

No. 755,978.

PATENTED MAR. 29, 1904.

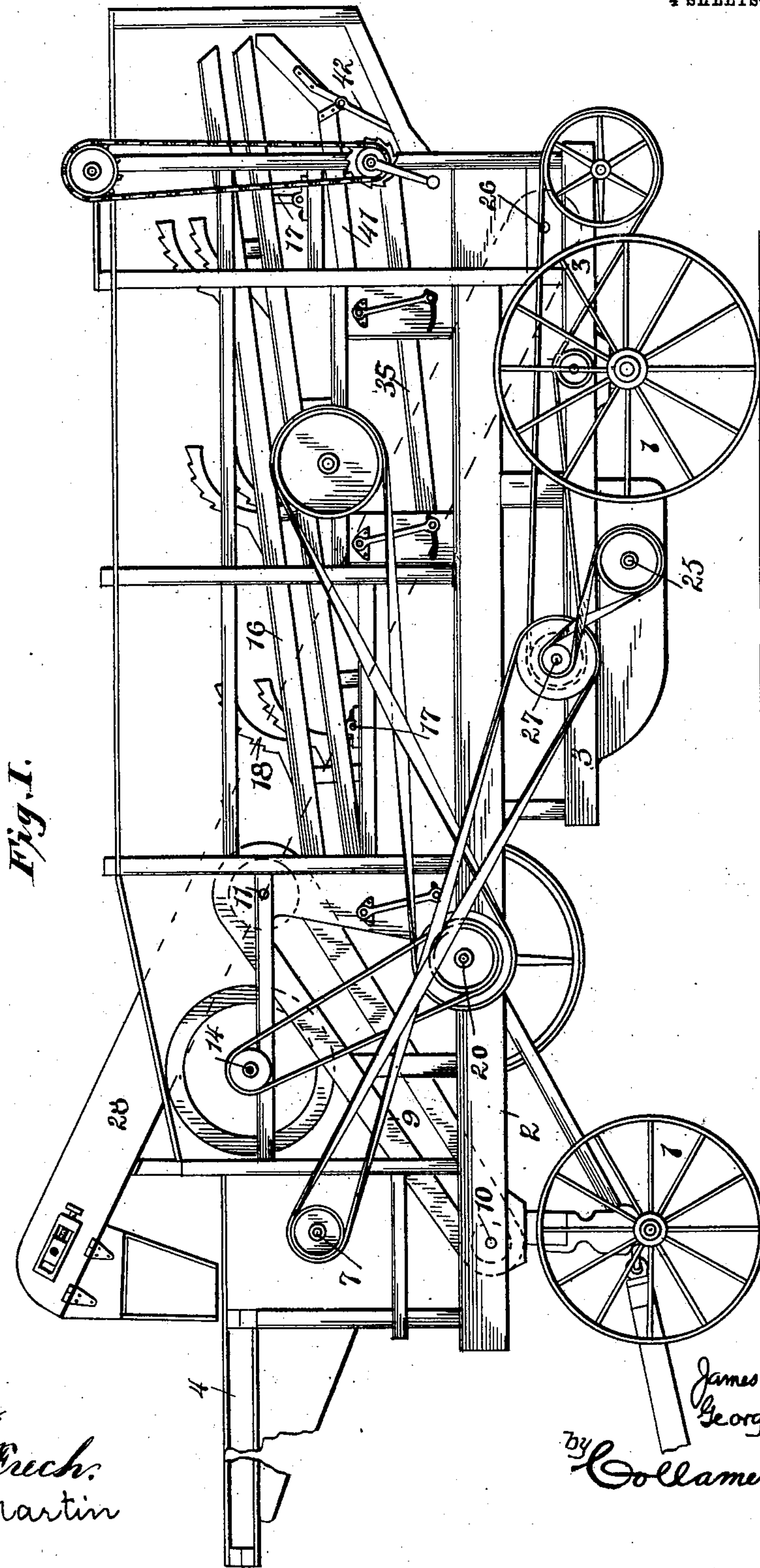
J. K. WHITE & G. W. PYLE.

