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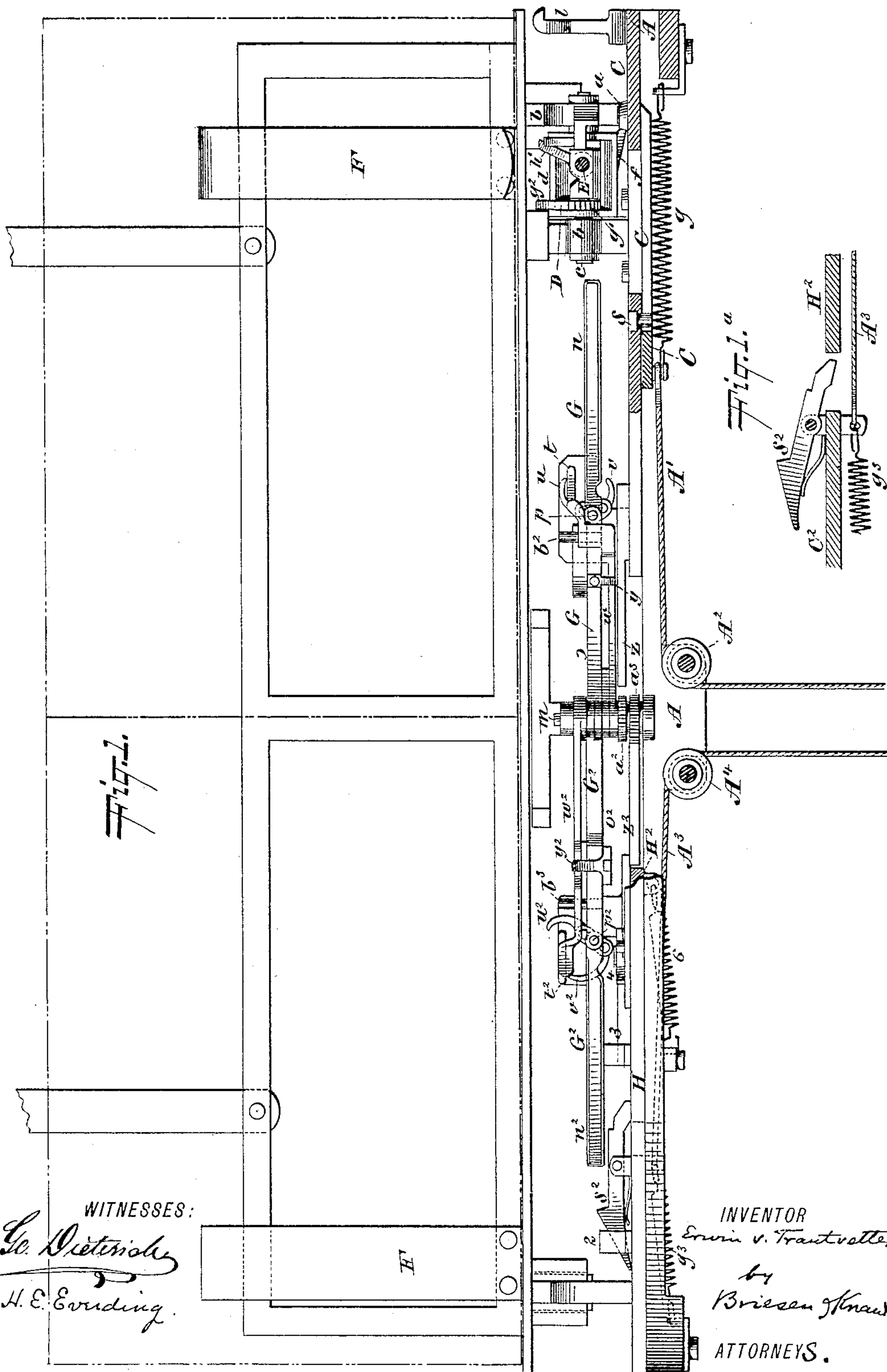
4 Sheets—Sheet 1.

E. VON TRAUTVETTER.

MUSIC LEAF TURNER.

No. 477,828.

Patented June 28, 1892.



