

(Model.)

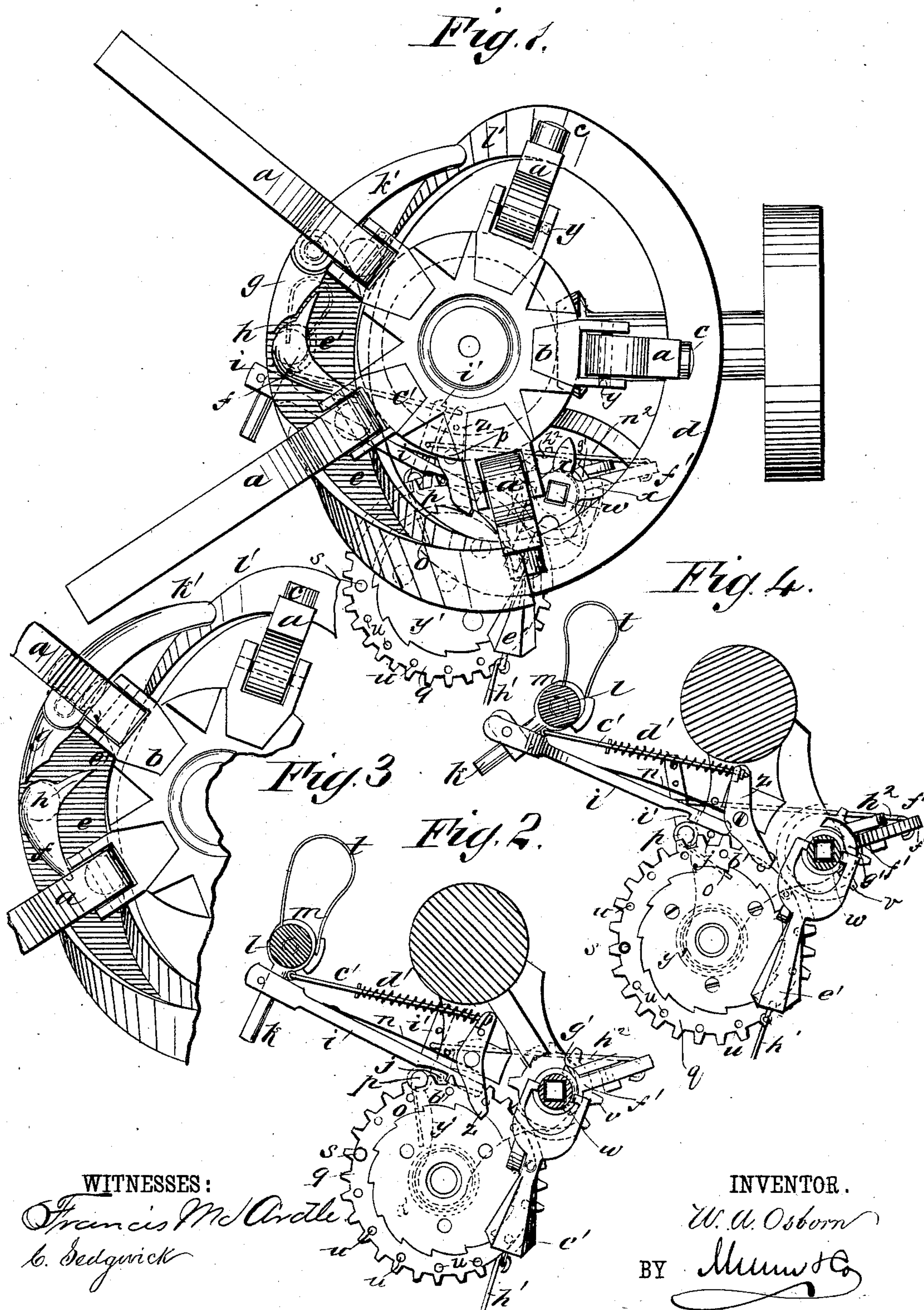
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W. A. OSBORN.

TRIP GEAR FOR HARVESTER RAKES.

No. 280,074.

Patented June 26, 1883.



**WITNESSES :**

Francis McArdle  
C. Sedgwick

INVENTOR.

W. A. Osborn

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Mum & Co

ATTORNEYS.