GRAIN SEPARATOR.

APPLICATION FILED JULY 10, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:

Geo. C. Rich.
J. R. Martin

Inventors:

James K. White &
George W. Pyle,

by Collamer & Co.,

Attorneys:

No. 755,978.

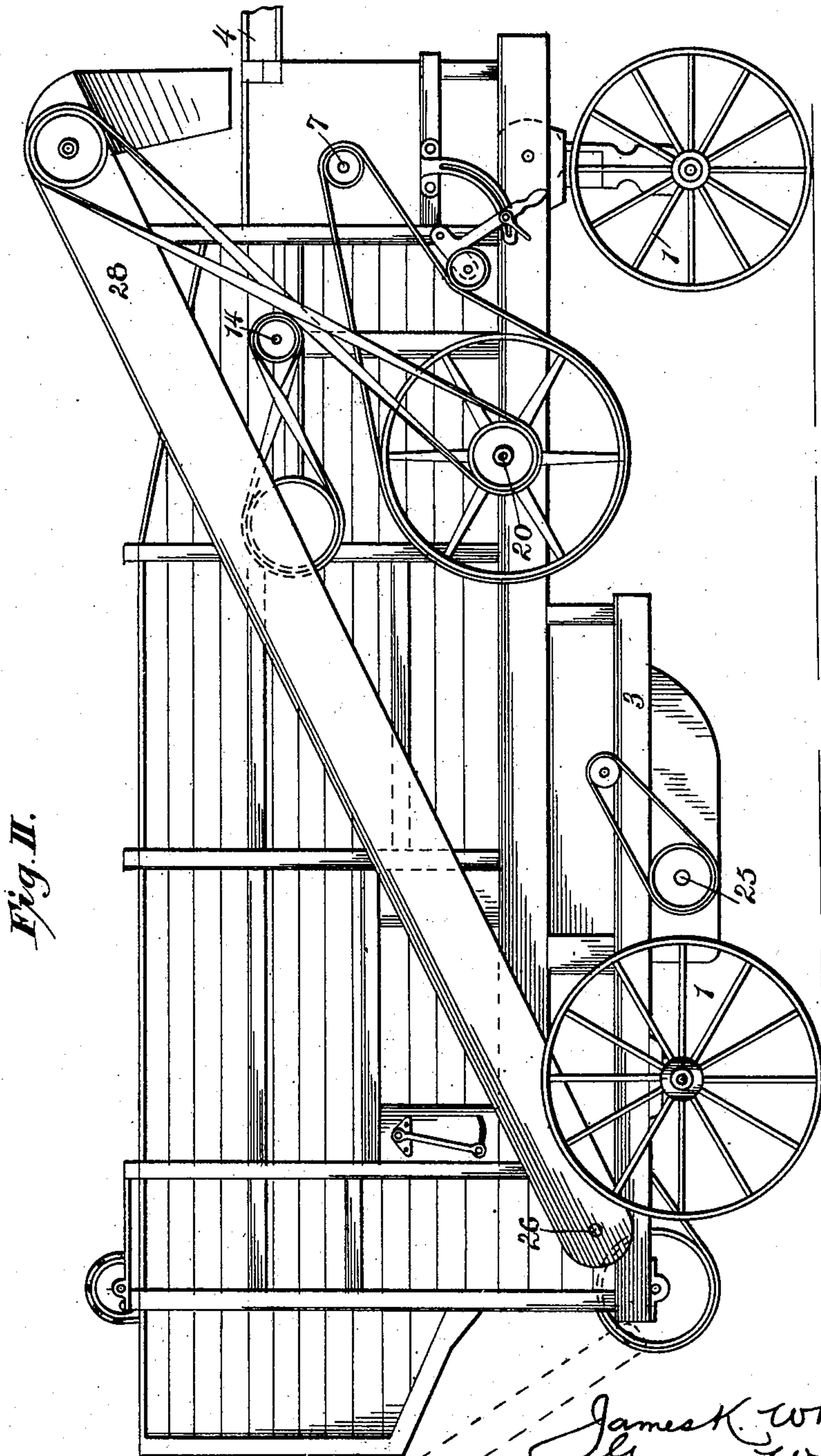
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4 SHEETS—SHEET 2.



