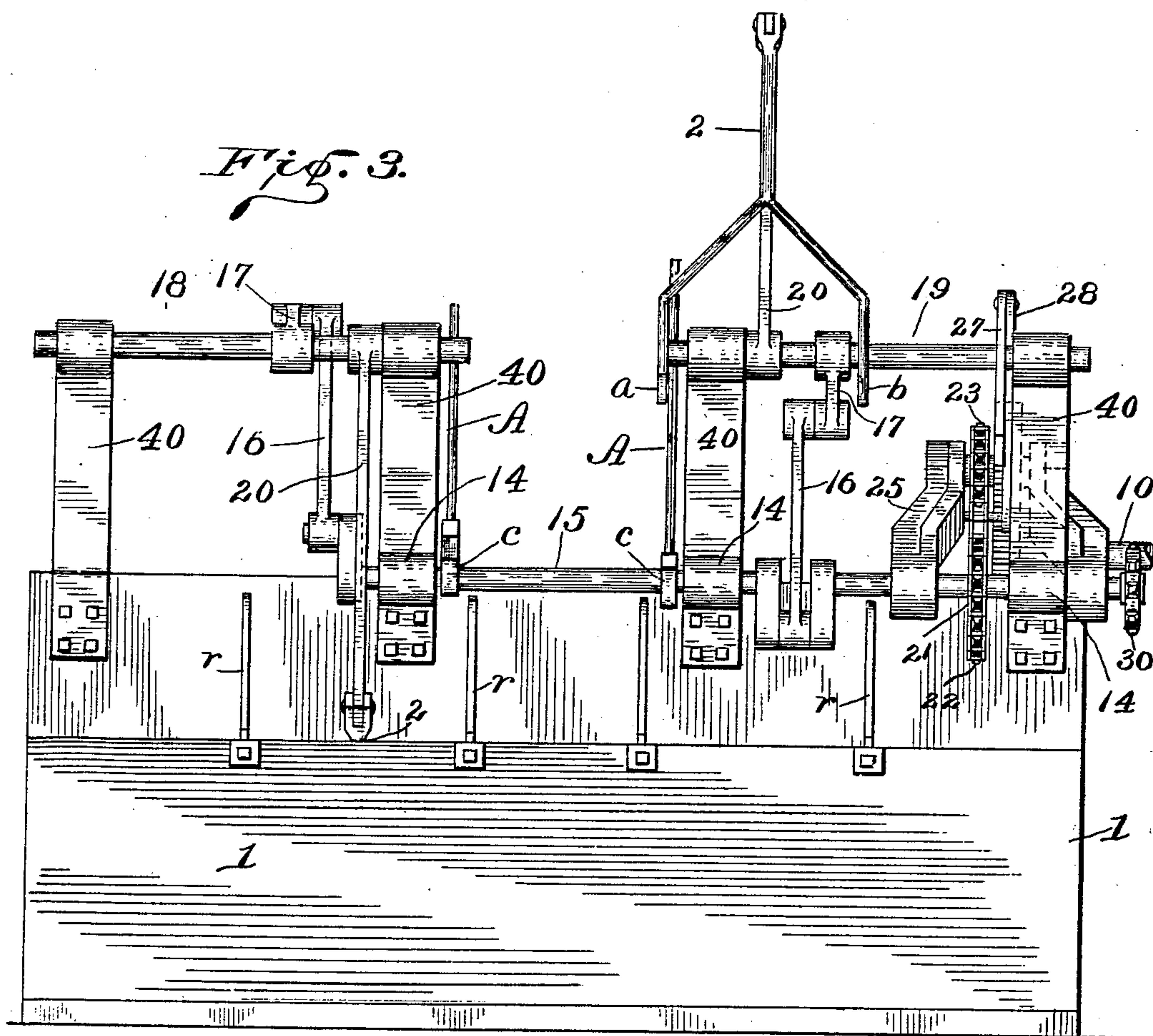
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3 Sheets—Sheet 2.



