

No. 733,043.

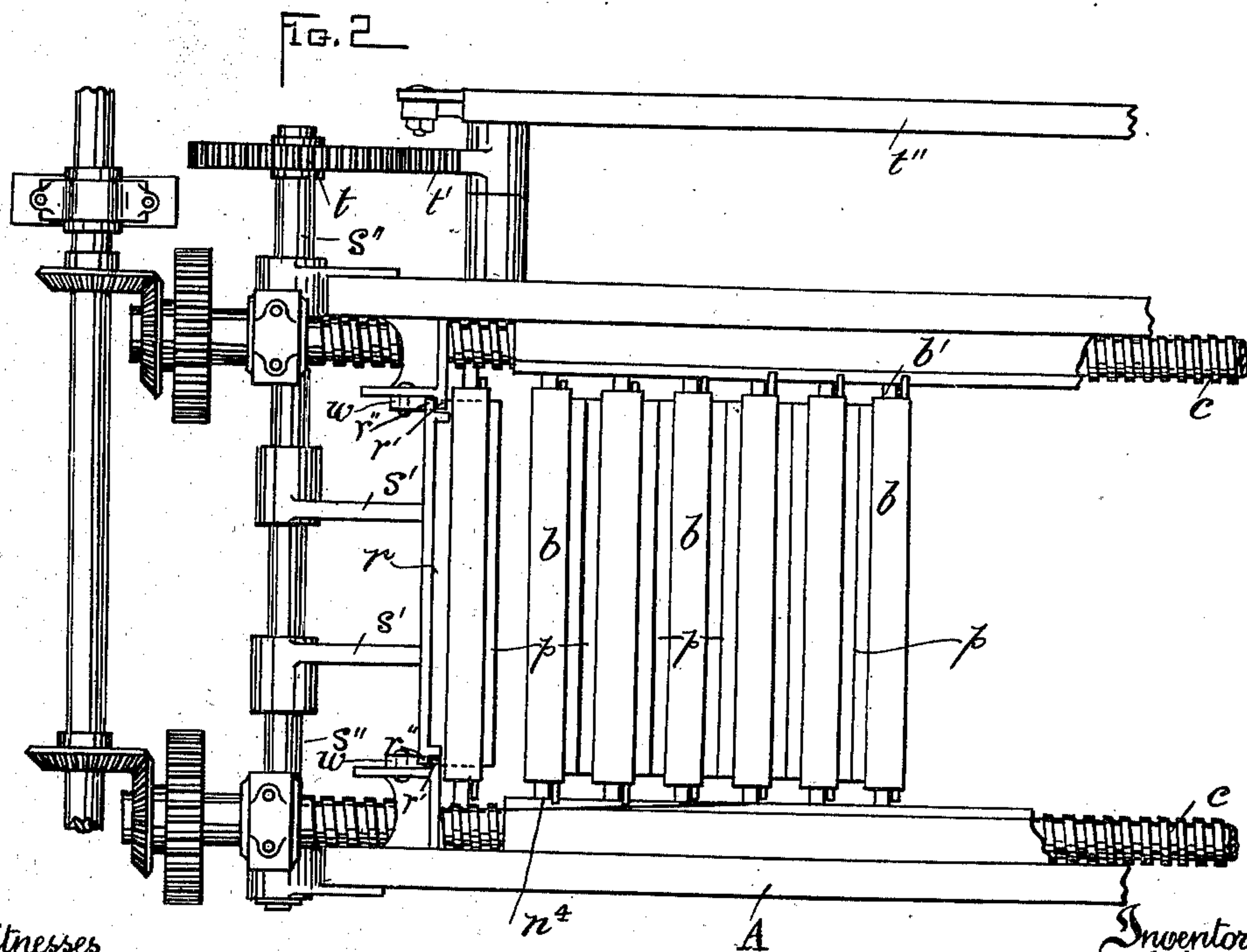
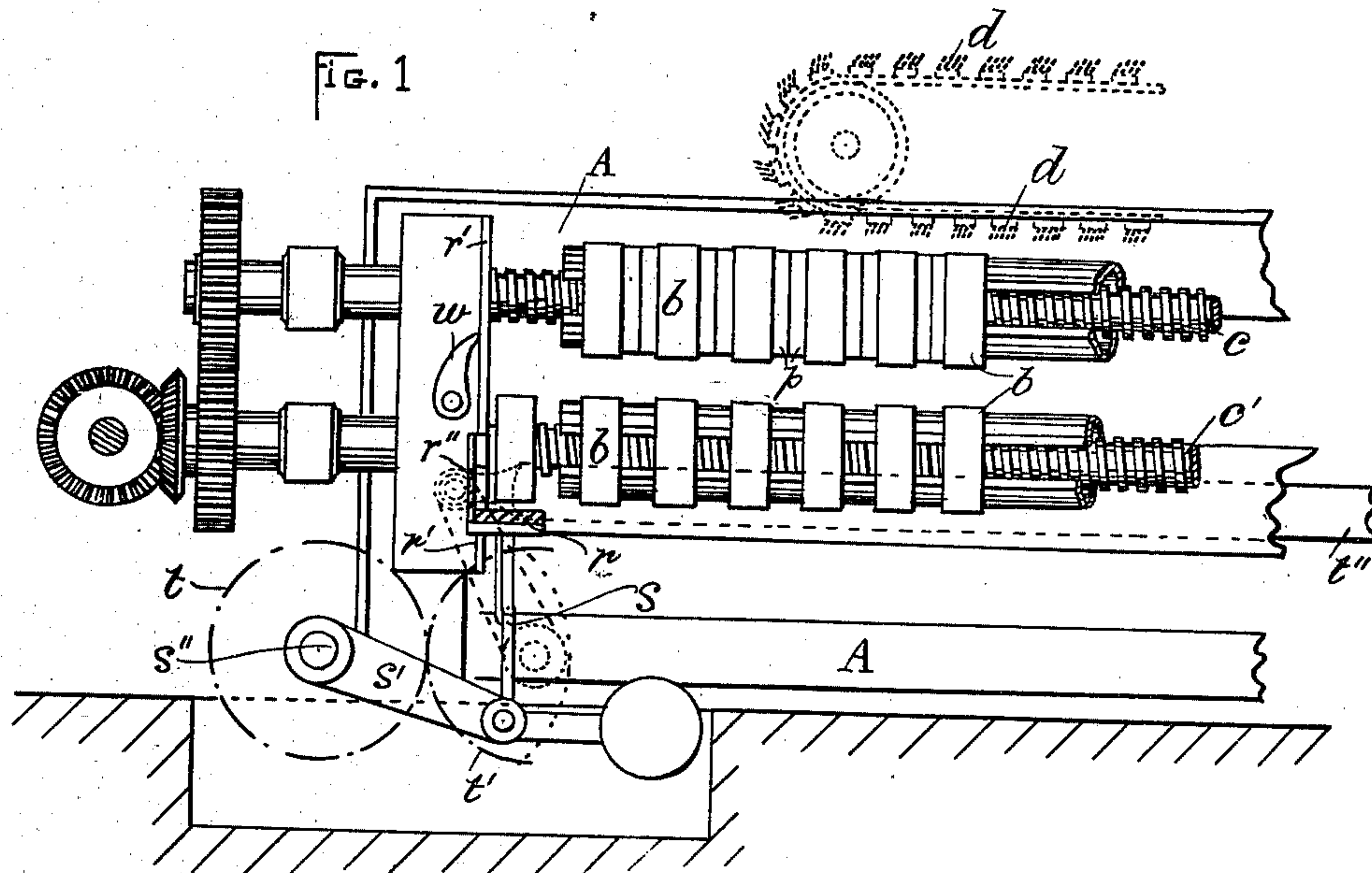
PATENTED JULY 7, 1903.

