

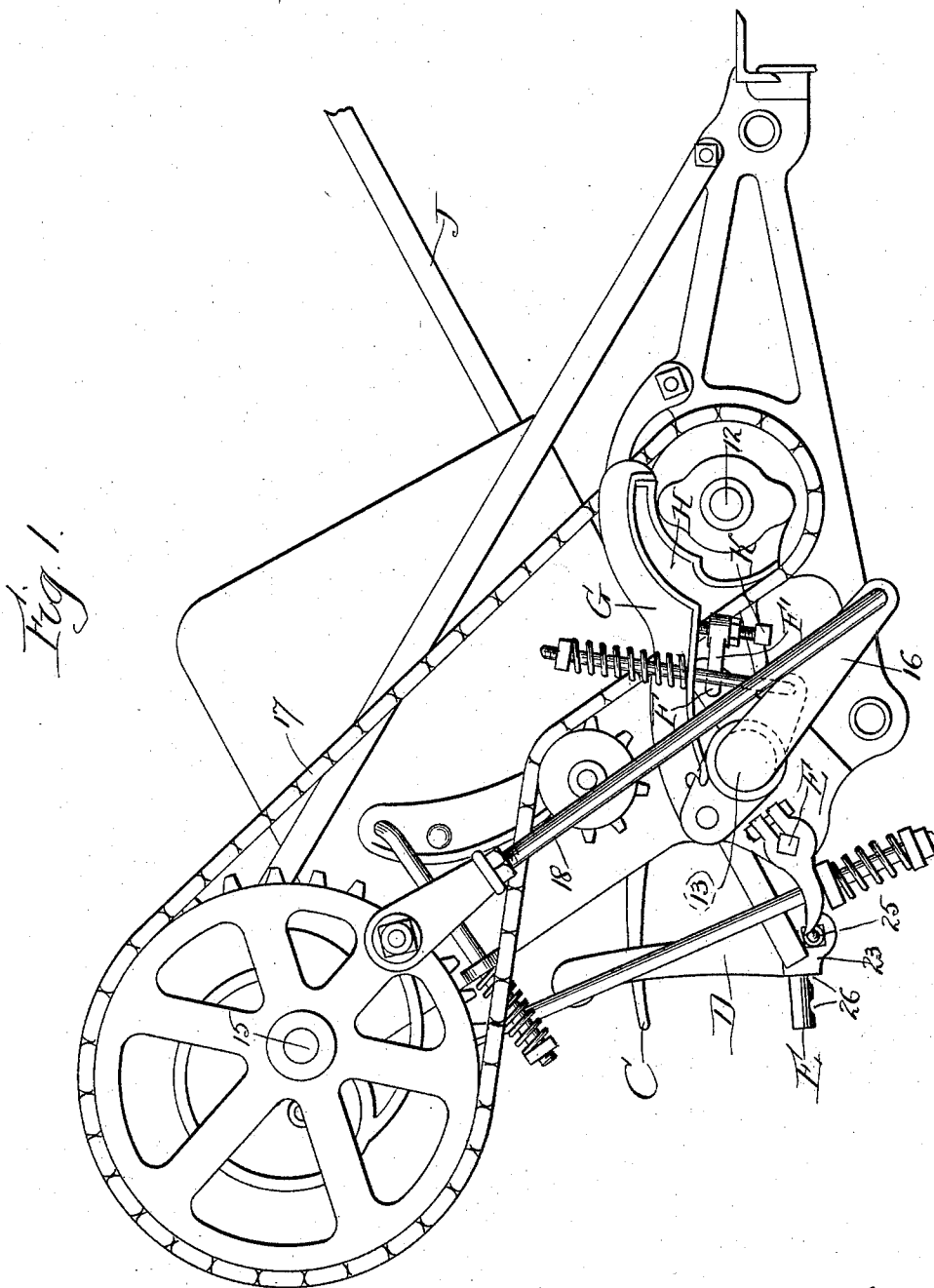
No Model.)

2 Sheets—Sheet 1.

M. KANE.  
GRAIN BINDER.

No. 586,131.

Patented July 13, 1897.