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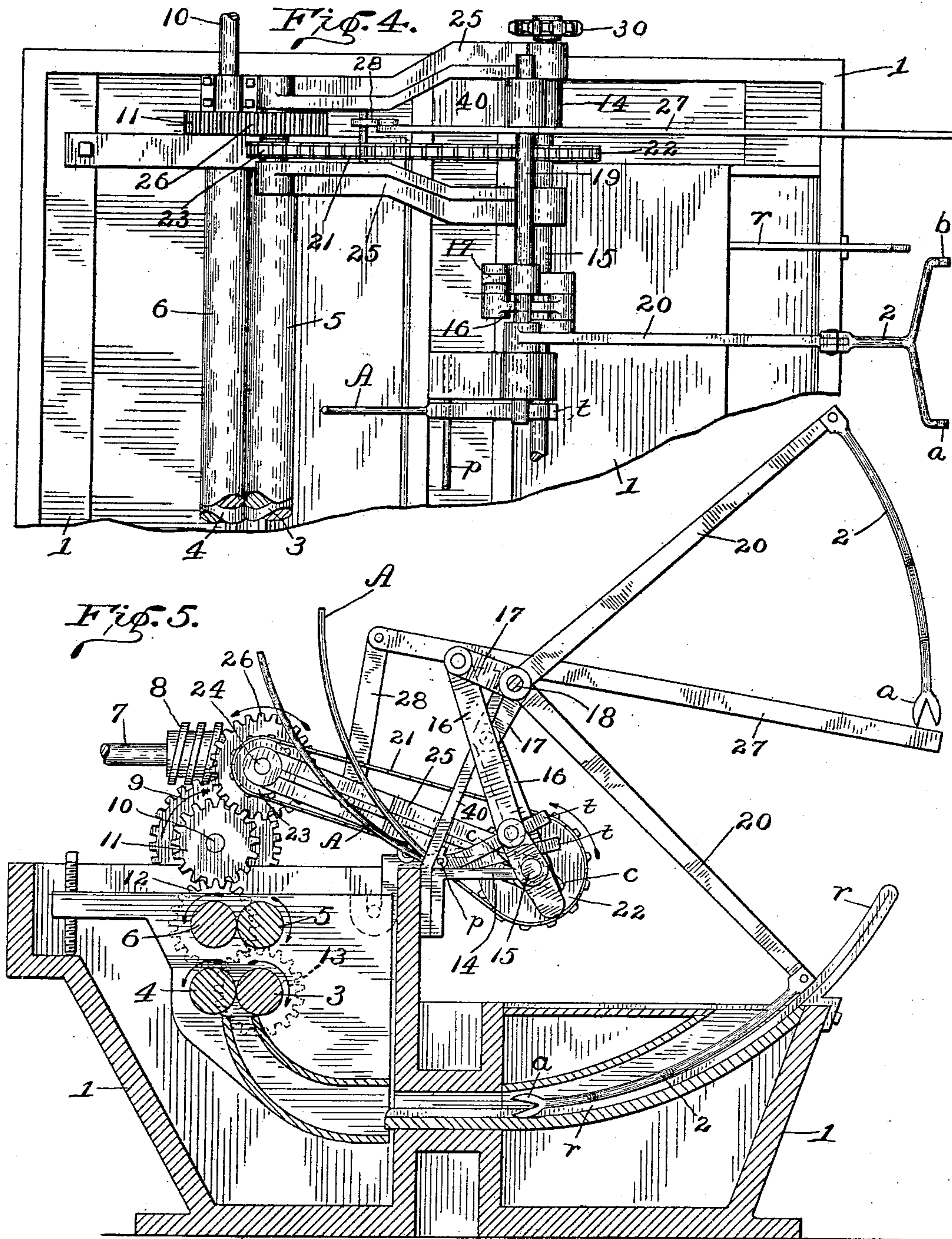
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

CHARLES W. BENNETT, OF ELWOOD, INDIANA, ASSIGNOR TO THE AMERICAN TIN PLATE COMPANY, OF SAME PLACE AND NEW YORK, N. Y.

AUTOMATIC FEEDING APPARATUS FOR TINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 677,054, dated June 25, 1901.

Application filed October 3, 1900. Serial No. 31,822. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. BENNETT, a citizen of the United States, residing at Elwood, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Automatic Feeding Apparatus for Tinning-Machines, of which the following is a specification.

My present invention relates to the apparatus used in the process of making tin-plate, by means of which the sheets to be tinned are propelled through the tinning-vat, withdrawn, and delivered to the carrying-off table; and said invention consists particularly in a novel automatic feeding apparatus, by which such sheets are regularly and efficiently fed successively one by one to the rolls, which receive them as they emerge from the vat.

