

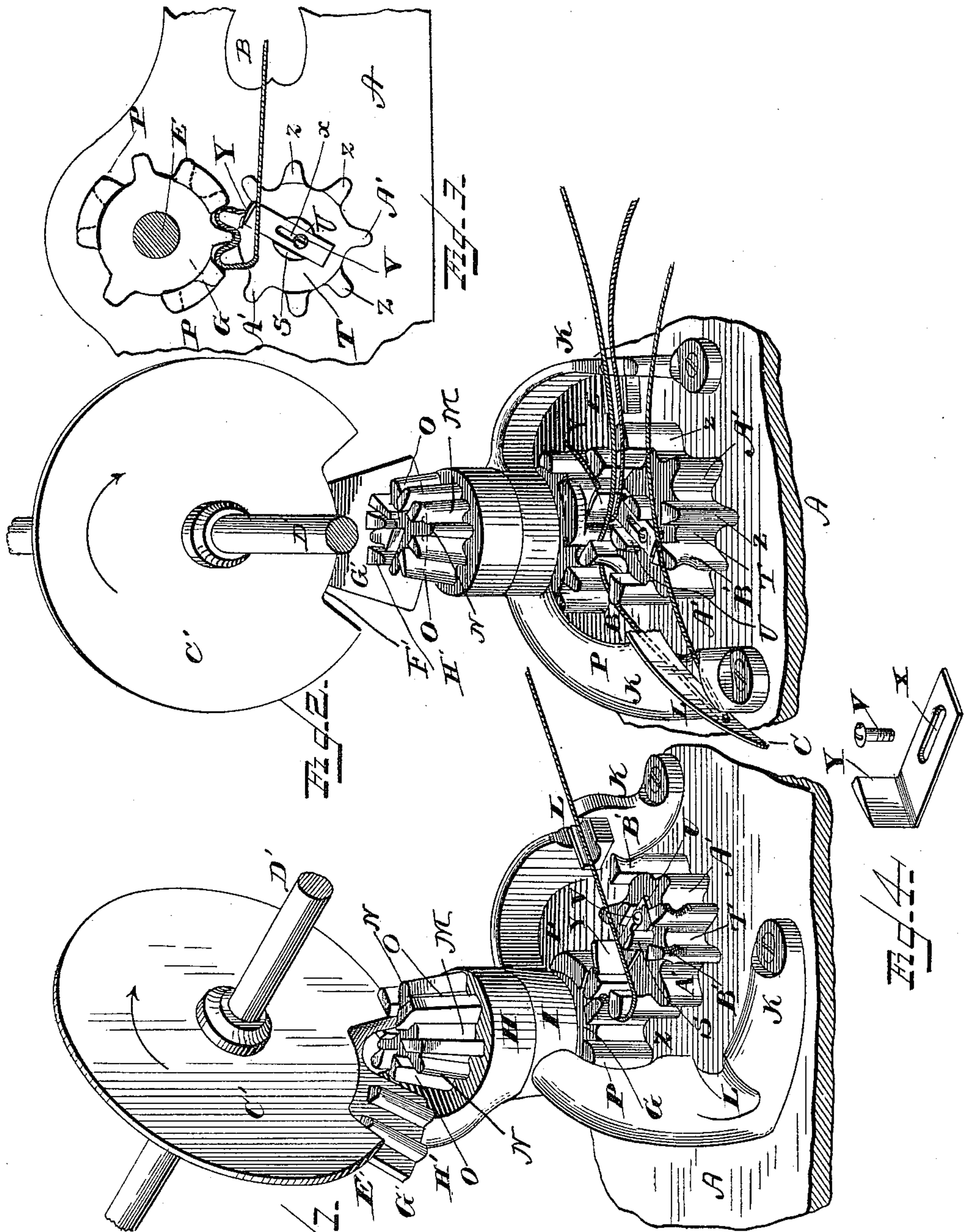
(Model.)

C. F. ADAMS.

TWINE HOLDER AND CUTTER FOR GRAIN BINDERS.

No. 362,696.

Patented May 10, 1887.



Witnesses
Frank L. Curand,
Geo. E. French

Inventor
Charles F. Adams,
By his attorneys
Louis Dwyer & Co.

UNITED STATES PATENT OFFICE.

CHARLES FRANCIS ADAMS, OF RIGA, NEW YORK.

TWINE HOLDER AND CUTTER FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 362,696, dated May 10, 1887.

Application filed January 15, 1886. Serial No. 188,688. (Model.)

To all whom it may concern:

Be it known that I, CHARLES FRANCIS ADAMS, a citizen of the United States, residing at Riga, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Twine Holders and Cutters for Grain-Binders; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of my improved twine holder and cutter, showing the end of the cord held in position, the needle having been drawn back for the reception of another sheaf. Fig. 2 is a side perspective showing the position of the different parts just before the cords are cut and the new end secured in position, the knoter-bill being omitted in each of said figures. Fig. 3 is a top plan view of Fig. 1, partly in section, with the frame or casing removed and the breast-plate partly broken away, the end of the cord being shown clamped between the cogs of the pinions; and Fig. 4 is a detail view of the knife and means of securing it.

