

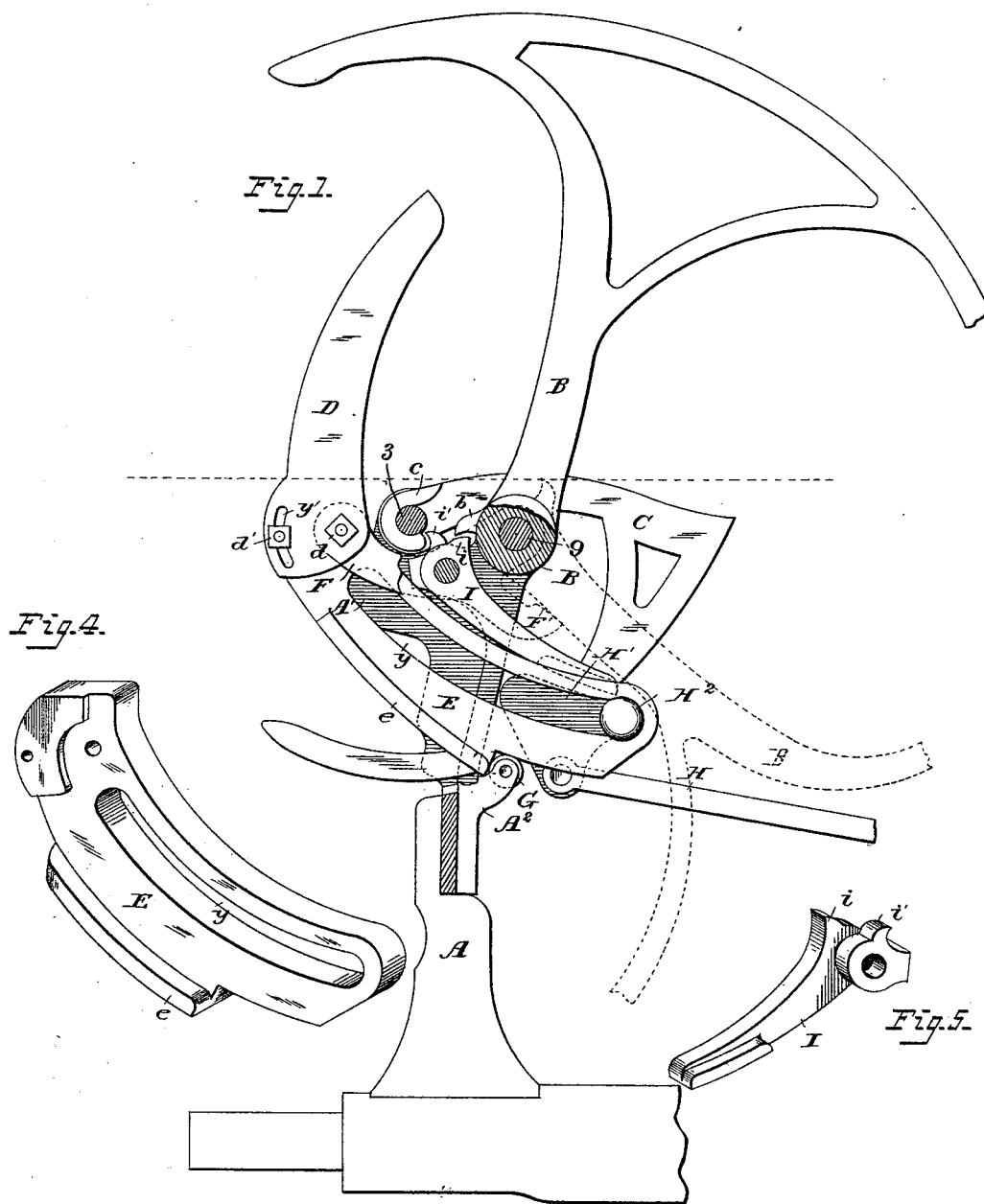
(No Model.)

2 Sheets—Sheet 1.

A. TÉTRAULT.  
GRAIN BINDER.

No. 386,905.

Patented July 31, 1888.