Witnesses  
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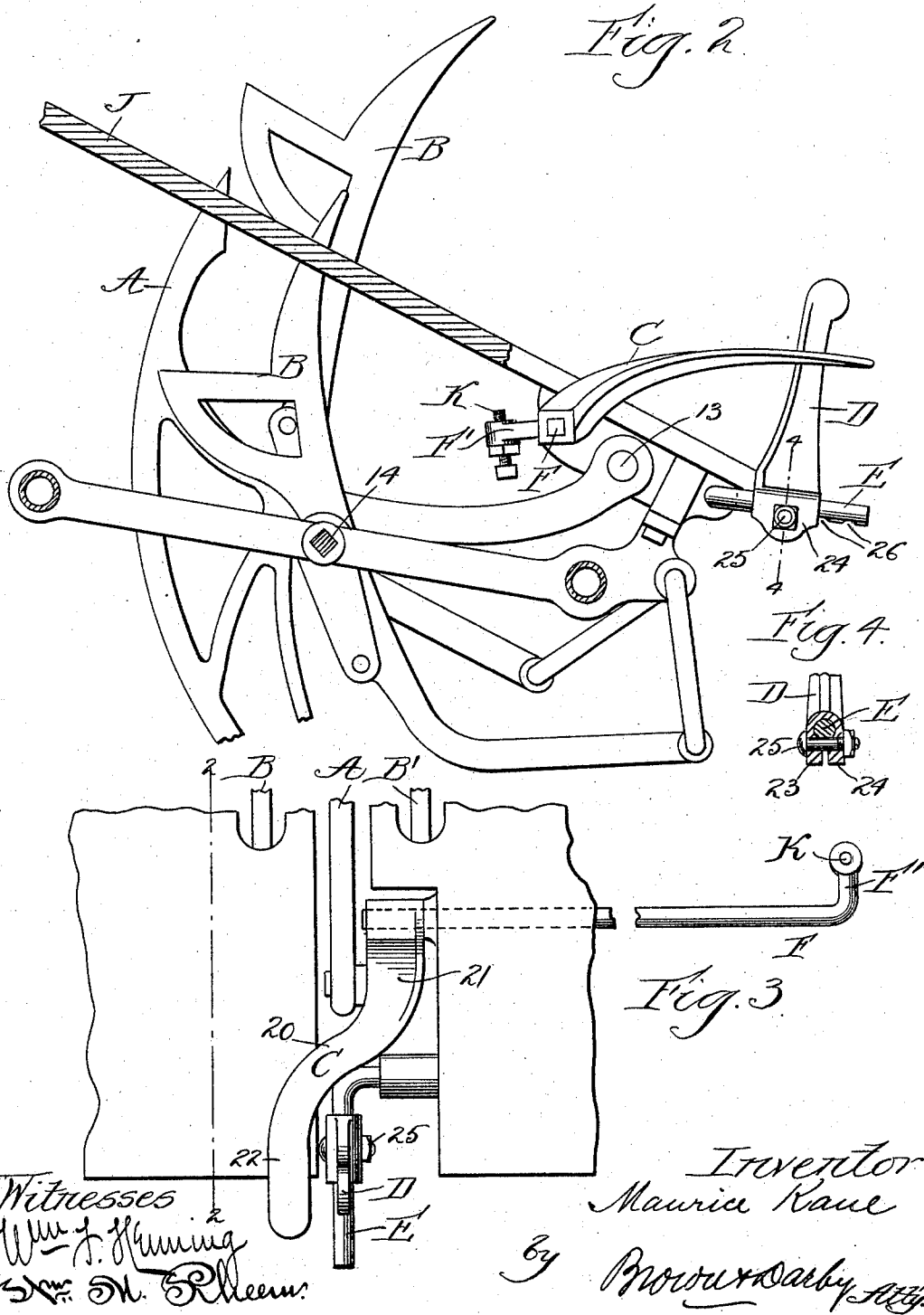
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# UNITED STATES PATENT OFFICE.

MAURICE KANE, OF CHICAGO, ILLINOIS.

## GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 586,131, dated July 13, 1897.

Application filed October 27, 1896. Serial No. 610,181. (No model.)

*To all whom it may concern:*

Be it known that I, MAURICE KANE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Grain-Binders, of which the following is a specification.

This invention relates to grain-binders.

The object of the invention is to provide a trip mechanism for grain-binders which is simple and efficient.

A further object of the invention is to provide a trip mechanism for grain-binders wherein the packers may have an equal influence in effecting a tripping of the driving mechanism.

Other objects of the invention will more fully hereinafter appear.

The invention consists, substantially, in the construction, combination, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a view in side elevation of a binder attachment for harvesting-machines, showing my invention applied thereto. Fig. 2 is a broken detail view, in central longitudinal section, on the line 2 2, Fig. 3. Fig. 3 is a broken detail view in plan of the binder-deck, showing the relative arrangement and location of the packers, needle, compressor hook or bar, and trip-flap in accordance with the principles of my invention. Fig. 4 is a broken detail sectional view on the line 4 4, Fig. 2, showing the improvement in the manner of mounting the compressor hook or bar.

