

No. 793,406.

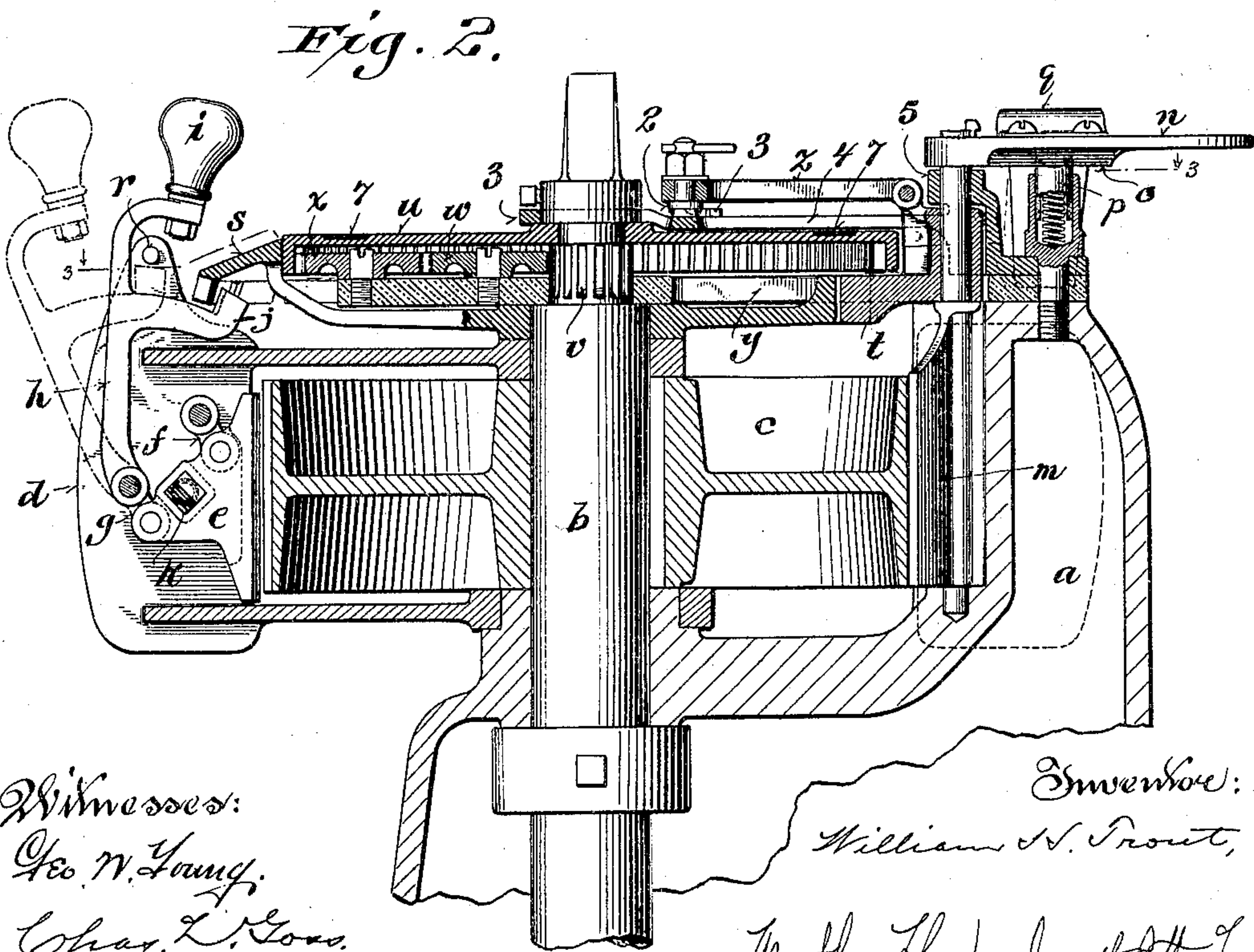
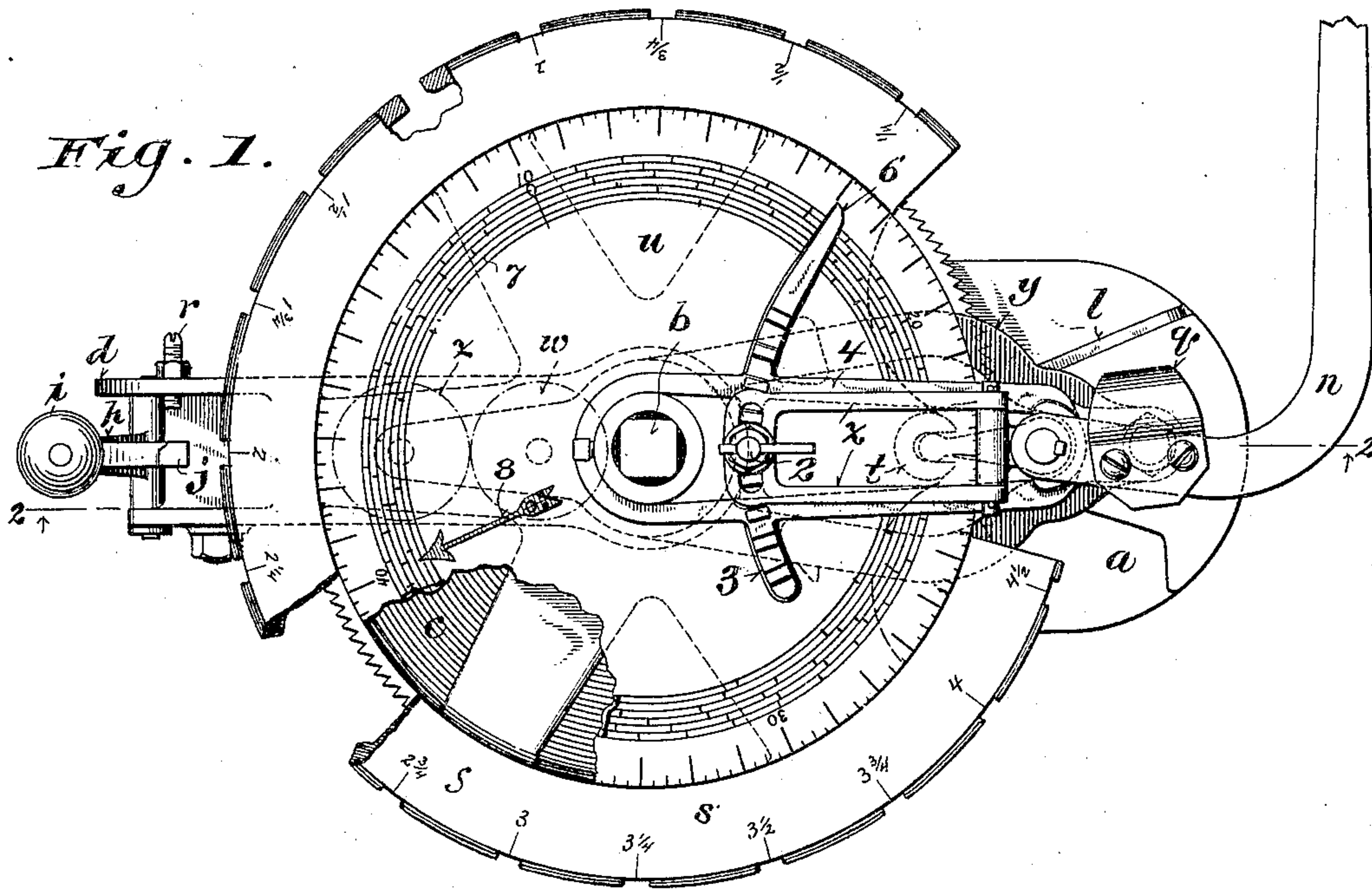
PATENTED JUNE 27, 1905.

