S. MARSCHIK.

WAGE REGISTERING APPARATUS FOR POWER LOOMS AND TEXTILE MACHINERY.

APPLICATION FILED MAR. 1, 1911.

1,034,920.

Patented Aug. 6, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

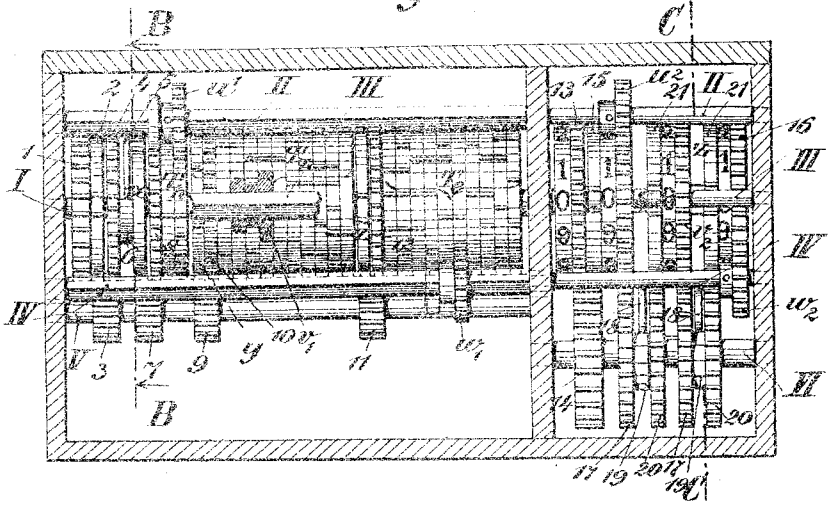


Fig. 2.

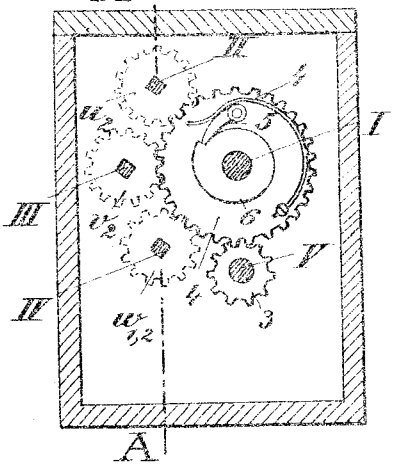
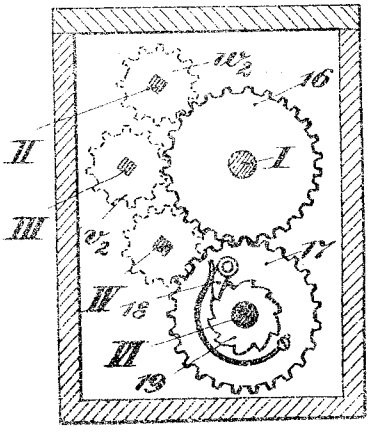


Fig. 3.



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3 SHEETS-SHEET 2.

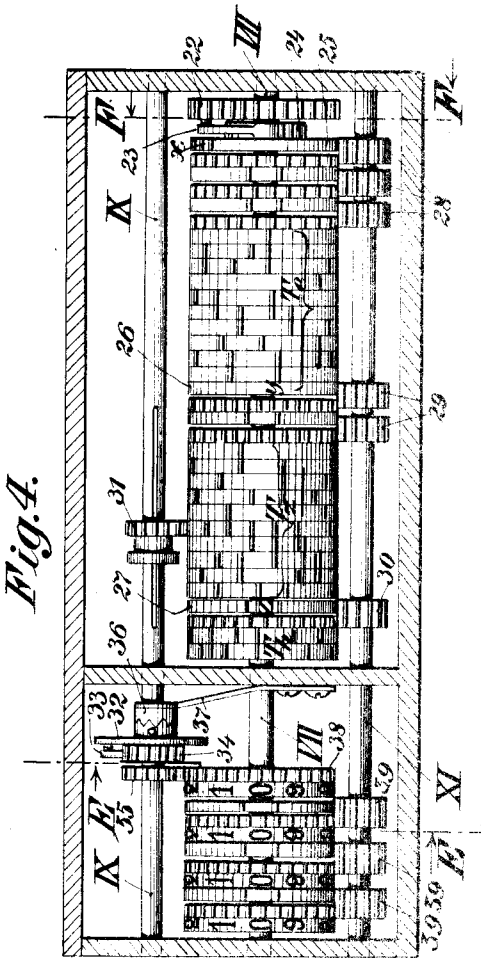

Fig. 4.