Attest:  
Court. A. Cooper.  
A. E. Hansmann.

A. T. Traut.  
Inventor: 4  
Foster & Newman  
attys

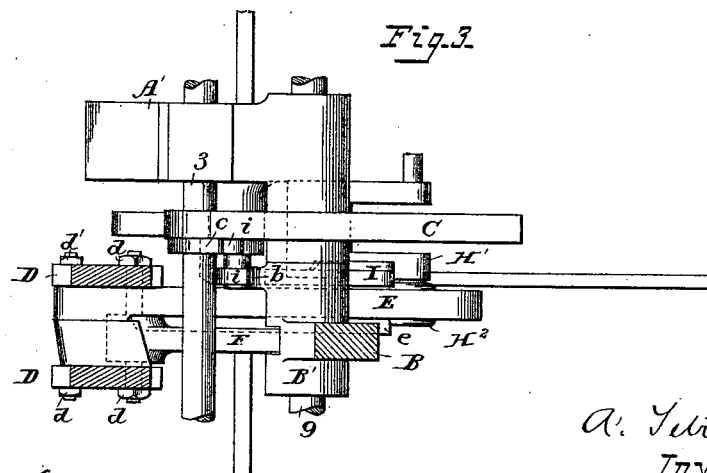
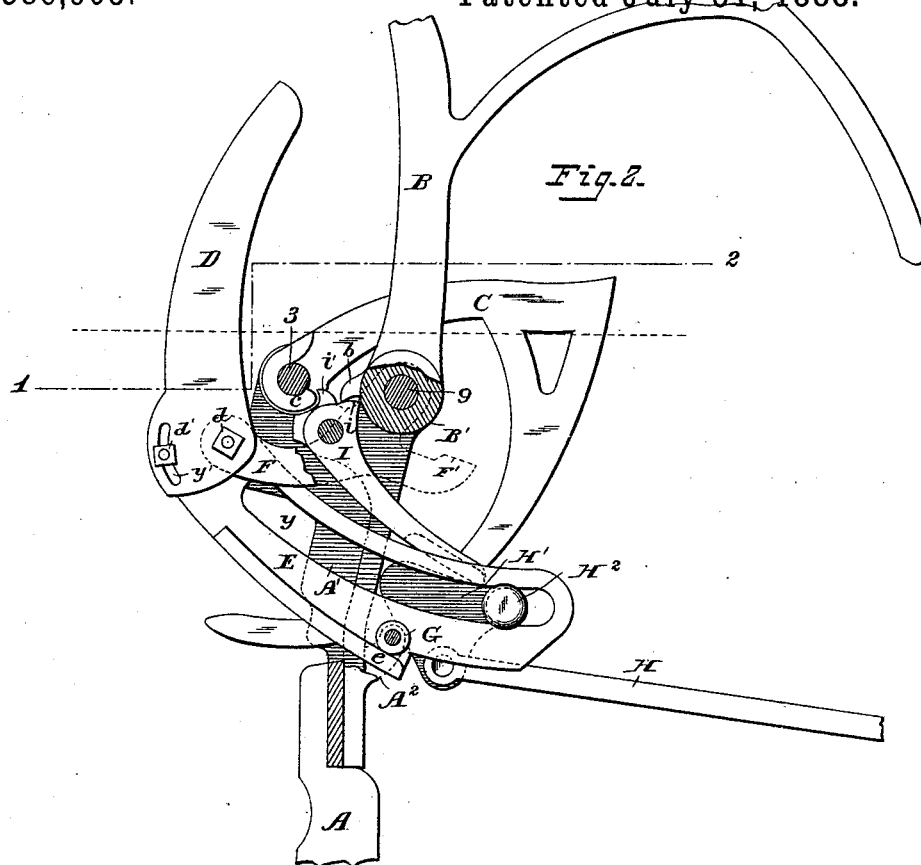
(No Model.)

2 Sheets—Sheet 2.

A. TÉTRAULT.  
GRAIN BINDER.

No. 386,905.

Patented July 31, 1888.