W. H. TROUT.

GAGE AND STOP MECHANISM FOR SAWMILL SET WORKS.

APPLICATION FILED MAR. 13, 1905.

2 SHEETS—SHEET 1.



Witnesses:

Geo. W. Young.

Char. L. Ross.

Inventor:

William H. Trout,

By *Wm. H. Trout*
Wm. H. Trout
Attorneys.

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Fig. 3.

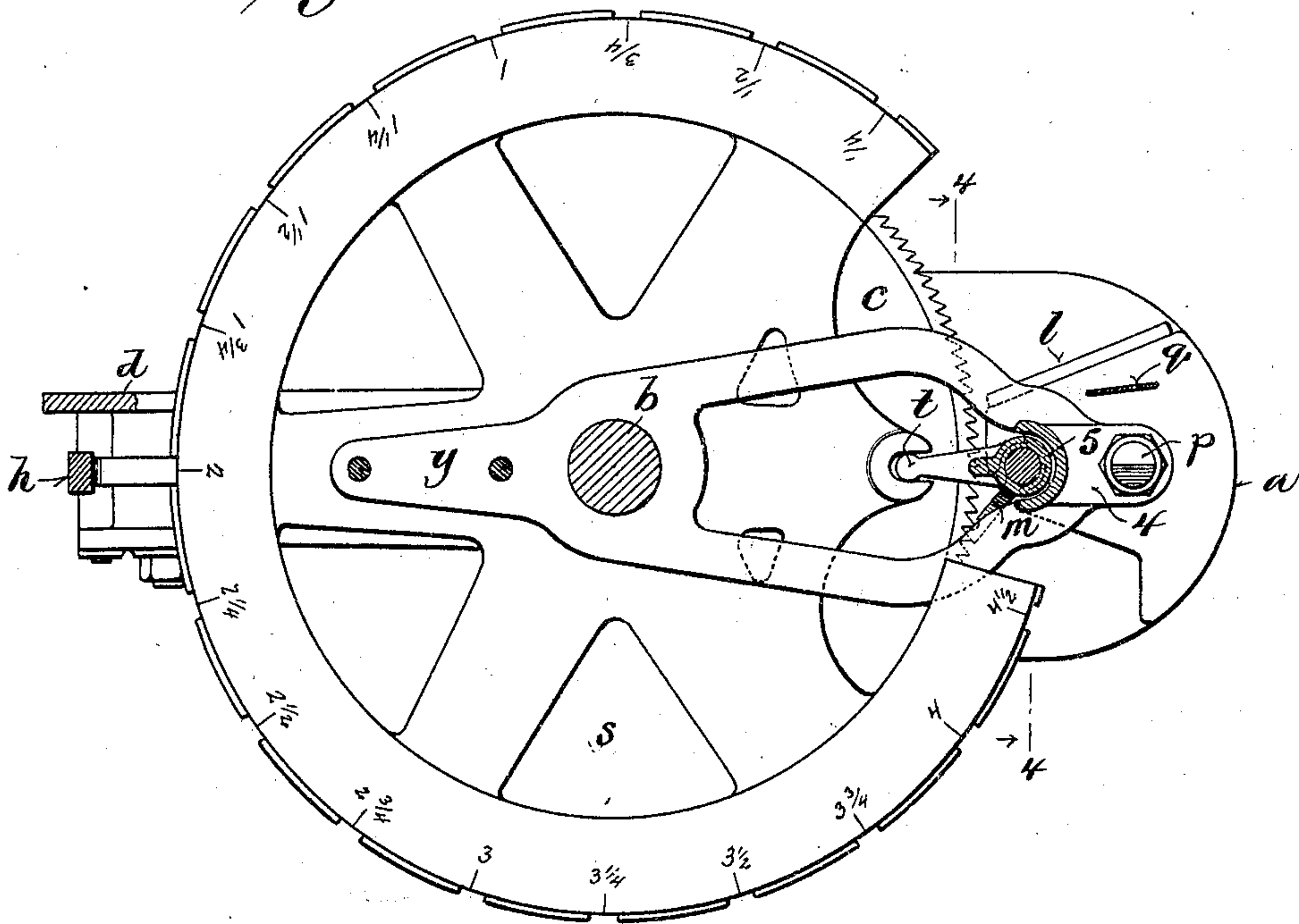
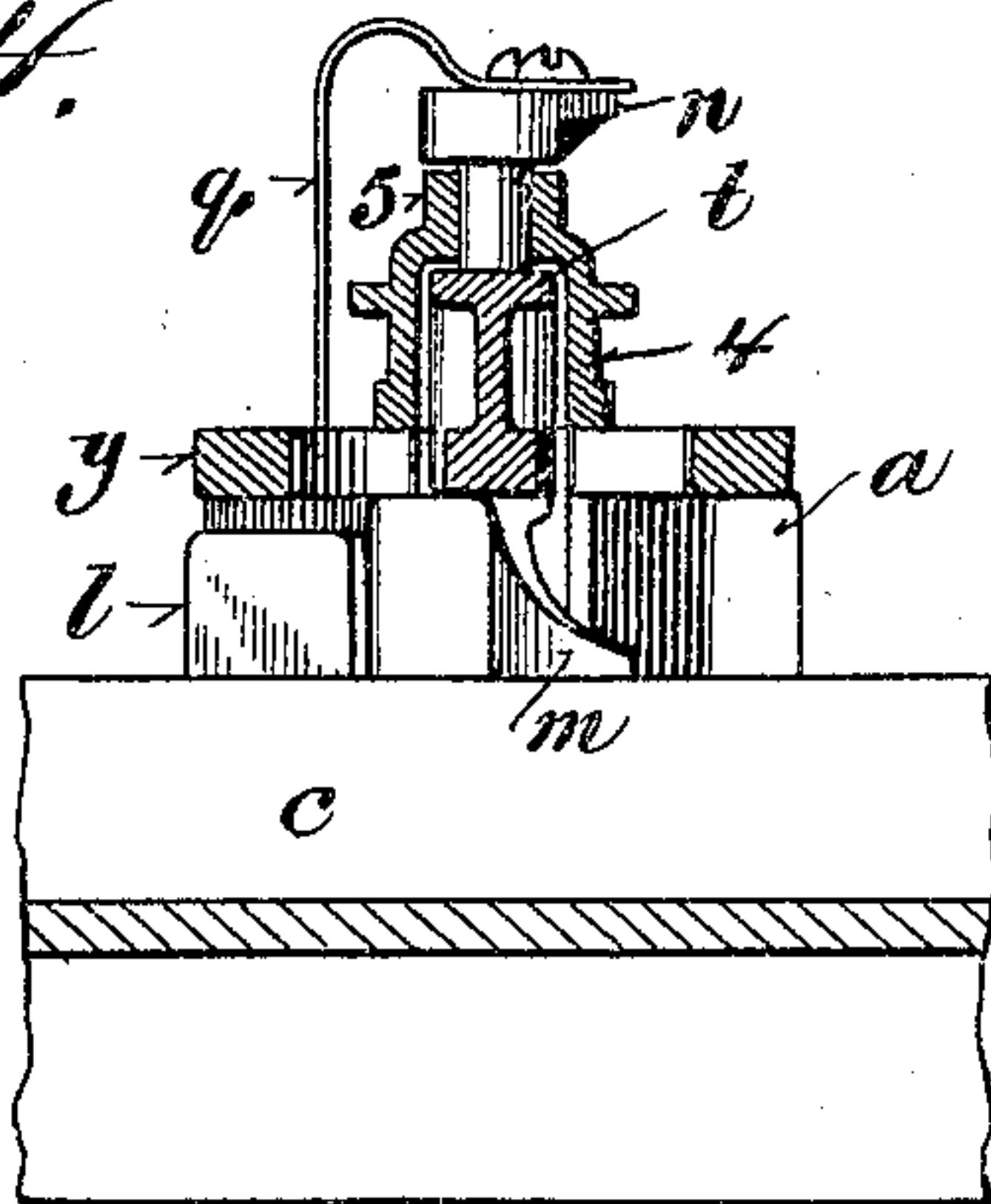