H. HOYLE & E. SCARBOROUGH.
COMBING MACHINE.

APPLICATION FILED MAY 10, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses
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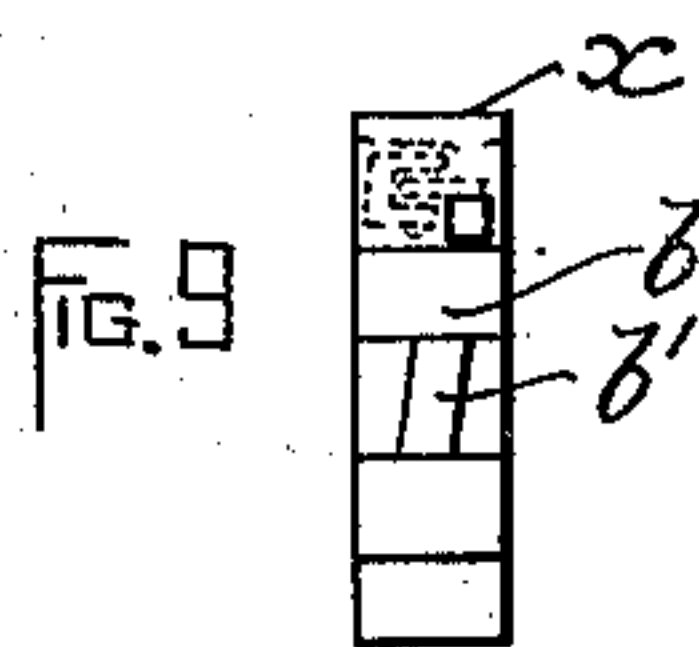