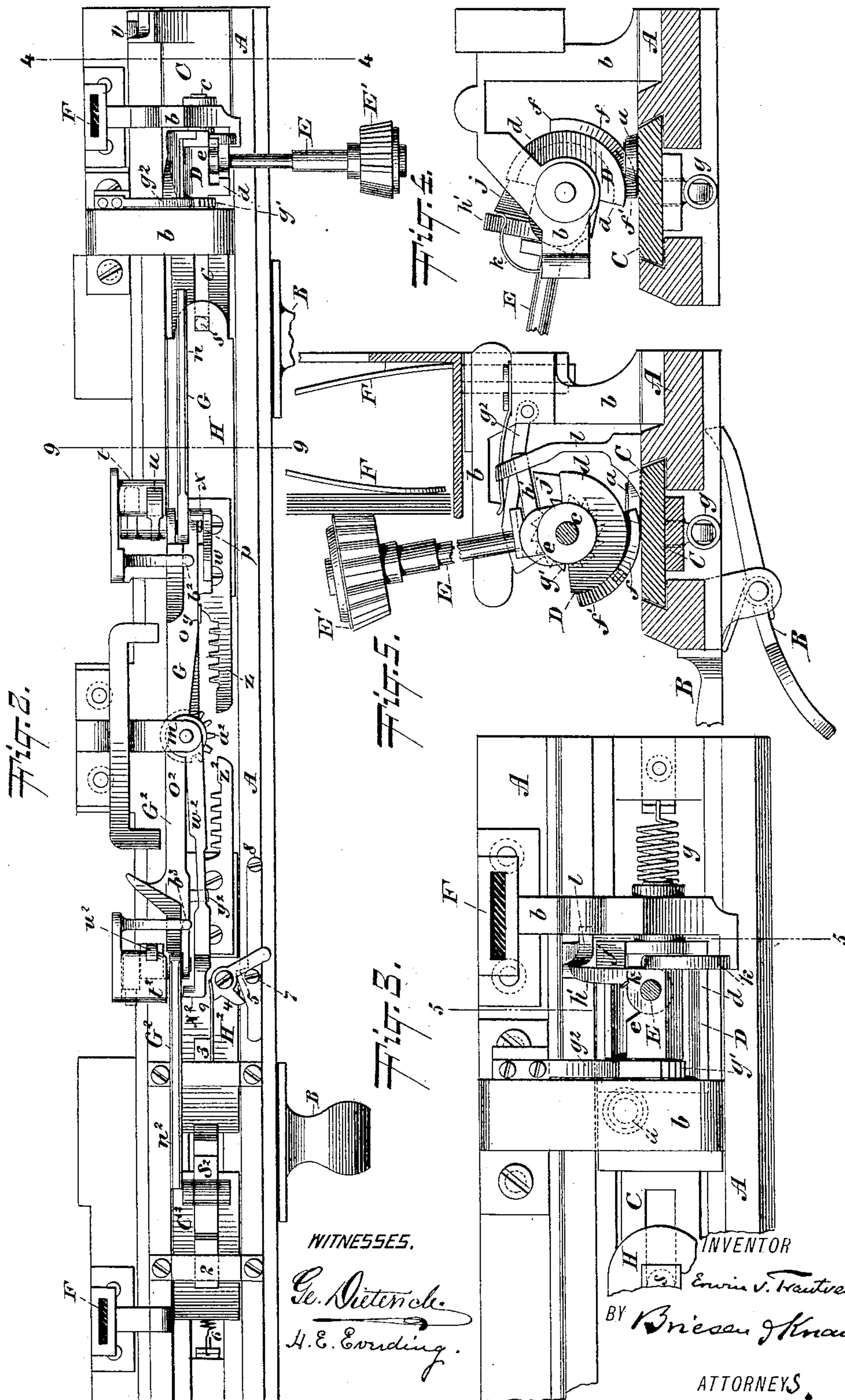
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WITNESSES.

