

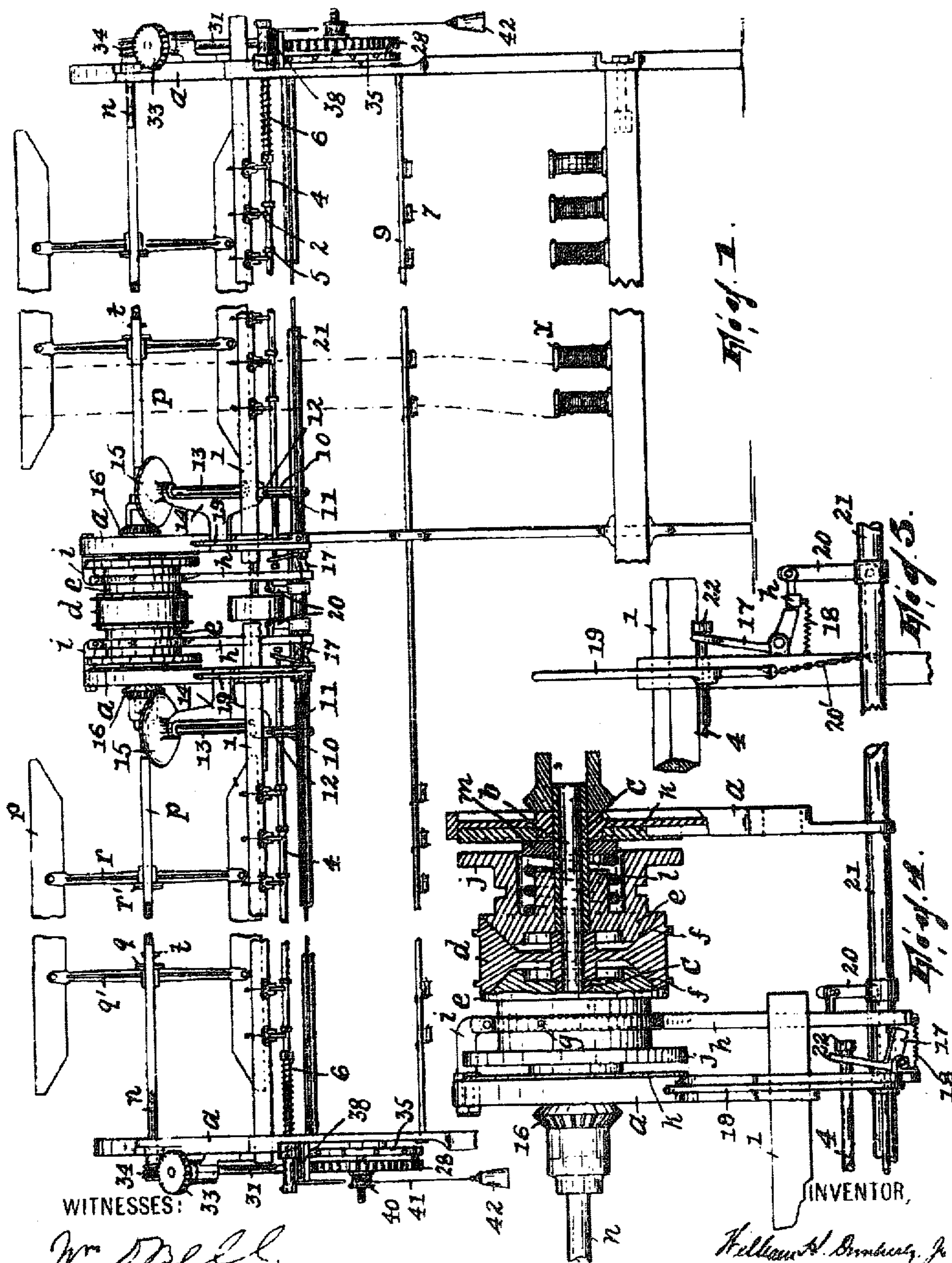
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PATENTED AUG. 22, 1905.

W. H. DUNKERLEY, JR.
REELING MACHINERY.

APPLIOATION FILED OCT. 15, 1904.

2 SHEETS-SHEET 1.



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No. 797,797.