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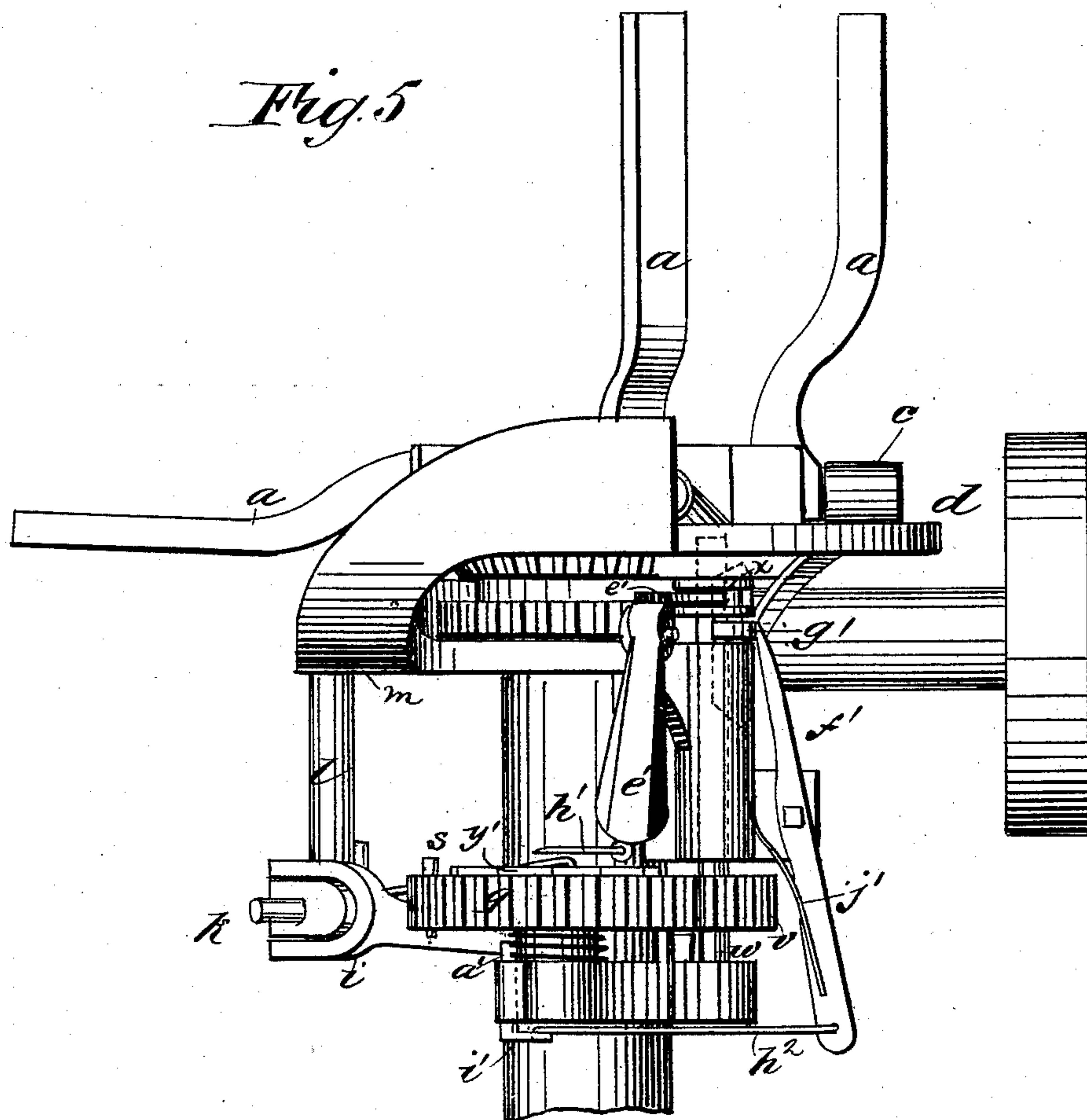
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*L. Sedgwick*

INVENTOR:

*W. A. Osborn*  
BY *Munn & Co*  
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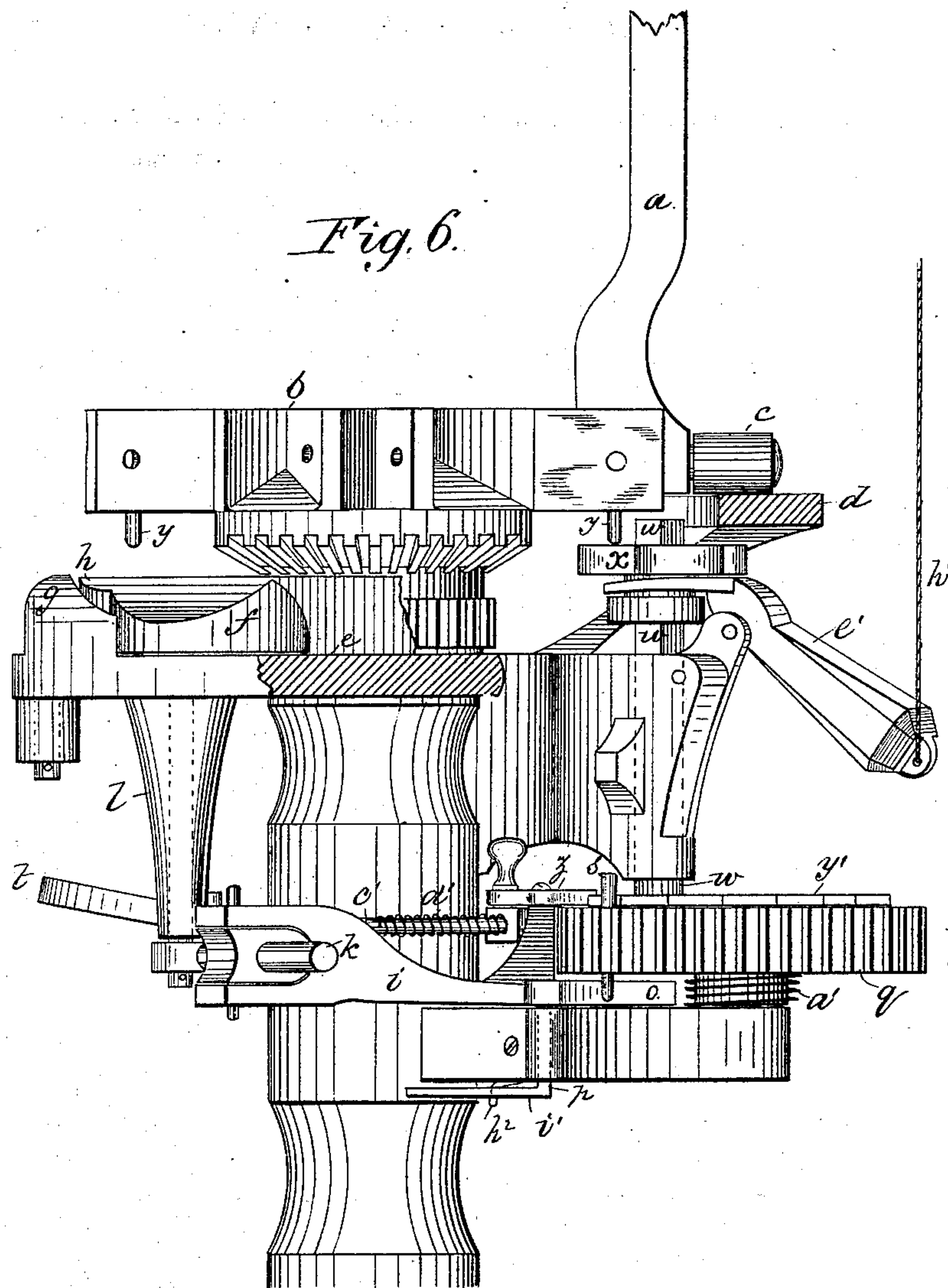
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INVENTOR:

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# UNITED STATES PATENT OFFICE.

WALTER A. OSBORN, OF OWOSSO, MICHIGAN.

## TRIP-GEAR FOR HARVESTER-RAKES.

SPECIFICATION forming part of Letters Patent No. 280,074, dated June 26, 1883.

Application filed February 15, 1883. (Model.)

*To all whom it may concern:*

Be it known that I, WALTER A. OSBORN, of Owosso, in the county of Shiawassee and State of Michigan, have invented a new and Improved Trip-Gear for Self-Rakers, of which the following is a full, clear, and exact description.