It further consists in certain novel combinations and arrangements of parts, as will be hereinafter described and claimed. An automatic catching and delivering apparatus is also illustrated, and the same is involved in some of the combinations of the present invention; but as the particular construction and arrangement of said apparatus forms the subject-matter of my Patent No. 677,055, of even date herewith, the description thereof in the present case will be in general terms, the particular and detailed descriptions of its parts and their arrangement being left to the specification of the patent wherein such subject-matter is claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a top or plan view of an apparatus embodying my said invention; Fig. 2, a vertical sectional view thereof as seen when looking in the direction indicated by the arrows from the dotted line 2 2 in Fig. 1, showing most of the mechanism in end elevation; Fig. 3, a front elevation of the feeding apparatus on an enlarged scale, the catching apparatus being omitted for purposes of clearness, the same, as before stated, constituting a separate invention; Fig. 4, a fragmentary top or plan view similar to a portion of Fig. 1 on an enlarged scale; Fig. 5, a detail sectional view similar in a general way to a portion of Fig. 2, but illustrating the devices as

seen from the dotted line 5 5 in Fig. 1; and Fig. 6, a detail sectional view as seen from the dotted line 6 6 in Fig. 1, but with the feeder-operating gear raised out of engagement.

In operation the sheets of tin are delivered in any desired manner to the tinning-vat 1 and are forced through the same by the reciprocating curved forked arms 2 until they reach the pair of rolls 3 4, by which (and the pair of rolls 5 6 when, as is usual, two pairs are used) they are driven up until they are brought alongside the rotary structure R, forming the automatic catcher, which is armed with magnets *m*, sufficiently powerful to attract and hold the sheet and carry it over until it is delivered to the slide S on the adjacent edge of the carrying-off table T. The various devices are driven, primarily, from a main or line shaft, as 7, having a worm 8, which engages with a corresponding worm-gear 9 on the main shaft 10 of the tinning-machine. A spur-pinion 11 on the shaft 10 engages with another spur-pinion 12 on the shaft of one of the rolls 6 of the upper pair, and this in turn engages with another spur-pinion 13 on the opposite roll 3 of the lower pair, thus imparting uniform motion to both said pairs of rolls, which are respectively geared together at the opposite ends by suitable small pinions $p^3 p^4 p^5 p^6$.

A crank-shaft 15 is mounted in suitable bracket-bearings 14 on the frame of the tinning-vat, and the cranks thereof are connected by links or connecting-rods 16 with crank-arms 17 on the rock-shafts 18 and 19, mounted on brackets 40, and on these rock-shafts are arms 20, which carry the forked curved arms 2, which engage with and propel the plate through the vat and into engagement with the rolls 3 4. These curved and forked arms are shown as bifurcated or having two forked ends, as *a* and *b*, which engage with the plates, and this is the form which I prefer. They may, however, each be made with a single forked end, if desired, in which case such single forked end would be arranged to engage centrally with the sheet, as will be readily understood. Ribs *r* in the bottom of the vat support the plates and permit the lower points of the forks to pass below said plates. The crank-shaft 15 is driven

by means of a chain belt 21, running from a sprocket-wheel 22 thereon to a corresponding sprocket-wheel 23 on a counter-shaft 24, carried in the end of a swinging frame 25, which
 5 pivots on the crank-shaft 15. This counter-shaft 24 has a spur-gear 26, which engages with the same spur-gear 11 on the main shaft 10 which engages with and drives the pinions on the feed-roll shafts, as hereinbefore described. The swinging frame 25 is adapted
 10 to be raised up to the position shown in Fig. 6, which of course raises the spur-gear 26 out of engagement, whereupon the operation of the automatic feeding devices will stop. This
 15 is conveniently done by means of a lever 27, which is connected to the swinging frame 25 by means of a link 28, and may be fulcrumed on the shaft 19 or any other suitable support, its handle end extending out in front of the
 20 machine, where it may be readily reached by the operative.

The apparatus by means of which the sheets of tin are driven through the vat and up between the rolls has now been described. At
 25 this point the sheets are caught by the magnets *m* of the rotary automatic catcher R and drawn on over and delivered to the slide S of the carrying-off table T. This rotary catcher is driven by a chain belt 29, running over
 30 sprocket-wheels 30 and 31 on the crank-shaft 15 and on the shaft R' of said structure, respectively.