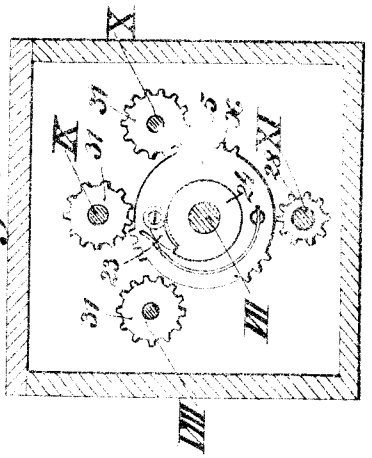

Fig. 6.

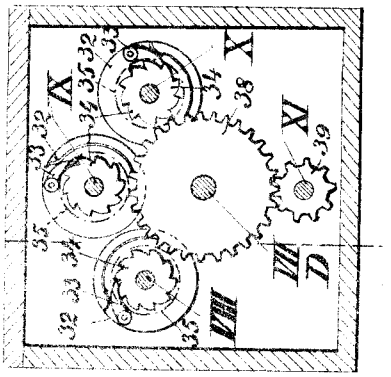

Fig. 5.

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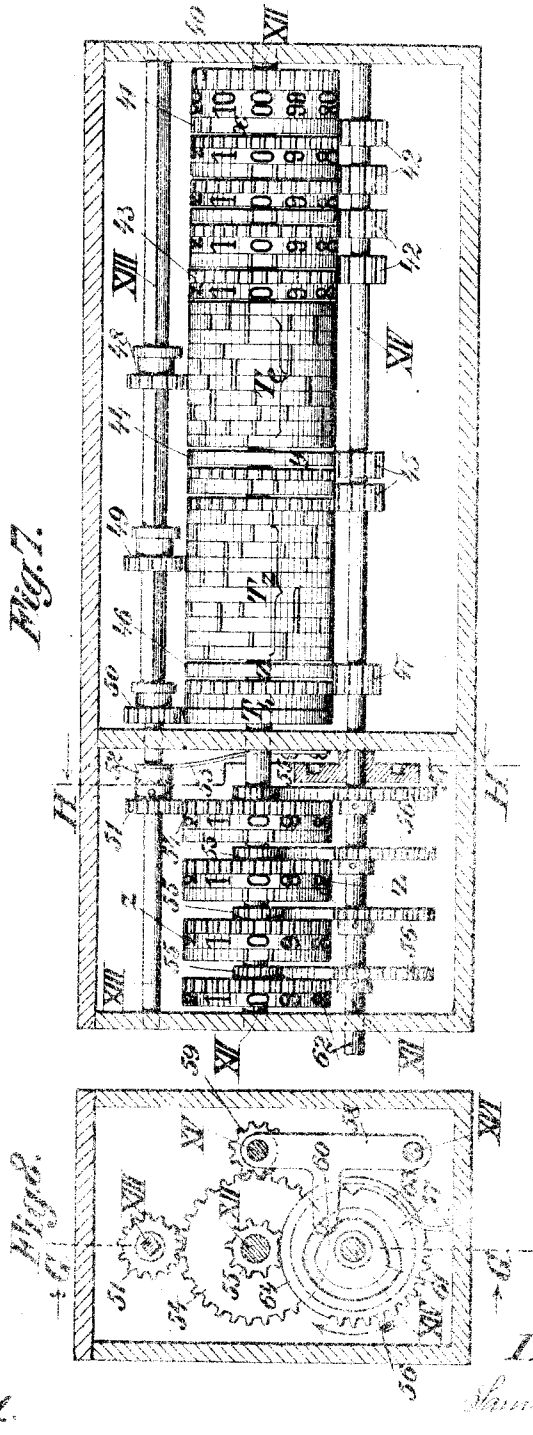
Fig. 7.



Witnesses:
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Gerhard Pagel.

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UNITED STATES PATENT OFFICE.

SAMUEL MARSCHIK, OF BRÜNN, AUSTRIA-HUNGARY.

WAGE-REGISTERING APPARATUS FOR POWER-LOOMS AND TEXTILE MACHINERY.

