

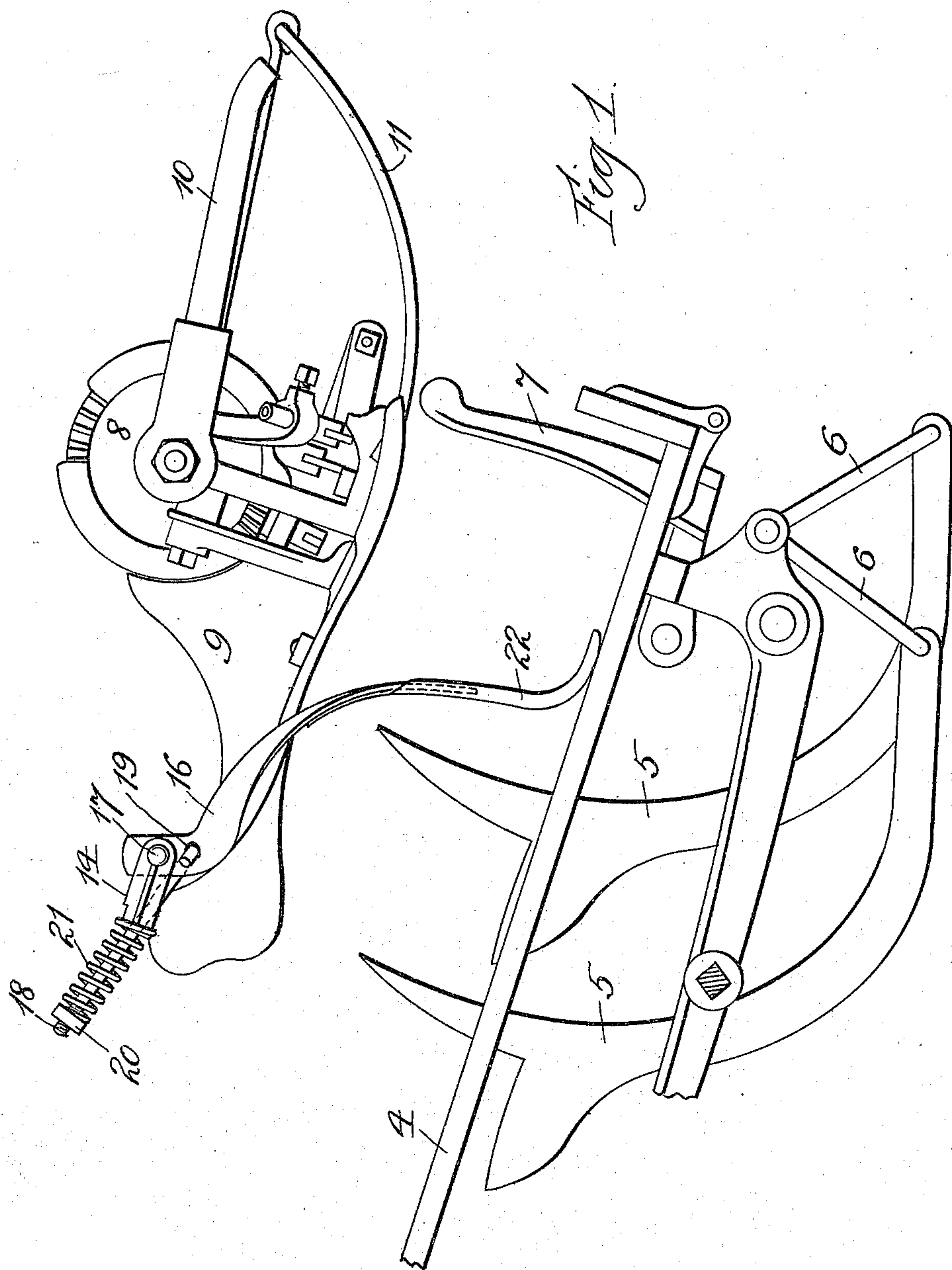
(No Model.)

2 Sheets—Sheet 1.

M. KANE.  
ATTACHMENT FOR GRAIN BINDERS.

No. 537,828.