Witnesses:
Geo. E. Frick
J. R. Martin

James K. White & George W. Pyle,
by *Collamer & Co.,*
Attorneys

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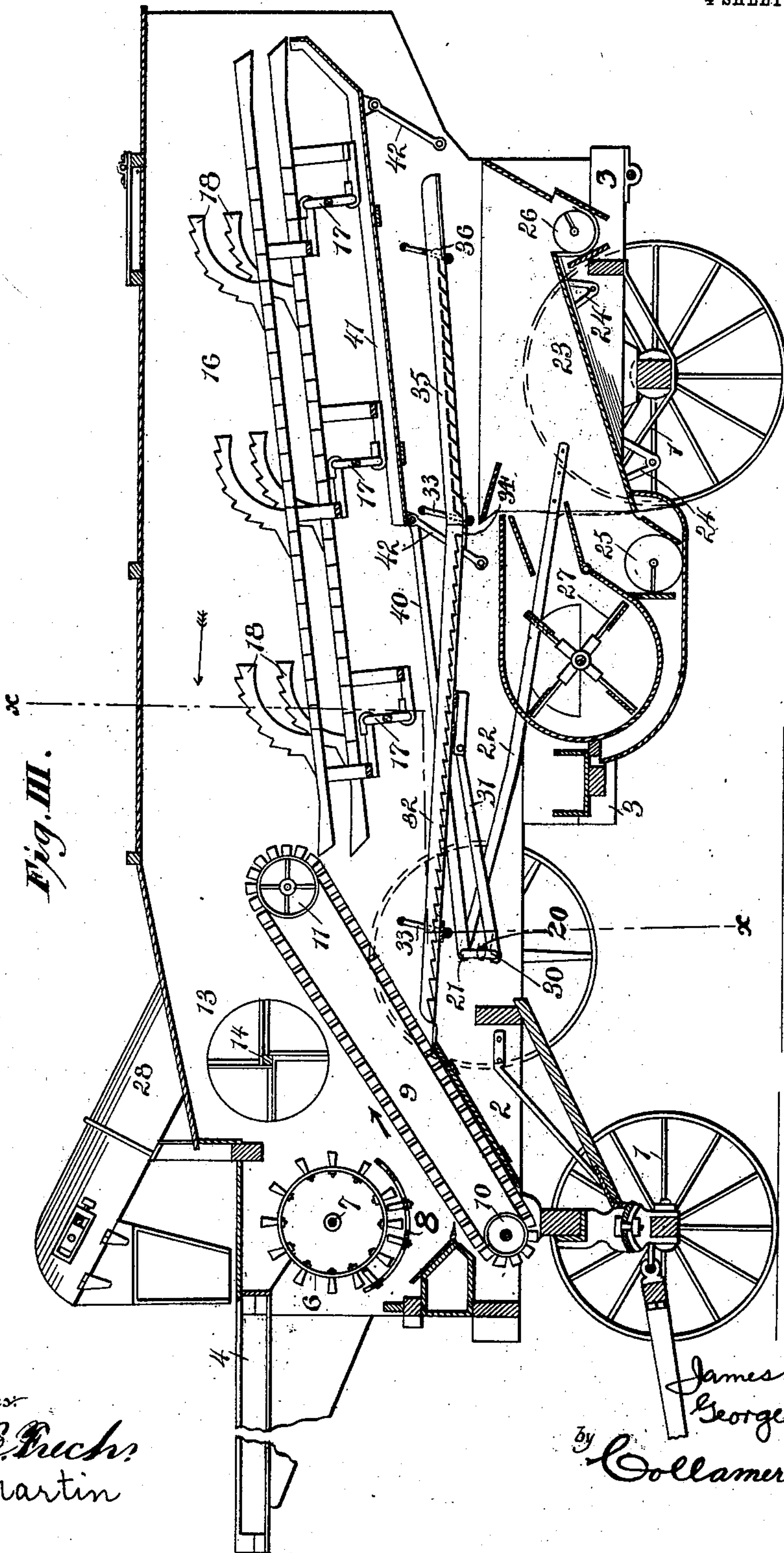
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4 SHEETS—SHEET 3.



