

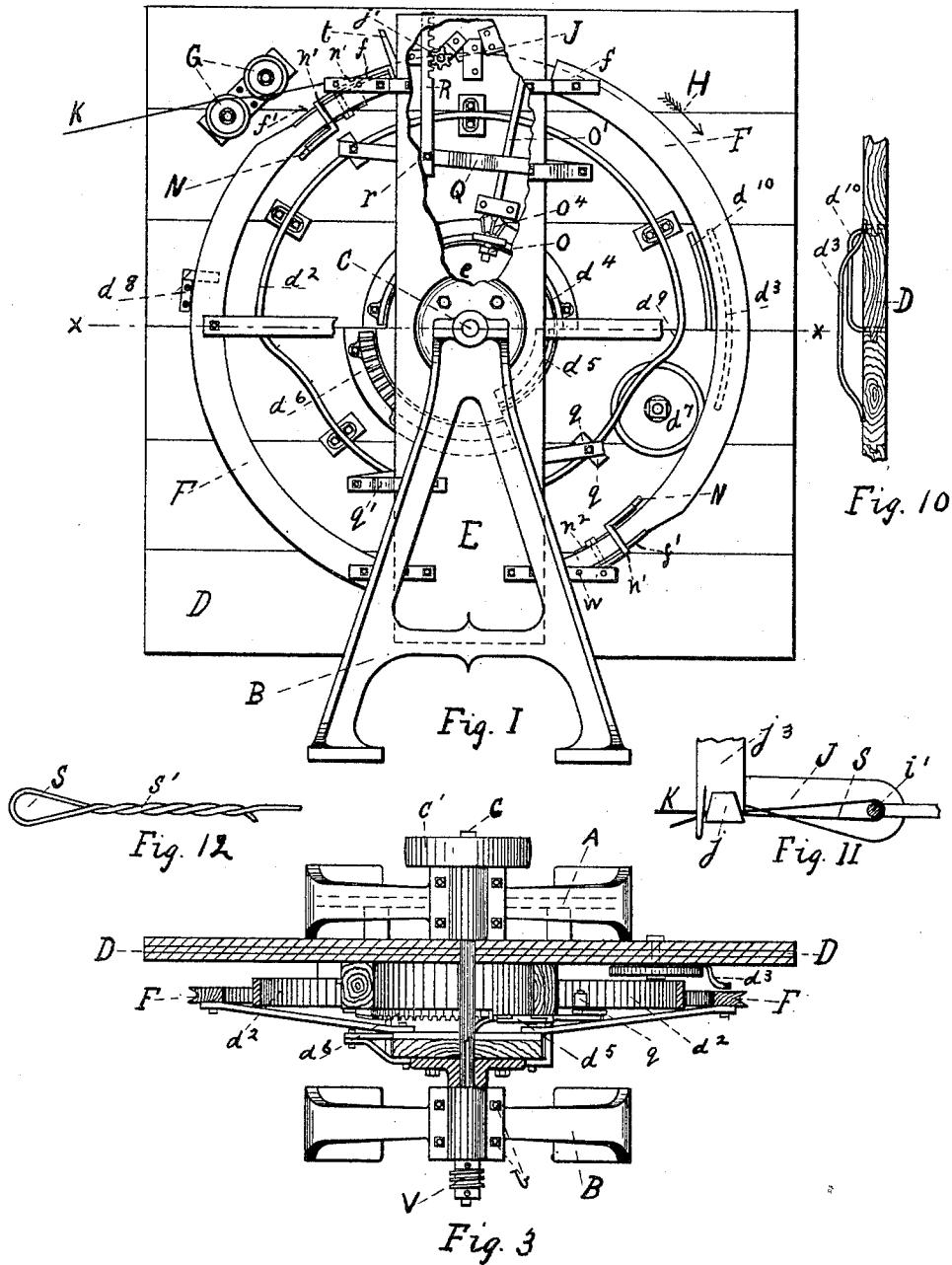
(No Model.)

2 Sheets—Sheet 1.

E. LEMYRE DIT GAUCHER.
LOOP MAKING MACHINE.

No. 581,580.

Patented Apr. 27, 1897.



Witnesses.

