

(No Model.)

4 Sheets—Sheet 1.

A. KLEINSTIVER.
SEPARATOR.

No. 467,133.

Patented Jan. 12, 1892.

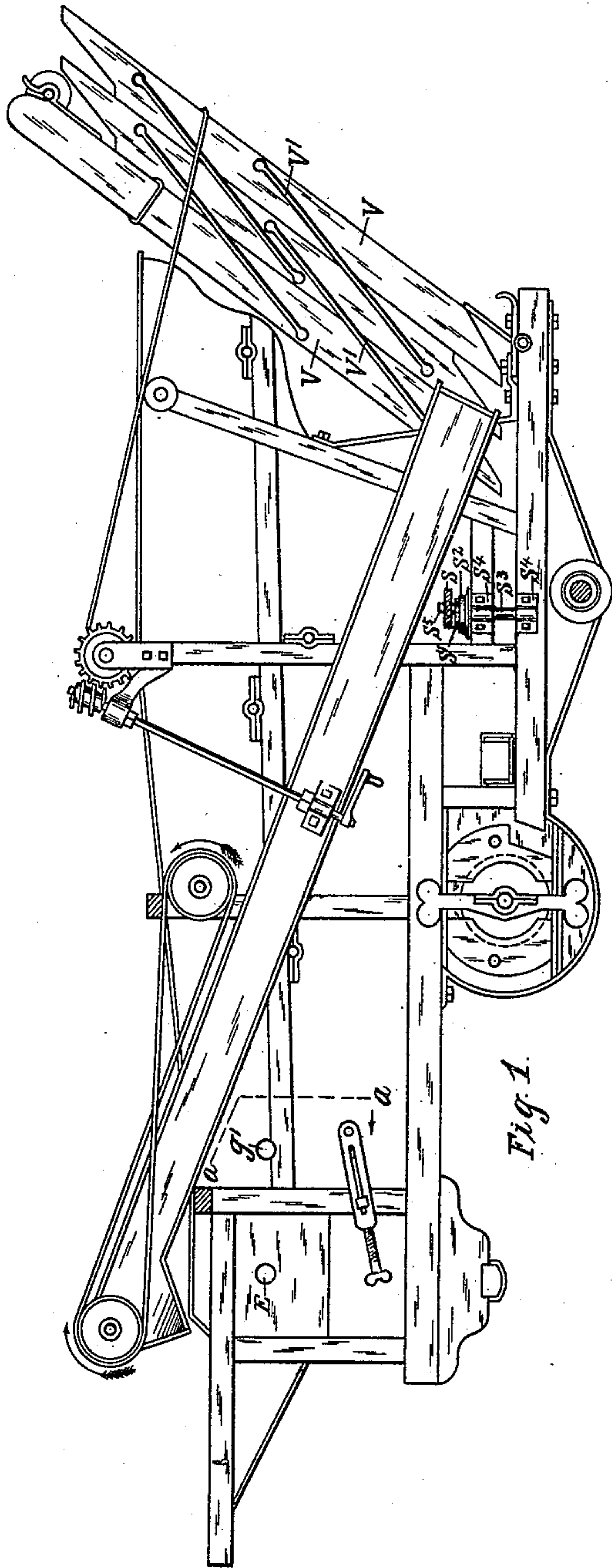


Fig. 1.

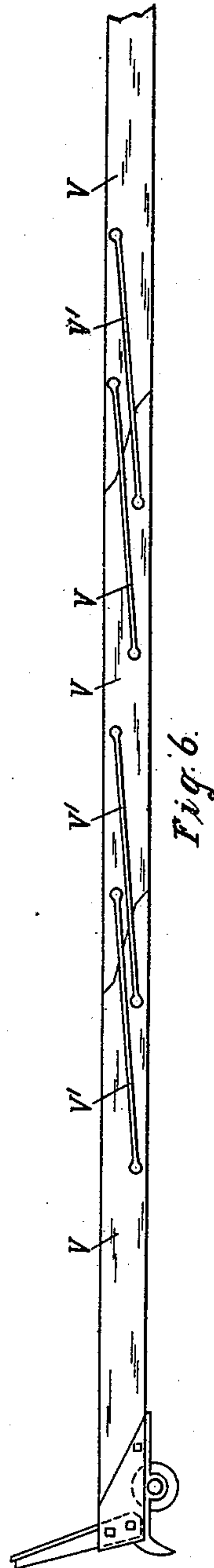


Fig. 6.

