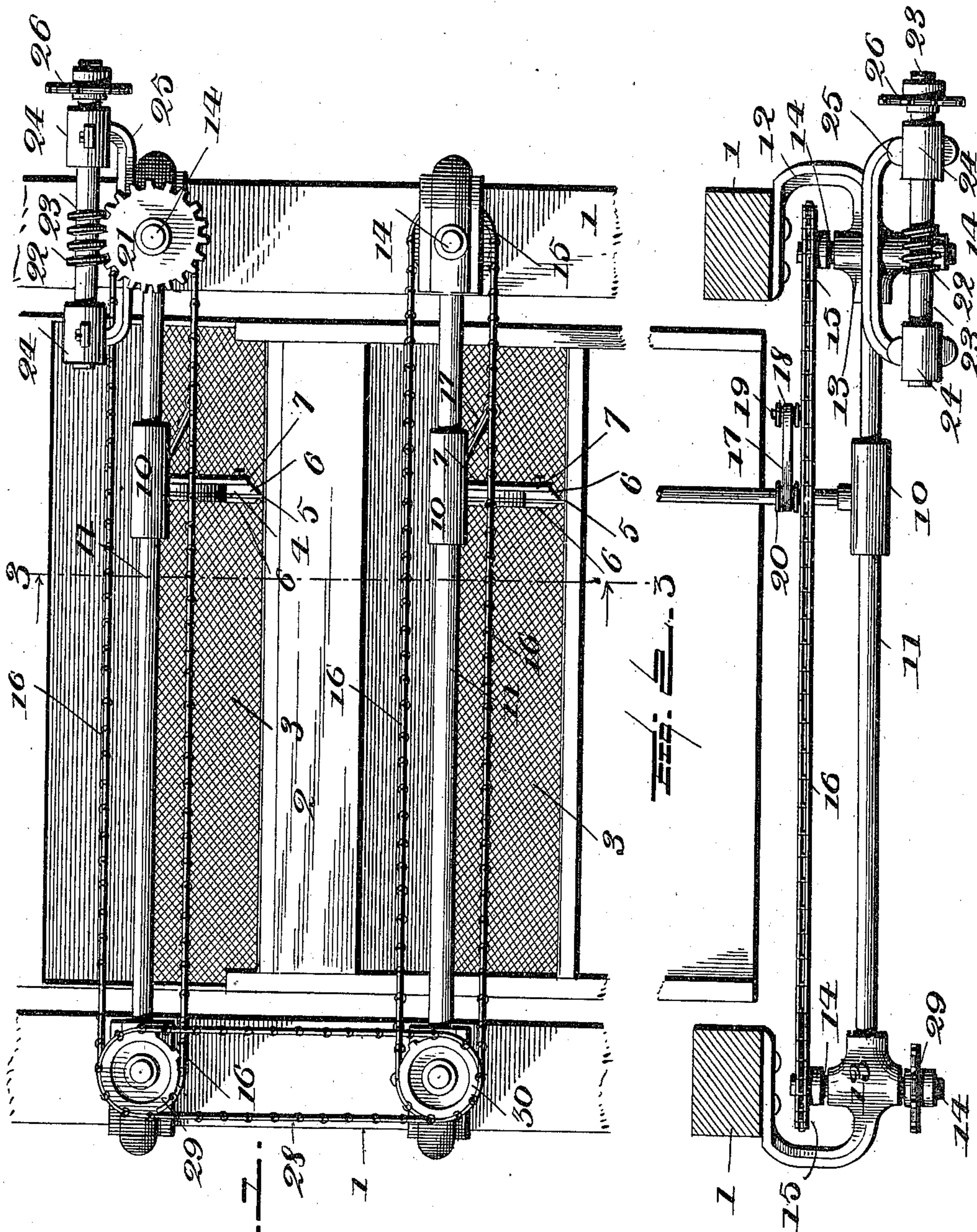


F. PRINZ.
CLEANING ATTACHMENT FOR GRAIN SEPARATORS.
APPLICATION FILED JULY 10, 1899.

975,995.

Patented Nov. 15, 1910.

2 SHEETS-SHEET 1.



Witnesses
L. C. Hills.
H. R. Taylor.