My invention consists of an automatic trip device to be set for causing a switch to be opened for any predetermined number of rakes, to sweep off the gavels with any one, from the second upward, the rest being allowed to pass over the gavel for enabling the due measure of grain to be accumulated in it, together with contrivances for disconnecting the trip-gear to allow the gavels to be carried any distance, whenever it may be required, before being discharged, the arrangement being such that the gavel may be discharged with any one of the rakes at any time the operator may desire, and the order of the automatic action following the re-engagement of the trip-gear will be the same for the next gavel as before, all as hereinafter fully described.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improved self-raking apparatus. Fig. 2 is a horizontal section showing the trip apparatus as when the switch for causing the rakes to skip the gavel is closed. Fig. 3 is a plan view of a portion, showing the switch open for allowing the gavel to be raked off. Fig. 4 is a horizontal section showing the trip apparatus as when the switch is open, as in Fig. 3. Fig. 5 is a side elevation; and Fig. 6 is an elevation showing the tripping devices, and partly broken away to show the local relation of certain parts.

In this example there are five rake-arms, *a*, pivoted to the rake-head *b*, for swinging around on it to gather the grain into gavels on the platform, and for discharging the gavels therefrom from time to time. They have friction-rollers *c*, running on the elevated way *d*, to throw up the rakes clear of the machine, and down in the depressed or grooved way *e*, for allowing the rakes to sweep down along the surface of the platform for raking the grain falling thereon from the cutters.

The switch *f* is located in the depressed way *e*, to turn the roller *c* out on the incline *g*, for causing the rakes to skip the gavels or allow them to continue along the part *e'* for sweeping them off the platform. The switch is closed by each rake-arm that passes along the way *e'*, and sweeps off a gavel by contact of its roller *c* with the arm *h*, and the catch-pawl *i* hooks onto the stud-pin *j* and holds it closed, said pawl being connected to the arm *k* of the switch-shaft *l*, extending up through the bearing *m*, and having the switch *f* attached to its upper end, said pawl also having a spring, *n*, that causes it to catch on the stud-pin *j*, and holds it thereon until it is tipped therefrom.

It will be seen that as long as the switch is retained in the closed position of Fig. 1 by the catch-pawl *i* the rake-arms will run out of way *e* onto incline *g*, and will thus fail to sweep off the gavel.

To trip the switch for every second, third, or other number of rake-arms, as may be required by the volume of grain, and allow the gavels to be swept off as often as required, I have provided a tripping-arm, *o*, (dotted in Figs. 1, 2, and 4,) on a pivot, *p*, with a tripping pin-wheel, *q*, having a pin, *s*, that is to be brought into contact with the tripping-lever *o* to cause it to push off catch *i* from stud *j* to allow the switch *f* to be opened by spring *t* when a rake is to be allowed to sweep off the gavel.

The tripping-wheel *q* has a series of holes, *u*, in which the tripping-pin is to be set, according to the number of rakes that are to be made to skip the gavel. The wheel *q* is toothed, and gears with a pinion, *v*, on the lower end of a shaft, *w*, extending up close under the rake-head *b*, where it carries a five-toothed star-wheel, *x*, that is turned the distance of one tooth by a pin, *y*, for each rake-arm *a* passing over it. The pinion *v* moves the distance of two teeth, and the pin-holes *u* of said wheel *q* being the distance of two teeth apart, the pin *s*, set in any one of the holes, will thus be moved toward arm *o* the distance of one hole from another for each rake-arm.

A ratchet-disk, *y'*, and a pawl, *z*, are employed with the tripping-wheel *q*, to prevent it from reacting until the proper time, and a coiled spring, *a'*, is applied to it for the pur-



pose of returning it to the normal position whenever it has tripped the switch.

It will be seen by reference to Fig. 4, where the parts are in the positions they occupy when the switch is open and a rake-arm is passing through it, Fig. 3, that the pawl *z* is disconnected from the ratchet, and the tripping-wheel is in the position to which the spring *a'* returns it when released by the pawl. Then, supposing it is desired to have the switch open for every fourth rake to sweep off the gavel, the tripping-pin *s* will be put in the position represented in Fig. 4, from which it will be brought by the fourth movement of the star-wheel to the position *b'*, where it will push arm *o* against the end of pawl *i*—re-engaged with stud-pin *j*, Fig. 2—and push it off again for the opening of the switch, as before, by the spring *t*. The spring *t* also disengages pawl *z* by means of rod *c'* and spring *d'*, connecting it with arm *k*, to allow the reaction of the tripping-wheel.