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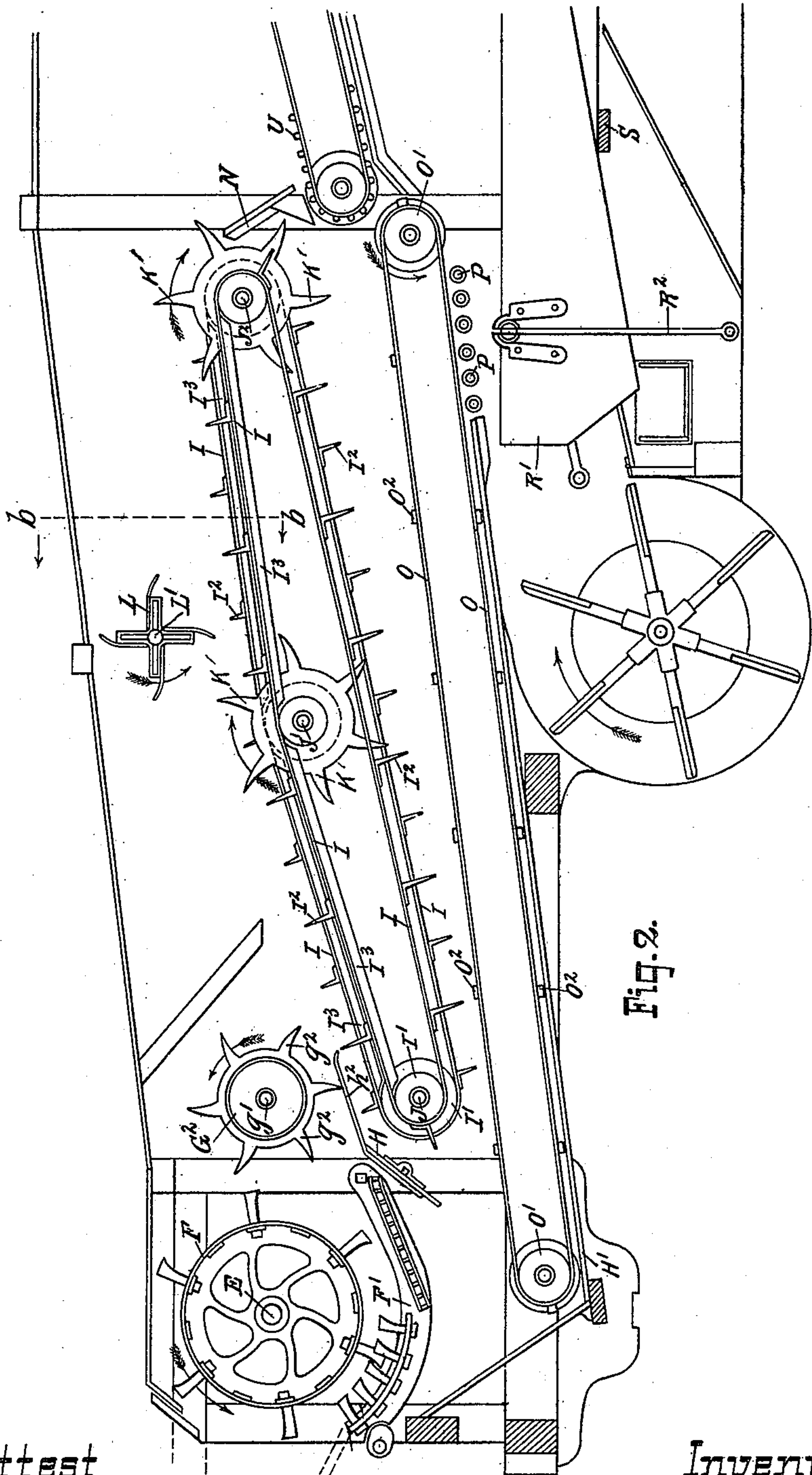


Fig. 2.

