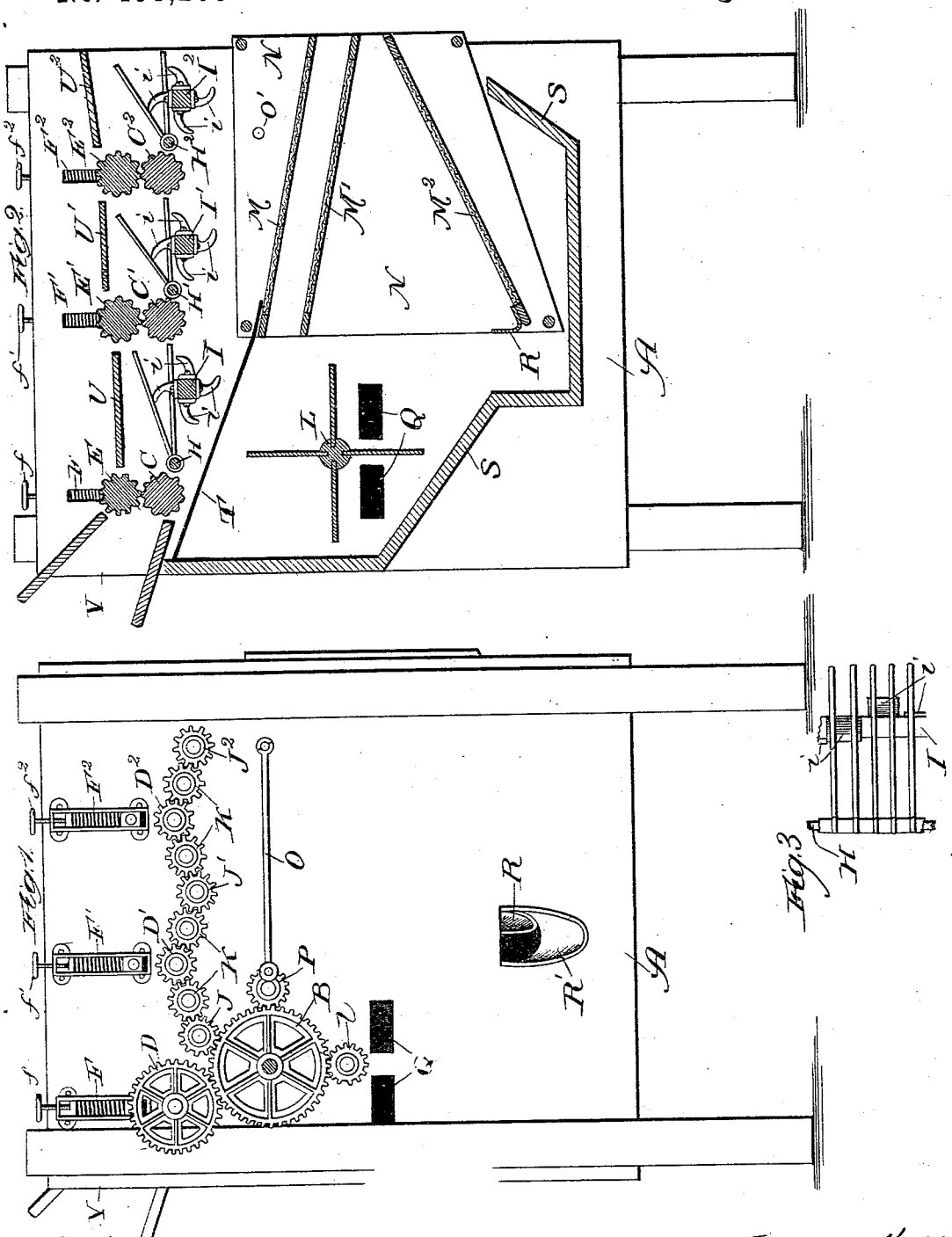
(No Model.)

T. DOOLAN.

MACHINE FOR THRASHING FLAX.

No. 458,269 Patented Aug. 25, 1891.



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UNITED STATES PATENT OFFICE.

THOMAS DOOLAN, OF CHICAGO, ILLINOIS.

MACHINE FOR THRASHING FLAX.

SPECIFICATION forming part of Letters Patent No. 458,269, dated August 25, 1891.

Application filed May 9, 1889. Serial No. 310,091. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DOOLAN, a citizen of the United States, residing at Chicago, Illinois, have invented a new and useful Improvement in Machines for Thrashing Flax, of which the following is a specification.

The object of my invention is to construct a machine which shall thoroughly and economically thrash the flax; and the invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improved thrasher; Fig. 2, a vertical longitudinal section thereof, and Fig. 3, a plan view of a portion of one of the agitators.

