No. 613,214. Patented Oct. 25, 1898.

A. McGREGOR.

GRAIN BINDER.

(Application filed Jan. 7, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

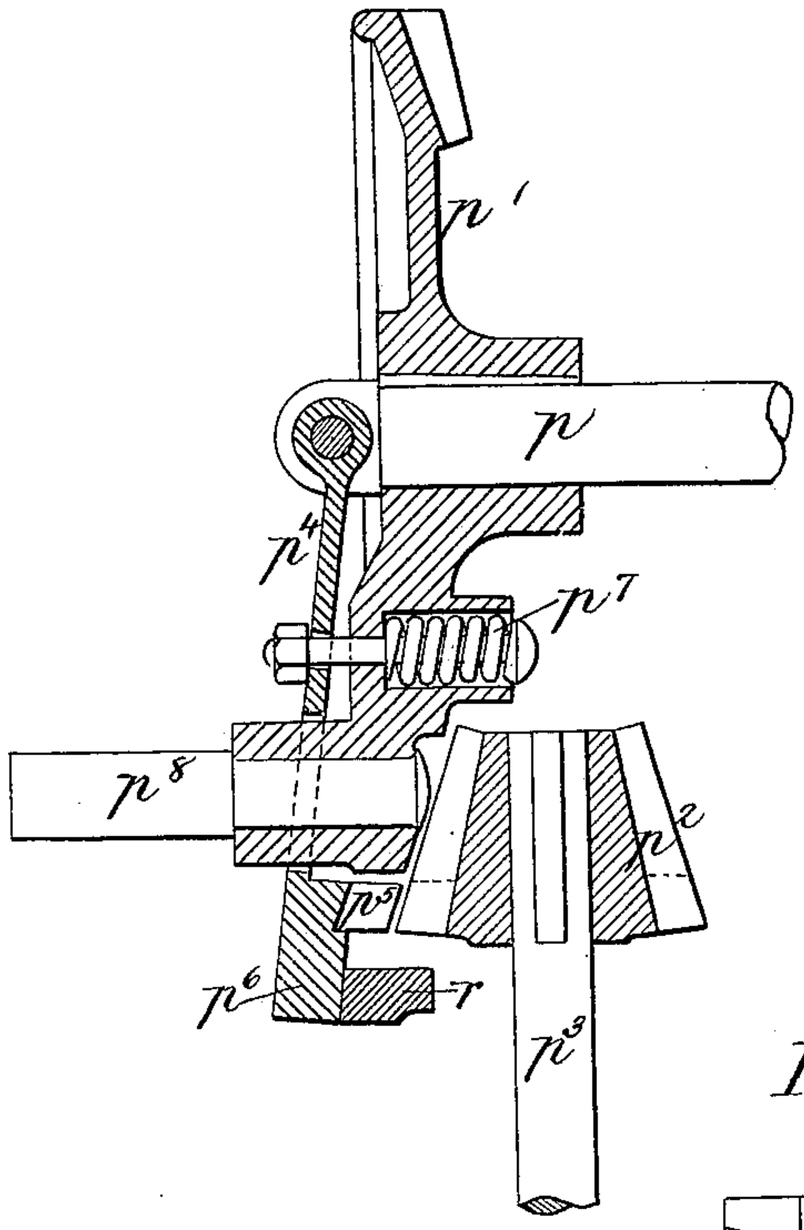


Fig. 2.

