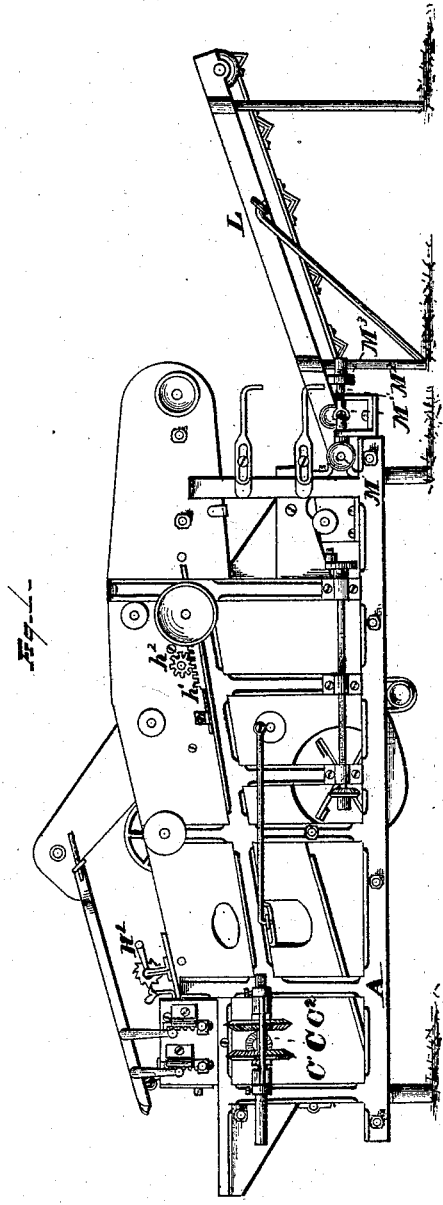


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COMBINED CLOVER-HULLING AND THRASHING-MACHINE.
No. 182,318. Patented Sept. 19, 1876.



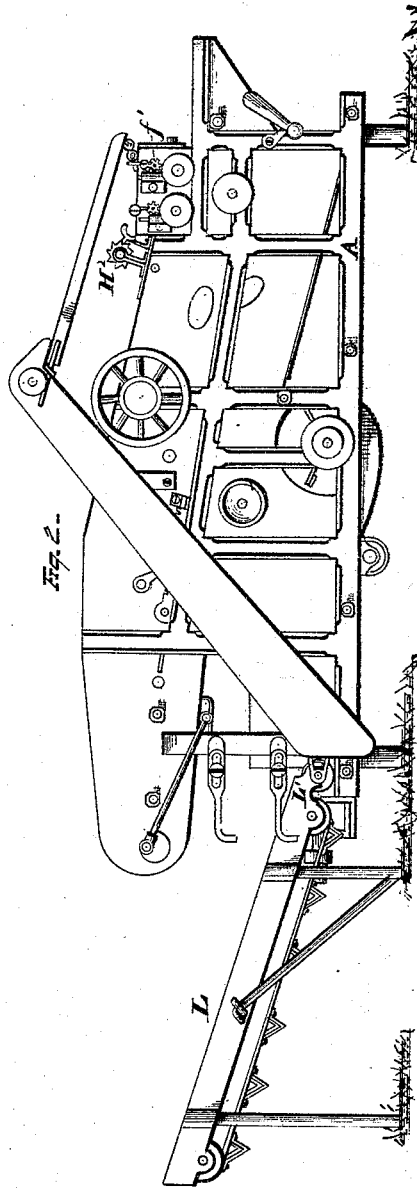
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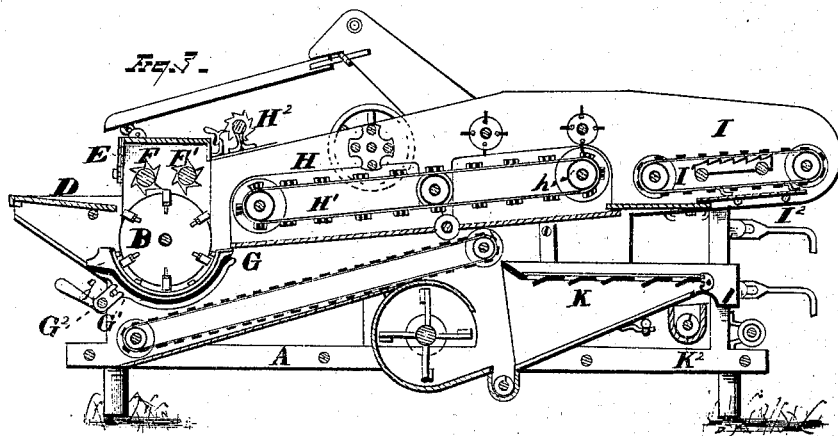
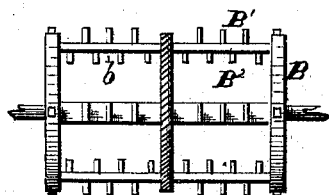