Fig. 4.



Witnesses:
Geo W Young
Chas. L. Low.

Inventor:

William H. Trout,

By Winkler Henden Smith & Bennett

Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM H. TROUT, OF MILWAUKEE, WISCONSIN.

GAGE AND STOP MECHANISM FOR SAWMILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 793,406, dated June 27, 1905.

Application filed March 13, 1905. Serial No. 249,684.

To all whom it may concern:

Be it known that I, WILLIAM H. TROUT, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Gage and Stop Mechanism for Sawmill Set-Works, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to sawmill set-works of the class shown and described in my application Serial No. 238,720, filed December 29, 1904, for United States Letters Patent, and more particularly to the mechanism for determining and controlling the operation of the setting mechanism for cutting lumber of various dimensions.

The main object of the invention is to simplify and improve the construction and operation of the gage and stop mechanisms; and it consists in certain novel features of construction and in the novel arrangement and combinations of parts, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like characters designate the same parts in the several figures.

Figure 1 is a plan view of gage and stop mechanism embodying my present improvements. Fig. 2 is a vertical section of the same on the line 2 2, Fig. 1. Fig. 3 is a horizontal section on the line 3 3, Fig. 2; and Fig. 4 is a vertical section on the line 4 4, Fig. 3.

a designates the upper part of the setting-stand, which is mounted on the carriage, and *b* is the upper end of the vertical stop-shaft, journaled in said stand and connected at its lower end by suitable gearing with the set-shaft, from which it is turned to correspond with the movements of the setting mechanism.

