

No. 691,877.

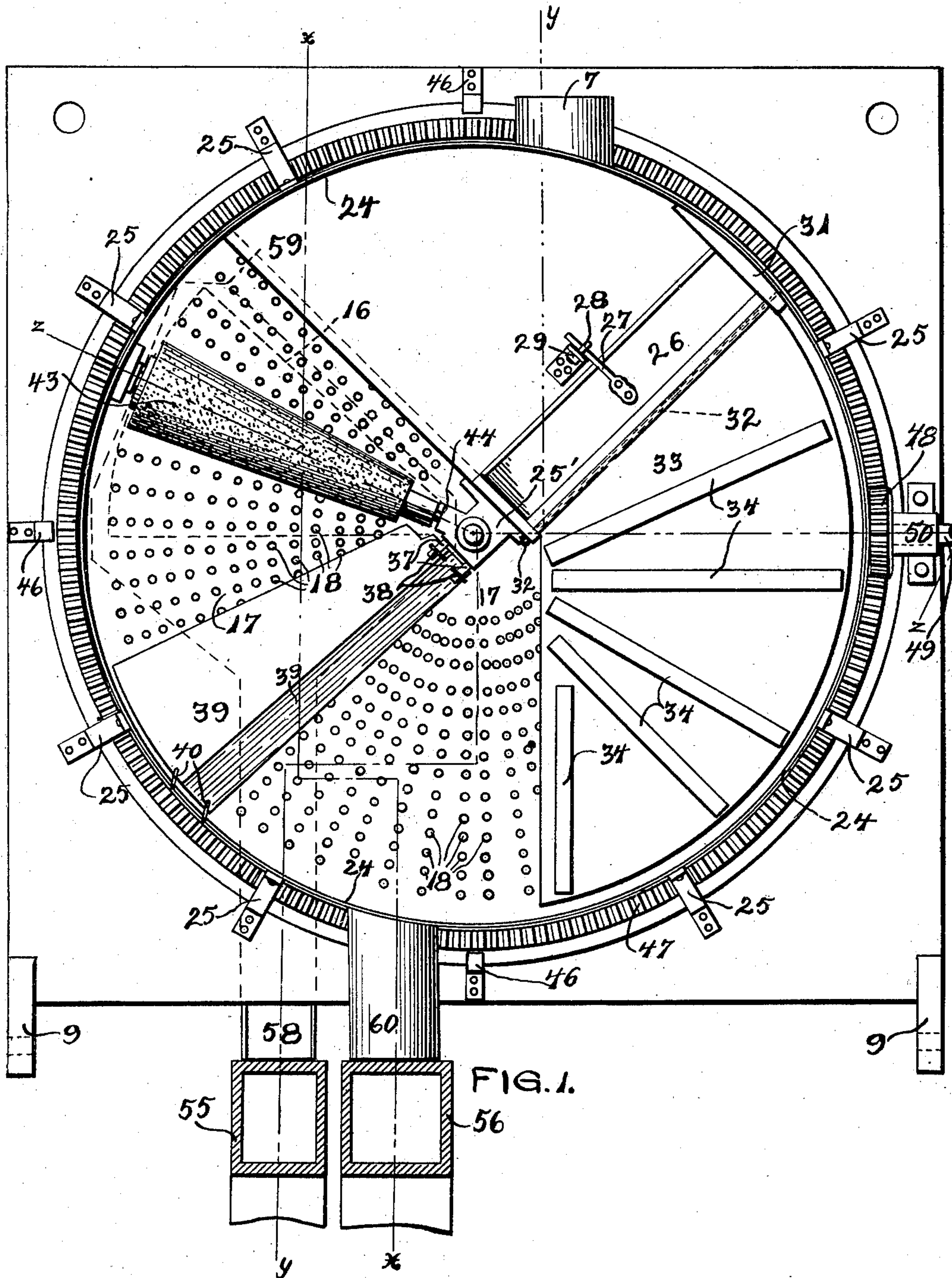
Patented Jan. 28, 1902.

C. H. SCOTT.
SEPARATOR.

(Application filed Aug. 20, 1901.)

(No Model.)

