

1,016,759.

P. MICHEL, FILS.
SAWMILL SET WORKS.
APPLICATION FILED JAN. 18, 1910.

Patented Feb. 6, 1912.

4 SHEETS—SHEET 1.

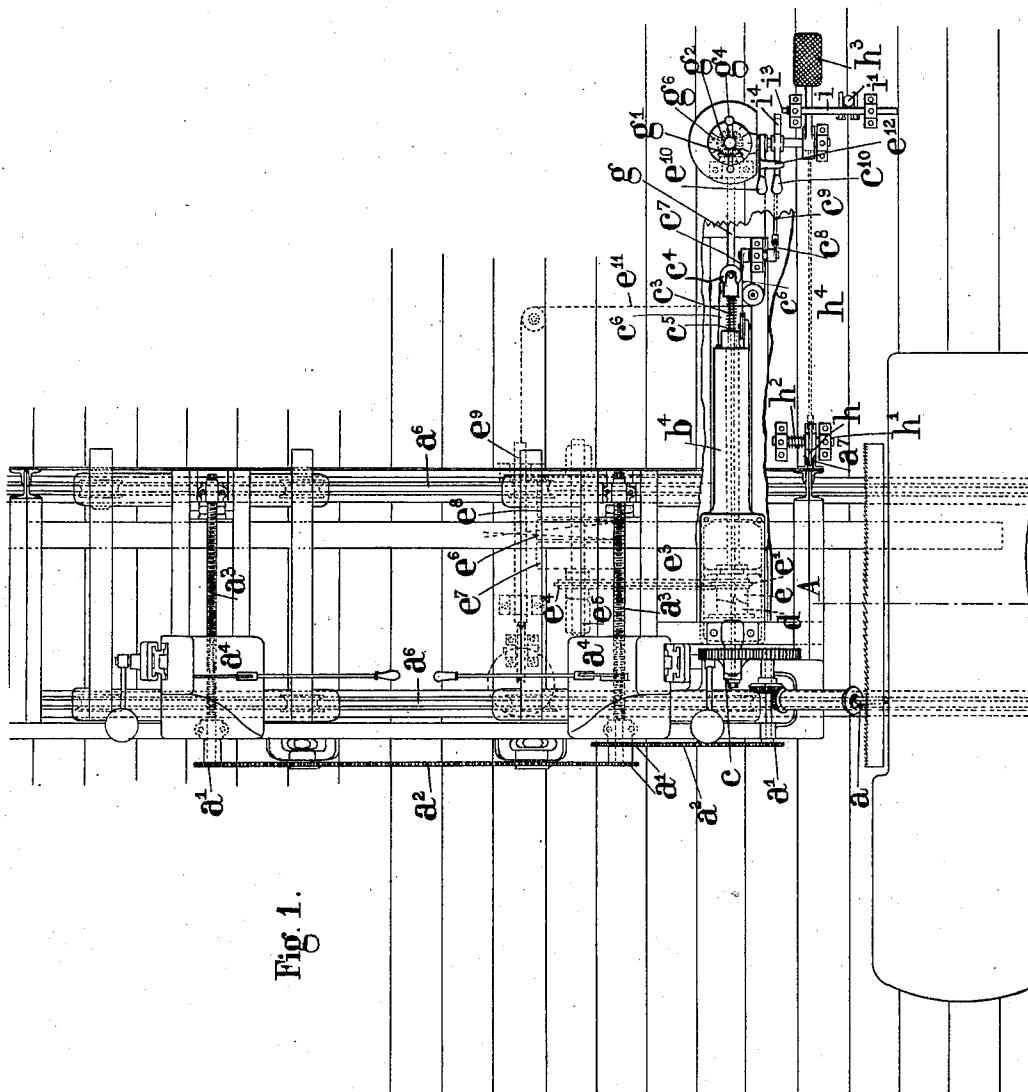


Fig. 1.