A ratchet-wheel *c* is fixed on the shaft *b* near its upper end, and above and below the ratchet-wheel a forked or divided gage or setting-arm *d* is pivoted concentrically with said shaft, so as to swing when released freely with relation to the ratchet-wheel. The arm *d* is provided in its recessed outer end with a toothed pawl-block or locking device *e*, pivotally connected therewith by parallel links *f* and *g*,

so as to be swung into and out of engagement with the toothed periphery of the ratchet-wheel. The link *g* is extended upwardly in an arm or lever *h*, which is provided at its upper end with an operating-handle *i*. The arm or lever *h* has a curved inward extension concentric with its fulcrum and terminating in an upturned nose *j*. The pawl-block *e* is provided with a spring-actuated bolt *k*, having a beveled end protruding from one of its lateral faces and adapted to engage with recesses in the adjacent face of the arm *d* to lock and hold said block either in or out of engagement with the ratchet-wheel.

The stand *a* is provided with a padded home stop *l* for arresting the advance movement of the arm *d* and the ratchet-wheel *c*, to which it is locked. A pawl *m*, pivoted in the stand *a*, is adapted by engagement with the back of a tooth on the ratchet-wheel to prevent recoil and backward movement of the ratchet-wheel when the arm *d* strikes the home stop *l*. On the upper end of the stem of the pawl *m* an arm *n*, having a double-beveled or V-shaped projection *o* on the under side, is fixed, and in a vertical socket on the stand below this arm is a spring-actuated bolt *p*, having a double-beveled or V-shaped upper end engaging with the corresponding V-shaped projection *o* on the under side of said arm for throwing the pawl *m* when it passes its central position into and out of engagement with the ratchet-wheel. The parts are so constructed and arranged that the advance passage of a tooth on the ratchet-wheel by the pawl will carry the V-shaped projection *o* on the arm *n* over the center of the bolt *p*, which will thereupon complete the outward movement of the pawl, carrying it into a position in which it will be cleared by the teeth of the ratchet-wheel, thereby avoiding noise and wear.

The arm *n* is provided with a spring *q* in the path of an adjustable stud *r* on the arm *d*. This stud is adjusted to engage with said spring just before the arm strikes the home stop *l* and to throw the V-shaped projection *o* on the under side of the arm *n* forward over the center of the bolt *p*, which will thereupon complete its forward movement, carrying the pawl *m* into

and holding it in engagement with the back of a tooth on the ratchet-wheel at the instant the arm *d* comes in contact with the stop *l*. The arm *n* is connected with the setting-lever in such a way that when it is thrown back into position to recede the set-works and turn the ratchet-wheel backward the pawl *m* will be thrown out of engagement with the ratchet-wheel. The construction, arrangement, and operation of this pawl and its connections being fully shown and described in my former application require no further explanation in connection with my present improvements.

Above the arm *d* a gage-plate *s*, having a depending and graduated notched rim, is loosely mounted on the shaft *b*. On the side next to the stand *a* the rim of the gage-plate is cut away, and it is formed with a recess or notch which is engaged by a tooth *t*, pivoted on the stem of the pawl *m*. Above the gage-plate *s* a dial *u*, having a depending internally-toothed rim, is pivotally mounted on the shaft *b*, from which it is turned by intermeshing gears *v*, *w*, and *x*. The gage-plate *s* is recessed on the upper side within its graduated rim to receive the dial *u*, which is provided with lumber-scales and with a marginal scale on which the distance of the knees from the sawing plane is indicated at all times. The lumber-scales are marked on a ring *7*, which is let into an annular groove in the dial *u*, preferably flush with its upper face, and is capable of being turned therein, being yieldingly held in place by the zero index or pointer *8* of the marginal scale. The gears *w* and *x* are journaled on a support *y*, which encircles and has a bearing on the upper reduced end of the shaft *b* and is secured, with the socket of the bolt *p*, to the stand *a*. This support is looped or divided, as shown in Figs. 3 and 4, to pass around the tooth *t* and the upwardly-projecting stem of the pawl *m*, on which said tooth is pivoted.