4 Sheets—Sheet I.



WITNESSES

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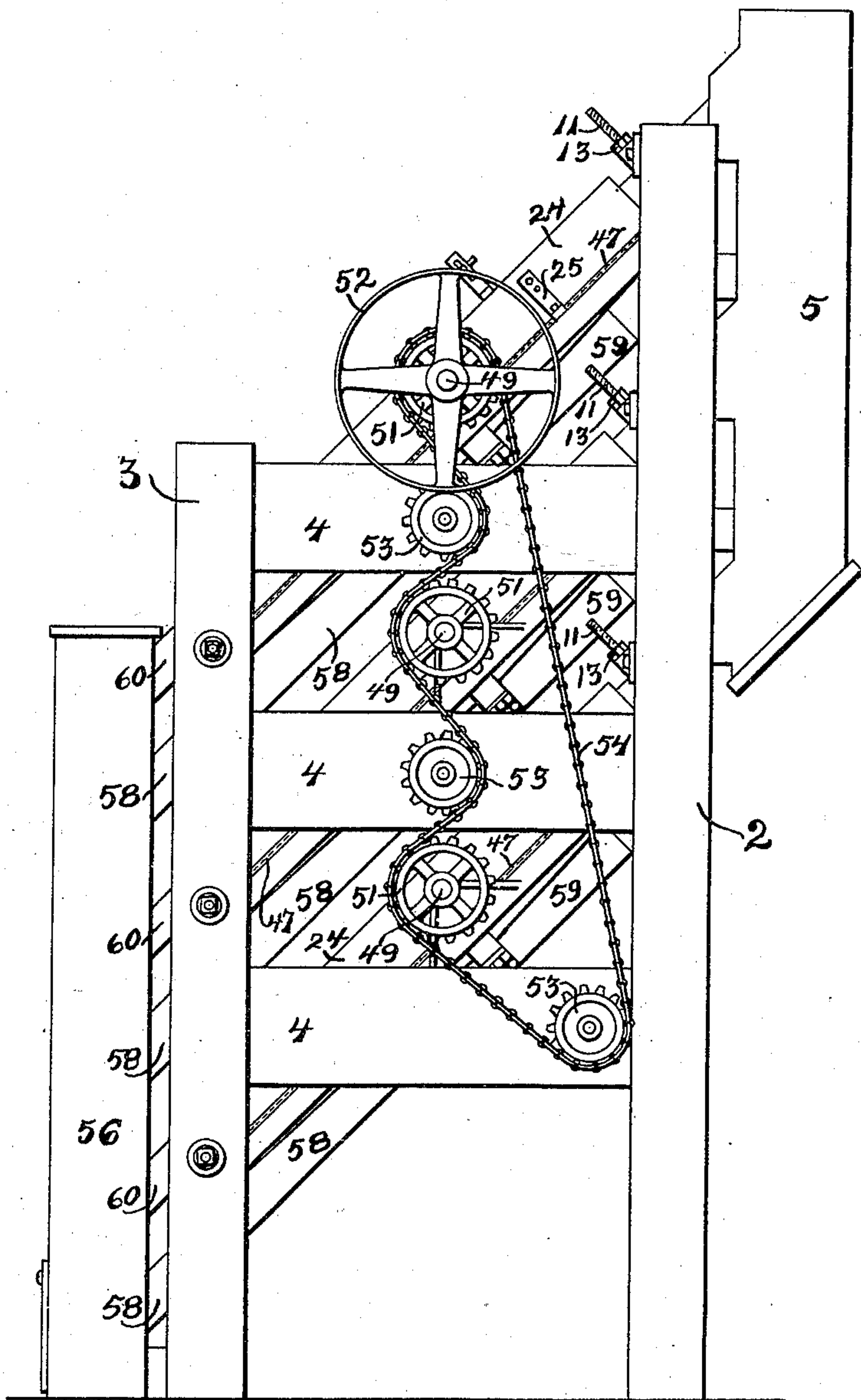


FIG. 2.

