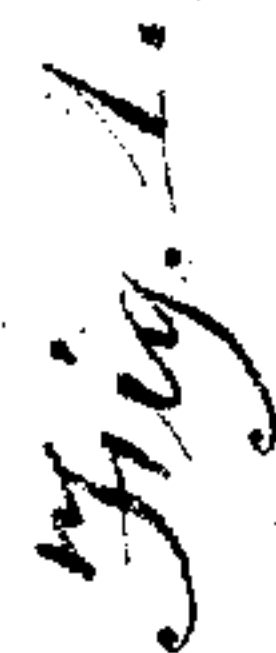


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2 SHEETS--SHEET 1.



Wellington M. Brewster
William P. Hamilton



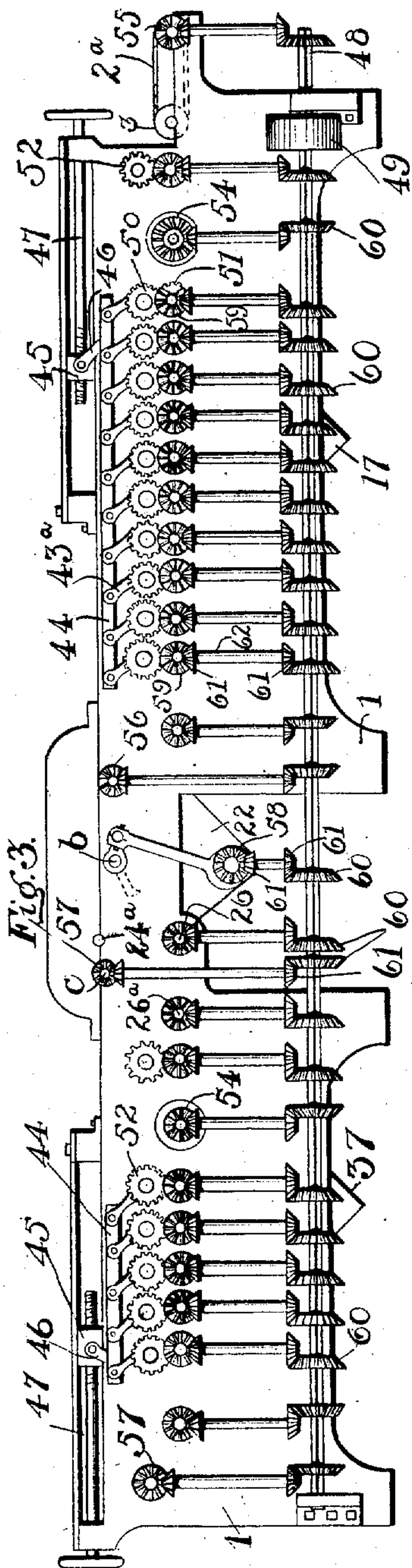
Jonas Broline
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his attorney