Fig. 8.



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UNITED STATES PATENT OFFICE.

DAVID LIPPY, OF MANSFIELD, AND ZALMON S. STOCKING, OF
CLEVELAND, OHIO.

IMPROVEMENT IN COMBINED CLOVER-HULLING AND THRASHING MACHINE.

Specification forming part of Letters Patent No. **182,318**, dated September 19, 1876; application filed
June 13, 1876.

To all whom it may concern:

Be it known that we, DAVID LIPPY, of Mansfield, Richland county, Ohio, and ZALMON S. STOCKING, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Combined Clover Hullers and Thrashers; and we 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to a combined clover-huller and grain-thrasher.

In the drawings, Figure 1 represents a side elevation of one side of this machine; Fig. 2, a side elevation of the other side; Fig. 3, a longitudinal section of the same; Fig. 4, a side elevation of the rear end of the machine, and a side elevation of the rear and auxiliary conveyer, showing its mode of attachment to the main machine.

Our invention consists in the following parts and combinations, as hereinafter specified and claimed.

In this invention we shall not attempt to describe any well-known device or portion of our machine, but shall confine said description to such portions as have been newly invented or modified by us.

A is a suitable frame, whereto are attached, and wherein operate, the various portions of this machine. B is the thrashing-cylinder. B¹ are the teeth of said cylinder intended for clover; B², the teeth intended for grain; *b*, the shaft or arm, or other support, for carrying the teeth B¹ B². A sufficient number of shafts, *b*, are provided upon the cylinder B. The shafts *b* are made reversible by any suitable device, and are adapted to be clamped or set in three positions, so that the teeth B¹ B² may be called into operation, as it is desired to operate upon clover or grain.

In our device we have shown a set-screw which clamps the shafts *b* in either of their operative positions. The cylinder B in our machine is designed to revolve in opposite directions, as it may be desired to use it for

clover or grain. When used for clover, the cylinder is revolved in such a direction as to be called "overshot"—that is, the clover is fed to the upper face of the cylinder; or when desired for cleaning grain the direction of its revolution is reversed, so as to alter it to an undershot—that is, the grain is fed to the lower face of the cylinder. Any suitable mechanical device may be employed whereby the cylinder is revolved one way or another at pleasure. An arrangement which we prefer is here shown.

The shaft of the cylinder is provided with a bevel-gear pinion, C. Upon each side of the pinion C are bevel-gear wheels C¹ C², suitably mounted, and so adjusted that either one or the other of said wheels C¹ C² may be made to engage with the pinion C, whereby the cylinder may be made to revolve either as an overshot or undershot.

D is the feeding-board, which may be so adjusted as that the cylinder may be fed overshot or undershot.

E is an adjustable fender-plate, whereby sufficient space may be allowed between the feeding-board D and said fender-plate, as the cylinder is used overshot or undershot.

F F' are feeders or rubbers, a revolving motion to which is transmitted through belts by pulleys from the shaft of the cylinder B. The feeders F F' are revolved more slowly than the cylinder B, and by the combined action of their teeth and the teeth of the cylinder, through this differential movement, the clover is properly acted upon.