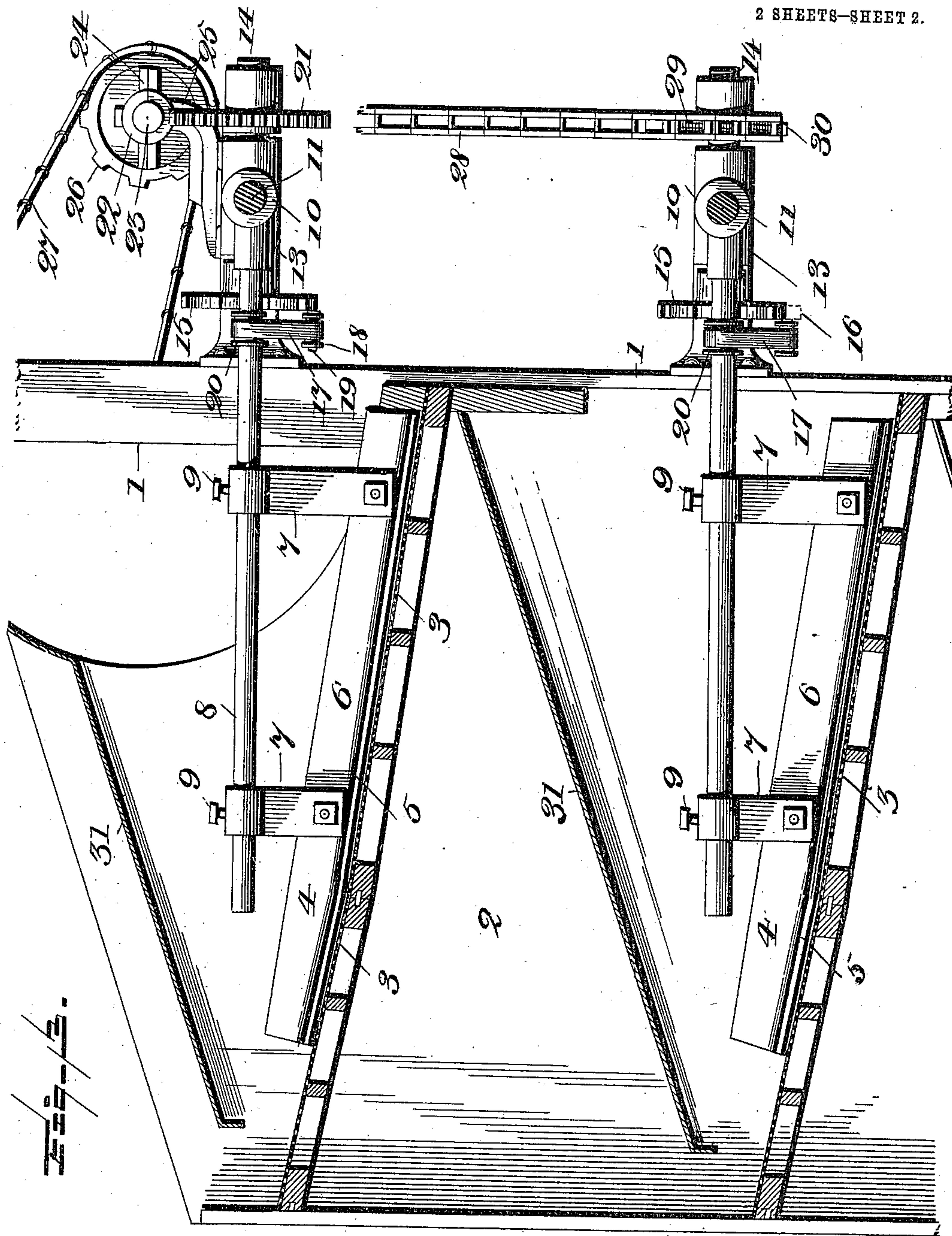
Inventor
F. Prinz.
H. R. Taylor.
Attorney

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 W. R. Taylor.

Inventor
 Franklin Prinz.
 By *[Signature]*
 Attorney

UNITED STATES PATENT OFFICE.

FAUSTIN PRINZ, OF MILWAUKEE, WISCONSIN.

CLEANING ATTACHMENT FOR GRAIN-SEPARATORS.

975,995.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed July 10, 1899. Serial No. 723,363.

