

(No Model.)

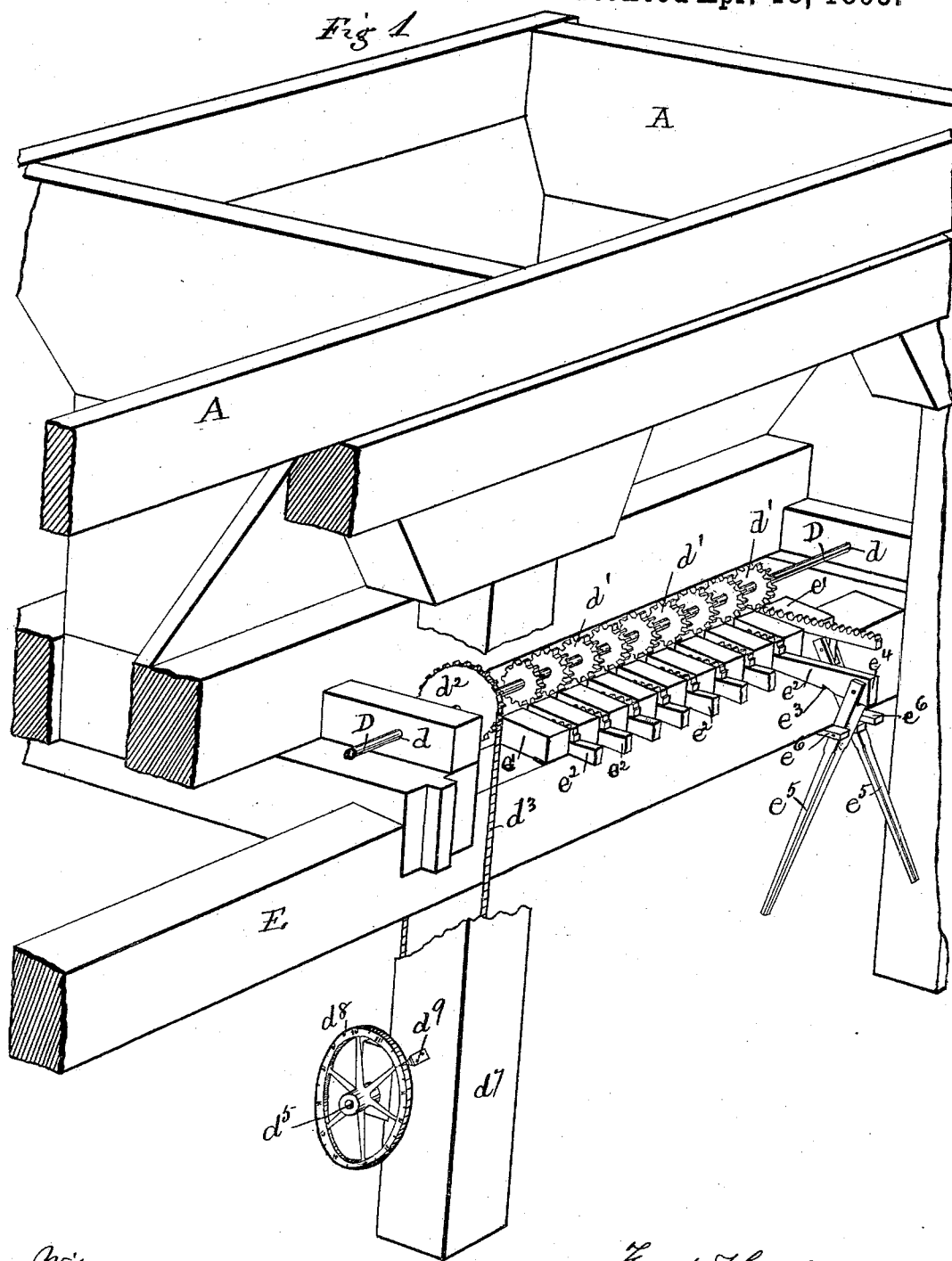
3 Sheets—Sheet 1.