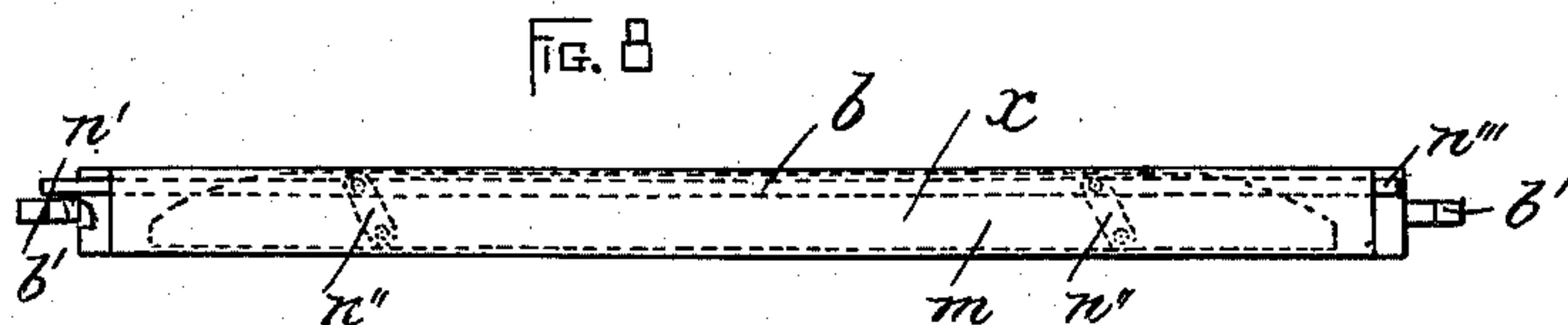
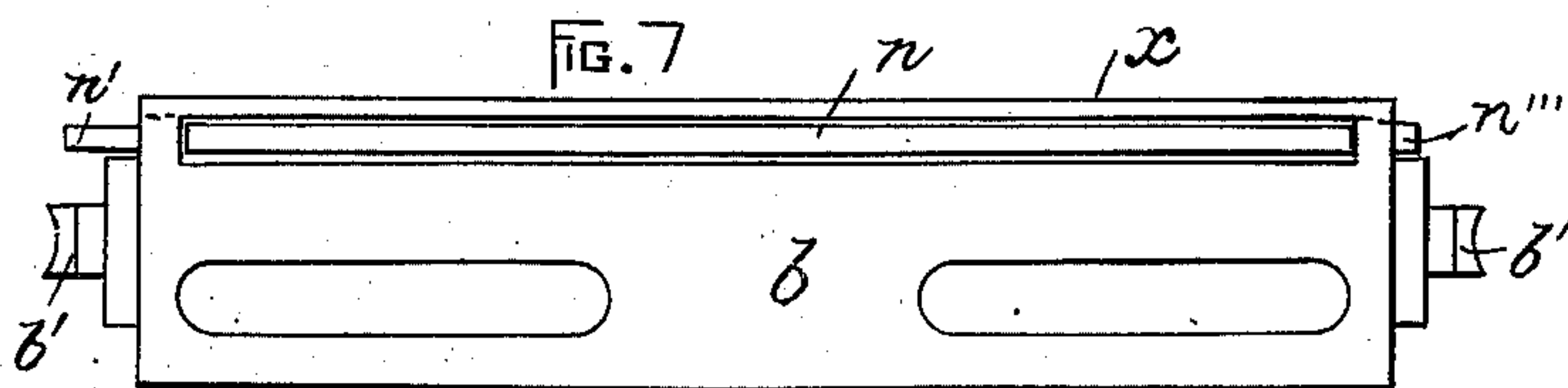
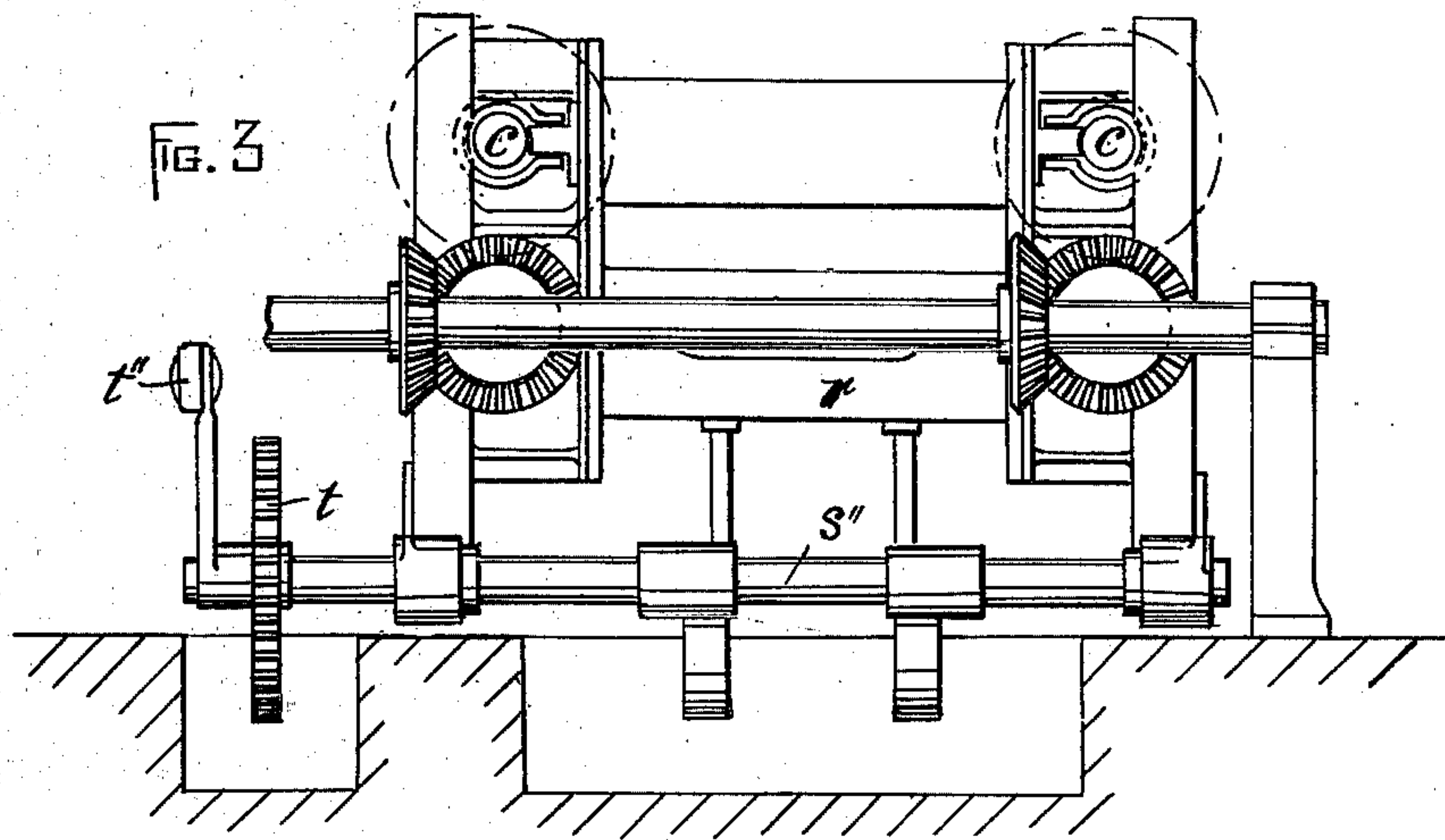
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4 SHEETS—SHEET 2.