To insure the forcible contact of the sheets of tin with the magnets of the catcher as
 35 said sheets emerge from the rolls, I have provided swinging fingers A, mounted on pivots *p* on a suitable part of the frame and operated by cams *c* on the shaft 15. Said swinging fingers are arranged one or more on each
 40 side of the apparatus, and each has a part *t* extending rearwardly from the pivot, with which the appropriate cam *c* contacts to throw its opposite end forward against the plate. The upper ends of these fingers A,
 45 which extend to near the catcher, may, if desired, be sufficiently small or thin to be yielding, so as to push the sheets of tin against the magnets under something of a spring-pressure; but I prefer to so adjust
 50 said fingers as to push the sheets up close to the magnets without quite touching them and depend upon the magnets themselves to cause the completion of the movement, thus avoiding the possibility of applying such
 55 force to the sheets as to mar their surfaces. The ends of said fingers behind the pivots *p* and upon which the cams *c* operate are sufficiently thick and heavy to overbalance the operative ends, so that said operative ends
 60 will be caused to recede from the catcher, except when forced forward by the action of said cam. The revolutions of the parts are so timed that the upper or operative ends of these fingers will be forced forward just as
 65 the sheets emerge from the rolls, and are permitted to drop backwardly under the force of their weighted ends in time to permit the

lower ends of the sheets to swing outwardly as the structure R revolves without coming
 in contact with said arms. The revolutions 70 of the structure R and the reciprocatory motions of the arms 2 are also so timed that the sheets of tin are delivered by said arms at such intervals as enable them to be delivered
 75 to the catcher in proper succession and without interfering one with another.

The direction of rotation of the several rolls, wheels, &c., is indicated by curved arrows upon or alongside the several structures.

The machine illustrated is a duplicate machine—*i. e.*, is of double the width of an ordinary sheet of tin-plate and has two sets of feeding-arms which operate alternately—and the structure R also includes duplicate catchers, the two sides having the magnets properly
 85 arranged to catch the plates as they emerge from the portions of the rolls which operate therewith, respectively. The sheets are thence delivered to the carrying-off table, as before stated. 90

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

1. The combination, in a tinning-machine, of the vat, the rolls therein, a rock-shaft provided with a crank-arm, an arm mounted on
 95 said rock-shaft provided with an end adapted to engage and feed the plates, a crank-shaft, a link connecting the crank thereon with the crank-arm on the rock-shaft, a swinging frame mounted on said crank-shaft, and gearing
 100 mounted on said swinging frame adapted to connect said crank-shaft with the gearing for driving the rolls, substantially as set forth.

2. The combination, in a tinning-machine, 105 of the vat, the rolls therein, a rock-shaft carrying a sheet-propelling arm, a crank-arm also mounted on said rock-shaft, a crank-shaft, a link connecting the crank-arms of the crank-shaft and rock-shaft, a swinging
 110 frame, and gearing mounted on said swinging frame and adapted to connect the crank-shaft with the rolls, whereby said crank-shaft may be thrown into or out of gear and the sheet-propelling arms driven or permitted to remain
 115 at rest, substantially as set forth.

3. The combination, in a tinning-machine, of the vat, the rolls therein provided with suitable driving-gear, a rock-shaft, a sheet-propelling arm mounted on said rock-shaft, 120 a crank-shaft, crank-arms mounted on said crank-shaft and rock-shaft, a link connecting said crank-arms, a swinging frame pivoted on said crank-shaft, a counter-shaft in the opposite end of said swinging frame, sprocket-wheels on said counter-shaft and crank-shaft, 125 a chain belt connecting said sprocket-wheels, a gear-wheel on said counter-shaft adapted to engage with the roll-driving gear, and means for swinging said frame, whereby said gearing may be thrown into or out of engagement
 130 at will, substantially as set forth.

4. The combination, in a tinning-machine, of the tinning-vat, the rolls therein, an auto-

matic feeding apparatus for driving the sheets through the vat to the rolls, a catcher for catching the sheets as they emerge from the rolls, swinging fingers for forcing said sheets
5 into engagement with said catcher, and gearing by which said feed apparatus, catcher and fingers are operated simultaneously and in the proper relation to each other.

5. The combination, in a tinning-machine,
10 of the vat, the rolls therein, an automatic feeding apparatus for forcing the sheets through the vat to the rolls, an automatic catcher for receiving the sheets as they emerge from the rolls, swinging fingers adapted to force said
15 sheets against said automatic catcher, and means for operating said swinging arms, the several parts being timed as specified, whereby they operate in proper succession to and relation with each other, and whereby said
20 arms are permitted to recede as the lower ends

of the sheets pass upwardly carried by the catcher, substantially as set forth.

6. The combination, in a tinning-machine, of the tinning-vat, rolls therein, an automatic feeding apparatus for driving the sheets 25 through the vat to the rolls, a catcher for receiving the sheets and delivering the same to a suitable table, positively-operated swinging fingers for moving the sheets toward or against the catcher, means for swinging said 30 fingers, said table, and a slide interposed between said table and said catcher for guiding the sheets onto said table.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 35 27th day of September, A. D. 1900.

CHARLES W. BENNETT. [L. S.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.