WITNESSES
L. H. Grot
M. McCallum

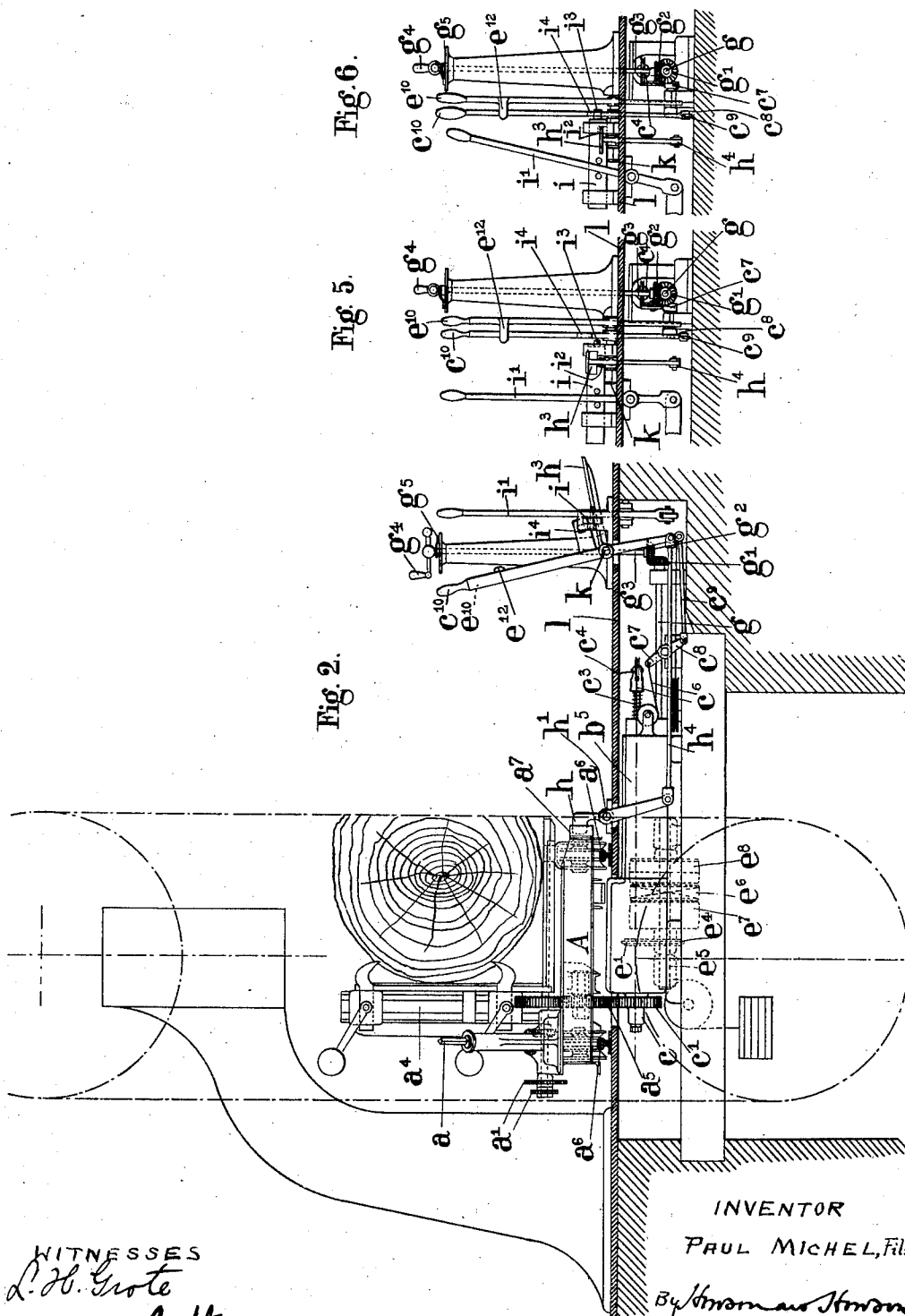
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4 SHEETS—SHEET 2.