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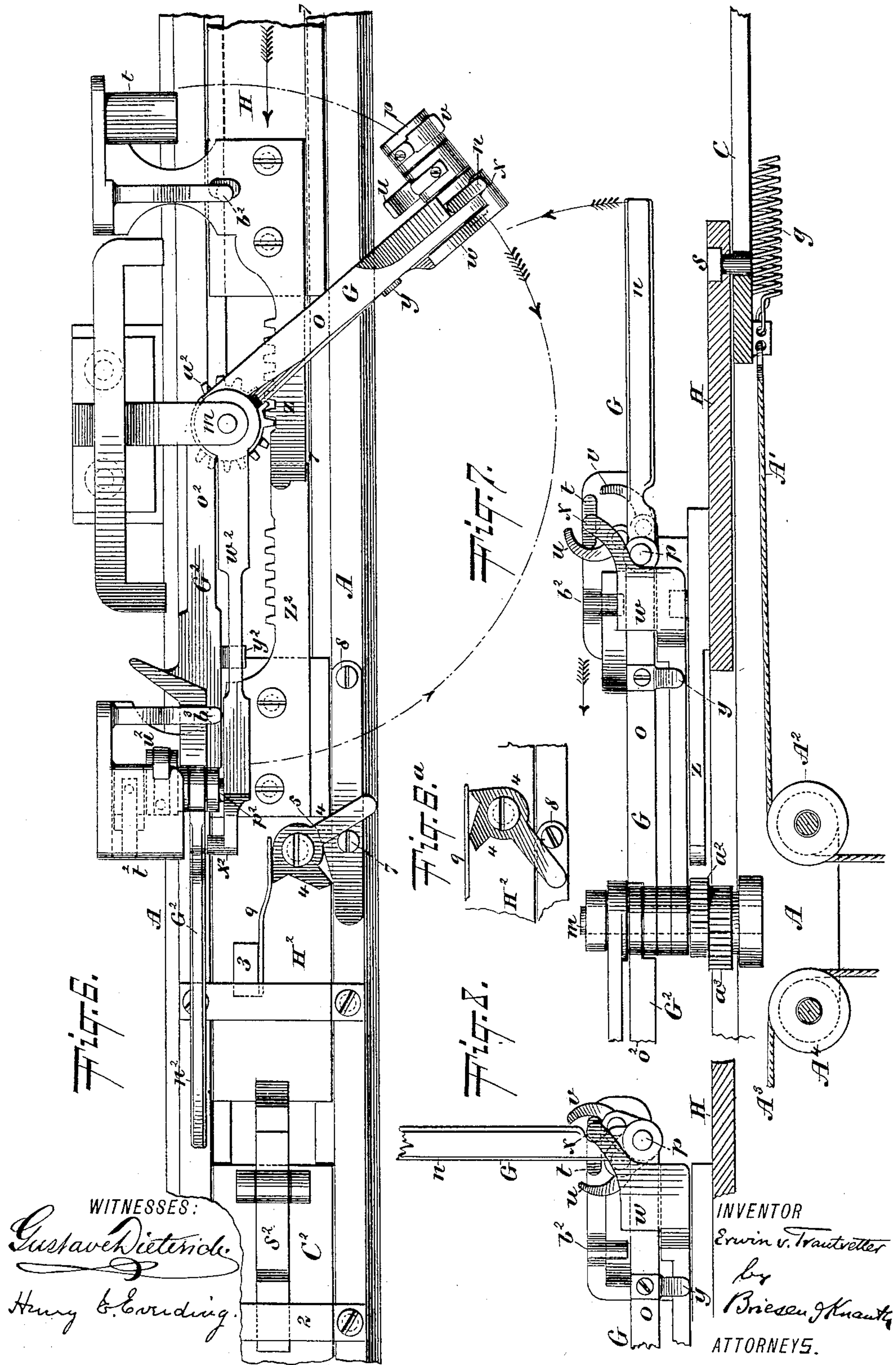
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4 Sheets—Sheet 4.

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Fig. 13.



Fig. 9.

