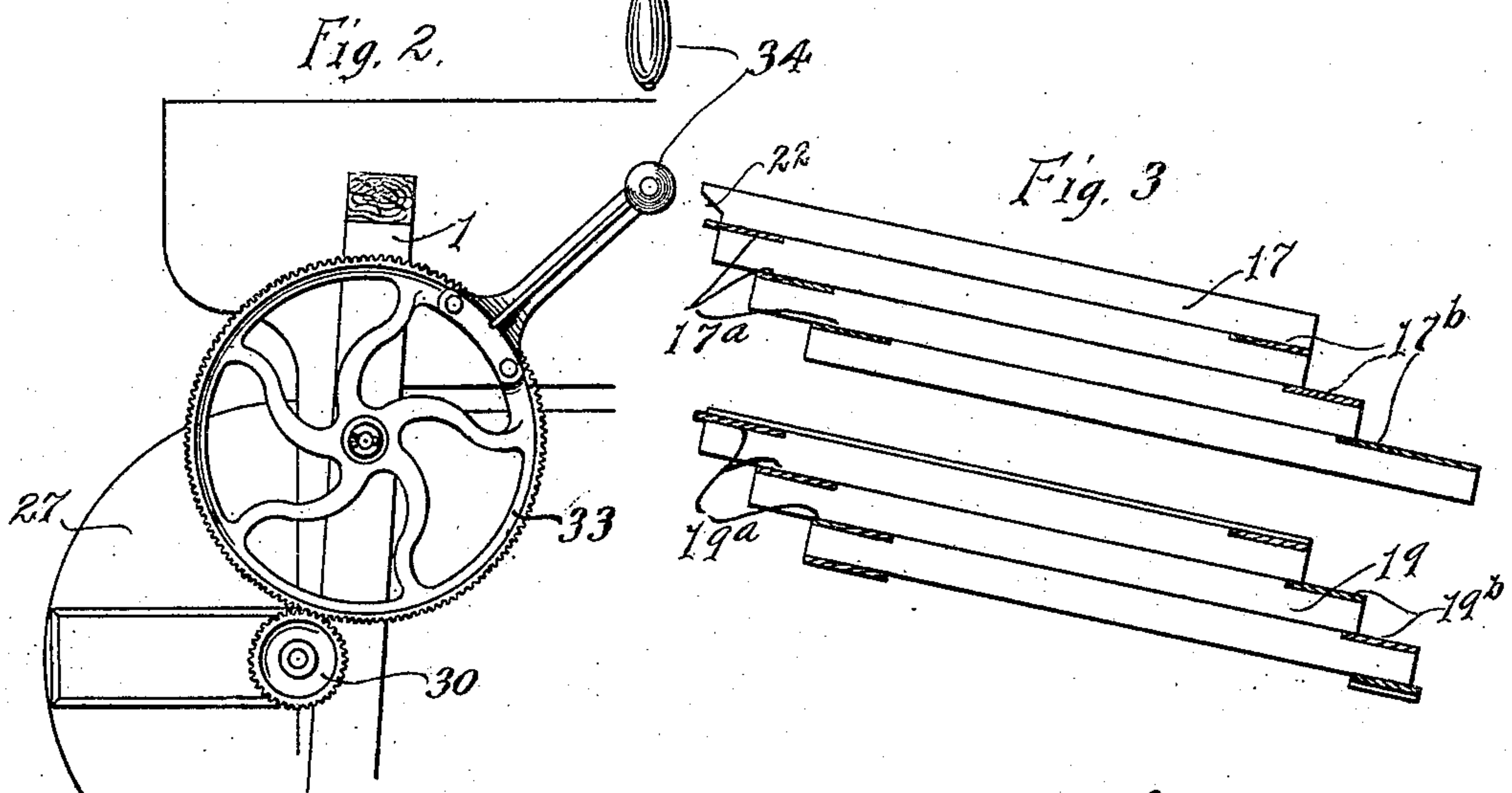