If more rakes are required to skip the gavel, the pin *s* will be set farther along the series of holes *u* from the tripping-arm *o*, and if less the pin will be shifted back toward said arm.

The spring *d'* connects the pawl *z* to the rod *c'*, so as to provide for an elastic connection that will press the pawl on the ratchet-wheel without slack or overpressure. The closing of the switch by the rake-arm passing through it restores the pawl *z* to the ratchet *y'* at the same time that it re-engages the trip-lever with the stud *j*.

The star-wheel *x* is fitted on the shaft *w*, so as to slide down and allow the rake-arms to pass without turning it, and it has a weighted lever, *e'*, to shift it up into the range of the pins of said arms, and a guard-lever, *f'*, the head of which, *g'*, is to spring under it when so shifted up and hold it. The weighted lever *e'* is to be connected by a cord, *h'*, with one end of a tilting treadle at the foot-board of the machine, and the guard-lever *f'* is connected by a cord or rod, *h''*, with an arm, *i'*, attached to pivot *p* of the trip-arm *o*, which arm *i'* is to be connected, in practice, with the other end of said treadle at the foot-board.

It will be noticed by inspection of Figs. 2 and 4 that the trip-arm *o* will cause arm *i'* to pull guard *f'* from under the star-wheel *x* just before it trips the switch—that is to say, in the last movement of the trip-wheel prior to the one that trips the switch. This will allow the star-wheel to drop sufficiently by raising the weighted lever with the treadle to allow the pins *y* to pass over without shifting it, the weighted lever being at the same time lifted by the operator with the treadle. The machine can then be run as far as may be desired before delivering the gavel from it, which is sometimes required. The tripping of the switch may then be done by the operator with the treadle acting on arm *i'*, the treadle being tilted the reverse of the way it was previously shifted to lift the weighted lever, and releas-

ing said lever *e'* to throw up the star-wheel *x* into gear with the rake-arms again for continuing the operation of the trip mechanism, which will go on as before when the tilting treadle is released by the operator, so that the spring *j* will return guard *f'* and arm *i'*. It will thus be seen that the tripping device may be set for action at intervals of any number of rakes; also, that the trip may be interrupted, and the gavel may be carried any distance desired, where the grain stands thin, and then be swept off by any one of the rakes, and the renewal of the operation of the automatic trip device may begin with the first of the series of skipping-rakes, thus making the gavels uniform.

When it is not desired to interrupt the tripping device to carry the gavels, as above described, the guard *f'* may be disconnected from the arms *i'*. The tongue *k'* opens automatically to allow the arms passing through the switch to rise up the incline *l'*, and closes in like manner to bridge over the space below for those arms that pass over the switch.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the rake-arms and the switch *f*, of the automatic tripping device consisting of the tripping-wheel *q*, actuated by said arms, the tripping-arm *o*, and the catch-pawl *i*, substantially as described.

2. The tripping-wheel *q*, having a series of pin-holes, *u*, and being geared with the rake-arms, as set forth, and provided with reacting springs *a'*, substantially as described.

3. The combination, with the switch *f*, of the spring *t*, catch-pawl *i*, stud-pin *j*, tripping-arm *o*, and the tripping-wheel *q*, said wheel being geared with the rake-arms, substantially as described.

4. The combination of the tripping-wheel *q*, ratchet *y'*, pawl *z*, tripping-arm *o*, catch-pawl *i*, and switch *f*, the said wheel *q* being geared with the rake-arms, and the pawl *z* being connected to the switch-arm, substantially as described.

5. The rake-head having pins *y*, star-wheel *x*, pinion *v*, tripping-wheel *q*, arm *o*, and the trip catch-pawl *i*, in combination with switch *f*, having a spring to open it, substantially as described.

6. The star-wheel *x*, weighted shifting-lever *e'*, and guard-lever *f'*, in combination with the tripping-wheel *q*, arm *i'*, and the trip catch-pawl *i*, substantially as described.

7. In a self-raking trip-gear, the pivot *p*, having the tripper-arm *o*, and the wheel *q*, having pin *s*, in combination with the catch *i*, whereby the latter may be pushed from the stud *j*, as described.

WALTER A. OSBORN.

Witnesses:

HENRY H. DANIELS,  
WILLIE T. DUNNING.