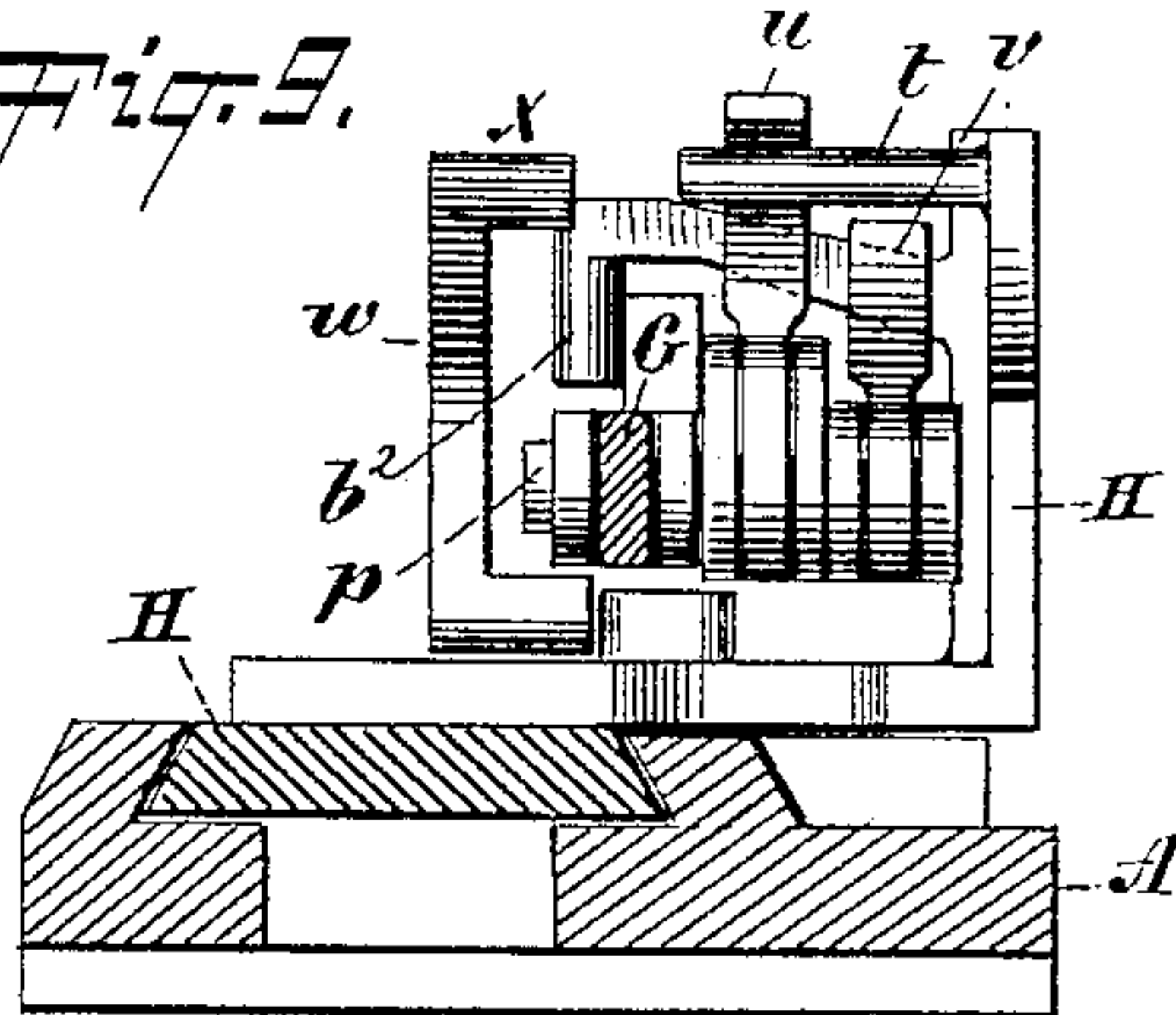


Fig. 10.

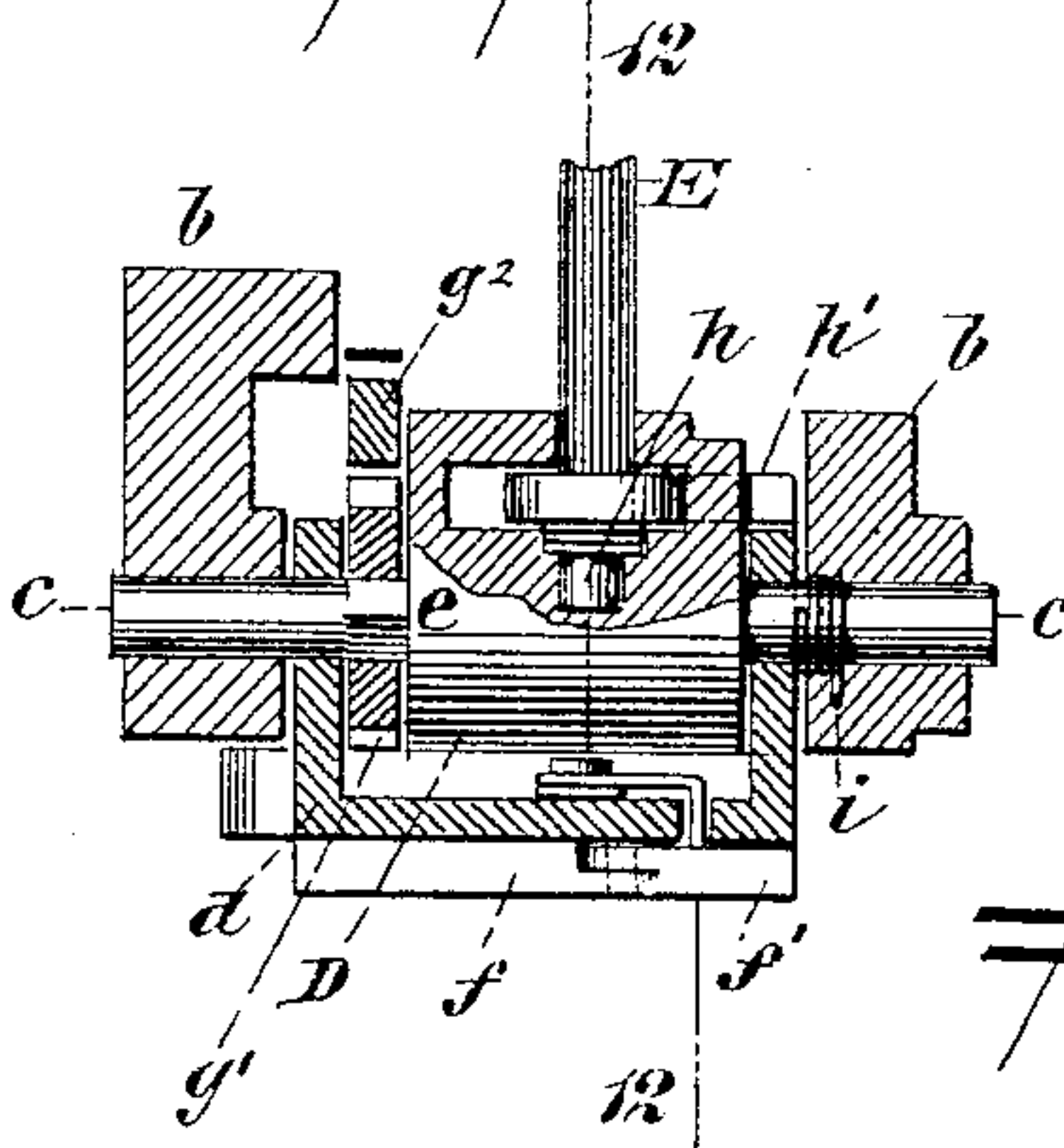


Fig. 11.