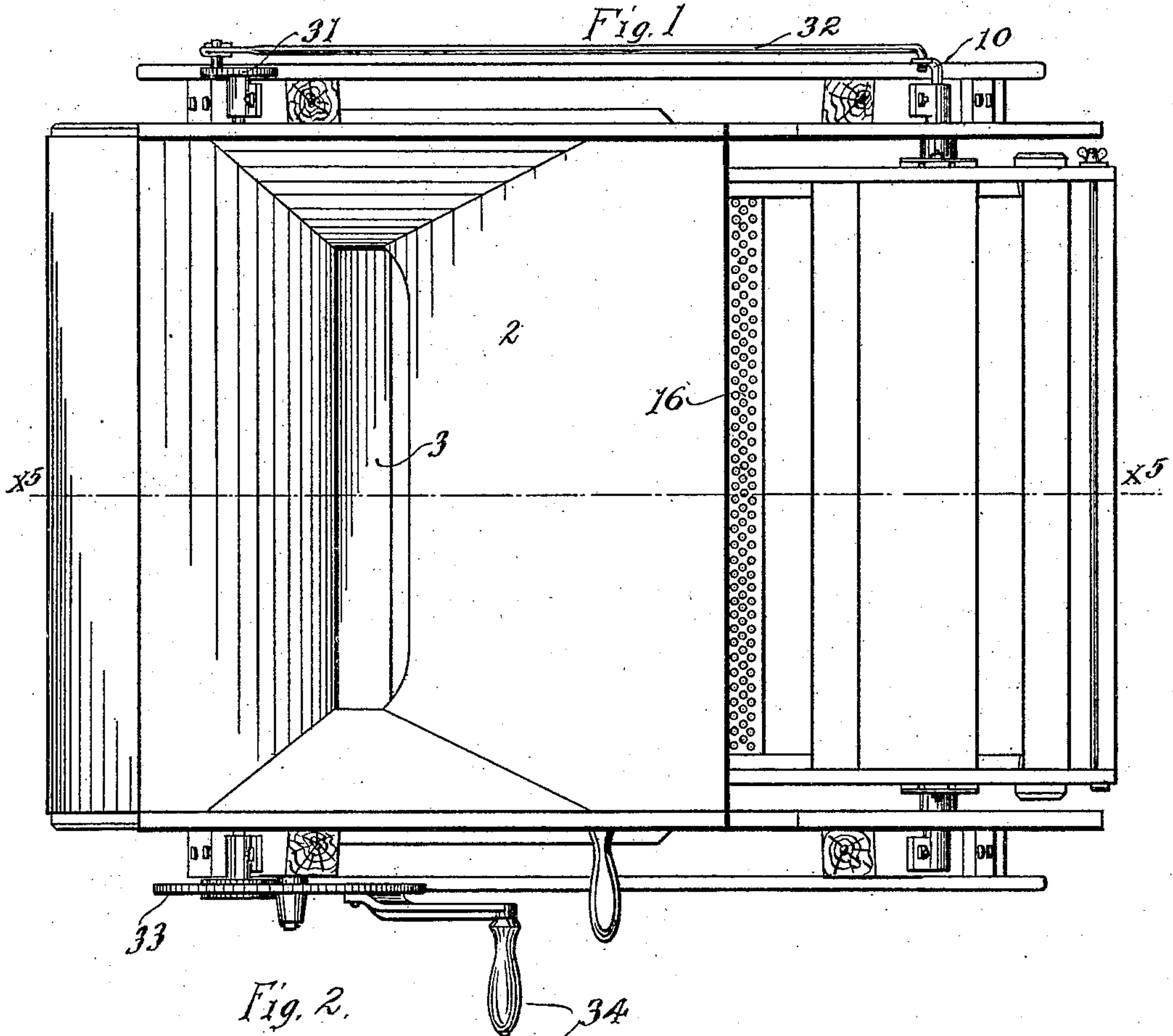