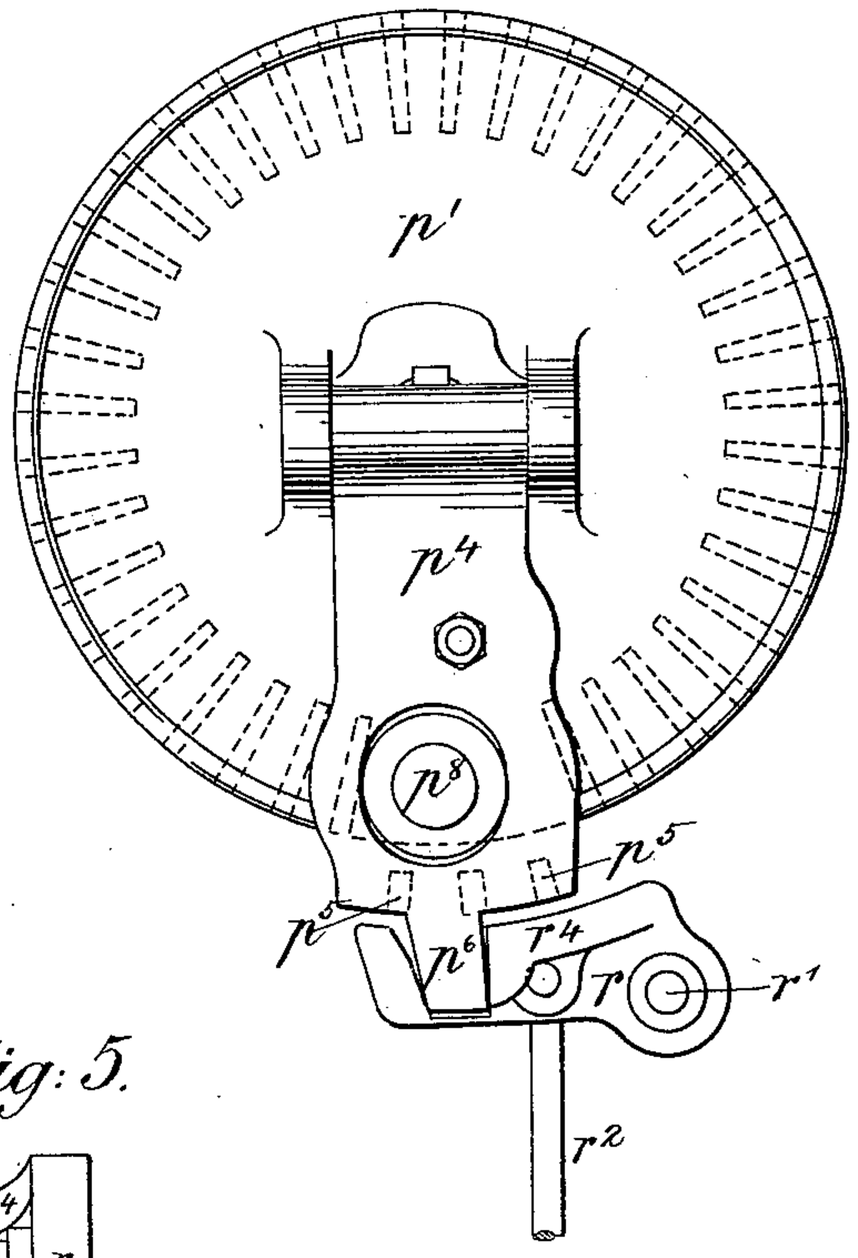


Fig. 5.

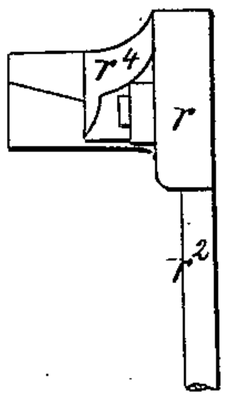


Fig. 3.

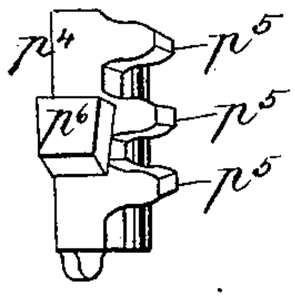
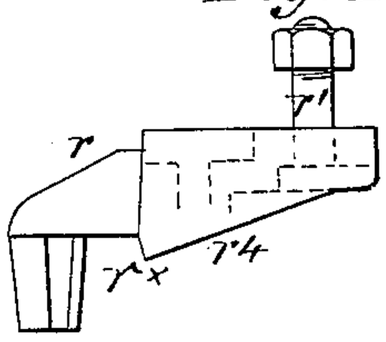


Fig. 4.



Witnesses
James F. Phillips
Hy. Burch

Inventor
Alex. McGregor

No. 613,214. Patented Oct. 25, 1898.