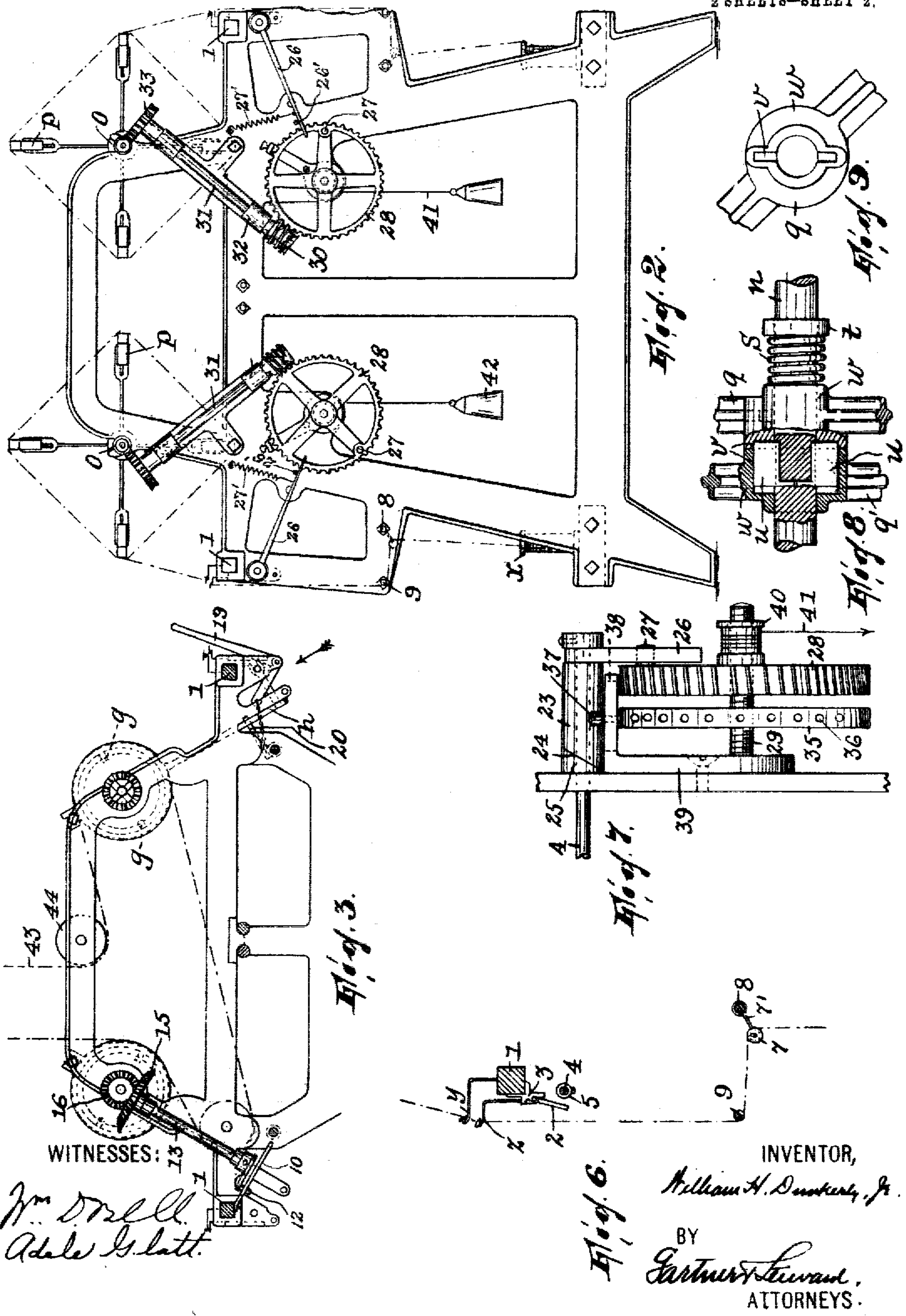
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2 SHEETS—SHEET 2.



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REELING MACHINERY.

No. 797,797.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed October 15, 1904. Serial No. 228,523.

To all whom it may concern:

Be it known that I, WILLIAM H. DUNKERLEY, Jr., a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Reeling Machinery, of which the following is a specification.

This invention relates to machines for reeling or drawing silk, cotton, flax, wool, &c.; and it has for its objects certain improvements in the means for automatically stopping the machine upon the breaking of a thread, in the means for stopping the machine when a given quantity of thread has been wound on the reel, in the construction of the reel whereby to make it collapsible, and so facilitate removing the skeins, and in the driving means whereby the use of gears is avoided and the rotation of two reels from a single driving means is accomplished.

My invention is illustrated in the accompanying drawings, with reference to a machine in which two reels are operated at once; but it will be understood that such duplication of mechanism is not essential.