W. SPERRY.  
GRAIN SEPARATOR.  
APPLICATION FILED FEB. 16, 1907.

929,044.

Patented July 27, 1909.

3 SHEETS—SHEET 1.



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A. H. Osahl

Inventor:  
Willis Sperry  
By his Attorneys,  
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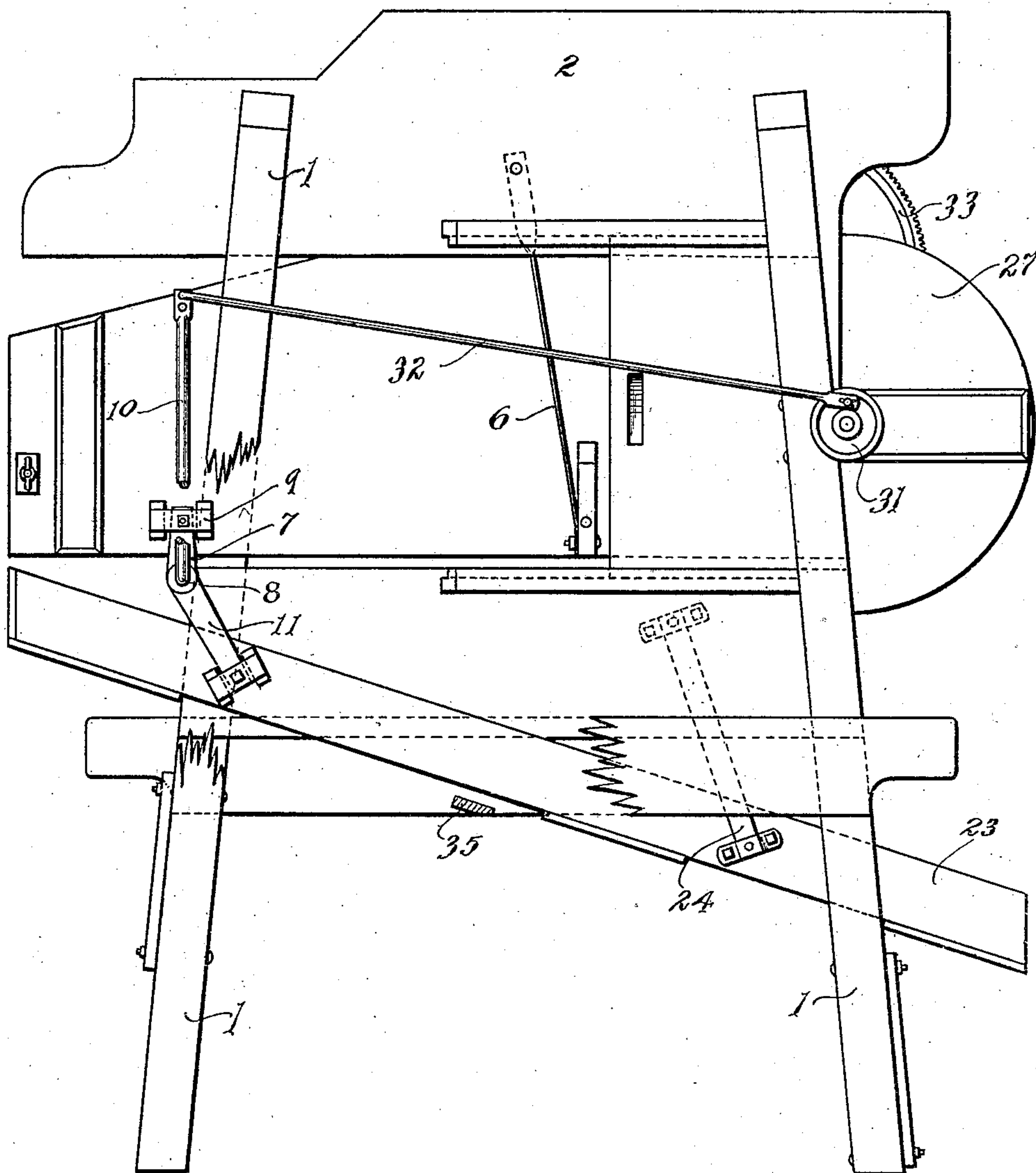
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3 SHEETS—SHEET 2.