The same part is designated by the same reference-sign wherever it occurs throughout the several views.

In the operation of a harvester-machine having a binder attachment the grain is delivered to the binder-deck in a thin stream. During the operation of the bundle-compressing and knot-tying mechanisms—that is, during the time the needle is advanced to perform its work—the stream of incoming grain is arrested by the rear edge of the needle, and thereby the nucleus for the next succeeding

bundle is formed. When the needle is again retracted to a point below the binder-deck to permit the next succeeding bundle to be formed, the grain which has thus collected behind the needle is engaged by one or the other of the packers and carried down against the compressor-hook and into the space where the bundle is formed. Each of the constantly-running packers successively adds to the forming bundle an increment of grain at each forward movement thereof until finally a sufficient or the desired quantity of grain has been accumulated to form a bundle. During this period the needle and knotter operating mechanisms remain out of action. When this point in the operation is reached, it becomes of importance to throw the needle and the knotter operating mechanisms into action. This has been done heretofore and automatically by arranging an arm to project above the binder-deck and into the space occupied by the forming bundle and adapted to effect a throwing of the needle and knotter mechanisms into action, said arm being arranged to be depressed by the weight of the forming bundle and by the action of the packers in crowding the grain toward the forming bundle. It is usual to arrange the needle between the packers, and hence in the constructions as heretofore arranged it was necessary to place the trip-arm in closer proximity to the plane of action of one of the packers than to the plane in which the other packer operates. The throwing of the needle and knotter mechanisms into operation was effected through the trip-arm by mounting said arm upon a rock-shaft mounted in suitable bearings and grainward with respect to the point of support of the needle, and said shaft is provided with another arm arranged to trip the mechanism for driving the knotter-operating shaft.

I have found the construction and arrangement as above outlined defective by reason of the necessity of placing the trip-arm wholly to one side of the plane of action of the needle, and hence in closer relation to one of the packers than the other. This arrangement makes it possible for each packer to have an equal influence with the other in depressing the trip-arm, and hence in effecting a tripping of the knotter-operating-shaft-driving mechanism—that is to say, each actuation of

the packers adds an increment of grain to the forming bundle, and the design is to effect a tripping of the knotter-driving mechanism just at the point when the exact amount of grain to form the bundle has been accumulated in the gavel. The trip-arm is depressed under the influence of the weight of the gavel, aided by the pressure of the packers in their forward stroke. In the prior constructions, however, the packer farthest removed from the trip-arm, instead of influencing the trip-arm in a direction to depress the same, and hence in the direction of effecting a tripping of the knotter-driving mechanism after delivering its increment of grain to the bundle by the pressure thereof toward the compressor bar or hook, effects a tilting of the entire bundle about the compressor bar or hook, thereby not only tilting and disarranging the bundle, but also failing to effect the proper tripping at the proper time. The result is that the other packer must advance and add an additional increment of grain to the bundle, although the bundle may already contain the required quantity to form a bundle, before the tripping mechanism will be actuated. Thus it will be seen that the packers exert an unequal influence upon the trip-arm, and the consequence is that not only is the bundle frequently disarranged or tilted, but the bundles are of varying size. It is my purpose in the present invention to avoid this objection and to provide an arrangement wherein the packers exert an equal influence, the one with the other, in depressing the trip-arm, and hence in effecting a tripping of the knotter-operating mechanism.

In the accompanying drawings, wherein I have shown an operative embodiment of my invention, reference-sign A designates the needle mounted on the needle-shaft 13, which is rocked by the connecting-rod or pitman 18 engaging the crank-arm 16, said connecting-rod or pitman 18 being actuated from the knotter-operating shaft 15, which receives motion through the gearing 17 from the drive-shaft 12.

Reference-signs B B' designate the packers; F, the shaft upon which is carried the trip-arm, said shaft being journaled grainward with respect to the point of support of the needle, and has an arm F', carrying an adjustable stop K, arranged to engage the under side of the trip-latch G and to rock said trip-latch when said shaft F is rocked in a direction to release the starter-pawl H, by which the knotter-driving mechanism is clutched to or unclutched from drive-shaft 12, the normal position of said trip-latch being such as to maintain the starter-pawl in position for said knotter-driving mechanism to be unclutched from the driving-shaft.

D is the compressor-hook; E, the shaft or support upon which said hook is mounted.

The parts so far described may be of any usual, convenient, or well-known form or type

of construction of machines of this class; and while I have shown a particular form or type thereof I desire it to be distinctly understood that I do not confine my invention to the specific construction shown and described.