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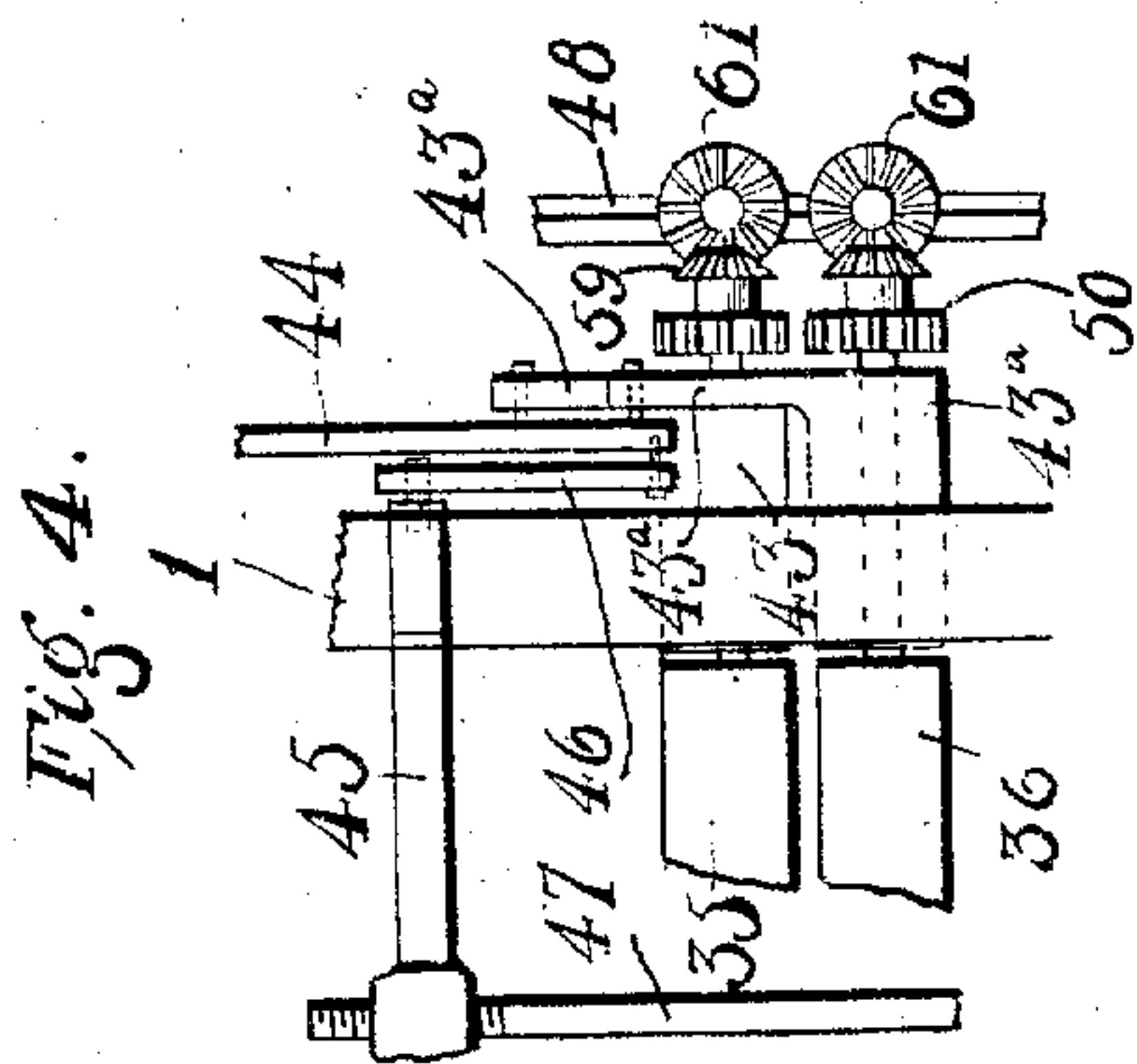
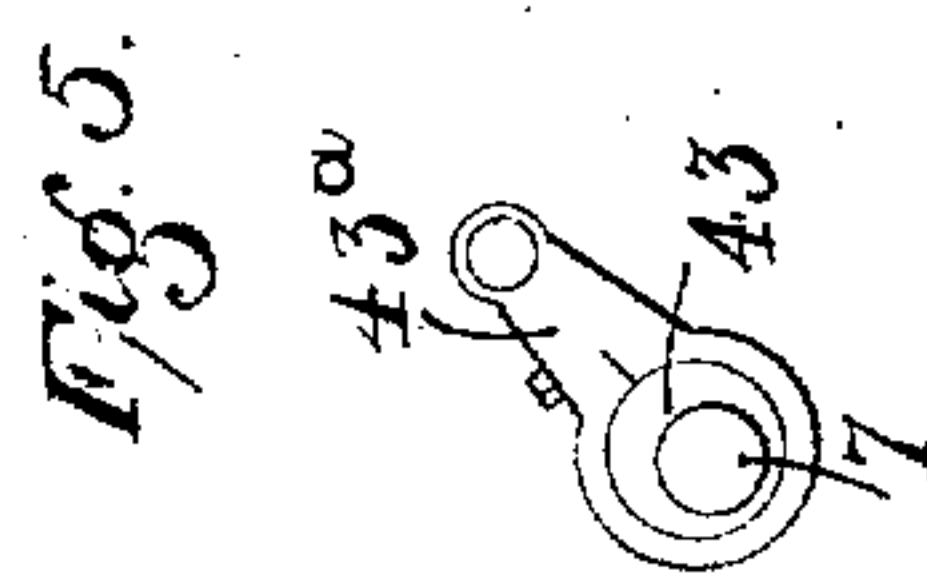