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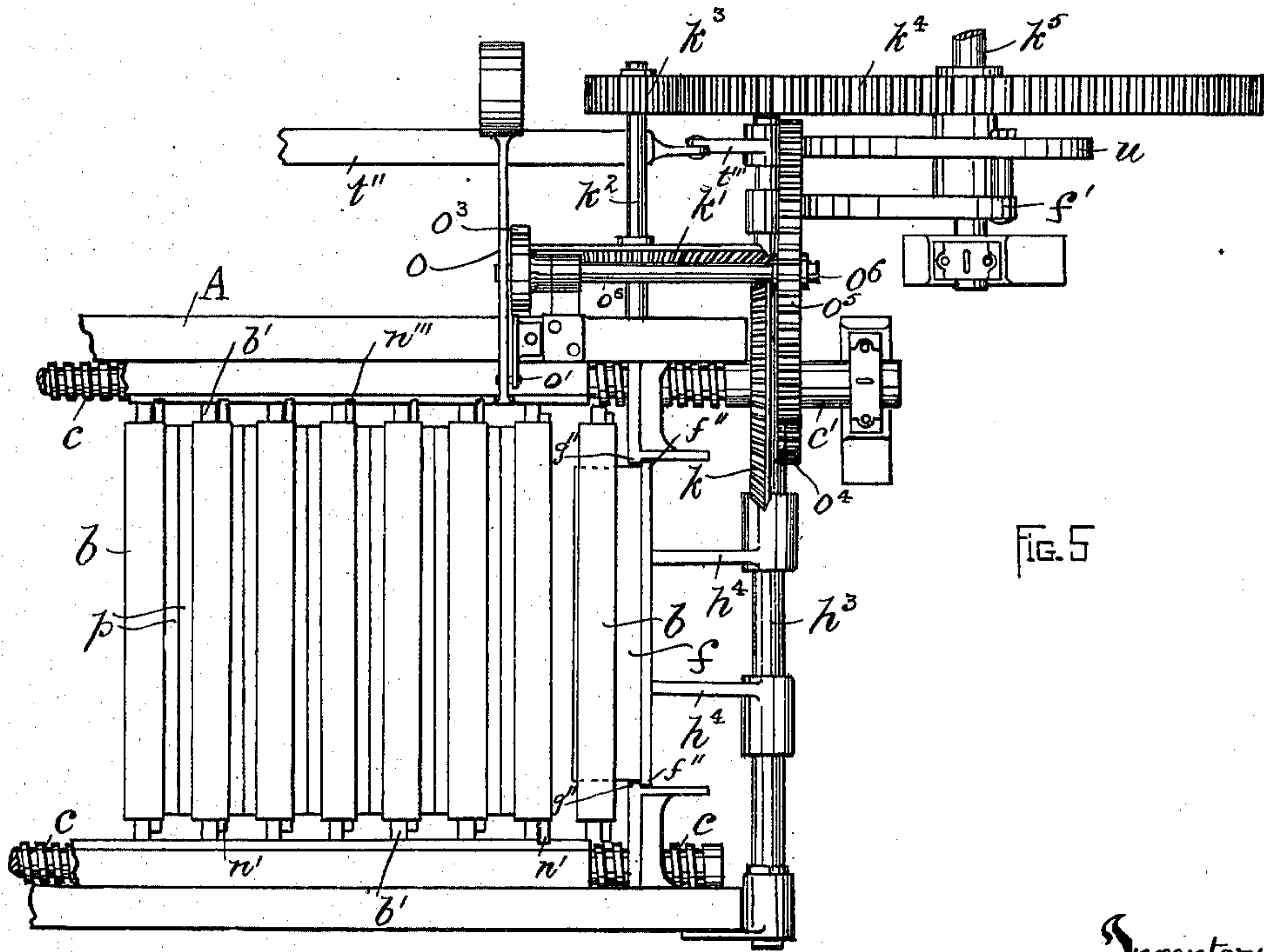