J. Lemyre
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Attorney.

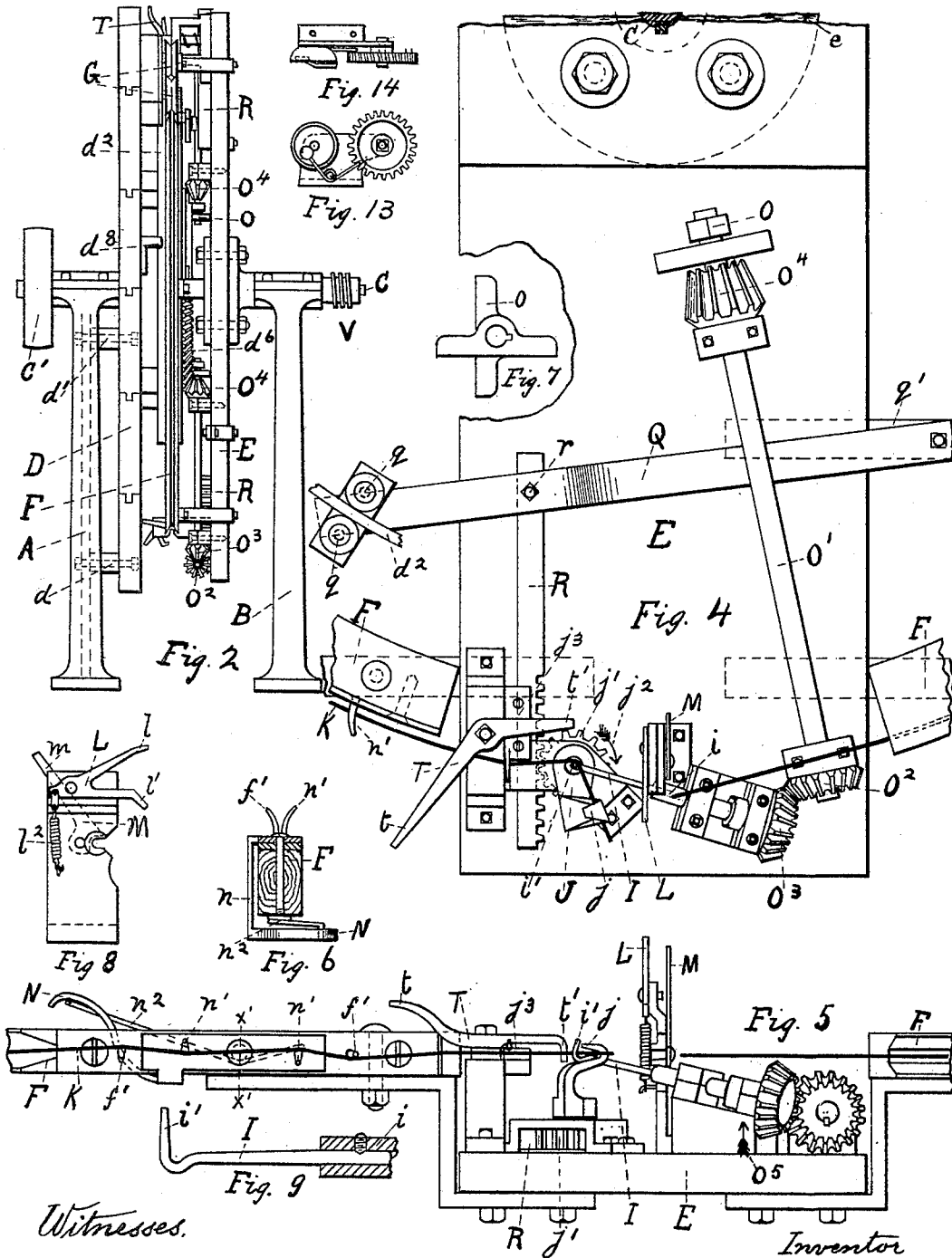
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UNITED STATES PATENT OFFICE.

EDOUARD LEMYRE DIT GAUCHER, OF MASKINONGE, CANADA.

LOOP-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,580, dated April 27, 1897.

Application filed March 16, 1896. Serial No. 583,412. (No model.) Patented in Canada March 5, 1896, No. 51,545.

To all whom it may concern:

Be it known that I, EDOUARD LEMYRE DIT GAUCHER, a citizen of the Dominion of Canada, and a subject of the Queen of Great Britain, residing at Maskinonge, in the county of Maskinonge, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Machines for Making Loops on Binding-Wire, (for which I have received a patent in Canada, No. 51,545, bearing date March 5, 1896,) of which the following is a specification.

My invention has reference to a machine for making a loop on the end of binding-wires used to bind bales of hay, straw, or other materials; and it consists in two distinct parts, one immovable and having secured to it various cam-rails, the other movable and having the necessary mechanism to form the loop and cut the wires into suitable lengths, all actuated by means of the cam-rails, &c., placed on the immovable parts, such as described hereinafter.