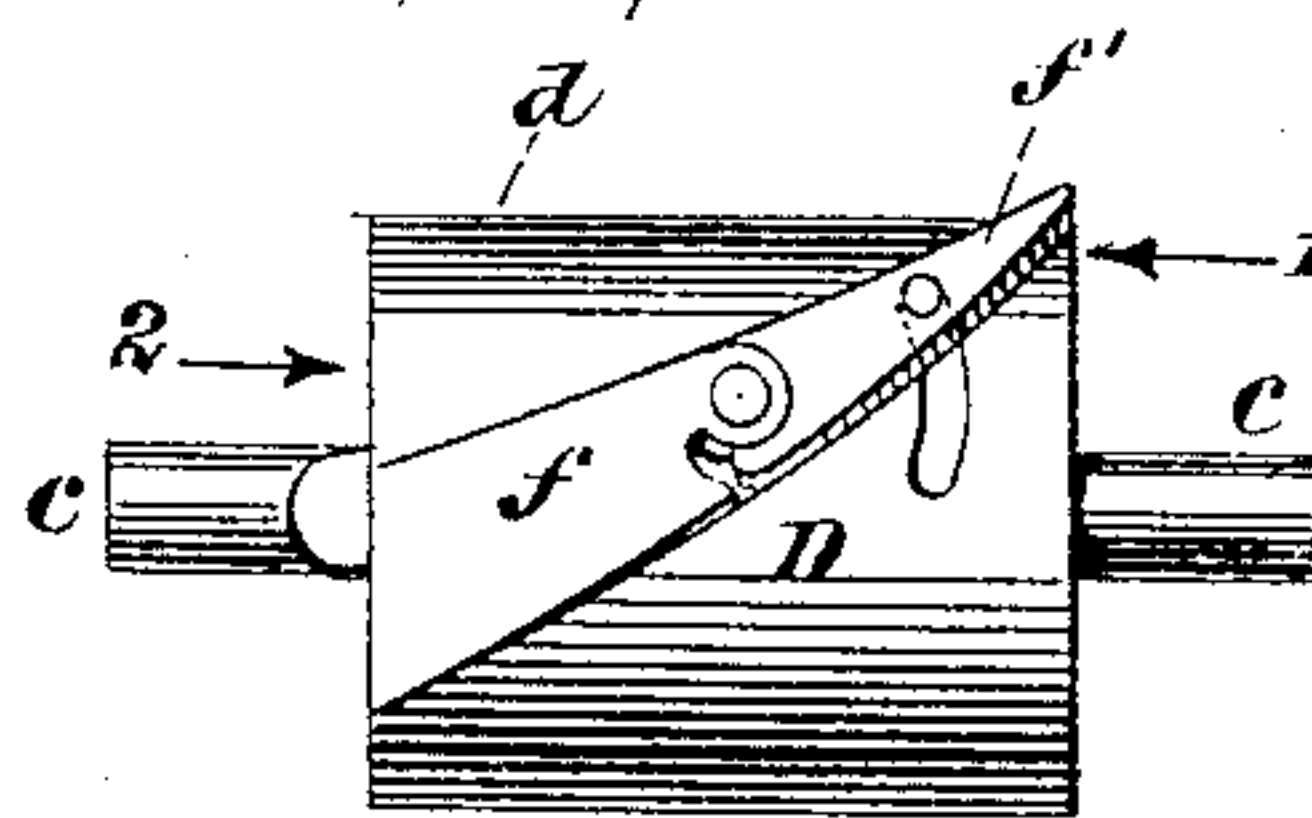
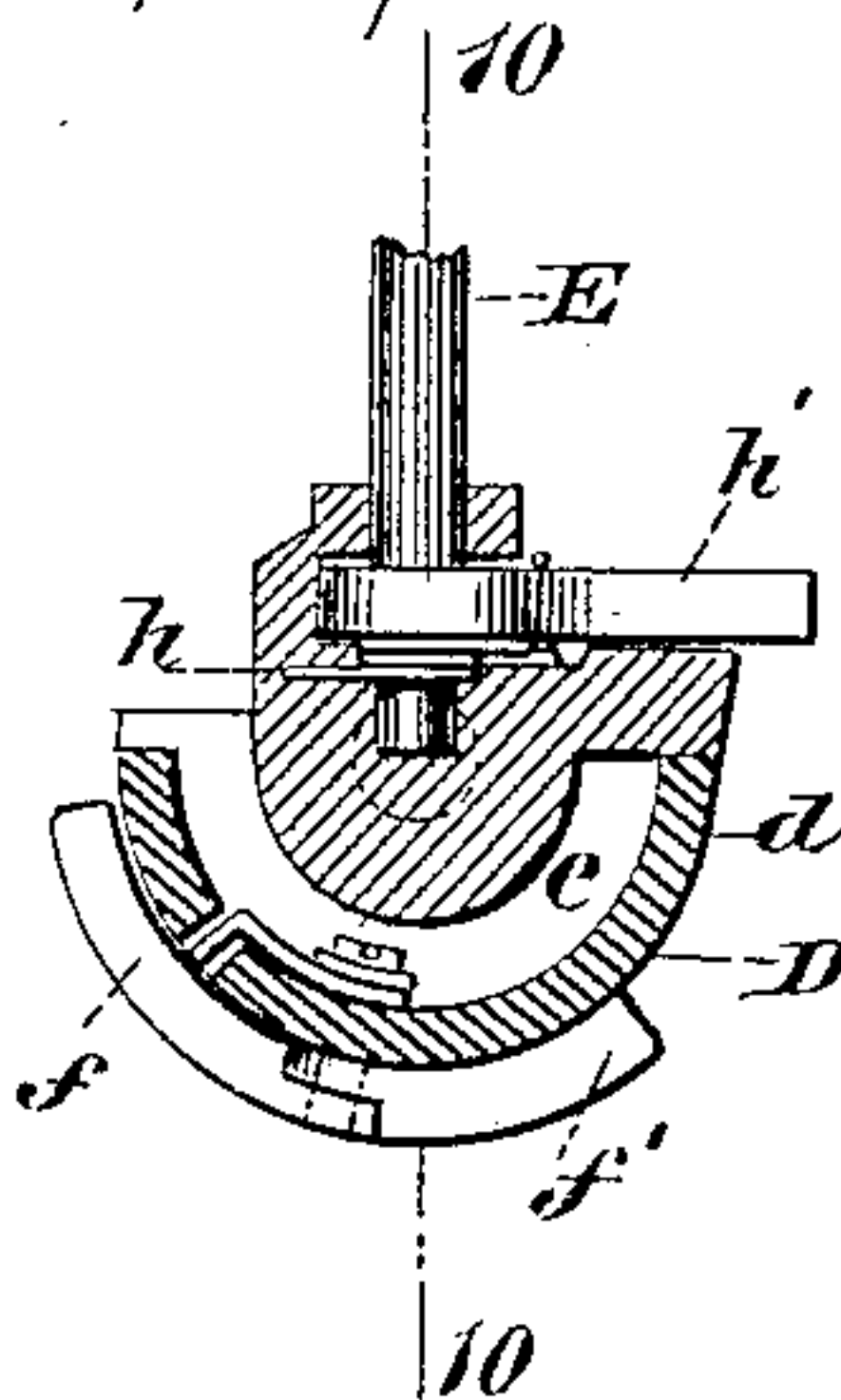