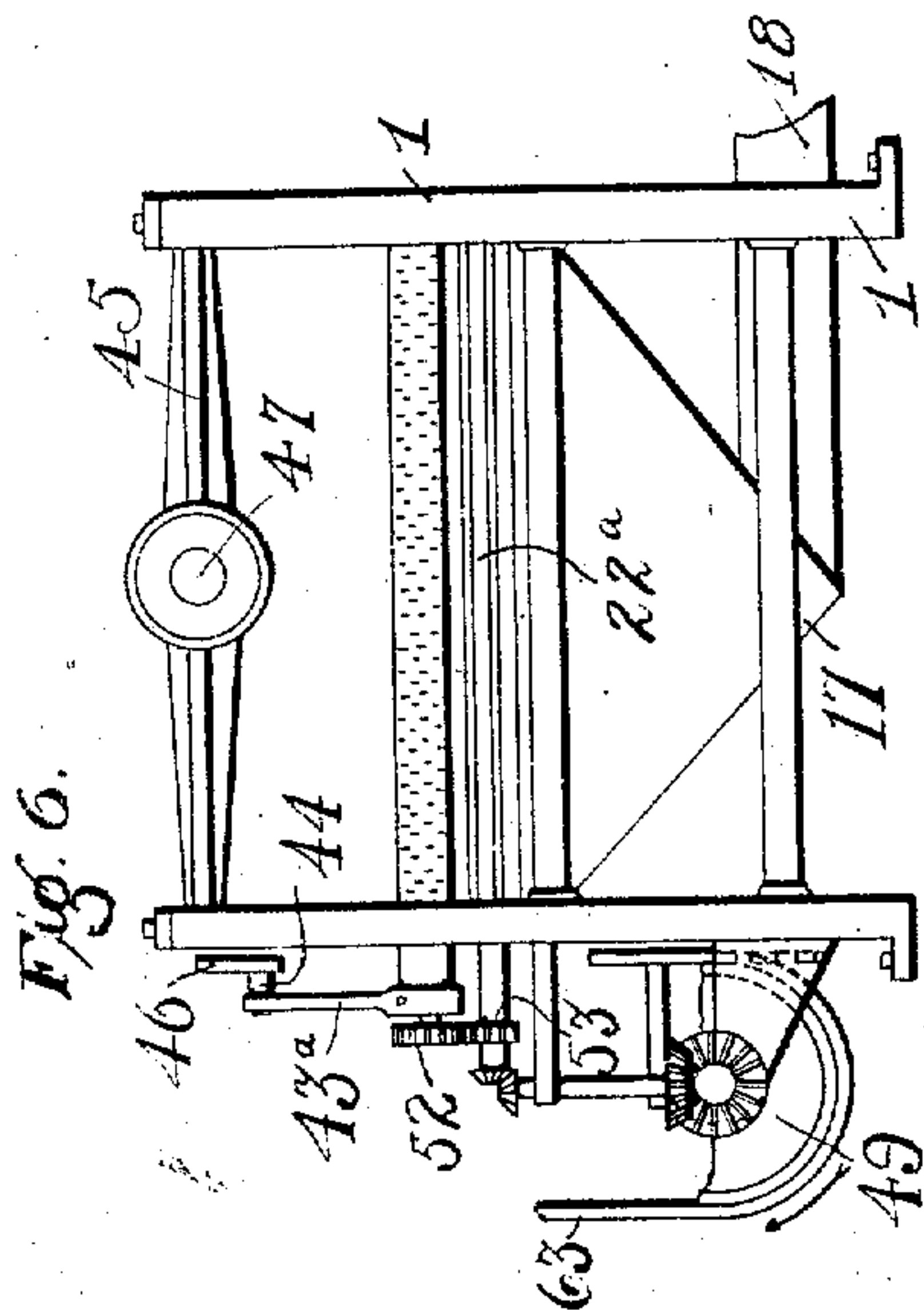
J. BROLIN.
DECORTICATING MACHINE.
APPLICATION FILED JULY 21, 1910.