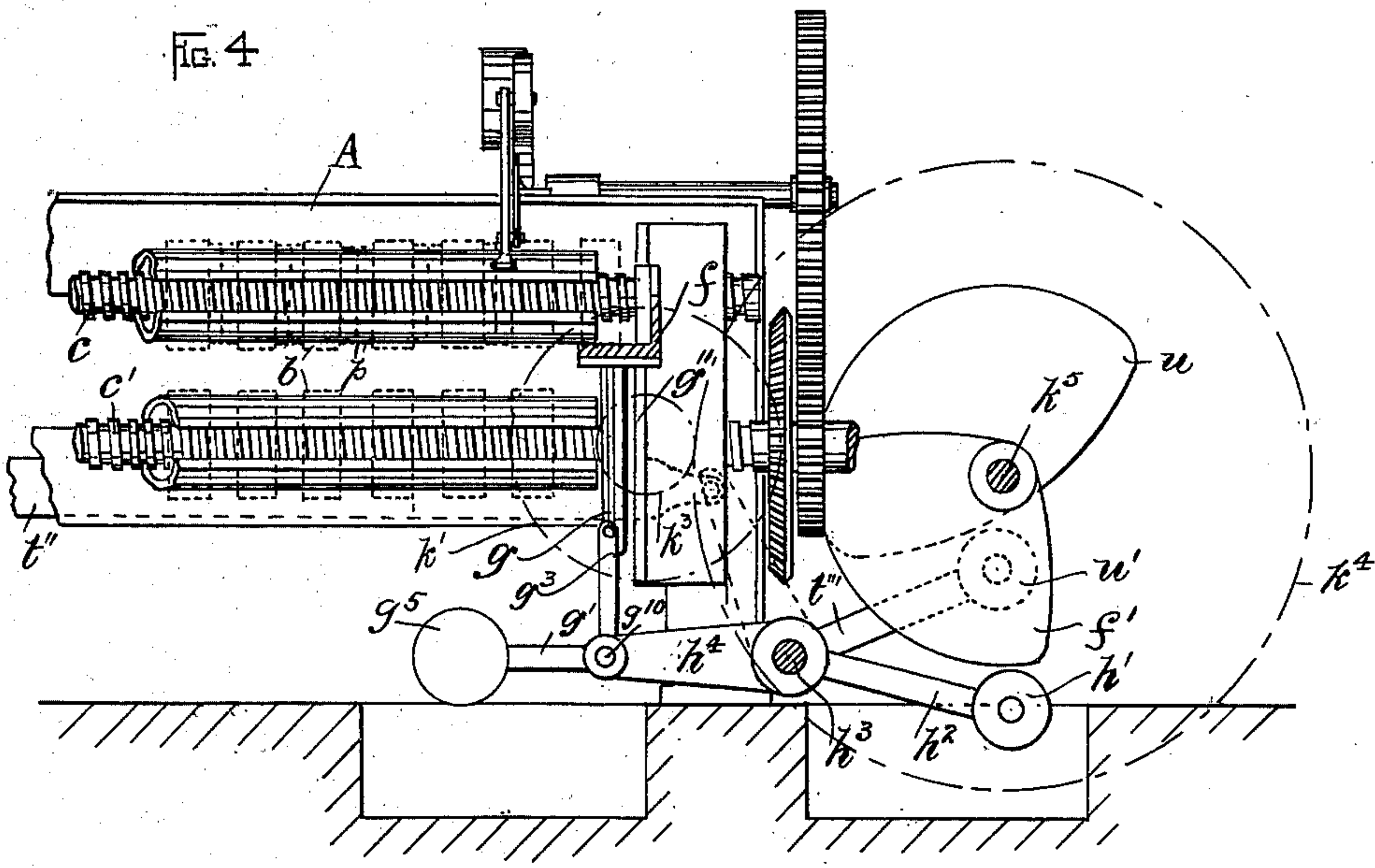
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4 SHEETS—SHEET 3.