In the drawings, Figure 1 is a front view of the machine; Fig. 2, an end view; Fig. 3, a transverse sectional view taken just to one side of the driving means; Fig. 4, a view, partly in section and partly in front elevation, of the driving mechanism and adjacent parts; Fig. 5, a view of a resetting mechanism, taken in the direction of the arrow in Fig. 3; Fig. 6, a vertical sectional view of a part of the means for stopping the rotation of a reel upon a breaking of a thread; Fig. 7, a view in elevation of the means for stopping the rotation of a reel when a predetermined quantity of material has been wound thereon; Fig. 8, a detail of one of the reels, and Fig. 9 a view in elevation of a part of what is seen in Fig. 8.

a designates four uprights suitably braced and connected together.

b is a shaft received by two aligned hollow shafts *c*, which are journaled in the two inner uprights.

d is the main drive-pulley, arranged on shaft *b*, and *e* two reversed cones arranged on the hollow shafts *c*, they being adapted to be received by and fit into conical recesses *f* in the opposite sides of pulley *d*. Said cones have peripheral grooves, in which fit pins *g* in the circular heads of levers *h*, fulcrumed in brackets *i*, and by means of said levers they may be moved longitudinally on shafts *c* to

bring friction-disks *j*, with which they are formed, into contact with face-plates *k*, fixed to the adjacent uprights. The cones are normally held against the pulley by springs *l*, inclosed within them and abutting against disks *m*, which are penetrated by shafts *c*.

n designates the reel-shafts. These are adapted to be separably clutched with the shafts *c* at one end and at their other ends to have bearing in the end uprights *a*, such bearings being recesses *o*, Fig. 2, out of which the shafts may be lifted.

p designates blades of the reels, and *q q' r r'* the arms or spokes which carry them, the latter being four in number in the adaptation shown, two of them, *q r'*, crossing the others, *q' r*, at right angles in the working position and disposed between them. The blades connect arms *q* and *r'* and *q'* and *r*. Arm *q* is pressed longitudinally of the shaft by a spring *s*, interposed between a collar *t* and arm *q*.

u is a key set in the reel-shaft and normally received by a keyway *v* in both hubs *w* of arms *q q'*. The key limits the movement of the arms *q r'* under action of spring *s*, and the several arms being connected by the blades *p* in the manner above described arms *q' r* can only move axially when arms *q r'* move. If, however, there is a relative axial movement as between the shaft and all the arms against the tension of spring *s*, the keys will be disengaged from arm *q*, permitting the latter and arm *r'* to turn on the shaft and the reel to be collapsed, so that the skeins may be removed.

The material to be reeled is led up from spools *x* through eyelets *y* and *z*. Each eyelet *y* is fixed on the traverse-rail 1, guided for movement in uprights *a*, and each eyelet *z* forms a part of a faller 2, fulcrumed in a bracket 3 on the traverse-rail. The tension of the thread keeps the faller 2 in the position shown, Fig. 6; but gravity will cause it to assume a more perpendicular position if it is released, as by the breaking of the thread, until it rests against a shaft 4, carrying collars 5, whereupon in the reciprocation of the traverse-rail said faller will engage a collar 5 and force it and the shaft lengthwise against the tension of spring 6. The collars are disposed at one limit of movement of the respective fallers, so that the latter can only fall on one side thereof. Between the spools and the thread-guides *y z* the thread passes first over a porcelain guide 7 on a spiral spring 7',

coiled on a rod 8, and then under a rod 9, being thereby kept at a proper tension.

Each traverse-rail 1 carries a bracket 10, having a slot 11 receiving an eccentric-pin 12 on shaft 13, which is journaled in a bracket 14 and carries a bevel-pinion 15, meshing with a bevel-pinion 16 on shaft *c*. Upon shaft 13 being rotated the traverse-rail is reciprocated, as will be obvious.

Each lever *h* is normally held in such position that the cone which it controls can be held against the pulley *d* by spring *l* by a detent 17. When it is disengaged by the detent, a spring 18, connecting said lever with the upright *a* adjoining and strong enough to overcome spring *l*, moves the lever so that the cone leaves the pulley and is drawn up against its face-plate and stopped. The parts are reset by a lever 19, fulcrumed in upright *a* and connected with a bell-crank lever 20, fulcrumed on a fixed shaft 21, which is pivotally connected with lever *h* by a chain 20'.