Fig. 12.



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UNITED STATES PATENT OFFICE.

ERWIN VON TRAUTVETTER, OF BROOKLYN, NEW YORK.

MUSIC-LEAF TURNER.

SPECIFICATION forming part of Letters Patent No. 477,828, dated June 28, 1892.

Application filed October 21, 1891. Serial No. 409,403. (No model.)

To all whom it may concern:

Be it known that I, ERWIN VON TRAUTVETTER, a resident of Brooklyn, Kings county, New York, have invented an Improvement in Music-Leaf Turners, of which the following is a specification.

My invention relates to certain improvements in music-leaf turners; and it consists in certain mechanism whereby a leaf of music may first be curled and separated from its fellows and then turned to the opposite side of the book or pamphlet, and of further mechanism whereby one or more of the leaves already turned may be returned to the original or initial position. The invention therefore accomplishes three objects, to wit: first, the curling or separation of the leaf from the layer of leaves behind it; second, the turning of said leaf to the other side of the pamphlet, and, third, the returning to the original or initial position of the turned leaves.

The improvement consists, further, in the novel arrangement and combination of parts hereinafter more fully described and claimed.

In the drawings, Figure 1 represents a front view of the device with the curling-arm in section; Fig. 2, a plan view of the same with the curling-arm in its lowermost position; Fig. 3, an enlarged plan view of the mechanism for actuating the curling-arm; Fig. 4, a cross-section on the line 4 4, Fig. 2; Fig. 5, a cross-section on the line 5 5, Fig. 3; Fig. 6, an enlarged plan view of the leaf-turning mechanism; Fig. 7, a horizontal section on the line 7 7, Fig. 6, with the turning-arm in its horizontal or initial position. Fig. 8 is a similar view of the turning mechanism with the turning-arm in an upright or vertical position. Figs. 9 to 13 are detail views of certain portions of the mechanism for curling and turning the leaf, in which Fig. 9 is a cross-section on the line 9 9, Fig. 2; Fig. 10, a longitudinal section on the line 10 10, Fig. 12; Fig. 11, an under side view of the operating-cylinder and its spring-cam; Fig. 12, a cross-section on the line 12 12, Fig. 10; Fig. 13, a side view of one of the claws shown in Fig. 9 for operating the turning mechanism. Figs. 1^a and 6^a are diagrams hereinafter referred to.