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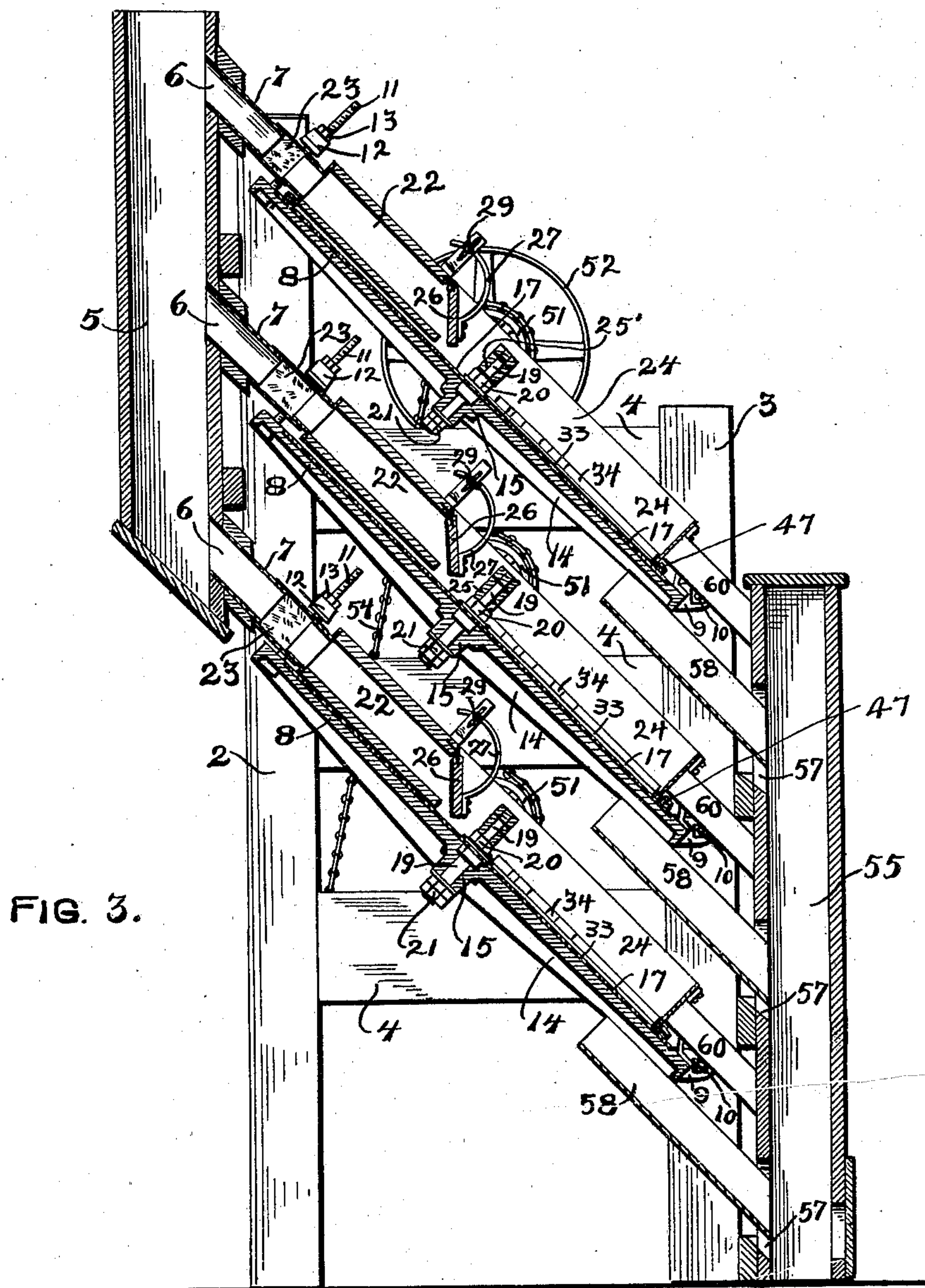


FIG. 3.