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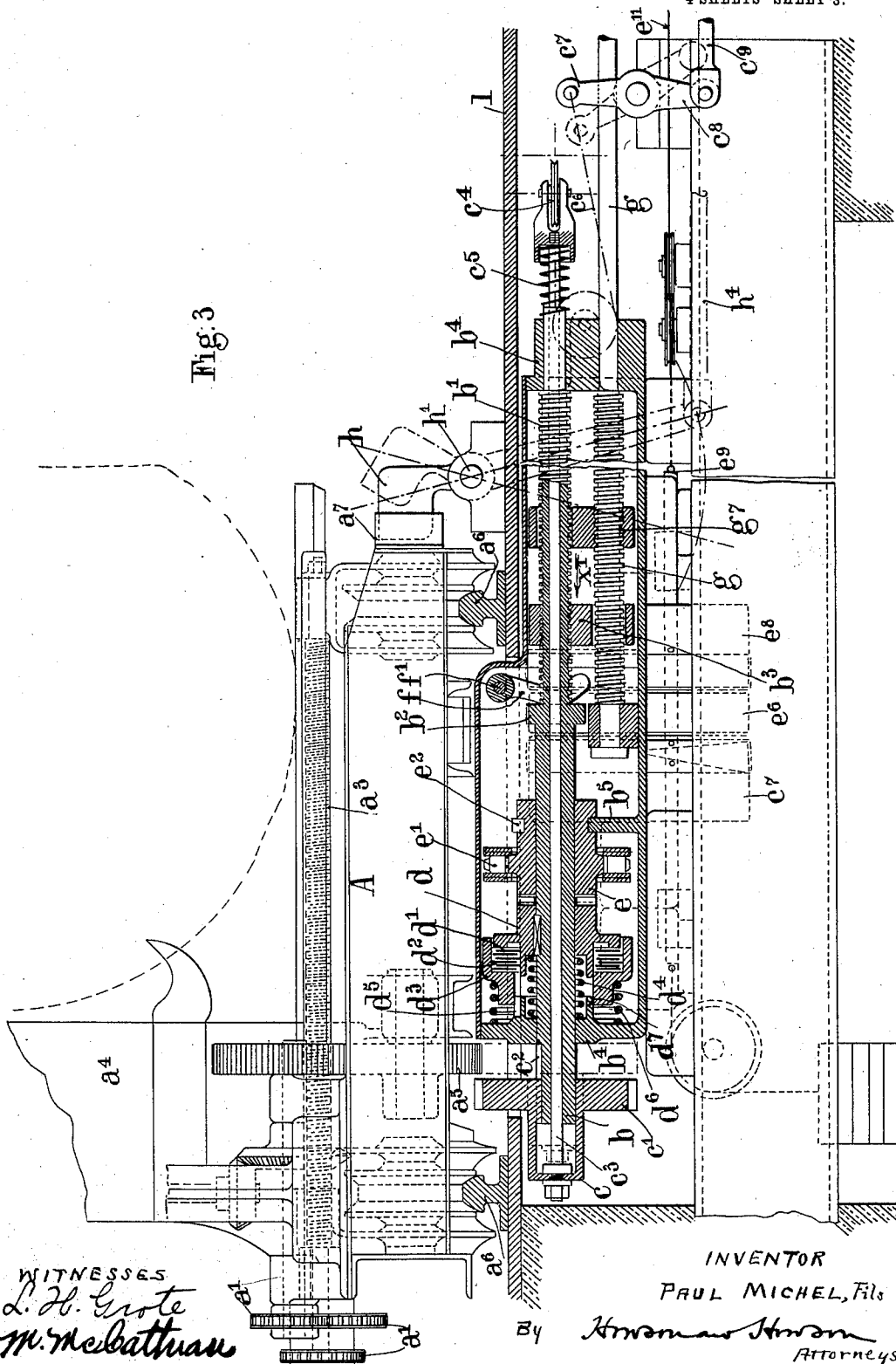
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4 SHEETS—SHEET 3.