A is the case or frame of the thrasher; B, one of the main cog-wheels; C C′ C^2, rollers; D D′ D^2, cog-wheels attached, respectively, to each of said rollers; E E′ E^2, rollers placed above the rollers C C′ C^2; F F′ F^2, adjustable bearings for the ends of the rollers E E′ E^2; H H′ H^2, agitators; I I′ I^2, cam-shafts for operating the agitators; J J′ J^2, cog-wheels attached, respectively, to the shafts I I′ I^2; K K K, idlers or cog-wheels for transmitting power to the cogs D′ D^2 and J′ J^2; L, a fan; *l*, a cog-wheel attached to the shaft of the fan; M M′ M^2, sieves; N, the box in which the sieves are fastened; O, a bar attached to the side of the sieve-box N by means of the bolt or pin O′; Q, openings in the side of the case A, and R R′ spouts for delivering the seed.

In constructing my improved thrashing-machine I make a case or frame A, of any suitable dimensions, as shown in the drawings. In suitable bearings in this case I place a series of rollers C C′ C^2, which may be made of wood or metal, as desired, and which are preferably corrugated, though this is not essential. Only one roller in each pair may be so corrugated, or both or neither of them may be corrugated. These rollers are provided, preferably, at each end with cog-wheels, as shown in Fig. 1 of the drawings; and it may be here stated that although Fig. 1 represents an elevation of but one side the other side of my device is preferably similar to it, having the same cog-wheels, adjustable bearings, &c., as are shown in this figure.

I next make out of wood or metal, and preferably corrugated, as above stated, with reference to the rollers C, &c., another set of rollers E E′ E^2, placed, preferably, directly above the former rollers, as shown in Fig. 2, and journaled in spring-bearings F F′ F^2, by means of which the rollers E, &c., are kept normally in contact with the rollers C, &c., and may be allowed to move up and down against the pressure of the springs. To increase or diminish the tension of these springs, I provide screws *f f′ f²*.

I next construct a series of agitators H H′ H^2. Each of these agitators consists of a shaft, and set of fingers attached thereto in such manner as to be capable of independent movement. The shaft and fingers may be made of any desired material and size, and the fingers may be set close together or some distance apart, as is found desirable. For the purpose of raising these fingers I next construct a series of cam-shafts I I′ I^2. These consist of shafts having cog-wheels at one or both of their ends, preferably square in section and provided with cams or fingers *i i i*. These cams or fingers are attached to the sides of the shaft in a spiral manner, one cam being placed on the upper side, as shown in Fig. 2, the next one a little farther along on the next side, and the third and fourth still farther along on the third and fourth sides of the shaft, respectively, the fifth cam coming on the upper side at some distance from the first, and so on. This construction is more particularly shown in Fig. 3. Each cam is preferably of a width to raise two of the agitator-fingers, though of course it may raise more or less than two, if desired. When in the position shown in Fig. 2, two of the agitator-fingers are lifted by the first cam on the upper side of the shaft, and (if two fingers are raised by each cam) the next six fingers to those shown as raised will rest on the shaft, and the two fingers following these last will be raised by the next cam which comes on the upper side of the shaft. As the shaft rotates and brings the next set of cams into action the sets of fingers now raised will fall by their own weight, and the sets of two fingers adjacent to those now raised will rise in their turn. In other words, the agitator-fingers rise in pairs, separated by a distance of six fingers from each other. Of course it will be understood that these fingers may rise in sets of three or any other desired number, since I have merely men-

tioned two as being the number I consider adapted to attain the best results. By this rising and falling of the fingers a sort of chopping motion is produced.

I next construct a sifting apparatus, which consists of a box N, supported inside of the frame-work, A by straps, or on ways or in any other suitable manner, so as to be capable of oscillating back and forth. To move this box, I have provided the cog P, carrying the bar O. This bar is attached to the box N at the point O′, and there will preferably be one of these bars attached to each side of the box, the bar on the side of the case A (not shown) being driven by a cog-wheel on the side of the case similar to the cog P. The cog P meshes with the cog B, and it is evident that as the former revolves the arm O will travel backward and forward, oscillating the box to which it is attached. In this box, which is preferably open at the back, I place sieves M M′ M^2, preferably three in number. These sieves may be made of wire-cloth or perforated metal, or of any suitable material. The topmost one should be a very coarse sieve; the one next below it much finer, and the lower one M^2 so fine as to allow nothing but dust or very fine chaff to pass through it. There may be more or less of these sieves and their positions may be more or less changed relatively to each other; but I have shown in the drawings the number and arrangement of sieves which I consider preferable. At the lower end of the sieve M^2, I prefer to attach a spout R, which hangs, as shown in Fig. 1, inside a larger spout R′, out of which the seed which has been thrashed passes. Below the sieve-box N, I prefer to place a dust-box S, and in front of the box I construct a fan, preferably of the form shown in Fig. 2, where it consists of a shaft provided with four blades or wings attached to the shaft at right angles to each other, though there may of course be more or less than four blades, the object being merely to provide a suitable fan to blow the chaff and dust out through the rear of the box N. The blades of the fan extend preferably across the entire width of the inside of the frame A. This fan is driven by means of the cog *l*, there being preferably one of these cogs at each end of the shaft, and draws air in through one or more holes Q made in the sides of the case A.