Patented Apr. 23, 1895.



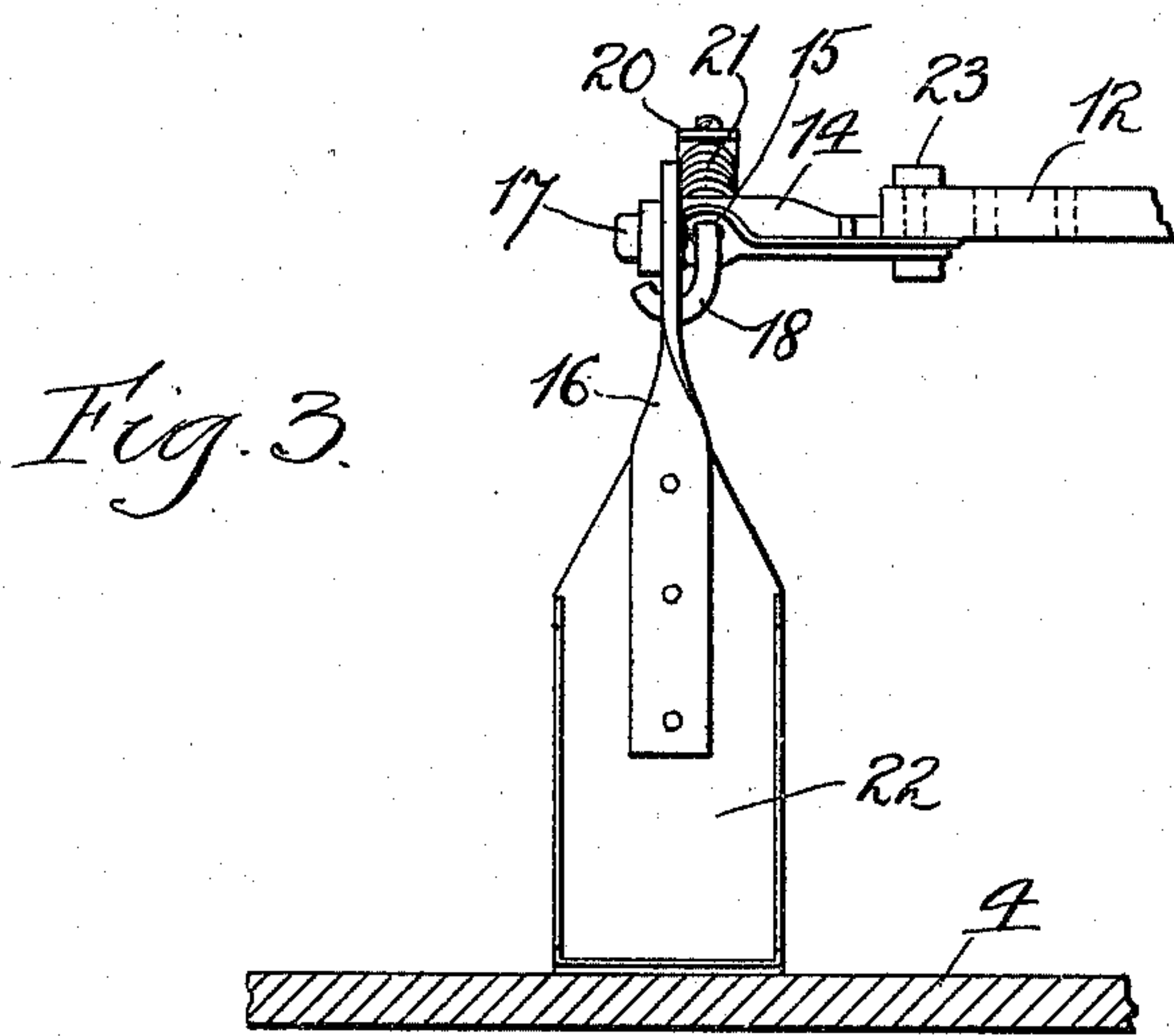