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NO MODEL.

4 SHEETS—SHEET 4.

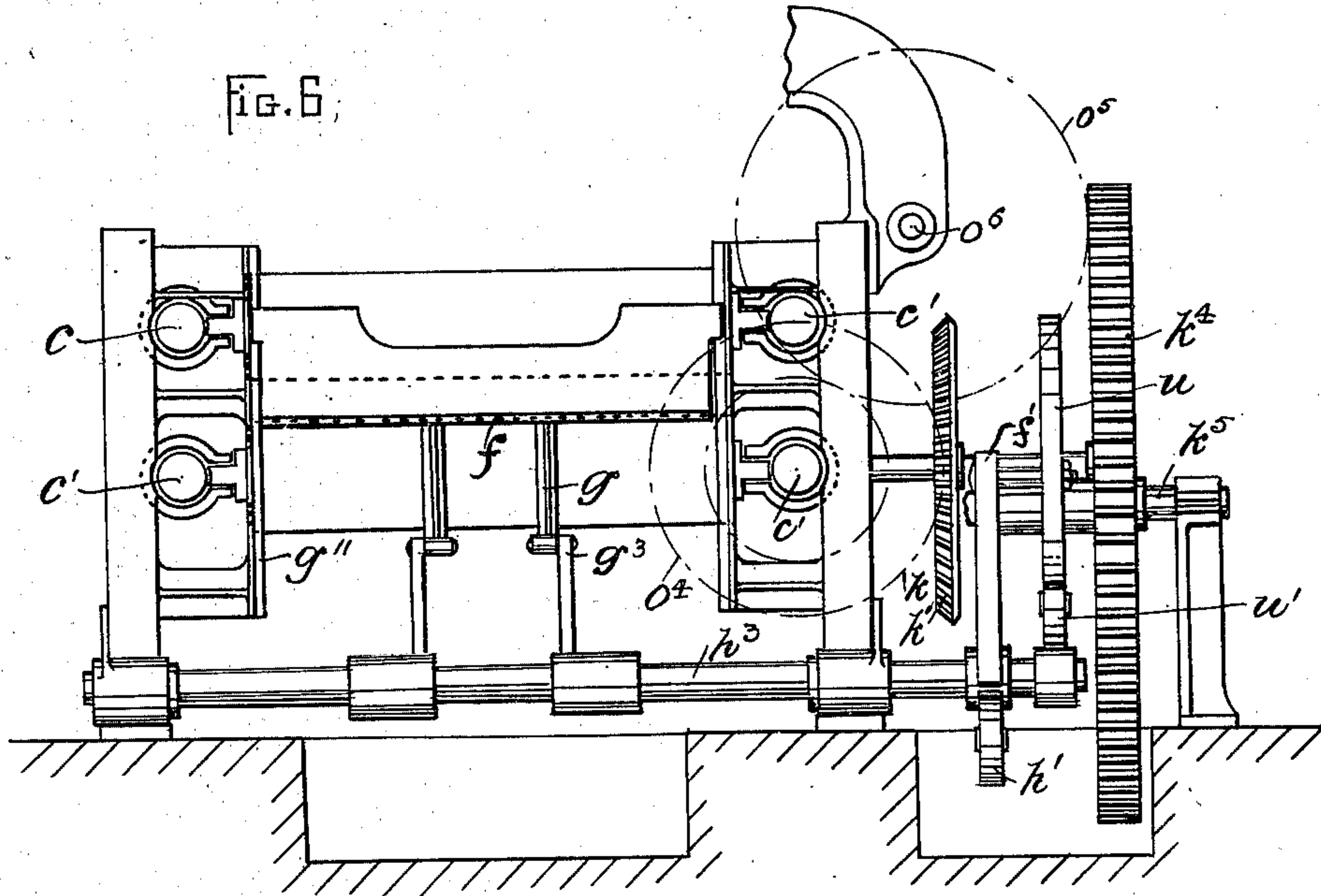
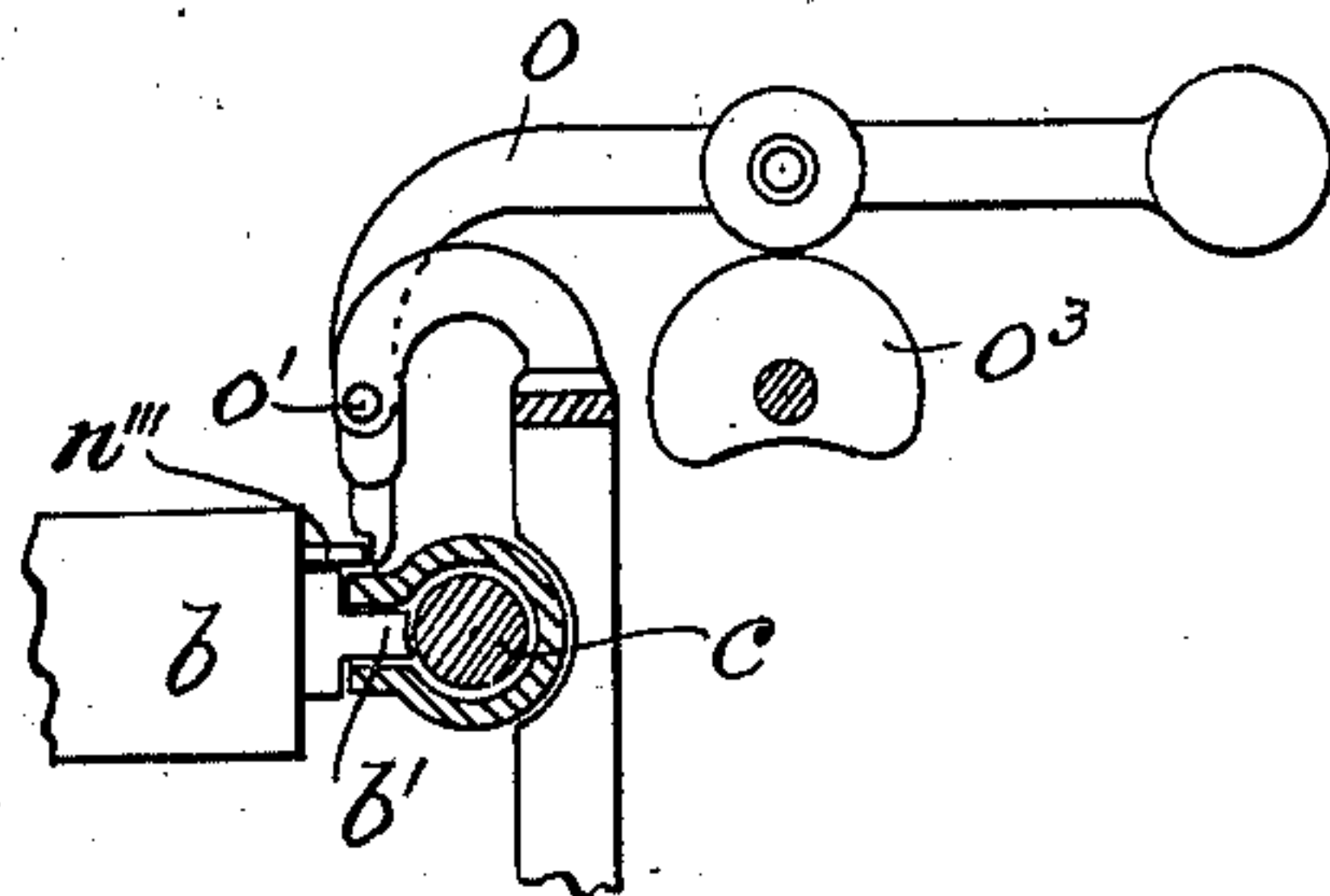