To the upwardly-projecting hub of the tooth *t* is pivoted a latch *z*, having a tooth *2* adjustably secured in a transverse curved slot which is concentric with the stem of the pawl *m*. The latch-tooth *2* engages with the notches of a curved rack *3*, which is also concentric with the stem of the pawl *m* and is carried by an open frame or support *4*, which is looped at one end around a collar on the upper end of the shaft *b* and at the other end around the hub of the tooth *t* and is secured, with the support *y*, to the stand *a* by the screw-threaded shank of the socket of the bolt *p*. The frame *4* is formed or provided with a bearing *5* for the stem of the pawl *m* above the hub of the tooth *t*. The rack *3* is extended at one end into an index or pointer *6*, by which the position of the knees at any given time is indicated on the marginal scale of the dial *u*.

My improved gage and stop mechanism herein shown and described operates as follows: Assuming that a two-inch plank or piece

of lumber is to be cut, the lever *h* is moved inward to disengage the pawl-block *e* from the ratchet-wheel, as shown in Fig. 2 by full lines, and the arm *d* is then swung back to the left by means of the handle *i* on said lever till the nose *j* is between the notches in the gage-plate marked "1½" and "2." The handle *i* is then thrown outward by the setter to carry and hold the nose *j* against the inner side of the depending rim of the gage-plate, the movement of the arm *d* being continued to the left until said nose, which is still pressed outwardly by the setter, drops into and passes through the notch marked "2." This determines the exact position in which the arm *d* is to be locked to the ratchet-wheel for cutting a piece of lumber of the desired dimension, and before the nose *j* clears the rim of the gage-plate in passing outwardly into the position indicated by dotted lines on Fig. 2 the pawl-block *e* is carried into engagement with the ratchet-wheel, thereby locking said arm thereto. The setter now throws his setting-lever into position to turn the set-shaft forward and advance the knees in the usual way, and the stop-shaft *b*, with the ratchet-wheel *c* and arm *d*, is simultaneously turned forward to the right till the arm *d* strikes the home stop *l*, thereby arresting the further forward movement of the setting mechanism and the log or timber in the exact position to make the desired cut. As the arm *d* strikes the home stop *l* the pawl *m* is thrown by the engagement of the stud *r* with the spring *q* and by the action of the beveled pointed bolt *p* on the beveled arm *n* into engagement with the back of a tooth on the ratchet-wheel, thereby preventing recoil of the ratchet-wheel and setting mechanism, and consequently inaccuracy in setting. To reset the gage and stop mechanism for making another cut, the handle *i* on the lever *h* is thrown inwardly to unlock the arm *d* on the ratchet-wheel, and said arm is swung back to the left till the nose *j* nears the notch in the gage-plate *s* corresponding with the dimension of lumber it is desired to cut. The handle *i* is then thrown outwardly and the nose *j* pressed against the inner side of the rim on the gage-plate till it drops into and passes through the desired notch therein, thereby stopping the arm *d* and locking it to the ratchet-wheel in the desired position for making the next cut. The notches in the gage-plate are beveled on the inner side, and the nose *j* is correspondingly beveled on the outer side toward the home stop *l*, as shown in Fig. 1, to facilitate the engagement of the nose with any desired notch as the arm *d* is moved back to the left and brought to the desired position, the nose as it approaches that position being held and pressed outwardly against the notched rim of the gage-plate. The gage-plate is adjusted with relation to the fixed home stop *l* on the stand for different saw-kerfs and for slightly

increasing or diminishing the dimensions of lumber indicated on the gage-plate by shifting the latch z in the proper direction one or more notches on the rack 3.

5 To adjust the parts to compensate for any inaccuracy in fitting and for wear, so that the teeth of the pawl-block e will properly engage with the teeth of the ratchet-wheel c when the nose j registers with the notches in the rim of the gage-plate s and the tooth 2 of the latch z is in engagement with a notch of the rack 3, said latch is disengaged from said tooth 2 and turned independently thereof forward or back till the teeth of the pawl-block e properly en-
10 gage with the teeth of the ratchet-wheel, while the nose j is engaged with or exactly opposite a notch of the gage-plate s .

By locating the gage-plate s above the ratchet-wheel and letting the dial u into a recess in its upper side, so as to bring its upper graduated face approximately flush with the graduated face of the gage-plate, the graduations on the gage-plate are brought into clearer view of the setter and the operation
25 of the set-works is facilitated.