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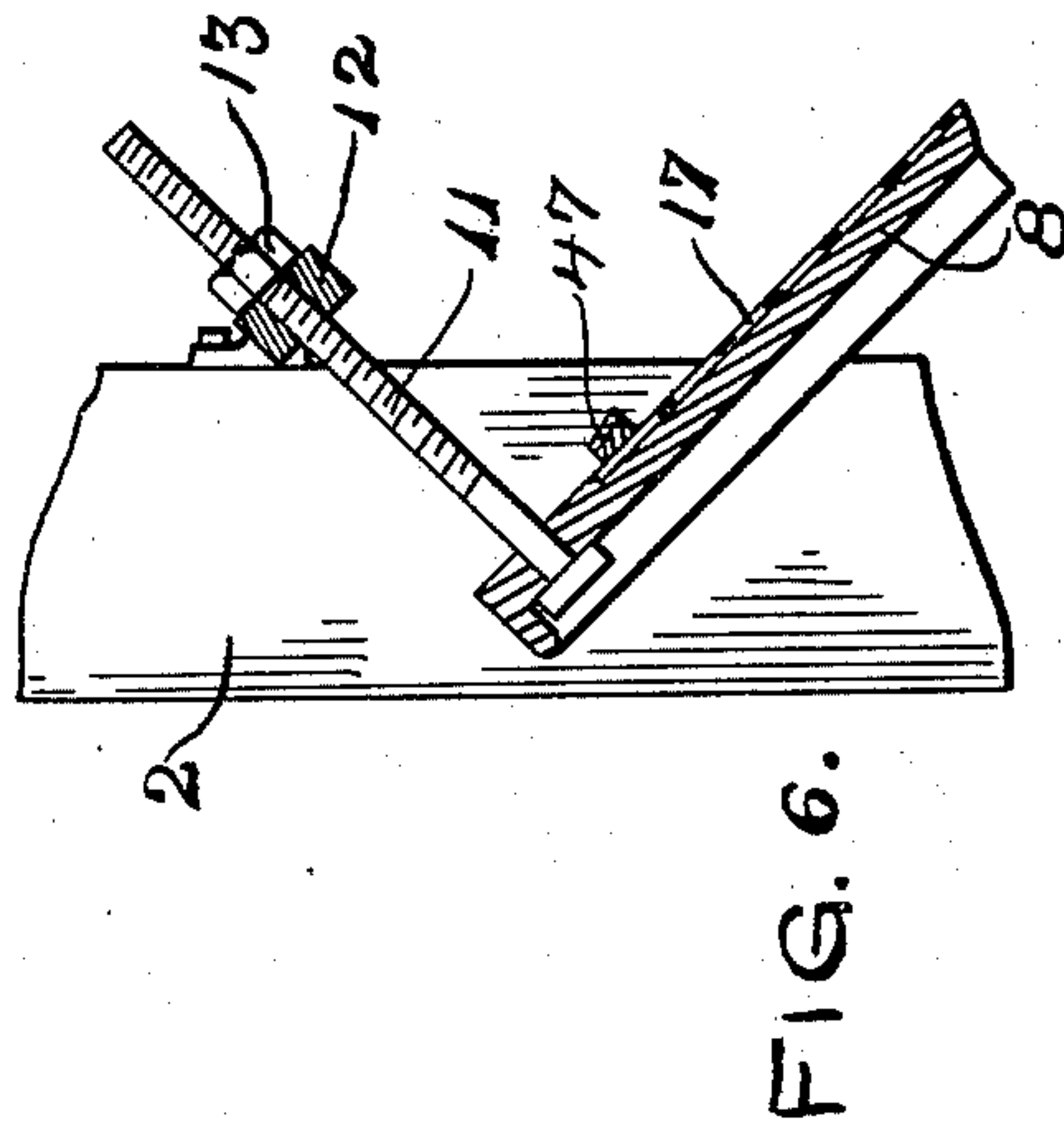
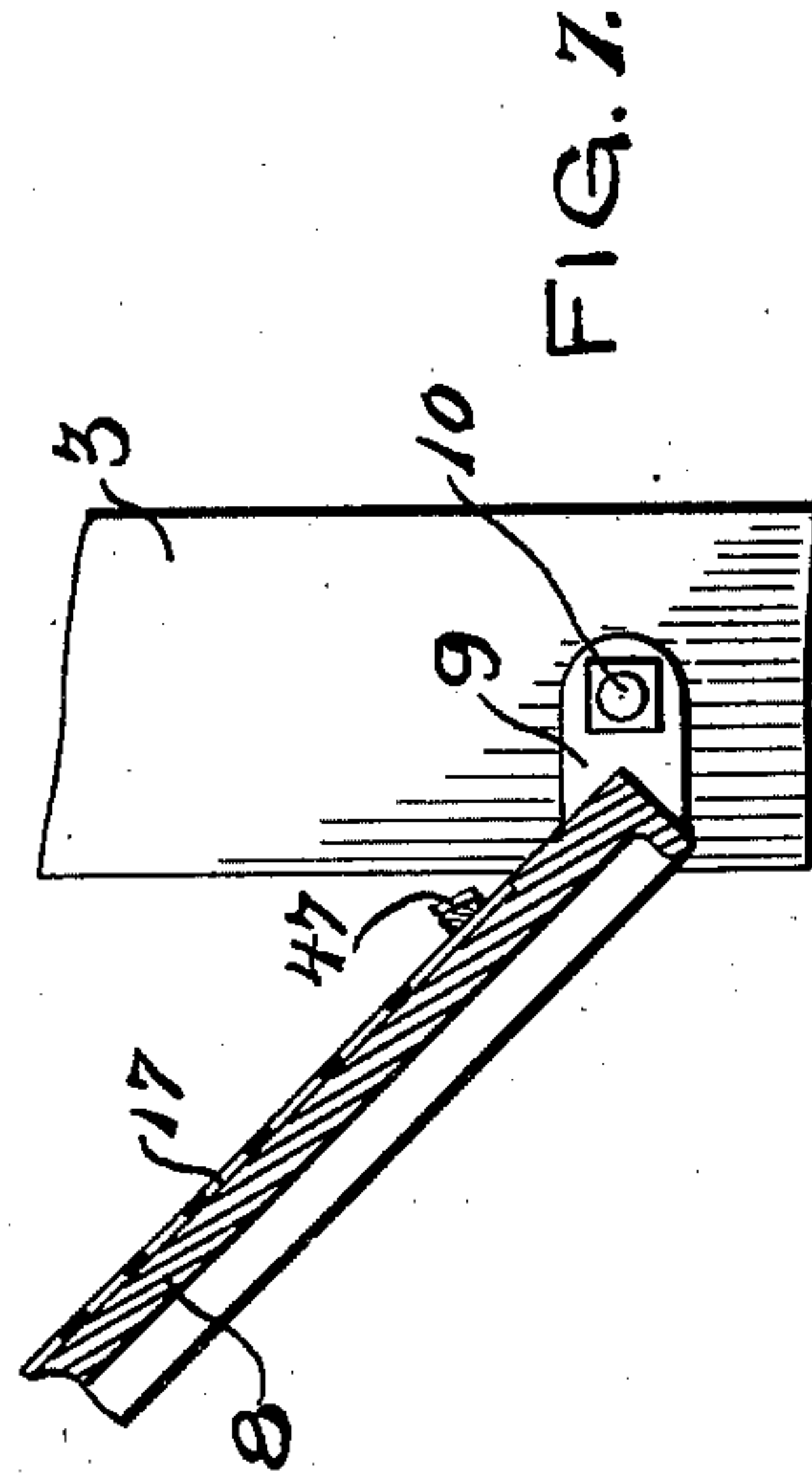