Fig. 10



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UNITED STATES PATENT OFFICE.

HERBERT HOYLE AND EDWIN SCARBOROUGH, OF HALIFAX, ENGLAND.

COMBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 733,043, dated July 7, 1903.

Application filed May 10, 1902. Serial No. 107,287. (No model.)

To all whom it may concern:

Be it known that we, HERBERT HOYLE, residing at 8 Bright street, Commercial road, and EDWIN SCARBOROUGH, residing at Crossley Street, Halifax, in the county of York, England, subjects of the King of Great Britain, have invented certain new and useful Improvements in Machines for Combing and Dressing Silk and other Fibrous Substances, of which the following is a specification.

This invention has reference to improvements in or appertaining to machinery or apparatus for combing and dressing silk and other fibrous substances, and particularly to that class of machinery or apparatus wherein the substance to be treated is placed and held between detachable gripping-jaws carried beneath or in contact with traveling combs; and our said invention consists in constructing, arranging, and operating the devices for causing said jaws and their carrying pieces or slides so to act that every function thereof is performed with such accuracy and precision as to greatly enhance the efficiency of the machine or apparatus, as well as to enable same to effect a greater output.

To attain the object of our invention, we make use of the devices which we hereinafter describe and which are illustrated by the drawings hereunto annexed, in which only such parts of the machine are shown as are necessary to illustrate the application thereto of our improvements.

Figure 1 is a sectional side elevation of that end of the machine wherein the fibrous substance is introduced for treatment. Fig. 2 is a view of same part of the machine as seen from above. Fig. 3 is an end elevation of parts shown by Figs. 1 and 2. Figs. 4, 5, and 6 are similar views to Figs. 1, 2, and 3, respectively, but are illustrative of the opposite end of our improved machine. Figs. 7, 8, and 9 are side elevation, plan, and end views, respectively, of a part used in connection with the machine, the same being constructed as hereinafter described. Fig. 10 is a sectional end elevation of a certain part of the machine, showing the devices employed for acting upon the parts illustrated by Figs. 7, 8, and 9.

Similar letters of reference indicate similar parts throughout the several views.

A indicates the framework of the machine.

