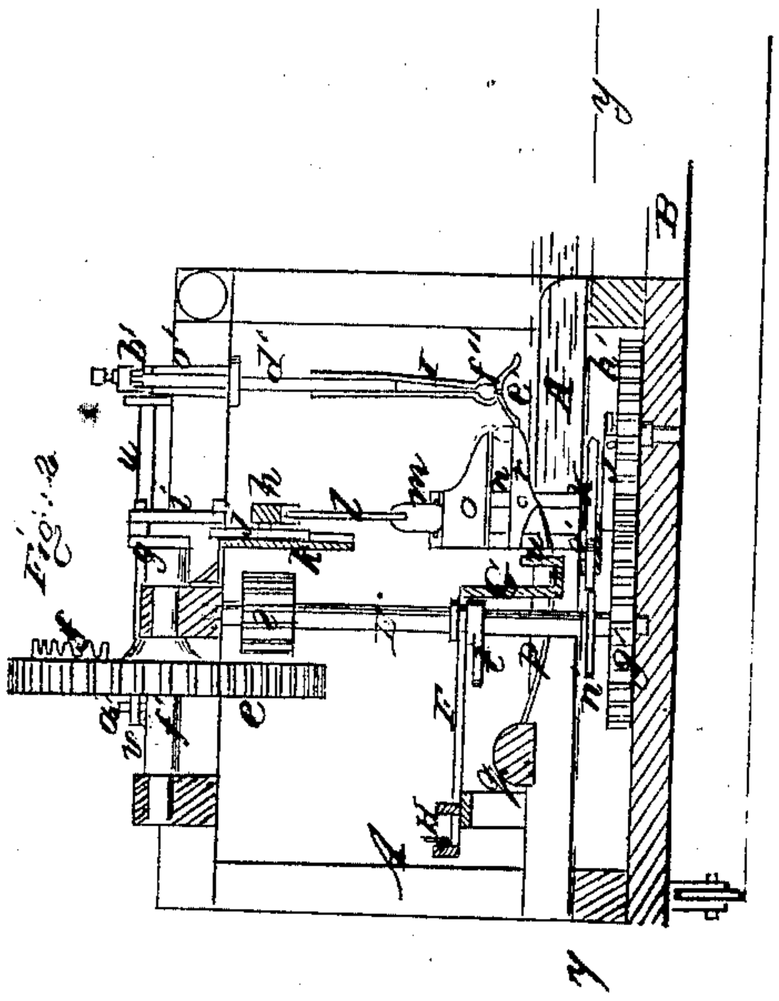
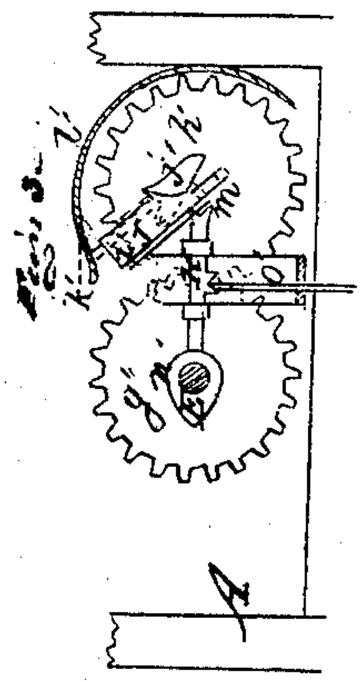
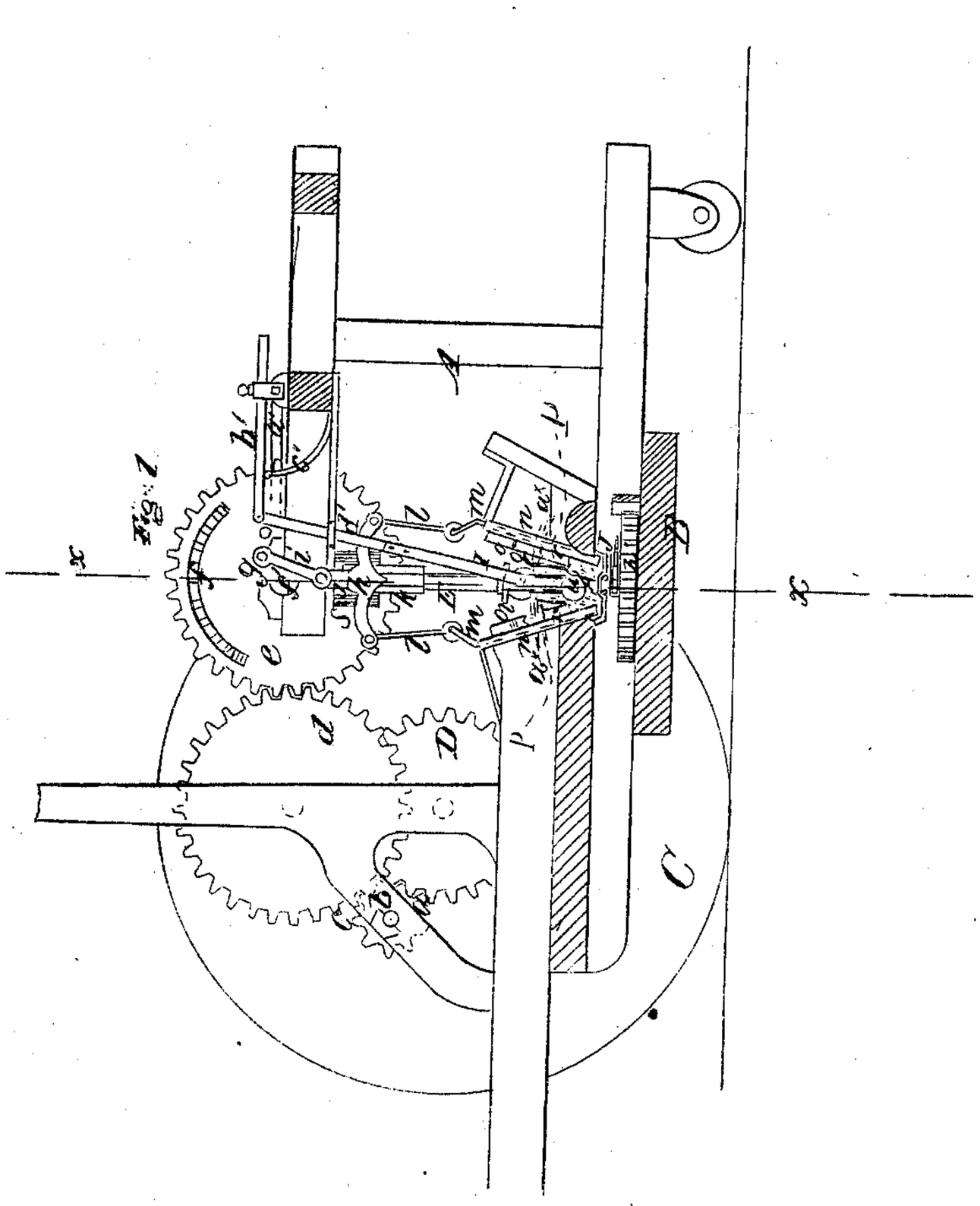
J. Mitchell
Grain Binder.