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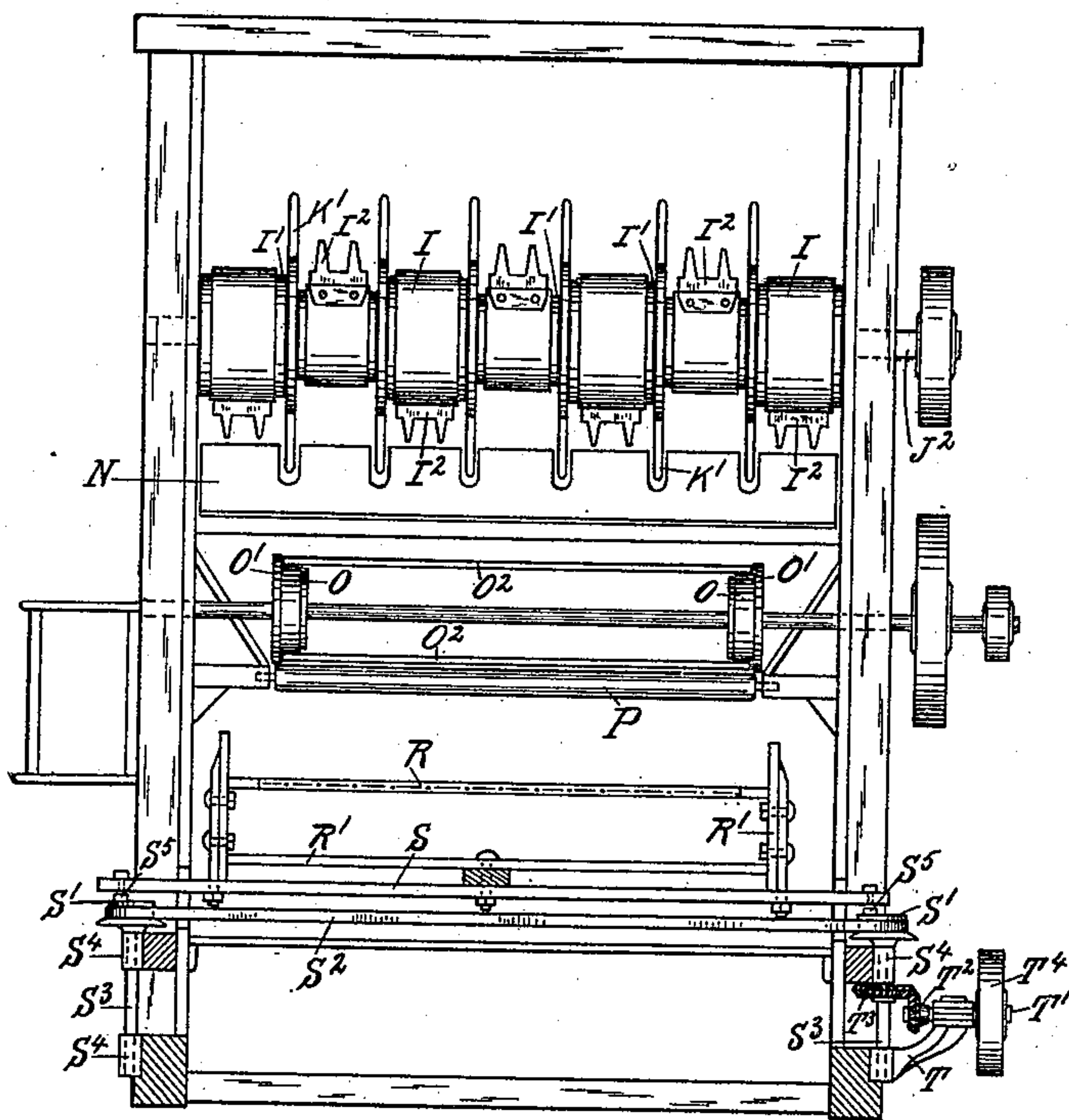


Fig. 3.