Upon the trip-shaft F and at a point adjacent to the planes in which the needle and packers operate I arrange the trip-arm C. Instead of making this arm a straight arm, as heretofore, I provide the same with a lateral bend or offset, as at 20, Fig. 3, at a point about midway the length thereof, whereby one portion, 21, thereof will occupy the same relative position with reference to the packer B' that the entire trip-arm occupied in the prior constructions, and the other bent or offset portion, 22, thereof will occupy a corresponding relative position with reference to the other packer B. In other words, by providing the trip-arm with a lateral bend or offset I provide an arrangement wherein the proper operation of the needle is not interfered with and wherein one portion of the trip-arm co-operates with one of the packers and another portion of the trip-arm co-operates with the other packer, whereby the packers have an equal influence upon the trip-latch in effecting a depression thereof, and hence in effecting a tripping or rocking thereof, and this important result is attained by arranging the one portion of the trip-arm to operate in a plane adjacent to that in which one of the packers operates and another portion to operate in a plane adjacent to that in which the other packer operates. The bend or offset in the trip-arm also avoids any interference with the proper operation of the needle, although the shaft upon which the trip-arm is mounted is journaled at a point grainward with respect to the needle.

I will now describe my construction and arrangement for mounting and supporting the compressor hook or bar D upon the support E. I form on the compressor-hook D the spring clamping jaws or flanges 23 24, arranged to encircle or embrace the shaft or support E, and a bolt 25 serves to draw these jaws together to clamp upon the shaft a support. Now in order to prevent the compressor-hook from slipping on its support or from tilting thereon under the strains it is called upon to withstand in opposing the action of the packers and of the needle, I plane off from the under side of the compressor-hook the seats 26, and I arrange the clamping-bolt 25 to be received in said seats. From this construction it will be seen that a clamping effect is secured of the clamping-jaws 23 24 upon the compressor-hook support E, and by reason of the clamping-bolt being received in the depressions or seats 26, after passing through said jaws or flanges, slipping of the compressor-hook endwise or tilting sidewise is prevented. In order that the compressor-hook may be adjustable to provide for different sizes of bundles, I provide the support E with a number of such seats 26, and in use I

first adjust the hook D to the desired point to correspond with the desired size of bundle, and then insert the bolt 25 through the clamping-jaws and the seat 26 and clamp the same.

5 Many variations in the details of construction, size and proportion of parts, and their relative location and arrangement would readily suggest themselves to persons skilled in the art and still fall within the spirit and  
10 scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details shown and described; but,

Having now set forth the object and nature of my invention and an operative form of apparatus embodying the same, and having explained the construction, function, and mode  
15 of operation thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent of the United States, is—

1. In a grain-binder, the combination with the needle, packers respectively arranged on opposite sides of said needle and operating mechanisms therefor, of a trip-arm having a  
25 portion thereof arranged to coöperate with one of the packers and another portion arranged to coöperate with the other packer; as and for the purpose set forth.

2. In a grain-binder, the combination with  
30 the needle, and the packers respectively arranged on opposite sides thereof and operating mechanisms therefor, of a trip-arm having one portion arranged adjacent to the plane in which one of the packers operates, and another portion arranged adjacent to the  
35 plane in which the other of said packers operates, as and for the purpose set forth.

3. In a grain-binder, the combination with the needle, and the packers and operating

mechanisms therefor, of a trip-arm having a  
40 lateral bend or offset, whereby one portion thereof coöperates with one of said packers, and another portion thereof coöperates with the other of said packers; as and for the purpose set forth.

4. The combination with the needle, packers and compressor-hook, of a trip-arm mounted at a point grainward with respect to the needle-support and provided with a lateral  
45 bend or offset, whereby one portion thereof coöperates with one of the packers and another portion thereof coöperates with the other packer and means actuated by said trip-arm for throwing said needle into action; as and for the purpose set forth.

5. The combination with the needle, packers and compressor-hook, of a trip-arm mounted at a point grainward with respect to the needle-support and to one side of the plane in which the needle operates, said trip-arm  
50 arranged to project above the binder-deck and to extend stubbleward with respect to the needle and having one portion thereof arranged on one side of the plane in which the needle operates and adjacent to the plane in  
55 which one of the packers operates, and having another portion arranged on the opposite side of the plane in which the needle operates and adjacent to the plane in which the other packer operates; as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 24th day of October, 1896.

MAURICE KANE.

Attest:

M. I. CAVANAUGH,  
FRANK T. BROWN.