F. KAUCHER.
DEVICE FOR MIXING GRAIN.

No. 495,590.

Patented Apr. 18, 1893.

Fig 1



Witnesses
Theo. Munger
A. Coughlinbaugh.

Frank Kaucher,
Inventor.
John J. Walcott & Son,
his Attys

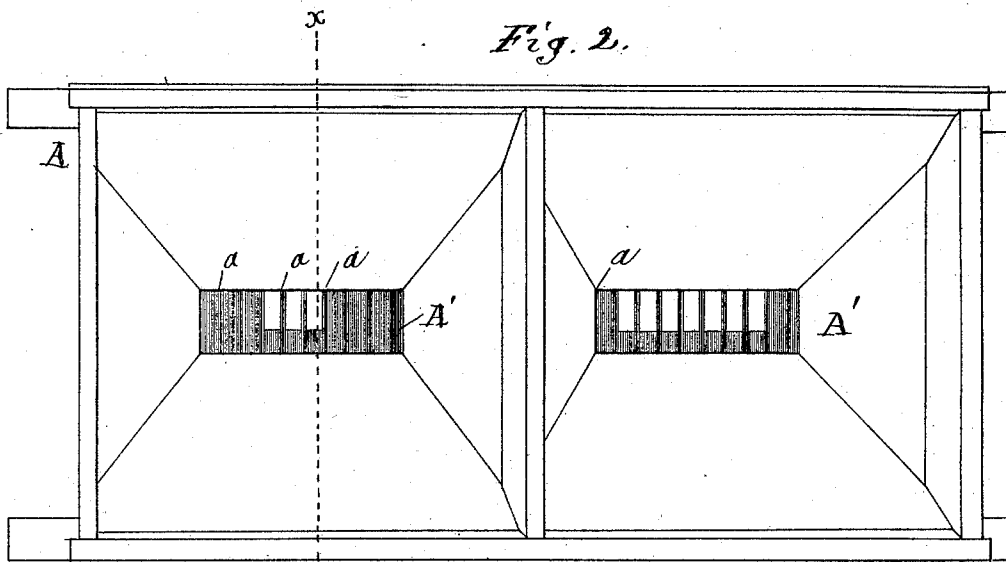
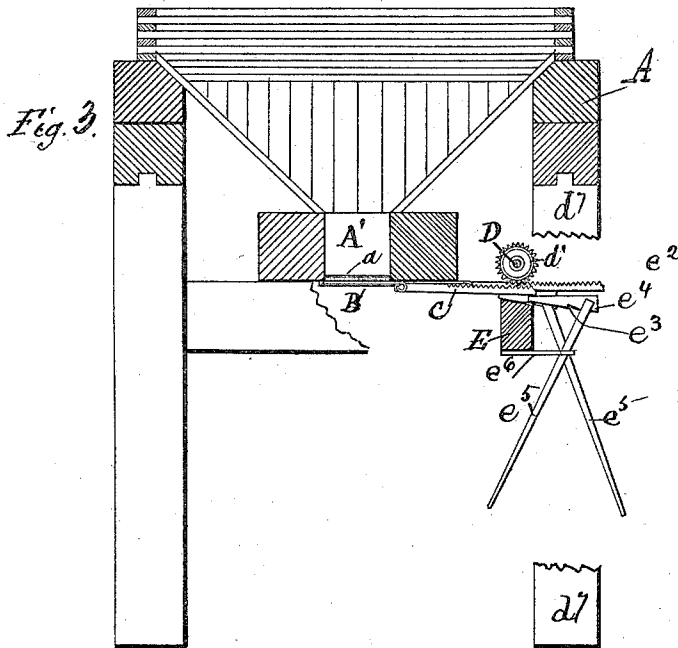
(No Model.)

3 Sheets—Sheet 2.

F. KAUCHER.
DEVICE FOR MIXING GRAIN.

No. 495,590.

Patented Apr. 18, 1893.



Witnesses
Theo. Mungen
A. Coughlinbaugh.