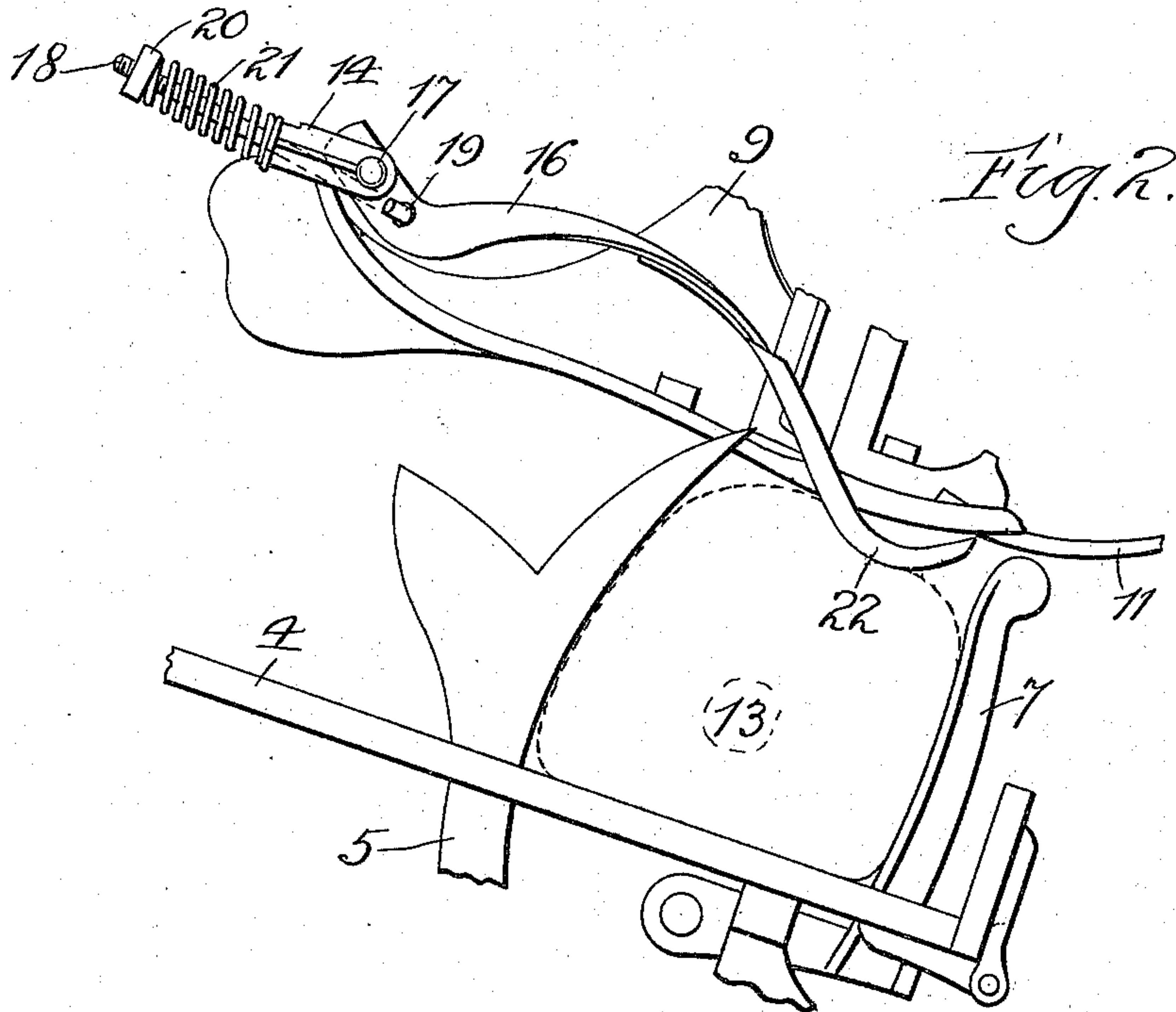
Witnesses  
Wm. J. Hanning  
M. J. Cavanagh.