Fig. 3



WITNESSES
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M. McBethuan

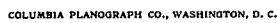
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UNITED STATES PATENT OFFICE.

PAUL MICHEL, FILS, OF TROYES, FRANCE.

SAWMILL SET-WORKS.

1,016,759.

Specification of Letters Patent.

Patented Feb. 6, 1912.

Application filed January 18, 1910. Serial No. 538,672.

To all whom it may concern:

Be it known that I, PAUL MICHEL, Fils, a citizen of the Republic of France, residing at Troyes, Aube, France, (whose post-office address is 180 Faubourg Croncels, Troyes, Aube, France,) manufacturer, have invented an Improvement in Sawmill Set-Works, of which the following is a specification.

The present invention relates to set-works for saw-mill carriages, and the particular object of my invention is to provide an improved motor-driven set-works adapted to be operatively connected to the usual feed screws of the set-works on a traveling-carriage after the latter has reached a predetermined position.

My improved set-works is designed to secure the following advantages. (1) The width of the cut may be determined in advance and the setting mechanism is automatically halted as soon as the log has been advanced the predetermined distance for the succeeding cut. (2) After the cutting of the log has been completed, the log supporting knees are returned to their original position by the setting mechanism which is automatically halted as soon as this position is reached. (3) An interlocking system for the various operating levers is provided which prevents their operation in the wrong sequence and thus insures the mechanism against erroneous manipulation.

In the accompanying drawings Figures 1 and 2 are respectively broken plan and side elevation showing my improved set-works applied to a saw-mill carriage of suitable character; Fig. 3 is a longitudinal section on the line 3—3, Fig. 4 drawn to a larger scale, through the set-mechanism and showing its relation to the log carriage; Fig. 4 is a plan of the set works, showing in dotted lines its relation to the carriage; Figs. 5 and 6 are side elevations of the controlling levers for the set-works, the parts being, in Fig. 5, in the position taken at the halt of the carriage and during the advance of the log to position for the next cut; while in Fig. 6, they are in the position assumed during the travel of the carriage for the cut, the set works mechanism being halted.

The present invention is not concerned with the carriage construction *per se*, except in so far as it possesses the necessary means for connecting the usual feed screws a^3 for the log-holding knees a^4 to my improved motor-driven setting mechanism. Thus, in

Figs. 1 and 2, I have represented the usual wheeled carriage A, which travels in the customary manner upon the guide tracks a^6 arranged beneath the same. The usual series of log-holding knees a^4 work in the customary manner transversely of the carriage, the feed motion being imparted thereto by the screws a^3 which are interconnected and simultaneously rotated through sprockets a^1 and chains a^2 . In the old type of carriage, the feed is effected by a hand wheel spindle a , mounted on the carriage, and connected through bevel gears, with the spindle of one of the sprockets a^1 . Without altering this old method feed, I now propose to supplement it by a power driven feed mechanism, adapted to be operatively connected to said sprocket and chain mechanism when the carriage has reached a predetermined point in its travel. As shown in Fig. 2, I arrange in stationary position at one end of the carriage runway, and beneath the carriage when the latter is in its end position, a pinion c^1 adapted to gear with a pinion a^5 operatively connected with the spindle of one of the sprockets a^1 . Obviously, upon the rotation of this pinion c^1 , the motion which it imparts to the coöperating pinion a^5 on the carriage is transmitted through the chains a^2 to the series of sprockets a^1 for the feed screws a^3 , and the knees are advanced a distance determined by the rotation of the pinion c^1 .