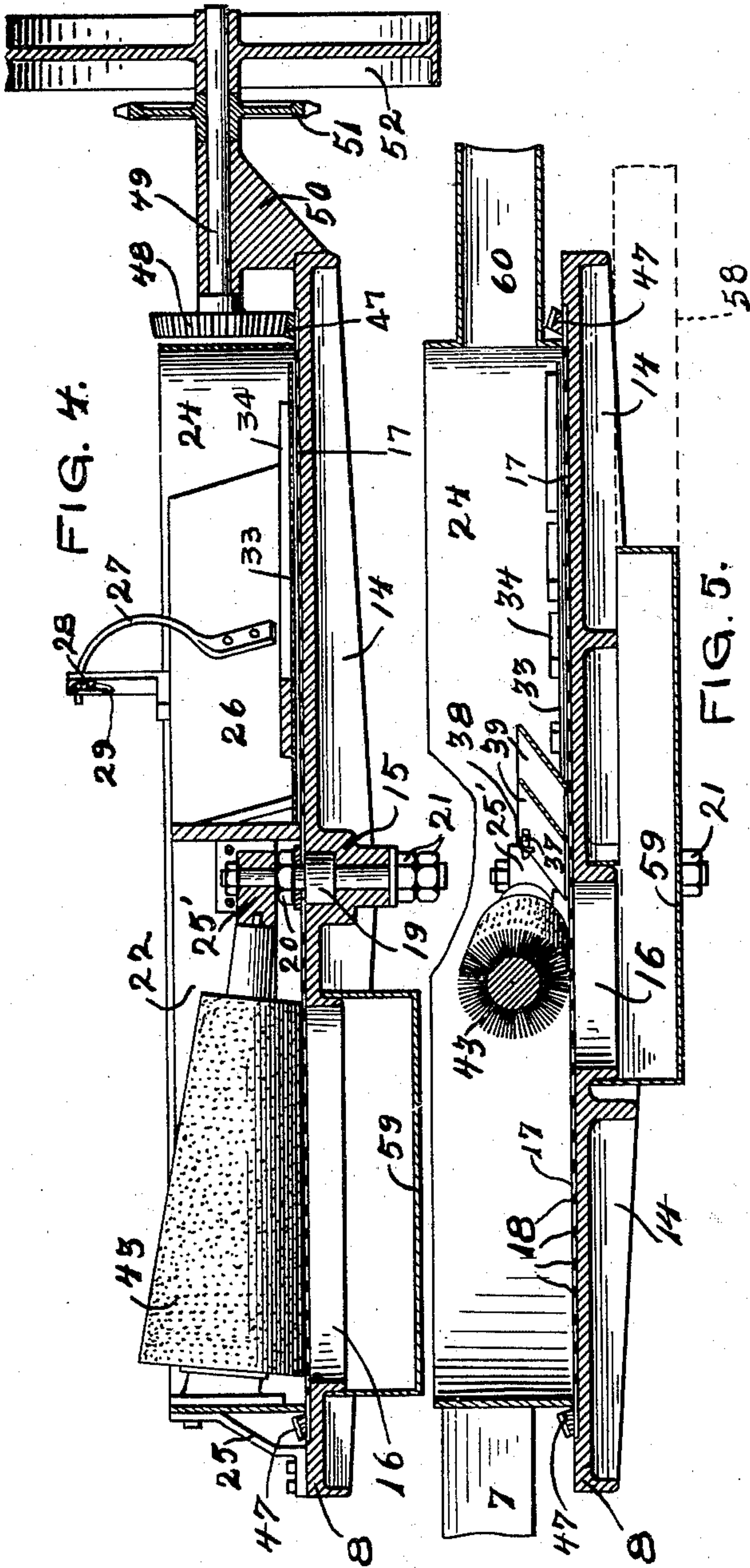
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4 Sheets—Sheet 4.