Patented Mar. 21, 1911.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JONAS BROLIN, OF DULUTH, MINNESOTA.

DECORTICATING-MACHINE.

987,342.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed July 21, 1910. Serial No. 572,986.

To all whom it may concern:

Be it known that I, JONAS BROLIN, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Decortivating - Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to decortivating machines, and has for its object the provision of an improved machine for removing shive and waste from flax fiber, and for other suitable purposes.

It consists of the constructions, combinations and arrangements of parts hereinafter described and claimed.

In the drawings, Figure 1 is a diagrammatic view of a portion of my invention, showing the relation to each other of the material parts which act directly upon the flax to be operated upon, such parts comprising conveyers, combs, crushing rolls, and beaters. Fig. 2 is a plan view of my said invention, partly broken away. Fig. 3 is a side elevation of one form of my said invention containing a fewer number of the hereinafter described crusher rolls. Fig. 4, is an enlarged plan view of a portion of said invention, showing means for lifting the hereinafter described upper crusher rolls to facilitate the cleaning of the rolls and the removal of obstructions. Fig. 5 is an enlarged side elevation of one form of lever mounted on an oscillatable journal bearing. Fig. 6 is a rear end view of said invention.

In the drawings, 1 is a frame or support of any suitable construction, in which is journaled a pair of belt rolls, 2 and 3, respectively, which rolls support a conveyer belt of any suitable construction, as 2^a, for conveying flax straw to respectively adjoining parts of the mechanism designed to operate upon it. Journaled upon said frame in front of said conveyer belt 2^a, which may be called the first, primary, or rear conveyer belt, are a pair of horizontal primary toothed rolls 4 and 4^a respectively adapted to turn oppositely to each other and draw in between them straw fed to them by the first conveyer belt, and, in a measure, to comb or disentangle the individual straws from each other and from various foreign substances which may be mixed with them.

Next in front of said rolls 4 and 4^a is a primary single toothed roll 5, journaled upon said frame and adapted to further comb said straw as it passes to the first pair of the hereinafter described crusher rolls. Partly surrounding said roll 5 and spaced therefrom is a diaphragm 6, supported on said frame, and extending transversely thereof and adapted to hold the straw close to said roll 5 and to guide it to the first pair of said crusher rolls. Next in front of said roll 5 is a series of any suitable or desired number of pairs of primary corrugated crusher rolls, as 7, 8, 9, 10, 11, 12, 13 and 14; each pair comprising an upper and lower roll adapted to receive between them the straw which has passed the roll 5, the corrugations on each successive pair of said rolls preferably being finer or shallower than on the pair of rolls next in the rear in said series. Next in front of said series of corrugated crusher rolls, are one or more pairs of primary smooth crusher rolls, as 15 and 16, each pair comprising an upper and a lower roll adapted to receive between them the straw which has passed the said series of corrugated rolls. Beneath the said toothed and corrugated rolls and smooth rolls is a hopper, 17, preferably supported on said frame and adapted to receive such shive, or other material as may fall between, or from any of said rolls, which hopper is provided with an exhaust port or conduit 18, wherein is located an exhaust pan 18^a for removing the contents of said hopper. Beneath the hereinafter described screen 20 is a second hopper 18^b provided with an exhaust port 18^c wherein is positioned an exhaust fan 18^d. Next in front of said smooth rolls is a transversely disposed forwardly and downwardly directed apron A, preferably formed of angle iron, and next in front of said apron is a rotary beater 19 of any suitable construction, adapted to beat the straw as it passes over said apron from the smooth rolls. Below said beater is a screen 20 adapted to support the straw and guide it in its forward course and to screen shive or waste therefrom. Next forward of said beater, is a rotary primary doffer, or deflector 21 journaled on said frame and positioned a little above the horizontal axial plane of said beater, and adapted to deflect said straw downward after it has passed said beater. Next in front of said deflector is a hopper 22, adapted to receive said straw after it has passed said