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

My invention has relation to devices for holding and cutting the twine in twine-binding grain-binders; and it consists in the improved construction and combination of parts of the same, as hereinafter more fully described and claimed.

In the accompanying drawings the letter A indicates the breast-plate having an aperture, B, through which the needle C passes back and forth. As the knoter is of any ordinary construction and forms no part of the present invention, and must be secured differently upon different machines, it is not shown in the drawings.

The lower end of a short shaft, E, is provided with a pinion, G, having preferably nine cogs, or any uneven number of cogs above that number which is divisible with three, while its upper portion is journaled in a bearing, H, in the upper end of a frame or casing, I, which covers the pinion, and which is provided with

two forwardly-projecting lugs, K K, at its sides, which lugs are formed with notches L in their upper edges.

The upper end of the short shaft is provided with a pinion, M, having a number of teeth corresponding to the teeth of the lower pinion, and three of these teeth or cogs extend only as far as the upper end of the shaft, as shown at N, while the remaining teeth, O, which sit in pairs between the shorter teeth or cogs, project above the end of the shaft, so that this pinion will have pairs of long cogs alternating with single shorter cogs.

The cogs upon the upper pinion register with the cogs upon the lower pinion, and every third space between the cogs of the lower pinion is filled up at its upper end, as shown at P.

A shaft or bolt, S, projects near the lower pinion from the breast-plate, and has a pinion, T, journaled upon it. This pinion is surrounded and partly covered by the casting upon the breast-plate, which covers the lower pinion upon the upright shaft, and the notched ears of this casting reach around at the sides of the pinion upon the bolt, having the notches standing nearly diametrical to each other at the sides of the pinion.

The upper end of the upright bolt is formed with a transverse notch, U, and a set-screw, V, is inserted axially into the said notch, the upper end of the bolt having a central perforation, and the slotted base portion, X, of a cutter, Y, which projects at a right angle to the base portion, slides with its slot adjustably upon the screw, being clamped within the notch, which it fills by the head of the screw.

The pinion journaled upon the rigid upright shaft or bolt has alternately two long cogs, Z Z, which project above the upper surface of the pinion, and one short tooth or cog, A', and the short cogs mesh with the short or half-filled spaces in the lower pinion upon the revolving upright shaft, while the outer faces of the upper portions of the longer cogs are preferably formed with shallow notches B'.

A disk, C', is secured upon a shaft, D', and is formed with a thin edge, E', which may pass through the spaces between the long cogs of the upper pinion, and over the top of one short cog, the said spaces and the short cogs being diametrically opposite to each other and the

shaft of the disk, and the revolving short upright shaft being placed at a right angle to each other.

The edge of the disk is cut away at one place at F', and at this place a short flange, G', projects from the disk parallel with the edge of the disk, but at a short distance from the same to the rear of it, and this short flange is formed with cogs H' upon its forward side, which engage the cogs of the upper pinion and turn it three cogs forward each time when the flange engages the pinion.

In operation the end of the cord is secured between the cogs, as shown in Figs. 1 and 3, and the needle placed in its lower position. As soon as a sheaf is ready to be bound the needle passes up over it, carrying the cord up around over it, and across over the top of the pinion, within which the knife is located. When the needle reaches the end of its forward stroke, the disk upon the shaft is revolved until its edge has passed out of the notch in the top of the pinion for operating the holding mechanism, and the cogs upon the flange come into engagement with the cogs of said pinion. This causes the pinion to be turned one-third of the way round, or three cogs, which also causes the pinions holding the cord to be revolved a corresponding distance, the needle remaining stationary at the end of its forward stroke during this operation. As the pinion over which the cord is drawn by the needle is revolved the cord is caught in the notch of one of the long teeth, and carried around with it and the cogs of the other pinion. As this cog passes the edge of the knife in its revolution, which it does just after the cord is secured between the two pinions, that cord is cut, and also the end of the cord which was held in that place before the sheaf was encircled, so that the sheaf can then be thrown from the table by the ejector-arms as soon as the needle has been withdrawn, the end of the cord for the new sheaf being secured between the two pinions upon the withdrawal of the needle in the same manner as it was in the first place. The notches in the long cog assist in keeping the cord from slipping off them as it is being carried around between the pinions. As soon as the cogs upon the flange on the disk leave the cogs of the pinion upon the top of the shaft, and before the needle is drawn back far enough to pull upon the cord that is secured between the pinions at the top of the breast-plate, the edge of the disk enters one of the spaces between two of the long cogs and over the short cog, thus locking the pinion and keeping it from being revolved backward by the tension upon the end of the cord as the needle is being withdrawn. The needle may now be carried up to pass around another bundle, whereupon it again may be passed over the notched ears, when the twine will again be caught and held, while the other end is again cut off by the cutter.