Inventor  
Maurice Kane  
by Mowen & Darby Attys.

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# UNITED STATES PATENT OFFICE.

MAURICE KANE, OF AUSTIN, ILLINOIS, ASSIGNOR TO THE WARDER, BUSH-  
NELL & GLESSNER COMPANY, OF SPRINGFIELD, OHIO.

## ATTACHMENT FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 537,828, dated April 23, 1895.

Application filed November 2, 1894. Serial No. 527,705. (No model.)

*To all whom it may concern:*

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

This invention relates to attachments for grain binders.

The object of the invention is to provide an exceedingly simple and efficient spring attachment of novel construction and arrangement for retarding or holding the grain at the beginning of and during the formation of the bundle.

The invention consists substantially in the construction, combination, location and relative arrangements 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 portion of a grain binding machine showing the spring attachment applied thereto in operative position. Fig. 2 is a view similar to Fig. 1, showing the spring attachment in displaced position with reference to the position shown in said Fig. 1. Fig. 3 is a detail view illustrating the manner of mounting the spring attachment.

Reference sign 4 designates the deck of a grain binding machine; 5, 5, the packer arms; 6, the packer links; 7, the compressor bar; 8, the knotter operating mechanism; 9, the breast plate; 10, the bundle ejecting arms; 11, the stripper arms, and 12 the breast-plate supporting bar. As all these parts may be of any ordinary and well-known construction and form no part of the present invention, I do not deem it necessary to specifically describe the construction, function or mode of operation thereof. In a general way, however, it may be said that in machines of this character when a sufficient quantity of grain is fed in to form a bundle as indicated at 13, Fig. 2, the packer arms are operated to compress the bundle, and the needle, not shown, in conjunction with the knotter mechanism, operates to tie the bundle when formed. As the feed of the grain to the bundle forming mech-

anism is, in practice, substantially continuous, it will be obvious that the packer arms and also the needle, when brought into action to perform their respective functions, must force a way through the incoming layer of grain so as to cut off from the supply or continuous feed that portion of the grain which is designed to form the bundle. It is also of usual occurrence that the stalks of grain do not lie at right angles to the line of feed, but they occupy, usually, a position on the binder deck inclined with respect to the line of feed. Moreover, the stalks of grain are not always parallel with each other and they are frequently matted together or overlap each other. It will also be understood that when the bundle has been completed and is ready to be tied, the needle is advanced to perform its duty, forcing its way through the stream of incoming grain, thereby not only cutting off that part of the grain intended for the particular bundle under process of formation, but also arresting the flow of grain, and hence permitting a nucleus for the next bundle to form against the grainward edge of the needle. The needle also acts as a barrier to maintain a clear space between its grainward and its stubbleward edges within which the packer arms operate during the tying process. When the bundle has been tied and the ejecting mechanism advances to its work of ejecting the bundle, the needle begins to return to its position beneath the binder deck. At this point it becomes important to retard or resist the feed of the advanced ends of the grain forming the nucleus of the next bundle which has collected grainward of the needle, and which is then released by the withdrawal of the needle beneath the deck, to the end that the stalks of grain may be straightened into proper position relative to the line of feed to be fed into the compressing or bundle forming mechanism. In order to accomplish this purpose, I mount upon any convenient support, preferably, and as shown, upon the breast-plate supporting bar 12, an angle bar, 14, having a flange perforated as at 15. To the free end of angle bar 14 I pivot an arm 16, as at 17. A hook bolt, 18, is arranged to pass loosely through perforations 15, and to loosely engage arm 16, as at 19. Hook bolt 18 is screw-threaded on the end thereof to receive a nut 20, and inter-



posed between said nut and the flanged bar 14 is a spring 21, it being understood that the point of loose pivotal connection 19, of hook bolt 18 with arm 16 is on the opposite side of the pivot 17 of said arm 16 with reference to the spring 21. The purpose of this construction and arrangement will presently appear more fully. Supported by arm 16 is a retarding foot 22, having a broad surface and adapted, when in its normal position, to rest upon the binder deck, as indicated in Fig. 1.

Angle bar 14 may be made adjustable on its support in any suitable manner. In the form shown, breast-plate supporting bar 12 is provided with a series of holes, in any one of which may be inserted bolt 23, by which angle bar 14 is secured to said bar 12. It will be obvious, however, that any other desirable adjustable connection for these parts may be provided.

The operation of my invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings.

