March 18, 1930. E. O. ECKLAND ET AL 1,750,955

INKING DEVICE

Filed Aug. 12, 1925 2 Sheets-Sheet 1

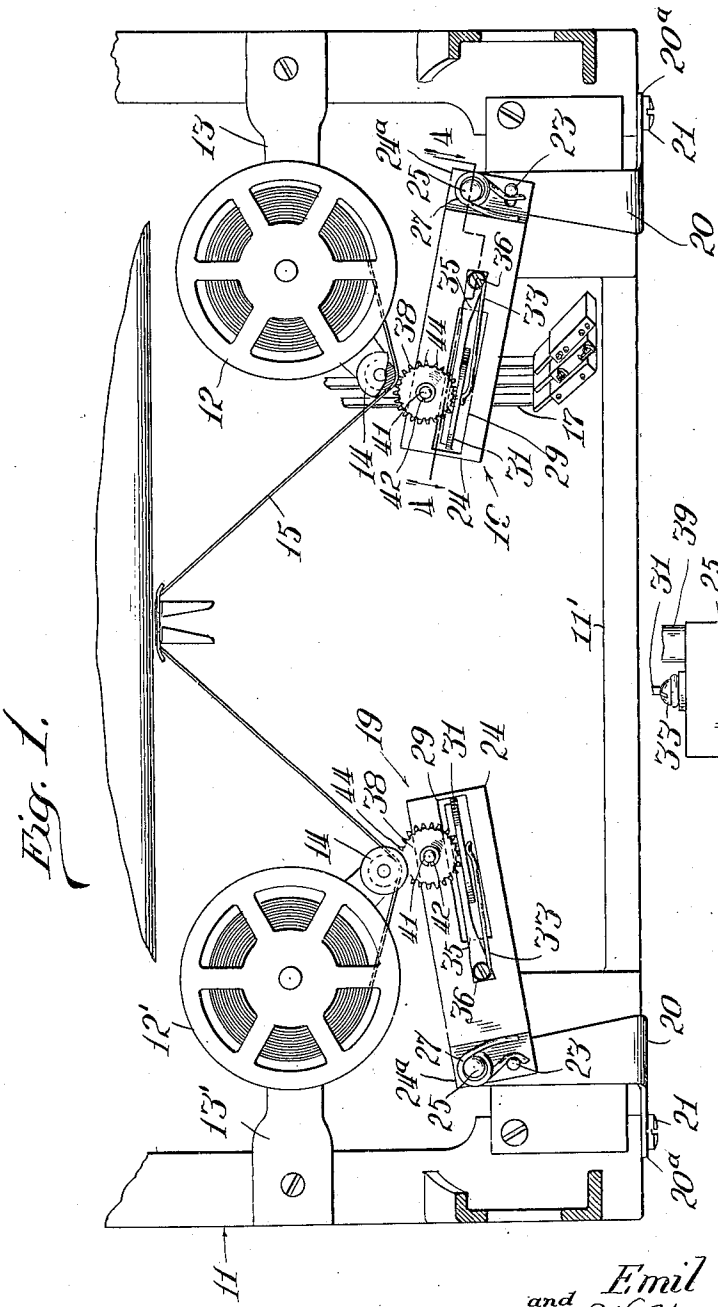


Fig. 1.