A represents the base or supporting frame of the mechanism.

B B are suitable clamps for attaching the

frame A to the ledge of the music rack or holder.

C is a slide working in a suitable slot in the frame A and actuated by a cord A', passing over a pulley A² and attached to a pedal; but the slide C may be moved otherwise than by a pedal in one direction. A spring *g* moves it back to its normal position, being the position to the extreme right, as in Figs. 1 and 2. The slide C has a pin or other projection *a* on its upper surface near the right-hand end, which pin is adapted to set in motion the leaf-curling mechanism, as hereinafter described.

D is a drum or barrel mounted or hung horizontally on a shaft *c*, which hangs in bearings *b b*, that project from the frame A.

E is the curling-shaft attached to said barrel D, as hereinafter more fully described. This shaft E is susceptible of two rotary motions—one upon its own axis and the other around the shaft *c* of the drum or barrel D. The upper or outer end of the curling-shaft E is provided with an enlargement or head E', preferably of rubber or of any similar substance having frictional contact for the leaf to be curled. The barrel D is composed of an outer semi-cylindrical shell *d* and an inner cylinder *e*, both rigidly attached to the shaft *c*. Upon the periphery of the outer shell *d* on its normally-lower side a cam *f* is placed, having a movable spring-arm *f'*. The curling-shaft E is swiveled in the inner cylinder *e* and can be rotated therein on its own axis, being connected to a spring *h*, which tends to hold the shaft E normally in such position that an arm *h'*, projecting from it, will extend normally upward, as in Fig. 4. Upon the shaft *c*, to the left of the cylinder *e*, a ratchet *g'* is placed, into the teeth of which enters a pawl *g*², pivoted to the frame A.

The operation of this curling mechanism is as follows: The initial position of the curling-shaft is shown in Fig. 4, in which it is in a substantially horizontal position. In this position it is held by a spring *i* around shaft *c*, which presses a lug *j* on drum D against a cushion or spring K on one of the bearings *b*. The spring *i* tends to so turn the shaft *c* and the parts it carries that normally the shaft E is about horizontal, projecting forward, as in Figs. 2 and 4. When now the pedal is depressed and the slide C drawn to

the left, its pin a reaches the oblique edge of the cam $f f'$ on the under surface of the shell d , as by arrow 1 in Fig. 11. The projection a is then moved along the inner side of said cam $f f'$, thereby rotating the barrel D and raising the shaft E until it assumes a substantially vertical position and against the leaf to be turned, as shown in Fig. 5. The ratchet g' and its pawl g^2 serve to retain the drum D in this position against the effort of the spring i . The slide C, continuing to advance, a post l , carried by it, comes in contact with the arm h' on the shaft E, thereby rotating said shaft E upon its axis, and thus curling the leaf to be turned. The slide C, continuing to advance, passes its said post l under and raises the pawl g^2 , allowing the drum D and its shaft E to return to the normal position—i. e., bring the lug j against the cushion K. Of course the curling of the leaf is followed by the action of the leaf-turning arm before the post l reaches the pawl g^2 . When the pedal is released, the spring g draws the slide C back to the right, the point f' of the cam f , being spring-pivoted to allow the pin a to pass back in the direction of the arrow 2, Fig. 11, without injuring the parts or moving the drum. Right here I will state that the music to be turned is rested against springs F F, Figs. 1 and 5, so that the curling-shaft, when thrown against the music and while turned in contact therewith, meets a yielding resistance. The leaf-turning arm G is hung on a vertical post m , which projects from the frame A. Around this post the arm G vibrates, so that it will turn a leaf over from right to left and then return into position for turning another leaf. The arm G is jointed, its outer member n being connected to its inner member o by a horizontal pivot p , on which the outer member is free to turn upward, as in Fig. 8. To produce these movements, I employ a slide H, Fig. 7, which carries a pin s into a slot of the slide C, all arranged so that the slide H will begin to move to the left after the shaft E has been elevated and turned on its axis, but before the pawl g^2 is lifted. This movement of the slide H carries an arm or pusher t thereon against a claw u on pivot p , as shown in Fig. 7, the continued movement of the slide H resulting in raising the member n , as in Fig. 8, said member, as well as the claw u , being fixed to the pin p . It will be seen from Figs. 7 and 8 that the arm or pusher t enters between two claws on pivot p , one being the claw u , which raises, and the other a reversed claw v , which lowers, the member n . The member n when raised enters the loop in the paper which was created by the curling-head E' and is in this upright position locked to the inner member o by an arm w , pivoted on pin m and having locking-pin x —that is to say, the arm w is by a spring y , connecting with member o , pressed against said member o until the pin x enters to the right of the raised member n , which is preferably notched for the purpose. The raised arm n is now ready to turn

the leaf into the loop of and behind which it has entered. This turning is accomplished by a rack z on the slide H, engaging a pinion a^2 on pivot m , said pinion being rigidly connected with the arm w and member o . The pinion receiving half a revolution, the leaf is turned. The spring g , when returning the slide C to the right, also returns the slide H to its normal position to the right, and thereby also restores the arm G to its normal position, first returning it by means of the rack and pinion as an elbow to the right, and then by the pusher t and claw v lowering the member n . It remains in this connection to show that the pin x is during the act of raising and lowering of the member n held out of the way of said member by a pendent pin b^2 , which is carried by an arm or bracket of the slide H, becoming inserted at the proper time between the spring-pressed arm w and the member o and crowding w outward sufficiently far as to carry the pin x out of the path of the ascending and descending member n .