1,034,920. Specification of Letters Patent. Patented Aug. 6, 1912.

Application filed March 1, 1911. Serial No. 611,726.

To all whom it may concern:

Be it known that I, SAMUEL MARSCHIK, a subject of the Austro-Hungarian Emperor, and resident of 37 Schmerlingstrasse, Brünn, Austria-Hungary, have invented certain new and useful Improvements in Wage-Registering Apparatus for Power-Looms and Textile Machinery, of which the following is a specification.

My invention relates to improvements in an apparatus for registering wages for mechanical looms and similar textile machines, and more precisely to an apparatus for registering wages of the kind described in my specifications Serial No. 455487 filed Sept. 30, 1908 and Serial Number 543387 filed February 11, 1910.

With the known mechanism the successive interpolation of the unit disks for composing any required wage may lead to inaccuracies by reason of the close disposition of the rear wheels which have to be shifted for a fraction of the division of their teeth.

Now the present invention has for its object to obviate the mistakes by the arrangement of a wages drum for each monetary division of the wage upon a common axis, and of driving all such drums from the same shaft which performs a revolution for an appropriate part of the unit of work (for example 1000 wefts or 1 meter), said shaft carrying gear wheels which for the purpose of successive engagement of the wage rate drums, have differently placed teeth at uniform distances on the periphery for each monetary division. These wage rate drums are not only provided with teeth for the monetary divisions, but they can also be driven at a rate corresponding to each of the latter. For example, when the wage rate is divided into tenths and for 1000 wefts counts 13.5 cents the pay would be for said 1000 wefts equal to 10+3+0.5 cents. Reduced to units it will mean that 100 wefts cost 1 cent, 1000 wefts 3 cents and 10000 wefts 5 cents in this example. For tenths of the wage rate, the corresponding drum must be driven at a ratio of 1:10000, for units at the rate of 1:1000 and for tenths 1:100. Therefore, the transmission is the same for 1:10 while from here the transmission teeth of the gear wheels are transposed by 0:3 to each other so that the successive movement of the wage rate drums takes place in a time interval of 3 wefts and the collisions are thus effectually prevented. The present arrangement also provides a weft counter, or a meter counter, as well as an automatic zero-return device.

Various forms of construction of this invention are shown in the accompanying drawings, in which:—

Figure 1 is a longitudinal section taken on the line A—A of Fig. 2, of one form. Fig. 2 is a cross-section on the line B—B of Fig. 1. Fig. 3 is a cross-section on the line C—C of Fig. 1. Fig. 4 is a longitudinal section taken on the line D—D of Fig. 5, showing a modification. Fig. 5 is a cross-section on the line E—E of Fig. 4. Fig. 6 is a cross-section on the line F—F of Fig. 4. Fig. 7 is a longitudinal section taken on the line G—G of Fig. 8. Fig. 8 is a cross-section on the line H—H of Fig. 7.

Referring to Figs. 1 to 3, each monetary division of wage is marked in a wage-rate drum mounted on a common shaft with the other drums for units, tens and hundreds, which for 1000 wefts, or 1 meter, makes one revolution. The movement is transmitted from the units-drum, by means of gear wheels to the units-disk of the wages registering drum, from the tens-drum to the tens-disk and from the hundreds-drum to the hundreds-disk of the wages registering drum. In this apparatus, the wheel 1 on shaft I is driven so that it makes one revolution for 10 wefts, or for 0.1 meter where the wage is reckoned per meter produced. By the wheels 2, 3, 4, pawl 5 attached to the latter wheel, and cam 6 of the intermediate wheel x which is fast on the shaft I the latter is revolved once for every 100 wefts, or 1 meter. Upon the shaft I are wheels y and z which are fixed in such a manner as to have the teeth x, y, z displaced to each other by 0.3 of the periphery. The connection of the wheels 4 and x through the intervention of the pawl 5 and cam 6 is such as to leave the counting mechanism unaffected for the backward turning of the pattern cylinder, or the yarn beam, the counting being restarted only when the weaving has advanced to the same point where it was. In the present case, the withdrawal of the weft may be as much as a hundred or 1 meter. The wheel x causes the rotation of the hundreds-drum T^h of the wage-rate drum through the intervention of the gear wheels 7 and 8, while y moves the tens-drum T^z through the