Attest:  
Court. A. Cooper.  
A. C. S. Harmsmann.

A. Tétrault  
Inventor: *h*  
Foster & Thuman  
attys

# UNITED STATES PATENT OFFICE.

AMÉDÉE TÉTRAULT, OF ST. PAUL, MINNESOTA.

## GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 386,905, dated July 31, 1888.

Application filed November 9, 1886. Serial No. 218,428. (No model.)

*To all whom it may concern:*

Be it known that I, AMÉDÉE TÉTRAULT, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Grain-Binders, of which the following is a specification.

My invention relates to grain-binders, and more particularly to that part of the mechanism of grain-binders by means of which the grain is formed into a bundle or sheaf, compressed into shape for the reception of the binding-cord, and discharged from the binder; and it has for its object to render the operation of such mechanism positive and accurate, with less chance of getting out of order.

To these ends my invention consists in the combinations of parts, substantially as more particularly pointed out hereinafter.

Referring to the accompanying drawings, forming part of this specification, Figure 1 is a side view of so much of a grain-binder as relates to my present invention. Fig. 2 is a similar view showing the parts in a different position. Fig. 3 is a plan view of these parts on the line 1 2, Fig. 2; and Figs. 4 and 5 are perspective views of detached parts.

My improvement is more especially adapted to be used on a machine constructed substantially as forth in the application of S. D. Madden, Serial No. 171,222, and I have not deemed it necessary to show a full operative machine, as my invention may be readily understood by those skilled in the art without reference thereto.

It may be said, in general, that as the grain falls on the table it is carried by the packers against the compressor-arms until the required quantity to make a bundle or sheaf is gathered, when the pressure of the packers upon the grain lying against the compressor-arms causes them to operate a trip or clutch mechanism connected to the moving parts of the binder, which mechanism throws into action the devices which operate the needle and cord-tying devices and the throw-off arms, the compressor-arms moving out of the way of the corded or tied bundle while being discharged from the machine by the throw-off arms.

In operating the mechanisms, as set forth in the application above referred to, it has been

found in practice that owing to the jolting of the machine and other causes the parts get out of adjustment and sometimes fail to operate in proper time and with the desired positiveness, and the mechanism I am about to describe is intended to overcome this and other objections.

In the drawings, the letter A designates a part of the frame-work of the binder, and the needle-arm B is hung to a shaft, 9, rocking in bearings upon standards connected to the frame A, one of which is shown at A'. Suitable mechanism operating the needle-arm at the proper time is also connected to the shaft, but is not shown in the present case.

Fixed upon a shaft, 3, supported by the standard A', are the throw-off arms C, one only being shown in the drawings, and this shaft is also operated by mechanism connected with the main driving-gear of the machine.

The compressor-arms D are connected by a bolt, *d*, to a curved arm or link, E, having a slot, *y*, and a second bolt, *d'*, passes through the arm E and slots *y'* in the hubs of the compressor-arms D, so that the latter may be set at the desired angle with respect to the arm E and then clamped fixedly thereto. The compressor-arms are hung loosely to a link, F, which extends into a socket in the hub of the needle-arm B' and is therein hung loosely to the needle-shaft 9. The weight of the arm D and link E would tend to cause these parts to swing downward upon the shaft 9 and to carry the compressor-arms below the table, and some means must be provided for locking these parts in an elevated position during the time the grain is being sheaved or the bundle is being packed by the packers in the usual way, the packers not being shown.

Upon a stud, A<sup>2</sup>, projecting from the standard A', is fixed a friction-roll, G, and on the under side of the link E is a projecting rib, *e*, the end of which normally bears upon the roll G and supports the compressor-arms in their elevated position while the bundle or sheaf is being formed. The needle-arm B, while the grain is being packed, bears upon the projection F' of the link F and helps to support the compressor-arms in their elevated position, as well as to restore them to that position after the bundle has been discharged. When the

arms contain a proper amount of grain to form a sheaf, the pressure of the grain upon the arms D while being packed will cause the arms to trip a suitable clutch mechanism connected to the driving-shaft of the machine and to operate the needle-arm B and knot-tying devices, as well as the throw-offs C; and H, H', and H'' represent a part of such trip mechanism, which need not be described herein, as it forms no part of my present invention and is generally understood by those skilled in the art.