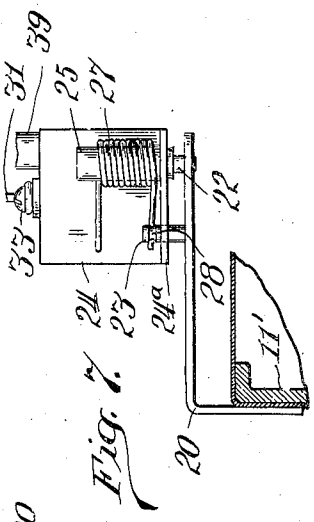


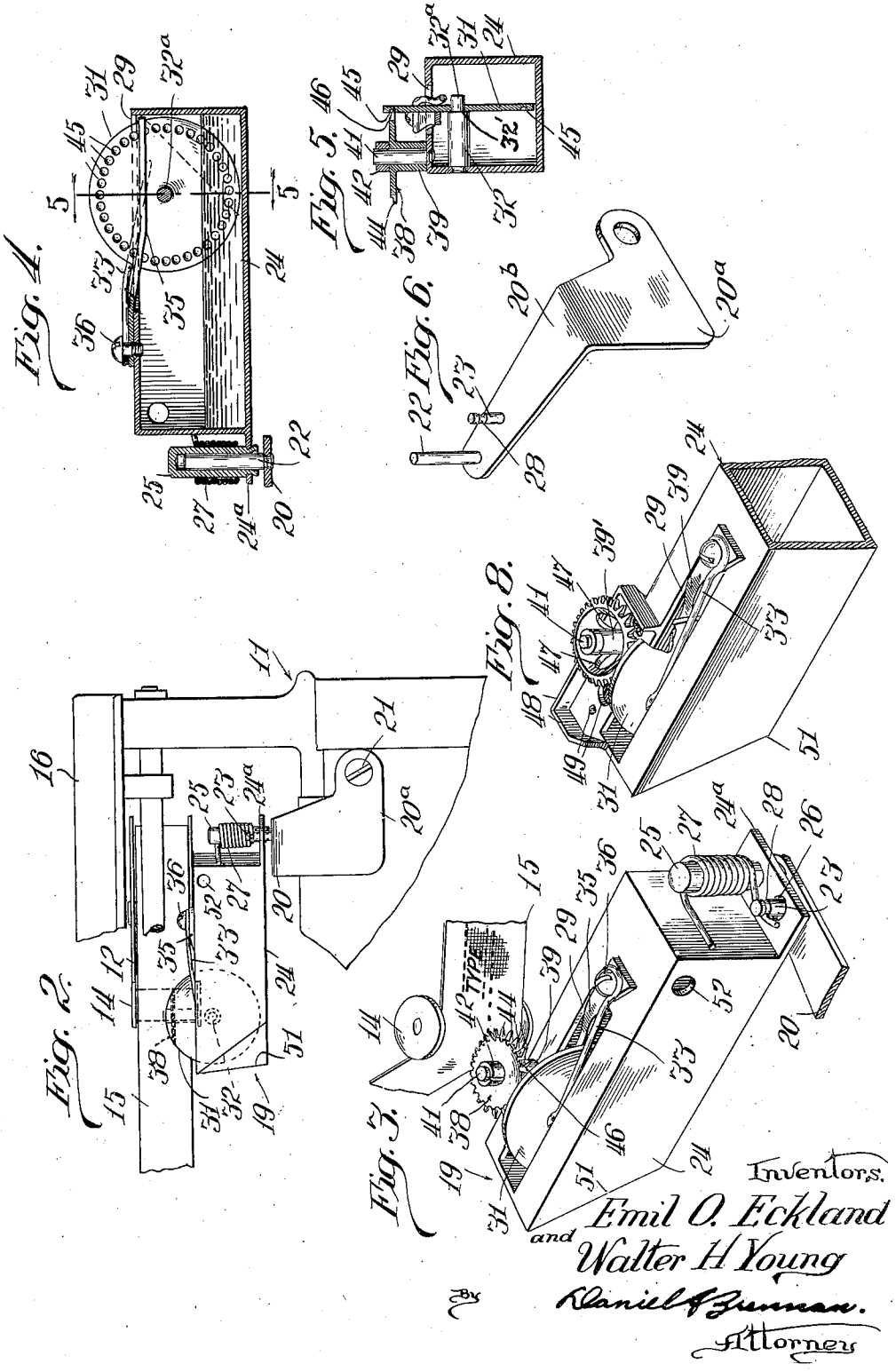
Fig. 2.

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UNITED STATES PATENT OFFICE

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INKING DEVICE

Application filed August 12, 1925. Serial No. 49,748.

The invention relates broadly to inking devices, and particularly to an inking device adapted to be used on typewriters or the like for continuously feeding ink to the typewriter ribbon in the operation of the typewriter.