No. 21434

Patented Sept. 7. 1858.







UNITED STATES PATENT OFFICE.

JAMES MITCHELL, OF OSCEOLA, IOWA.

IMPROVEMENT IN BINDING ATTACHMENTS TO REAPING-MACHINES.

Specification forming part of Letters Patent No. 21,434, *dated September* 7, 1858.

To all whom it may concern:

Be it known that I, JAMES MITCHELL, of Osceola, in the county of Clark and State of Iowa, have invented a new and Improved Grain-Binding Attachment to be Applied to Reapers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section of a reaper with my invention applied to it, the latter not being bisected. Fig. 2 is also a vertical section of the reaper with my invention also, bisected, as indicated by the line *x x*, Fig. 1. Fig. 3 is a horizontal section of a portion of the same. *y y*, Fig. 2, indicate the plane of section.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of clamps or band-carriers, a band-twisting device, tucking-rod, and discharging device applied to the reaper, arranged relatively with each other and operated as hereinafter shown and described, whereby the grain is bound into sheaves and discharged upon the ground, the whole working automatically as the machine moves along.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents the main frame of a reaper. B is the platform, and C the driving-wheel. To the inner side of the driving-wheel C a toothed wheel, D, is attached, and a pinion, *a*, gears into said wheel D. The pinion *a* is placed on a shaft, *b*, in the main frame A, said shaft also having a pinion, *c*, on it, which gears into a wheel, *d*, the axes of which is in the main frame. The wheel *d* gears into a corresponding wheel, *e*, one side of which has a series of teeth, *f*, projecting from it, forming a segment-rack or a segment of a gear-wheel concentric with the teeth of wheel *e*. (See Fig. 1.)

The axis *f'* of the wheel *e* has a crank, *g*, at one end, and to this crank a yoke, *h*, is connected by a rod, *i*, the yoke being a curved bar attached to a vertical slide, *j*, which is fitted in a guide, *k*, attached to the main frame. To each end of the yoke *h* a rod, *l*, is attached, and the lower ends of these rods are attached to slides *m*, which are fitted in oblique guides *n n*, secured in the main frame back of the inner end of the platform B. The guides *n n* are placed in V form—that is to say, their lower ends are nearer together than their upper ends, as shown clearly in Fig. 1. To each slide *m* a jaw, *o*, is permanently attached. The form of these jaws is plainly shown in Fig. 2.