As the needle-arm B moves forward after the trip mechanism has operated, it tightly presses the grain against the compressor-arms, and a lug, *b*, on the hub of the needle-arm comes in contact with a projection, *i*, on a depressor-arm, I, pivoted to a lug on the standard A' and tilts it downward, and its end bearing upon the upper edge of the part H' of the trip device, which is connected to the link E by a pin, H'', working in the slot *y* thereof, forces the link E down, and thereby causes the compressor arms to swing upon the link F and to approach the needle-arm, giving the bundle an extra pressure from both sides, and this pressure is maintained until the rib *e* passes below the friction-stud G, when the compressor-arms slide down under the table to allow the bundle to be discharged, the rib *e* serving to give proper direction to the movements of the compressor, insuring that it shall swing with link F around shaft 9 as a pivot, instead of around pivot *d*, as it otherwise might.

If from any cause the link E should rise when the pressure of the needle-arm is released as it retires to its normal position and remain in its locked position, one of the throw-off arms C is provided with a lug, *c*, on its hub, which engages with the projection *i'* on the hub of the arm I and again depresses the said arm, so as to insure its retraction as the bundle is discharged.

It will thus be seen that the action of the compressor-arms is positive, both in its movement to give the binder or sheaf an extra compression at the moment the knot is tied and to depress the link from its locked position to allow the arm to retire below the platform.

Having thus described my invention, what I claim is—

1. In a grain-binder, the combination, with the needle-arm, of compressor-arms, a link, as F, connecting the arms to the shaft of the needle arm, a depressor-arm pivoted to the frame at one end adjacent to the hub of the needle-arm, and connecting mechanism between the needle-arm and depressor arm, whereby the latter is moved by the needle-arm to force the compressor-arms toward the needle-arm, substantially as described.

2. In a grain-binder, the combination, with the main frame carrying a fixed lug, of the needle-arm, a compressor-arm, a link on which the compressor-arm is loosely hung, an arm connected fixedly to the compressor-arm to cause them to move together, and carrying an offset arranged to bear against said fixed lug to lock the compressor-arm in its elevated position, and an intermediate arm bearing on the arm connected to the compressor, said parts being arranged substantially as described, whereby as the knot is being tied said intermediate arm bears upon and moves the arm connected to the compressor out of engagement with the fixed lug, and at the same time forces the compressor toward the gavel to produce a final compression.

3. In a grain-binder, the combination, with the main frame provided with a fixed lug adapted to carry an anti-friction roller, G, of the needle-arm, a compressor arm, a pivoted link on which the compressor is loosely hung, arm E, connected to the compressor and carrying a projecting offset or rib, *e*, the end of which normally bears against the said roller, and thereby supports the compressor-arm in its elevated position, and a trip device which forces the end of the rib *e* out of engagement with roller G, which then rides upon the upper face thereof and permits the compressor to fall, substantially as described.

4. The combination, with the needle-arm having a lug, *b*, of a depressor-arm, I, having a projection, *i*, whereby the lug of the needle-bar engages with the projection upon the depressor-arm and forces the latter downward, substantially as described.

5. The combination, with the throw-off arm C, having a lug, *c*, on its hub, of the depressor-arm I, having a projection, *i'*, engaging with the lug *c*, substantially as described.

6. The combination, with the compressor-arms D and the curved arm E, supporting the compressor-arms, of a depressor-arm, I, having projections *i i'*, the needle-arm having lug *b*, and the throw-off arm having lug *c*, the whole combined and operating substantially as described, to insure the release of the curved arm from its locking device, as set forth.

7. The combination of compressor-arms, a depressor-arm, the needle-arm and throw-off arms operating said depressor-arm, and a lug on the frame of the machine for locking the compressor-arms until released by the depressor-arm, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AMÉDÉE TÉTRAULT.

Witnesses:

FRANK O. OLIVIER,  
E. W. BAZILLE.