beater, into which hopper extends the lower end of a stock-adjusting or straightening toothed belt, 23, which extends upward and forward above the horizontal planes of the opposing faces of said crusher rolls. Said adjusting belt is mounted upon a pair of rolls 24 and 24^a, respectively, journaled on said frame. The straw and fiber are removed from said hopper upon the rearward face of said adjusting belt. B, is a comb mounted on a rock shaft 6 and extending across the rearward face of said adjusting belt, the office of which comb is to remove excess straw from said belt and throw it back into the hopper 22. Next in front of said stock-adjusting belt and preferably extending at its rearward end beneath the upper end of said belt, is a second conveyer belt 25, of any suitable structure, which is mounted on a pair of rolls 26 and 26^a journaled in said frame. Said second conveyer belt is adapted to receive the straw and fiber as it falls from the stock-adjusting belt. Next in front of said second conveyer belt is a second pair of toothed rolls comprising an upper and a lower roll 27 and 27^a, respectively, which rolls are adapted to draw between them the straw which is conveyed by said second conveyer belt and to further comb and straighten it. Next in front of said second pair of toothed rolls, is a second toothed single roll 28 journaled upon said frame and adapted to further comb said straw and fiber as it passes from said second pair of toothed rolls. Partly surrounding said roll 28, is a second diaphragm 29, adapted to hold said straw close to said roll 28 and to guide it in its passage to the first pair of the second series of crusher rolls hereinafter described. Next in front of said second toothed single roll is a second series of any suitable or desired number of pairs of corrugated crusher rolls, as 30, 31, 32, 33, 34, respectively (the number being reduced in Fig. 3), each pair comprising an upper and a lower roll, and the corrugations on each pair of rolls being finer or shallower than on the pair of rolls next in the rear in said series. Next in front of said second series of corrugated crusher rolls are one or more pairs of smooth crusher rolls, as 35 and 36, respectively, each of which pairs consists of an upper and a lower roll adapted to receive between them the straw and fiber which has passed said second series of corrugated rolls. Beneath said second pair of toothed rolls and beneath said second isolated toothed roll and beneath said second series of corrugated and smooth rolls is a third hopper 37 adapted to receive the shive and other material which may fall into it from between said rolls, which hopper is provided with an exhaust conduit 38 within which is an exhaust fan 38^a for removing the contents of the hopper. Beneath the hereinafter described screen 42 is a fourth hopper 39 pro-

vided with an exhaust conduit 39^a within which is an exhaust fan 39^b. Next in front of said second pair or series of pairs of smooth crusher rolls is a second transversely disposed forwardly and downwardly directed apron 40, preferably formed of angle iron, and next in front of said second apron is a rotary beater 41 adapted to beat said straw and fiber as it passes over said second apron. Below said second beater is a second screen 42 adapted to support the straw and fiber as it passes in its forward course and to screen waste therefrom. Next forward of said second beater, is a rotary doffer, or deflector 42^a journaled on said frame and adapted to deflect said straw and fiber downward after it has passed the second beater, and passes out of the forward end of the machine.