The tying of the knot takes place after the needle has passed over the notched ears and

before the pinions are revolved, the revolving of the pinions taking place immediately after the knot has been tied and before the needle is drawn back, the connection between the tyer and needle and revolving disk being so adjusted that they will operate together in the aforesaid manner. It follows that the pinions may be either square or beveled, and that the cogs of the pinions may be square or rounded, and, if desired, the notches in the faces of the long cogs upon the pinion revolving upon the rigid shaft may be omitted without departing from the spirit of my invention.

By filling out the upper portions of the spaces between the cogs upon the lower pinion upon the revolving shaft, which are engaged by the short cogs of the pinion upon the rigid shaft, the cogs of the pinions may always be retained in their proper position relative to each other, as it will be impossible for the two pinions to mesh with each other and to freely revolve with each other excepting when the filled-up spaces are engaged by the short cogs, as a long cog meeting a partly filled-up space would not be able to enter into it and would consequently stop the revolutions of the pinions.

It will be seen that this twine holder and cutter may be used with a twine-binder of any construction when the cogs and pinions are made suitable in size and the intermediate gearing connecting the device with the moving parts of the binder is suitably adjusted.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a twine-holder for grain-binders, the combination of a pinion having the ends of its cogs projecting beyond its face, a pinion meshing with the said pinion and having means for imparting a part revolution at one time, and a cutter bearing with its edge against the inner sides of the projecting ends of the long cogs, as and for the purpose shown and set forth.

2. In a twine holder and cutter for grain-binders, the combination of a pinion having alternately two cogs extending beyond its face and one short cog, an intermeshing pinion having a corresponding number of cogs and having means for revolving it the space of three cogs at a time, and a cutter secured rigidly to bear with its edge against the inner sides of the long cogs, as and for the purpose shown and set forth.

3. In a twine holder and cutter for grain-binders, the combination of a pinion having alternately two cogs extending with their ends beyond the face of the pinion and one short cog, a pinion having a corresponding number of cogs and having the spaces into which the short cogs mesh partly filled and provided with means for revolving it the space of three cogs at a time, and a cutter bearing with its edge against the inner sides of the long cogs, as and for the purpose shown and set forth.

4. In a twine holder and cutter for grain-
binders, the combination of a pinion having
alternately two cogs extending with their ends
beyond the face of the pinion and one short
5 cog, and having shallow notches in the faces
of the upper portions of the long cogs, an in-
termeshing pinion having a corresponding
number of cogs and having means for revolving
it the space of three cogs at a time, and a
10 cutter bearing against the inner faces of the
ends of the cogs, as and for the purpose shown
and set forth.

5. In a twine holder and cutter for grain-
binders, the combination of a rigid stud hav-
15 ing a transverse notch in its end, a pinion re-
volving upon the stud and having alternately
two cogs extending with their ends beyond
the face of the pinion and one short cog, a cut-
ter consisting of a slotted portion secured ad-
20 justably in the notch of the short shaft, and an
upwardly-bent blade bearing with its edge
against the inner sides of the long cogs, and a
pinion having a corresponding number of cogs
to the other pinion and meshing with the same,
25 and having means for revolving it the space
of three cogs at a time, as and for the pur-
pose shown and set forth.

6. In a twine holder and cutter for grain-
binders, the combination of a rigid stud hav-
30 ing a cutter secured to its end formed with a
blade at a right angle to the portion secured to
the end of the stud, a pinion revolving upon
the stud and having alternately two cogs ex-
tending beyond the face of the pinion and one
35 short cog, a shaft having a pinion at its lower
end meshing with the other pinion and having

a corresponding number of cogs, and having
a pinion at its upper end having a correspond-
ing number of cogs to the lower pinion and
having alternately two cogs extending with 40
their ends above the face of the pinion and
one short cog, and a disk secured upon a re-
volving shaft at a right angle to the pinion-
shaft and having a thin edge fitting into the
spaces between two long cogs, and a flange at 45
a cut-away portion of the edge slightly to the
side of the edge and formed with cogs mesh-
ing with the upper pinion, as and for the pur-
pose shown and set forth.

7. In a twine holder and cutter for a grain- 50
binder, the combination of a casing having
two diametrically-opposite notched ears, a
short stud placed nearly central to the notches
and having a transverse notch in its upper
end, a pinion revolving upon the stud and 55
having alternately two cogs projecting with
their ends beyond the face of the pinion and
one short cog, a slotted cutter secured ad-
justably in the notch of the shaft, with its blade
bearing against the inner sides of the ends of 60
the long cogs, and a pinion having a corre-
sponding number of cogs to the other pinion,
and having means for revolving it the space
of three cogs at a time, as and for the pur-
pose shown and set forth. 65

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

CHARLES FRANCOIS ADAMS.

Witnesses:

B. G. COWL,
BENNETT S. JONES.