We have adapted the feeders F F' to be made adjustable up and down by any suitable mechanism, but that which we prefer is here shown, as follows:

The shafts or axles of the feeders F F' are housed in movable journals, which are adapted to move up and down through suitable guides. To the said journals are attached upright cog-bars, which engage with the pinion *f'*, operated by suitable handle. By connecting-shafts running across the machine similar pinion and ratchet-bar arrangement is operated at the opposite journals of each feeder F F', so that by a movement of either pinion its opposite

pinion is similarly operated, thereby securing an even adjustment of the feeders F F'. The rear feeder F' we term an auxiliary feeder, inasmuch as its action is not intended to be so much a feeder as to afford an additional engagement and operation by its teeth with the teeth of the cylinder B.

The feeders may be thrown out of connection with the thrashing-cylinder when desired, and are adapted to be adjusted to or from the thrashing-cylinder, according to the nature and quality of the grain fed to the machine.

G is the concave or plate surrounding the lower portion of the cylinder, into which teeth are inserted, suitable either for operating upon clover or grain. This concave is constructed in sections, so that the same may be readily removed from its grooved rests or supports G¹.

We construct two sets of sections for the concave, one having teeth suitable for operating upon clover, and another set with teeth for operating upon grain, so that one or the other may be applied, as necessary. The double grooved rests or supports G¹ are made adjustable up and down, so that the teeth of the concave may be brought more or less close to the cylinder B. By this arrangement not only can the operation of this portion of the machine be regulated, but in the event of becoming foul, the parts may be separated, and the cylinder, if revolved, will operate to clean the machine, thus making it self-cleaning.

The double-grooved rests or supports of the concave may be made adjustable up and down by any suitable means. The means which we have here shown is as follows: The shaft G² is journaled to the front of the machine. To this shaft is attached arms g, which engage with studs, lugs, or the like, and the rests G¹. One end of the shaft G² is provided with a crank or handle, whereby it may be revolved, thus lifting or lowering the rests or supports G¹. A pawl and ratchet, or the like, is provided upon the shaft G², whereby said shaft may be fixed at any point that the rests G¹ are to be held.

H is the long apron or carrier. This is in the shape of an endless belt, carried upon suitable pulleys, and extends from the cylinder B well to the rear of the machine. It is provided with transverse bars H¹, which, in combination with a movable bottom beneath the apron, operate as scrapers or carriers, to force the thrashed or hulled material back again to the cylinder B. The long apron H, when nearest the cylinder B, is made adjustable up and down, so that it could operate properly with the cylinder B, as said cylinder is used overshot or undershot. This adjustable feature, so far as we are aware, is new, and said adjustment may be accomplished in any suitable way. One which we have here shown is by means of a windlass, H², suitably placed upon the frame of the machine, whereby is lifted or lowered the front end of the apron H. A

pawl-and-ratchet arrangement is provided, whereby said windlass may be fixed at any point that the apron may be adjusted.

I is the rear or short apron, which, like apron H, is in the form of an endless belt, and is carried upon proper pulleys or rollers. The belts, aprons, or carriers H and I each receive their motion through appropriate pulley-and-belt arrangement, said pulleys being placed upon the shaft of the rollers operating said belts or aprons.

The short apron I is given a shaking and sifting movement by being made to pass over agitators I¹ and I². These agitators consist of raised projections or studs, located on the floors, respectively, just beneath the upper and lower leaves of the endless apron, so that, as the latter is in operation, it strikes the projections, and imparts a shaking motion to the apron.

The long apron H may be made adjustable as to its tension by the following provision, to wit: Its rear roller h, upon which the pulley is placed, that communicates motion to said apron H, is made adjustable in the direction of the length of said apron H, and by moving the roller h forward or backward, the apron H is correspondingly tightened or loosened, and can thus be fixed at any desired tension.

If desired, any suitable clamp or setting contrivance to lock the belt-tightener can be employed, and this is always preferable to be had.

We have here shown a rack, h¹, attached to the journal or boxing of the shaft upon which the pulley h is fixed. A pinion, h², is geared into said rack, which, when operated, results in moving said rack one way or another in its guides, which, in turn, operates the roller at the end of the apron H, and thus tightens or loosens said aprons.

By a pawl-and-ratchet arrangement the pinion moving the rack h¹ may be fixed at any degree of tension desired for the apron H.

Beneath each apron or carrier H I, along their delivering ends, we provide shaking-boards, that are adapted to have a reciprocating movement in the direction of the length of the machine. By this provision clogging or fouling is prevented.