When the ring 7 is adjusted so that the zero-point of the lumber-scales coincides with the zero-point of the marginal scale on the dial u , a log may be cut in the usual way into lumber of any of the dimensions represented by said scales without calculation by setting the knees so that the index 6 will coincide with successive divisions of the particular scale selected; but if it is desired to cut, say, ten-
30 inch stock for a gang-saw or ten-inch square timber the ring 7 is adjusted so that the zero-point of the lumber-scales coincides with the ten-inch division of the marginal scale on dial u , as shown in Fig. 1. Any excess of material in a log or piece of timber as shown by the index 6 on the marginal scale over the ten inches to be left may be cut off in boards or lumber of any desired thickness corresponding with one of the scales on the ring 7
35 without calculation by simply setting so that divisions of the selected scale will coincide successively with the index 6 until the zero-point of said scale arrives at said index.

The lumber-scales, graduated for cutting
50 lumber of certain standard or definite dimensions including the saw-kerf, which in the present case is assumed to be one-eighth of an inch, are shown in Fig. 1 as made for the dimensions of one, one and one-fourth, one and one-half, two, three, and four inches, respectively; but obviously the number, arrangement, and graduation of these scales may be varied according to the requirements of varying conditions.

60 Various changes in minor details of construction and arrangement of parts may be made without affecting the operation of the device and without departing from the principle and scope of the invention.

I claim—

1. In sawmill set-works the combination with the setting-stand provided with a home stop and the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, of a gage-plate having a notched rim, a stop-arm
65 70 pivotally mounted on the stand concentrically with the ratchet-wheel and provided with a locking device for securing it to the ratchet-wheel, and a handle movably mounted on the stop-arm for operating said locking device and having a projection adapted to engage with a notch in the gage-plate as the locking device is engaged with the ratchet-wheel and thereby exactly determine the set for cutting lumber of the desired dimension, substantially as
75 80 described.

2. In sawmill set-works the combination with the setting-stand provided with a home stop and the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, of
85 a stop-arm pivoted concentrically with said ratchet-wheel and provided with a pawl or toothed block for locking it to said ratchet-wheel, and a graduated gage-plate having a notched rim concentric with the ratchet-
90 wheel, and a lever pivoted to the stop-arm, connected with said pawl or toothed block and provided with a projection adapted to pass through a notch in the gage-plate and hold said arm in a position exactly corresponding therewith while the pawl or toothed block is being carried into engagement with the ratchet-wheel, substantially as described.

3. In sawmill set-works the combination with the setting-stand provided with a home
100 stop and the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, of a stop-arm pivoted concentrically with the ratchet-wheel and provided with a pawl or toothed block pivotally connected therewith
105 and adapted to lock it to said ratchet-wheel, a graduated gage-plate pivoted on said shaft adjacent to said arm and having a notched rim, means for adjusting said gage-plate with relation to the home stop, a graduated dial
110 journaled on said shaft adjacent to the gage-plate and connected by gears with said shaft, and a lever pivoted to the stop-arm, connected with said locking pawl or block and provided with a projection adapted to pass through
115 the notches in the gage-plate and to hold the stop-arm in corresponding positions while the locking pawl or block is being engaged with the ratchet-wheel, substantially as described.

4. In sawmill set-works the combination
120 with the setting-stand provided with a home stop and the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, of a stop-arm pivoted concentrically with the ratchet-wheel and provided with a locking
125 device for securing it thereto, a graduated gage-plate pivoted concentrically with said ratchet-wheel for determining the point of

locking said stop-arm to the ratchet-wheel, a tooth or arm pivoted on said stand and engaging said gage-plate, a latch connected with said pivoted tooth or arm, and a stationary rack with which said latch engages, substantially as described.

5. In sawmill set-works the combination with the setting-stand provided with a home stop, the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, and a pawl pivoted to the stand for preventing backward movement of the ratchet-wheel, of a stop-arm pivoted concentrically with the ratchet-wheel and provided with a locking device for securing it thereto, a gage-plate pivoted on said stop-shaft above the ratchet-wheel for determining the point of locking said stop-arm to the ratchet-wheel, a tooth or arm pivoted on the stem of said pawl and engaging with said gage-plate, a latch connected with said tooth or arm, and a stationary rack with which said latch engages, substantially as described.