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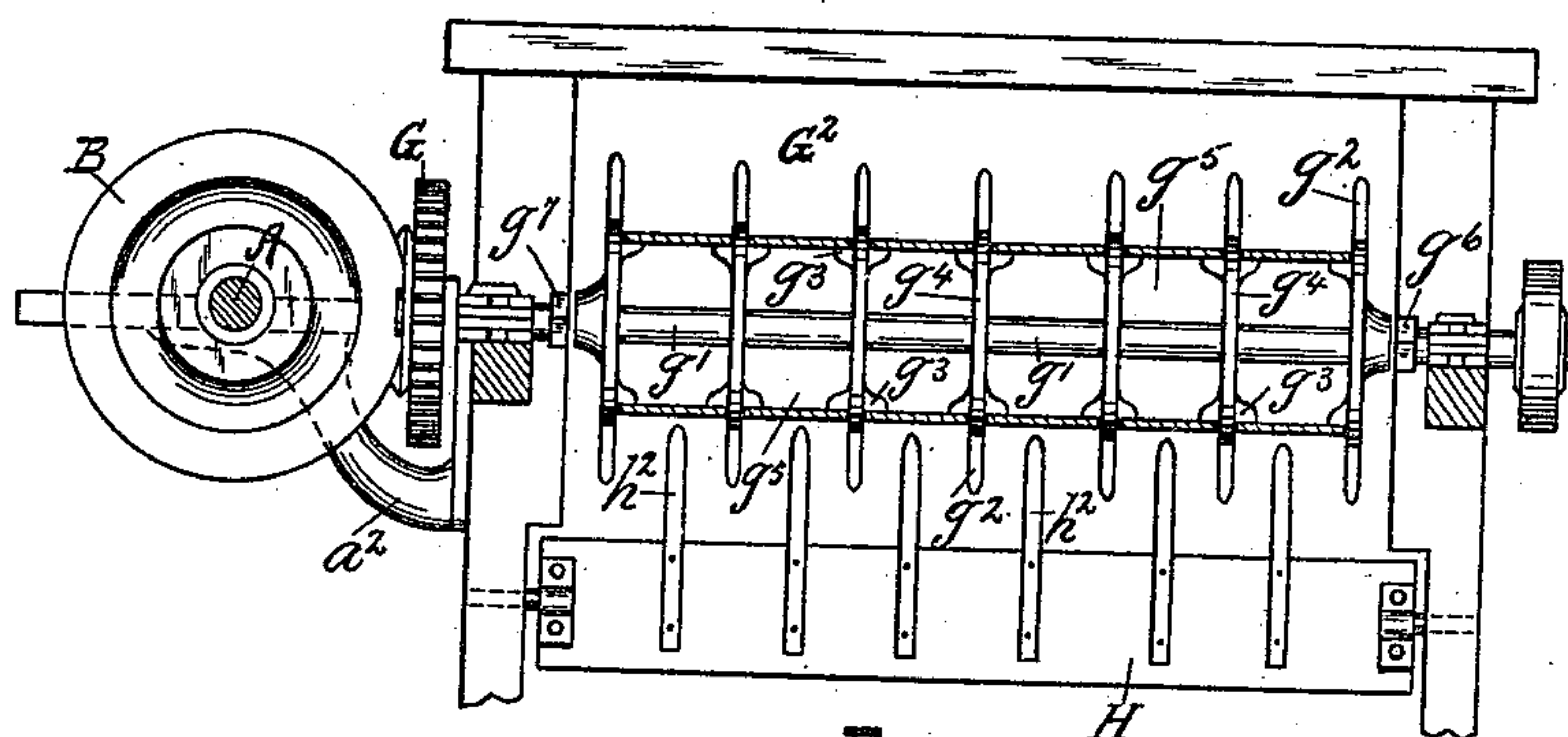


Fig. 4.