Another object of the invention is to provide an inking device for typewriters and the like which will be in the form of an accessory or attachment and which readily can be adapted to standard machines with minimum difficulty and expense.

Another object of the invention is to provide an improved distributor, arranged to engage with the ribbon, which will feed a properly graduated and distributed amount of ink thereto in a continuous intermittent manner, and which will interrupt all feed of ink to the ribbon when the machine is not in operation. This distributor is also characterized by a unique construction which prevents any accumulation of ink on the top of the distributor.

Another object of the invention is to provide a feeding mechanism, characterized by a plurality of ink conveying pockets which apportions the quantity of ink transferred to the distributing member.

Another object of the invention is to provide an improved construction of adjustable wiper for cooperation with the feeding member.

Another object of the invention is to provide a container large enough to carry a sufficient supply of ink and so formed at one of its corners as to clear the type bars during the operation of the typewriter.

Another object of the invention is to mount the device for spring pressed pivotal motion, whereby the distributing member is resiliently held against the typewriter ribbon.

Another object of the invention is to provide such an inking device which will be free running in action and which will carry the ink substantially through a right angle path from the surface of the ink to the surface of the ribbon.

The foregoing and such other objects and advantages as may be pointed out or appear as this description proceeds are attained in the structural embodiment illustrated in the accompanying drawings, it being understood that this is merely an exemplary embodiment.

In these drawings:

Fig. 1 is a fragmentary plan view of a conventional typewriter showing the device of the present invention operatively connected therewith.

Fig. 2 is a fragmentary front elevational view of the typewriter showing the device in operative position.

Fig. 3 shows a perspective view of the device at an enlarged scale in engagement with the typewriter ribbon.

Fig. 4 is a transverse section of the device taken on the line 4—4 of Fig. 1.

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 4.

Fig. 6 is a perspective view of the bracket which supports the device,

Fig. 7 is a sectional view through the typewriter frame showing the inking device in end elevation, and

Fig. 8 is a fragmentary perspective view showing a modified construction.

Referring to Fig. 1, 11 is a conventional typewriter frame on which the ribbon spools 12 and 12′ are rotatably mounted by means of brackets 13 and 13′ and are provided with tension producing rollers 14 for the ribbon 15. In the usual typewriter construction, the frame 11 is generally provided with a cross bar 16 extending across the front of the machine. Directly below this cross bar, the frame 11 is generally provided with frame extensions or an arcuate front plate 11′ forming part of a bed for the type bars 17. Depending upon the particular style and construction of machine, in some instances, it may be desirable to mount the present inking devices upon the front frame portion 11′ and in other instances upon the front cross bar 16, or even upon the side members of the frame. In the present disclosure we have shown these inking devices mounted on the front plate portion 11′ of the typewriter frame.

These inking attachments are each designated 19 in their entireties, either one or two of these devices being employed in each machine. In order that the ribbon be inkable

to both extreme ends there are preferably two of the present attachments mounted on each machine, each being located to engage the ribbon below its longitudinal center to avoid feeding the ribbon at a point where the type strikes and near one ribbon spool 12 and preferably at the point where the ribbon passes over the tension roller 14 thus getting the best results. The two devices are substantial duplicates with the exception that the relationship of the parts is reversed for mounting on the opposite sides of the machine, and consequently only one of the units will be described.

Each attachment is supported on a bracket 20 having a vertically extending portion 20^a which is apertured at one end for receiving a screw 21 by which the bracket is fastened to the typewriter. The mounting of the inking attachment therefore merely involves the drilling and tapping of a hole for the screw 21 or a screw forming a part of the machine may preferably be used. The horizontally extending portion 20^b of the bracket carries two upwardly extending spaced pins 22 and 23. The ink receptacle and its associated ink transferring mechanism are mounted on this bracket 20 for pivotal movement as a unit about the pin 22.