It will be observed that spring 21 exerts its greatest pressure on toe or plate 22 when said toe or plate is in its normal position, that is, its lowest position, as shown in Fig. 1. As the size of the bundle increases and the toe 22 is elevated thereby, there is a constantly decreasing pressure on the toe by reason of the fact that point 19 approaches a dead center when toe or plate 22 and its supporting arm is rocked about the pivot 17, hook bolt 18 is rocked and also moved endwise, because point 19 has an orbital movement about pivot 17, and as said point 19 approaches a position where bolt 18 intersects the axis of pivot 17, there is a continually decreasing spring tension on toe or plate 22. This is an important feature of my invention for the necessity for spring pressure on plate 22 no longer exists when the bundle is nearly formed. On the contrary, it is desirable when that point is reached to relieve the bundle of pressure from the grain holding plate, in order that the bundle may be ejected from the machine without unnecessary hinderance.

It will be understood from the foregoing description that when the bundle is formed and ready to be tied the parts are in the position shown in Fig. 2, and the further feed of the grain to the bundle is arrested by the needle being advanced to its work. When the bundle is tied and the ejecting mechanism begins to operate and the needle to be retracted, it will be seen that the bundle will be freed from toe 22 before the needle has been sufficiently retracted to permit of the arrested grain being fed in for the next succeeding bundle, and thereby permitting the toe to return to position as shown in Fig. 1, stubbleward of the retracting needle, ready to perform its function of retarding the advanced ends of the inclined stalks of grain.

It will also be observed that after pivotal

point 19 is elevated above pivot 17, the toe 22 will be held by spring 21 in such elevated position. This is an important feature, for the toe can be thrown up by hand out of the way when desired.

I consider the adjustment of angle bar 14 upon bar 12 important, for the reason that the position of spring toe 22 can thereby be adjusted nearer to or farther from the packers and the needle, as may be desired.

Having now fully explained the purpose and mode of operation of my invention and a form of apparatus embodying the same, I desire it to be understood that I do not limit myself to the exact details of construction and arrangement shown, as many variations therein may be made without departing from the spirit or scope of the invention; but

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a grain binder a grain retarding plate and means for applying a decreasing spring pressure thereto as the size of the bundle increases; as and for the purpose set forth.

2. In a grain binder, a grain retarding plate, means for applying a decreasing spring pressure thereto as the size of the bundle increases, and means for adjusting the position of said plate; as and for the purpose set forth.

3. In a grain binder, a pivotally mounted grain retarding plate, and means for applying a decreasing pressure thereto as said plate is rocked about its pivot by the increasing size of the bundle; as and for the purpose set forth.

4. In a grain binder a grain plate, pivotally supported, a bolt loosely connected thereto, on one side of said pivot, and a spring arranged to act upon said bolt on the opposite side of said pivot, as and for the purpose set forth.

5. In a grain binder a bar, a grain plate pivoted thereto, a bolt adapted to be passed loosely through a perforation in said bar and loosely connected to said plate, and having a nut on the opposite end thereof, and a spring interposed between said nut and bar; as and for the purpose set forth.

6. In a grain binder, a supporting bar, an angle piece carried thereby, a grain arm pivoted to said angle bar, a bolt adapted to pass loosely through a perforation in said angle bar, and loosely connected at one end to said main arm, and screw-threaded at the opposite end thereof, a nut mounted upon said screw-threaded end, a spring mounted upon said bolt and interposed between said nut and angle bar, the pivoted point of said grain arm arranged between said spring and the point of connection of said bolt and arm; as and for the purpose set forth.

7. In a grain binder a supporting bar, a grain plate pivoted thereto, a bolt connected to said grain plate, a spring arranged to act upon said bolt to exert a pressure upon said grain plate when said plate is rocked, whereby



said plate is maintained in an elevated position when said point of connection passes a dead center; as and for the purpose set forth.

5 8. In a grain binder, a retarding plate, a tension device therefor, and means for relieving said tension as the bundle increases in size; as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 30th day of October, 1894.

MAURICE KANE.

In presence of—

EDWIN L. ARTHUR,  
OSCAR T. MARTIN.