To all whom it may concern:

Be it known that I, FAUSTIN PRINZ, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Cleaning Attachments for Grain-Separators; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to grain cleaning machines, and it has for its object to provide an attachment for the purpose of keeping clean the sieves of the machine, which attachment shall be efficient and durable and of comparative simplicity.

The attachment comprises generally a scraper or rubber which shall traverse back and forth over the screen to keep the meshes of the screen open, thus facilitating the cleaning of the grain as it moves over the screen surface, the movement of the grain being imparted thereto by the movement of the screen or otherwise.

The attachment is adapted to operate on a single screen, or upon each of a series of screens.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, the invention consists in the construction and also in the combination of parts hereinafter particularly described and then sought to be clearly defined by the claims, reference being had to the accompanying drawings forming a part hereof and in which,

Figure 1 is a side elevation of so much of a grain separator as is necessary to illustrate my invention. Fig. 2 is a plan view of a portion of the machine illustrated in Fig. 1, and Fig. 3 is a vertical section on line 3—3 of Fig. 1 looking in the direction of the arrows.

In the accompanying drawings the numeral 1 designates the posts or frame of the machine in which is suspended so as to vibrate a shoe 2 which contains one or more

screens or sieves 3, which shoe and screens may be of any approved pattern and which may be vibrated by any of the well known means common for the purpose.

The scraper or rubber for keeping clear the meshes of the sieve or screen comprises what for convenience I will designate as a blade 4 carrying a flexible strip 5 which may be of rubber or other suitable material fitting between the two strips 6 of the blade, which strips may be of wood and between which the flexible strip 5 will be clamped by screws or other means securing the two wooden strips and the flexible strip together, the flexible strip projecting below the lower edge of the blade 5 so as to contact with the surface of the screen as the blade is moved back and forth over the screen surface in order to clear the meshes of the screen and thus keep the same in proper condition for the efficient screening and cleaning of the grain which travels over the surface of the screen. The blade 5 is suspended by means of hangers 7 from a rod 8 which extends over the surface of the screen, the hangers being secured to the rod by means of set-screws 9 so as to hold the hangers to the position to which they are adjusted on said rod to bring the scraper blades to the position desired immediately above or over the surface of the screen. The rod 8 is connected at one end to a sleeve 10 which encircles a rod or rail 11 so as to be moved back and forth along said rail and thus cause the scraper blades to travel back and forth over the surface of the screen, the arrangement being such that the scraper blade will travel in the direction of the endwise movement or vibration of the screen. The rail 11 will be round in cross-section so that the scraper-blade carrying-arm or rod 8 will swing from the rail thus permitting the scraper to rest upon the screen so that its heft or weight will be thrown thereon thus giving better results in the cleaning of the screen, although any other suitable construction for effecting that purpose may be employed. The rail 11 at its opposite ends is supported in suitable brackets which in the form illustrated are curved so that they may have hubs 13 in which are journaled the shafts 14 of the sprocket wheels 15, the

brackets being bolted to the uprights or posts 1 of the frame, and when so formed and placed the sprocket wheels 15 will lie between the hubs of the brackets and said posts. A sprocket chain 16 extends from one sprocket wheel to the other wheel and said chain has the scraper-blade carrying-arm or rod 8 connected thereto so that as the sprocket chain travels it will move the said rod or arm and its scraper or rubber back and forth over the surface of the screen. For the purpose of connecting the scraper carrying rod or arm 8 to the chain, I have illustrated a flexible strap 17, which may be of leather or other suitable material, connected at one end to a sheave or thimble 18 on a spindle 19 riveted or otherwise secured to one link of the chain, the other end of the flexible strap being connected to the arm or rod 8 either directly or by means of a thimble or sleeve 20, the connection of the two ends of the flexible strap to said parts being such that the strap may readily turn when passing from one plane to another as the chain travels around the sprocket wheels. Under this construction when the scraper blade carrying-arm reaches the end of its movement in one direction and the portion of the chain having the flexible strap connected thereto passes say from its lower plane around the sprocket wheel and to its upper plane, the flexible strap will be turned or shifted in place so that as the chain continues in its travel the flexible strap will pull said arm or rod in the opposite direction and thus carry the scraper blade to the opposite end of the screen and thence back again as the chain and the flexible strap turn around the sprocket wheel at the opposite end of the machine. In this way the scraper blade is carried back and forth by the chain, and the flexible strip to the scraper blade rubbing over the surface of the screen will clear the meshes of the screen of any material that otherwise might lie in the meshes and thus the screen is kept clean. The shaft 14 of one of the sprocket wheels 15 carries at its outer end a toothed wheel 21 with which meshes a worm 22 on a shaft 23 which is journaled in boxes 24 supported upon arms 25 supported by the box 13 of the bracket 12, the shaft 23 having a sprocket wheel 26 at its end from which extends a chain 27 to a source from which it derives motion so that through the parts mentioned the sprocket wheel 15 may be revolved so as to actuate the carrying chain 16 which carries the scraper or rubber back and forth over the screen.