Witnesses:

Geo. E. Puck
J. R. Martin

Inventors:

James K. White
George W. Pyle

by

Collamer & Co.

Attorneys.

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4 SHEETS—SHEET 4.

Fig. IV.

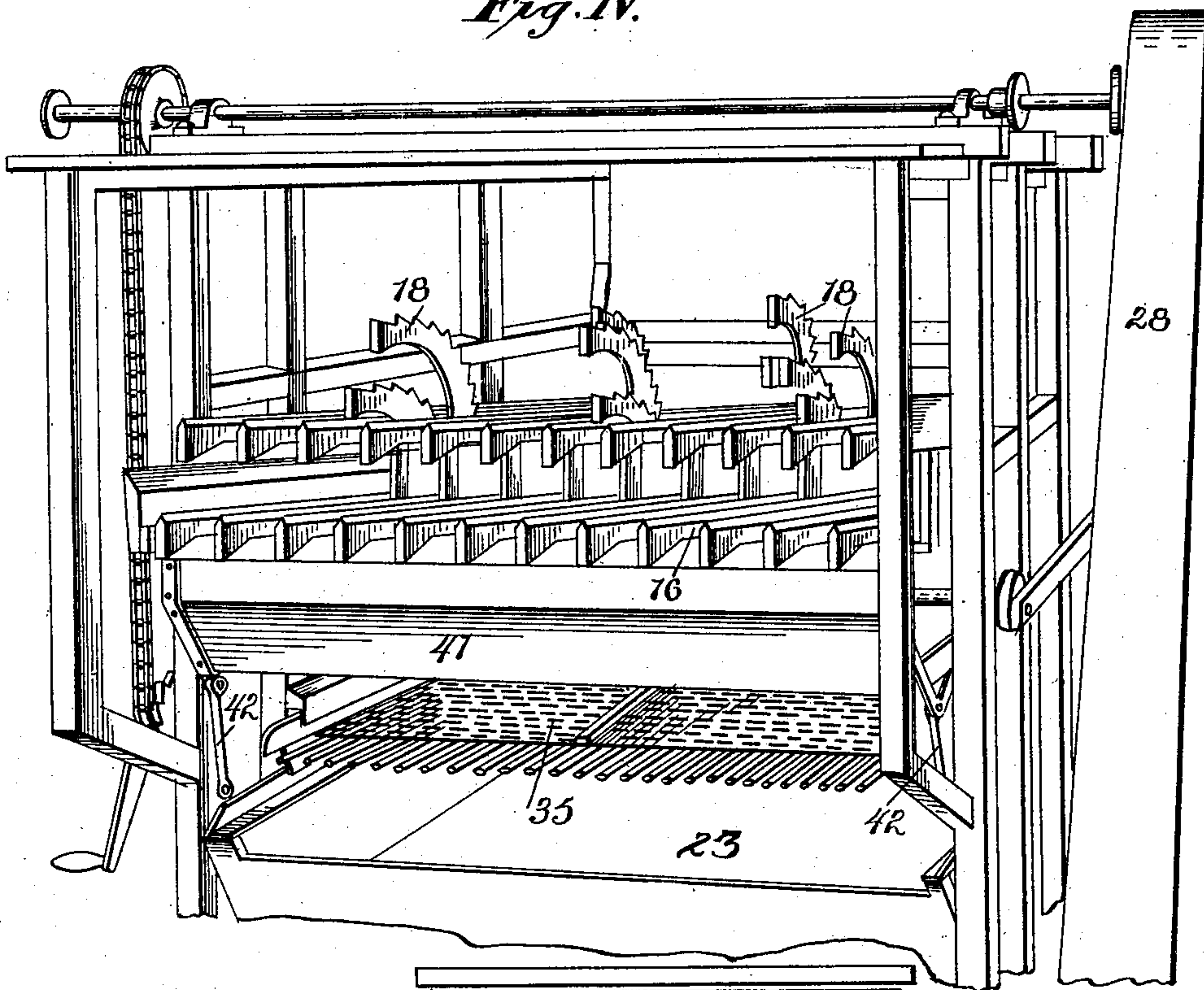
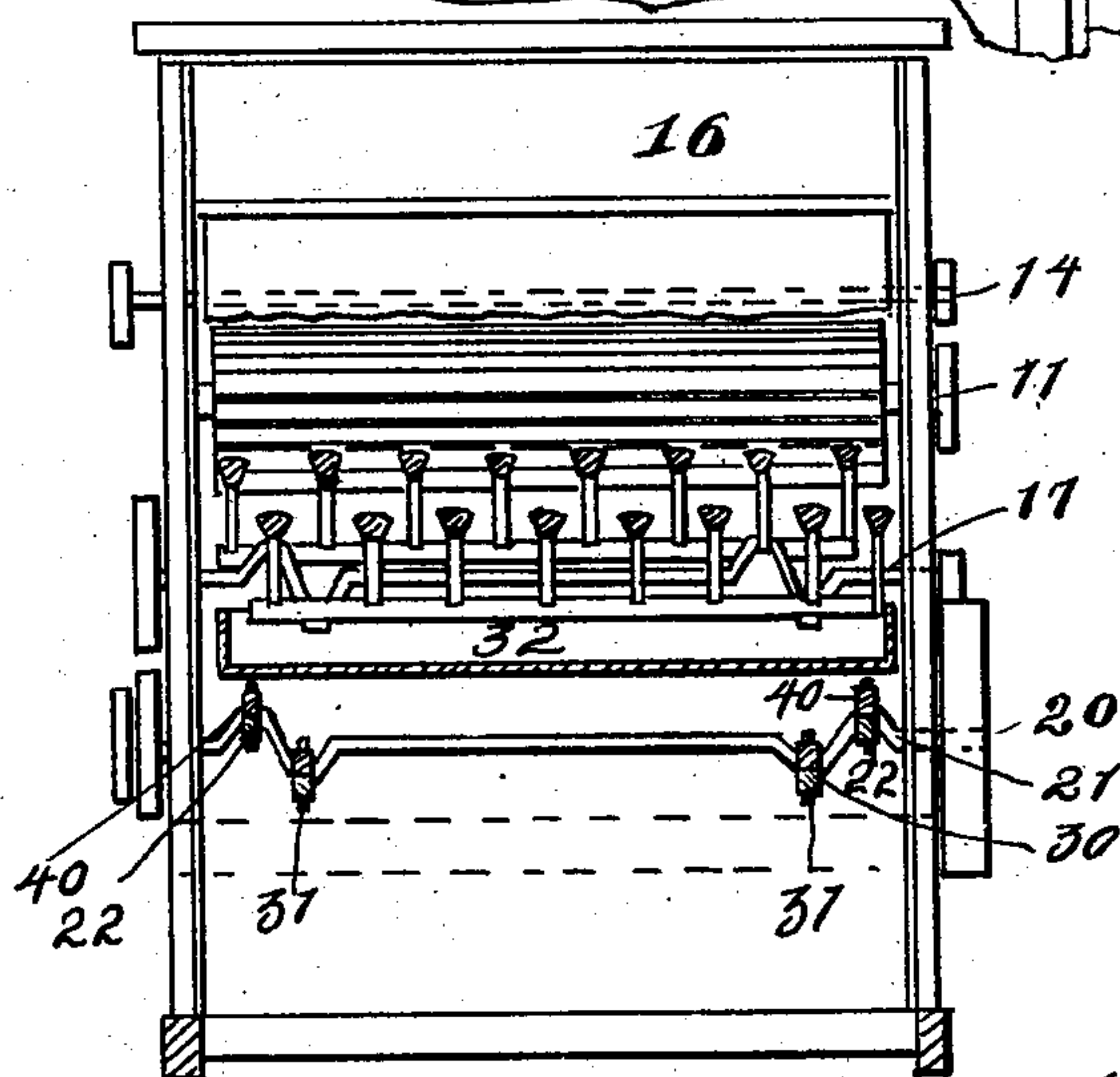


Fig. V.