The ink receptacle or container 24 preferably consists of a small rectangular tank substantially closed on all sides. Extending from the rear end of this tank is a flange 24^a for mounting on the supporting bracket 20. Beaded over in an aperture in this flange is a thimble or sleeve 25 which slips down over the pin 22 and forms a bearing for the swinging ink receptacle 24. Adjacent this sleeve 25, the flange 24^a is provided with an enlarged hole or elongated slot 26 which fits over the other pin 23. The play of the pin in this opening permits the necessary angular movement of the receptacle 24, but affords a limiting stop for this movement. A helical spring 27 is coiled around the sleeve or thimble 25 and has one end bearing against the end of the tank and the other end bearing in an annular groove 28 in the upper end of the pin 23. This spring is effective to swing the receptacle for yieldingly holding the ink transferring mechanism against the ribbon.

Referring now to the construction of this ink transferring mechanism it will be noted that the upper wall of the receptacle 24 is provided with a slot 29, in which rotates an ink feeding or lifting disc 31. As shown in Figure 5, this disc is journaled on the reduced end 32^a of a pivot pin 32 which is riveted or soldered in the side wall of the receptacle. A wire spring 33 having its free end bearing against the side of the disc 31 holds this disc against the shoulder 32′ at the inner end of the reduced portion 32^a. This construction simplifies and cheapens the assembly of the unit, and permits of the ready removal of the disc from the pivot pin 32 for substitution or repair. It will also be noted that the entire receptacle 24 can be quickly lifted off the two pins 22 and 23.

Extending across the other face of the disc is a wiping finger 35 which regulates the quantity of ink raised on this face of the disc from the receptacle 24. The other end of this wiping finger has an enlarged portion which is apertured to receive a fastening screw 36 by which the wiping finger is secured to the top wall of the receptacle. The other end of the wire spring 33 is preferably coiled around this screw under the head thereof. By loosening this screw the lateral pressure of the spring 33 against the side of the feeding disc can be adjusted, and the spacing of the wiping finger from the other side of the disc can be adjusted. In actual practice we prefer to have the wiping finger spaced a small fraction of an inch from the side of the feeding disc.

The ink which is raised from the receptacle 24 is transferred to a distributing wheel 38, which in turn transfers it to the ribbon 15. In the embodiment shown in Figure 5, this wheel is formed with a relatively long hub 39 which is journaled on a pivot pin 41 riveted in the top wall of the receptacle 24 and which is of proper height to dispose the periphery of the distributing wheel adjacent the periphery of the feeding disc 31. A small split ring 42 is sprung on the upper end of the pivot pin 41 to hold the distributing wheel in place.

As clearly shown in Figures 3 and 4, the periphery of the distributing wheel 38 is formed with pointed teeth 44 which reduce and proportion the quantity of ink transferred to the ribbon 15. These teeth mesh with the lateral pockets 45 formed in the side of the feeding disc 31, these pockets consisting of small cylindrical or spherical recesses formed in one side of the disc. In the intermittent advancement of the ribbon to which the distributing wheel 38 is responsive for its actuation, the said wheel is slowly rotated and in turn serves to drive the feeding disc 31. As this disc rotates, each pocket 45 entrains a certain definite amount of ink and raises this ink up to the pointed teeth on the distributing wheel. Here this ink is transferred to these pointed teeth and is then carried around on these teeth into contact with the ribbon 15. The teeth preferably contact with the ribbon below or on a substantially medial line as indicated in Figure 3, so that the ink will distribute itself uniformly over the width of the ribbon by capillary attraction. The pointed shape of the teeth 44 and the resilient pressure of the spring 27 insures penetration of the ink in the ribbon. The point of tangency of these

teeth with the ribbon is preferably directly opposite the tension roller 14.

The pressure of the spring wire 33, effective laterally on the face of the feeding wheel 31, is borne by the shoulder 32′ on the pivot pin 32 and imposes no pressure at the point of mesh of the two wheels which might retard their easy rotation.

It will be observed from Figures 3 and 5 that the teeth 44 have their upper surfaces cut away to form relatively abrupt shoulders 46 adjacent the roots of the teeth. These shoulders prevent the ink from working up over the top of the distributing wheel, which would be objectionable, as it might encrust on the bearing surfaces of the pivot pin 41 and make the distributing wheel hard to revolve.