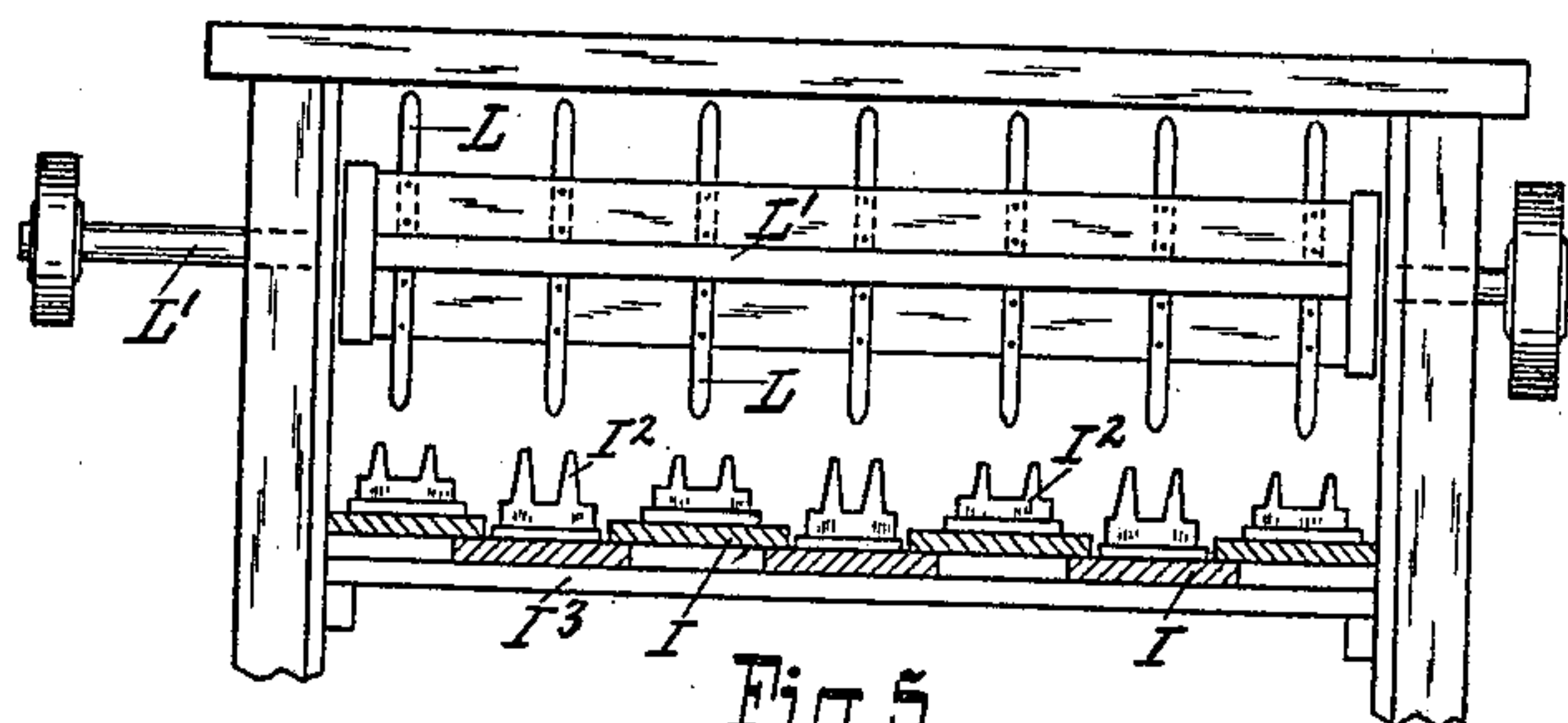


Fig. 5.