To trip lever *h*, a head 22 on shaft 4 engages detent 17, the shaft being moved either as above described—when a thread breaks or upon a predetermined quantity having been wound on the reel—by the following means: The end of the shaft 4 opposite to the head 22 carries a cam 23, whose inclined surface bears against an incline 24 of a projection 25 on one of the end uprights *a*. The shaft also carries a crank 26, which may be engaged by an eccentric-pin 27 on a worm-wheel 28, which has a threaded engagement with a stub-shaft 29, projecting from said upright. Said crank is normally held against a stop 26' by a spring 27'. Worm-wheel 28 is in mesh with a worm 30 on a shaft 31, journaled in the bracket 32 and carrying a worm-wheel 33, which meshes with a worm 34 on the reel-shaft. Thus as the reel-shaft turns and causes the worm-wheel 28 to turn the latter advances on the stub-shaft 29 until pin 27 engages crank 26 and rocks shaft 4, upon which the inclined surfaces of cam 23 and projection 25 will move said shaft lengthwise, causing the tripping of the lever *h* and the moving of the corresponding cone out of engagement with the pulley and against the face-plate *k*, thus stopping the rotation of said cone. It depends on what point on shaft 29 worm-wheel 28 starts to rotate as to when the machine will be thrown out of operation in the manner just described. In order to render this variable, therefore, at will, I provide a stop-disk 35, which has a threaded engagement with shaft 29 and is peripherally notched, as at 36, to receive a removable pin 37, which may project through a slot 38 in a bracket 39. According as the stop-disk is advanced more or less on shaft 29, and so determines the position from which worm-wheel 28 may be started in its rotation, so the number of revolutions which said worm-

wheel will make before it is advanced on the shaft far enough to cause the movement of crank 26 will be determined.

On the hub 40 of the worm-wheel 28 is wound a cord 41 or the like, carrying a weight 42. The purpose of this is to automatically reset the worm-wheel back to the starting-point against stop-disk 35 when the reel has been removed in order to take off the skeins wound thereon and the parts connected with the worm-wheel 28 are free to rotate by worm 34 having been disconnected from worm-wheel 33.

In the foregoing description reference is made to only two of the reels and their accessory mechanism. It will be understood that provision may or may not be made for operating four reels, as is shown in the drawings.

The power for operating the machine may be applied to the pulleys *d* by belt 43 engaging said pulleys and idlers 44.

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

1. In a reeling-machine or the like, the combination of the frame, a reel journaled therein, a driving means, disconnective connecting means between the driving means and the reel, a spring-actuated lever controlling said disconnective connecting means, a detent normally holding said lever against the tension of its spring, a longitudinally-movable shaft engageable with said detent to move the same and release said lever, collars fixed on said shaft, and thread-controlled fallers carried by the traverse-rail and movable against said shaft, substantially as described.

2. In a reeling-machine or the like, the combination of the frame, a reel journaled therein, a driving means, disconnective connecting means between the driving means and the reel and means for controlling said disconnective connecting means comprising a longitudinally-movable and rotative shaft, means for effecting the longitudinal movement of said shaft upon turning the same and means for turning said shaft, said last-named means being operative from the reel, substantially as described.

3. In a reeling-machine or the like, the combination of the frame, a reel journaled therein, a driving means, disconnective connecting means between the driving means and the reel and means for controlling said disconnective connecting means comprising a longitudinally-movable and rotative shaft, a fixed shaft, a rotary part having a threaded engagement with said fixed shaft and also having an eccentric projection, a crank on said first-named shaft engageable with said projection and means for rotating said rotary part from the reel, substantially as described.

4. In a mechanism for controlling the ro-

tation of a reel in a reeling-machine, the combination of a frame, a longitudinally-movable and rotary part, means for effecting the longitudinal movement of said part upon rotating the same, a fixed shaft, another rotary part having a threaded engagement with said shaft and adapted, in its advance on said shaft, to engage and turn said other part, a stop-disk arranged on said shaft and having a threaded engagement therewith, means for securing said stop-disk against rotation on said shaft, and means whereby said last-named rotary part may be driven from the reel, substantially as described.

5. In a mechanism for controlling the rotation of a reel in a reeling-machine, the combination of a frame, a longitudinally-movable and rotary part, means for effecting the longitudinal movement of said part upon rotating the same, a fixed shaft, another rotary part having a threaded engagement with said fixed shaft and adapted, in its advance on said shaft, to engage and turn said

other part, a stop-disk arranged on said shaft and having a threaded engagement therewith, means for securing said stop-disk against rotation on said shaft, and means for automatically rotating said last-named rotary part when disconnected from the reel in a direction reverse to the direction of its normal rotation, substantially as described.

6. In a collapsible reel for reeling-machines, the combination of a shaft, the reel-blades, two pairs of arms carrying said blades, those of one pair being arranged between and abutting against those of the other and those of each pair being connected by blades, a key fixed in the shaft and engaging two adjacent arms, and a spring acting to move said arms axially of said shaft, substantially as described.

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Witnesses:

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