6. In sawmill set-works the combination with the setting-stand provided with a home stop and the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, of a stop-arm pivoted concentrically with the ratchet-wheel and provided with a locking device for securing it thereto, a graduated gage-plate located above and concentric with the ratchet-wheel for determining the point of locking said arm to said ratchet-wheel, and a graduated dial pivoted upon said shaft and connected therewith by gears, said gage-plate being recessed on its upper side to receive said dial, the graduated face of which is approximately flush with the raised graduated rim of the gage-plate, substantially as described.

7. In sawmill set-works the combination with the setting-stand provided with a home stop and the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, of a stop-arm pivoted concentrically with said ratchet-wheel and provided with a locking device for securing it thereto, a graduated gage-plate for determining the point of locking said arm to said ratchet-wheel pivoted on said shaft above the ratchet-wheel and recessed on the upper side, a dial having an internally-toothed depending rim journaled on said shaft above said gage-plate and connected by gears with said shaft, a pawl for preventing recoil of the ratchet-wheel when the stop-arm engages the home stop, a tooth or arm pivoted on the stem of said pawl and engaging with said gage-plate, a gear-support attached at one end to said stand, extending around said tooth or arm between the gage-plate and dial, encircling the stop-shaft and carrying the gears which connect the dial with said shaft, a looped frame attached to the stand, passing around the stop-shaft above the dial and provided with a bearing for the stem of said pawl and

with a curved rack concentric with said stem, and a latch pivoted to the hub of said tooth or arm and provided with a transversely-adjustable tooth adapted to engage with said rack, substantially as described.

8. In sawmill set-works the combination with the setting-stand provided with a home stop and the stop-shaft journaled in said stand and having a ratchet-wheel fixed thereon, of a stop-arm pivoted concentrically with the ratchet-wheel and provided with a locking device for securing it thereto, a graduated gage-plate pivoted on said shaft for determining the point of locking said arm to the ratchet-wheel, a graduated dial journaled on said shaft adjacent to said gage-plate, a pawl for preventing recoil when said arm strikes the home stop, a frame-piece attached to the stand, extending over the dial, and provided with a bearing for the stem of said pawl and with a rack which is concentric with said stem and terminates at one end in an index or pointer adjacent to a circular scale on the dial, a tooth or arm pivoted on the stem of said pawl and engaging with said gage-plate, and a latch connected with said tooth or arm and adapted to engage with said rack, substantially as described.

9. In sawmill set-works the combination of the setting-stand provided with a home stop, a stop-shaft journaled in said stand, a ratchet-wheel fixed on said shaft, a stop-arm pivoted concentrically with the ratchet-wheel and provided with means for locking it thereto, an adjustable gage-plate pivoted above and concentric with said ratchet-wheel for determining the point of locking said arm to said ratchet-wheel, a dial journaled on said shaft and connected therewith by gears above the gage-plate, a pawl for preventing recoil of the ratchet-wheel when the stop-arm strikes the home stop, a gear-support extending from the stand between the gage-plate and dial and having a bearing on the stop-shaft, a tooth pivoted on the stem of said pawl and engaging with said gage-plate, a frame-piece provided with a bearing for the stem of said pawl and with a rack and extending from the stand over the dial to the stop-shaft on which it has a bearing, a latch pivoted to the hub of said tooth or arm and adapted to engage with said rack, a spring-actuated bolt for holding said pawl in and out of engagement with the ratchet-wheel, and a socket for said bolt having a shank by which said gear-support and frame-piece are secured to the stand, substantially as described.

10. In sawmill set-works the combination with a stationary index, of a rotary dial having a scale on which said index shows the distance of the knees from the sawing plane, and a lumber-scale adjustable on said dial with relation to the other scale, substantially as described.

11. In sawmill set-works the combination
with gage and stop mechanism, of a rotary
dial connected with the setting mechanism
and provided with a circular scale for deter-
5 mining the distance of the knees from the
sawing plane and with an adjustable ring hav-
ing circular lumber-scales concentric with the
dial and with the other scale thereon, and a

stationary index with which said scales are
read, substantially as described. 10

In witness whereof I hereto affix my signa-
ture in presence of two witnesses.

WILLIAM H. TROUT.

Witnesses:

CHAS. L. GOSS,

BERNARD C. ROLOFF.