Frank Kaucher
Inventor
By John J. Halsted for
his Attys

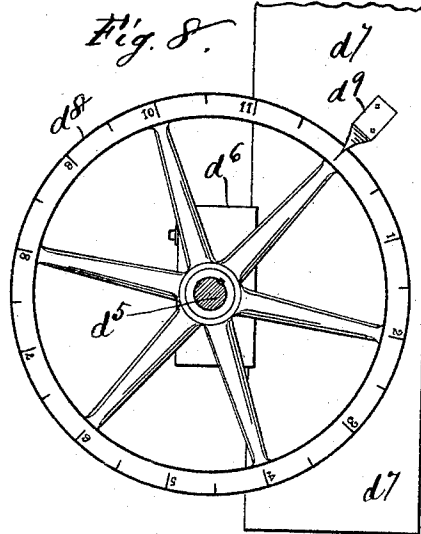
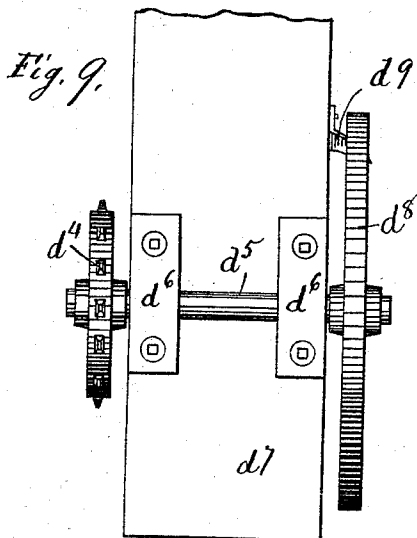
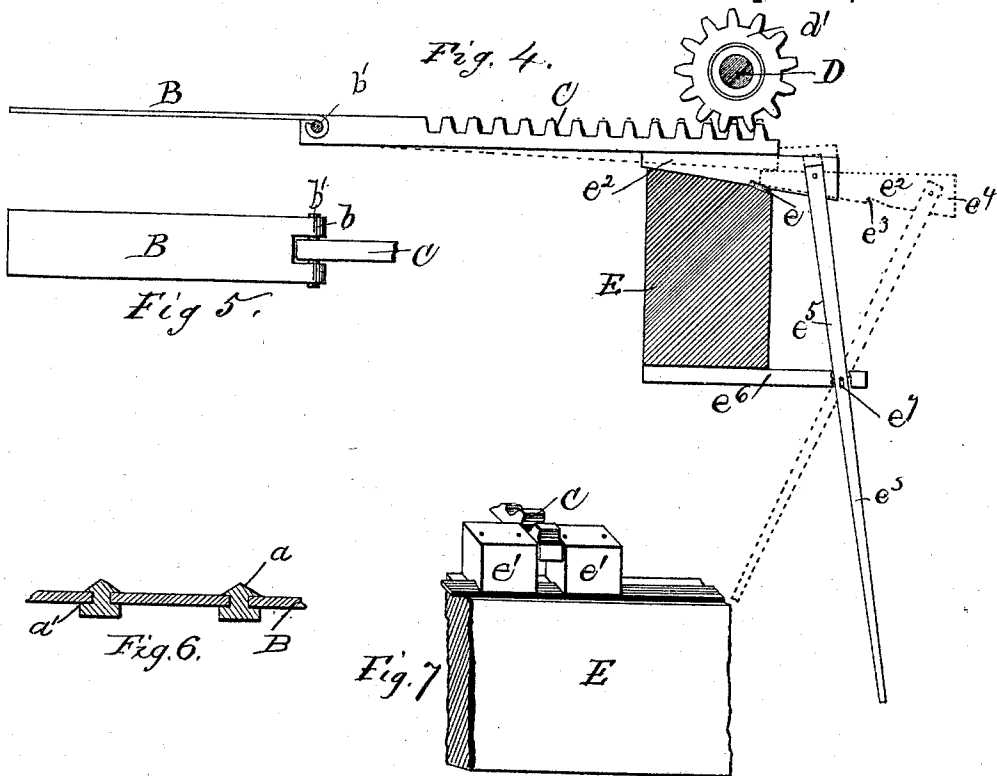
(No Model.)