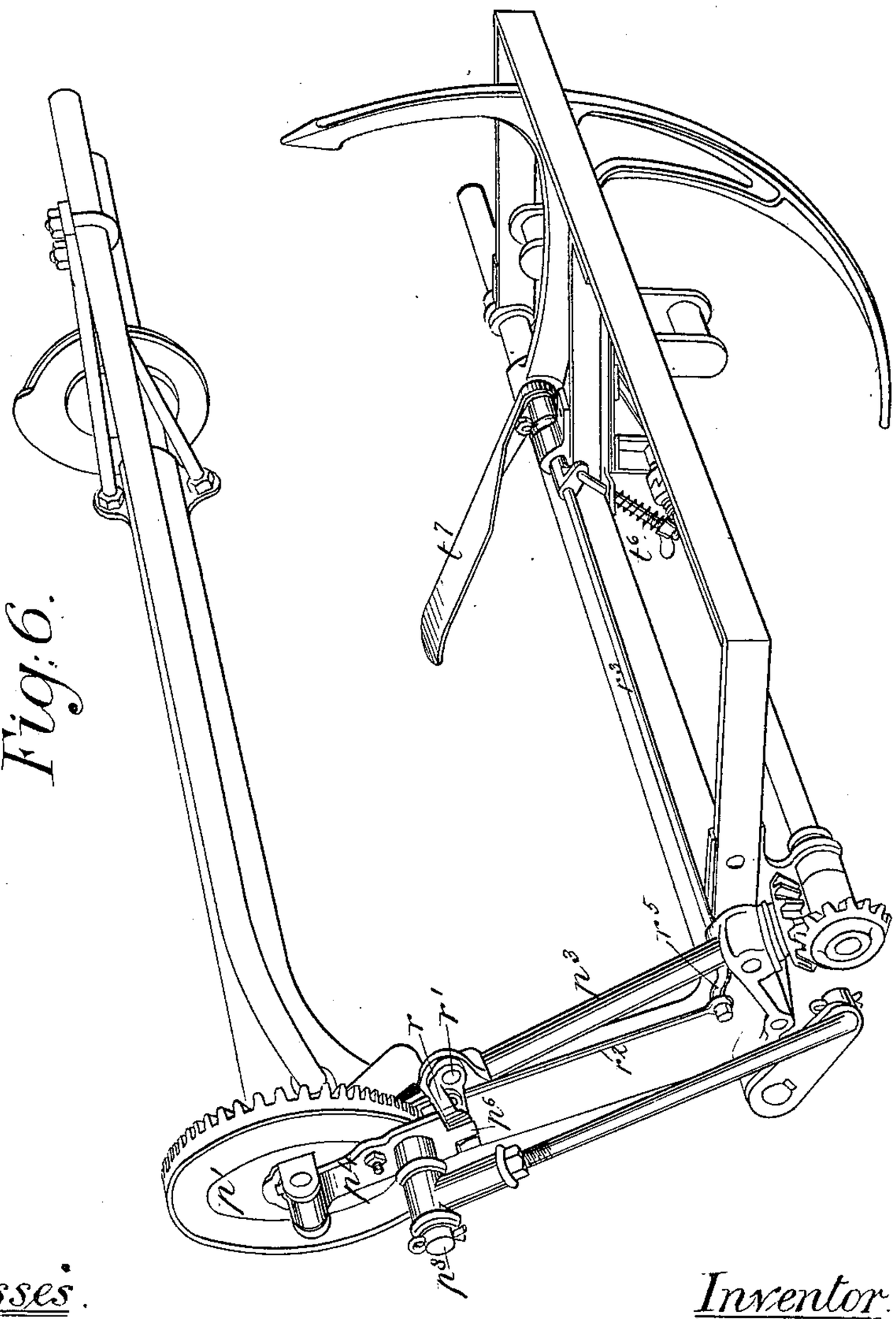
A. McGREGOR.

GRAIN BINDER.

(Application filed Jan. 7, 1898.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 6.



Witnesses.

James. F. Phillips.

Hy. Burch

Inventor.

Alex. McGregor

UNITED STATES PATENT OFFICE.

ALEXANDER McGREGOR, OF LEIGH, ENGLAND.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 613,214, dated October 25, 1898.

Application filed January 7, 1898. Serial No. 665,950. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER McGREGOR, a subject of Her Majesty the Queen of Great Britain, residing at Albion Iron Works, Leigh, in the county of Lancaster, England, have invented certain new and useful Improvements in Grain-Binders, (included in a patent granted to me in Great Britain, No. 13,865, bearing date June 5, 1897,) of which the following is a specification.

My invention has for its object improvements in the knotter driving and tripping mechanism of grain-binders. During the formation of the sheaf by the packers, in a manner well understood, the knotter-shaft and tying mechanism remain at rest or in lock; but the moment the binder is tripped into gear and the twisting and tying of the knot are about to commence it is very desirable that the knotter-driving shaft and its mechanism should instantaneously commence to rotate, and my invention relates to the means for accomplishing this object and to the simplification of parts, whereby the starting, stopping, and locking of the binding mechanism are effected at the proper time. I attain these objects by the means illustrated in the accompanying drawings, in which like reference-letters designate the same parts in the several views.