In the particular arrangement illustrated, which may be variously modified without departing from my invention, I have shown the pinion c^1 mounted on the feather c^2 , lying to one side of the end of frame b^4 in which the spindle b is journaled. This spindle b is driven by a sprocket e^1 , mounted freely upon the shaft but normally engaging the clutch member d keyed to said shaft. The sprocket e^1 is connected by the chain e^3 to the sprocket e^4 mounted upon the shaft e^5 of the pulleys e^6 , e^7 , e^8 , of which only e^6 is fast upon the shaft, e^7 and e^8 receiving oppositely running belts, which may be shifted upon the pulley e^6 by the shifter e^9 , controlled by the lever e^{10} through the flexible connection e^{11} .

In order to obtain an automatic stop of the feed mechanism and thus to determine with precision the width of successive cuts I provide an automatic unclutching device which coöperates with a simultaneously acting brake mechanism to halt the feed after the same has proceeded a predetermined in-

terval. This I accomplish through coöperating tappet nuts b^3 and g^7 . The tappet nut b^3 is threaded upon the screwed end b^1 of the shaft b , and is provided with a depending leg perforated to ride freely upon the screw shaft g . The tappet g^7 is reversely arranged, that is, it is threaded upon the screw shaft b . The tappet g^7 is reupwardly extending leg perforated to pass freely over the screwed end b^1 of the shaft b . Obviously, upon the rotation of the shaft g , the tappet g^7 is moved longitudinally thereon since it is prevented from rotation by its engagement with the shaft b . Consequently, if by means of the bevel gears g^1 and g^2 , mounted at the ends of the shaft b and the spindle g^3 of the handle g^4 respectively, the tappet g^7 is moved a predetermined distance determined by the gage g^6 and pointer g^5 beneath the handle g^4 , the tappet b^3 on the spindle b can move longitudinally thereon only this predetermined distance to the tappet g^7 before engaging the latter. Upon engaging the tappet g^7 , the tappet b^3 is necessarily halted, and the continued rotation of the spindle b causes the latter to be longitudinally displaced in the direction of the arrow x^1 (Fig. 3). Inasmuch as the sprocket e^1 is held in stationary position with relation to the spindle b by the fixed fork b^5 , this longitudinal displacement of the shaft separates the clutch member d from the sprocket e^1 , and the latter therefore rotates as an idler upon the shaft b .

Simultaneously with the unclutching of the clutch member d and the sprocket e , a braking device is brought into operation to halt the shaft b . In the form shown this braking device comprises disks d^1 mounted upon the hub, of the clutch d , and coöperating disks d^2 mounted within the bell d^3 , the latter being slidably mounted upon a feather d^5 on the hub d^7 of the frame b^4 in which the shaft b is journaled. A spring d^6 presses the bell d^3 toward the clutch b , thus cushioning and preventing a too sudden action of the braking device. The carriage is now ready to be advanced to the saw, the log having been fed forward transversely of the carriage the predetermined distance to secure the desired thickness of the next cut. Before advancing the carriage, however, it is advisable to move the pinion c^1 out of engagement with the coöperating pinion a^5 on the carriage, and I accomplish this by means of a rod c^3 , extending lengthwise through the shaft b , which is made hollow for this purpose. This rod is attached at one end to a cap c fast with the pinion c^1 , and at the other end carries a roller c^4 over which passes a band c^6 secured at one end to the adjacent end of the frame b^4 and attached at its other end to the rock lever c^7 , the position of which is determined

through the other arm c^8 and connecting rod c^9 by the control lever c^{10} . As soon as this lever c^{10} is moved to the position indicated in full lines (Fig. 3), the rod c^3 is longitudinally displaced, thus throwing the pinion c^1 out of engagement with the pinion a^5 .