3 Sheets—Sheet 3.

F. KAUCHER.
DEVICE FOR MIXING GRAIN.

No. 495,590.

Patented Apr. 18, 1893.



Witnesses
Theo. Mungen.
A. Coughenbaugh.

Frank Kaucher, Inventor.
By John J. Halsted, for
his atty's

UNITED STATES PATENT OFFICE.

FRANK KAUCHER, OF ST. JOSEPH, MISSOURI.

DEVICE FOR MIXING GRAIN.

SPECIFICATION forming part of Letters Patent No. 495,590, dated April 18, 1893.

Application filed July 1, 1892. Serial No. 438,718. (No model.)

To all whom it may concern:

Be it known that I, FRANK KAUCHER, of the city of St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Devices for Mixing Grain; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of devices used in grain elevators, for mixing different kinds of grain, including all kinds of cereals.

The main object of my invention is to provide a device easily applicable to all kinds of grain elevators now in use, or hereafter constructed, in which bins or grain tanks are used for the purpose of mixing various grades of grain; which device will be strong, simple in construction and operation, durable, cheap and effective, in simultaneously discharging from each of the various bins to which it is attached and without variation, the exact proportion of each grade of grain required by the operator.

Hitherto, all mixing bins, so far as I know, have been and are constructed and combined in pairs, or such number as may be required. The bottom of each of such bins, has so far been provided with a single slide or valve, for opening and shutting the same, which slide or valve is operated entirely by hand, without any means of exactly gaging the proportions to be discharged from each bin. In my device I remedy these defects so that there may be discharged from each bin used, say up to ten in number, and at the same time, the exact percentage of grain required from each bin to constitute the required grade, or product, and so that the combination may be changed, or all, or any portion thereof shut off, without in any manner deranging or affecting the operation of mixing.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the drawings: it being noted that the following specification

as to one bin, is to apply to any number of bins.

Figure 1. is a perspective view of one of a series of bins with my novel mixing device applied thereto, a part of one of the supports thereto being broken away so as to show the sprocket wheel and chain, by means of which said device is actuated. Fig. 2. is a top view of two mixing bins showing the position of slides and slide bars in the bottom thereof, part of which are partially open, and the remainder closed. Fig. 3. is a sectional view through the line X. Y. in Fig. 2. and shows more clearly my devices in position for operation, one of the racks being shown in gear with its pinion, and the other one shown out of gear. Fig. 4. is an enlarged sectional detail view showing the mechanism of one of the valves or slides with its actuating rack and pinion, key, and lever. The dotted lines in said figure show the position of the various parts when out of gear, as hereinafter described. Fig. 5. is a top view of one of my slides or valves, showing in enlarged detail, the mode of connecting the valve or slide with its rack. Fig. 6. is a sectional view showing the construction of grooved slide bars, and the bearings of the slides therein. Fig. 7. is an enlarged detail view of part of Fig. 1. showing the guide blocks, and position therein of the racks. Figs. 8 and 9. are respectively, side and back detail views of the dial wheel and lower sprocket wheel.

In the drawings, A. represents a solid frame work including and constituting one of the grain bins, with my improved mixing attachment. The bottom of said bin terminates in an oblong opening A' (see Figs. 2 and 3.) of any required dimensions. This bottom or opening A' is provided with nine transverse guide-bars or ways *a*, the opposite side of each of said guides being grooved as shown at *a'* in Fig. 6, to form a bearing or support for the slides or valves hereinafter described, and the upper part of each of said bars being beveled or inclined at opposite sides as shown, such bevells meeting at about a right angle, so as to prevent the accumulation of grain thereon. Said bars *a*. divide the bottom of said bin into nine equal openings, constituting practically a grating, and are constructed

of metal, or other suitable material, and let into the bottom of said bin, and firmly secured by screws or bolts.