Fig. 4



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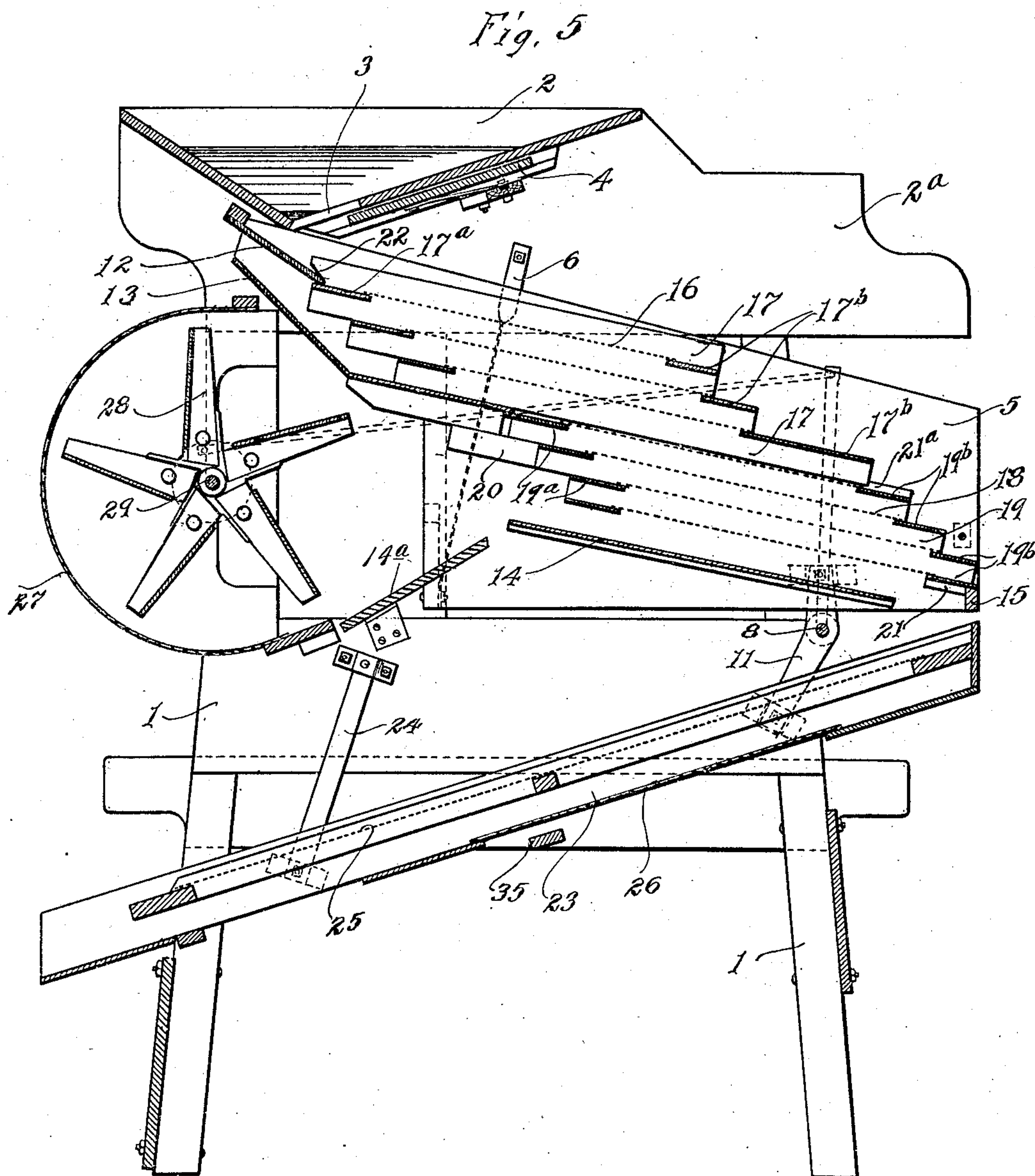
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# UNITED STATES PATENT OFFICE

WILLIS SPERRY, OF OWATONNA, MINNESOTA.