intervention of gear wheels 9 and 10, and z moves the units-drum T^e through wheels 11 and 12, uniformly for every 1000 wefts or 10 meters. From the hundreds-drum T^h motion is transmitted to a slidable wheel u^1 upon the shaft II which has a fixed wheel U^2, while the tens-drum T^z transmits motion to a slidable wheel V^1 upon the shaft III which has a fixed wheel V^2, and the units-drum T^e transmits motion to a slidable wheel W^1 upon the shaft IV which has a fixed wheel W^2, and thence to the corresponding wheels 16 of the hundreds, tens and units parts of the wage registering drums z which latter in connection with wheels 21, 20, 19, pawl 18 and wheels 17, 15, 14 and 13 effect the registration in higher totals in the usual manner. The displacement of the wheels U^1, V^1, W^1, is obtained in any known manner.

The apparatus shown in Figs. 4 to 6 is arranged so that the units-drum revolves once for every 10000 wefts or 10 meters, the tens-drum once for 1000 wefts or 1 meter, and the hundreds-drum once for 100 wefts or 0.1 meter. With this arrangement the transmission wheels on their separate shafts act successively on the units-disk of the wage registering drum. The wheel 22 makes one revolution for 10 wefts or 0.1 meter and imparts rotation to the gear wheel 25 with its teeth x through the intervention of the pawl 23 and cam 24. The wheel 25 is fixed to the shaft VII and makes one revolution for 10 wefts or 0.1 meter and allows of the withdrawal of 10 wefts 0.1 meter when required. On the shaft VII are also keyed transmission wheels 26 with interrupted teeth y and 27 with interrupted teeth z. The pinions 28 drive the units-drum T^e of the wages-rate drum for 10 wefts or 10 meters, the pinions 29 drive the tens-drum T^z for 1000 wefts or 1 meter and the pinion 30 drive the hundreds-drum T^h for 100 wefts or 1.1 meter by one revolution. The teeth x, y and z are displaced by 0.3 of the circumference with each other so that the successive motions occur in relative periods of 3 wefts or 0.03 meters. Transmission to the wage registering drums Z is effected through intermediate shafts VIII, IX and X. The wage-rate drums T^h, T^z T^e drive the slidable wheels 31 which revolve the disks 32 with pawls 33. These pawls drive wheels 34 fixed to wheels 35 and so rotate the units-disk of the wage-registering drums Z, the displacement toward the number disk of the next higher order being effected by means of a drive 39 in the usual manner. The disks 32 have each a toothed hub in engagement with a corresponding coupling 36 pressed together by a spring 37. For the sake of greater clearness of drawing only one of these transmitting gears is shown in Fig. 4.

In the apparatus shown in the Figs. 7 and 8, the wages-rate drums are driven in the same manner as last described, but the transmitting gears for the wage-registering drum are mounted on a common shaft and act through the intervention of only one transmitting wheel upon the units-disk of the wage-registering drum. The apparatus is further provided with a weft counter and an automatic zero-return device. The wheel 40, which makes a revolution for 10 wefts or 0.1 meter, is fixed to the wheel 41 and is fast on the shaft XII so that the latter also makes a revolution at the same time. On the shaft XII are fixed wheels 44 and 46 so arranged that the teeth x of the wheel 41, the teeth y of the wheel 44 and the teeth z of the wheel 46 are set relatively to each other at 0.3 of the circumference and thus cause the successive rotation of the wages-rate drums T_e, T_z, and T_h to take place in time-lags of 3 wefts or 0.03 meter. The drums T_e, T_z, T_h are driven by gears 42, 45 and 47 respectively which are mounted on the shaft XIV. The said wages-rate drums act through slidable wheels 48, 49 and 50 on the wheel 51 fast on the shaft XIII and engaged with the toothed coupling 52 under pressure of the spring 53. The wheel 51 rotates the wheel 54 and therewith the units-disk of the wage registering drum Z, the transmission on to the higher number-disks being effected by the gear 59 upon shaft XV (Fig. 8) in the usual manner. The drive of the units-drum T_e serves at the same time as weft-counter, or meter-counter, for which purpose the transmitting gear wheels are connected with number disks 43 one or more of which can be loosely mounted on the nave of the drum T_e (Fig. 7). Upon the counter shaft XIV are fixed toothed segments 56 and a grooved cam 57, by means of a crank handle, not shown, applied to the square end 62 of the shaft, can receive a complete revolution, the correct starting position being insured by the spring catch 63. The toothed segments 56 can gear with toothed wheels 55 which are fixed to the number-disks of the wage registering drums Z and with a circumference for 10 tooth divisions have only 9 teeth. The counter shaft XV is carried by a pair of levers 58 on the shaft XIV (not shown in Fig. 7). One of these levers carries on an arm a pin 60 which projects into the groove 61 of the cam 57. The latter is so formed and connected with the toothed segment 56 that during a revolution of the shaft XIV the following successive operations occur, viz: The intermediate gear 59 is shifted, the toothed segments 56 turn the wheels 55 until the mutilations thereof are in the position shown in Fig. 8 (zero position), the intermediate gear 59 is re-engaged while the wheels 55 are stationary, and the latter are then released. The lock-