B. represents one of the series of slides or valves constructed of metal, adapted to enter and engage the grooves a' in the bars a , and move easily therein. One end of said slides B. is bifurcated, the two branches being formed into eyes or scrolls b , which form sockets or bearings for a pivot or pin b' , by means of which the slide or valve B. is connected with a rack C, the said pivot b' being fixedly attached to and through the end of said rack C, and revolubly working in the sockets b .

The bin A. is provided with nine slides B. and their connecting and actuating racks C, so that as many of the openings in the bottom A' of the bin as desired may be opened or closed, by means of the slides B. and the racks C.

D. is a pinion shaft working in bearings d , at each end thereof and provided with nine pinions d' adapted to mesh with and engage the cogs of the racks C, whenever the same are thrown in gear, in the manner and by means hereinafter described. The pinion shaft D. is operated by means of sprocket wheel d^2 attached thereto near one end thereof. The wheel d^2 is actuated by a sprocket chain d^3 passing over the same and around and under another sprocket wheel d^4 (see Fig. 9.), a shaft d^5 working in block bearings d^6 , attached to a support d^7 of the bin A, and a dial wheel d^8 is provided with a pointer d^9 attached to the upright support d^7 , by means of which, and the indicating figures on the face of said wheel d^8 , the pinions d' on the pinion shaft D, may be turned either forward or backward, to any degree of a circumference that may be desired; a complete revolution of said dial wheel d^8 either opening or closing fully, the slides B in the guide bars a , as hereinafter described.

E is a beam forming also a part of the frame work of bin A, the upper surface of which is beveled as shown from the front thereof upward, preferably at an angle of about nine degrees from the horizontal.

A latch or lock-plate e , preferably of metal, one and one-half inches in width and one-eighth of an inch in thickness is provided, and fixedly attached to the upper and along the front part of the beam E, in such manner that the front edge of said plate e shall be about flush with the front upper corner of said beam E. Over the said latch e , are fitted and fixedly attached to said beam E, ten guide blocks e' constructed of wood, preferably three and one-fourth inches wide, two and one-half inches in height and extending across the thickness of said beam E, and said blocks are set at such distances apart, as to permit free passage between them, of the racks C, to which they serve as guides. Nine keys e^2 are provided, the office of which is to throw in and out of gear, the racks C, with the pinions d' . Said keys are

so constructed that the under sides thereof shall constitute the same angle from a horizontal, as that formed by the upper surface of the beam E. Said keys e^2 are each provided with a nick or catch e^3 adapted to drop over the inner or near edge of the latch-plate e when thrown into action, and lock therewith, so as to prevent said keys e^2 from being forced outward. Said keys e^2 are pivotally attached at their outer ends e^4 to the short arms of levers e^5 , which said levers e^5 are in turn attached pivotally to and between a series of brackets e^6 ; said brackets e^6 may be constructed of any suitable material and are firmly attached by bolts to and across the under side of the beam E. Said levers e^5 are each provided with a slotted opening at their point of connection e^7 , with the brackets e^6 , so as to permit said levers, and with them the outer ends of the keys e^2 being raised the length of said slotted opening e^7 .

In Fig. 1. only two keys e^2 , the levers e^5 , and three of the brackets e^6 , are shown, the remaining seven being omitted to avoid confusion in the drawings and multiplicity of detail. It will of course be understood that each slide or valve has its own corresponding rack, key, and lever.

The method of operating my device is as follows; Any number of bins A. that may be desired, (preferably not exceeding ten in number, and provided with my novel devices,) are placed side by side, and connected with each other, by means of the pinion shaft D. extending to the length desired: each bin being fitted with the attachments above described and the whole series of pinions d' , being when in engagement with the racks C, operated by the dial wheel d^8 , the sprocket wheels d^2 and d^4 , and the sprocket chain d^3 . Those slides which are to determine the proportion of grain to be discharged from each bin, are then opened by the following means; the upper levers e^5 are thrown forward, forcing the keys e^2 under the racks C, lifting the same up and engaging or meshing them with the pinions d' : the nick or catch e^3 drops over the inner or back edge of the latch plate e , firmly holding in place the keys e^2 and forming a solid support for the racks C; the racks and slides thus engaged are then opened to any desired extent, by turning said dial wheel d^8 to the left. By turning said dial wheel d^8 to the right, all the racks in action are forced backward, closing their respective slides.