(No Model.)



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UNITED STATES PATENT OFFICE.

CHARLES H. SCOTT, OF MINNEAPOLIS, MINNESOTA.

SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 691,877, dated January 28, 1902.

Application filed August 20, 1901. Serial No. 72,658. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SCOTT, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Separators, of which the following is a specification.

The invention relates to machines for separating coarse and fine material wherein advantage is taken of the difference in size or shape between the large and small particles, and is designed as an improvement over the construction of the machine shown in application for Letters Patent of the United States filed by me November 13, 1899, Serial No. 736,728, renewed June 24, 1901, Serial No. 65,572.

The invention consists generally in providing improved means for driving the perforated disks.

Further, the invention consists in providing an improved hopper.

Further, the invention consists in providing means for adjusting the backing-plates and disks.

Further, the invention consists in means for cleaning the pockets of the grain therein as the disks pass over the discharge-openings.

Further, the invention consists in improved spouting means for carrying away the grain; and, further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of the backing-plates and disks and their connections, the machine-frame, for the sake of clearness, being omitted. Fig. 2 is a side elevation. Fig. 3 is a vertical section on the line *y y* of Fig. 1. Fig. 4 is a section on the line *z z* of Fig. 1 through the upper disk and its backing-plate. Fig. 5 is a section on the line *x x* of Fig. 1, also through the upper plate and disk only. Figs. 6 and 7 are details of the means for adjustably supporting the backing-plates.

In the drawings, 2 represents the upright posts at the back of the machine, 3 the posts at the front, and 4 the connecting cross-bars.

At the back of the machine at the top of the posts 2 I provide a universal hopper 5,

having a closed bottom and a series of discharge-openings 6 in its side wall next to the machine corresponding in number to the number of disks employed. In this machine I have shown three disks arranged one above the other a suitable distance apart. It will be understood, however, that this number may be increased or decreased at will, according to the desired capacity of the machine. Within the openings 6 I provide short spouts and beneath their discharge ends arrange a series of backing-plates 8, one beneath each spout. These plates are inclined from the back to the front of the machine substantially parallel with the spouts 7 and are provided at their lower edges on each side with lugs 9, having holes to receive bolts 10, which support the lower sides of said plates and form pivots to permit adjustment thereof to alter the pitch or inclination. The upper edges of said plates are provided with threaded bolts 11, passing through holes in brackets 12 and adjustably supported therein by nuts 13. By means of these bolts and the hinged connections of said plates at their lower edges they may be vertically oscillated and their pitch or inclination changed at will. The plates are preferably provided with transverse strengthening-ribs 14 and with hubs 15. In their upper sides the plates are provided with sectoral discharge-openings 16, through which the grain falls from the revolving disks. Each plate is provided with a flat upper surface, and resting thereon and forming a close grain and dirt joint therewith are disks 17, there being one for each plate, and each disk being provided with a series of holes or perforations 18, arranged at suitable intervals between its center and circumference. Short shafts 19, having suitable locking-nuts 20 and 21, extend through holes in the centers of said disks and through said hubs to hold the parts closely together while permitting the revolution of said disks. Near the spouts 7, in position to deliver the material upon the down side of said disks, I provide hoppers 22, each having a closed bottom and top and connected at their upper ends with the spouts 7 by flexible spout connections 23. These hoppers are supported at their outer edges on guard-plates 24, of sheet metal or other suit-