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UNITED STATES PATENT OFFICE.

ABEL KLEINSTIVER, OF PETROLEA, CANADA, ASSIGNOR OF ONE-HALF TO
B. S. VAN TUYL, OF SAME PLACE.

SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 467,133, dated January 12, 1892.

Application filed June 11, 1888. Serial No. 276,775. (No model.)

To all whom it may concern:

Be it known that I, ABEL KLEINSTIVER, a subject of the Queen of Great Britain, and a resident of Petrolea, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Separators, of which the following specification, taken in connection with the accompanying drawings, forms a full, clear, and exact description.

This invention relates to an improvement in those classes of machines in which the grain is separated from impurities; and it consists of the improved construction and combination of parts of the same, as will be hereinafter more fully described and claimed, reference being had to the drawings already mentioned, wherein—

Figure 1 is a side elevation of a separator embodying my invention. Fig. 2 is an interior side elevation of same with the outside case or frame of the machine removed. Fig. 3 is a rear end elevation of this machine. Fig. 4 is a view of the drum-cylinder, partly in section, and some of the adjacent mechanism on the line *a a* of Fig. 1. Fig. 5 is a side elevation of the beaters and a sectional view of the straw-deck on the line *b b* of Fig. 2. Fig. 6 is a side elevation of the straw-carriers.

The straw passes between the cylinder *F* and concave *F'* to the dividing board or partition *H*, extending across the machine. The grain, which is separated under the cylinder *F*, being below the straw, is caught by this dividing-board *H* and is conducted to the grain-deck *H'*, thereby preventing the grain from passing over onto the straw-deck formed of the endless bands *I*.

*h*² are arms secured to this partition *H*, as shown in Figs. 2 and 4. These arms extend over on the straw-deck between the latter and the drum-cylinder *G*², and as the straw passes over on these arms the pickers *g*², secured to the drum-cylinder *G*² or shaft *g'*, engage with said straw and pull it apart, thereby feeding the straw evenly to the straw-deck. This drum-cylinder *G*² is constructed as follows: Flanges *g*³ are cast on disks *g*⁴, and the latter are secured to the shaft *g'*, and to these disks *g*⁴ the picker-arms *g*² are secured; and *g*⁵ are

tubular sheet-iron sections held in place by these flanges *g*³ between the disks *g*⁴; and these disks *g*⁴ and tubular sheet-iron sections *g*⁵ are clamped and firmly held together between a shoulder *g*⁷ near one end of the shaft *g'* and a nut *g*⁶ or other suitable clamping device. The straw-deck is composed of endless bands *I*, passing over pulleys *I'* of different diameters, as shown in Figs. 2 and 3. To these bands *I* buckets *I*² are secured, and these endless bands *I* pass over pulleys *I'* of different diameters, secured on two or more shafts *J J' J*². To the shafts *J'* and *J*² the picker-arms *K* and *K'* are secured, respectively, and *L* are beater-arms secured to the shaft *L'*.

The operation of the straw-deck is as follows: As these endless bands *I* pass over the pulleys *I'* of different diameters, the bands *I* passing over the pulleys *I'* of the largest diameter move more rapidly than the bands passing over the pulleys of small diameter, and the buckets *I*², holding the straw, being operated by these bands *I* at different rates of speed, one bucket in passing the other will beat or whip the straw thoroughly apart and separate the grain therefrom. This separating process is further assisted and more perfectly accomplished by means of the picker-arms *K* on the shaft *J'* and the beaters *L*, when the machine is crowded, as follows: These picker-arms *K* are interposed between each of the bands *I*, as shown by *K'* in Fig. 3, and they are secured to and revolve with the pulleys on the shaft *J'*. As the bands *I* bring the straw up to these picker-arms *K* they pick the straw up free from the endless bands *I*, forming the straw-deck, and throw it against the beaters *L*, which revolve in the opposite direction, thereby spreading out the straw and further separating the grain therefrom. As these bands *I* bring the straw up to the picker-arms *K'* they will also pick the straw up from these bands *I* forming the straw-deck, and deposit it on the straw-rakers *U*, which convey it to the straw-carriers *V*. The grain which remains on the bands *I* falls off said bands onto the grain-deck *H'* when these bands pass over the pulleys on the shaft