Witnesses:

Geo. C. French
J. R. Martin

James K. White & George W. Pyle,
by Collamer & Co.,

Attorneys.

UNITED STATES PATENT OFFICE.

JAMES K. WHITE AND GEORGE W. PYLE, OF MANSFIELD, OHIO.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 755,978, dated March 29, 1904.

Application filed July 10, 1902. Serial No. 115,072. (No model.)

To all whom it may concern:

Be it known that we, JAMES K. WHITE and GEORGE W. PYLE, citizens of the United States, residing at Mansfield, in the county of Rich-
land and State of Ohio, have invented certain
5 new and useful Improvements in Grain-Separators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others
10 skilled in the art to which it appertains to make and use the same.

This invention relates to threshing, and more especially to such machines used in that art as are known as "separators," although the pres-
15 ent specification and drawings describe and illustrate several other parts of the threshing-machine; and the object of the same is to so balance the parts of a separator that their speed of movement may be reduced without
20 sacrificing efficiency, that there may be, therefore, less power required to run the machine, that less vibration will result, and hence that the whole will have a longer life.

To these ends the present invention consists
25 in the general construction and arrangement of parts as hereinafter more fully described and claimed, rather than in the specific construction of the parts themselves, to which end the latter are referred to in general terms,
30 it being assumed that their specific construction is well known or is at least covered by other patents.

In the accompanying drawings, Figure I is a left side elevation of this machine. Fig. II
35 is a right side elevation with one form of stacker attached. Fig. III is a central longitudinal section. Fig. IV is a perspective view of the rear end of the machine. Fig. V is a cross-section on the line 5 5 of Fig. III.

40 Mounted on wheels 11 are the framework 2 and the subsill 3, which carry all the parts hereinafter referred to.

4 is the feed-table; 6, the cylinder, mounted on a shaft 7; 8, the concave beneath the cyl-
45 inder; 9, the web or belt of an elevator running over rollers 10 and 11; 13, the beater, located above the upper inner end of said web and mounted on a shaft 14, and 16 the straw-shaker, arranged in two banks mounted on a
50 plurality of double-crank shafts 17 and hav-

ing risers 18. This latter is covered by United States Letters Patent already issued, and its details form no part of the present invention further than that it is in two banks whose
movements offset or counterbalance each
55 other. It is obvious that the straw and chaff which are passed to the rear by the cylinder and beater are agitated by said shaker, and it is clear that if a stacker is used where marked, 19, it will carry said straw and chaff to a pile,
60 preferably at a remote point.

20 is what we will call the "power-shaft." As here shown, it is located beneath the web 9, although it could be elsewhere. Further, as
65 shown in the accompanying drawings, the several parts of the machine are connected by belting (it might be gearing or otherwise) with some shaft in such a manner that the proper speed of movement will be given them in the proper direction, and in view of the
70 fact that machines of this type are well known we have not considered it necessary to further describe the manner of applying or conveying power to these various parts. The shaft 20 has double and oppositely-disposed cranks,
75 preferably one pair near each end. In Fig. III the upper pair of cranks 21 is connected by pitman-rods 22 with the shoe 23, which is mounted on hangers 24 upon the subsill 3 just in rear of the delivery-auger 25 and for-
80 ward of the tailing-auger 26. The former delivers into a suitable receptacle, as is well known, and usually stands just in rear of the fan 27, while the auger 26 delivers into the tailing-elevator 28, which in practice returns
85 the mixed grain and chaff to the cylinder for renewed treatment. The lower pair of cranks 30 is connected by pitman-rods 31 with the grain-pan 32, which is supported by hangers 33, and the weight of the shoe and grain-pan
90 nearly counterbalance each other. To the rear end of said pan, at 34, is pivotally attached the chaffer 35, whose rear end is supported by hangers 36, and with this addition the parts
95 moved by the lower cranks 30 are heavier than said shoe 23, but the upper pair of cranks are also connected by pitman-rods 40 with the return-pan 41, which is supported upon hang-
ers 42, and all parts can be and are nicely
100 proportioned, so that the weight of the shoe