To prevent any of the seed or chaff from falling down onto this wheel and also to prevent the wheel from blowing the flax off of the agitators placed above it, I prefer to place a partition T, of wood or metal, entirely across the case A and extending, as shown in Fig. 2, from the front of such case to the upper sieve, so that any chaff or seed falling upon this partition will slide down onto the sieve.

Just above the agitators I prefer to place a series of shields or protectors U U′ U^2, intended to prevent the flax from being thrown too high by the agitators and to direct it between the next pair of rollers. These shields are preferably hinged at one side to adjust themselves to the amount of flax passing through.

I prefer to provide a box or case to cover the cams, &c., to protect them from dirt and dust; but inasmuch as the construction of this box is simple and obvious I have not shown it in the drawings.

My device operates as follows: Power being applied to the cog-wheel B by belt, crank, or in any other suitable manner, the lower rollers, cam-shafts, and fan will be revolved and the box N oscillated back and forth. The upper series of rollers being pressed down by their spring-bearings will be rotated by the rotation of the lower rollers. The flax to be thrashed is now introduced at the entrance V and passed between the first pair of rollers E C. By these rollers the seed is loosened and separated more or less from the chaff. The flax then passes onto the first set of agitators and is tossed up and down by them, passed through the second set of rollers, tossed up and down by the second set of agitators through and over the third set of rollers and agitators, and the chaff and straw are thrown off at the rear of the machine. During this process of alternating crushing and tossing the seed will have become thoroughly loosened and will fall, together with more or less of the chaff, &c., onto the upper sieve M. The box N being oscillated back and forth, as above described, the seed, together with possibly some of the chaff, will pass through and fall onto the sieve M′, which is preferably of so fine a mesh as to allow only the seed to pass, the chaff, &c., being thrown off at the rear. The seed then falls onto the lowest sieve, which sifts out whatever dust may be mixed with it into the dust-box S, and the seed then passes out through the spouts, the fan L of course acting all this time to aid the sieves in separating the seed from the chaff.

While I have described precise forms of the parts of the machine, it will of course be understood that I do not intend to limit myself thereto, but contemplate the use of proper equivalents.

I claim—

1. In a flax-thrasher, the combination of a series of rollers arranged in pairs, a series of agitators placed between the pairs of rollers, a series of cam-shafts for operating such agitators, and a series of protectors for directing the flax toward the rollers, substantially as described.

2. In a flax-thrasher, a series of rollers arranged in pairs, a series of agitators alternating with the pair of rollers, a series of cam-shafts for operating such agitators, and an oscillating box placed beneath such agitators and provided with one or more sieves, substantially as described.

3. In a flax-thrasher, the combination of a series of rollers arranged in pairs, the upper rollers being mounted in yielding spring-bearings and pressed into contact with the

lower rollers, a series of agitator-fingers placed alternately with the pairs of rollers, a series of cam-shafts for operating such agitator-fingers, an oscillating sieve-box provided with one or more sieves, and a fan for driving air into the sieve-box, substantially as described.

4. In a flax-thrasher, the combination of a series of rollers placed in pairs one above another, the upper roller in each pair mounted in yielding spring-bearings and forced thereby into contact with the lower roller, by which it is driven, a series of agitators placed in alternation with the pairs of rollers, each agitator comprising a number of independently-movable fingers mounted on a shaft, and a series of cam-shafts placed beneath these fingers and causing them to rise and fall in an irregular or chopping manner, substantially as described.

5. In a flax-thrasher, the combination of a series of corrugated rollers placed in pairs, one above another, the upper roller in each pair mounted in yielding spring-bearings and forced thereby into contact with the lower roller, by which it is driven, a series of independently-movable agitator-fingers placed in alternation with the pairs of rollers, and a series of cam-shafts placed beneath these fingers and causing them to rise and fall in an irregular or chopping manner, an oscillating sieve-box placed beneath the agitators, provided with two or more sieves, and a fan for driving air into the sieve-box, substantially as described.

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