J², and to prevent the grain from falling through the space between the belts I, I provide a solid floor I³ between the pulleys J and J' and J' and J².

5 N is a dividing board or partition between the adjacent ends of the straw-deck and the rakers U for the purpose of preventing the grain from falling on the rakers U. This partition N also acts as a conducting-board to
10 conduct the grain to the grain-deck H'.

O O designate endless bands passing over the pulleys O', and to these endless bands slats O² are secured and adjusted to draw the grain on the grain-deck H' to the rollers P, through
15 which the grain falls onto the screens R in the shoe R', supported on the supports R², secured at their lower end to the frame of the machine. The lower ends of the supports R² are pivoted on the frame of the machine, and
20 on the upper end of each of these supports R² an enlarged spherical-shaped end or ball is formed, which is inserted into a recess in a casting secured to the shoe R', to the recess in which casting the ball on the upper end of
25 the support R² is fitted.

S' are pulleys around which the belt S² passes. In order that both may be revolved simultaneously these pulleys S' revolve with the shafts S³, secured in place and revolving
30 perfectly free in the bearings S⁴, secured to the frame of the machine, and S⁵ are crank-pins secured to the pulleys S' at any suitable distance from the center, and these crank-pins S⁵ revolve perfectly free in bearings in the
35 bar S, secured to the shoe R'.

T designates a bracket in which a shaft T' is journaled. To this shaft T' a beveled pinion T² is rigidly secured, which engages with the beveled gear-wheel T³, rigidly secured to
40 one of the shafts S³, and to the shaft T' a pulley T⁴ is secured, so that by operating this pulley T⁴ a revolving motion is imparted to the shoe R' by the revolution of the crank-pins S⁵ in order to keep the grain in a state
45 of constant agitation on the screens or sieves R, and also for the purpose of balancing the

motion of the shoe, and thereby preventing any jerking or damage to the latter.

V V are straw-carriers hinged and secured together by connecting-bars V', pivotally securing their adjacent ends together to permit these carriers to be readily and easily folded together or extended, as required.

Having thus described my invention, I claim—

1. The combination of the shaft g', disks or plates g⁴, flanges g³, and picker-arms g² with the tubular sheet-iron sections g⁵, shoulder g⁷, and nut g⁶, substantially as and for the purpose set forth.

2. The combination of the stationary floor I³ and the shafts J, J', and J², each carrying juxtaposed alternately large and small pulleys I', over which the bands I, carrying the buckets I², pass in close parallel relation to one another and in themselves constitute the carriers, with intervals between said bands equal to the difference between the radii of the large and small pulleys, through which the grain may escape, substantially as shown and described, and for the purpose specified.

3. The combination of the endless bands I, formed with the buckets I², pulleys I', the alternate ones of which are all of the same diameter, but of a larger diameter than the intermediate pulleys, the shafts J J' J², and the picker-arms K', substantially as shown and described, and for the purpose specified.

4. The endless bands I, formed with the buckets I², pulleys I', the alternate ones of which are all of the same diameter, but of a larger diameter than the intermediate pulleys, the shafts J, J', and J², and the picker-arms K, in combination with the beaters L and shaft L', substantially as shown and described, and for the purpose specified.

In testimony whereof I affix my signature in the presence of the two undersigned witnesses.

ABEL KLEINSTIVER.

Witnesses:

P. J. EDMUNDS,
A. EDMUNDS.