Behind the blower-fan, and in combination therewith, after the fashion of the well-known fanning-mill, is provided the laterally vibrating or shaking screen K. The floor of this screen K is composed either in sections or of a single plate or piece. The perforations are made by stamping or cutting tongue-shaped portions, and bending said tongues downward, making them face the fan or blast, so that they shall deliver in the opposite direction of said blast, while the upper face of the screen K presents a smooth surface in said direction. By this provision a very effective separation is accomplished. The rear end of the screen K is made adjustable up and down, so that it

can be set to deliver more or less readily. Beneath the tail-end of the screen K is placed the worm-feed K², which acts to deliver the thrashed or hulled material either into a receptacle or into another carrier.

It is well known that in thrashing or hulling clover a second operation of the cylinder B is necessary, and to accomplish this the swinging end of the carrier or apron H is elevated, as hereinbefore specified. By this adjustment the cylinder B will act twice upon the same material—once as an overshot, and once as an undershot.

As an attachment or auxiliary to our machine, we add the supplemental carrier L, which is, essentially, a frame placed at any suitable elevation or angle, in which operates an endless carrier or apron, similar in office and construction and operation to the aprons H and I.

In our device, however, we have provided that the carrier L may present and discharge in any direction, and still be operated by the main machine.

This we accomplish as follows: To the rear of the machine is fixed the shaft M, driven by pulley-and-belt connections with the main machine. This shaft drives a bevel-pinion, or its equivalent, which gives rotary motion to a universal joint, M¹, and its connected shaft and pulley M² and M³. The universal joint M¹, shaft M², and pulley M³ are placed in a frame, which can be adjusted so as to permit of all necessary presentations of the said joint, pulley, and shaft.

The auxiliary carrier L may be operated at an angle to the main machine by coupling the shaft of its lower apron-pulley to the shaft M², or by connecting, by a belt, the pulley M³ and a pulley upon the shaft of the lower roller of said carrier L.

The office of the carrier L is simply that of a deliverer of the straw or clover after having been thrashed or hulled. To support the upper end of the carrier L, two posts may be provided, the length of which will determine the angle and altitude of the carrier L. These posts or supports also serve to steady the carrier L. As an additional means of making the carrier L firm and steady in any position, we provide hooks or clamps L', the lengths of which are made adjustable. These adjustable hooks or clamps L' connect the carrier L and the main machine intimately and firmly together.

What we claim is—

1. A thrashing-cylinder provided with reversible cross-bars, having teeth secured to opposite sides of the bars, substantially as and for the purpose set forth.

2. The combination, with a thrashing-cylinder provided with independently-reversible cross-bars, having teeth on opposite sides of an interchangeable concave for operating upon grain or clover, substantially as and for the purpose set forth.

3. The cylinder B, provided with reversible bars or shafts *b*, having teeth upon one side for operating upon clover, and teeth upon the other for operating upon grain, substantially as and for the purpose described.

4. The combination of a clamped fender-plate and the reversible cylinder of a thrashing or hulling machine; substantially as and for the purpose described.

5. The combination of the adjustable fender-plate E, the adjustable feeding-board D, and the reversible cylinder B, substantially as and for the purpose described.

6. The combination of adjustable feeders or rubbers with a thrashing-cylinder provided with reversible toothed bars, substantially as and for the purpose set forth.

7. In a thrashing and hulling machine, the combination of rubbers or feeders F F', moving journals *f*, and rack and pinion *f'*, substantially as and for the purpose described.

8. The combination, with a reversible thrashing-cylinder, provided with reversible toothed bars, of a vertically-adjustable endless apron, to receive the material from the top or bottom of the thrashing-cylinder, substantially as and for the purpose set forth.

9. The combination, with a reversible thrashing-cylinder, provided with reversible toothed bars, of the adjustable apron H, and windlass H², substantially as and for the purpose set forth.

10. In a thrashing and hulling machine, the combination, with the endless apron I, of the agitators I¹ I², located, respectively, beneath the upper and lower leaves of said apron, substantially as and for the purpose described.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

DAVID LIPPY.
Z. S. STOCKING.

Witnesses:

H. W. PATTERSON,
I. SHUNK.