After the carriage has started on its advance for the cutting stroke, the handle g^4 is rotated to set the tappet nut g^7 in position for the next transverse feed of the log. This separates the tappet b^3 therefrom and the shaft b is returned by the spring d^4 which presses against the clutch member d , and the latter is again brought into engagement with the ratchet e . The pinion c^1 is still held in the extended position illustrated in Fig. 3, by the rod c^3 , so that upon the return of the carriage to its initial position, the pinion a^5 is out of gear therewith, until upon the shifting of the lever c^{10} the spring c^5 returns the pinion c^1 into engagement with the pinion a^5 .

To insure the proper positioning of the carriage with relation to the set device above described, the carriage is provided with shoulders a^7 at one end, (Figs. 1 and 4) between which stop lug h , mounted upon the spindle h^1 is pressed by the spring h^2 . This lug may be disengaged by means of the treadle h^3 , and connecting rod h^4 pivoted to the lug.

After a log has been completely cut and it is desired to return the knees to position to receive a fresh log, the tappets having been moved to the right hand end of the shafts b and g , it is sufficient to merely shift the belt-lever e^{10} so as to rotate the shaft b in the opposite direction to that of the feed, whereupon the tappet b^3 is traveled back to its original position, coming into engagement with the fork f swinging on the pivot f^1 , which bears against the collar b^2 , and serves to declutch the shaft from the sprocket sleeve e in the manner hereinbefore described. The tappet g^7 may be brought back into engagement with the tappet b^3 by rotating the handle g^4 in the direction opposite to that in which it is turned to set the feed.

While it is not essential to the other features mentioned, I prefer as a matter of safety, to provide an interlocking engagement of the various controlling levers so that it is not possible to operate them in the wrong sequence. As previously stated, the lever c^{10} controls the position of the pinion c^1 with relation to the pinion a^5 on the carriage, while the lever e^{10} controls the belt shifter. In addition to these levers, the usual lever i^1 is provided to control the carriage traveling mechanism. Subject to the motion of the lever i^1 , I provide a lock bar i which is engaged by the shank of the treadle h^3 on the one hand, and by the car-

riage-advancing lever i^1 on the other hand. This bar i must be freed of the treadle h^3 by depressing the latter before the lever i^1 may be shifted to operative position and the carriage-advancing mechanism started. The depression of the treadle, as above explained, rocks the lug h out of the offset a^6 of the carriage, and the latter is thus freed. When the lever i^1 is shifted into position to set the carriage-advancing mechanism in operation, the tongue i^3 on one end of the rod i , enters a perforation i^4 in the lever c^{10} , and thus locks it in position such that the pinion c^1 is out of engagement with the carriage pinion a^5 when the latter returns to its usual position. The belt-shifting lever c^{10} is provided with an arm e^{12} reaching across to and engaging the lever c^{10} , so that it is impossible to shift the lever c^{10} until the rod i has been withdrawn by the return of the lever i^1 which stops the carriage-actuating mechanism when the carriage is again in position for the adjustment of the log knees for a fresh cut.

Obviously my invention is not limited to the particular arrangement shown, but may be embodied in various modifications which do not depart therefrom, and I do not limit myself to the precise structure shown.

I claim as my invention:

1. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, a clutch on said shaft and means in connection therewith for driving the latter, means in connection with the longitudinal displacement of said shaft following the impingement of said nut against said tappet for disengaging the clutch members and thereby stopping the drive of said shaft, in combination with means for connecting said shaft to the feed gearing for the transversely movable work supports on a traveling carriage when the latter is in predetermined position.

2. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, a clutch on said shaft and means in connection therewith for driving the latter, means in connection with the longitudinal displacement of said shaft following the impingement of said nut against said tappet for disengaging the clutch members and thereby stopping the drive of said shaft, in combination with means for connecting said shaft to the feed gearing for the transversely movable work supports on a traveling carriage when the latter is in

predetermined position, together with means for holding said connecting means in inoperative position.

3. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, a clutch on said shaft and means in connection therewith for driving the latter, means in connection with the longitudinal displacement of said shaft following the impingement of said nut against said tappet for disengaging the clutch members and thereby stopping the drive of said shaft, a braking device automatically brought into action upon the opening of the clutch to stop the rotation of the shaft, in combination with means for connecting said shaft to the feed gearing for the transversely movable work supports on a traveling carriage when the latter is in predetermined position.

4. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, a clutch on said shaft and means in connection therewith for driving the latter, means in connection with the longitudinal displacement of said shaft following the impingement of said nut against said tappet for disengaging the clutch members and thereby stopping the drive of said shaft, in combination with means for connecting said shaft to the feed gearing for the transversely movable work supports on a traveling carriage when the latter is in predetermined position, together with means to insure the positioning of said carriage in the operatively coördinated relation of said feed gearing and connecting means.

5. A feed device for a machine of the character described, comprising a longitudinally displaceable hollow shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, a clutch on said shaft and means in connection therewith for driving the latter, means in connection with the longitudinal displacement of said shaft following the impingement of said nut against said tappet for disengaging the clutch members and thereby stopping the drive of said shaft, in combination with a pinion splined on said shaft and adapted to engage a cooperating pinion of the feed gearing for the transversely movable work supports on a traveling carriage, together with a rod passing longitudinally through said shaft and means in connection with said

rod for controlling the position of said pinion on the shaft, for the purpose specified.

6. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, means for reversibly rotating said shaft, said means comprising a clutch member freely rotating on said shaft, a reversible belt drive therefor, and a cooperating clutch member fast on said shaft adapted to be disengaged from the positively driven clutch member on the longitudinal displacement of said shaft following the impingement of said nut against said tappet, in combination with means for connecting said shaft to the feed gearing for the transversely movable work supports on a traveling carriage when the latter is in predetermined position.

7. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, means for reversibly rotating said shaft, said means comprising a clutch member freely rotating on said shaft, a reversible belt drive therefor, and a cooperating clutch member fast on said shaft adapted to be disengaged from the positively driven clutch member on the longitudinal displacement of said shaft following the impingement of said nut against said tappet, in combination with a pinion splined on said shaft and adapted to engage a cooperating pinion of the feed gearing for the transversely movable work supports on a traveling carriage of the character described, together with a rod passing longitudinally through said shaft and means in connection with said rod for controlling the position of said pinion on the shaft, for the purpose specified.

8. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in

the path of said nut, means for reversibly rotating said shaft, said means comprising a clutch member freely rotating on said shaft, a reversible belt drive therefor, and a cooperating clutch member fast on said shaft adapted to be disengaged from the positively driven clutch member on the longitudinal displacement of said shaft following the impingement of said nut against said tappet, in combination with a pinion splined on said shaft and adapted to engage a cooperating pinion of the feed gearing for the transversely movable work supports on a traveling carriage of the character described, together with a rod passing longitudinally through said shaft and cooperating levers for shifting said rod and the belt drive for the clutch.

9. A feed device for a machine of the character described, comprising a longitudinally displaceable shaft having a threaded portion, a nut thereon held against rotation but free to travel on said spindle during the rotation of the latter, a tappet arranged in the path of said nut, means for reversibly rotating said shaft, said means comprising a clutch member freely rotating on said shaft, a reversible belt drive therefor, and a cooperating clutch member fast on said shaft adapted to be disengaged from the positively driven clutch member on the longitudinal displacement of said shaft following the impingement of said nut against said tappet, in combination with a pinion splined on said shaft and adapted to engage a cooperating pinion of the feed gearing for the transversely movable work supports on a traveling carriage of the character described, together with a rod passing longitudinally through said shaft and cooperating levers for shifting said rod and the belt drive for the clutch, together with a lever for operating the carriage traveling mechanism and means for locking one set of levers while the other set is free, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

PAUL MICHEL, Fils.

Witnesses:

DEAN M. MASON,
JACQUES LEJEUNE.