The object of my invention is to provide a machine to make loops at the ends of binding-wires in a substantial and expeditious manner.

Referring to the drawings, similar letters refer to similar parts throughout the several views.

Figure 1 is an end view of my machine with certain portions cut away to show the mechanism. Fig. 2 is a front view. Fig. 3 is a sectional view through line xx in Fig. 1. Fig. 4 is a plan view of the twisting mechanism. Fig. 5 is a front view of the same. Fig. 6 is a sectional view, through line xx' of Fig. 5, of a clamp to hold the wire during and after being cut. Fig. 7 is a detail view, on a larger scale, of a device to make the twisting-head rotate one-quarter of a revolution. Fig. 8 is a detail view of the cutter. Fig. 9 is a detail view showing the method of securing the twisting-hook in its head. Fig. 10 is a side view of two of the cam-rails. Fig. 11 is a view showing the loop before being twisted. Fig. 12 is a view showing the completed loop. Fig. 13 is a side view of a signaling-bell, and Fig. 14 is a top view of same.

My machine consists in the two frames A and B, on which is journaled the shaft C. To the frame A is firmly secured at d d' the panel D, having on its face the endless cam-rail d^2 , segmental rails d^3 and d^{10} , the segmental flat rails d^4 and d^5 , the segmental rack d^6 , and the

deflecting-wheel d^7 , all joined to it in a suitable way, also the deflecting-arm d^8 . As for the movable portion, it consists in the plate E, made out of any suitable material and mounted on the shaft C in a substantial way (shown on the drawings by a disk) and having on its two extremities the mechanism shown on Figs. 4 and 5, and also having secured to it the semicircular guides F. The piece E is cut away at e to show the arrangements of the several parts on its side facing the panel D.

Now to make a loop on the wire all that is necessary to do is to take the wire from a reel, located at any convenient point and not shown on the drawings, and then pass it between the guide-wheels G, secured to the panel D, and pass it over onto the end f of the right-hand semicircular guide F, and there secure its end in any suitable way. Then by making the piece E, and consequently all that is secured to it, turn on the shaft C, by means of the driving-pulley c' , in the direction H the wire is pulled along and is kept in position by means of the semicircular guides F. On starting the machine from the position shown on Fig. 1 the hook I, secured into the twisting-head i , as shown in Fig. 9, that is removable, has its point i' turned toward the end of panel D, and the one J has its point j turned toward the shaft C and below the wire K. As the apparatus turns on the shaft C the arm l of the forked lever I comes in contact with the segmental cam-rail d^3 and forces the arm l' against the wire K, which it holds snug up against the cutter M. At the same moment the outside perpendicular shoe O, striking the segmental rail d^5 , tumbles over and makes the twister-head i , and consequently the hook, turn exactly one quarter-turn, this bringing the point i' of the hook I in the position shown on Fig. 5—that is, about perpendicular to the piece E and away from it—by the medium of the shaft O' and gears O² and O³, the latter being secured and operating the twister-head i . After this the arm N of the lever n , coming in contact with the segmental cam-rail d^{10} , is deflected upward from the panel D, and thus secures the wire K between the small projections n' on the lever n and the ones f' on the semicircular guides F and holds it firmly the whole time the arm N is in contact with the segmental rail d^{10} , the lever n retaking its position as soon as its arm N passes off the segmental

rail d^{10} by means of the spring n^2 . As soon
 as the wire is secured by the lever n it is severed
 by the cutter M , which is actuated by
 its arm m passing over the rim of the deflect-
 ing-wheel d^7 , and then retakes its place by
 means of a spring. (Not shown on the draw-
 ings.) At the same instant the free end of
 the wire is released as the forked lever L ,
 passing off the segmental cam-rail d^3 , retakes
 its normal position by means of the spring l^2 .
 By this time the two trundle-rolls q , secured
 to the end of the lever Q , which has its other
 extremity secured to the panel D through
 the arm q' , and which run on either side of the
 endless cam-rail d^2 , as shown in Figs. 1 and
 4, come to the deviation d^9 , and thus approach
 the central shaft C , this having for effect to
 pull down toward the shaft C the rack R , se-
 cured to the lever at r , and thus make the hook
 J , to which the gear j' , intermeshing with the
 rack R , is secured, turn in the direction j^2 , Fig.
 4, and thus take the free end of the wire K ,
 which has just been cut, with it and bring it in
 contact with the split holder j^3 , Figs. 4 and 5,
 where it securely holds it, as shown on Fig. 11.
 As soon as this is done the gear O^1 begins
 to intermesh with the segmental rack d^6 , and
 thus the twister-head i and hook I begin to
 turn in the direction O^5 , Fig. 5, and as the
 hook J has folded the wire, or, rather, bent it
 around the point i' of the hook I , as shown
 on Fig. 11, in forming the loop S the latter
 is twisted, as shown at S' in Fig. 12. As soon
 as this is done the same operation begins by
 the mechanism placed on the other extremity
 of the piece E , and the wire K being severed
 again the piece so cut falls out with a loop on
 one of its ends and the operation is continued
 indefinitely. However, just as it is being
 cut the arm t of the lever T comes into con-
 tact with the bracket d^8 , and thus forces the
 end t' against loop S , just twisted, and runs
 it off the point i' of the hook I . The hooks
 J and I of course retake their normal posi-
 tions by means of the endless cam-rail d^2 and
 gear O^1 , running off the semicircular rack d^6 ,
 respectively, the teeth in the latter being so
 numbered to secure this.