In the event that a second screen is used in the vibrating shoe, said sieve is provided with a traveling scraper or rubber formed and operated in the same manner as the corresponding parts for the first sieve just de-

scribed in detail, motion being transmitted to the carrying chain 16 of the second sieve by means of a chain 28 which is driven from a sprocket wheel 29 mounted on the outer end of the shaft 14 of the sprocket wheel 15, said chain passing around a sprocket wheel 30 on the outer end of the shaft of one of the sprocket wheels for the carrier chain 16 of the second or lower sieve. If a third sieve should be employed the construction and arrangement of the parts would be the same as already described it only being necessary to add another sprocket wheel to one of the shafts 14 so as to transmit motion from the sprocket wheel shaft of the second sieve to the sprocket wheel shaft of the third sieve and so on according to the number of sieves used in the shoe as will be clearly understood by those skilled in the art. It will thus be seen that where a series of screens are employed in the vibrating shoe, each sieve or screen will be provided with a scraper or rubber formed and operated in the same manner as the corresponding parts for the single or top sieve, the brackets and sprocket wheels being the same for each sieve with the single exception that to one of the sprocket wheel shafts of the first sieve is applied the toothed wheel and the worm wheel already described for the first sieve, such parts not being necessary for the other sieves as the motion to the additional sieves of the series is transmitted from the top sieve and so on to the succeeding sieves through the transmitting power chains already described.

The inclined boards 31 are the ordinary boards for delivering the material to the upper end of each sieve as it is received from the hopper or delivered from the tail end of one sieve for transmission to the head end of the sieve next below.

Under the construction and arrangement of parts illustrated and described a very durable and comparatively simple arrangement is provided for the purpose of moving the scrapers or rubbers over the sieves, and while I prefer such construction and arrangement of parts and desire to claim the same herein, still I do not wish to be understood as limiting myself thereto so far as other features of the invention are concerned. By providing a construction and arrangement by which the scraper or rubber blades may be moved back and forth over the surface of the screen for cleaning grain and also in which the heft or weight of the scraper is thrown upon the surface of the screen a better cleaning action is obtained than otherwise would be the case and so far as this feature of the invention is concerned I am not confined to any particular means for moving the scrapers back and forth over the screen.

I have illustrated and described what I consider to be the best form and arrangement of the several parts but it is obvious that changes can be made without departing from the essential features of the invention.

It will be observed that the scraper has a swinging movement in a vertical direction and that the flexible strip constituting its lower edge yields in a lateral direction, so that the scraper swings vertically and at the same time yields laterally, and at the same time the scraper is supported from the sieve surface thereby throwing the heft of the scraper upon the screen. The advantage of this is that injury to and destruction of the screen is prevented because the vertical swing and lateral yield of the scraper will cause the scraper to move over and past the grains, nails, bolts, or other foreign substances that may lodge in the meshes of the screen while exerting a sufficient pull on the grains to loosen them in the screen meshes thus preparing them to be removed by the succeeding sweep of the scraper, the pull on the grains being increased by the heft of the scraper. If the flexible edge were not provided the stiffness of the scraper would tend to force the wedged grains, and if nails be lodged in the sieve meshes, the screen or the scraper, or both, would be injured, and if the flexible edge be employed without the weight or heft of the scraper being thrown upon the screen through the flexible edge which constitutes a support for the scraper from the screen surface the pressure would not be sufficient to efficiently loosen and remove the grains wedged in the meshes of the screen. It will thus be apparent that a scraper is produced having functions and capable of efficient action not found in a scraper having only one of the features specified.