Figure 1 is a vertical section, and Fig. 2 a front view, showing just sufficient to explain my improved mechanism. Fig. 3 is an under side plan of a hinged locking-plate. Fig. 4 is a plan, and Fig. 5 an end view of a controllable trip-switch and lock, all being shown in Fig. 6, which is a perspective view of the binder-frame with sufficient parts to illustrate my invention.

p is the knotter-driving shaft, on the forward end of which I key or otherwise fix a bevel-wheel p'. This bevel-wheel p' is driven by the bevel-pinion p^2, keyed on the upper end of the inclined shaft p^3, said pinion p^2 having its teeth extended or prolonged a convenient distance beyond the periphery of the bevel-wheel p', (for a purpose hereinafter fully described,) and I drive this pinion p^2 continuously by miter or bevel gear from the forward end of the packer-shaft, as will be seen on reference to the perspective view Fig. 6.

In order to arrest the motion of the bevel-wheel p', it is mutilated by being deprived of two or more of its teeth at the point which would otherwise be in gear with the bevel-pinion p^2 when the knotter-shaft and tying mechanism are at rest. This mutilation allows the bevel-pinion p^2 and its shaft p^3 to continue revolving without engaging with the mutilated bevel-wheel p' so long as the mechanism remains at rest. The crank-pin p^8, which carries the connecting-rod for operating the needle-shaft, is fixed in a boss formed on the back of the mutilated bevel-wheel p' in the space left vacant by the absence of the teeth. To the outside of this mutilated bevel-wheel p' I hinge a laterally-moving locking-plate p^4, provided with an opening through which the crank-pin boss of the mutilated bevel-wheel p' projects and is to some extent guided, but which at the same time permits of the free lateral rocking movement of the hinged locking-plate p^4, on the inner face of which I form teeth p^5 of a comparatively short length at a point beyond the periphery of the mutilated bevel-wheel p' and forming a continuation of the missing teeth thereof. The teeth p^5 of the said hinged locking-plate p^4 correspond and gear with the before-mentioned prolongated or extended teeth of the bevel-pinion p^2. This hinged locking-plate p^4 is held to the mutilated bevel-wheel p' by an adjustable bolt and spring p^7, and at its extremity I form a lug p^6, which is directed to a point out of gear and locked at the end of its rotation by a trip-switch r, having an inclined track r^4, which serves to deflect the hinged locking-plate p^4, so that the teeth p^5 formed thereon are clear of the points of the prolonged teeth of the bevel-pinion p^2, leaving the latter free to rotate.

When the lug p^6 arrives at the end of the track or inclined surface r^4 of the trip-switch r, it drops in a recess or gap $r^\times$ formed in the face of the said trip-switch, thus securely locking the binding mechanism from backward or forward movement when the binder is at rest. The said trip-switch r is pivoted on a stud r', fixed to the binder-frame, and is connected by the rod r^2 to a crank r^5, formed on the forward end of the trip-spindle r^3, carrying the ordinary deck-trip lever t^7, (or it may be a compressor-trip,) which on being

depressed pulls the trip-switch r out of gear or otherwise releases the lug p^6 of the hinged locking-plate p^4, thus allowing the teeth p^5 thereon to fly into gear with the extended teeth of the bevel-pinion p^2, and thereby instantaneously start the binder. The trip-lever t^7 being controlled by an adjustable spring t^6 in the ordinary manner regains its normal position as soon as the bound sheaf has been discharged, while the same spring and connections raises the trip-switch r again into position for the inclined track r^4 to guide the lug p^6 of the hinged locking-plate p^4 to its position of rest.

I am aware that mutilated bevel and spur wheels have been employed on the end of the knotter-shaft and to which I lay no claim; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a grain-binder the combination of a bevel driving-gear, a mutilated driven bevel-gear, a hinged locking-plate p^4 jointed to the back of said mutilated wheel, the teeth p^5 on the inner face beyond the periphery of the bevel-wheel p' engaging with the extended ends of the teeth of the bevel-pinion p^2, the lug p^6 formed on said hinged locking-plate p^4 and trip-switch r and its lock, controlled and operating substantially as and for the purposes herein set forth.

2. In a grain-binder the combination of a hinged locking-plate p^4 and lug p^6 with the trip-switch r, said switch having an inclined deflecting-surface r^4 and gap or recess $r^\times$ for stopping, starting and locking the binding mechanism substantially in the manner herein set forth.

ALEX. McGREGOR.

Witnesses:
JAMES FREDERICK PHILLIPS,
ARTHUR E. HALL.