## GRAIN-SEPARATOR.

No. 929,044.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed February 16, 1907. Serial No. 357,698.

*To all whom it may concern:*

Be it known that I, WILLIS SPERRY, a citizen of the United States, residing at Owatonna, in the county of Steele and State of Minnesota, have invented certain new and useful Improvements in Grain-Separators; and I do hereby 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.

My invention has for its object to provide an improved grain separator, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a plan view of the improved machine. Fig. 2 is a detail in right side elevation, showing a portion of the machine. Fig. 3 is a detail in side elevation, showing the upper and lower sections of the upper gang of sieves. Fig. 4 is a view in left side elevation, with some parts broken away, showing the improved machine; and Fig. 5 is a vertical section taken through the machine on the line  $x^5 x^5$  of Fig. 1.

The framework of the machine is indicated as an entirety by the numeral 1. At its upper portion, this framework supports a feed hopper 2 having in its bottom a discharge opening 3 adapted to be closed and to be opened to any desired extent by a sliding gate or valve 4 of the usual or any suitable construction.

Mounted to vibrate between the sides of the framework 1, below the hopper 2, is an upper sieve shoe 5, which shoe, near its receiving end, is supported by a pair of yielding metal straps 6 secured thereto at their lower ends, and secured at their upper ends to extended side boards  $2^a$  of the hopper 2. At or near its outer end, the shoe 5 is supported by a pair of upwardly extended arms 7 secured on a rock shaft 8, journaled in suitable bearings on the sides of the frame 1. As shown, the said arms 7 are pivotally connected to brackets 9 secured on the sides of the shoe 5. The said rock shaft 8 is provided at one end with an upwardly extended arm 10, and near each end it is provided with

a depending arm 11, the purposes of which arms will presently be noted.

In the preferred arrangement of the shoe 5, it is provided with three imperforate inclined feed decks 12, 13 and 14. The feed deck 12 directly underlies the discharge opening 3 of the hopper 2; the deck 13 extends from a point below the deck 12 to the intermediate portion of the shoe 5; and the deck 14 extends below and forward of said deck 13. At the lower portion of its delivery end, the shoe 5 is provided with a transverse supporting bar 15. Also in the preferred arrangement, the shoe 5 is provided with a gang of sieves connected in two banks or groups, as best shown in Figs. 3 and 5, wherein the numerals 16 and 17 indicate, respectively, the sieve surfaces and frames of the sieves, and the numerals 18 and 19 indicate, respectively, the sieve surfaces and frames of the lower group of sieves. At their upper portions, the frames 17 are provided with narrow transverse deck sections  $17^a$ , and at their lower portions they are provided with similar deck sections  $17^b$ . The frames 19 at their upper ends are provided with narrow transverse deck sections  $19^a$ , and at their lower ends they are provided with similar deck sections  $19^b$ .

Secured to the inner surface of the sides of the shoe 5 below the delivery end of the deck 13 are supporting blocks 20. Secured to the sides of the lower frame 19, just below the lowermost deck section  $19^b$  thereof, are lock blocks 21. When the lower bank of sieves 18—19 is applied in working position, it is secured to or interlocked with the shoe 5, and this is done by placing the projecting upper end of the uppermost sieve frame 19 upon the supporting blocks 20 and forcing the transverse deck section  $19^a$  thereof under the delivery end of the deck 13, and by forcing the delivery ends of the said connected frames 19 downward so that the lock blocks 21 engage with the supporting bar 15, and the lower deck section  $19^b$  rests upon said bar 15. The upper ends of the sides of the upper frame 17 are notched at 22 for interlocking engagement with the lower edge of the deck 12, and the sides of the upper frame 19 are provided with raised lock blocks  $21^a$  that engage the lower ends of the sides of the lowermost sieve frame 17, and thus secure in working position the upper bank of sieves 16—17. The lower sieve shoe 23 is



supported by the depending arms 11 of the rock shaft 8 and by a pair of pivoted links 24, pivoted to the sides of said shoe 23 and to the sides of the frame 1. This lower shoe 23 is provided with one or more inclined sieves 25, and below said sleeve with an imperforate deck 26.