In Figure 8, we have shown a slightly modified construction. In this form the web portion of the distributing wheel is of conical form, extending down from the toothed outer annulus to the base of the hub 39′. Holes 47 are formed in this conical web portion for precipitating any ink flowing down in this conical web portion. Such ink is discharged into a receptacle or trough formed around this portion of the wheel by vertical flanges 48 which close off a portion of the upper surface of the receptacle extending over to the slot 29. Holes 49 may be provided in the bottom of this overflow receptacle for draining such excess ink back into the main receptacle 24. Thus no excess ink can accumulate on the bearing surfaces of the pivot 41.

For installation in certain makes of typewriters where the clearance between the path of the type bars and the ribbon spools is small, the lower inner corner of the ink receptacle may be beveled off as indicated at 51. The receptacle 24 may be refilled through the slot or through a front opening 52.

It will be evident from the foregoing that the present device provides a direct mechanical transfer of the ink from an ink receptacle to the ribbon without imposing any appreciable retardation to the motion of the ribbon. Prior art devices employing wicks and other elements which are not free-running impose an objectionable retardation to the motion of the ribbon. Because the inking face of the ribbon is upstanding in a substantially vertical plane and the surface of the ink lies in a horizontal plane, the transfer of the ink is literally around a right angle corner, which is performed very efficaciously by the present feeding wheel and distributing wheel rotating in planes at right angles to each other.

We do not intend to be limited to the specific details herein shown and described, as it will be evident that the essential features of the invention can be practiced in other embodiments within the scope of the claims.

We claim:

1. The combination with a printing machine comprising a ribbon cooperating with the type characters in making the printing impressions, of an inking device for the ribbon comprising a bracket, adapted to be supported by the machine, an ink receptacle pivotally supported on said bracket, ink transferring mechanism comprising a member dipping in said receptacle and another member conveying ink from the first named member to the ribbon, and spring means operating to swing said receptacle and said transferring mechanism to hold the latter resiliently in contact with the ribbon.

2. The combination with a printing machine having a ribbon for cooperating with the type characters, of an inking device for said ribbon comprising an ink receptacle, a feeding wheel rotating in said receptacle, said feeding wheel having a plurality of pockets formed in the side thereof, and a distributing wheel having teeth engaging in said pockets for transferring the ink therefrom to the ribbon.

3. The combination with a printing machine having a ribbon for cooperating with the type characters, of an inking device for said ribbon comprising an ink receptacle, a feeding wheel rotating in said receptacle, said feeding wheel having a plurality of pockets formed in the side thereof, a distributing wheel having teeth engaging in said pockets for transferring the ink therefrom to the ribbon, and spring means yieldingly holding said distributing wheel against said ribbon.

4. The combination with a printing machine, having a ribbon for cooperating with the type characters, of an inking device for said ribbon comprising an ink receptacle, a feeding wheel rotating in said receptacle, said feeding wheel having a plurality of pockets formed in the side thereof, a distributing wheel having teeth engaging in said pockets for transferring the ink therefrom to the ribbon, and spring means for moving said receptacle to hold said distributing wheel against said ribbon.

5. The combination with a printing machine, having a ribbon for cooperating with the type characters, of an inking device for said ribbon comprising an ink receptacle, a feeding wheel rotating in said receptacle, said feeding wheel having a plurality of pockets formed in the side thereof, a pivot, and a distributing wheel on said pivot having teeth engaging in said pockets for transferring the ink therefrom to the ribbon, said distributing wheel having angular surfaces for preventing a flow of ink into contact with the bearing surfaces of said pivot.

6. The combination with a printing machine employing a typewriter ribbon, of an inking attachment for inking said ribbon comprising an ink receptacle, and ink transferring mechanism comprising a toothed

wheel having means thereon to prevent the ink from reaching the bearing surfaces of said wheel.

7. The combination with a typewriter having a typewriter ribbon cooperating with the type bars, of an inking device for the ribbon comprising a support, an ink receptacle on said support, mechanism for transferring the ink from said receptacle to the ribbon comprising a toothed wheel, and means for resiliently urging said toothed wheel into contact with the ribbon.