Similar mechanism to that described above is employed for returning one or more leaves to the original or initial position, said mechanism operating, however, in a direction opposite to that of the turning mechanism. The parts corresponding and operating substantially the same as the similar parts of the turning mechanism being the arm G², corresponding to arm G; n^2 and o^2 , members thereof, corresponding to members n and o of the arm G; p^2 , the pivot, corresponding to pivot p ; u^2 and v^2 , raising and lowering claws, corresponding to raising and lowering claws u and v ; w^2 , locking-arm, and x^2 pin thereon, corresponding to locking-arm w and pin x ; y^2 , spring between member o^2 and locking-arm w^2 , corresponding to spring y ; slide H², with pusher t^2 and pendent pin b^3 and rack z^2 , corresponding to slide H, pusher t , pin b^2 , and rack z , said rack z^2 engaging a pinion a^3 , which is carried by the vertical pivot m , and is rigidly connected with the arm w^2 and member o^2 . Motion is imparted to the slide H² by an outer slide C², which can be moved inwardly by a cord A³ passing over a pulley A⁴ and outwardly by a spring g^3 . The slide C² carries a pivoted pusher s^2 , whose outer beveled end in the normal position—that is, under the influence of the spring g^3 —is depressed under a stationary loop or abutment 2, while its inner end stands on or over the outer part of the slide H², as in Fig. 2. When now the slide C² is drawn inward by means of the cord A³, the pusher s^2 first strikes a lug 3 on the slide H² and moves said slide H² inward a certain distance—to wit, until a double-armed pawl 4 on H² engages a fixed shoulder 5 on the frame A. The motion thus far imparted to the slide H² suffices to raise the member n^2 , but is not sufficient to engage the rack z^2 and pinion a^3 . Hence the motion of the slide H², thus far described, enables the player to raise the member n^2 against the face of those sheets of

music that are not to be turned backward—that is, to the right, and to leave it for any suitable time behind those sheets of music which finally are to be turned back to the right for repeating or other purposes. When now the player desires to finally turn these last-mentioned leaves over to the right, he once more pulls the cord A^3 , moves the slide C^2 inward, which causes the inner end of the pivoted pusher s^2 that now no longer rests on the slide H^2 , to drop behind the end of said slide, (see diagram Fig. 1^a.) and push it along, so as to cause the rack and pinion to engage and the music to be turned over. After this the slide C^2 is automatically returned to its normal position by the spring g^3 and the slide H^2 by a spring 6. It remains to state that the double-armed pawl 4 has its long arm in the normal position to bear against a stationary pin 7, and that after it has engaged the shoulder 5 and after the second motion of the slide H^2 has been started its long arm strikes another stationary pin 8, which tilts it (see diagram Fig. 6^a) against its spring 9, so that it may finally, under the influence of spring 6, allow the slide H^2 to return to its normal position.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the slide C with the rotary drum D, means for turning the same, substantially as described, shaft E, having curling-head E' swiveled in said drum, and means for turning said shaft on its own axis when elevated, substantially as specified.

2. The drum D, having cam f and movable cam-section f' , combined with the slide C, having pin a and post l , and with the ratchet g' and pawl g^2 , spring i , stop j K, and swiveled shaft E, having arm h' and head E' , all arranged substantially as herein shown and described.

3. The combination of the swiveled shaft E, having elastic head E' , with means, substantially as described, for raising, turning, and lowering it, and with the spring F, against which sheets to be curled are pressed by said head E' when raised, as specified.

4. The combination of the jointed arm G, which is composed of two members o and n , with mechanism, substantially as described, for revolving both members around their vertical pivot m and for turning the outer member n on its horizontal pivot p , as specified.

5. The combination of the slide H and its pusher t , pin b^2 , and rack z with the jointed arm G, pinion a^2 , spring-pressed locking-arm w , pivot p , and claws u and v , substantially as herein shown and described.

6. The combination of the slide C^2 and its spring-pressed pivoted pusher s^2 with the loop 2, slide H^2 , pawl 4 on said slide H^2 , stationary pins 7 and 8, and jointed leaf-turning arm G^2 , and mechanism, substantially as described, for transmitting motion to said arm G^2 from slide H^2 , all as specified.

ERWIN VON TRAUTVETTER.

Witnesses:

HARRY M. TURK,
MAURICE BLOCK.