and the return-pan counterbalance that of the grain-pan and chaffer, while (the throw of the upper and lower cranks of the shaft 20 being the same) the movements of these connected parts are the same in distance. Hence it follows that while one pair of parts is traveling in one direction to a certain degree another pair of parts is traveling in the opposite direction to the same degree, and the well-known tendency of a crank-shaft to have periods of its revolution impeded by the stopping and starting of the mechanisms connected therewith is overcome. This we consider an important feature of our invention.

The cylinder, beater, and web, while forming no part of the present invention, nevertheless are operated by rotary movements, or at least not by crank movements, and need no counterbalance. The straw-shaker being in two banks, mounted on double-crank shafts 17, has the same result—*i. e.*, the forward movement of one bank overcomes the rearward movement of the other, and the double cranks have ever the same resistance. Hence all parts of this machine are either purely rotary or else counterbalanced in their reciprocations or oscillations.

It is not inconsistent with the present invention that the moving parts should slide nor is it material whether they be mounted on pendent hangers or risers, whereby they work over their supporting centers, to which end the word "hangers" herein may have a double or even a triple meaning. The exact construction of parts is immaterial, as also is the proportion, sizes, shapes, and materials thereof.

In operation the material to be threshed is fed in over the feed-table 4, passes between the cylinder 6 and concave 8, drops onto the web 9, and is beaten by the beater 13, and said web or elevator raises and carries it to and delivers it onto the straw-shaker 16, which, as before stated, is covered by other patents. Hereon it is tossed and manipulated, the straw and chaff of coarser grade finally passing off its rear end, possibly onto a stacker 19, if one be provided. Meanwhile the fine chaff and the grain fall through the shaker onto the grain-pan 32 at the front or onto the return-pan 41 at the rear, by which it is delivered into the grain-pan 32. The latter, by reason of the teeth with which it is provided and the agitation to which it is subjected, delivers the material into the chaffer 35, through which

the grain falls into the shoe 23, while the chaff is blown out by the fan 27 in the usual manner. The cleaned grain is delivered by the auger 25 into sacks or other receptacles, while the mixed grain and fine chaff is delivered by the auger 26 into the tailing-elevator 28, by which it is returned for renewed operation in the customary manner.

What is claimed as new is—

1. In a grain-separator, the combination; of a grain-pan, a chaffer pivotally connected thereto, supports for these parts, a double-crank shaft, connections between one of the cranks thereof and said parts; a shoe, connections between said shoe and the other crank, and connections between the latter and another moving part of the separator which—with the shoe—counterbalances the grain-pan and chaffer.

2. In a grain-separator, the combination; of a grain-pan, a chaffer pivotally connected thereto, supports for these parts, a double-crank shaft, connections between one of the cranks thereof and said pan; a shoe, a return-pan, supports for these parts, and connections between each of them and the other crank, as and for the purpose set forth.

3. In a grain-separator, the combination; of a grain-pan, a chaffer connected thereto, a double-crank shaft, one pitman-rod connecting one of the cranks thereof with the pan; a return-pan above the chaffer, another pitman-rod connecting the return-pan with the other crank, and connections between the latter and a moving part of the separator which—with the return-pan—counterbalances the grain-pan and chaffer.

4. In a grain-separator, the combination including the straw-shaker, the driving mechanism, and a double-crank shaft; of a return-pan standing next under the shaker, a grain-pan, a chaffer attached thereto and standing next under the return-pan, a shoe next under the chaffer, and one pitman-rod between the grain-pan and chaffer and one crank, and two pitman-rods between the return-pan and shoe and the other crank, whereby said pairs of parts counterbalance each other.

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

JAMES K. WHITE.
GEORGE W. PYLE.

Witnesses:

M. J. COBEAN,
A. F. BLACK.