ing of the wheels 55 is effected through the intervention of a segment 64 whose periphery projects beyond the toothed segments 56.

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

1. In an apparatus of the kind described, in combination a shaft driven from a suitable part of the loom so that it makes one revolution for an appropriate portion of the work-unit, toothed wage-rate drums for the different monetary divisions of the wage arranged on said shaft, toothed wheels fixed to said shaft and having their teeth displaced relatively to each other, gear wheels adapted to transmit the rotation of said toothed wheels to said wage-rate drums, said toothed wheels being adapted to operate the successive rotation of said wage-rate drums of each monetary division, a counter of any desired construction, and means for transmitting the motion of said wage-rate drums to said counter, substantially as set forth.

2. In an apparatus of the kind described in combination a shaft driven from a suitable part of the loom so that it makes one revolution for an appropriate portion of the work-unit, toothed wage-rate drums for the different monetary divisions of the wage arranged on said shaft, toothed wheels fixed to said shaft and having their teeth displaced relatively to each other, gear wheels adapted to transmit the rotation of said toothed wheels to said wage-rate drums and adapted to drive the latter according to the rate of the monetary divisions, said toothed wheels being adapted to operate the successive rotation of said wage-rate drums of each monetary division, a counter of any desired construction, and means for transmitting the motion of said wage-rate drums to said counter, substantially as set forth.

3. In an apparatus of the kind described in combination a shaft driven from a suitable part of the loom so that it makes one revolution for an appropriate portion of the work-unit, toothed wage-rate drums for the different monetary divisions of the wage arranged on said shaft, toothed wheels fixed to said shaft and having their teeth displaced relatively to each other, gear wheels adapted to transmit the rotation of said toothed wheels to said wage-rate drums and adapted to drive the latter according to the rate of the monetary divisions, said toothed wheels being adapted to operate the successive rotation of said wage-rate drums of each monetary division, figure wheels connected with the units-drum of said wage-rate drums and driven by said gear wheels, said figure-wheels being adapted to indicate the total work done, a counter of any desired construction, and means for transmitting the motion of said wage-rate drums to the corresponding place of said counter, substantially as set forth.

4. In an apparatus of the kind described in combination a shaft driven from a suitable part of the loom so that it makes one revolution for an appropriate portion of the work-unit, toothed wage-rate drums for the different monetary divisions of the wage arranged on said shaft, toothed wheels fixed to said shaft and having their teeth displaced relatively to each other, gear wheels adapted to transmit the rotation of said toothed wheels to said wage-rate drums and adapted to drive the latter according to the rate of the monetary divisions, said toothed wheels being adapted to operate the successive rotation of said wage-rate drums of each monetary division, figure wheels connected with the unit-drum of said wage-rate drums and driven by said gear wheels, said figure-wheels being adapted to indicate the total work done, a counter of any desired construction, and means for transmitting the motion of said wage-rate drums to the corresponding place of said counter, toothed wheels connected to the figure wheels of said counter and each having a locking pin, a shaft, a number of toothed segments engaging the last said toothed wheels, adapted to turn the figure wheels of said counter to zero, a grooved cam fixed to the last said shaft, swing-levers engaging said cam, intermittens transmission gear, one of said levers engaging said grooved cam, the latter being adapted to disengage said transmission gear from said counter, arms also fixed to said shaft and adapted for locking the last said toothed wheels, and means for turning said shaft, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name this 14th day of February 1911, in the presence of two subscribing witnesses.

SAMUEL MARSCHIK.

Witnesses:

D. ALEXANDRE MARSCHIK.

AUGUST FUGGER.