able material, placed on edge around the down side of said disks and secured to the back plates by brackets 25 or in any other suitable way. The inner walls or sides of the
 5 hoppers project beyond the tops and bottoms thereof and are secured to blocks 25', secured on projecting ends of the studs 19. The hoppers are thus held stationary above the revolving disks, and each is provided with a
 10 swinging door 26, having a curved arm 27, slidable in a stud 28 and adjustable therein by a thumb-screw 29. The bottom of each hopper projects beyond the top of the same and its edge forms a feed-board, over which
 15 the grain slides in a thin even sheet upon the down side of the disk, and this stream of grain is regulated by the swinging door. When one of the disks is not in use for any reason, the door may be closed tight, and the
 20 grain will be kept from passing out of the hopper. Opposite the extended side of the hopper (see Fig. 1) is a block 31, and between said extension and block I provide a rod 32, that passes through a loop in the end of the
 25 sectoral-shaped canvas apron 33, that rests upon the down side of the disks and is provided with a series of slats 34. This apron corresponds substantially in its construction and functions to the one shown in my application heretofore referred to and is not
 30 claimed in this application. These blocks 25' have projecting pins or fingers 37 to enter loops 38 on sheet-metal plates or wings 39, whose lower edges drag over the surfaces of
 35 said disks on their up sides. The loops are arranged near the upper edges of said plates, and hooks 40 are correspondingly arranged at the opposite or outer ends of said plates and rest upon the guard-plates 24.
 40 A conical brush 43 has its shaft mounted in bearings 44, provided, respectively, on the block 25' and the guard-plate 24. One brush is provided for each disk and is located over the discharge-opening in the backing-
 45 plate. The bristles of the brushes bear upon the surfaces of their disks, entering the perforations therein and forcing the grain out of the pockets into the discharge-opening. The brushes are driven by contact with their disks,
 50 and as the pockets pass beneath the brushes all the grain therein will be forced out, so that the disks as they approach their hoppers to receive a fresh supply of grain will be discharged of their load and ready to be filled
 55 again.

The edges of the disks are held down upon their plates by guides 46, and near said guides on each disk I provide a gear-ring 47, secured thereto and meshing with a pinion 48, provided on a shaft 49, mounted in suitable bearings in a bracket 50. Each shaft is provided with a sprocket 51, and the shaft of the upper disk has a driven pulley 52, by means of which the disks are driven from a suitable
 60 source of power. Idle sprockets 53 are provided on the cross-bars 4, and a chain belt 54

connects said idle sprockets and the sprocket 51, whereby all the said disks will be driven simultaneously.

In front of the machine I provide two up-
 70 right spouts 55 and 56, the former for the wheat and the latter for the oats. The spout 55 has a series of holes 57 in its wall next to the machine, and shallow pans or spouts 58 are provided beneath the backing-plates, hav-
 75 ing their lower ends in the openings 57 and provided with enlarged or expanded upper portions 59, that correspond substantially to the shape of the discharge-openings in the backing-plates and are arranged beneath the
 80 same to receive the wheat as it falls from the pockets. The other spout 56 is also provided with openings in its wall next to the machine, one for each disk, and short spouts 60 are provided in the guard-plates on the down side
 85 of the disks and are adapted to receive the oats or larger grains and direct them into their separate spouts.

In operation the mixture of wheat and oats, generally known as "succotash," or whatever
 90 mixture of different-sized grains or particles of material it is desired to separate is placed in the receiving-spout at the back of the machine or is allowed to feed therein from a bin. The grain upon entering this spout will
 95 flow into the hoppers of the respective disks and as soon as the hopper-doors are opened will flow in a thin sheet out of the hoppers upon the revolving disks, which have been set in motion at the desired speed before the
 100 opening of the hoppers. As the mixture of different-sized kernels of grain falls upon the disks the short kernels will drop in the pockets and the longer kernels, being held flatwise by the pressure of the canvas apron, will
 105 be carried along on the surface of the disks until reaching the point where they are free from the pressure of the apron, and will slide down to the lower edge of the disks and out of their respective spouts. The shorter kernels
 110 of grain, such as wheat, having lodged in the little pockets formed by the stationary plates and the revolving disks, will be carried toward the up side of the disks to the discharge-openings. As the disks pass under the grav-
 115 ity-held plates any kernels of oats or of the longer grains that happen to be tilted into the pockets and project out of the same will be scraped out and allowed to slide down and mingle with the other grain of similar nature.
 120 As the disks pass under the revolving brushes the pockets will be effectually cleared of all the short kernels, which, dropping into the pans beneath, will slide down to the spout provided for their reception.

The separation above described corresponds to that set forth in my application above referred to, except as regards some of the details of the mechanism for effecting the same, and the operation of the disks corre-
 125 sponds to the operation of the one described in my prior application, except that in this

case the disks are driven from their circumference and are arranged in series.