8. In an inking device, an ink receptacle, a lift rotatably mounted in said container, a plurality of pockets disposed on a circumference of said lift, and a rotatably mounted toothed distributor having its teeth engaging in said pockets, whereby rotation of said distributor will transmit a corresponding rotation to the lift.

9. In an inking device, a receptacle having an opening, a lift arranged to extend through said opening, a bearing shoulder for one side of said lift, a distributor arranged to engage said lift, a spring engaging said lift holding it in contact with said bearing shoulder, and a wiper engaging the opposite side of the lift arranged to keep said lift clean and to prevent an excess of ink being carried to the distributor.

10. In an inking device, a bracket, a receptacle rotatably mounted on said bracket, means for limiting its angle of rotation, a lift rotatably mounted in operative relation with the receptacle, and a distributor operatively associated with said lift.

11. In an inking device adapted for inking a typewriter ribbon, a bracket, a plurality of pins on said bracket, an apertured receptacle carrying a bearing engaging one of said pins, the other of said pins engaging said aperture to provide means for limiting the angle of rotation of said receptacle with respect to said bracket, yielding means engaging said bracket and container tending to rotate said container, and means communicating with the inside of said container and the typewriter ribbon whereby the ink is uniformly distributed on said ribbon.

12. In an inking device, a bracket adapted to be secured to a typewriter, a plurality of upstanding pins on said bracket one of which is provided with a groove, in combination with a receptacle having a flange provided with two apertures therein, a tubular member secured to one of said apertures arranged to bear on one of said pins, the other or grooved pin extending through the other of said apertures, a spring surrounding said tubular member and having one of its ends engaging said receptacle and the other end registering with the groove in said pin, whereby said receptacle and said bracket are held yieldingly with relation to each other, a distributor rotatably mounted on said container adapted to be driven by said typewriter ribbon, a lift adapted to engage said distributor and extending into the receptacle, a spring holding said lift and distributor in operatve engagement with each other and a scraper arranged to engage the lift.

13. In an inking device, an ink receptacle, a lift rotatably mounted in said receptacle, a distributor engaging said lift, and teeth formed on said distributor of less thickness than the distributor proper.

14. In a typewriter comprising a typewriter ribbon having its inking face disposed in a substantially vertical plane, an ink receptacle, and ink transferring mechanism dipping into said receptacle from the top thereof and operating to raise the ink and convey it through a substantially right angle path to a part of the vertical face of said ribbon below its longitudinal center.

15. In a typewriter, the combination of a frame, a bank of type bars supported by said frame, a ribbon spool supported by said frame, a ribbon on said spool, an ink receptacle supported by said frame in a position above said bank of keys and adjacent said ribbon, and means responsive to the feed of the ribbon for transferring ink from said receptacle to said ribbon below the part of ribbon that the type strikes.

16. A device of the class described comprising a ribbon; a receptacle having a feeding wheel mounted thereon associated with said ribbon and mounted to move toward and away from the same, distributor means mounted on said receptacle to contact with said ribbon and transfer material from said feeding wheel to said ribbon; and a spring yieldingly pressing said receptacle toward said ribbon to effect yielding contact between said ribbon and said transfer means.

17. A device of the class described comprising a ribbon; a receptacle associated with said ribbon; a feeding wheel rotatably mounted on said receptacle and having a plurality of pockets formed in the side thereof; and a distributing wheel having teeth engaging in said pockets and contacting with said ribbon.

18. The combination with a typewriter ribbon, of automatic inking means contacting with and transferring ink to said ribbon at regular intervals on a line below its longitudinal center.

19. The combination with a typewriter ribbon, of inking means therefor comprising a toothed transfer wheel contacting with said ribbon at isolated points, and means for supplying ink to the teeth of said wheel.

In testimony whereof we affix our signatures at 10 S. La Salle St., Otis Bldg., Chicago, Ill.

EMIL O. ECKLAND.
WALTER H. YOUNG.