Having thus described the invention and set forth its merits, what I claim is:—

1. In a grain separator, the combination with a sieve, of an attachment for cleaning the sieve comprising a rail, a swinging scraper blade or rubber slidably connected with said rail and having a pivotal connection therewith upon which it is free to swing as a center, a flexible strip projecting from the lower edge of said blade and receiving and supporting the weight of the blade upon the screen whereby the friction and pulling action of the flexible strip against the screen will be increased, a sprocket chain, a flexible connection between said chain and scraper blade or rubber, and means for operating the chain to move the scraper back and forth over the sieve surface, substantially as described.

2. In a grain separator, the combination with a sieve, of an attachment for cleaning the sieve comprising a rail, an arm movable

along said rail and overhanging the sieve at a distance above the sieve, said arm having a pivotal connection at its end next to said rail whereon it may swing as a center, a scraper or rubber depending from said arm, sprocket wheels arranged opposite to each other, a sprocket chain extending from one wheel to the other, means connecting said chain and said arm, and means for operating the chain to move the scraper or rubber back and forth over the sieve, substantially as described.

3. In a grain separator, the combination with a sieve, of an attachment for cleaning the sieve comprising a rail, an arm overhanging the sieve and having a sliding and swinging connection with the rail and carrying a scraper in contact with the sieve, sprocket wheels arranged opposite to each other, a sprocket chain extending from one wheel to the other, a spindle secured to the sprocket chain, and a flexible member connecting said spindle and the overhanging scraper arm, said member having a loose turning connection with both the spindle and arm, substantially as described.

4. In a grain separator, the combination with a sieve, of an attachment for cleaning the sieve comprising a rail, an arm movable along said rail and carrying a scraper or rubber, said arm having a pivotal connection with said rail whereon the arm may swing as a center, brackets supporting sprocket wheels arranged opposite to each other, the shaft of one of said sprocket wheels carrying a toothed wheel, a sprocket chain extending from one sprocket wheel to the other, a strap connecting said chain and said arm, a worm wheel meshing with said toothed wheel, and means for rotating said worm wheel, substantially as described.

5. In a grain separator, the combination with a sieve, of an attachment for cleaning the sieve comprising a rail, an arm movable along said rail and carrying a scraper or rubber, said arm having a pivotal connection with said rail whereon the arm may swing as a center, brackets supporting sprocket wheels arranged opposite to each other, the shaft of one of said sprocket wheels carrying a toothed wheel, a sprocket chain extending from one sprocket wheel to the other, a strap connecting said chain and said arm, an arm supported from one of said brackets, a worm wheel journaled in said arm and meshing with said toothed wheel, and means for rotating said worm wheel, substantially as described.

6. In a grain separator containing a number of sieves, an attachment for cleaning each sieve comprising a rail, an arm movable along said rail and extending over the sieve, and carrying a scraper or rubber between it and the sieve, said arm having a

pivotal connection with said rail whereon the arm may swing as a center, a sprocket chain, means connecting said chain and arm for moving the scraper or rubber back and forth in the travel of the chain, and means for transmitting power from the cleaning attachment of one sieve to the cleaning attachment of another sieve, substantially as described.

7. In a grain separator containing a number of sieves, an attachment for cleaning each sieve comprising oppositely arranged brackets, a sprocket wheel supported from each bracket, the shafts of one set of sprocket wheels having sprocket wheels connected to their outer ends so as to lie one in a higher plane than the other, a chain connecting said last mentioned sprocket wheels, chains connecting the other sprocket wheels, one for each sieve, a rail extending along

each sieve, an arm extending from each of said rails and having a sliding connection therewith and carrying a scraper or rubber between it and the sieve and extending across the sieve surface, each arm having a pivotal connection with its respective rail whereon it may turn as a center, and means connecting each arm with its appropriate chain, whereby in the travel of the chains the scrapers will be moved back and forth over the sieves and motion will be transmitted through the attachment of one sieve to the cleaning attachment of another sieve, substantially as described.

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

FAUSTIN PRINZ.

Witnesses:

WM. F. FILTER,

ROBT. W. HAMBURG.