I claim as my invention—

1. The combination, with a stationary inflexible plate or member arranged at an incline, of a revolving disk resting thereon and having a close grain and dirt tight joint therewith, said disk having a series of perforations forming with said plate a series of little pockets wherein the fine material falls and is carried over said plate, and means for adjusting said plate and disk to vary their pitch or inclination.

2. The combination, with a series of inclined plates, of disks resting thereon, means for revolving said disks simultaneously, each of said disks having a series of perforations forming with their plates a series of pockets, hoppers provided above said disks, and a spout common to all of said hoppers and having suitable connections respectively therewith, substantially as described.

3. The combination, with a stationary inflexible plate arranged at an incline, of a revolving disk resting thereon and forming a close joint therewith, said disk having a series of perforations forming with said plate a series of little pockets, a hopper having an imperforate bottom provided over said disk, and an adjustable gate device provided on said hopper and adapted to deliver the grain therefrom in a thin sheet upon said disk.

4. The combination, with a suitable frame, of a series of inclined backing-plates pivotally supported on one side therein, means for vertically adjusting the opposite side of said plates to vary their pitch or inclination, revolving disks resting upon said plates, said disks having a series of perforations forming with said plates little pockets or receptacles, and suitable hoppers wherefrom the grain is discharged in a thin sheet upon said disks, substantially as described.

5. The combination, with an inclined plate, of a revolving disk thereon, said disk having a series of perforations forming with said plate a series of pockets, a stud centrally connecting said plate and disk, a gear-ring provided near the circumference of said disk, and a driven pinion meshing with said ring, whereby said disk is revolved, substantially as described.

6. The combination, with an inclined backing-plate having a discharge hole or opening in its up side, of a disk centrally mounted on said plate and forming a close grain and dirt tight joint therewith, said disk having a series of perforations forming a series of pockets with said plate, a hopper provided above the down side of said disk wherefrom the grain is delivered in a thin sheet, a gear-ring secured to said disk near its circumference, and means for driving said ring.

7. The combination, with a series of inclined backing-plates arranged one above the other and suitably spaced in their up sides and provided with discharge-openings, of perforated disks resting upon said plates and

forming close joints therewith, the perforations in said disks forming pockets with said plates wherein the short kernels of grain fall, hoppers provided above said disks, gear-rings near the circumference of said disks, means for driving said rings and disks, spouts near the down side of said disks to receive the longer grains, and pans provided beneath said discharge-openings to receive the shorter grains that fall from said pockets, substantially as described.

8. The combination, with an inclined backing-plate having a discharge-opening in its upside, of a disk resting upon said plate and having a series of perforations forming pockets therewith, means for revolving said disk, and a brush device provided above said disk and discharge-opening, substantially as described and for the purpose specified.

9. The combination, with an inclined backing-plate having a discharge-opening in its upside, of a disk resting upon said plate and forming a close grain-tight joint therewith, said disk having a series of perforations forming pockets with said plate, means for revolving said disk, and a revolving brush provided above said discharge-opening and disk and driven by frictional contact with the latter, substantially as described and for the purpose specified.

10. The combination, with an inclined backing-plate having a discharge-opening in its upside, of a revolving disk mounted on said plate and having a series of perforations forming pockets therewith, means for revolving said disk, and plates provided on the upside and having their lower edges in gravity-held contact therewith, substantially as described and for the purpose specified.

11. The combination, with an inclined backing-plate having a discharge-opening in its up side, of a disk resting on said plate and having a series of holes or perforations forming pockets therewith, means for revolving said disk, means for delivering grain in a thin sheet on the down side thereof, scraper-plates provided on the upside of said disk and having their edges in gravity-held contact therewith, and a revolving brush provided above said discharge-opening and disk and driven by frictional contact with the latter, substantially as described.

12. A separator, comprising an inclined normally stationary plate of inflexible material having a flat surface, in combination with a perforated disk movable over said plate and having a close joint therewith, the perforations in said disk forming with said plate a series of little pockets wherein the fine material falls and is carried over said stationary plate, means provided near the outer edge of said disk for driving the same, and means for adjusting said plate and disk to alter their pitch or inclination.

13. A separator, comprising an inclined normally stationary plate of inflexible material having a flat surface, in combination with a

perforated disk revoluble over said plate and
having a close joint therewith, the perfora-
tions in said disk forming with said plate a
series of little pockets, means for delivering
5 the material in a thin sheet upon the down
side of said disk and a circumferential driv-
ing means for said disk.

In witness whereof I have hereunto set my
hand this 15th day of August, 1901.

CHARLES H. SCOTT.

In presence of—

RICHARD PAUL,
M. F. GOOLEY.