When it is desired to throw any rack or racks out of gear, its respective lever e^5 is raised the length of the slotted opening e^7 , disengaging the key e^2 from the latch-plate e : the lever e^5 is then thrown backward withdrawing the key e^2 , and the rack C drops out of mesh with the pinion d' , and rests between the guide blocks e' . By these means, the amount of grain desired to be discharged from each bin, may be instantly pre-determined, by withdrawing just as few or as many as required, of the slides B. from the bottom open-

ing A' of the respective bins. And it will be further observed that by a partial instead of a full withdrawing of any one or more of these slides, the quantity discharged from such portion of opening A', may be made proportionate to the degree to which such slide or slides shall have been withdrawn.

At the left hand side of Fig. 2. I have shown three of the slides partially withdrawn, and at the right hand side seven of them similarly withdrawn: and taking this as an illustration, the proportions of the grain passing through both these bins, to make a new mixed grade, would be seventy per cent. of one kind, to thirty per cent. of the other.

The office of the dial wheel is this: Suppose there are five bins, all connected by means of the pinion shaft D. (Fig. 1.), which shaft is operated as stated, by the sprocket wheels, chain and dial wheel. The valves or slides being all pushed back and their racks out of gear, and the bottoms of the bins all closed as indicated by the ungeared rack, the left hand lever e^5 and its key e^3 (in Fig. 3.), the operator now throws into gear as many racks from each bin as desired, and then by turning the dial to the left, opens at once all the slides that are in gear; and to exactly the same extent. One revolution of the dial wheel completely opens the slides; the intermediate degrees of opening being determined by the figures on the front of the dial wheel, as they pass under the pointer. When a change of proportions is required, the slides may all be thrown in by reversing the dial wheel, a new combination made, and the slides again thrown open.

I make no claim to the bin A, nor to its manner of construction; nor to the arrangement of two or more bins; as I am aware that such bins are in common use: but

What I do claim is—

1. In a grain-mixing bin, a set of grooved guide bars in the bottom of the same, a set of adjustable slides fitting in said bars, serving

jointly to divide the outlet mouth into openings of uniform size, a set of levers one for each slide, and intermediate connections between each lever and its slide, whereby each and any of the slides may be closed or opened at will, and for the purpose set forth.

2. In a mixing bin, the grooved bars dividing the bottom into two or more equal openings, and the slides or valves, in combination with the racks C, the latch-plates e , the keys e^2 each with a nick or catch therein, and the slotted levers pivotally connected with said keys, and supported between brackets, as and for the purpose described,

3. In a mixing bin, the guide bars a secured to the bottom of said bin, having their upper surfaces double-beveled as set forth, the said bars serving to divide the bottom into two or more openings; slides B adapted to engage with and move in the grooves of said bars; the racks C, the latch-plate e , and the keys e^2 , and levers e^3 , in combination with the pinion shaft D and its pinions d' , and with means for actuating the said shaft, substantially as and for the purpose set forth.

4. In a mixing bin, the combination of the grooved bars, slides, racks, levers, keys, and latch-plate, in combination with the pinion shaft, pinions, and guide blocks, the sprocket wheels d^2 and d^4 and pointer d^5 , d^6 , and the sprocket chain d^3 , substantially as and for the purposes set forth.

5. In combination, two or more bins, provided with the described devices, consisting of the grooved bars, slides and racks; keys, levers, and brackets; single pinion shaft for all the bins, pinions, and guide blocks, latch-plate and sprocket wheels, chain and dial wheel, all combined and operating, substantially as and for the purposes set forth.

FRANK KAUCHER.

Witnesses:

FRANK HINDS,

S. R. LANCASTER.