In the lower part of the main frame A there are two springs, *p p*. These springs are constructed of flat steel strips attached at one end to a bar, *q*. To the opposite ends of the springs jaws *r r* are attached, one to each, and the jaws *r* are placed directly below the jaws *o o*. (See Figs. 1 and 2.)

E is a vertical shaft, which is placed in the main frame A. This shaft has a pinion, *s*, on its upper end, into which pinion the teeth *f* gear as the wheel *e* rotates. On the shaft E a cam, *t*, is placed, said cam bearing against and actuating a horizontal slide, F, having a curved rod, G, at one end, at the front part of which rod there is a circular disk, *u*, said disk being between the two lower jaws *r r*. A spring, H, bears against the opposite end of the slide F, said spring keeping the slide bearing against the cam.

To the side of the wheel *e*, opposite to that side where the teeth *f* are attached, there is a pin, *v*, and on the upper part of the main frame there is a shaft, *w*, which has an arm, *a'*, projecting from it at one end at right angles, and an arm, *b'*, at the opposite end, the two arms *a' b'* being parallel with each other. Against the under side of the arm *b'* a spring, *c'*, bears, and to the outer end of the arm *b'* a rod, *d'*, is attached, to the lower part of which a clamp, I, is secured. This clamp is formed of two flat metal strips, the lower ends of which are curved or bent so as to form a curved terminus, *e'*, and an eye, *f''*, immediately above it. (See Fig. 2.)

To the lower end of the shaft E a toothed wheel, *g'*, is attached, and this wheel gears into a corresponding wheel, *h'*, on the upper surface of which a clamp, J, is attached. This clamp is formed of two parts, *i' j*, (see Fig. 3,) the part *i'* being permanently attached to the wheel *h'*, and the part *j'* being pivoted to *i'*,

and actuated by a bar, k', and eccentric, l'. (See Fig. 3.) A spring, m', bears against the jaw or part j', and has a tendency to keep it thrown out from i'.

K is a sliding rod or bar, which is fitted in suitable guides, so that it may work directly over the wheels g' h'. This rod or bar is actuated by a cam, n', on the shaft E, and a spring, o', attached to the main frame.

The operation is as follows: As the machine is drawn along the cut grain on the platform is raked intermittingly to its inner end in gavels parallel with the draft-pole, and at right angles with the slide F, the clamp I at the commencement of the operation being directly over the gavel, which is designated by A'. The clamp I is first moved and is depressed in consequence of the pin v of a wheel, e, striking the arm a' of shaft w. The clamp, by this means, is forced down on the gavel, and, in consequence of its curved terminus, is expanded so that it will grasp a few straws necessary to form a band, the band passing into the eye f'' of the clamp. The clamp I is suddenly raised by the spring c'—that is, when the pin v has passed the arm a' of the shaft w, and the ends of the band (designated by $a^{\times}$) catch on the lower jaws r, which extend a trifle beyond the jaws o. The gavel A' is then turned around parallel with the axis of the driving-wheel C, in line with the slide F, the gavel passing down between the jaws o r, the band $a^{\times}$ being over the gavel. (See Fig. 2.) The jaws o r then descend, owing to the crank g, and the upper jaws o are pressed down on the lower jaws r, and, owing to the resistance of the springs p, the ends of the band are firmly grasped and carried down by the clamps each side the gavel, the two ends meeting when the jaws are fully depressed in consequence of the inclined position of the guides n n. When the jaws o r reach their lowest point the two ends of the band are caught by the clamp J, the jaw or part j' being distended so as to receive the ends, but pressed close to the part i' when they are secured, in order to hold them, by means of the eccentric ledge l', which forces inward the bar k', and retains it while the wheel h' is making about one-half of a revolution. The two ends of the band by this means are twisted, and the twist is given at the proper time in consequence of the teeth f gearing intermittingly into the pulley of shaft E. As soon as the twist is given its end is tucked under the band by the rod K, which is shoved forward by the cam n'. The work of binding is then completed, and the rod or slide F is shoved outward by the cam t, and the sheaf deposited on the ground in consequence of the disk u bearing against it. A fresh gavel is then drawn under the clamp I, and the operation repeated.

I would remark that the within-described device may be used with a raking attachment of any proper construction, or the cut grain may be raked by hand.

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

1. The combination of the jaws o o r r, arranged as shown, and attached, respectively, to the slides m m and springs p p, whereby they are made to receive and grasp the ends of the band, as described.

2. The clamp J, constructed of two parts, i' j', attached to the rotating wheel h', and used in connection with the slide-bar k' and ledge l', for the purpose of twisting the ends of the band, substantially as described.

3. The jaws o o r r, clamp I, band-twisting device J, tucking-rod C, and discharge-rod G, combined and arranged to operate substantially as and for the purpose set forth.

JAMES MITCHELL.

Witnesses:
HENRY A. DAY,
A. M. MURPHY.