The screws $c\ c$ and $c' c'$, together with their respective gear-wheels and other devices for operating them, are mounted and arranged as heretofore, the screws $c\ c$ effecting the movements of the slides b from the end of the machine shown by Fig. 1 to that shown by Fig. 4, during the transit of which they are brought into contact with the traveling combs d , (shown in broken lines, Fig. 1,) while the screws $c' c'$ carry them in the opposite direction back to the end from whence they came. On the slides b being brought with their outer ends b' to mesh with the worms $c\ c$ these latter carry them along, so that the projecting ends n' of the locking-bars n are forced longitudinally into said slides b by the incline n^4 in order that by their links n'' they may force the gripping parts m laterally beyond said slides b , thereby laying hold of and securing the fiber-holding boards p (which are of well-known construction) between the preceding and succeeding slides b . Thus the fibrous substances carried by said boards are brought into the path of motion of the traveling comb d for treatment as said slides b travel from the end of the machine shown by Fig. 1 to that shown by Fig. 4. On the slides b reaching the releasing-lever o this latter presses the other ends n''' of the locking-bars n in the opposite direction to their movement derived from the incline n^4 , so that the boards p are released and may be detached from the machine to receive a fresh supply of fiber before being readmitted or reintroduced to the machine, as hereinbefore described. The movements of the lever o , which is pivoted at o' and by its weight or by gravity acts upon the bars n , are controlled by the rotary cam o^3 , which derives its motion from the screw c' through the wheels $o^4\ o^5$ and shaft o^6 at such a rate of speed that by its shape or configuration it is enabled to allow said lever o to descend exactly at the proper time to act upon each bar n as it is advanced and presented by its respective slide b . Thus the releasing of the boards p is effected expeditiously and as desired to give the operative ample time to detach or remove them as required. The slides b on reaching the end of the screws c are received by the carrier f , which acts by gravity under the control of the

cam f' to lower said slides b at the proper time relatively with the movements of the screws c' , so that they will mesh properly with them when brought into position. The carrier f is supported by the arms g , the lower ends of which are pivotally connected to upright arms g^3 of levers g' , pivoted at g^{10} to rock-arms h^4 and having weights g^5 . The carrier f is formed with ribs f'' behind the straight guiding-surfaces g'' of the framework, and said ribs are held in contact with the said guiding-surfaces by the weights g^5 , notwithstanding the curved path that its pivotal point g^{10} describes. The time of action of the carrier is controlled by the cam f' , which operates the antifriction-bowl h' , mounted on the lever h^2 , secured to the shaft h^3 , upon which are fixed the rock-arms h^4 , to which the levers g' are pivoted. The cam f' derives its rotary motion from the screw c' through the medium of the bevel-gears k and k' , shaft k^2 , gears k^3 and k^4 , and shaft k^5 , upon which it is mounted. When the slides b reach the ends of the screws c' at the feeding end of the machine, as shown by Fig. 1, they are received by the carrier r , which lifts or raises them at the proper time and rate of speed into gear with the screws c , and to effect these actions of the carrier r it is mounted upon the counter-balanced lever-arms s , pivoted to the levers s' , fixed upon the shaft s'' , operated by the gear t' gearing with the segmental gear t'' , which derives its motion from the connecting-rod t''' , coupled to the bell-crank lever t'''' , operated by the cam u , mounted upon the shaft k^5 , through the antifriction-bowl u' , the lever t'''' being mounted to swivel freely upon the end of the shaft h^3 . Thus the movements of the carrier r are controlled by the cam u .

The carrier r is formed with ribs r'' behind the straight guiding-surfaces r' of the framework A , and in rising the ribs of said carrier are held in contact with the said surfaces r' by reason of the action of the weighted levers s through connections similar to those which control the movements of the carrier f ; but on its descent in order to guide the carrier from coming into contact with a slide b , which after the rising of said carrier r may have been brought beneath it, said carrier r comes into contact with the pivoted incline w , which guides it out of its straight path downward, and so moves it clear of such slides

b . The moving of the incline w on its pivotal bearings by the carrier coming into contact with it as it rises enables said carrier to follow its straight path during its said upward movements.

Free access is afforded to the locking-bar n , links n''' , and gripping parts m by constructing the slides b so that the part x is detachable.

Having thus described the nature and object of our invention, what we claim is—

1. In a machine of the class described, traveling combs, rotary screws operating beneath such combs, sliding gripping-jaws carried by said screws, carriers for raising said gripping-jaws from one set of screws to the other, cam mechanism for operating said carriers, guides for directing the movements of said carriers, in a desired path, weighted levers for keeping the carriers in engagement with the guides, lever and connecting-rod, mechanisms for transmitting motion from the operating-cams to said carriers, and driving-gears for operating said cam substantially as herein specified.

2. In a machine of the class described, traveling combs, rotary screws operating beneath such combs, sliding gripping-jaws carried by said screws, carriers for lowering or bringing said jaws from the higher to the lower set of screws, guides for said carriers, weighted levers for keeping the carriers in engagement with said guides, rod and lever mechanism for transmitting motion to said carriers, cams for operating said rod and lever mechanisms, and gearing-wheels for transmitting motion to said cams, substantially as herein specified.

3. In a machine of the class described, traveling combs, rotary screws operating beneath such combs, sliding gripping-jaws meshing with to be operated by said screws, incline devices for causing the jaws to grip, and weighted lever devices operated by cam mechanism for causing said jaws to release their grip, substantially as herein specified.

In testimony whereof we have affixed our signatures in presence of two witnesses.

HERBERT HOYLE.

EDWIN SCARBOROUGH.

Witnesses:

JOHN WHITEHEAD,
PICKLOS BAILEY.