The upper crusher rolls are preferably all journaled eccentrically in rotatable journal bearings 43 which are journaled on said frame, so that when the journal bearings are partly rotated or oscillated in one direction the rolls which are journaled in them will be raised and when said bearings are oscillated in the opposite direction said rolls will be lowered; thus the upper rolls may be raised to facilitate cleaning them or the removal of obstructions. In order either to oscillate said journal bearings, or to hold them stationary, I provide each of them with an arm, as 43^a which may be integral with the journal bearing as shown in Fig. 4, or which may be clamped thereto as shown in Fig. 5. These arms are pivotally connected at their upper ends to connecting rods, as 44. Mounted upon said frame above the upper crusher rolls and extending transversely of said frame are slidable bars 45 to the ends of which said connecting rods are coupled by links 46. Engaging said slidable bars and a portion of said frame are screws 47 for operating said sliding bars.

Driving mechanism of any suitable construction is provided for driving the several rolls of said machine, as a drive shaft 48, a drive belt wheel 49 keyed thereto for driving said shaft, gears 50 keyed to the axles of the upper crusher rolls, gears 51 keyed to the lower crusher rolls and adapted in operation to mesh with the gears on said upper rolls, gears 52 keyed to the upper toothed rolls, gears 53 keyed to the lower toothed rolls, and meshing with the gears on the upper toothed rolls, pinions 54 keyed to said toothed single rolls, pinions 55 keyed to one of each pair of conveyer belt rolls, pinions 56 keyed to the axles of the rotary beaters, pinions 57 keyed to the axles of each of said doffers or rotary deflectors, a pinion 58 keyed to the axle of one of the rolls supporting said adjusting belt, pinions 59 keyed to the axles of one of each pair of said crusher rolls and to the axles of one of each pair of toothed rolls, gears 60 keyed to said

shaft, intermediate gears 61 and shafts 62 adapted to transmit power from said gears 60 to said pinions, and a drive belt 63. I am aware that it is not new to use corrugated crusher rolls, toothed comb rolls and conveyer belts for such purposes. I do not therefore claim such construction as broadly as might otherwise be done. The value of my invention lies in the combination and arrangement of the parts which act directly on the material to be operated upon, whereby a continuous operation to an effectual result is produced in one machine which heretofore has required transfer of the material from one machine to another or to others, at the expense of much time and labor. I also regard the aprons A and 40 as particularly valuable and new features of said machine.

It is obvious that said construction may be modified in many particulars within the scope of my claim; especially may it be modified with respect to proportions, dimensions, arrangement of the driving mechanism, and by the substitution of mechanical equivalents for certain of its parts. I do not therefore desire to be restricted to the exact proportions, dimensions, arrangements or forms described except as may be specifically required by said claim.

What I claim is:—

In a decorticating machine the combination with a suitable frame, of a primary conveyer belt, a primary pair of comb rolls, a primary single comb roll, a plural number of pairs of corrugated primary crusher rolls, a pair of smooth primary crusher rolls, a rotatable primary beater, a toothed stock-ad-

justing belt, a second conveyer belt, a second pair of comb rolls, a second single comb roll, a plurality of pairs of corrugated secondary crusher rolls, a second pair of smooth crusher rolls, and a second rotary beater, so arranged in series as to provide a continuous course for the material to be operated upon from the primary conveyer belt to and between the primary pair of comb rolls, thence to and beneath the primary single comb roll, thence to and between each pair of the corrugated primary crusher rolls, thence beneath the primary beater, thence to and over the stock adjusting belt, thence over the secondary conveyer belt, thence to and between the second pair of comb rolls, thence to and beneath the secondary single comb roll, thence between the rolls of each pair of the series of secondary crusher rolls, thence beneath the secondary beater, means for rotating said rolls and belts, screens beneath said beaters for supporting and screening the material during its passage by said beaters, means for supporting said material in its passage by said single rolls, means for preventing the adherence of excess material to said adjusting belt, means for stripping adjusted stock from said adjusting belt, and aprons against which the material to be operated upon may be beaten by said beaters.

In testimony whereof I hereunto affix my signature, in presence of two witnesses.

JONAS BROLIN.

Witnesses:

JAMES T. WATSON,

WILLIAM J. STEVENSON.