Secured to the frame 1 below the receiving end of the upper shoe 5, is a fan case 27 in which works a fan head 28, the shaft 29 of which projects outward and is provided at one end with a spur pinion 30, and at its other end with a crank disk 31. The crank disk 31 is connected by a pitman or connecting rod 32, to the upper end of the arm 10 of the rock shaft 8. The spur pinion 30 meshes with a large spur gear 33 suitably journaled on the adjacent side of the frame 1, and provided with a hand crank 34, by means of which it may be rotated. By reference to Fig. 5 it will be noted that the fan case 27 is so positioned, and the discharge opening thereof is so arranged that air blown from the fan case, under the rotation of the fan head 28, will blow air above the lower deck 14 of the shoe 5, and out through the passages between the sieves of the lower section of said upper shoes. 14<sup>a</sup> indicates a deflecting board which, as shown, is secured to the sides of the frame 1 and is arranged to prevent the discharge of air from the fan below the deck 14. The deck 13 prevents the passage of air between the sieves of the upper group or section of the gang of sieves in the upper shoe 5. The arrangement whereby the fan is caused to blow a blast of air through the spaces between several of the lower sieves of the gang in said shoe I believe to be new and desire to claim the same broadly. This arrangement is very important and it very greatly increases the efficiency of the machine by rendering the blast effective to carry off the desired amount of light formed materials from a stock passing through and over the said sieves. It is, of course, evident that when the gear 33 is rotated, the fan head will be rotated and the two sieve shoes 5 and 23 will be simultaneously oscillated in reverse directions.

By reference to Figs. 4 and 5 it will be seen that the arms 11 and links 24 always stand in an oblique or inclined position with respect to vertical lines drawn through their pivotal supports. Hence, it follows that whenever the lower shoe 23 is oscillated toward the right with respect to Fig. 5, it will be lowered, and when oscillated toward the left with respect to said view, it will be raised.

For the purpose of producing a jar which will clean the sieve 25, the intermediate portion of the shoe 23 is arranged to strike against a stop bar 35, the ends of which are secured to the sides of the frame 1. The arrangement should, of course, be such that the shoe 23 will strike said stop bar 35 only when it has reached approximately the limit of its downward movement. The upper and lower groups of sieves in the upper shoe may be used independently or together, according to the kind of work required. The sieves of the upper group would usually be provided with perforations that are larger than those in the sieves of the lower group. The upper group of sieves 16—17 may be used alone for separating macaroni wheat which is large, from oats and other grain. For the separation of succotash, (wheat and oats) best results can be obtained by using both groups of sieves in the upper shoe. It will, of course, be understood that by the several sieve surfaces 16—18 the wheat and relatively long material will be worked off at the ends of the said sieve surfaces, onto the deck sections 19<sup>b</sup>, and by the latter will be discharged beyond the receiving end of the sieve 25 of the lower shoe, while the wheat or other grain passing through the several sieve surfaces 16—18 will fall onto the deck 14 and by the latter will be directed onto the said sieve 25 of the lower shoe.

What I claim is:

In a machine of the kind described the combination with a vibratory shoe provided with deck sections and transversely supporting bar and supporting blocks, of a bank of sieves having lock blocks, and a bank of sieves having lock notches, the upper end of the upper frame of the lower bank of sieves being engageable between said supporting blocks and the lower edge of said deck, the lower end of the lower sieve of said lower bank being rested upon said supporting bar, with the lock blocks engaging the latter, said notches in the upper frame of the upper bank of sieves being engaged with the lower edge of said deck section, and the lower ends of the lower frame of said upper bank being engaged with said lock blocks, substantially as described.

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

WILLIS SPERRY.

Witnesses:

G. B. BENNETT,  
HARRY D. TOMPKINS.