As can be seen, two binding-wires are made
 at each revolution of the machine.

A worm V , placed on the end of the shaft C ,
 runs the gear operating the signaling-bell,
 which is screwed on the frame B at the points
 indicated by b in Fig. 3 and may be so fixed
 as to ring at every one hundred binding-wires
 made. This bell, however, can be dispensed
 with if not found necessary.

As the length of the binding-wires vary ac-
 cording to the size of the bales they are to
 secure, the circular guides F are made with
 several holes w , so that they can be secured
 to the plate E in such a way as to present
 more or less circumference, and thus vary
 the length of the binding-wires.

Having described my invention, what I
 claim, and desire to secure by Letters Patent,
 is—

1. In a machine for making wire loops, the
 combination with the machine-frame and
 driving-shaft, of an immovable panel, as de-
 scribed, and a plate connected with the driv-
 ing-shaft; the panel provided with guide-
 wheels for the binding-wire, and the plate of
 the driving-shaft having semicircular grooved
 guides adapted to be adjustably secured
 thereto, substantially as set forth.

2. In a machine for making wire loops, the
 combination of the panel D provided with a
 segmental rail d^5 and segmental rack d^6 , a
 driving-shaft, and a plate, the latter provided
 with a shaft O' having a shoe O and pinion
 O^1 for engaging respectively the segmental
 rail d^5 and segmental rack d^6 of the panel, the
 hook I and twister-head i , with gearing con-
 necting same with the shaft O' , substantially
 as and for the purpose specified.

3. In a machine for making wire loops, the
 combination with a suitable frame and driv-
 ing-shaft, of a panel connected with the frame,
 the said panel provided with a segmental cam-
 rail d^3 and a deflecting-wheel d^7 , with a plate
 connected with the driving-shaft, the said
 plate having its face provided with a pivoted
 lever L having arms l and l' , the spring l^2 ,
 and the cutter M having an arm m , all ar-
 ranged for operation substantially as and for
 the purpose set forth.

4. In a machine for making wire loops, the
 combination with a suitable frame and driv-
 ing-shaft, of a panel connected with the frame,
 the said panel provided with a segmental cam-
 rail d^{10} , a driving-shaft having a plate pro-
 vided with adjustable semicircular guides,
 each guide having one of its ends provided
 with a projection f' , and a lever n , having an
 arm N and a spring n^2 , substantially as and
 for the purpose set forth.

5. In a machine for making wire loops, the
 combination with a suitable frame and driv-
 ing-shaft, of a panel connected with the frame,
 the said panel provided with an endless cam-
 rail d^2 , and a plate connected with the driv-
 ing-shaft, the said plate provided with an arm
 q' , a lever Q pivotally connected with the outer
 end thereof; the free end of said lever pro-
 vided with a pair of trundle-rollers q which
 are adapted to operate at the sides of the cam-
 rail d^2 ; a rack R suspended from the lever Q ,
 a gear-wheel adapted to be engaged by the
 rack, with the hook J , and split holder j^3 ,
 substantially as set forth.

6. In a machine for making wire loops, the
 combination of a suitable frame, a driving-
 shaft, and a fixed panel, as described, with a
 plate secured to the driving-shaft and adapted
 to revolve therewith, the hooks I and J , and
 means substantially as described for operat-
 ing the same, with the lever T having arms
 t and t' , and the bracket d^8 , as and for the
 purpose set forth.

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Witnesses:

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 W. B. LAFRENIEN.